Sun Valley Area Drainage Master Plan

Technical Appendices

Step 2

Proposed Alternatives
Analysis Report

Volume 2

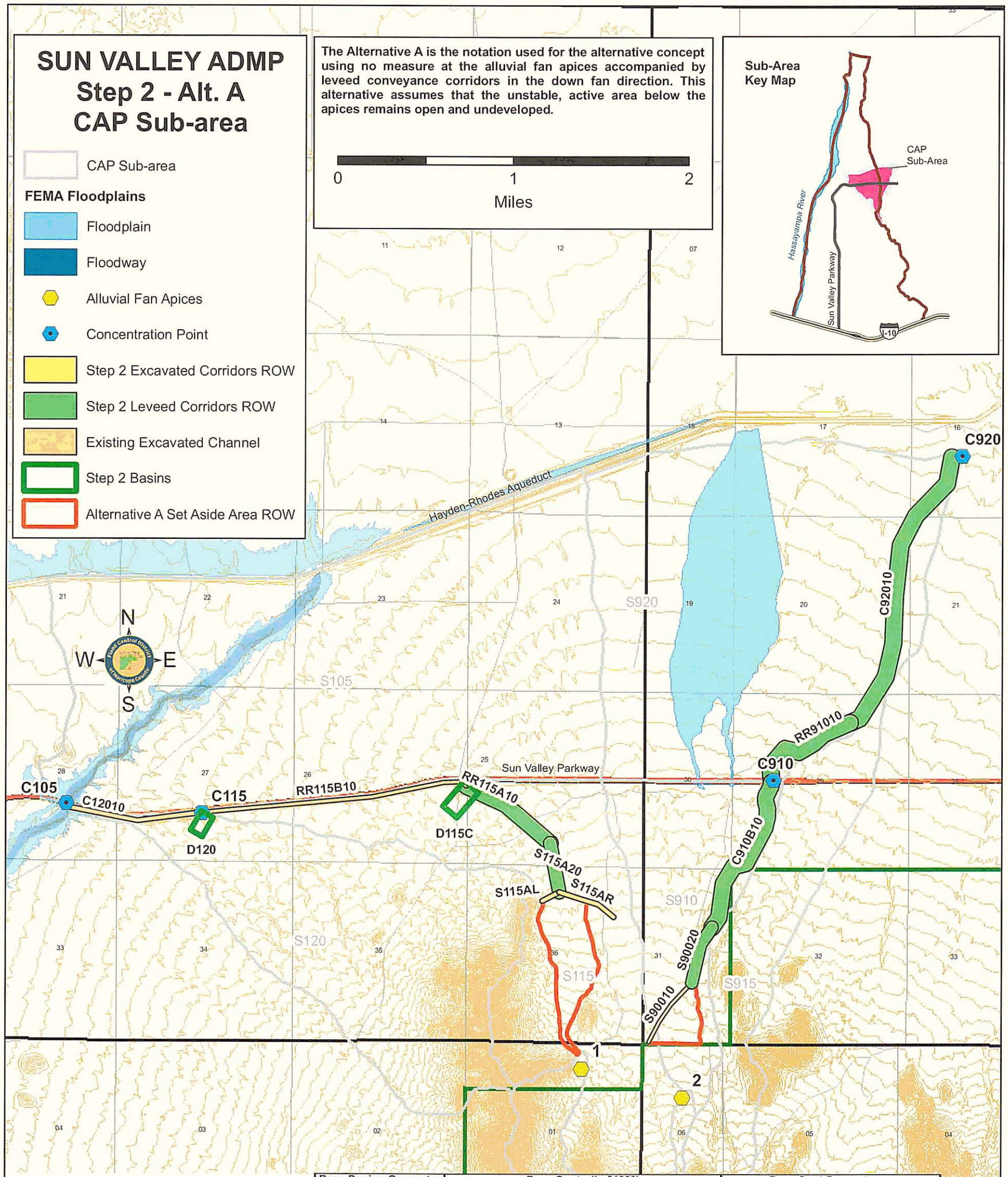
CAP SUB-AREA

Flood Control District of Maricopa County

September 2006

SUN VALLEY ADMP
Step 2 - Alt. A
CAP Sub-area

The Alternative A is the notation used for the alternative concept using no measure at the alluvial fan apices accompanied by leveed conveyance corridors in the down fan direction. This alternative assumes that the unstable, active area below the apices remains open and undeveloped.



Structure ID	Type	Flow Rate (cfs)	ROW Area (acres)	Exc. Vol. (ac. ft)	Fill Vol. (ac. ft)	Base Design Geometry: Length (stor-ft; chl-mi)	ROW Width (ft)	Depth (ft)	Base Costs (in $1000): Land Cost	Constr. Cost	Lndscp Cost	50 Yr Maint. Cost	Total Cost	Base Cost Percentages: Land Cost %	Constr. Cost %	Lndscp Cost %	50 Yr Maint. Cost %	% of Total Cost
S115A20	Leveed Chl.	2008	14	0	7	0.3	408	4	$ 1,400	$ 741	$ 116	$ 350	$ 2,607	54%	28%	4%	13%	4%
RR115A10	Leveed Chl.	2103	34	0	15	0.6	476	4	$ 3,370	$ 1,566	$ 241	$ 771	$ 5,947	57%	26%	4%	13%	8%
RR115B10	Existing Chl.	1000	0	0	0	1.5	108	6	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D115C	Offline Basin	1000	13	126	0	1000	550	5	$ 1,263	$ 1,156	$ 550	$ 530	$ 3,499	36%	33%	16%	15%	5%
C12010	Existing Chl.	2000	0	0	0	0.8	136	7	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D120	Offline Basin	2000	6	51	0	660	400	5	$ 606	$ 519	$ 264	$ 262	$ 1,651	37%	31%	16%	16%	2%
S90010	Excavated Chl.	1253	44	46	5	0.4	140	4	$ 4,420	$ 1,441	$ 227	$ 454	$ 6,542	68%	22%	3%	7%	9%
S90020	Leveed Chl.	1529	15	0	9	0.3	376	4	$ 1,540	$ 803	$ 140	$ 400	$ 2,882	53%	28%	5%	14%	4%
C910B10	Leveed Chl.	2521	56	0	24	0.9	488	4	$ 5,600	$ 2,132	$ 389	$ 1,097	$ 9,218	61%	23%	4%	12%	13%
RR91010	Leveed Chl.	2907	39	0	23	0.6	500	5	$ 3,890	$ 1,742	$ 312	$ 872	$ 6,816	57%	26%	5%	13%	10%
C92010	Leveed Chl.	3898	103	0	59	1.7	506	5	$10,290	$ 4,445	$ 815	$ 2,269	$ 17,819	58%	25%	5%	13%	25%
S115AR	Excavated Chl.	2202	108	32	4	0.3	170	4	$10,820	$ 1,032	$ 243	$ 358	$ 12,453	87%	8%	2%	3%	18%
S115AL	Excavated Chl.	2202	2	6	1	0.1	170	4	$ 150	$ 253	$ 76	$ 149	$ 628	24%	40%	12%	24%	1%
		TOTAL	434	261	147				$43,349	$ 15,830	$ 3,373	$ 7,511	**$ 70,063**	62%	23%	5%	11%	100%
All Channels			415	84	147	5.2			$41,480	$ 14,154	$ 2,559	$ 6,719	$ 64,912	64%	22%	4%	10%	93%
All Online Basins			0	0	0				$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
All Offline Basins			19	177	0				$ 1,869	$ 1,676	$ 814	$ 792	$ 5,150	36%	33%	16%	15%	7%

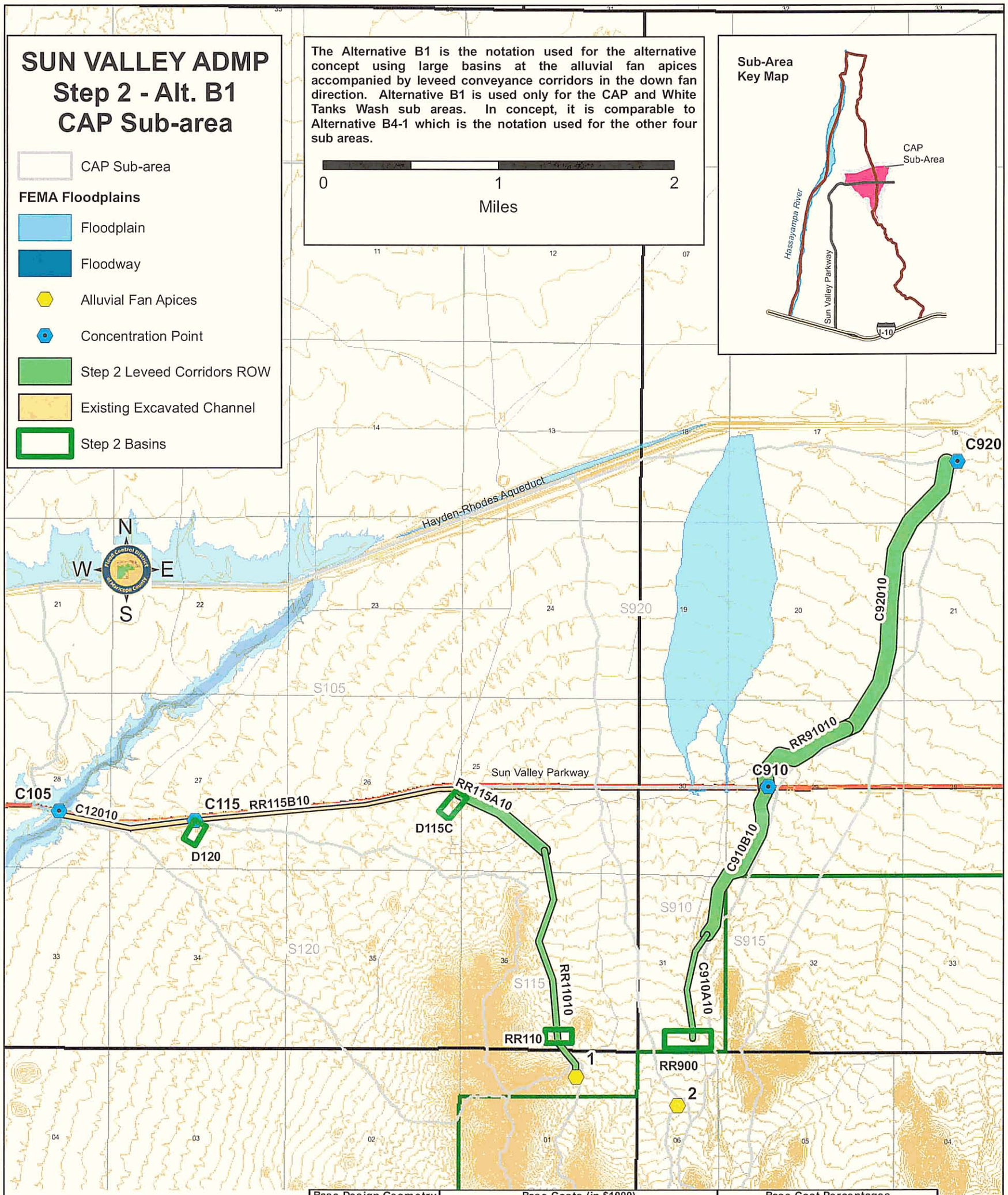
Channel Cost per mile (in $1000)	$12,483	Basins Cost per ac. ft. (in $1000)	$4.60

Cost Increase for Landscape Compatibility Enhancement over Base Costs

All Channels % increase	9%	29%	135%				9%	63%	94%	91%	33%
All Online Basins % increase	0%	0%	0%				0%	0%	0%	0%	0%
All Offline Basins % increase	47%	8%	0%				51%	7%	51%	49%	37%
Total % increase	11%	15%	135%				11%	57%	84%	86%	33%

SUN VALLEY ADMP
Step 2 - Alt. B1
CAP Sub-area

The Alternative B1 is the notation used for the alternative concept using large basins at the alluvial fan apices accompanied by leveed conveyance corridors in the down fan direction. Alternative B1 is used only for the CAP and White Tanks Wash sub areas. In concept, it is comparable to Alternative B4-1 which is the notation used for the other four sub areas.



						Base Design Geometry			Base Costs (in $1000)					Base Cost Percentages				
Structure ID	Type	Flow Rate (cfs)	ROW Area (acres)	Exc. Vol. (ac. ft)	Fill Vol. (ac. ft)	Length (stor-ft; chl-mi)	ROW Width (ft)	Depth (ft)	Land Cost	Constr. Cost	Lndscp Cost	50 Yr Maint. Cost	Total Cost	Land Cost %	Constr. Cost %	Lndscp Cost %	50 Yr Maint. Cost %	% of Total Cost
RR110	Online Basin	74	7	79	0	800	400	6	$ 730	$ 744	$ 320	$ 319	$ 2,113	35%	35%	15%	15%	4%
RR11010	Leveed Chl.	782	30	0	41	1.4	182	5	$ 3,010	$ 2,804	$ 605	$ 1,431	$ 7,850	38%	36%	8%	18%	13%
RR115A10	Leveed Chl.	1664	25	0	18	0.6	350	5	$ 2,480	$ 1,466	$ 259	$ 734	$ 4,939	50%	30%	5%	15%	8%
RR115B10	Existing Chl.	1000	0	0	0	1.5	108	6	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D115C	Offline Basin	1000	8	66	0	850	400	5	$ 781	$ 644	$ 340	$ 332	$ 2,097	37%	31%	16%	16%	4%
C12010	Existing Chl.	2000	0	0	0	0.8	136	7	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D120	Offline Basin	2000	6	51	0	660	400	5	$ 606	$ 519	$ 264	$ 262	$ 1,651	37%	31%	16%	16%	3%
RR900	Online Basin	74	17	211	0	1400	525	6	$ 1,690	$ 1,857	$ 735	$ 707	$ 4,989	34%	37%	15%	14%	8%
C910A10	Leveed Chl.	667	14	0	21	0.7	166	5	$ 1,380	$ 1,379	$ 304	$ 727	$ 3,790	36%	36%	8%	19%	6%
C910B10	Leveed Chl.	1498	45	0	24	0.9	394	4	$ 4,520	$ 2,086	$ 389	$ 1,004	$ 7,999	57%	26%	5%	13%	13%
RR91010	Leveed Chl.	2902	38	0	19	0.6	482	5	$ 3,750	$ 1,643	$ 285	$ 799	$ 6,476	58%	25%	4%	12%	11%
C92010	Leveed Chl.	3962	99	0	59	1.7	488	5	$ 9,930	$ 4,609	$ 815	$ 2,249	$ 17,604	56%	26%	5%	13%	30%
		TOTAL	289	407	182				$28,877	$ 17,752	$ 4,316	$ 8,564	**$ 59,509**	49%	30%	7%	14%	100%
All Channels			251	0	182	5.9			$25,070	$ 13,987	$ 2,657	$ 6,944	$ 48,658	52%	29%	5%	14%	82%
All Online Basins			24	290	0				$ 2,420	$ 2,601	$ 1,055	$ 1,025	$ 7,102	34%	37%	15%	14%	12%
All Offline Basins			14	117	0				$ 1,387	$ 1,164	$ 604	$ 594	$ 3,749	37%	31%	16%	16%	6%

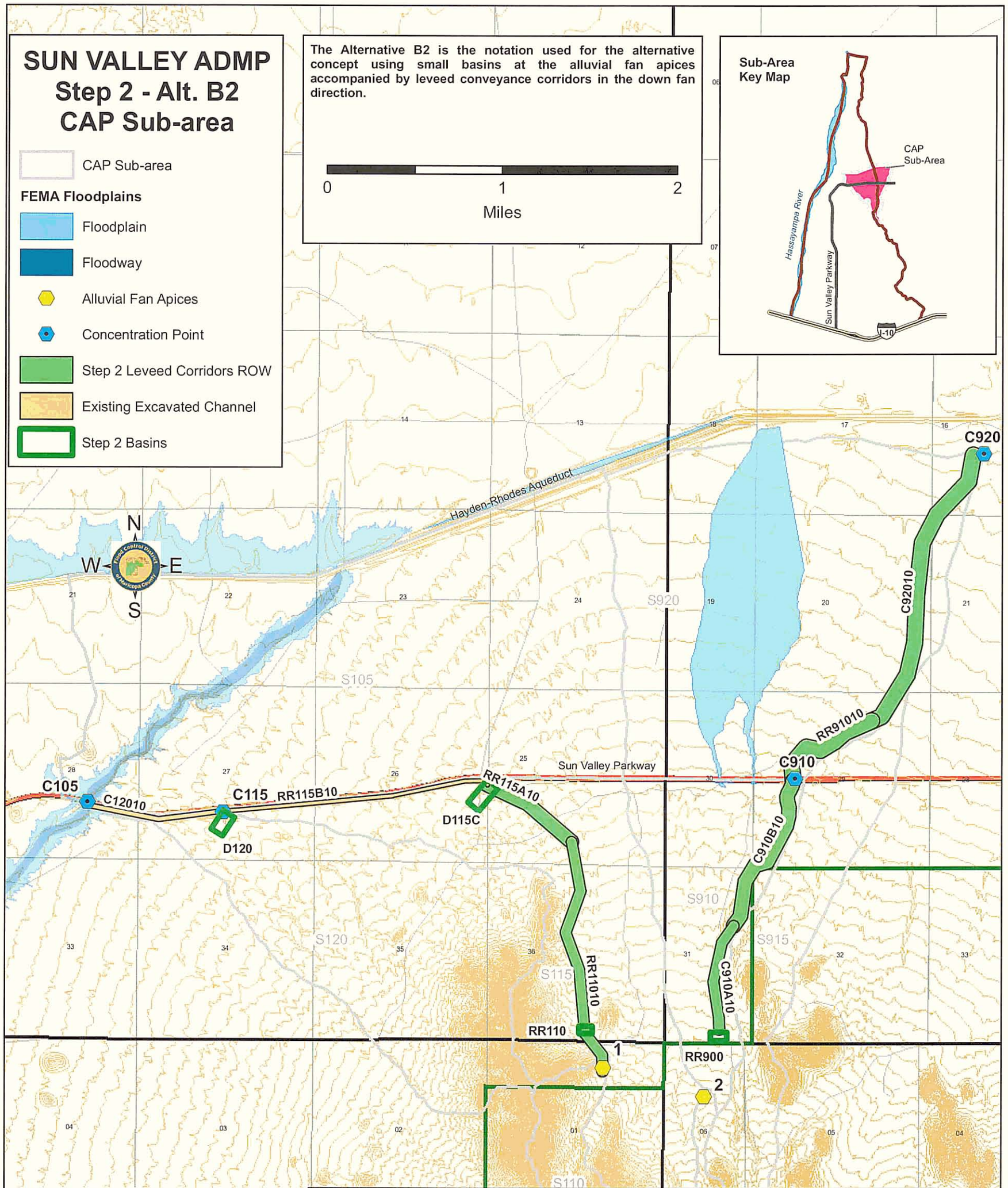
Channel Cost per mile (in $1000)	$8,247	Basins Cost per ac. ft. (in $1000)	$4.08

Cost Increase for Landscape Compatibility Enhancement over Base Costs

All Channels % increase	15%	0%	134%				15%	74%	106%	106%	50%
All Online Basins % increase	54%	11%	0%				54%	10%	54%	53%	38%
All Offline Basins % increase	57%	8%	0%				61%	7%	61%	58%	44%
Total % increase	20%	10%	134%				20%	60%	87%	96%	48%

SUN VALLEY ADMP
Step 2 - Alt. B2
CAP Sub-area

The Alternative B2 is the notation used for the alternative concept using small basins at the alluvial fan apices accompanied by leveed conveyance corridors in the down fan direction.



						Base Design Geometry			Base Costs (in $1000)					Base Cost Percentages				
Structure ID	Type	Flow Rate (cfs)	ROW Area (acres)	Exc. Vol. (ac. ft)	Fill Vol. (ac. ft)	Length (stor-ft; chl-mi)	ROW Width (ft)	Depth (ft)	Land Cost	Constr. Cost	Lndscp Cost	50 Yr Maint. Cost	Total Cost	Land Cost %	Constr. Cost %	Lndscp Cost %	50 Yr Maint. Cost %	% of Total Cost
RR110	Online Basin	600	2	12	0	400	220	4	$ 200	$ 162	$ 88	$ 95	$ 545	37%	30%	16%	17%	1%
RR11010	Leveed Chl.	1308	54	0	34	1.4	326	4	$ 5,390	$ 3,238	$ 562	$ 1,434	$ 10,623	51%	30%	5%	13%	18%
RR115A10	Leveed Chl.	1664	30	0	15	0.6	428	4	$ 3,030	$ 1,473	$ 241	$ 743	$ 5,487	55%	27%	4%	14%	9%
RR115B10	Existing Chl.	1000	0	0	0	1.5	108	6	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D115C	Offline Basin	1000	9	75	0	900	420	5	$ 868	$ 722	$ 378	$ 368	$ 2,336	37%	31%	16%	16%	4%
C12010	Existing Chl.	2000	0	0	0	0.8	136	7	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D120	Offline Basin	2000	6	51	0	660	400	5	$ 606	$ 519	$ 264	$ 262	$ 1,651	37%	31%	16%	16%	3%
RR900	Online Basin	829	3	21	0	490	250	5	$ 280	$ 246	$ 122	$ 130	$ 778	36%	32%	16%	17%	1%
C910A10	Leveed Chl.	1422	27	0	17	0.7	328	4	$ 2,720	$ 1,513	$ 282	$ 721	$ 5,236	52%	29%	5%	14%	9%
C910B10	Leveed Chl.	1501	50	0	24	0.9	436	4	$ 5,000	$ 1,989	$ 389	$ 1,067	$ 8,445	59%	24%	5%	13%	14%
RR91010	Leveed Chl.	2906	38	0	19	0.6	482	5	$ 3,750	$ 1,607	$ 285	$ 799	$ 6,441	58%	25%	4%	12%	11%
C92010	Leveed Chl.	3974	99	0	59	1.7	488	5	$ 9,930	$ 4,421	$ 815	$ 2,249	$ 17,415	57%	25%	5%	13%	30%
		TOTAL	318	159	168				$31,774	$ 15,891	$ 3,426	$ 7,866	**$ 58,958**	54%	27%	6%	13%	100%
All Channels			298	0	168	5.9			$29,820	$ 14,242	$ 2,574	$ 7,012	$ 53,648	56%	27%	5%	13%	91%
All Online Basins			5	33	0				$ 480	$ 408	$ 211	$ 224	$ 1,323	36%	31%	16%	17%	2%
All Offline Basins			15	126	0				$ 1,474	$ 1,242	$ 642	$ 630	$ 3,987	37%	31%	16%	16%	7%

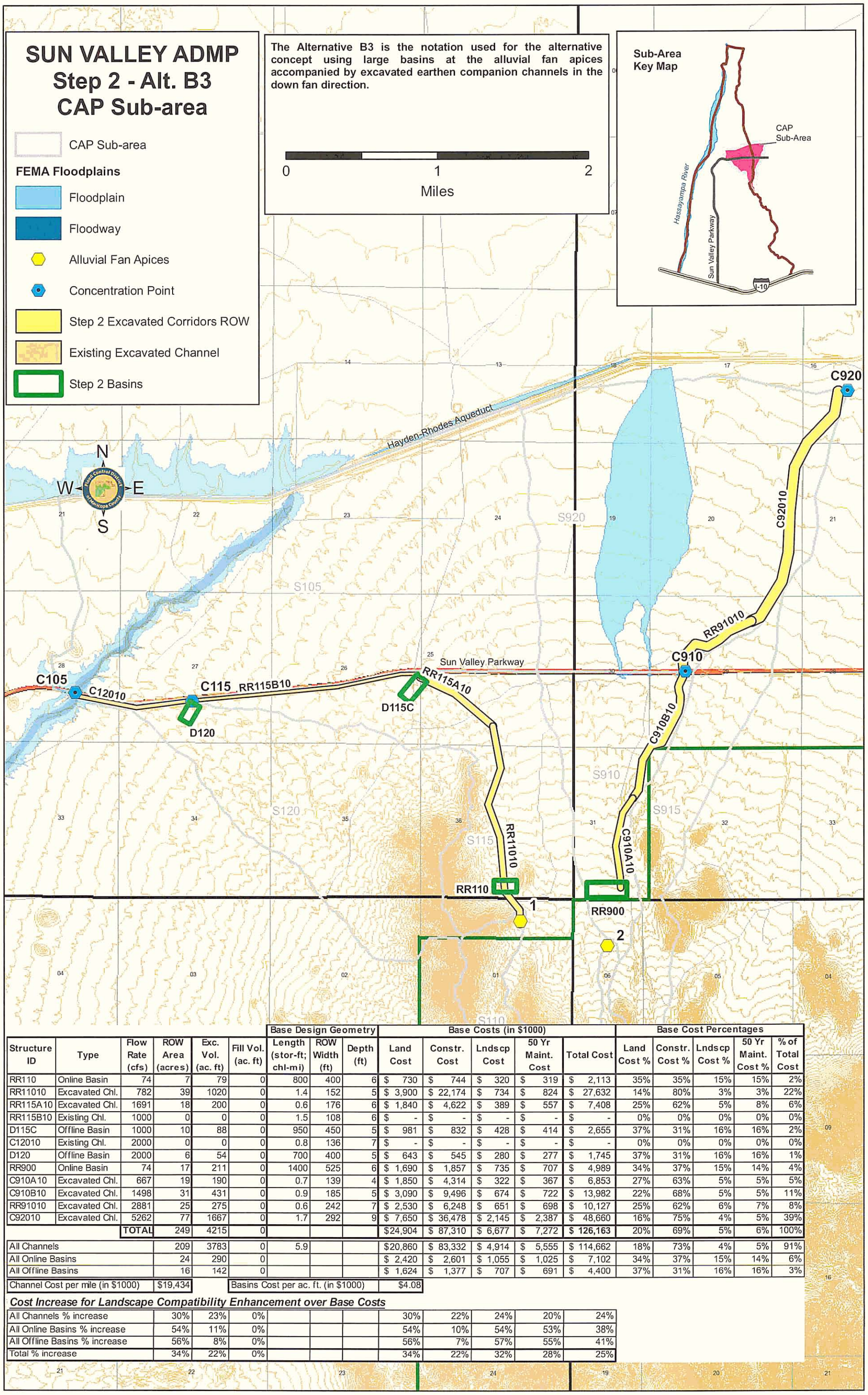
Channel Cost per mile (in $1000)	$9,093	Basins Cost per ac. ft. (in $1000)	$5.36

Cost Increase for Landscape Compatibility Enhancement over Base Costs

All Channels % increase	12%	0%	138%				12%	69%	106%	100%	43%
All Online Basins % increase	100%	15%	0%				108%	8%	108%	96%	75%
All Offline Basins % increase	60%	8%	0%				59%	7%	59%	56%	42%
Total % increase	16%	9%	138%				16%	63%	97%	96%	44%

SUN VALLEY ADMP
Step 2 - Alt. B3
CAP Sub-area

The Alternative B3 is the notation used for the alternative concept using large basins at the alluvial fan apices accompanied by excavated earthen companion channels in the down fan direction.



Structure ID	Type	Flow Rate (cfs)	ROW Area (acres)	Exc. Vol. (ac. ft)	Fill Vol. (ac. ft)	Base Design Geometry: Length (stor-ft; chl-mi)	ROW Width (ft)	Depth (ft)	Base Costs (in $1000): Land Cost	Constr. Cost	Lndscp Cost	50 Yr Maint. Cost	Total Cost	Base Cost Percentages: Land Cost %	Constr. Cost %	Lndscp Cost %	50 Yr Maint. Cost %	% of Total Cost
RR110	Online Basin	74	7	79	0	800	400	6	$ 730	$ 744	$ 320	$ 319	$ 2,113	35%	35%	15%	15%	2%
RR11010	Excavated Chl.	782	39	1020	0	1.4	152	5	$ 3,900	$ 22,174	$ 734	$ 824	$ 27,632	14%	80%	3%	3%	22%
RR115A10	Excavated Chl.	1691	18	200	0	0.6	176	6	$ 1,840	$ 4,622	$ 389	$ 557	$ 7,408	25%	62%	5%	8%	6%
RR115B10	Existing Chl.	1000	0	0	0	1.5	108	6	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D115C	Offline Basin	1000	10	88	0	950	450	5	$ 981	$ 832	$ 428	$ 414	$ 2,655	37%	31%	16%	16%	2%
C12010	Existing Chl.	2000	0	0	0	0.8	136	7	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D120	Offline Basin	2000	6	54	0	700	400	5	$ 643	$ 545	$ 280	$ 277	$ 1,745	37%	31%	16%	16%	1%
RR900	Online Basin	74	17	211	0	1400	525	6	$ 1,690	$ 1,857	$ 735	$ 707	$ 4,989	34%	37%	15%	14%	4%
C910A10	Excavated Chl.	667	19	190	0	0.7	139	4	$ 1,850	$ 4,314	$ 322	$ 367	$ 6,853	27%	63%	5%	5%	5%
C910B10	Excavated Chl.	1498	31	431	0	0.9	185	5	$ 3,090	$ 9,496	$ 674	$ 722	$ 13,982	22%	68%	5%	5%	11%
RR91010	Excavated Chl.	2881	25	275	0	0.6	242	7	$ 2,530	$ 6,248	$ 651	$ 698	$ 10,127	25%	62%	6%	7%	8%
C92010	Excavated Chl.	5262	77	1667	0	1.7	292	9	$ 7,650	$ 36,478	$ 2,145	$ 2,387	$ 48,660	16%	75%	4%	5%	39%
		TOTAL	249	4215	0				$24,904	$ 87,310	$ 6,677	$ 7,272	**$ 126,163**	20%	69%	5%	6%	100%
All Channels			209	3783	0	5.9			$20,860	$ 83,332	$ 4,914	$ 5,555	$ 114,662	18%	73%	4%	5%	91%
All Online Basins			24	290	0				$ 2,420	$ 2,601	$ 1,055	$ 1,025	$ 7,102	34%	37%	15%	14%	6%
All Offline Basins			16	142	0				$ 1,624	$ 1,377	$ 707	$ 691	$ 4,400	37%	31%	16%	16%	3%

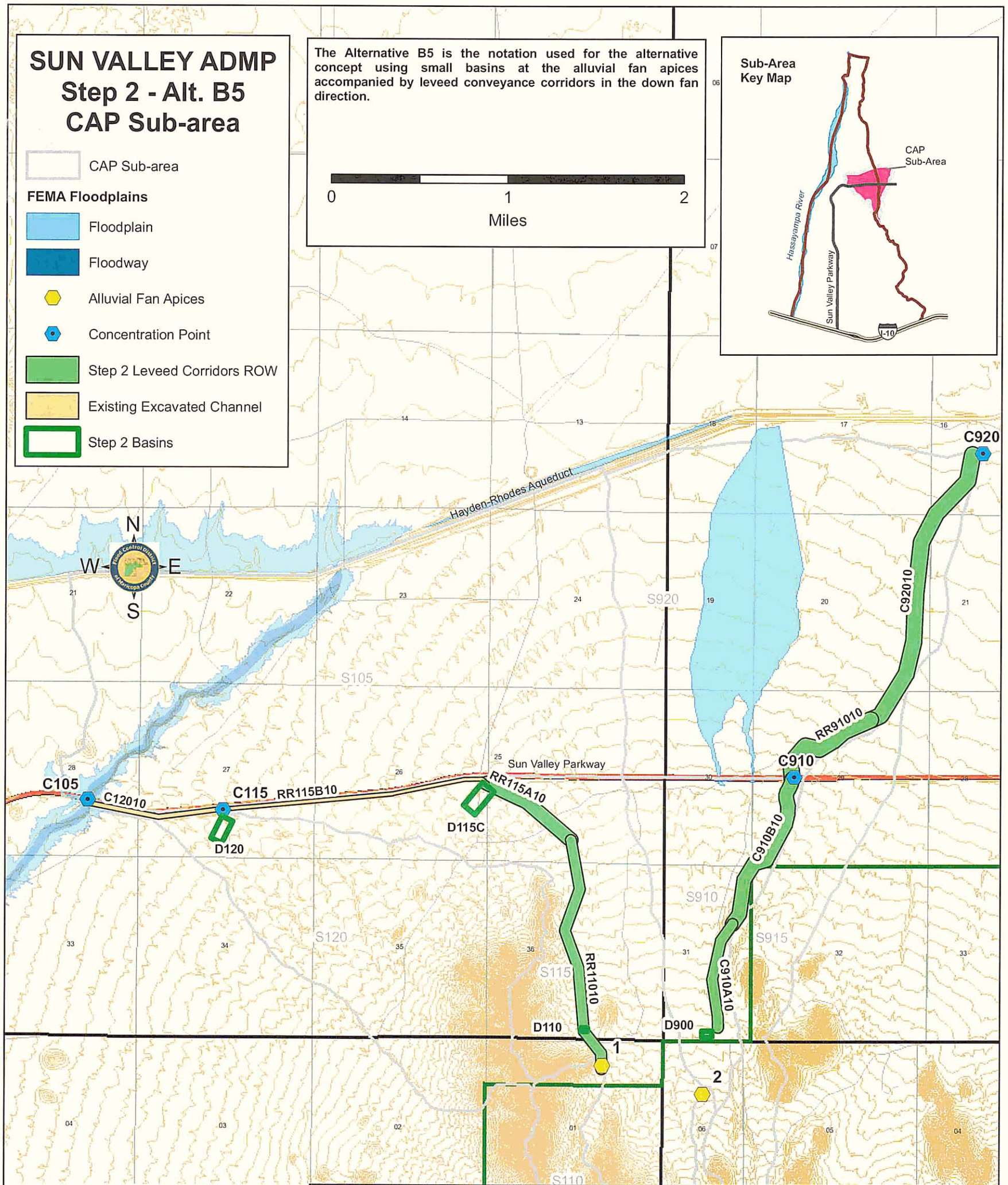
Channel Cost per mile (in $1000)	$19,434	Basins Cost per ac. ft. (in $1000)	$4.08

Cost Increase for Landscape Compatibility Enhancement over Base Costs

All Channels % increase	30%	23%	0%				30%	22%	24%	20%	24%
All Online Basins % increase	54%	11%	0%				54%	10%	54%	53%	38%
All Offline Basins % increase	56%	8%	0%				56%	7%	57%	55%	41%
Total % increase	34%	22%	0%				34%	22%	32%	28%	25%

SUN VALLEY ADMP
Step 2 - Alt. B5
CAP Sub-area

The Alternative B5 is the notation used for the alternative concept using small basins at the alluvial fan apices accompanied by leveed conveyance corridors in the down fan direction.



						Base Design Geometry			Base Costs (in $1000)					Base Cost Percentages				
Structure ID	Type	Flow Rate (cfs)	ROW Area (acres)	Exc. Vol. (ac. ft)	Fill Vol. (ac. ft)	Length (stor-ft; chl-mi)	ROW Width (ft)	Depth (ft)	Land Cost	Constr. Cost	Lndscp Cost	50 Yr Maint. Cost	Total Cost	Land Cost %	Constr. Cost %	Lndscp Cost %	50 Yr Maint. Cost %	% of Total Cost
D110	Offline Basin	600	0	2	0	200	100	4	$ 46	$ 69	$ 20	$ 28	$ 164	28%	42%	12%	17%	0%
RR11010	Leveed Chl.	1308	54	0	34	1.4	326	4	$ 5,390	$ 3,550	$ 562	$ 1,434	$ 10,935	49%	32%	5%	13%	19%
RR115A10	Leveed Chl.	1681	30	0	15	0.6	428	4	$ 3,030	$ 1,476	$ 241	$ 743	$ 5,489	55%	27%	4%	14%	9%
RR115B10	Existing Chl.	1000	0	0	0	1.5	108	6	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D115C	Offline Basin	1000	9	80	0	900	440	5	$ 909	$ 768	$ 396	$ 385	$ 2,458	37%	31%	16%	16%	4%
C12010	Existing Chl.	2000	0	0	0	0.8	136	7	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D120	Offline Basin	2000	6	49	0	740	360	5	$ 612	$ 501	$ 266	$ 263	$ 1,642	37%	31%	16%	16%	3%
D900	Offline Basin	831	1	8	0	300	190	4	$ 131	$ 118	$ 57	$ 66	$ 371	35%	32%	15%	18%	1%
C910A10	Leveed Chl.	1424	27	0	17	0.7	328	4	$ 2,720	$ 1,513	$ 282	$ 721	$ 5,236	52%	29%	5%	14%	9%
C910B10	Leveed Chl.	1501	50	0	24	0.9	436	4	$ 5,000	$ 2,043	$ 389	$ 1,067	$ 8,499	59%	24%	5%	13%	14%
RR91010	Leveed Chl.	2906	38	0	19	0.6	482	5	$ 3,750	$ 1,644	$ 285	$ 799	$ 6,477	58%	25%	4%	12%	11%
C92010	Leveed Chl.	3976	99	0	59	1.7	488	5	$ 9,930	$ 4,419	$ 815	$ 2,249	$ 17,414	57%	25%	5%	13%	30%
		TOTAL	314	139	168				$31,517	$ 16,102	$ 3,313	$ 7,754	$ 58,687	54%	27%	6%	13%	100%
All Channels			298	0	168	5.9			$29,820	$ 14,645	$ 2,574	$ 7,012	$ 54,051	55%	27%	5%	13%	92%
All Online Basins			0	0	0				$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
All Offline Basins			16	139	0				$ 1,697	$ 1,457	$ 739	$ 742	$ 4,636	37%	31%	16%	16%	8%

Channel Cost per mile (in $1000)	$9,161	Basins Cost per ac. ft. (in $1000)	$5.32

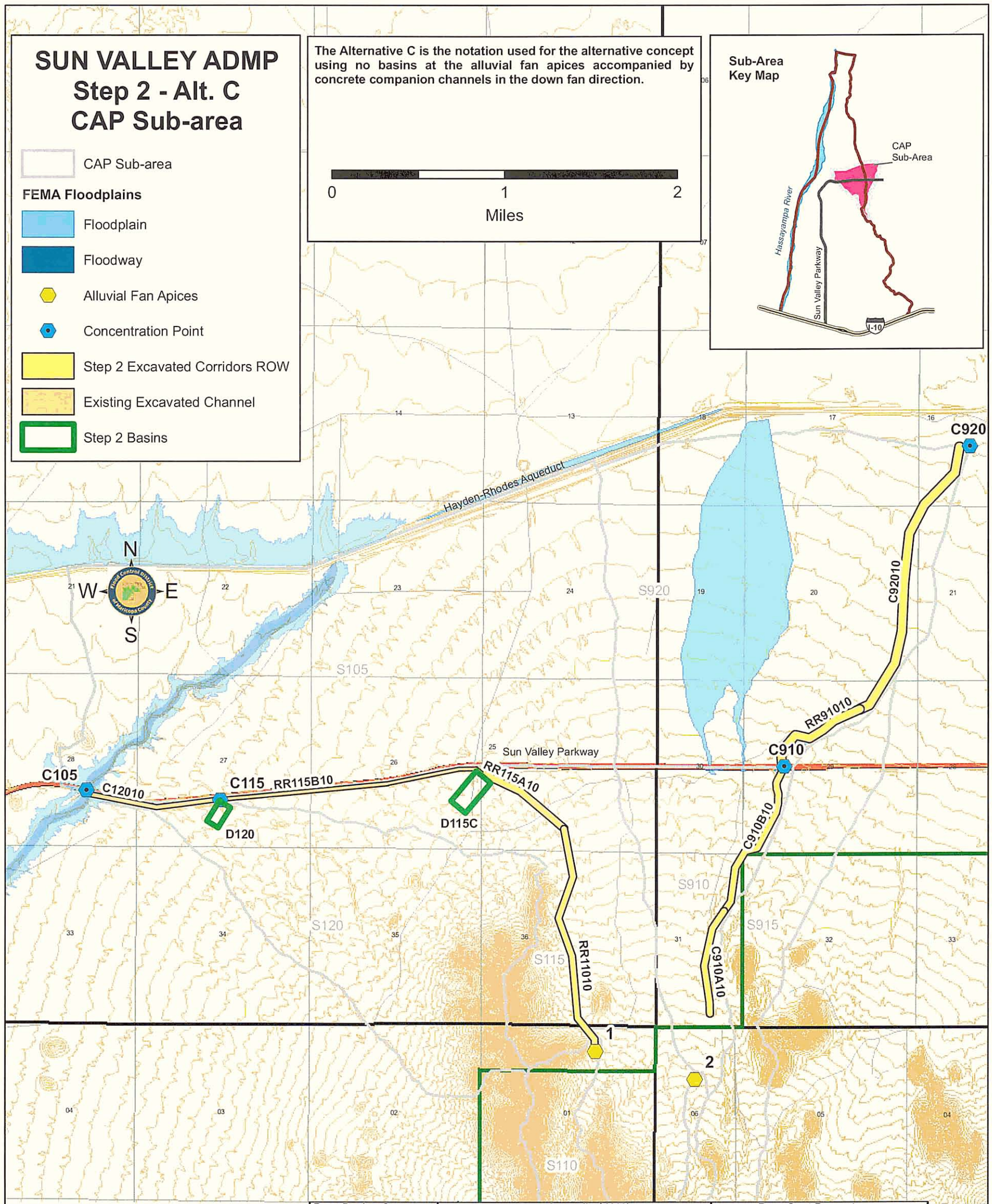
Cost Increase for Landscape Compatibility Enhancement over Base Costs

All Channels % increase	12%	0%	138%				12%	67%	106%	100%	43%
All Online Basins % increase	0%	0%	0%				0%	0%	0%	0%	0%
All Offline Basins % increase	81%	9%	0%				71%	7%	72%	67%	50%
Total % increase	16%	9%	138%				15%	62%	98%	97%	43%

SUN VALLEY ADMP
Step 2 - Alt. C
CAP Sub-area

The Alternative C is the notation used for the alternative concept using no basins at the alluvial fan apices accompanied by concrete companion channels in the down fan direction.

0 1 2
Miles



Structure ID	Type	Flow Rate (cfs)	ROW Area (acres)	Exc. Vol. (ac. ft)	Fill Vol. (ac. ft)	Base Design Geometry: Length (stor-ft; chl-mi)	ROW Width (ft)	Depth (ft)	Base Costs (in $1000): Land Cost	Constr. Cost	Lndscp Cost	50 Yr Maint. Cost	Total Cost	Base Cost Percentages: Land Cost %	Constr. Cost %	Lndscp Cost %	50 Yr Maint. Cost %	% of Total Cost
RR11010	Excavated Chl.	1370	35	1004	0	1.4	127	5	$ 3,480	$ 22,146	$ 554	$ 1,256	$ 27,436	13%	81%	2%	5%	25%
RR115A10	Excavated Chl.	2291	17	206	0	0.6	151	6	$ 1,670	$ 4,903	$ 311	$ 746	$ 7,630	22%	64%	4%	10%	7%
RR115B10	Existing Chl.	1000	23	0	0	1.5	108	6	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D115C	Offline Basin	1000	16	160	0	1200	570	5	$ 1,570	$ 1,443	$ 684	$ 655	$ 4,352	36%	33%	16%	15%	4%
C12010	Existing Chl.	2000	14	0	0	0.8	136	7	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
D120	Offline Basin	2000	7	56	0	720	400	5	$ 661	$ 559	$ 288	$ 284	$ 1,792	37%	31%	16%	16%	2%
C910A10	Excavated Chl.	1529	18	239	0	0.7	135	5	$ 1,820	$ 5,551	$ 308	$ 663	$ 8,342	22%	67%	4%	8%	8%
C910B10	Excavated Chl.	1703	26	366	0	0.9	140	5	$ 2,570	$ 8,360	$ 449	$ 943	$ 12,322	21%	68%	4%	8%	11%
RR91010	Excavated Chl.	3107	21	227	0	0.6	190	5	$ 2,130	$ 5,306	$ 475	$ 829	$ 8,740	24%	61%	5%	9%	8%
C92010	Excavated Chl.	5660	59	1299	0	1.7	208	8	$ 5,940	$ 29,242	$ 1,400	$ 2,925	$ 39,508	15%	74%	4%	7%	36%
		TOTAL	236	3557	0				$19,841	$ 77,511	$ 4,470	$ 8,301	**$ 110,123**	18%	70%	4%	8%	100%
All Channels			176	3341	0	5.9			$17,610	$ 75,509	$ 3,498	$ 7,362	$ 103,979	17%	73%	3%	7%	94%
All Online Basins			0	0	0				$ -	$ -	$ -	$ -	$ -	0%	0%	0%	0%	0%
All Offline Basins			23	216	0				$ 2,231	$ 2,002	$ 972	$ 939	$ 6,144	36%	33%	16%	15%	6%

Channel Cost per mile (in $1000)	$17,624	Basins Cost per ac. ft. (in $1000)	$4.50

Cost Increase for Landscape Compatibility Enhancement over Base Costs

All Channels % increase	35%	31%	0%				35%	32%	31%	54%	34%
All Online Basins % increase	0%	0%	0%				0%	0%	0%	0%	0%
All Offline Basins % increase	43%	7%	0%				48%	7%	48%	47%	34%
Total % increase	31%	30%	0%				36%	32%	35%	53%	34%

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN   1998               *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   19APR06  TIME  12:50:19  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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

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

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

1                                                HEC-1 INPUT                                                PAGE  1

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

  1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
  2           ID       - CAP SUBBAREA
  3           ID       - ALTERNATIVE A
  4           ID             - NATURAL APEX SEDIMENTATION AREA,
  5           ID               LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR
  6           ID
  7           ID  Alternative Description
  8           ID  The main design objective of the A Alternative is to allow the
  9           ID  natural geomorphic processes to occur within a designated active
 10           ID  area downstream of the apex.  The objective then is to control
 11           ID  the flow path downstream of the region of uncertainty.  The flows
 12           ID  will be captured in the up-fan area by excavated collector channels
 13           ID  and/or diversion levees.  Once collected, the flows are routed
 14           ID  downstream using leveed corridors similar to the B alternatives.
 15           ID
 16           ID
 17           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
 18           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
 19           ID   MODELER: TED LEHMAN
 20           ID   FILENAME: A4_EX6.DAT
 21           ID
 22           ID   100-YEAR 6-HOUR MODEL
 23           ID   EXISTING CONDITIONS
 24           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
 25           ID            MODELED AREA = 76.8 SQ. MILES
 26           ID
 27           ID   GREEN-AMPT LOSS METHOD
 28           ID   S-GRAPH UNIT HYDROGRAPHS
 29           ID     - MOUNTAIN
 30           ID     - DESERT/RANGELAND
 31           ID   NORMAL-DEPTH CHANNEL ROUTING
 32           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
 33           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
 34           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
 35           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
 36           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
 37           IT       5  1JAN99    1200    2000
 38           IN      15
 39           IO       5
              *DIAGRAM
              *
 40           JD   3.196  0.1000
 41           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 42           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 43           PC   0.962   0.972   0.983   0.991   1.000
 44           JD   3.181  0.5000
 45           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 46           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 47           PC   0.962   0.972   0.983   0.991   1.000
 48           JD   3.120     2.8
 49           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.068   0.077
 50           PC   0.088   0.101   0.121   0.164   0.253   0.451   0.694   0.836   0.900   0.938
 51           PC   0.950   0.963   0.975   0.988   1.000
 52           JD   2.950    16.0
 53           PC   0.000   0.015   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
1                                                HEC-1 INPUT                                                PAGE  2
```

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

  54          PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
  55          PC   0.946   0.960   0.973   0.987   1.000
  56          JD   2.592    90.0
  57          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  58          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  59          PC   0.927   0.945   0.964   0.982   1.000
              *

  60          KK    S100   BASIN
  61          KM        Compute runoff from subbasin 100
  62          BA   6.994
  63          LG    0.35    0.38    6.40    0.16       0
  64          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  65          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  66          UI     848     715     635     476     471     313     309     309     204     110
  67          UI     109     111     110     109     111     109     110     111       0       0
              *

  68          KK    S102   BASIN
  69          KM        Compute runoff from subbasin 102
  70          BA   3.234
  71          LG    0.35    0.38    6.60    0.22       0
  72          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  73          UI    1179     890     674     542     377     300     232     193      81      82
  74          UI      81      81      83       0       0       0       0       0       0       0
              *

  75          KK    C102 COMBINE
  76          KM        Combine total inflow to detention area behind (north) of CAP Canal
  77          HC       2
              *

  78          KK   RR102 STORAGE
  79          KM        Route flows through storage area behind CAP Canal
  80          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  81          KO
  82          RS       1    STOR      -1
  83          SV          553.00 1148.00 2316.00 2705.00
  84          SQ                  128.00  587.00  600.00
  85          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  86          ST  1556.0  1320.0     3.2     1.5
              *

  87          KK    D102  DIVERT
  88          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  89          KM        although the inverts are 0.5 feet different in elevation
  90          DT    CF02     0.0     0.0
  91          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  92          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  93          KK  100105   ROUTE
  94          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  95          RS       9    FLOW      -1
  96          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  97          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  98          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *

  99          KK    S105   BASIN
 100          KM        Compute runoff from subbasin 105
 101          BA   4.370
 102          LG    0.35    0.35    4.80    0.30       0
 103          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 104          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 105          UI     288     235     238     126      83      85      84      84      84      84
 106          UI      84       0       0       0       0       0       0       0       0       0
              *

 107          KK    CF02RETRIEVE
 108          KM        Retrieve flow from west CAP overchute.
 109          DR    CF02
              *

 110          KK  102105   ROUTE
 111          KM        Route retrieved flow from west overchute to C105.
 112          RS       6    FLOW      -1
 113          RC   0.045   0.045   0.045 12096.90.016546   104.0
 114          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 115          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 116          KK   C105U COMBINE
 117          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 118          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 119          KM        of Sun Valley Parkway.
 120          HC       3  14.598
              *
```

```
 121          KK   S110   BASIN
 122          KM        Compute runoff from subbasin 110
 123          BA   0.430
 124          LG    0.25    0.37    5.20    0.25       6
 125          UI      56     166     335     449     587     358     291     241     188     140
 126          UI     121      86      68      56      43      32      27      22      11      11
 127          UI      10      11      11       0       0       0       0       0       0       0
              *

 128          KK  11015I   ROUTE
 129          KM   Proposed Channel
 130          KM        Route flow from RR110 through subbasin 115 - first subsegment
 131          KM    STRUCTURE ID(s): S115A20
 132          KM    Slope=(1720.7 - 1692.1) / 1489.3
 133          RS       1    FLOW      -1
 134          RC   0.045   0.045   0.045  1489.30.019204   104.0
1                                          HEC-1 INPUT                                                    PAGE  4

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

 135          RX     0.0    12.0    12.0    12.0   344.0   344.0   344.0   356.0
 136          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 137          KK   S115A   BASIN
 138          KM        Compute runoff from subbasin 115A
 139          BA   1.397
 140          LG    0.31    0.38    5.60    0.22       3
 141          UI     145     288     671     992    1273    1374    1344    1137     854     658
 142          UI     504     380     290     232     162     129     100      80      35      35
 143          UI      35      35      36       0       0       0       0       0       0       0
              *

 144          KK   C115A COMBINE
 145          KM        Combine runoff from S115A with routed flow.
 146          HC       2
              *

 147          KK  15I15A   ROUTE
 148          KM   Proposed Channel
 149          KM        Route flows from split through S115 to Sun Valley Parkway
 150          KM    STRUCTURE ID(s): RR115A10
 151          KM    Slope=(1692.1 - 1633.3) / 3083.7
 152          RS       3    FLOW      -1
 153          RC   0.045   0.045   0.045  3083.70.019076   104.0
 154          RX     0.0    12.0    12.0    12.0   412.0   412.0   412.0   424.0
 155          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 156          KK   S115B   BASIN
 157          BA   0.421
 158          LG    0.35    0.35    3.71    0.47       0
 159          UI     113     438     721     741     502     300     180     110      65      36
 160          UI      20      20       0       0       0       0       0       0       0       0
              *

 161          KK   C115B COMBINE
 162          KM        Combine runoff from S115B with routed flow.
 163          HC       2
              *

 164          KK  15I15B   ROUTE
 165          KM   Proposed - This is existing SV PKWY Channel
 166          KM        Route flows in existing Sun Valley Parkway channel
 167          KM    STRUCTURE ID(s): RR115B10
 168          KM    Slope=(1633.3 - 1537.8) / 8073.3
 169          RS       7    FLOW      -1
 170          RC    0.03    0.03    0.03  8073.30.011832   105.5
 171          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 172          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
              *
1                                          HEC-1 INPUT                                                    PAGE  5

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

 173          KK   S115C   BASIN
 174          BA   0.429
 175          LG    0.35    0.35    4.00    0.47       0
 176          UI      64     250     457     595     594     444     299     208     135      93
 177          UI      62      44      23      15      16      16       0       0       0       0
              *

 178          KK   C115C COMBINE
 179          KM        Combine runoff from S115C with routed flow.
 180          HC       2
              *

 181          KK   D115C  DIVERT
 182          KM   Proposed Detention Basin
 183          KM   limit flow to capacity of existing Sun Valley Parkway
 184          KM    STRUCTURE ID:D115C
 185          KM    DIMENSIONS: L=1000ft, W=550ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 45 ac-ft
 186          DT    DOUT
 187          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
```

```
188          DI  2500.0  3000.0
189          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
190          DQ  1500.0  2000.0
             *

191          KK  115120   ROUTE
192          KM   Proposed - This is existing SV PKWY Channel
193          KM   It is marked proposed to check for capacity
194          KM    STRUCTURE ID(s): C12010
195          KM    Slope=(1537.8 - 1496.4) / 4136.0
196          RS       3    FLOW      -1
197          RC    0.03    0.03    0.03  4136.00.010008   106.5
198          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
199          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

200          KK    S120   BASIN
201          KM        Compute runoff from subbasin 120
202          BA   2.004
203          LG    0.33    0.35    4.65    0.32       1
204          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
205          UI     731     551     418     336     234     186     143     120      50      51
206          UI      50      51      51       0       0       0       0       0       0       0
             *

207          KK    C120 COMBINE
208          KM        Combine flows at Wagner Wash at outlet of channel along SVP
209          HC       2   4.681
             *
```



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

210          KK    D120  DIVERT
211          KM   Proposed Detention Basin
212          KM   limit flow to capacity of existing Sun Valley Parkway
213          KM    STRUCTURE ID:D120
214          KM    DIMENSIONS: L=660ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 21.1 ac-ft
215          DT    DOUT
216          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
217          DI  3000.0  4000.0
218          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
219          DQ  1000.0  2000.0
             *

220          KK   C105D COMBINE
221          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
222          HC       2  19.279
             *

223          KK    S900   BASIN
224          KM        Compute runoff from subbasin 900
225          BA   1.035
226          LG    0.25    0.37    5.30    0.24       6
227          UI      75      77     215     338     472     551     650     871     671     496
228          UI     448     394     356     320     277     233     197     180     165     140
229          UI     116      97      89      83      65      59      58      37      38      37
230          UI      37      23      14      15      14      15      14      15      15      14
231          UI      15      14       0       0       0       0       0       0       0       0
             *

232          KK  90091A   ROUTE
233          KM   Proposed Channel
234          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
235          KM    STRUCTURE ID(s): S90010, S90020
236          KM    Slope=(1816.2 - 1746.9) / 3994.5
237          RS       5    FLOW      -1
238          RC   0.045   0.045   0.045  3994.50.017345   104.0
239          RX     0.0    12.0    12.0    12.0   312.0   312.0   312.0   324.0
240          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

241          KK  90091B   ROUTE
242          KM   Proposed Channel
243          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
244          KM    STRUCTURE ID(s): C910B10
245          KM    Slope=(1746.9 - 1667.9) / 4991.8
246          RS       4    FLOW      -1
247          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
248          RX     0.0    12.0    12.0    12.0   424.0   424.0   424.0   436.0
249          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *
```



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

250          KK    S910   BASIN
251          KM        Compute runoff from subbasin 910
252          BA   0.983
253          LG    0.35    0.35    4.70    0.31       0
254          UI     234     923    1540    1684    1252     768     471     298     172     120
255          UI      45      44      44       0       0       0       0       0       0       0
             *
```

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256          KK    C910 COMBINE
257          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
258          HC       2
             *

259          KK  910915   ROUTE
260          KM   Proposed Channel
261          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
262          KM    STRUCTURE ID(s): RR91010
263          KM    Slope=(1668.1 - 1623.5) / 3390.4
264          RS       3    FLOW      -1
265          RC   0.045   0.045   0.045  3390.40.013146   105.0
266          RX     0.0    15.0    15.0    15.0   427.0   427.0   427.0   442.0
267          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
             *

268          KK    S915   BASIN
269          KM    Compute runoff from subbasin 915
270          BA   1.126
271          LG    0.25    0.38    6.40    0.16       1
272          UI     102     175     410     534     662     809    1162    1191     903     742
273          UI     603     468     294     180     156     102      68      31      32      32
274          UI      31      32       0       0       0       0       0       0       0       0
             *

275          KK    C915 COMBINE
276          KM      Combine runoff from S915 with C910 (or outflow if basin)
277          HC       2
             *

278          KK  915920   ROUTE
279          KM   Proposed Channel
280          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
281          KM    STRUCTURE ID(s): C92010
282          KM    Slope=(1623.5 - 1532.6) / 8861.8
283          RS       7    FLOW      -1
284          RC   0.045   0.045   0.045  8861.80.010265   105.0
285          RX     0.0    15.0    15.0    15.0   433.0   433.0   433.0   448.0
286          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
             *
1                                          HEC-1 INPUT                                                    PAGE  8

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

287          KK    S920   BASIN
288          KM        Compute runoff from subbasin 920
289          BA   3.291
290          LG    0.35    0.38    5.60    0.22       0
291          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
292          UI    2073    1666    1376    1100     654     455     421     261     240      81
293          UI      80      80      81      80      81       0       0       0       0       0
294          UI       0       0       0       0       0       0       0       0       0       0
             *

295          KK    C920 COMBINE
296          KM        Combine flows in Trilby Wash tributary
297          HC       2
298          ZZ
1
             SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   60        S100
                .
                .
   68           .        S102
                .           .
                .           .
   75        C102...........
                V
                V
   78       RR102
                .
                .
   90           .------->    CF02
   87        D102
                V
                V
   93      100105
                .
                .
   99           .        S105
                .           .
                .           .
  109           .           .          .<-------    CF02
  107           .           .       CF02
                .           .          V
                .           .          V
  110           .           .     102105
                .           .          .
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                .           .           .
116       C105U.......................
                .
                .
121             .        S110
                .           V
                .           V
128             .      11015I
                .           .
                .           .
137             .           .        S115A
                .           .           .
                .           .           .
144             .       C115A............
                .           V
                .           V
147             .      15I15A
                .           .
                .           .
156             .           .        S115B
                .           .           .
                .           .           .
161             .       C115B............
                .           V
                .           V
164             .      15I15B
                .           .
                .           .
173             .           .        S115C
                .           .           .
                .           .           .
178             .       C115C............
                .           .
                .           .
186             .           .-------->    DOUT
181             .       D115C
                .           V
                .           V
191             .      115120
                .           .
                .           .
200             .           .        S120
                .           .           .
                .           .           .
207             .        C120............
                .           .
                .           .
215             .           .-------->    DOUT
210             .        D120
                .           .
                .           .
220       C105D............
                .
                .
223             .        S900
                .           V
                .           V
232             .      90091A
                .           V
                .           V
241             .      90091B
                .           .
                .           .
250             .           .        S910
                .           .           .
                .           .           .
256             .        C910............
                .           V
                .           V
259             .      910915
                .           .
                .           .
268             .           .        S915
                .           .           .
                .           .           .
275             .        C915............
                .           V
                .           V
278             .      915920
                .           .
                .           .
287             .           .        S920
                .           .           .
                .           .           .
295             .        C920............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN   1998               *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   19APR06  TIME  12:50:19   *
*                                       *
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
```

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

                    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
                       - CAP SUBBAREA
                       - ALTERNATIVE A
                             - NATURAL APEX SEDIMENTATION AREA,
                               LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR

                  Alternative Description
                  The main design objective of the A Alternative is to allow the
                  natural geomorphic processes to occur within a designated active
                  area downstream of the apex.  The objective then is to control
                  the flow path downstream of the region of uncertainty.  The flows
                  will be captured in the up-fan area by excavated collector channels
                  and/or diversion levees.  Once collected, the flows are routed
                  downstream using leveed corridors similar to the B alternatives.


                   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
                   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
                   MODELER: TED LEHMAN
                   FILENAME: A4_EX6.DAT

                   100-YEAR 6-HOUR MODEL
                   EXISTING CONDITIONS
                   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
                            MODELED AREA = 76.8 SQ. MILES

                   GREEN-AMPT LOSS METHOD
                   S-GRAPH UNIT HYDROGRAPHS
                     - MOUNTAIN
                     - DESERT/RANGELAND
                   NORMAL-DEPTH CHANNEL ROUTING
                   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
                     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
                     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
                     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
                   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

 39 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1JAN99  STARTING DATE
                      ITIME       1200  STARTING TIME
                         NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      8JAN99  ENDING DATE
                     NDTIME       1035  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE  166.58 HOURS

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

 40 JD          INDEX STORM NO. 1
                       STRM      3.20  PRECIPITATION DEPTH
                       TRDA       .10  TRANSPOSITION DRAINAGE AREA

 41 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 44 JD          INDEX STORM NO. 2
                       STRM      3.18  PRECIPITATION DEPTH
                       TRDA       .50  TRANSPOSITION DRAINAGE AREA

 45 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                    .00       .00

 48 JD          INDEX STORM NO. 3
                      STRM        3.12  PRECIPITATION DEPTH
                      TRDA        2.80  TRANSPOSITION DRAINAGE AREA

 49 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                    .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                    .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00

 52 JD          INDEX STORM NO. 4
                      STRM        2.95  PRECIPITATION DEPTH
                      TRDA       16.00  TRANSPOSITION DRAINAGE AREA

 53 PI            PRECIPITATION PATTERN
                    .01       .01       .00       .00       .00       .00       .00       .00       .00       .01
                    .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                    .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                    .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                    .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00

 56 JD          INDEX STORM NO. 5
                      STRM        2.59  PRECIPITATION DEPTH
                      TRDA       90.00  TRANSPOSITION DRAINAGE AREA

 57 PI            PRECIPITATION PATTERN
                    .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                    .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                    .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01

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

            **************
            *            *
 78 KK      *    RR102   *      STORAGE
            *            *
            **************

 81 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                  TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF   AVERAGE FLOW FOR MAXIMUM PERIOD   BASIN   MAXIMUM   TIME OF
          OPERATION        STATION  FLOW   PEAK     6-HOUR    24-HOUR    72-HOUR     AREA    STAGE   MAX STAGE
+
          HYDROGRAPH AT
+                           S100    4347.   4.67      899.      225.       75.       6.99
          HYDROGRAPH AT
+                           S102    2790.   4.33      417.      104.       35.       3.23
          2 COMBINED AT
+                           C102    5993.   4.50     1198.      300.      100.      10.23
          ROUTED TO
+                          RR102     127.   6.75      122.      104.       72.      10.23
          DIVERSION TO
+                           CF02      63.   6.75       61.       52.       36.      10.23
          HYDROGRAPH AT
+                           D102      63.   6.75       61.       52.       36.      10.23
          ROUTED TO
+                         100105      61.  11.42       59.       51.       36.      10.23
          HYDROGRAPH AT
+                           S105    2863.   4.50      495.      124.       41.       4.37
          HYDROGRAPH AT
+                           CF02      63.   6.75       61.       52.       36.      10.23
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+          ROUTED TO
                        102105      63.   8.08        60.        51.        36.     10.23
+          3 COMBINED AT
                        C105U     2863.   4.50       554.       228.       121.     14.60
+          HYDROGRAPH AT
                        S110       662.   4.25        76.        19.         6.       .43
+          ROUTED TO
                        11015I     617.   4.33        76.        19.         6.       .43
+          HYDROGRAPH AT
                        S115A     1540.   4.33       213.        53.        18.      1.40
+          2 COMBINED AT
                        C115A     1886.   4.33       271.        68.        23.      1.83
+          ROUTED TO
                        15I15A    1827.   4.50       271.        68.        23.      1.83
+          HYDROGRAPH AT
                        S115B      789.   4.17        57.        14.         5.       .42
+          2 COMBINED AT
                        C115B     1954.   4.42       308.        77.        26.      2.25
+          ROUTED TO
                        15I15B    1918.   4.58       308.        77.        26.      2.25
+          HYDROGRAPH AT
                        S115C      668.   4.17        58.        14.         5.       .43
+          2 COMBINED AT
                        C115C     2000.   4.58       343.        86.        29.      2.68
+          DIVERSION TO
                        DOUT      1000.   4.58        79.        20.         7.      2.68
+          HYDROGRAPH AT
                        D115C     1000.   4.33       264.        66.        22.      2.68
+          ROUTED TO
                        115120    1001.   4.58       263.        66.        22.      2.68
+          HYDROGRAPH AT
                        S120      1838.   4.33       256.        64.        21.      2.00
+          2 COMBINED AT
                        C120      2304.   4.50       477.       120.        40.      4.68
+          DIVERSION TO
                        DOUT       362.   4.42        18.         5.         2.      4.68
+          HYDROGRAPH AT
                        D120      1960.   4.58       459.       115.        38.      4.68
+          2 COMBINED AT
                        C105D     3823.   4.58       799.       269.       125.     19.28
+          HYDROGRAPH AT
                        S900       936.   4.50       170.        43.        14.      1.03
+          ROUTED TO
                        90091A     902.   4.67       170.        43.        14.      1.03
+          ROUTED TO
                        90091B     778.   5.00       170.        43.        14.      1.03
+          HYDROGRAPH AT
                        S910      1585.   4.17       138.        35.        12.       .98
+          2 COMBINED AT
                        C910      1226.   4.17       282.        71.        24.      2.02
+          ROUTED TO
                        910915    1096.   4.33       281.        71.        24.      2.02
+          HYDROGRAPH AT
                        S915      1400.   4.50       189.        47.        16.      1.13
+          2 COMBINED AT
                        C915      2032.   4.42       433.       109.        36.      3.14
+          ROUTED TO
                        915920    1729.   4.92       426.       109.        36.      3.14
+          HYDROGRAPH AT
                        S920      2660.   4.58       424.       106.        35.      3.29
+          2 COMBINED AT
                        C920      3175.   4.83       758.       194.        65.      6.43
1                   SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                  (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)
```

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.61	.00	1386.	222.	.00	6.33	.00

PLAN 2 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.59	.00	1380.	219.	.00	6.33	.00

PLAN 3 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.23	.00	1236.	163.	.00	6.58	.00

PLAN 4 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1551.78	.00	1083.	114.	.00	6.75	.00

PLAN 5 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1551.06	.00	868.	68.	.00	6.75	.00

*** NORMAL END OF HEC-1 ***

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1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998              *                                    *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                *                                    *         609 SECOND STREET            *
 *                                      *                                    *      DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   19APR06  TIME  12:50:20  *                                    *          (916) 756-1104              *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************

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


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

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

1                                          HEC-1 INPUT                                                    PAGE  1

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

        1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
        2           ID       - CAP SUBBAREA
        3           ID       - ALTERNATIVE A
        4           ID             - NATURAL APEX SEDIMENTATION AREA,
        5           ID               LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR
        6           ID
        7           ID  Alternative Description
        8           ID  The main design objective of the A Alternative is to allow the
        9           ID  natural geomorphic processes to occur within a designated active
       10           ID  area downstream of the apex.  The objective then is to control
       11           ID  the flow path downstream of the region of uncertainty.  The flows
       12           ID  will be captured in the up-fan area by excavated collector channels
       13           ID  and/or diversion levees.  Once collected, the flows are routed
       14           ID  downstream using leveed corridors similar to the B alternatives.
       15           ID
       16           ID
       17           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
       18           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
       19           ID   MODELER: TED LEHMAN
       20           ID   FILENAME: A4_EX24.DAT
       21           ID
       22           ID   100-YEAR 24-HOUR MODEL
       23           ID   EXISTING CONDITIONS
       24           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       25           ID            MODELED AREA = 76.8 SQ. MILES
       26           ID
       27           ID   GREEN-AMPT LOSS METHOD
       28           ID   S-GRAPH UNIT HYDROGRAPHS
       29           ID     - MOUNTAIN
       30           ID     - DESERT/RANGELAND
       31           ID   NORMAL-DEPTH CHANNEL ROUTING
       32           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
       33           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
       34           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
       35           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
       36           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
       37           IT       5  1JAN99    1200    2000
       38           IN      15
       39           IO       5
                    *DIAGRAM
                    *
       40           JD   4.198  0.1000
       41           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
       42           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
       43           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
       44           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
       45           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
       46           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
       47           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
       48           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
       49           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
       50           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
       51           JD   3.990    10.0
       52           JD   3.780    30.0
                    *
1                                          HEC-1 INPUT                                                    PAGE  2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 53           KK    S100   BASIN
 54           KM        Compute runoff from subbasin 100
 55           BA   6.994
 56           LG    0.35    0.38    6.40    0.16       0
 57           UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
 58           UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
 59           UI     848     715     635     476     471     313     309     309     204     110
 60           UI     109     111     110     109     111     109     110     111       0       0
              *

 61           KK    S102   BASIN
 62           KM        Compute runoff from subbasin 102
 63           BA   3.234
 64           LG    0.35    0.38    5.60    0.22       0
 65           UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
 66           UI    1179     890     674     542     377     300     232     193      81      82
 67           UI      81      81      83       0       0       0       0       0       0       0
              *

 68           KK    C102 COMBINE
 69           KM        Combine total inflow to detention area behind (north) of CAP Canal
 70           HC       2
              *

 71           KK   RR102 STORAGE
 72           KM        Route flows through storage area behind CAP Canal
 73           KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
 74           KO
 75           RS       1    STOR      -1
 76           SV          553.00 1148.00 2316.00 2705.00
 77           SQ                  128.00  587.00  600.00
 78           SE  1543.0 1550.00 1552.00 1555.00 1556.00
 79           ST  1556.0  1320.0     3.2     1.5
              *

 80           KK    D102  DIVERT
 81           KM        Divide flow evenly over the two 18-foot wide CAP overchutes
 82           KM        although the inverts are 0.5 feet different in elevation
 83           DT    CF02     0.0     0.0
 84           DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
 85           DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *

 86           KK  100105   ROUTE
 87           KM        Route outflows from east CAP overchute to Sun Valley Parkway.
 88           RS       9    FLOW      -1
 89           RC   0.035   0.045   0.035 11235.0  0.0045   105.0
 90           RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
 91           RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *
```



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

 92           KK    S105   BASIN
 93           KM        Compute runoff from subbasin 105
 94           BA   4.370
 95           LG    0.35    0.35    4.80    0.30       0
 96           UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 97           UI    2374    1903    1555    1291    1018     832     685     564     458     369
 98           UI     288     235     238     126      83      85      84      84      84      84
 99           UI      84       0       0       0       0       0       0       0       0       0
              *

100           KK    CF02RETRIEVE
101           KM        Retrieve flow from west CAP overchute.
102           DR    CF02
              *

103           KK  102105   ROUTE
104           KM        Route retrieved flow from west overchute to C105.
105           RS       6    FLOW      -1
106           RC   0.045   0.045   0.045 12096.90.016546   104.0
107           RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
108           RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

109           KK   C105U COMBINE
110           KM        Combine runoff from S105 with routed flow from 100105 and 102105
111           KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
112           KM        of Sun Valley Parkway.
113           HC       3  14.598
              *

114           KK    S110   BASIN
115           KM        Compute runoff from subbasin 110
116           BA   0.430
117           LG    0.25    0.37    5.20    0.25       6
118           UI      56     166     335     449     587     358     291     241     188     140
119           UI     121      86      68      56      43      32      27      22      11      11
120           UI      10      11      11       0       0       0       0       0       0       0
```

```
                *
 121            KK  11015I   ROUTE
 122            KM   Proposed Channel
 123            KM        Route flow from RR110 through subbasin 115 - first subsegment
 124            KM    STRUCTURE ID(s): S115A20
 125            KM    Slope=(1720.7 - 1692.1) / 1489.3
 126            RS       1    FLOW      -1
 127            RC   0.045   0.045   0.045  1489.30.019204   104.0
 128            RX     0.0    12.0    12.0    12.0   344.0   344.0   344.0   356.0
 129            RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
                *
1                                          HEC-1 INPUT                                                    PAGE  4

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

 130            KK   S115A   BASIN
 131            KM        Compute runoff from subbasin 115A
 132            BA   1.397
 133            LG    0.31    0.38    5.60    0.22       3
 134            UI     145     288     671     992    1273    1374    1344    1137     854     658
 135            UI     504     380     290     232     162     129     100      80      35      35
 136            UI      35      35      36       0       0       0       0       0       0       0
                *

 137            KK   C115A COMBINE
 138            KM        Combine runoff from S115A with routed flow.
 139            HC       2
                *

 140            KK  15I15A   ROUTE
 141            KM   Proposed Channel
 142            KM        Route flows from split through S115 to Sun Valley Parkway
 143            KM    STRUCTURE ID(s): RR115A10
 144            KM    Slope=(1692.1 - 1633.3) / 3083.7
 145            RS       3    FLOW      -1
 146            RC   0.045   0.045   0.045  3083.70.019076   104.0
 147            RX     0.0    12.0    12.0    12.0   412.0   412.0   412.0   424.0
 148            RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
                *

 149            KK   S115B   BASIN
 150            BA   0.421
 151            LG    0.35    0.35    3.71    0.47       0
 152            UI     113     438     721     741     502     300     180     110      65      36
 153            UI      20      20       0       0       0       0       0       0       0       0
                *

 154            KK   C115B COMBINE
 155            KM        Combine runoff from S115B with routed flow.
 156            HC       2
                *

 157            KK  15I15B   ROUTE
 158            KM   Proposed - This is existing SV PKWY Channel
 159            KM        Route flows in existing Sun Valley Parkway channel
 160            KM    STRUCTURE ID(s): RR115B10
 161            KM    Slope=(1633.3 - 1537.8) / 8073.3
 162            RS       7    FLOW      -1
 163            RC    0.03    0.03    0.03  8073.30.011832   105.5
 164            RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 165            RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
                *

 166            KK   S115C   BASIN
 167            BA   0.429
 168            LG    0.35    0.35    4.00    0.47       0
 169            UI      64     250     457     595     594     444     299     208     135      93
 170            UI      62      44      23      15      16      16       0       0       0       0
                *
1                                          HEC-1 INPUT                                                    PAGE  5

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

 171            KK   C115C COMBINE
 172            KM        Combine runoff from S115C with routed flow.
 173            HC       2
                *

 174            KK   D115C  DIVERT
 175            KM   Proposed Detention Basin
 176            KM   limit flow to capacity of existing Sun Valley Parkway
 177            KM    STRUCTURE ID:D115C
 178            KM    DIMENSIONS: L=1000ft, W=550ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 45 ac-ft
 179            DT    DOUT
 180            DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
 181            DI  2500.0  3000.0
 182            DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
 183            DQ  1500.0  2000.0
                *

 184            KK  115120   ROUTE
 185            KM   Proposed - This is existing SV PKWY Channel
```

```
186          KM   It is marked proposed to check for capacity
187          KM    STRUCTURE ID(s): C12010
188          KM    Slope=(1537.8 - 1496.4) / 4136.0
189          RS       3    FLOW      -1
190          RC    0.03    0.03    0.03  4136.00.010008   106.5
191          RX     0.0    18.0    82.0    58.0    78.0    84.0   118.0   136.0
192          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

193          KK    S120   BASIN
194          KM        Compute runoff from subbasin 120
195          BA   2.004
196          LG    0.33    0.35    4.65    0.32       1
197          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
198          UI     731     551     418     336     234     186     143     120      50      51
199          UI      50      51      51       0       0       0       0       0       0       0
             *

200          KK    C120 COMBINE
201          KM        Combine flows at Wagner Wash at outlet of channel along SVP
202          HC       2   4.681
             *

203          KK    D120  DIVERT
204          KM   Proposed Detention Basin
205          KM   limit flow to capacity of existing Sun Valley Parkway
206          KM    STRUCTURE ID:D120
207          KM    DIMENSIONS: L=660ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 21.1 ac-ft
208          DT    DOUT
209          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
210          DI  3000.0  4000.0
211          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
212          DQ  1000.0  2000.0
             *
```

1 HEC-1 INPUT PAGE 6

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

213          KK   C105D COMBINE
214          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
215          HC       2  19.279
             *

216          KK    S900   BASIN
217          KM        Compute runoff from subbasin 900
218          BA   1.035
219          LG    0.25    0.37    6.30    0.24       6
220          UI      75      77     215     338     472     551     650     871     671     496
221          UI     448     394     356     320     277     233     197     180     165     140
222          UI     116      97      89      83      65      59      58      37      38      37
223          UI      37      23      14      15      14      15      14      15      15      14
224          UI      15      14       0       0       0       0       0       0       0       0
             *

225          KK  90091A   ROUTE
226          KM   Proposed Channel
227          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
228          KM    STRUCTURE ID(s): S90010, S90020
229          KM    Slope=(1816.2 - 1746.9) / 3994.5
230          RS       5    FLOW      -1
231          RC   0.045   0.045   0.045  3994.50.017345   104.0
232          RX     0.0    12.0    12.0    12.0   312.0   312.0   312.0   324.0
233          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

234          KK  90091B   ROUTE
235          KM   Proposed Channel
236          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
237          KM    STRUCTURE ID(s): C910B10
238          KM    Slope=(1746.9 - 1667.9) / 4991.8
239          RS       4    FLOW      -1
240          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
241          RX     0.0    12.0    12.0    12.0   424.0   424.0   424.0   436.0
242          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

243          KK    S910   BASIN
244          KM        Compute runoff from subbasin 910
245          BA   0.983
246          LG    0.35    0.35    4.70    0.31       0
247          UI     234     923    1540    1684    1252     768     471     298     172     120
248          UI      45      44      44       0       0       0       0       0       0       0
             *

249          KK    C910 COMBINE
250          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
251          HC       2
             *
```

1 HEC-1 INPUT PAGE 7

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

252          KK  910915   ROUTE
```

```
253          KM   Proposed Channel
254          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
255          KM    STRUCTURE ID(s): RR91010
256          KM    Slope=(1668.1 - 1623.5) / 3390.4
257          RS       3    FLOW      -1
258          RC   0.045   0.045   0.045  3390.40.013146   105.0
259          RX     0.0    15.0    15.0    15.0   427.0   427.0   427.0   442.0
260          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
             *

261          KK    S915   BASIN
262          KM    Compute runoff from subbasin 915
263          BA   1.126
264          LG    0.25    0.38    6.40    0.16       1
265          UI     102     175     410     534     662     809    1162    1191     903     742
266          UI     603     468     294     180     156     102      68      31      32      32
267          UI      31      32       0       0       0       0       0       0       0       0
             *

268          KK    C915 COMBINE
269          KM      Combine runoff from S915 with C910 (or outflow if basin)
270          HC       2
             *

271          KK  915920   ROUTE
272          KM   Proposed Channel
273          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
274          KM    STRUCTURE ID(s): C92010
275          KM    Slope=(1623.5 - 1532.6) / 8861.8
276          RS       7    FLOW      -1
277          RC   0.045   0.045   0.045  8861.80.010265   105.0
278          RX     0.0    15.0    15.0    15.0   433.0   433.0   433.0   448.0
279          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
             *

280          KK    S920   BASIN
281          KM        Compute runoff from subbasin 920
282          BA   3.291
283          LG    0.35    0.38    5.60    0.22       0
284          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
285          UI    2073    1666    1376    1100     654     455     421     261     240      81
286          UI      80      80      81      80      81       0       0       0       0       0
287          UI       0       0       0       0       0       0       0       0       0       0
             *

288          KK    C920 COMBINE
289          KM        Combine flows in Trilby Wash tributary
290          HC       2
291          ZZ
```

```
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    53        S100
                .
                .
    61          .        S102
                .           .
                .           .
    68        C102............
                V
                V
    71       RR102
                .
                .
    83          .-------->    CF02
    80        D102
                V
                V
    86      100105
                .
                .
    92          .        S105
                .           .
                .           .
   102          .           .           .<-------    CF02
   100          .           .        CF02
                .           .           V
                .           .           V
   103          .           .      102105
                .           .           .
                .           .           .
   109       C105U........................
                .
                .
   114          .        S110
                .           V
                .           V
   121          .      11015I
                .           .
                .           .
   130          .           .       S115A
```

```
                .          .          .
                .          .          .
  137           .      C115A...........
                .          V
                .          V
  140           .     15I15A
                .          .
                .          .
  149           .          .      S115B
                .          .          .
                .          .          .
  154           .      C115B...........
                .          V
                .          V
  157           .     15I15B
                .          .
                .          .
  166           .          .      S115C
                .          .          .
                .          .          .
  171           .      C115C...........
                .          .
                .          .
  179           .          .-------->    DOUT
  174           .      D115C
                .          V
                .          V
  184           .     115120
                .          .
                .          .
  193           .          .       S120
                .          .          .
                .          .          .
  200           .       C120...........
                .          .
                .          .
  208           .          .-------->    DOUT
  203           .       D120
                .          .
                .          .
  213       C105D...........
                .
                .
  216           .       S900
                .          V
                .          V
  225           .     90091A
                .          V
                .          V
  234           .     90091B
                .          .
                .          .
  243           .          .       S910
                .          .          .
                .          .          .
  249           .       C910...........
                .          V
                .          V
  252           .     910915
                .          .
                .          .
  261           .          .       S915
                .          .          .
                .          .          .
  268           .       C915...........
                .          V
                .          V
  271           .     915920
                .          .
                .          .
  280           .          .       S920
                .          .          .
                .          .          .
  288           .       C920...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   19APR06  TIME  12:50:20  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
- CAP SUBBAREA
- ALTERNATIVE A
  - NATURAL APEX SEDIMENTATION AREA,
    LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR

```
Alternative Description
The main design objective of the A Alternative is to allow the
natural geomorphic processes to occur within a designated active
area downstream of the apex.  The objective then is to control
the flow path downstream of the region of uncertainty.  The flows
will be captured in the up-fan area by excavated collector channels
and/or diversion levees.  Once collected, the flows are routed
downstream using leveed corridors similar to the B alternatives.


SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX24.DAT

100-YEAR 24-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
  - MOUNTAIN
  - DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
  - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
  - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
  - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

39 IO        OUTPUT CONTROL VARIABLES
                IPRNT          5  PRINT CONTROL
                IPLOT          0  PLOT CONTROL
                QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                NMIN           5  MINUTES IN COMPUTATION INTERVAL
                IDATE     1JAN99  STARTING DATE
                ITIME       1200  STARTING TIME
                   NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
              NDDATE     8JAN99  ENDING DATE
              NDTIME       1035  ENDING TIME
               ICENT         19  CENTURY MARK

          COMPUTATION INTERVAL     .08 HOURS
               TOTAL TIME BASE  166.58 HOURS

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

40 JD        INDEX STORM NO. 1
                STRM        4.20  PRECIPITATION DEPTH
                TRDA         .10  TRANSPOSITION DRAINAGE AREA

41 PI          PRECIPITATION PATTERN
              .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
              .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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              .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
              .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
              .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
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              .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
              .00       .00       .00       .00       .00       .00       .00       .00

51 JD        INDEX STORM NO. 2
                STRM        3.99  PRECIPITATION DEPTH
```

TRDA 10.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
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52 JD INDEX STORM NO. 3
STRM 3.78 PRECIPITATION DEPTH
TRDA 30.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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          **************
          *            *
71 KK     *   RR102    *      STORAGE
          *            *
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74 KO OUTPUT CONTROL VARIABLES
IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

1

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

+	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	S100	5214.	12.58	965.	241.	80.	6.99		

+	HYDROGRAPH AT	S102	3434.	12.33	420.	105.	35.	3.23
+	2 COMBINED AT	C102	7803.	12.42	1367.	342.	114.	10.23
+	ROUTED TO	RR102	149.	14.42	141.	119.	82.	10.23
+	DIVERSION TO	CF02	75.	14.42	71.	59.	41.	10.23
+	HYDROGRAPH AT	D102	75.	14.42	71.	59.	41.	10.23
+	ROUTED TO	100105	71.	19.17	68.	58.	41.	10.23
+	HYDROGRAPH AT	S105	3466.	12.50	531.	133.	44.	4.37
+	HYDROGRAPH AT	CF02	75.	14.42	71.	59.	41.	10.23
+	ROUTED TO	102105	74.	15.92	70.	59.	41.	10.23
+	3 COMBINED AT	C105U	3466.	12.50	593.	239.	126.	14.60
+	HYDROGRAPH AT	S110	532.	12.17	62.	16.	5.	.43
+	ROUTED TO	11015I	491.	12.33	62.	16.	5.	.43
+	HYDROGRAPH AT	S115A	1536.	12.33	193.	50.	17.	1.40
+	2 COMBINED AT	C115A	2008.	12.33	253.	65.	22.	1.83
+	ROUTED TO	15I15A	1931.	12.42	253.	65.	22.	1.83
+	HYDROGRAPH AT	S115B	619.	12.08	47.	12.	4.	.42
+	2 COMBINED AT	C115B	2103.	12.42	298.	77.	26.	2.25
+	ROUTED TO	15I15B	2060.	12.58	298.	77.	26.	2.25
+	HYDROGRAPH AT	S115C	534.	12.17	47.	12.	4.	.43
+	2 COMBINED AT	C115C	2185.	12.58	343.	88.	29.	2.68
+	DIVERSION TO	DOUT	1185.	12.58	89.	22.	7.	2.68
+	HYDROGRAPH AT	D115C	1000.	12.25	254.	66.	22.	2.68
+	ROUTED TO	115120	1002.	12.50	254.	66.	22.	2.68
+	HYDROGRAPH AT	S120	2032.	12.33	247.	62.	21.	2.00
+	2 COMBINED AT	C120	2854.	12.42	495.	127.	42.	4.68
+	DIVERSION TO	DOUT	854.	12.42	43.	11.	4.	4.68
+	HYDROGRAPH AT	D120	2000.	12.25	453.	116.	39.	4.68
+	2 COMBINED AT	C105D	5244.	12.50	989.	333.	154.	19.28
+	HYDROGRAPH AT	S900	853.	12.50	150.	39.	13.	1.03
+	ROUTED TO	90091A	816.	12.67	150.	39.	13.	1.03
+	ROUTED TO	90091B	679.	13.08	150.	39.	13.	1.03
+	HYDROGRAPH AT	S910	1512.	12.17	122.	30.	10.	.98

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          2 COMBINED AT
+                          C910      1501.   12.17        268.        69.        23.       2.02

          ROUTED TO
+                        910915      1296.   12.33        267.        69.        23.       2.02

          HYDROGRAPH AT
+                          S915      1305.   12.42        165.        42.        14.       1.13

          2 COMBINED AT
+                          C915      2441.   12.33        427.       109.        36.       3.14

          ROUTED TO
+                        915920      1957.   12.83        420.       109.        36.       3.14

          HYDROGRAPH AT
+                          S920      3157.   12.58        428.       107.        36.       3.29

          2 COMBINED AT
+                          C920      3898.   12.75        828.       214.        71.       6.43
1                          SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                        (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

     PLAN  1 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION          1550.00           1556.00           1556.00
                              STORAGE              553.              2705.             2705.
                              OUTFLOW                0.               600.              600.

                    RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                     OF      RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                    PMF      W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS      HOURS

                    1.00     1552.28         .00       1258.      171.        .00        14.42        .00

     PLAN  2 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION          1550.00           1556.00           1556.00
                              STORAGE              553.              2705.             2705.
                              OUTFLOW                0.               600.              600.

                    RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                     OF      RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                    PMF      W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS      HOURS

                    1.00     1552.14         .00       1204.      150.        .00        14.42        .00

     PLAN  3 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION          1550.00           1556.00           1556.00
                              STORAGE              553.              2705.             2705.
                              OUTFLOW                0.               600.              600.

                    RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                     OF      RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                    PMF      W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS      HOURS

                    1.00     1552.00         .00       1149.      128.        .00        14.50        .00

*** NORMAL END OF HEC-1 ***
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1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998              *                                    *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                *                                    *         609 SECOND STREET            *
 *                                      *                                    *      DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   19APR06  TIME  12:55:09  *                                    *          (916) 756-1104              *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************

                                        X     X  XXXXXXX   XXXXX           X
                                        X     X  X        X     X         XX
                                        X     X  X        X                X
                                        XXXXXXX  XXXX     X        XXXXX   X
                                        X     X  X        X                X
                                        X     X  X        X     X          X
                                        X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

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1                                                HEC-1 INPUT                                                    PAGE  1

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

            1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
            2           ID       - CAP SUBBAREA
            3           ID       - ALTERNATIVE B1
            4           ID             - BIG APEX BASIN WITH LEVEED DOWNSTREAM FLOOD CONTROL CORRIDOR
            5           ID
            6           ID  Alternative Description
            7           ID  The purpose of Alternative B is to capture the upstream flow at the
            8           ID  apex using online detention basins.  The presence of the detention
            9           ID  basins eliminates the downstream alluvial fan uncertainties by
           10           ID  controlling the flow from the apices to the outfall.  Alternative B1
           11           ID  is based on using a relatively larger on-line detention basin at the
           12           ID  apex accompanied by smaller leveed channel sections in the down fan
           13           ID  direction.  Alternative B1 is used for the CAP and White Tanks Wash
           14           ID  subareas which do not have more than one reasonable set of alignments
           15           ID  for the corridors.
           16           ID
           17           ID
           18           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
           19           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
           20           ID   MODELER: TED LEHMAN
           21           ID   FILENAME: A4_EX6.DAT
           22           ID
           23           ID   100-YEAR 6-HOUR MODEL
           24           ID   EXISTING CONDITIONS
           25           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
           26           ID           MODELED AREA = 76.8 SQ. MILES
           27           ID
           28           ID   GREEN-AMPT LOSS METHOD
           29           ID   S-GRAPH UNIT HYDROGRAPHS
           30           ID     - MOUNTAIN
           31           ID     - DESERT/RANGELAND
           32           ID   NORMAL-DEPTH CHANNEL ROUTING
           33           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
           34           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
           35           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
           36           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
           37           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
           38           IT       5  1JAN99    1200    2000
           39           IN      15
           40           IO       5
                        *DIAGRAM
                        *
           41           JD   3.196  0.1000
           42           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
           43           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
           44           PC   0.962   0.972   0.983   0.991   1.000
           45           JD   3.181  0.5000
           46           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
           47           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
           48           PC   0.962   0.972   0.983   0.991   1.000
           49           JD   3.120     2.8
           50           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.068   0.077
           51           PC   0.088   0.101   0.121   0.164   0.253   0.451   0.694   0.836   0.900   0.938
           52           PC   0.950   0.963   0.975   0.988   1.000
           53           JD   2.950    16.0
1                                                HEC-1 INPUT                                                    PAGE  2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  54          PC   0.000   0.015   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
  55          PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
  56          PC   0.946   0.960   0.973   0.987   1.000
  57          JD   2.592    90.0
  58          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  59          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  60          PC   0.927   0.945   0.964   0.982   1.000
              *

  61          KK    S100   BASIN
  62          KM        Compute runoff from subbasin 100
  63          BA   6.994
  64          LG    0.35    0.38    6.40    0.16       0
  65          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  66          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  67          UI     848     715     635     476     471     313     309     309     204     110
  68          UI     109     111     110     109     111     109     110     111       0       0
              *

  69          KK    S102   BASIN
  70          KM        Compute runoff from subbasin 102
  71          BA   3.234
  72          LG    0.35    0.38    5.60    0.22       0
  73          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  74          UI    1179     890     674     542     377     300     232     193      81      82
  75          UI      81      81      83       0       0       0       0       0       0       0
              *

  76          KK    C102 COMBINE
  77          KM        Combine total inflow to detention area behind (north) of CAP Canal
  78          HC       2
              *

  79          KK   RR102 STORAGE
  80          KM        Route flows through storage area behind CAP Canal
  81          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  82          KO
  83          RS       1    STOR      -1
  84          SV          553.00 1148.00 2316.00 2705.00
  85          SQ                  128.00  587.00  600.00
  86          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  87          ST  1556.0  1320.0     3.2     1.5
              *

  88          KK    D102  DIVERT
  89          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  90          KM        although the inverts are 0.5 feet different in elevation
  91          DT    CF02     0.0     0.0
  92          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  93          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
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1 HEC-1 INPUT PAGE 3

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

  94          KK  100105   ROUTE
  95          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  96          RS       9    FLOW      -1
  97          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  98          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  99          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *

 100          KK    S105   BASIN
 101          KM        Compute runoff from subbasin 105
 102          BA   4.370
 103          LG    0.35    0.35    4.80    0.30       0
 104          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 105          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 106          UI     288     235     238     126      83      85      84      84      84      84
 107          UI      84       0       0       0       0       0       0       0       0       0
              *

 108          KK    CF02RETRIEVE
 109          KM        Retrieve flow from west CAP overchute.
 110          DR    CF02
              *

 111          KK  102105   ROUTE
 112          KM        Route retrieved flow from west overchute to C105.
 113          RS       6    FLOW      -1
 114          RC   0.045   0.045   0.045 12096.90.016546   104.0
 115          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 116          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 117          KK   C105U COMBINE
 118          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 119          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 120          KM        of Sun Valley Parkway.
 121          HC       3  14.598
              *
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122          KK    S110   BASIN
123          KM        Compute runoff from subbasin 110
124          BA   0.430
125          LG    0.25    0.37    5.20    0.25       6
126          UI      56     166     335     449     587     358     291     241     188     140
127          UI     121      86      68      56      43      32      27      22      11      11
128          UI      10      11      11       0       0       0       0       0       0       0
             *

129          KK   RR110 STORAGE
130          KM   Proposed Detention Basin
131          KM    ROUTE COMBINED RUNOFF AT S110 THROUGH PROPOSED (BIG) DETENTION BASIN
132          KM    AT ALLUVIAL FAN APEX NO. 1
133          KM    STRUCTURE ID:RR110
134          KM    DIMENSIONS: L=800ft, W=400ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 30.9 ac-ft
135          RS       1    STOR       0
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

136          SV     0.0     2.9     5.9     8.9    11.9    14.9    18.0    24.4    30.9    37.5
137          SE     0.0     0.5     1.0     1.5     2.0     2.5     3.0     4.0     5.0     6.0
138          SQ     0.0    24.1    34.0    41.7    48.1    53.8    59.0    68.1    76.1    83.4
             *

139          KK  11015I   ROUTE
140          KM   Proposed Channel
141          KM        Route flow from RR110 through subbasin 115A
142          KM    STRUCTURE ID(s): RR11010
143          KM    Slope=(1865.3 - 1692.1) / 7199.5
144          RS       6    FLOW      -1
145          RC   0.045   0.045   0.045  7199.5 0.02405   104.5
146          RX     0.0    13.5    13.5    13.5   113.5   113.5   113.5   127.0
147          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
             *

148          KK   S115A   BASIN
149          KM        Compute runoff from subbasin 115A
150          BA   1.397
151          LG    0.31    0.38    5.60    0.22       3
152          UI     145     288     671     992    1273    1374    1344    1137     854     658
153          UI     504     380     290     232     162     129     100      80      35      35
154          UI      35      35      36       0       0       0       0       0       0       0
             *

155          KK   C115A COMBINE
156          KM        Combine runoff from S115A with routed flow.
157          HC       2
             *

158          KK  15I15A   ROUTE
159          KM   Proposed Channel
160          KM        Route flows to Sun Valley Parkway
161          KM    STRUCTURE ID(s): RR115A10
162          KM    Slope=(1692.1 - 1633.3) / 3083.7
163          RS       3    FLOW      -1
164          RC   0.045   0.045   0.045  3083.70.019076   104.5
165          RX     0.0    13.5    13.5    13.5   281.5   281.5   281.5   295.0
166          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
             *

167          KK   S115B   BASIN
168          BA   0.421
169          LG    0.35    0.35    3.71    0.47       0
170          UI     113     438     721     741     502     300     180     110      65      36
171          UI      20      20       0       0       0       0       0       0       0       0
             *

172          KK   C115B COMBINE
173          KM        Combine runoff from S115B with routed flow.
174          HC       2
             *
```



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

175          KK  15I15B   ROUTE
176          KM   Proposed - This is existing SV PKWY Channel
177          KM   It is marked proposed to check for capacity
178          KM        Route flows in existing Sun Valley Parkway channel
179          KM    STRUCTURE ID(s): RR115B10
180          KM    Slope=(1633.3 - 1537.8) / 8073.3
181          RS       7    FLOW      -1
182          RC    0.03    0.03    0.03  8073.30.011832   105.5
183          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
184          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
             *

185          KK   S115C   BASIN
186          BA   0.429
187          LG    0.35    0.35    4.00    0.47       0
188          UI      64     250     457     595     594     444     299     208     135      93
189          UI      62      44      23      15      16      16       0       0       0       0
```

```
                 *

190              KK   C115C COMBINE
191              KM        Combine runoff from S115C with routed flow.
192              HC       2
                 *

193              KK   D115C  DIVERT
194              KM   Proposed Detention Basin
195              KM   limit flow to capacity of existing Sun Valley Parkway
196              KM    STRUCTURE ID:D115C
197              KM    DIMENSIONS: L=850ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 27.4 ac-ft
198              DT    DOUT
199              DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
200              DI  2500.0  3000.0
201              DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
202              DQ  1500.0  2000.0
                 *

203              KK  115120   ROUTE
204              KM   Proposed - This is existing SV PKWY Channel
205              KM   It is marked proposed to check for capacity
206              KM        Route total flows from C115C to C120.
207              KM    STRUCTURE ID(s): C12010
208              KM    Slope=(1537.8 - 1496.4) / 4136.0
209              RS       3    FLOW      -1
210              RC    0.03    0.03    0.03  4136.00.010008   106.5
211              RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
212              RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
                 *

213              KK    S120   BASIN
214              KM        Compute runoff from subbasin 120
215              BA   2.004
216              LG    0.33    0.35    4.65    0.32       1
217              UI     206     408     954    1419    1824    1969    1911    1637    1230     944
218              UI     731     551     418     336     234     186     143     120      50      51
1                                                HEC-1 INPUT                                          PAGE  6

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

219              UI      50      51      51       0       0       0       0       0       0       0
                 *

220              KK    C120 COMBINE
221              KM        Combine flows at Wagner Wash at outlet of channel along SVP
222              HC       2   4.681
                 *

223              KK    D120  DIVERT
224              KM   Proposed Detention Basin
225              KM   limit flow to capacity of existing Sun Valley Parkway
226              KM    STRUCTURE ID:D120
227              KM    DIMENSIONS: L=660ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 21.1 ac-ft
228              DT    DOUT
229              DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
230              DI  3000.0  4000.0
231              DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
232              DQ  1000.0  2000.0
                 *

233              KK   C105D COMBINE
234              KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
235              HC       2  19.279
                 *

236              KK    S900   BASIN
237              KM        Compute runoff from subbasin 900
238              BA   1.035
239              LG    0.25    0.37    5.30    0.24       6
240              UI      75      77     215     338     472     551     650     871     671     496
241              UI     448     394     356     320     277     233     197     180     165     140
242              UI     116      97      89      83      65      59      58      37      38      37
243              UI      37      23      14      15      14      15      14      15      15      14
244              UI      15      14       0       0       0       0       0       0       0       0
                 *

245              KK   RR900 STORAGE
246              KM   Proposed Detention Basin
247              KM    ROUTE RUNOFF FROM S900 THROUGH PROPOSED (BIG) DETENTION BASIN AT APEX FOR
248              KM    ALLUVIAL FAN NO. 2
249              KM    STRUCTURE ID:RR900
250              KM    DIMENSIONS: L=1400ft, W=525ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 73 ac-ft
251              RS       1    STOR       0
252              SV     0.0     7.0    14.1    21.2    28.4    43.0    57.9    73.0    88.3   104.0
253              SE     0.0     0.5     1.0     1.5     2.0     3.0     4.0     5.0     6.0     7.0
254              SQ     0.0    24.1    34.0    41.7    48.1    59.0    68.1    76.1    83.4    90.0
                 *

255              KK  90091A   ROUTE
256              KM   Proposed Channel
257              KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
258              KM    STRUCTURE ID(s): C910A10
259              KM    Slope=(1818.8 - 1746.9) / 3620.4
260              RS       4    FLOW      -1
```

```
 261          RC   0.045   0.045   0.045  3620.4 0.01985   104.5
1                                          HEC-1 INPUT                                                          PAGE  7

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

 262          RX     0.0    13.5    13.5    13.5    97.5    97.5    97.5   111.0
 263          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
              *

 264          KK  90091B   ROUTE
 265          KM   Proposed Channel
 266          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
 267          KM    STRUCTURE ID(s): C910B10
 268          KM    Slope=(1746.9 - 1667.9) / 4991.8
 269          RS       4    FLOW      -1
 270          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
 271          RX     0.0    12.0    12.0    12.0   330.0   330.0   330.0   342.0
 272          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 273          KK    S910   BASIN
 274          KM        Compute runoff from subbasin 910
 275          BA   0.983
 276          LG    0.35    0.35    4.70    0.31       0
 277          UI     234     923    1540    1684    1252     768     471     298     172     120
 278          UI      45      44      44       0       0       0       0       0       0       0
              *

 279          KK    C910 COMBINE
 280          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
 281          HC       2
              *

 282          KK  910915   ROUTE
 283          KM   Proposed Channel
 284          KM        Route combined flow to C915
 285          KM    STRUCTURE ID(s): RR91010
 286          KM    Slope=(1668.1 - 1623.5) / 3390.4
 287          RS       3    FLOW      -1
 288          RC   0.045   0.045   0.045  3390.40.013146   104.5
 289          RX     0.0    13.5    13.5    13.5   413.5   413.5   413.5   427.0
 290          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
              *

 291          KK    S915   BASIN
 292          KM    Compute runoff from subbasin 915
 293          BA   1.126
 294          LG    0.25    0.38    6.40    0.16       1
 295          UI     102     175     410     534     662     809    1162    1191     903     742
 296          UI     603     468     294     180     156     102      68      31      32      32
 297          UI      31      32       0       0       0       0       0       0       0       0
              *

 298          KK    C915 COMBINE
 299          KM      Combine runoff from S915 with C910 (or outflow if basin)
 300          HC       2
              *
1                                          HEC-1 INPUT                                                          PAGE  8

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

 301          KK  915920   ROUTE
 302          KM   Proposed Channel
 303          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
 304          KM    STRUCTURE ID(s): C92010
 305          KM    Slope=(1623.5 - 1532.6) / 8861.8
 306          RS       7    FLOW      -1
 307          RC   0.045   0.045   0.045  8861.80.010265   105.0
 308          RX     0.0    15.0    15.0    15.0   415.0   415.0   415.0   430.0
 309          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
              *

 310          KK    S920   BASIN
 311          KM        Compute runoff from subbasin 920
 312          BA   3.291
 313          LG    0.35    0.38    5.60    0.22       0
 314          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
 315          UI    2073    1666    1376    1100     654     455     421     261     240      81
 316          UI      80      80      81      80      81       0       0       0       0       0
 317          UI       0       0       0       0       0       0       0       0       0       0
              *

 318          KK    C920 COMBINE
 319          KM        Combine flows in Trilby Wash tributary
 320          HC       2
 321          ZZ
1
            SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   61        S100
```

```
                .
                .
 69             .        S102
                .           .
                .           .
 76        C102.............
              V
              V
 79       RR102
                .
                .
 91             .-------->    CF02
 88        D102
              V
              V
 94      100105
                .
                .
100             .        S105
                .           .
                .           .
110             .           .          .<-------    CF02
108             .           .       CF02
                .           .          V
                .           .          V
111             .           .     102105
                .           .           .
                .           .           .
117       C105U.........................
                .
                .
122             .        S110
                .           V
                .           V
129             .       RR110
                .           V
                .           V
139             .      11015I
                .           .
                .           .
148             .           .      S115A
                .           .           .
                .           .           .
155             .       C115A............
                .           V
                .           V
158             .      15I15A
                .           .
                .           .
167             .           .      S115B
                .           .           .
                .           .           .
172             .       C115B............
                .           V
                .           V
175             .      15I15B
                .           .
                .           .
185             .           .      S115C
                .           .           .
                .           .           .
190             .       C115C............
                .           .
                .           .
198             .           .-------->    DOUT
193             .       D115C
                .           V
                .           V
203             .      115120
                .           .
                .           .
213             .           .       S120
                .           .           .
                .           .           .
220             .        C120............
                .           .
                .           .
228             .           .-------->    DOUT
223             .        D120
                .           .
                .           .
233       C105D............
                .
                .
236             .        S900
                .           V
                .           V
245             .       RR900
                .           V
                .           V
255             .      90091A
                .           V
                .           V
264             .      90091B
                .           .
```

```
                .          .
  273           .          .        S910
                .          .          .
                .          .          .
  279           .       C910...........
                .          V
                .          V
  282           .     910915
                .          .
                .          .
  291           .          .        S915
                .          .          .
                .          .          .
  298           .       C915...........
                .          V
                .          V
  301           .     915920
                .          .
                .          .
  310           .          .        S920
                .          .          .
                .          .          .
  318           .       C920...........

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998               *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   19APR06  TIME  12:55:09   *
 *                                       *
 *****************************************
```

```
*************************************
*                                   *
*   U.S. ARMY CORPS OF ENGINEERS    *
*   HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET         *
*      DAVIS, CALIFORNIA 95616      *
*          (916) 756-1104           *
*                                   *
*************************************
```

HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
- CAP SUBBAREA
- ALTERNATIVE B1
- BIG APEX BASIN WITH LEVEED DOWNSTREAM FLOOD CONTROL CORRIDOR

Alternative Description
The purpose of Alternative B is to capture the upstream flow at the apex using online detention basins. The presence of the detention basins eliminates the downstream alluvial fan uncertainties by controlling the flow from the apices to the outfall. Alternative B1 is based on using a relatively larger on-line detention basin at the apex accompanied by smaller leveed channel sections in the down fan direction. Alternative B1 is used for the CAP and White Tanks Wash subareas which do not have more than one reasonable set of alignments for the corridors.

SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX6.DAT

100-YEAR 6-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
- MOUNTAIN
- DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
- UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
- HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
- MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

```
 40 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1JAN99  STARTING DATE
                      ITIME        1200  STARTING TIME
                         NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      8JAN99  ENDING DATE
                     NDTIME        1035  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE  166.58 HOURS

         ENGLISH UNITS
```

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

41 JD       INDEX STORM NO. 1
                STRM        3.20  PRECIPITATION DEPTH
                TRDA         .10  TRANSPOSITION DRAINAGE AREA

42 PI         PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

45 JD       INDEX STORM NO. 2
                STRM        3.18  PRECIPITATION DEPTH
                TRDA         .50  TRANSPOSITION DRAINAGE AREA

46 PI         PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

49 JD       INDEX STORM NO. 3
                STRM        3.12  PRECIPITATION DEPTH
                TRDA        2.80  TRANSPOSITION DRAINAGE AREA

50 PI         PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

53 JD       INDEX STORM NO. 4
                STRM        2.95  PRECIPITATION DEPTH
                TRDA       16.00  TRANSPOSITION DRAINAGE AREA

54 PI         PRECIPITATION PATTERN
                .01       .01       .00       .00       .00       .00       .00       .00       .00       .01
                .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

57 JD       INDEX STORM NO. 5
                STRM        2.59  PRECIPITATION DEPTH
                TRDA       90.00  TRANSPOSITION DRAINAGE AREA

58 PI         PRECIPITATION PATTERN
                .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02,      .03
                .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01

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

          **************
          *            *
79 KK     *    RR102   *      STORAGE
          *            *
          **************

82 KO       OUTPUT CONTROL VARIABLES
                IPRNT           5  PRINT CONTROL
                IPLOT           0  PLOT CONTROL
                QSCAL          0.  HYDROGRAPH PLOT SCALE
1
                                                    RUNOFF SUMMARY
```

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	S100	4347.	4.67	899.	225.	75.	6.99		
+	HYDROGRAPH AT	S102	2790.	4.33	417.	104.	35.	3.23		
+	2 COMBINED AT	C102	5993.	4.50	1198.	300.	100.	10.23		
+	ROUTED TO	RR102	127.	6.75	122.	104.	72.	10.23		
+	DIVERSION TO	CF02	63.	6.75	61.	52.	36.	10.23		
+	HYDROGRAPH AT	D102	63.	6.75	61.	52.	36.	10.23		
+	ROUTED TO	100105	61.	11.42	59.	51.	36.	10.23		
+	HYDROGRAPH AT	S105	2863.	4.50	495.	124.	41.	4.37		
+	HYDROGRAPH AT	CF02	63.	6.75	61.	52.	36.	10.23		
+	ROUTED TO	102105	63.	8.08	60.	51.	36.	10.23		
+	3 COMBINED AT	C105U	2863.	4.50	554.	228.	121.	14.60		
+	HYDROGRAPH AT	S110	662.	4.25	76.	19.	6.	.43		
+	ROUTED TO	RR110	74.	5.08	59.	19.	6.	.43		
+	ROUTED TO	11015I	74.	5.67	58.	19.	6.	.43		
+	HYDROGRAPH AT	S115A	1540.	4.33	213.	53.	18.	1.40		
+	2 COMBINED AT	C115A	1442.	4.33	249.	68.	23.	1.83		
+	ROUTED TO	15I15A	1406.	4.50	247.	68.	23.	1.83		
+	HYDROGRAPH AT	S115B	789.	4.17	57.	14.	5.	.42		
+	2 COMBINED AT	C115B	1565.	4.42	284.	77.	26.	2.25		
+	ROUTED TO	15I15B	1536.	4.58	283.	77.	26.	2.25		
+	HYDROGRAPH AT	S115C	668.	4.17	58.	14.	5.	.43		
+	2 COMBINED AT	C115C	1640.	4.58	316.	86.	29.	2.68		
+	DIVERSION TO	DOUT	640.	4.58	44.	11.	4.	2.68		
+	HYDROGRAPH AT	D115C	1000.	4.33	271.	75.	25.	2.68		
+	ROUTED TO	115120	1001.	4.58	271.	75.	25.	2.68		
+	HYDROGRAPH AT	S120	1838.	4.33	256.	64.	21.	2.00		
+	2 COMBINED AT	C120	2294.	4.50	479.	127.	42.	4.68		
+	DIVERSION TO	DOUT	358.	4.50	18.	5.	2.	4.68		
+	HYDROGRAPH AT	D120	1950.	4.58	461.	122.	41.	4.68		
	2 COMBINED AT									

```
+                    C105D     3793.   4.58      795.      273.      127.     19.28

     HYDROGRAPH AT
+                    S900       936.   4.50      170.       43.       14.      1.03

     ROUTED TO
+                    RR900       74.   6.17       69.       42.       14.      1.03

     ROUTED TO
+                   90091A       74.   6.42       69.       42.       14.      1.03

     ROUTED TO
+                   90091B       74.   7.67       68.       42.       14.      1.03

     HYDROGRAPH AT
+                    S910      1585.   4.17      138.       35.       12.       .98

     2 COMBINED AT
+                    C910      1223.   4.17      170.       70.       24.      2.02

     ROUTED TO
+                   910915     1106.   4.33      166.       70.       24.      2.02

     HYDROGRAPH AT
+                    S915      1400.   4.50      189.       47.       16.      1.13

     2 COMBINED AT
+                    C915      2024.   4.42      323.      108.       36.      3.14

     ROUTED TO
+                   915920     1728.   4.92      312.      108.       36.      3.14

     HYDROGRAPH AT
+                    S920      2660.   4.58      424.      106.       35.      3.29

     2 COMBINED AT
+                    C920      3209.   4.83      657.      193.       65.      6.43
1                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION     RR102
                 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

PLAN  1 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00           1556.00
                          STORAGE              553.              2705.             2705.
                          OUTFLOW                0.               600.              600.

            RATIO     MAXIMUM      MAXIMUM     MAXIMUM     MAXIMUM     DURATION     TIME OF     TIME OF
             OF      RESERVOIR     DEPTH       STORAGE     OUTFLOW     OVER TOP    MAX OUTFLOW  FAILURE
            PMF      W.S.ELEV     OVER DAM      AC-FT        CFS        HOURS        HOURS       HOURS

            1.00     1552.61        .00         1386.       222.        .00         6.33         .00

PLAN  2 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00           1556.00
                          STORAGE              553.              2705.             2705.
                          OUTFLOW                0.               600.              600.

            RATIO     MAXIMUM      MAXIMUM     MAXIMUM     MAXIMUM     DURATION     TIME OF     TIME OF
             OF      RESERVOIR     DEPTH       STORAGE     OUTFLOW     OVER TOP    MAX OUTFLOW  FAILURE
            PMF      W.S.ELEV     OVER DAM      AC-FT        CFS        HOURS        HOURS       HOURS

            1.00     1552.59        .00         1380.       219.        .00         6.33         .00

PLAN  3 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00           1556.00
                          STORAGE              553.              2705.             2705.
                          OUTFLOW                0.               600.              600.

            RATIO     MAXIMUM      MAXIMUM     MAXIMUM     MAXIMUM     DURATION     TIME OF     TIME OF
             OF      RESERVOIR     DEPTH       STORAGE     OUTFLOW     OVER TOP    MAX OUTFLOW  FAILURE
            PMF      W.S.ELEV     OVER DAM      AC-FT        CFS        HOURS        HOURS       HOURS

            1.00     1552.23        .00         1236.       163.        .00         6.58         .00

PLAN  4 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00           1556.00
                          STORAGE              553.              2705.             2705.
                          OUTFLOW                0.               600.              600.

            RATIO     MAXIMUM      MAXIMUM     MAXIMUM     MAXIMUM     DURATION     TIME OF     TIME OF
             OF      RESERVOIR     DEPTH       STORAGE     OUTFLOW     OVER TOP    MAX OUTFLOW  FAILURE
            PMF      W.S.ELEV     OVER DAM      AC-FT        CFS        HOURS        HOURS       HOURS

            1.00     1551.78        .00         1083.       114.        .00         6.75         .00

PLAN  5 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00           1556.00
```

STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1551.06	.00	868.	68.	.00	6.75	.00

*** NORMAL END OF HEC-1 ***

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   19APR06  TIME  12:55:10  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

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

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

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

1 HEC-1 INPUT PAGE 1

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

  1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
  2           ID        - CAP SUBBAREA
  3           ID        - ALTERNATIVE B1
  4           ID              - BIG APEX BASIN WITH LEVEED DOWNSTREAM FLOOD CONTROL CORRIDOR
  5           ID
  6           ID  Alternative Description
  7           ID  The purpose of Alternative B is to capture the upstream flow at the
  8           ID  apex using online detention basins.  The presence of the detention
  9           ID  basins eliminates the downstream alluvial fan uncertainties by
 10           ID  controlling the flow from the apices to the outfall.  Alternative B1
 11           ID  is based on using a relatively larger on-line detention basin at the
 12           ID  apex accompanied by smaller leveed channel sections in the down fan
 13           ID  direction.  Alternative B1 is used for the CAP and White Tanks Wash
 14           ID  subareas which do not have more than one reasonable set of alignments
 15           ID  for the corridors.
 16           ID
 17           ID
 18           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
 19           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
 20           ID   MODELER: TED LEHMAN
 21           ID   FILENAME: A4_EX24.DAT
 22           ID
 23           ID   100-YEAR 24-HOUR MODEL
 24           ID   EXISTING CONDITIONS
 25           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
 26           ID            MODELED AREA = 76.8 SQ. MILES
 27           ID
 28           ID   GREEN-AMPT LOSS METHOD
 29           ID   S-GRAPH UNIT HYDROGRAPHS
 30           ID     - MOUNTAIN
 31           ID     - DESERT/RANGELAND
 32           ID   NORMAL-DEPTH CHANNEL ROUTING
 33           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
 34           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
 35           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
 36           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
 37           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
 38           IT       5  1JAN99    1200    2000
 39           IN      15
 40           IO       5
              *DIAGRAM
              *
 41           JD   4.198  0.1000
 42           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
 43           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
 44           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
 45           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
 46           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
 47           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
 48           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
 49           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
 50           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
 51           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
 52           JD   3.990    10.0
 53           JD   3.780    30.0
              *
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1 HEC-1 INPUT PAGE 2

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

  54          KK    S100   BASIN
  55          KM        Compute runoff from subbasin 100
  56          BA   6.994
  57          LG    0.35    0.38    6.40    0.16       0
  58          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  59          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  60          UI     848     715     635     476     471     313     309     309     204     110
  61          UI     109     111     110     109     111     109     110     111       0       0
              *

  62          KK    S102   BASIN
  63          KM        Compute runoff from subbasin 102
  64          BA   3.234
  65          LG    0.35    0.38    5.60    0.22       0
  66          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  67          UI    1179     890     674     542     377     300     232     193      81      82
  68          UI      81      81      83       0       0       0       0       0       0       0
              *

  69          KK    C102 COMBINE
  70          KM        Combine total inflow to detention area behind (north) of CAP Canal
  71          HC       2
              *

  72          KK   RR102 STORAGE
  73          KM        Route flows through storage area behind CAP Canal
  74          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  75          KO
  76          RS       1    STOR      -1
  77          SV          553.00 1148.00 2316.00 2705.00
  78          SQ                  128.00  587.00  600.00
  79          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  80          ST  1556.0  1320.0     3.2     1.5
              *

  81          KK    D102  DIVERT
  82          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  83          KM        although the inverts are 0.5 feet different in elevation
  84          DT    CF02     0.0     0.0
  85          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  86          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *

  87          KK  100105   ROUTE
  88          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  89          RS       9    FLOW      -1
  90          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  91          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  92          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *
```



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

  93          KK    S105   BASIN
  94          KM        Compute runoff from subbasin 105
  95          BA   4.370
  96          LG    0.35    0.35    4.80    0.30       0
  97          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
  98          UI    2374    1903    1555    1291    1018     832     685     564     458     369
  99          UI     288     235     238     126      83      85      84      84      84      84
 100          UI      84       0       0       0       0       0       0       0       0       0
              *

 101          KK    CF02RETRIEVE
 102          KM        Retrieve flow from west CAP overchute.
 103          DR    CF02
              *

 104          KK  102105   ROUTE
 105          KM        Route retrieved flow from west overchute to C105.
 106          RS       6    FLOW      -1
 107          RC   0.045   0.045   0.045 12096.90.016546   104.0
 108          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 109          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 110          KK   C105U COMBINE
 111          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 112          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 113          KM        of Sun Valley Parkway.
 114          HC       3  14.598
              *

 115          KK    S110   BASIN
 116          KM        Compute runoff from subbasin 110
 117          BA   0.430
 118          LG    0.25    0.37    5.20    0.25       6
 119          UI      56     166     335     449     587     358     291     241     188     140
 120          UI     121      86      68      56      43      32      27      22      11      11
```

```
 121          UI      10      11      11       0       0       0       0       0       0       0
              *

 122          KK   RR110 STORAGE
 123          KM   Proposed Detention Basin
 124          KM    ROUTE COMBINED RUNOFF AT S110 THROUGH PROPOSED (BIG) DETENTION BASIN
 125          KM    AT ALLUVIAL FAN APEX NO. 1
 126          KM    STRUCTURE ID:RR110
 127          KM    DIMENSIONS: L=800ft, W=400ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 30.9 ac-ft
 128          RS       1    STOR       0
 129          SV     0.0     2.9     5.9     8.9    11.9    14.9    18.0    24.4    30.9    37.5
 130          SE     0.0     0.5     1.0     1.5     2.0     2.5     3.0     4.0     5.0     6.0
 131          SQ     0.0    24.1    34.0    41.7    48.1    53.8    59.0    68.1    76.1    83.4
              *
1                                          HEC-1 INPUT                                          PAGE  4

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

 132          KK  11015I   ROUTE
 133          KM   Proposed Channel
 134          KM        Route flow from RR110 through subbasin 115A
 135          KM    STRUCTURE ID(s): RR11010
 136          KM    Slope=(1865.3 - 1692.1) / 7199.5
 137          RS       6    FLOW      -1
 138          RC   0.045   0.045   0.045  7199.5 0.02405   104.5
 139          RX     0.0    13.5    13.5    13.5   113.5   113.5   113.5   127.0
 140          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
              *

 141          KK   S115A   BASIN
 142          KM        Compute runoff from subbasin 115A
 143          BA   1.397
 144          LG    0.31    0.38    5.60    0.22       3
 145          UI     145     288     671     992    1273    1374    1344    1137     854     658
 146          UI     504     380     290     232     162     129     100      80      35      35
 147          UI      35      35      36       0       0       0       0       0       0       0
              *

 148          KK   C115A COMBINE
 149          KM        Combine runoff from S115A with routed flow.
 150          HC       2
              *

 151          KK  15I15A   ROUTE
 152          KM   Proposed Channel
 153          KM        Route flows to Sun Valley Parkway
 154          KM    STRUCTURE ID(s): RR115A10
 155          KM    Slope=(1692.1 - 1633.3) / 3083.7
 156          RS       3    FLOW      -1
 157          RC   0.045   0.045   0.045  3083.70.019076   104.5
 158          RX     0.0    13.5    13.5    13.5   281.5   281.5   281.5   295.0
 159          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
              *

 160          KK   S115B   BASIN
 161          BA   0.421
 162          LG    0.35    0.35    3.71    0.47       0
 163          UI     113     438     721     741     502     300     180     110      65      36
 164          UI      20      20       0       0       0       0       0       0       0       0
              *

 165          KK   C115B COMBINE
 166          KM        Combine runoff from S115B with routed flow.
 167          HC       2
              *

 168          KK  15I15B   ROUTE
 169          KM   Proposed - This is existing SV PKWY Channel
 170          KM        Route flows in existing Sun Valley Parkway channel
 171          KM    STRUCTURE ID(s): RR115B10
 172          KM    Slope=(1633.3 - 1537.8) / 8073.3
 173          RS       7    FLOW      -1
1                                          HEC-1 INPUT                                          PAGE  5

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

 174          RC    0.03    0.03    0.03  8073.30.011832   105.5
 175          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 176          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
              *

 177          KK   S115C   BASIN
 178          BA   0.429
 179          LG    0.35    0.35    4.00    0.47       0
 180          UI      64     250     457     595     594     444     299     208     135      93
 181          UI      62      44      23      15      16      16       0       0       0       0
              *

 182          KK   C115C COMBINE
 183          KM        Combine runoff from S115C with routed flow.
 184          HC       2
              *

 185          KK   D115C  DIVERT
```

```
186          KM   Proposed Detention Basin
187          KM   limit flow to capacity of existing Sun Valley Parkway
188          KM    STRUCTURE ID:D115C
189          KM    DIMENSIONS: L=850ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 27.4 ac-ft
190          DT    DOUT
191          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
192          DI  2500.0  3000.0
193          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
194          DQ  1500.0  2000.0
             *

195          KK  115120   ROUTE
196          KM   Proposed - This is existing SV PKWY Channel
197          KM        Route total flows from C115C to C120.
198          KM    STRUCTURE ID(s): C12010
199          KM    Slope=(1537.8 - 1496.4) / 4136.0
200          RS       3    FLOW      -1
201          RC    0.03    0.03    0.03  4136.00.010008   106.5
202          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
203          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

204          KK    S120   BASIN
205          KM        Compute runoff from subbasin 120
206          BA   2.004
207          LG    0.33    0.35    4.65    0.32       1
208          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
209          UI     731     551     418     336     234     186     143     120      50      51
210          UI      50      51      51       0       0       0       0       0       0       0
             *

211          KK    C120 COMBINE
212          KM        Combine flows at Wagner Wash at outlet of channel along SVP
213          HC       2   4.681
             *
1                                          HEC-1 INPUT                                          PAGE  6

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

214          KK    D120  DIVERT
215          KM   Proposed Detention Basin
216          KM   limit flow to capacity of existing Sun Valley Parkway
217          KM    STRUCTURE ID:D120
218          KM    DIMENSIONS: L=660ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 21.1 ac-ft
219          DT    DOUT
220          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
221          DI  3000.0  4000.0
222          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
223          DQ  1000.0  2000.0
             *

224          KK   C105D COMBINE
225          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
226          HC       2  19.279
             *

227          KK    S900   BASIN
228          KM        Compute runoff from subbasin 900
229          BA   1.035
230          LG    0.25    0.37    5.30    0.24       6
231          UI      75      77     215     338     472     551     650     871     671     496
232          UI     448     394     356     320     277     233     197     180     165     140
233          UI     116      97      89      83      65      59      58      37      38      37
234          UI      37      23      14      15      14      15      14      15      15      14
235          UI      15      14       0       0       0       0       0       0       0       0
             *

236          KK   RR900 STORAGE
237          KM   Proposed Detention Basin
238          KM    ROUTE RUNOFF FROM S900 THROUGH PROPOSED (BIG) DETENTION BASIN AT APEX FOR
239          KM    ALLUVIAL FAN NO. 2
240          KM    STRUCTURE ID:RR900
241          KM    DIMENSIONS: L=1400ft, W=525ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 73 ac-ft
242          RS       1    STOR       0
243          SV     0.0     7.0    14.1    21.2    28.4    43.0    57.9    73.0    88.3   104.0
244          SE     0.0     0.5     1.0     1.5     2.0     3.0     4.0     5.0     6.0     7.0
245          SQ     0.0    24.1    34.0    41.7    48.1    59.0    68.1    76.1    83.4    90.0
             *

246          KK  90091A   ROUTE
247          KM   Proposed Channel
248          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
249          KM    STRUCTURE ID(s): C910A10
250          KM    Slope=(1818.8 - 1746.9) / 3620.4
251          RS       4    FLOW      -1
252          RC   0.045   0.045   0.045  3620.4 0.01985   104.5
253          RX     0.0    13.5    13.5    13.5    97.5    97.5    97.5   111.0
254          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
             *
1                                          HEC-1 INPUT                                          PAGE  7

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

```
255          KK  90091B   ROUTE
256          KM   Proposed Channel
257          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
258          KM    STRUCTURE ID(s): C910B10
259          KM    Slope=(1746.9 - 1667.9) / 4991.8
260          RS       4    FLOW      -1
261          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
262          RX     0.0    12.0    12.0    12.0   330.0   330.0   330.0   342.0
263          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

264          KK    S910   BASIN
265          KM        Compute runoff from subbasin 910
266          BA   0.983
267          LG    0.35    0.35    4.70    0.31       0
268          UI     234     923    1540    1684    1252     768     471     298     172     120
269          UI      45      44      44       0       0       0       0       0       0       0
             *

270          KK    C910 COMBINE
271          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
272          HC       2
             *

273          KK  910915   ROUTE
274          KM   Proposed Channel
275          KM        Route combined flow to C915
276          KM    STRUCTURE ID(s): RR91010
277          KM    Slope=(1668.1 - 1623.5) / 3390.4
278          RS       3    FLOW      -1
279          RC   0.045   0.045   0.045  3390.40.013146   104.5
280          RX     0.0    13.5    13.5    13.5   413.5   413.5   413.5   427.0
281          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
             *

282          KK    S915   BASIN
283          KM    Compute runoff from subbasin 915
284          BA   1.126
285          LG    0.25    0.38    6.40    0.16       1
286          UI     102     175     410     834     662     809    1162    1191     903     742
287          UI     603     468     294     180     156     102      68      31      32      32
288          UI      31      32       0       0       0       0       0       0       0       0
             *

289          KK    C915 COMBINE
290          KM      Combine runoff from S915 with C910 (or outflow if basin)
291          HC       2
             *
```

1 HEC-1 INPUT PAGE 8

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

292          KK  915920   ROUTE
293          KM   Proposed Channel
294          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
295          KM    STRUCTURE ID(s): C92010
296          KM    Slope=(1623.5 - 1532.6) / 8861.8
297          RS       7    FLOW      -1
298          RC   0.045   0.045   0.045  8861.80.010265   105.0
299          RX     0.0    15.0    15.0    15.0   415.0   415.0   415.0   430.0
300          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
             *

301          KK    S920   BASIN
302          KM        Compute runoff from subbasin 920
303          BA   3.291
304          LG    0.35    0.38    5.60    0.22       0
305          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
306          UI    2073    1666    1376    1100     654     455     421     261     240      81
307          UI      80      80      81      80      81       0       0       0       0       0
308          UI       0       0       0       0       0       0       0       0       0       0
             *

309          KK    C920 COMBINE
310          KM        Combine flows in Trilby Wash tributary
311          HC       2
312          ZZ
```

1

```
          SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   54       S100
              .
              .
   62         .        S102
              .           .
              .           .
   69       C102............
              V
              V
   72      RR102
```

```
                .
                .
 84             .-------->    CF02
 81         D102
               V
               V
 87       100105
                .
                .
 93             .        S105
                .           .
                .           .
103             .           .           .<--------    CF02
101             .           .        CF02
                .           .           V
                .           .           V
104             .           .      102105
                .           .           .
                .           .           .
110        C105U.......................
                .
                .
115             .        S110
                .           V
                .           V
122             .       RR110
                .           V
                .           V
132             .      11015I
                .           .
                .           .
141             .           .       S115A
                .           .           .
                .           .           .
148             .       C115A............
                .           V
                .           V
151             .      15I15A
                .           .
                .           .
160             .           .       S115B
                .           .           .
                .           .           .
165             .       C115B............
                .           V
                .           V
168             .      15I15B
                .           .
                .           .
177             .           .       S115C
                .           .           .
                .           .           .
182             .       C115C............
                .           .
                .           .
190             .           .-------->    DOUT
185             .       D115C
                .           V
                .           V
195             .      115120
                .           .
                .           .
204             .           .        S120
                .           .           .
                .           .           .
211             .        C120............
                .           .
                .           .
219             .           .-------->    DOUT
214             .        D120
                .           .
                .           .
224        C105D............
                .
                .
227             .        S900
                .           V
                .           V
236             .       RR900
                .           V
                .           V
246             .      90091A
                .           V
                .           V
255             .      90091B
                .           .
                .           .
264             .           .        S910
                .           .           .
                .           .           .
270             .        C910............
                .           V
                .           V
273             .      910915
                .           .
```

```
                .           .
  282           .           .        S915
                .           .           .
                .           .           .
  289           .        C915............
                .           V
                .           V
  292           .      915920
                .           .
                .           .
  301           .           .        S920
                .           .           .
                .           .           .
  309           .        C920............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN   1998              *
 *           VERSION 4.1                *
 *                                      *
 *  RUN DATE   19APR06  TIME  12:55:10  *
 *                                      *
 ****************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 756-1104          *
*                                   *
*************************************
```

```
                    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
                       - CAP SUBBAREA
                       - ALTERNATIVE B1
                             - BIG APEX BASIN WITH LEVEED DOWNSTREAM FLOOD CONTROL CORRIDOR

                   Alternative Description
                   The purpose of Alternative B is to capture the upstream flow at the
                   apex using online detention basins.  The presence of the detention
                   basins eliminates the downstream alluvial fan uncertainties by
                   controlling the flow from the apices to the outfall.  Alternative B1
                   is based on using a relatively larger on-line detention basin at the
                   apex accompanied by smaller leveed channel sections in the down fan
                   direction.  Alternative B1 is used for the CAP and White Tanks Wash
                   subareas which do not have more than one reasonable set of alignments
                   for the corridors.

                    SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
                    JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
                    MODELER: TED LEHMAN
                    FILENAME: A4_EX24.DAT

                    100-YEAR 24-HOUR MODEL
                    EXISTING CONDITIONS
                    AREA 4 WATERSHED AREA = 90.5 SQ. MILES
                             MODELED AREA = 76.8 SQ. MILES

                    GREEN-AMPT LOSS METHOD
                    S-GRAPH UNIT HYDROGRAPHS
                      - MOUNTAIN
                      - DESERT/RANGELAND
                    NORMAL-DEPTH CHANNEL ROUTING
                    LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
                      - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
                      - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
                      - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
                    SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

  40 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE     1JAN99  STARTING DATE
                       ITIME       1200  STARTING TIME
                          NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE     8JAN99  ENDING DATE
                      NDTIME       1035  ENDING TIME
                       ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE  166.58 HOURS

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

  41 JD          INDEX STORM NO. 1
```

```
                STRM        4.20  PRECIPITATION DEPTH
                TRDA         .10  TRANSPOSITION DRAINAGE AREA

42 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
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                .00       .00       .00       .00       .00       .00       .00       .00

52 JD        INDEX STORM NO. 2
                STRM        3.99  PRECIPITATION DEPTH
                TRDA       10.00  TRANSPOSITION DRAINAGE AREA

 0 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
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53 JD        INDEX STORM NO. 3
                STRM        3.78  PRECIPITATION DEPTH
                TRDA       30.00  TRANSPOSITION DRAINAGE AREA

 0 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .01       .00       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
  72 KK   *     RR102  *      STORAGE
          *            *
          **************

  75 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                      TIME IN HOURS,  AREA IN SQUARE MILES

                                          PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
          OPERATION        STATION        FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                            6-HOUR     24-HOUR     72-HOUR

          HYDROGRAPH AT
+                           S100         5214.   12.58        965.        241.         80.      6.99
          HYDROGRAPH AT
+                           S102         3434.   12.33        420.        105.         35.      3.23
          2 COMBINED AT
+                           C102         7803.   12.42       1367.        342.        114.     10.23
          ROUTED TO
+                          RR102          149.   14.42        141.        119.         82.     10.23
          DIVERSION TO
+                           CF02           75.   14.42         71.         59.         41.     10.23
          HYDROGRAPH AT
+                           D102           75.   14.42         71.         59.         41.     10.23
          ROUTED TO
+                         100105           71.   19.17         68.         58.         41.     10.23
          HYDROGRAPH AT
+                           S105         3466.   12.50        531.        133.         44.      4.37
          HYDROGRAPH AT
+                           CF02           75.   14.42         71.         59.         41.     10.23
          ROUTED TO
+                         102105           74.   15.92         70.         59.         41.     10.23
          3 COMBINED AT
+                           C105U        3466.   12.50        593.        239.        126.     14.60
          HYDROGRAPH AT
+                           S110          532.   12.17         62.         16.          5.       .43
          ROUTED TO
+                          RR110           67.   13.00         52.         16.          5.       .43
          ROUTED TO
+                         11015I           66.   13.58         50.         16.          5.       .43
          HYDROGRAPH AT
+                           S115A        1536.   12.33        193.         50.         17.     1.40
          2 COMBINED AT
+                           C115A        1533.   12.33        235.         65.         22.     1.83
          ROUTED TO
+                         15I15A         1488.   12.42        233.         65.         22.     1.83
          HYDROGRAPH AT
+                           S115B         619.   12.08         47.         12.          4.       .42
          2 COMBINED AT
+                           C115B        1664.   12.33        277.         77.         26.     2.25
          ROUTED TO
+                         15I15B         1636.   12.58        275.         77.         26.     2.25
          HYDROGRAPH AT
+                           S115C         534.   12.17         47.         12.          4.       .43
```

```
+       2 COMBINED AT
                        C115C     1822.   12.50        318.        88.        29.      2.68
+       DIVERSION TO
                        DOUT       822.   12.50         56.        14.         5.      2.68
+       HYDROGRAPH AT
                        D115C     1000.   12.33        263.        74.        25.      2.68
+       ROUTED TO
                       115120     1002.   12.50        262.        74.        25.      2.68
+       HYDROGRAPH AT
                        S120      2032.   12.33        247.        62.        21.      2.00
+       2 COMBINED AT
                        C120      2853.   12.42        501.       135.        45.      4.68
+       DIVERSION TO
                        DOUT       853.   12.42         43.        11.         4.      4.68
+       HYDROGRAPH AT
                        D120      2000.   12.25        459.       124.        41.      4.68
+       2 COMBINED AT
                        C105D     5244.   12.50        995.       341.       157.     19.28
+       HYDROGRAPH AT
                        S900       853.   12.50        150.        39.        13.      1.03
+       ROUTED TO
                        RR900       70.   14.08         65.        38.        13.      1.03
+       ROUTED TO
                       90091A       70.   14.42         65.        38.        13.      1.03
+       ROUTED TO
                       90091B       69.   15.58         64.        38.        13.      1.03
+       HYDROGRAPH AT
                        S910      1512.   12.17        122.        30.        10.       .98
+       2 COMBINED AT
                        C910      1498.   12.17        165.        68.        23.      2.02
+       ROUTED TO
                       910915     1291.   12.33        161.        67.        23.      2.02
+       HYDROGRAPH AT
                        S915      1305.   12.42        165.        42.        14.      1.13
+       2 COMBINED AT
                        C915      2436.   12.33        320.       108.        36.      3.14
+       ROUTED TO
                       915920     1968.   12.83        309.       107.        36.      3.14
+       HYDROGRAPH AT
                        S920      3157.   12.58        428.       107.        36.      3.29
+       2 COMBINED AT
                        C920      3962.   12.75        719.       212.        71.      6.43
1                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION     RR102
                 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

PLAN  1 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION      1550.00           1556.00          1556.00
                              STORAGE          553.             2705.            2705.
                              OUTFLOW            0.              600.             600.

              RATIO     MAXIMUM     MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
               OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
               PMF      W.S.ELEV   OVER DAM     AC-FT       CFS       HOURS       HOURS       HOURS

              1.00      1552.28       .00       1258.      171.        .00        14.42        .00

PLAN  2 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION      1550.00           1556.00          1556.00
                              STORAGE          553.             2705.            2705.
                              OUTFLOW            0.              600.             600.

              RATIO     MAXIMUM     MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
               OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
               PMF      W.S.ELEV   OVER DAM     AC-FT       CFS       HOURS       HOURS       HOURS

              1.00      1552.14       .00       1204.      150.        .00        14.42        .00

PLAN  3 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION      1550.00           1556.00          1556.00
```

STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.00	.00	1149.	128.	.00	14.50	.00

*** NORMAL END OF HEC-1 ***

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998              *                    *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                *                    *         609 SECOND STREET            *
 *                                      *                    *      DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   19APR06  TIME  12:59:55  *                    *          (916) 756-1104              *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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

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

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

1                                                    HEC-1 INPUT                                                    PAGE  1

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

        1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
        2           ID       - CAP SUBBAREA
        3           ID       - ALTERNATIVE B2
        4           ID             - SMALL APEX BASIN, LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR
        5           ID
        6           ID   Alternative Description
        7           ID   The purpose of Alternative B is to capture the upstream flow at the
        8           ID   apex using online detention basins.  The presence of the detention
        9           ID   basins eliminates the downstream alluvial fan uncertainties by
       10           ID   controlling the flow from the apices to the outfall.  Alternative B2
       11           ID   is based on using a relatively smaller on-line detention basin at the
       12           ID   apex accompanied by larger leveed channel sections in the down fan
       13           ID   direction.
       14           ID
       15           ID
       16           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
       17           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
       18           ID   MODELER: TED LEHMAN
       19           ID   FILENAME: A4_EX6.DAT
       20           ID
       21           ID   100-YEAR 6-HOUR MODEL
       22           ID   EXISTING CONDITIONS
       23           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       24           ID            MODELED AREA = 76.8 SQ. MILES
       25           ID
       26           ID   GREEN-AMPT LOSS METHOD
       27           ID   S-GRAPH UNIT HYDROGRAPHS
       28           ID     - MOUNTAIN
       29           ID     - DESERT/RANGELAND
       30           ID   NORMAL-DEPTH CHANNEL ROUTING
       31           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
       32           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
       33           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
       34           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
       35           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
       36           IT       5  1JAN99    1200    2000
       37           IN      15
       38           IO       5
                    *DIAGRAM
                    *
       39           JD   3.196  0.1000
       40           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
       41           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
       42           PC   0.962   0.972   0.983   0.991   1.000
       43           JD   3.181  0.5000
       44           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
       45           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
       46           PC   0.962   0.972   0.983   0.991   1.000
       47           JD   3.120     2.8
       48           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.068   0.077
       49           PC   0.088   0.101   0.121   0.164   0.253   0.451   0.694   0.836   0.900   0.938
       50           PC   0.950   0.963   0.975   0.988   1.000
       51           JD   2.950    16.0
       52           PC   0.000   0.015   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
       53           PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
1                                                    HEC-1 INPUT                                                    PAGE  2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  54          PC   0.946   0.960   0.973   0.987   1.000
  55          JD   2.592    90.0
  56          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  57          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  58          PC   0.927   0.945   0.964   0.982   1.000
              *

  59          KK    S100   BASIN
  60          KM        Compute runoff from subbasin 100
  61          BA   6.994
  62          LG    0.35    0.38    6.40    0.16       0
  63          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  64          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  65          UI     848     715     635     476     471     313     309     309     204     110
  66          UI     109     111     110     109     111     109     110     111       0       0
              *

  67          KK    S102   BASIN
  68          KM        Compute runoff from subbasin 102
  69          BA   3.234
  70          LG    0.35    0.38    5.60    0.22       0
  71          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  72          UI    1179     890     674     542     377     300     232     193      81      82
  73          UI      81      81      83       0       0       0       0       0       0       0
              *

  74          KK    C102 COMBINE
  75          KM        Combine total inflow to detention area behind (north) of CAP Canal
  76          HC       2
              *

  77          KK   RR102 STORAGE
  78          KM        Route flows through storage area behind CAP Canal
  79          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  80          KO
  81          RS       1    STOR      -1
  82          SV           553.00 1148.00 2316.00 2705.00
  83          SQ                  128.00  587.00  600.00
  84          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  85          ST  1556.0  1320.0     3.2     1.5
              *

  86          KK    D102  DIVERT
  87          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  88          KM        although the inverts are 0.5 feet different in elevation
  89          DT    CF02     0.0     0.0
  90          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  91          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  92          KK  100105   ROUTE
  93          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  94          RS       9    FLOW      -1
  95          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  96          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  97          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *

  98          KK    S105   BASIN
  99          KM        Compute runoff from subbasin 105
 100          BA   4.370
 101          LG    0.35    0.35    4.80    0.30       0
 102          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 103          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 104          UI     288     235     238     126      83      85      84      84      84      84
 105          UI      84       0       0       0       0       0       0       0       0       0
              *

 106          KK    CF02RETRIEVE
 107          KM        Retrieve flow from west CAP overchute.
 108          DR    CF02
              *

 109          KK  102105   ROUTE
 110          KM        Route retrieved flow from west overchute to C105.
 111          RS       6    FLOW      -1
 112          RC   0.045   0.045   0.045 12096.90.016546   104.0
 113          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 114          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 115          KK   C105U COMBINE
 116          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 117          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 118          KM        of Sun Valley Parkway.
 119          HC       3  14.598
              *

 120          KK    S110   BASIN
```

```
 121          KM        Compute runoff from subbasin 110
 122          BA   0.430
 123          LG    0.25    0.37    5.20    0.25       6
 124          UI      56     166     335     449     587     358     291     241     188     140
 125          UI     121      86      68      56      43      32      27      22      11      11
 126          UI      10      11      11       0       0       0       0       0       0       0
              *

 127          KK   RR110 STORAGE
 128          KM   Proposed Detention Basin
 129          KM    ROUTE COMBINED RUNOFF AT S110 THROUGH PROPOSED (SMALL) DETENTION BASIN
 130          KM    AT ALLUVIAL FAN APEX NO. 1
 131          KM    STRUCTURE ID:RR110
 132          KM    DIMENSIONS: L=400ft, W=220ft, D=4ft, Sideslope (?H:1V)= 3,  Vol.= 5 ac-ft
 133          RS       1    STOR       0
1                                        HEC-1 INPUT                                          PAGE  4

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

 134          SV     0.0     3.3     5.0     5.9     6.8     7.8     8.8     9.7    10.8    12.8
 135          SE     0.0     2.0     3.0     3.5     4.0     4.5     5.0     5.5     6.0     7.0
 136          SQ     0.0   534.8   655.0   707.5   756.3   802.2   845.6   886.9   926.3  1000.5
              *

 137          KK  11015I   ROUTE
 138          KM   Proposed Channel
 139          KM        Route flow from RR110 through subbasin 115 - first subsegment
 140          KM    STRUCTURE ID(s): RR11010
 141          KM    Slope=(1865.3 - 1692.1) / 7199.5
 142          RS       6    FLOW      -1
 143          RC   0.045   0.045   0.045  7199.5 0.02405   104.0
 144          RX     0.0    12.0    12.0    12.0   262.0   262.0   262.0   274.0
 145          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 146          KK   S115A   BASIN
 147          KM        Compute runoff from subbasin 115A
 148          BA   1.397
 149          LG    0.31    0.38    5.60    0.22       3
 150          UI     145     288     671     992    1273    1374    1344    1137     854     658
 151          UI     504     380     290     232     162     129     100      80      35      35
 152          UI      35      35      36       0       0       0       0       0       0       0
              *

 153          KK   C115A COMBINE
 154          KM        Combine runoff from S115A with routed flow.
 155          HC       2
              *

 156          KK  15I15A   ROUTE
 157          KM   Proposed Channel
 158          KM        Route flows from split through S115 to Sun Valley Parkway
 159          KM    STRUCTURE ID(s): RR115A10
 160          KM    Slope=(1692.1 - 1633.3) / 3083.7
 161          RS       3    FLOW      -1
 162          RC   0.045   0.045   0.045  3083.70.019076   104.0
 163          RX     0.0    12.0    12.0    12.0   364.0   364.0   364.0   376.0
 164          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 165          KK   S115B   BASIN
 166          BA   0.421
 167          LG    0.35    0.35    3.71    0.47       0
 168          UI     113     438     721     741     502     300     180     110      65      36
 169          UI      20      20       0       0       0       0       0       0       0       0
              *

 170          KK   C115B COMBINE
 171          KM        Combine runoff from S115B with routed flow.
 172          HC       2
              *
1                                        HEC-1 INPUT                                          PAGE  5

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

 173          KK  15I15B   ROUTE
 174          KM   Proposed - This is existing SV PKWY Channel
 175          KM        Route flows in existing Sun Valley Parkway channel
 176          KM    STRUCTURE ID(s): RR115B10
 177          KM    Slope=(1633.3 - 1537.8) / 8073.3
 178          RS       7    FLOW      -1
 179          RC    0.03    0.03    0.03  8073.30.011832   105.5
 180          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 181          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
              *

 182          KK   S115C   BASIN
 183          BA   0.429
 184          LG    0.35    0.35    4.00    0.47       0
 185          UI      64     250     457     595     594     444     299     208     135      93
 186          UI      62      44      23      15      16      16       0       0       0       0
              *

 187          KK   C115C COMBINE
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188          KM        Combine runoff from S115C with routed flow.
189          HC       2
             *

190          KK   D115C  DIVERT
191          KM   Proposed Detention Basin
192          KM   limit flow to capacity of existing Sun Valley Parkway
193          KM    STRUCTURE ID:D115C
194          KM    DIMENSIONS: L=900ft, W=420ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 30.5 ac-ft
195          DT    DOUT
196          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
197          DI  2500.0  3000.0
198          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
199          DQ  1500.0  2000.0
             *

200          KK  115120   ROUTE
201          KM   Proposed - This is existing SV PKWY Channel
202          KM   It is marked proposed to check for capacity
203          KM    STRUCTURE ID(s): C12010
204          KM    Slope=(1537.8 - 1496.4) / 4136.0
205          RS       3    FLOW      -1
206          RC    0.03    0.03    0.03  4136.00.010008   106.5
207          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
208          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

209          KK    S120   BASIN
210          KM        Compute runoff from subbasin 120
211          BA   2.004
212          LG    0.33    0.35    4.65    0.32       1
213          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
214          UI     731     551     418     336     234     186     143     120      50      51
215          UI      50      51      51       0       0       0       0       0       0       0
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

216          KK    C120 COMBINE
217          KM        Combine flows at Wagner Wash at outlet of channel along SVP
218          HC       2   4.681
             *

219          KK    D120  DIVERT
220          KM   Proposed Detention Basin
221          KM   limit flow to capacity of existing Sun Valley Parkway
222          KM    STRUCTURE ID:D120
223          KM    DIMENSIONS: L=660ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 21.1 ac-ft
224          DT    DOUT
225          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
226          DI  3000.0  4000.0
227          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
228          DQ  1000.0  2000.0
             *

229          KK   C105D COMBINE
230          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
231          HC       2  19.279
             *

232          KK    S900   BASIN
233          KM        Compute runoff from subbasin 900
234          BA   1.035
235          LG    0.25    0.37    5.30    0.24       6
236          UI      75      77     215     338     472     551     650     871     671     496
237          UI     448     394     356     320     277     233     197     180     165     140
238          UI     116      97      89      83      65      59      58      37      38      37
239          UI      37      23      14      15      14      15      14      15      15      14
240          UI      15      14       0       0       0       0       0       0       0       0
             *

241          KK   RR900 STORAGE
242          KM   Proposed Detention Basin
243          KM    ROUTE RUNOFF FROM S900 THROUGH PROPOSED (BIG) DETENTION BASIN AT APEX FOR
244          KM    ALLUVIAL FAN NO. 2
245          KM    STRUCTURE ID:RR900
246          KM    DIMENSIONS: L=490ft, W=250ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 9.1 ac-ft
247          RS       1    STOR       0
248          SV     0.0     1.1     2.1     3.3     4.4     6.7     9.1    11.7    14.3    17.0
249          SE     0.0     0.5     1.0     1.5     2.0     3.0     4.0     5.0     6.0     7.0
250          SQ     0.0   334.3   472.7   578.9   668.5   818.8   945.4  1057.0  1157.9  1250.7
             *

251          KK  90091A   ROUTE
252          KM   Proposed Channel
253          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
254          KM    STRUCTURE ID(s): C910A10
255          KM    Slope=(1818.8 - 1746.9) / 3620.4
256          RS       5    FLOW      -1
257          RC   0.045   0.045   0.045  3620.4 0.01985   104.0
258          RX     0.0    12.0    12.0    12.0   264.0   264.0   264.0   276.0
259          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *
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1                                          HEC-1 INPUT                                                    PAGE  7

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

       260          KK  90091B   ROUTE
       261          KM   Proposed Channel
       262          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
       263          KM    STRUCTURE ID(s): C910B10
       264          KM    Slope=(1746.9 - 1667.9) / 4991.8
       265          RS       4    FLOW      -1
       266          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
       267          RX     0.0    12.0    12.0    12.0   372.0   372.0   372.0   384.0
       268          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
                    *

       269          KK    S910   BASIN
       270          KM        Compute runoff from subbasin 910
       271          BA   0.983
       272          LG    0.35    0.35    4.70    0.31       0
       273          UI     234     923    1540    1684    1252     768     471     298     172     120
       274          UI      45      44      44       0       0       0       0       0       0       0
                    *

       275          KK    C910 COMBINE
       276          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
       277          HC       2
                    *

       278          KK  910915   ROUTE
       279          KM   Proposed Channel
       280          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
       281          KM    STRUCTURE ID(s): RR91010
       282          KM    Slope=(1668.1 - 1623.5) / 3390.4
       283          RS       3    FLOW      -1
       284          RC   0.045   0.045   0.045  3390.40.013146   104.5
       285          RX     0.0    13.5    13.5    13.5   413.5   413.5   413.5   427.0
       286          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
                    *

       287          KK    S915   BASIN
       288          KM    Compute runoff from subbasin 915
       289          BA   1.126
       290          LG    0.25    0.38    6.40    0.16       1
       291          UI     102     175     410     534     662     809    1162    1191     903     742
       292          UI     603     468     294     180     156     102      68      31      32      32
       293          UI      31      32       0       0       0       0       0       0       0       0
                    *

       294          KK    C915 COMBINE
       295          KM      Combine runoff from S915 with C910 (or outflow if basin)
       296          HC       2
                    *
1                                          HEC-1 INPUT                                                    PAGE  8

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

       297          KK  915920   ROUTE
       298          KM   Proposed Channel
       299          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
       300          KM    STRUCTURE ID(s): C92010
       301          KM    Slope=(1623.5 - 1532.6) / 8861.8
       302          RS       7    FLOW      -1
       303          RC   0.045   0.045   0.045  8861.80.010265   105.0
       304          RX     0.0    15.0    15.0    15.0   415.0   415.0   415.0   430.0
       305          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
                    *

       306          KK    S920   BASIN
       307          KM        Compute runoff from subbasin 920
       308          BA   3.291
       309          LG    0.35    0.38    5.60    0.22       0
       310          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
       311          UI    2073    1666    1376    1100     654     455     421     261     240      81
       312          UI      80      80      81      80      81       0       0       0       0       0
       313          UI       0       0       0       0       0       0       0       0       0       0
                    *

       314          KK    C920 COMBINE
       315          KM        Combine flows in Trilby Wash tributary
       316          HC       2
       317          ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    59        S100
                .
                .
    67          .        S102
                .          .
```

```
                .           .
 74          C102............
                V
                V
 77         RR102
                .
                .
 89             .-------->    CF02
 86          D102
                V
                V
 92        100105
                .
                .
 98             .        S105
                .           .
                .           .
108             .           .           .<-------    CF02
106             .           .        CF02
                .           .           V
                .           .           V
109             .           .      102105
                .           .           .
                .           .           .
115         C105U.......................
                .
                .
120             .        S110
                .           V
                .           V
127             .       RR110
                .           V
                .           V
137             .      11015I
                .           .
                .           .
146             .           .       S115A
                .           .           .
                .           .           .
153             .       C115A............
                .           V
                .           V
156             .      15I15A
                .           .
                .           .
165             .           .       S115B
                .           .           .
                .           .           .
170             .       C115B............
                .           V
                .           V
173             .      15I15B
                .           .
                .           .
182             .           .       S115C
                .           .           .
                .           .           .
187             .       C115C............
                .           .
                .           .
195             .           .-------->    DOUT
190             .       D115C
                .           V
                .           V
200             .      115120
                .           .
                .           .
209             .           .        S120
                .           .           .
                .           .           .
216             .        C120............
                .           .
                .           .
224             .           .-------->    DOUT
219             .        D120
                .           .
                .           .
229         C105D............
                .
                .
232             .        S900
                .           V
                .           V
241             .       RR900
                .           V
                .           V
251             .      90091A
                .           V
                .           V
260             .      90091B
                .           .
                .           .
269             .           .        S910
                .           .           .
                .           .           .
```

```
  275          .        C910............
               .           V
               .           V
  278          .      910915
               .           .
               .           .
  287          .           .        S915
               .           .           .
               .           .           .
  294          .        C915............
               .           V
               .           V
  297          .      915920
               .           .
               .           .
  306          .           .        S920
               .           .           .
               .           .           .
  314          .        C920............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*************************************
 *                                   *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998           *
 *            VERSION 4.1            *
 *                                   *
 *  RUN DATE   19APR06  TIME  12:59:55   *
 *                                   *
 *************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 756-1104          *
*                                   *
*************************************
```

```
HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
   - CAP SUBBAREA
   - ALTERNATIVE B2
         - SMALL APEX BASIN, LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR

Alternative Description
The purpose of Alternative B is to capture the upstream flow at the
apex using online detention basins.  The presence of the detention
basins eliminates the downstream alluvial fan uncertainties by
controlling the flow from the apices to the outfall.  Alternative B2
is based on using a relatively smaller on-line detention basin at the
apex accompanied by larger leveed channel sections in the down fan
direction.


SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX6.DAT

100-YEAR 6-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
         MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
  - MOUNTAIN
  - DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
  - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
  - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
  - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

38 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1JAN99  STARTING DATE
                     ITIME        1200  STARTING TIME
                        NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      8JAN99  ENDING DATE
                    NDTIME        1035  ENDING TIME
                     ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE  166.58 HOURS

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

```
              TEMPERATURE            DEGREES FAHRENHEIT

 39 JD          INDEX STORM NO. 1
                      STRM        3.20  PRECIPITATION DEPTH
                      TRDA         .10  TRANSPOSITION DRAINAGE AREA

 40 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 43 JD          INDEX STORM NO. 2
                      STRM        3.18  PRECIPITATION DEPTH
                      TRDA         .50  TRANSPOSITION DRAINAGE AREA

 44 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 47 JD          INDEX STORM NO. 3
                      STRM        3.12  PRECIPITATION DEPTH
                      TRDA        2.80  TRANSPOSITION DRAINAGE AREA

 48 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                     .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 51 JD          INDEX STORM NO. 4
                      STRM        2.95  PRECIPITATION DEPTH
                      TRDA       16.00  TRANSPOSITION DRAINAGE AREA

 52 PI            PRECIPITATION PATTERN
                     .01       .01       .00       .00       .00       .00       .00       .00       .00       .01
                     .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                     .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                     .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 55 JD          INDEX STORM NO. 5
                      STRM        2.59  PRECIPITATION DEPTH
                      TRDA       90.00  TRANSPOSITION DRAINAGE AREA

 56 PI            PRECIPITATION PATTERN
                     .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                     .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01

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

            **************
            *            *
 77 KK      *    RR102   *      STORAGE
            *            *
            **************

 80 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                      TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
        OPERATION        STATION   FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                      6-HOUR      24-HOUR      72-HOUR
```

+	HYDROGRAPH AT	S100	4347.	4.67	899.	225.	75.	6.99
+	HYDROGRAPH AT	S102	2790.	4.33	417.	104.	35.	3.23
+	2 COMBINED AT	C102	5993.	4.50	1198.	300.	100.	10.23
+	ROUTED TO	RR102	127.	6.75	122.	104.	72.	10.23
+	DIVERSION TO	CF02	63.	6.75	61.	52.	36.	10.23
+	HYDROGRAPH AT	D102	63.	6.75	61.	52.	36.	10.23
+	ROUTED TO	100105	61.	11.42	59.	51.	36.	10.23
+	HYDROGRAPH AT	S105	2863.	4.50	495.	124.	41.	4.37
+	HYDROGRAPH AT	CF02	63.	6.75	61.	52.	36.	10.23
+	ROUTED TO	102105	63.	8.08	60.	51.	36.	10.23
+	3 COMBINED AT	C105U	2863.	4.50	554.	228.	121.	14.60
+	HYDROGRAPH AT	S110	662.	4.25	76.	19.	6.	.43
+	ROUTED TO	RR110	600.	4.33	76.	19.	6.	.43
+	ROUTED TO	11015I	504.	4.75	76.	19.	6.	.43
+	HYDROGRAPH AT	S115A	1540.	4.33	213.	53.	18.	1.40
+	2 COMBINED AT	C115A	1466.	4.42	271.	68.	23.	1.83
+	ROUTED TO	15I15A	1452.	4.50	271.	68.	23.	1.83
+	HYDROGRAPH AT	S115B	789.	4.17	57.	14.	5.	.42
+	2 COMBINED AT	C115B	1559.	4.42	308.	77.	26.	2.25
+	ROUTED TO	15I15B	1538.	4.58	308.	77.	26.	2.25
+	HYDROGRAPH AT	S115C	668.	4.17	58.	14.	5.	.43
+	2 COMBINED AT	C115C	1639.	4.58	342.	86.	29.	2.68
+	DIVERSION TO	DOUT	639.	4.58	52.	13.	4.	2.68
+	HYDROGRAPH AT	D115C	1000.	4.33	290.	73.	24.	2.68
+	ROUTED TO	115120	1002.	4.58	290.	73.	24.	2.68
+	HYDROGRAPH AT	S120	1838.	4.33	256.	64.	21.	2.00
+	2 COMBINED AT	C120	2277.	4.50	500.	126.	42.	4.68
+	DIVERSION TO	DOUT	355.	4.50	18.	4.	1.	4.68
+	HYDROGRAPH AT	D120	1935.	4.58	483.	121.	40.	4.68
+	2 COMBINED AT	C105D	3745.	4.58	813.	273.	127.	19.28
+	HYDROGRAPH AT	S900	936.	4.50	170.	43.	14.	1.03
	ROUTED TO							

```
+                        RR900      829.   4.58        170.        43.        14.      1.03

        ROUTED TO
+                       90091A      819.   4.75        170.        43.        14.      1.03

        ROUTED TO
+                       90091B      768.   5.08        170.        43.        14.      1.03

        HYDROGRAPH AT
+                         S910     1585.   4.17        138.        35.        12.       .98

        2 COMBINED AT
+                         C910     1226.   4.17        282.        71.        24.      2.02

        ROUTED TO
+                       910915     1111.   4.33        281.        71.        24.      2.02

        HYDROGRAPH AT
+                         S915     1400.   4.50        189.        47.        16.      1.13

        2 COMBINED AT
+                         C915     2029.   4.42        433.       109.        36.      3.14

        ROUTED TO
+                       915920     1740.   4.92        426.       109.        36.      3.14

        HYDROGRAPH AT
+                         S920     2660.   4.58        424.       106.        35.      3.29

        2 COMBINED AT
+                         C920     3225.   4.83        759.       194.        65.      6.43
1                     SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                   (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

    PLAN  1 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00           1556.00
                            STORAGE              553.              2705.             2705.
                            OUTFLOW                0.               600.              600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW   FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS         HOURS       HOURS

                  1.00     1552.61        .00       1386.      222.        .00          6.33         .00

    PLAN  2 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00           1556.00
                            STORAGE              553.              2705.             2705.
                            OUTFLOW                0.               600.              600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW   FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS         HOURS       HOURS

                  1.00     1552.59        .00       1380.      219.        .00          6.33         .00

    PLAN  3 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00           1556.00
                            STORAGE              553.              2705.             2705.
                            OUTFLOW                0.               600.              600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW   FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS         HOURS       HOURS

                  1.00     1552.23        .00       1236.      163.        .00          6.58         .00

    PLAN  4 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00           1556.00
                            STORAGE              553.              2705.             2705.
                            OUTFLOW                0.               600.              600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW   FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS         HOURS       HOURS

                  1.00     1551.78        .00       1083.      114.        .00          6.75         .00

    PLAN  5 ..............                  INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00           1556.00
                            STORAGE              553.              2705.             2705.
                            OUTFLOW                0.               600.              600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW   FAILURE
```

PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
1.00	1551.06	.00	868.	68.	.00	6.75	.00

*** NORMAL END OF HEC-1 ***

```
1*************************************                    *************************************
 *                                   *                    *                                   *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *    U.S. ARMY CORPS OF ENGINEERS     *
 *              JUN   1998           *                    *    HYDROLOGIC ENGINEERING CENTER    *
 *            VERSION 4.1            *                    *          609 SECOND STREET          *
 *                                   *                    *       DAVIS, CALIFORNIA 95616       *
 *  RUN DATE   19APR06  TIME  12:59:56   *                    *           (916) 756-1104            *
 *                                   *                    *                                   *
 *************************************                    *************************************

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

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

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

1                                          HEC-1 INPUT                                          PAGE  1

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

        1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
        2           ID       - CAP SUBBAREA
        3           ID       - ALTERNATIVE B2
        4           ID             - SMALL APEX BASIN LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR
        5           ID
        6           ID   Alternative Description
        7           ID   The purpose of Alternative B is to capture the upstream flow at the
        8           ID   apex using online detention basins.  The presence of the detention
        9           ID   basins eliminates the downstream alluvial fan uncertainties by
       10           ID   controlling the flow from the apices to the outfall.  Alternative B2
       11           ID   is based on using a relatively smaller on-line detention basin at the
       12           ID   apex accompanied by larger leveed channel sections in the down fan
       13           ID   direction.
       14           ID
       15           ID
       16           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
       17           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
       18           ID   MODELER: TED LEHMAN
       19           ID   FILENAME: A4_EX24.DAT
       20           ID
       21           ID   100-YEAR 24-HOUR MODEL
       22           ID   EXISTING CONDITIONS
       23           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       24           ID            MODELED AREA = 76.8 SQ. MILES
       25           ID
       26           ID   GREEN-AMPT LOSS METHOD
       27           ID   S-GRAPH UNIT HYDROGRAPHS
       28           ID     - MOUNTAIN
       29           ID     - DESERT/RANGELAND
       30           ID   NORMAL-DEPTH CHANNEL ROUTING
       31           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
       32           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
       33           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
       34           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
       35           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
       36           IT       5  1JAN99    1200    2000
       37           IN      15
       38           IO       5
                    *DIAGRAM
                    *
       39           JD   4.198  0.1000
       40           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
       41           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
       42           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
       43           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
       44           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
       45           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
       46           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
       47           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
       48           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
       49           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
       50           JD   3.990    10.0
       51           JD   3.780    30.0
                    *

1                                          HEC-1 INPUT                                          PAGE  2

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

```
 52          KK    S100   BASIN
 53          KM         Compute runoff from subbasin 100
 54          BA   6.994
 55          LG    0.35    0.38    6.40    0.16       0
 56          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
 57          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
 58          UI     848     715     635     476     471     313     309     309     204     110
 59          UI     109     111     110     109     111     109     110     111       0       0
             *

 60          KK    S102   BASIN
 61          KM         Compute runoff from subbasin 102
 62          BA   3.234
 63          LG    0.35    0.38    5.60    0.22       0
 64          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
 65          UI    1179     890     674     542     377     300     232     193      81      82
 66          UI      81      81      83       0       0       0       0       0       0       0
             *

 67          KK    C102 COMBINE
 68          KM         Combine total inflow to detention area behind (north) of CAP Canal
 69          HC       2
             *

 70          KK   RR102 STORAGE
 71          KM         Route flows through storage area behind CAP Canal
 72          KM         Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
 73          KO
 74          RS       1    STOR      -1
 75          SV          553.00 1148.00 2316.00 2705.00
 76          SQ                  128.00  587.00  600.00
 77          SE  1543.0 1550.00 1552.00 1555.00 1556.00
 78          ST  1556.0  1320.0     3.2     1.5
             *

 79          KK    D102  DIVERT
 80          KM         Divide flow evenly over the two 18-foot wide CAP overchutes
 81          KM         although the inverts are 0.5 feet different in elevation
 82          DT    CF02     0.0     0.0
 83          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
 84          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

 85          KK  100105   ROUTE
 86          KM         Route outflows from east CAP overchute to Sun Valley Parkway.
 87          RS       9    FLOW      -1
 88          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
 89          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
 90          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
             *
```



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

 91          KK    S105   BASIN
 92          KM         Compute runoff from subbasin 105
 93          BA   4.370
 94          LG    0.35    0.35    4.80    0.30       0
 95          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 96          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 97          UI     288     235     238     126      83      85      84      84      84      84
 98          UI      84       0       0       0       0       0       0       0       0       0
             *

 99          KK    CF02RETRIEVE
100          KM         Retrieve flow from west CAP overchute.
101          DR    CF02
             *

102          KK  102105   ROUTE
103          KM         Route retrieved flow from west overchute to C105.
104          RS       6    FLOW      -1
105          RC   0.045   0.045   0.045 12096.90.016546   104.0
106          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
107          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
             *

108          KK   C105U COMBINE
109          KM         Combine runoff from S105 with routed flow from 100105 and 102105
110          KM         (CAP overchute flows). This is the total flow in Wagner Wash upstream
111          KM         of Sun Valley Parkway.
112          HC       3  14.598
             *

113          KK    S110   BASIN
114          KM         Compute runoff from subbasin 110
115          BA   0.430
116          LG    0.25    0.37    5.20    0.25       6
117          UI      56     166     335     449     587     358     291     241     188     140
118          UI     121      86      68      56      43      32      27      22      11      11
119          UI      10      11      11       0       0       0       0       0       0       0
             *
```

```
120          KK   RR110 STORAGE
121          KM   Proposed Detention Basin
122          KM    ROUTE COMBINED RUNOFF AT S110 THROUGH PROPOSED (SMALL) DETENTION BASIN
123          KM    AT ALLUVIAL FAN APEX NO. 1
124          KM    STRUCTURE ID:RR110
125          KM    DIMENSIONS: L=400ft, W=220ft, D=4ft, Sideslope (?H:1V)= 3,  Vol.= 5 ac-ft
126          RS       1    STOR       0
127          SV     0.0     3.3     5.0     5.9     6.8     7.8     8.8     9.7    10.8    12.8
128          SE     0.0     2.0     3.0     3.5     4.0     4.5     5.0     5.5     6.0     7.0
129          SQ     0.0   534.8   655.0   707.5   756.3   802.2   845.6   886.9   926.3  1000.5
             *
1                                          HEC-1 INPUT                                          PAGE  4

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

130          KK  11015I   ROUTE
131          KM   Proposed Channel
132          KM        Route flow from RR110 through subbasin 115 - first subsegment
133          KM    STRUCTURE ID(s): RR11010
134          KM    Slope=(1865.3 - 1692.1) / 7199.5
135          RS       6    FLOW      -1
136          RC   0.045   0.045   0.045  7199.5 0.02405   104.0
137          RX     0.0    12.0    12.0    12.0   262.0   262.0   262.0   274.0
138          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

139          KK   S115A   BASIN
140          KM        Compute runoff from subbasin 115A
141          BA   1.397
142          LG    0.31    0.38    5.60    0.22       3
143          UI     145     288     671     992    1273    1374    1344    1137     854     658
144          UI     504     380     290     232     162     129     100      80      35      35
145          UI      35      35      36       0       0       0       0       0       0       0
             *

146          KK   C115A COMBINE
147          KM        Combine runoff from S115A with routed flow.
148          HC       2
             *

149          KK  15I15A   ROUTE
150          KM   Proposed Channel
151          KM        Route flows from split through S115 to Sun Valley Parkway
152          KM    STRUCTURE ID(s): RR115A10
153          KM    Slope=(1692.1 - 1633.3) / 3083.7
154          RS       3    FLOW      -1
155          RC   0.045   0.045   0.045  3083.70.019076   104.0
156          RX     0.0    12.0    12.0    12.0   364.0   364.0   364.0   376.0
157          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

158          KK   S115B   BASIN
159          BA   0.421
160          LG    0.35    0.35    3.71    0.47       0
161          UI     113     438     721     741     502     300     180     110      65      36
162          UI      20      20       0       0       0       0       0       0       0       0
             *

163          KK   C115B COMBINE
164          KM        Combine runoff from S115B with routed flow.
165          HC       2
             *

166          KK  15I15B   ROUTE
167          KM   Proposed - This is existing SV PKWY Channel
168          KM        Route flows in existing Sun Valley Parkway channel
169          KM    STRUCTURE ID(s): RR115B10
170          KM    Slope=(1633.3 - 1537.8) / 8073.3
171          RS       7    FLOW      -1
1                                          HEC-1 INPUT                                          PAGE  5

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

172          RC    0.03    0.03    0.03  8073.30.011832   105.5
173          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
174          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
             *

175          KK   S115C   BASIN
176          BA   0.429
177          LG    0.35    0.35    4.00    0.47       0
178          UI      64     250     457     595     594     444     299     208     135      93
179          UI      62      44      23      15      16      16       0       0       0       0
             *

180          KK   C115C COMBINE
181          KM        Combine runoff from S115C with routed flow.
182          HC       2
             *

183          KK   D115C  DIVERT
184          KM   Proposed Detention Basin
185          KM   limit flow to capacity of existing Sun Valley Parkway
```

```
KM    STRUCTURE ID:D115C
KM    DIMENSIONS: L=900ft, W=420ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 30.5 ac-ft
DT    DOUT
DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
DI  2500.0  3000.0
DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
DQ  1500.0  2000.0
*

KK  115120   ROUTE
KM   Proposed - This is existing SV PKWY Channel
KM   It is marked proposed to check for capacity
KM    STRUCTURE ID(s): C12010
KM    Slope=(1537.8 - 1496.4) / 4136.0
RS       3    FLOW      -1
RC    0.03    0.03    0.03  4136.00.010008   106.5
RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
*

KK    S120   BASIN
KM        Compute runoff from subbasin 120
BA   2.004
LG    0.33    0.35    4.65    0.32       1
UI     206     408     954    1419    1824    1969    1911    1637    1230     944
UI     731     551     418     336     234     186     143     120      50      51
UI      50      51      51       0       0       0       0       0       0       0
*

KK    C120 COMBINE
KM        Combine flows at Wagner Wash at outlet of channel along SVP
HC       2   4.681
*
```



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

KK    D120  DIVERT
KM   Proposed Detention Basin
KM   limit flow to capacity of existing Sun Valley Parkway
KM    STRUCTURE ID:D120
KM    DIMENSIONS: L=660ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 21.1 ac-ft
DT    DOUT
DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
DI  3000.0  4000.0
DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
DQ  1000.0  2000.0
*

KK   C105D COMBINE
KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
HC       2  19.279
*

KK    S900   BASIN
KM        Compute runoff from subbasin 900
BA   1.035
LG    0.25    0.37    5.30    0.24       6
UI      75      77     215     338     472     551     650     871     671     496
UI     448    .394     356     320     277     233     197     180     165     140
UI     116      97      89      83      65      59      58      37      38      37
UI      37      23      14      15      14      15      14      15      15      14
UI      15      14       0       0       0       0       0       0       0       0
*

KK   RR900 STORAGE
KM   Proposed Detention Basin
KM    ROUTE RUNOFF FROM S900 THROUGH PROPOSED (BIG) DETENTION BASIN AT APEX FOR
KM    ALLUVIAL FAN NO. 2
KM    STRUCTURE ID:RR900
KM    DIMENSIONS: L=490ft, W=250ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 9.1 ac-ft
RS       1    STOR       0
SV     0.0     1.1     2.1     3.3     4.4     6.7     9.1    11.7    14.3    17.0
SE     0.0     0.5     1.0     1.5     2.0     3.0     4.0     5.0     6.0     7.0
SQ     0.0   334.3   472.7   578.9   668.5   818.8   945.4  1057.0  1157.9  1250.7
*

KK  90091A   ROUTE
KM   Proposed Channel
KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
KM    STRUCTURE ID(s): C910A10
KM    Slope=(1818.8 - 1746.9) / 3620.4
RS       5    FLOW      -1
RC   0.045   0.045   0.045  3620.4 0.01985   104.0
RX     0.0    12.0    12.0    12.0   264.0   264.0   264.0   276.0
RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
*
```



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

KK  90091B   ROUTE
KM   Proposed Channel
```

```
 255          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
 256          KM    STRUCTURE ID(s): C910B10
 257          KM    Slope=(1746.9 - 1667.9) / 4991.8
 258          RS       4    FLOW      -1
 259          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
 260          RX     0.0    12.0    12.0    12.0   372.0   372.0   372.0   384.0
 261          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 262          KK    S910   BASIN
 263          KM        Compute runoff from subbasin 910
 264          BA   0.983
 265          LG    0.35    0.35    4.70    0.31       0
 266          UI     234     923    1540    1684    1252     768     471     298     172     120
 267          UI      45      44      44       0       0       0       0       0       0       0
              *

 268          KK    C910 COMBINE
 269          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
 270          HC       2
              *

 271          KK  910915   ROUTE
 272          KM   Proposed Channel
 273          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
 274          KM    STRUCTURE ID(s): RR91010
 275          KM    Slope=(1668.1 - 1623.5) / 3390.4
 276          RS       3    FLOW      -1
 277          RC   0.045   0.045   0.045  3390.40.013146   104.5
 278          RX     0.0    13.5    13.5    13.5   413.5   413.5   413.5   427.0
 279          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
              *

 280          KK    S915   BASIN
 281          KM    Compute runoff from subbasin 915
 282          BA   1.126
 283          LG    0.25    0.38    6.40    0.16       1
 284          UI     102     175     410     534     662     809    1162    1191     903     742
 285          UI     603     468     294     180     156     102      68      31      32      32
 286          UI      31      32       0       0       0       0       0       0       0       0
              *

 287          KK    C915 COMBINE
 288          KM      Combine runoff from S915 with C910 (or outflow if basin)
 289          HC       2
              *
1                                          HEC-1 INPUT                                          PAGE  8

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

 290          KK  915920   ROUTE
 291          KM   Proposed Channel
 292          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
 293          KM    STRUCTURE ID(s): C92010
 294          KM    Slope=(1623.5 - 1532.6) / 8861.8
 295          RS       7    FLOW      -1
 296          RC   0.045   0.045   0.045  8861.80.010265   105.0
 297          RX     0.0    15.0    15.0    15.0   415.0   415.0   415.0   430.0
 298          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
              *

 299          KK    S920   BASIN
 300          KM        Compute runoff from subbasin 920
 301          BA   3.291
 302          LG    0.35    0.38    5.60    0.22       0
 303          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
 304          UI    2073    1666    1376    1100     654     455     421     261     240      81
 305          UI      80      80      81      80      81       0       0       0       0       0
 306          UI       0       0       0       0       0       0       0       0       0       0
              *

 307          KK    C920 COMBINE
 308          KM        Combine flows in Trilby Wash tributary
 309          HC       2
 310          ZZ
1
          SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    52       S100
                .
                .
    60          .        S102
                .           .
                .           .
    67       C102............
                V
                V
    70      RR102
                .
                .
```

```
 82          .-------->    CF02
 79       D102
             V
             V
 85     100105
             .
             .
 91          .        S105
             .           .
             .           .
101          .           .           .<-------    CF02
 99          .           .        CF02
             .           .           V
             .           .           V
102          .           .      102105
             .           .           .
             .           .           .
108      C105U.......................
             .
             .
113          .        S110
             .           V
             .           V
120          .       RR110
             .           V
             .           V
130          .      11015I
             .           .
             .           .
139          .           .       S115A
             .           .           .
             .           .           .
146          .       C115A............
             .           V
             .           V
149          .      15I15A
             .           .
             .           .
158          .           .       S115B
             .           .           .
             .           .           .
163          .       C115B............
             .           V
             .           V
166          .      15I15B
             .           .
             .           .
175          .           .       S115C
             .           .           .
             .           .           .
180          .       C115C............
             .           .
             .           .
188          .           .-------->    DOUT
183          .       D115C
             .           V
             .           V
193          .      115120
             .           .
             .           .
202          .           .        S120
             .           .           .
             .           .           .
209          .        C120............
             .           .
             .           .
217          .           .-------->    DOUT
212          .        D120
             .           .
             .           .
222      C105D............
             .
             .
225          .        S900
             .           V
             .           V
234          .       RR900
             .           V
             .           V
244          .      90091A
             .           V
             .           V
253          .      90091B
             .           .
             .           .
262          .           .        S910
             .           .           .
             .           .           .
268          .        C910............
             .           V
             .           V
271          .      910915
             .           .
             .           .
280          .           .        S915
```

```
                .          .          .
                .          .          .
  287           .       C915...........
                .          V
                .          V
  290           .     915920
                .          .
                .          .
  299           .          .       S920
                .          .          .
                .          .          .
  307           .       C920...........

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN   1998              *
 *            VERSION 4.1               *
 *                                      *
 *  RUN DATE   19APR06  TIME  12:59:56  *
 *                                      *
 ****************************************
```

```
*************************************
*                                   *
*   U.S. ARMY CORPS OF ENGINEERS    *
*   HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET         *
*      DAVIS, CALIFORNIA 95616      *
*          (916) 756-1104           *
*                                   *
*************************************
```

```
HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
   - CAP SUBBAREA
   - ALTERNATIVE B2
         - SMALL APEX BASIN LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR

Alternative Description
The purpose of Alternative B is to capture the upstream flow at the
apex using online detention basins.  The presence of the detention
basins eliminates the downstream alluvial fan uncertainties by
controlling the flow from the apices to the outfall.  Alternative B2
is based on using a relatively smaller on-line detention basin at the
apex accompanied by larger leveed channel sections in the down fan
direction.


SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX24.DAT

100-YEAR 24-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
         MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
  - MOUNTAIN
  - DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
  - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
  - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
  - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

38 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1JAN99  STARTING DATE
                     ITIME        1200  STARTING TIME
                        NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      8JAN99  ENDING DATE
                    NDTIME        1035  ENDING TIME
                     ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE  166.58 HOURS

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

39 JD          INDEX STORM NO. 1
                      STRM        4.20  PRECIPITATION DEPTH
                      TRDA         .10  TRANSPOSITION DRAINAGE AREA

40 PI            PRECIPITATION PATTERN
```

```
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .01       .00       .01
          .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
          .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
          .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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          .00       .00       .00       .00       .00       .00       .00       .00
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50 JD        INDEX STORM NO. 2
                 STRM        3.99  PRECIPITATION DEPTH
                 TRDA       10.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .01       .00       .01
          .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
          .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
          .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
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          .00       .00       .00       .00       .00       .00       .00       .00
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51 JD        INDEX STORM NO. 3
                 STRM        3.78  PRECIPITATION DEPTH
                 TRDA       30.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .01       .00       .01
          .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
          .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
          .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00

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

            **************
            *            *
  70 KK     *     RR102  *      STORAGE
            *            *
            **************

  73 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                      TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
          OPERATION        STATION   FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR
          HYDROGRAPH AT
+                           S100     5214.   12.58         965.        241.         80.      6.99
          HYDROGRAPH AT
+                           S102     3434.   12.33         420.        105.         35.      3.23
          2 COMBINED AT
+                           C102     7803.   12.42        1367.        342.        114.     10.23
          ROUTED TO
+                          RR102      149.   14.42         141.        119.         82.     10.23
          DIVERSION TO
+                           CF02       75.   14.42          71.         59.         41.     10.23
          HYDROGRAPH AT
+                           D102       75.   14.42          71.         59.         41.     10.23
          ROUTED TO
+                         100105       71.   19.17          68.         58.         41.     10.23
          HYDROGRAPH AT
+                           S105     3466.   12.50         531.        133.         44.      4.37
          HYDROGRAPH AT
+                           CF02       75.   14.42          71.         59.         41.     10.23
          ROUTED TO
+                         102105       74.   15.92          70.         59.         41.     10.23
          3 COMBINED AT
+                          C105U     3466.   12.50         593.        239.        126.     14.60
          HYDROGRAPH AT
+                           S110      532.   12.17          62.         16.          5.       .43
          ROUTED TO
+                          RR110      503.   12.25          62.         16.          5.       .43
          ROUTED TO
+                         11015I      392.   12.75          62.         16.          5.       .43
          HYDROGRAPH AT
+                          S115A     1536.   12.33         193.         50.         17.      1.40
          2 COMBINED AT
+                          C115A     1551.   12.33         253.         65.         22.      1.83
          ROUTED TO
+                         15I15A     1496.   12.50         253.         65.         22.      1.83
          HYDROGRAPH AT
+                          S115B      619.   12.08          47.         12.          4.       .42
          2 COMBINED AT
+                          C115B     1664.   12.42         298.         77.         26.      2.25
          ROUTED TO
+                         15I15B     1635.   12.58         298.         77.         26.      2.25
          HYDROGRAPH AT
+                          S115C      534.   12.17          47.         12.          4.       .43
          2 COMBINED AT
+                          C115C     1766.   12.50         343.         88.         29.      2.68
```

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          DIVERSION TO
+                        DOUT       766.  12.50        61.        15.        5.      2.68

          HYDROGRAPH AT
+                       D115C      1000.  12.33       282.        73.       24.      2.68

          ROUTED TO
+                      115120      1000.  12.58       282.        73.       24.      2.68

          HYDROGRAPH AT
+                        S120      2032.  12.33       247.        62.       21.      2.00

          2 COMBINED AT
+                        C120      2842.  12.42       523.       134.       45.      4.68

          DIVERSION TO
+                        DOUT       842.  12.42        42.        11.        4.      4.68

          HYDROGRAPH AT
+                        D120      2000.  12.25       481.       123.       41.      4.68

          2 COMBINED AT
+                       C105D      5244.  12.50      1016.       340.      157.     19.28

          HYDROGRAPH AT
+                        S900       853.  12.50       150.        39.       13.      1.03

          ROUTED TO
+                       RR900       769.  12.58       150.        39.       13.      1.03

          ROUTED TO
+                     90091A        752.  12.75       150.        39.       13.      1.03

          ROUTED TO
+                     90091B        684.  13.08       150.        39.       13.      1.03

          HYDROGRAPH AT
+                        S910      1512.  12.17       122.        30.       10.       .98

          2 COMBINED AT
+                        C910      1501.  12.17       268.        69.       23.      2.02

          ROUTED TO
+                      910915      1295.  12.33       267.        69.       23.      2.02

          HYDROGRAPH AT
+                        S915      1305.  12.42       165.        42.       14.      1.13

          2 COMBINED AT
+                        C915      2440.  12.33       427.       109.       36.      3.14

          ROUTED TO
+                      915920      1975.  12.83       420.       109.       36.      3.14

          HYDROGRAPH AT
+                        S920      3157.  12.58       428.       107.       36.      3.29

          2 COMBINED AT
+                        C920      3974.  12.75       829.       214.       71.      6.43
1                     SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                   (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

     PLAN  1 ...............                INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00          1556.00
                            STORAGE              553.             2705.            2705.
                            OUTFLOW                0.              600.             600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                  1.00     1552.28        .00       1258.      171.        .00        14.42        .00

     PLAN  2 ...............                INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00          1556.00
                            STORAGE              553.             2705.            2705.
                            OUTFLOW                0.              600.             600.

                  RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                   OF      RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                  1.00     1552.14        .00       1204.      150.        .00        14.42        .00

     PLAN  3 ...............                INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION          1550.00           1556.00          1556.00
                            STORAGE              553.             2705.            2705.
                            OUTFLOW                0.              600.             600.
```

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.00	.00	1149.	128.	.00	14.50	.00

*** NORMAL END OF HEC-1 ***

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1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN   1998              *
 *           VERSION 4.1                *
 *                                      *
 *  RUN DATE   19APR06  TIME  13:04:48  *
 *                                      *
 ****************************************
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*************************************
*                                   *
*   U.S. ARMY CORPS OF ENGINEERS    *
*   HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET         *
*      DAVIS, CALIFORNIA 95616      *
*          (916) 756-1104           *
*                                   *
*************************************
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

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1                                          HEC-1 INPUT                                                    PAGE  1

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

    1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
    2           ID        - CAP SUBBAREA
    3           ID        - ALTERNATIVE B3 - EXCAVATED EARTHEN CHANNEL COMPANION CORRIDOR
    4           ID
    5           ID   Alternative Description
    6           ID   The purpose of Alternative B is to capture the upstream flow at the
    7           ID   apex using online detention basins.  The presence of the detention
    8           ID   basins eliminates the downstream alluvial fan uncertainties by
    9           ID   controlling the flow from the apices to the outfall.  Alternative B3
   10           ID   is based on using a relatively larger on-line detention basin at the
   11           ID   apex accompanied by smaller excavated channel sections in the down fan
   12           ID   direction.  The excavated earthen channels are complemented with a
   13           ID   120-foot wide adjacent riparian preservation corridor.
   14           ID
   15           ID
   16           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
   17           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
   18           ID   MODELER: TED LEHMAN
   19           ID   FILENAME: A4_EX6.DAT
   20           ID
   21           ID   100-YEAR 6-HOUR MODEL
   22           ID   EXISTING CONDITIONS
   23           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
   24           ID            MODELED AREA = 76.8 SQ. MILES
   25           ID
   26           ID   GREEN-AMPT LOSS METHOD
   27           ID   S-GRAPH UNIT HYDROGRAPHS
   28           ID     - MOUNTAIN
   29           ID     - DESERT/RANGELAND
   30           ID   NORMAL-DEPTH CHANNEL ROUTING
   31           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
   32           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
   33           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
   34           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
   35           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
   36           IT       5  1JAN99    1200    2000
   37           IN      15
   38           IO       5
                *DIAGRAM
                *
   39           JD   3.196  0.1000
   40           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   41           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   42           PC   0.962   0.972   0.983   0.991   1.000
   43           JD   3.181  0.5000
   44           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   45           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   46           PC   0.962   0.972   0.983   0.991   1.000
   47           JD   3.120     2.8
   48           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.068   0.077
   49           PC   0.088   0.101   0.121   0.164   0.253   0.451   0.694   0.836   0.900   0.938
   50           PC   0.950   0.963   0.975   0.988   1.000
   51           JD   2.950    16.0
   52           PC   0.000   0.015   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
   53           PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
1                                          HEC-1 INPUT                                                    PAGE  2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  54          PC   0.946   0.960   0.973   0.987   1.000
  55          JD   2.592    90.0
  56          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  57          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  58          PC   0.927   0.945   0.964   0.982   1.000
              *

  59          KK    S100   BASIN
  60          KM        Compute runoff from subbasin 100
  61          BA   6.994
  62          LG    0.35    0.38    6.40    0.16       0
  63          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  64          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  65          UI     848     715     635     476     471     313     309     309     204     110
  66          UI     109     111     110     109     111     109     110     111       0       0
              *

  67          KK    S102   BASIN
  68          KM        Compute runoff from subbasin 102
  69          BA   3.234
  70          LG    0.35    0.38    5.60    0.22       0
  71          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  72          UI    1179     890     674     542     377     300     232     193      81      82
  73          UI      81      81      83       0       0       0       0       0       0       0
              *

  74          KK    C102 COMBINE
  75          KM        Combine total inflow to detention area behind (north) of CAP Canal
  76          HC       2
              *

  77          KK   RR102 STORAGE
  78          KM        Route flows through storage area behind CAP Canal
  79          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  80          KO
  81          RS       1    STOR      -1
  82          SV          553.00 1148.00 2316.00 2705.00
  83          SQ                 128.00  587.00  600.00
  84          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  85          ST  1556.0  1320.0     3.2     1.5
              *

  86          KK    D102  DIVERT
  87          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  88          KM        although the inverts are 0.5 feet different in elevation
  89          DT    CF02     0.0     0.0
  90          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  91          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
1                                        HEC-1 INPUT                                          PAGE  3

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

  92          KK  100105   ROUTE
  93          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  94          RS       9    FLOW      -1
  95          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  96          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  97          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *

  98          KK    S105   BASIN
  99          KM        Compute runoff from subbasin 105
 100          BA   4.370
 101          LG    0.35    0.35    4.80    0.30       0
 102          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 103          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 104          UI     288     235     238     126      83      85      84      84      84      84
 105          UI      84       0       0       0       0       0       0       0       0       0
              *

 106          KK    CF02RETRIEVE
 107          KM        Retrieve flow from west CAP overchute.
 108          DR    CF02
              *

 109          KK  102105   ROUTE
 110          KM        Route retrieved flow from west overchute to C105.
 111          RS       6    FLOW      -1
 112          RC   0.045   0.045   0.045 12096.90.016546   104.0
 113          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 114          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 115          KK   C105U COMBINE
 116          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 117          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 118          KM        of Sun Valley Parkway.
 119          HC       3  14.598
              *

 120          KK    S110   BASIN
```

```
 121          KM        Compute runoff from subbasin 110
 122          BA   0.430
 123          LG    0.25    0.37    5.20    0.25       6
 124          UI      56     166     335     449     587     358     291     241     188     140
 125          UI     121      86      68      56      43      32      27      22      11      11
 126          UI      10      11      11       0       0       0       0       0       0       0
              *

 127          KK   RR110 STORAGE
 128          KM   Proposed Detention Basin
 129          KM    ROUTE COMBINED RUNOFF AT S110 THROUGH PROPOSED DETENTION BASIN
 130          KM    AT ALLUVIAL FAN APEX NO. 1
 131          KM    STRUCTURE ID:RR110
 132          KM    DIMENSIONS: L=800ft, W=400ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 30.9 ac-ft
 133          RS       1    STOR       0
1                                          HEC-1 INPUT                                          PAGE  4

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

 134          SV     0.0     2.9     5.9     8.9    11.9    14.9    18.0    21.2    24.4    30.9
 135          SE     0.0     0.5     1.0     1.5     2.0     2.5     3.0     3.5     4.0     5.0
 136          SQ     0.0    24.1    34.0    41.7    48.1    53.8    59.0    63.7    68.1    76.1
              *

 137          KK  11015I   ROUTE
 138          KM   Proposed Channel
 139          KM        Route flow from RR110 through subbasin 115 - first subsegment
 140          KM    STRUCTURE ID(s): RR11010
 141          KM    Slope=(1865.3 - 1692.1) / 7199.5
 142          RS       6    FLOW      -1
 143          RC   0.045   0.045   0.045  7199.5 0.02405   102.5
 144          RX     0.0     7.5    32.5    38.5    63.5    69.5    94.5   102.0
 145          RY   102.5   100.0   100.0    98.0    98.0   100.0   100.0   102.5
              *

 146          KK   S115A   BASIN
 147          KM        Compute runoff from subbasin 115A
 148          BA   1.397
 149          LG    0.31    0.38    5.60    0.22       3
 150          UI     145     288     671     992    1273    1374    1344    1137     854     658
 151          UI     504     380     290     232     162     129     100      80      35      35
 152          UI      35      35      36       0       0       0       0       0       0       0
              *

 153          KK   C115A COMBINE
 154          KM        Combine runoff from S115A with routed flow.
 155          HC       2
              *

 156          KK  15I15A   ROUTE
 157          KM   Proposed Channel
 158          KM        Route flows from split through S115 to Sun Valley Parkway
 159          KM    STRUCTURE ID(s): RR115A10
 160          KM    Slope=(1692.1 - 1633.3) / 3083.7
 161          RS       2    FLOW      -1
 162          RC   0.045   0.045   0.045  3083.70.019076   103.0
 163          RX     0.0     9.0    39.0    48.0    78.0    87.0   117.0   126.0
 164          RY   103.0   100.0   100.0    97.0    97.0   100.0   100.0   103.0
              *

 165          KK   S115B   BASIN
 166          BA   0.421
 167          LG    0.35    0.35    3.71    0.47       0
 168          UI     113     438     721     741     502     300     180     110      65      36
 169          UI      20      20       0       0       0       0       0       0       0       0
              *

 170          KK   C115B COMBINE
 171          KM        Combine runoff from S115B with routed flow.
 172          HC       2
              *
1                                          HEC-1 INPUT                                          PAGE  5

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

 173          KK  15I15B   ROUTE
 174          KM   Proposed - This is existing SV PKWY Channel
 175          KM        Route flows in existing Sun Valley Parkway channel
 176          KM    STRUCTURE ID(s): RR115B10
 177          KM    Slope=(1633.3 - 1537.8) / 8073.3
 178          RS       7    FLOW      -1
 179          RC    0.03    0.03    0.03  8073.30.011832   105.5
 180          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 181          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
              *

 182          KK   S115C   BASIN
 183          BA   0.429
 184          LG    0.35    0.35    4.00    0.47       0
 185          UI      64     250     457     595     594     444     299     208     135      93
 186          UI      62      44      23      15      16      16       0       0       0       0
              *

 187          KK   C115C COMBINE
```

```
188          KM        Combine runoff from S115C with routed flow.
189          HC       2
             *

190          KK   D115C  DIVERT
191          KM   Proposed Detention Basin
192          KM   limit flow to capacity of existing Sun Valley Parkway
193          KM    STRUCTURE ID:D115C
194          KM    DIMENSIONS: L=950ft, W=450ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 34.7 ac-ft
195          DT    DOUT
196          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
197          DI  2500.0  3000.0
198          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
199          DQ  1500.0  2000.0
             *

200          KK  115120   ROUTE
201          KM   Proposed - This is existing SV PKWY Channel
202          KM   It is marked proposed to check for capacity
203          KM    STRUCTURE ID(s): C12010
204          KM    Slope=(1537.8 - 1496.4) / 4136.0
205          RS       3    FLOW      -1
206          RC    0.03    0.03    0.03  4136.00.010008   106.5
207          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
208          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

209          KK    S120   BASIN
210          KM        Compute runoff from subbasin 120
211          BA   2.004
212          LG    0.33    0.35    4.65    0.32       1
213          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
214          UI     731     551     418     336     234     186     143     120      50      51
215          UI      50      51      51       0       0       0       0       0       0       0
             *
```



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

216          KK    C120 COMBINE
217          KM        Combine flows at Wagner Wash at outlet of channel along SVP
218          HC       2   4.681
             *

219          KK    D120  DIVERT
220          KM   Proposed Detention Basin
221          KM   limit flow to capacity of existing Sun Valley Parkway
222          KM    STRUCTURE ID:D120
223          KM    DIMENSIONS: L=700ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 22.4 ac-ft
224          DT    DOUT
225          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
226          DI  3000.0  4000.0
227          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
228          DQ  1000.0  2000.0
             *

229          KK   C105D COMBINE
230          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
231          HC       2  19.279
             *

232          KK    S900   BASIN
233          KM        Compute runoff from subbasin 900
234          BA   1.035
235          LG    0.25    0.37    5.30    0.24       6
236          UI      75      77     215     338     472     551     650     871     671     496
237          UI     448     394     356     320     277     233     197     180     165     140
238          UI     116      97      89      83      65      59      58      37      38      37
239          UI      37      23      14      15      14      15      14      15      15      14
240          UI      15      14       0       0       0       0       0       0       0       0
             *

241          KK   RR900 STORAGE
242          KM   Proposed Detention Basin
243          KM    ROUTE RUNOFF FROM S900 THROUGH PROPOSED (BIG) DETENTION BASIN AT APEX FOR
244          KM    ALLUVIAL FAN NO. 2
245          KM    STRUCTURE ID:RR900
246          KM    DIMENSIONS: L=1400ft, W=525ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 73 ac-ft
247          RS       1    STOR       0
248          SV     0.0     7.0    14.1    21.2    28.4    43.0    57.9    73.0    88.3   104.0
249          SE     0.0     0.5     1.0     1.5     2.0     3.0     4.0     5.0     6.0     7.0
250          SQ     0.0    24.1    34.0    41.7    48.1    59.0    68.1    76.1    83.4    90.0
             *

251          KK  90091A   ROUTE
252          KM   Proposed Channel
253          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
254          KM    STRUCTURE ID(s): C910A10
255          KM    Slope=(1818.8 - 1746.9) / 3620.4
256          RS       4    FLOW      -1
257          RC   0.045   0.045   0.045  3620.4 0.01985   104.0
258          RX     0.0     6.0    26.0    32.0    57.0    63.0    83.0    89.0
259          RY   104.0   102.0   102.0   100.0   100.0   102.0   102.0   104.0
             *
```

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1                                          HEC-1 INPUT                                                    PAGE  7

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


           260          KK  90091B   ROUTE
           261          KM   Proposed Channel
           262          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
           263          KM    STRUCTURE ID(s): C910B10
           264          KM    Slope=(1746.9 - 1667.9) / 4991.8
           265          RS       4    FLOW      -1
           266          RC   0.045   0.045   0.045  4991.8 0.01583   103.0
           267          RX     0.0     9.0    44.0    50.0    85.0    91.0   126.0   135.0
           268          RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
                        *

           269          KK    S910   BASIN
           270          KM        Compute runoff from subbasin 910
           271          BA   0.983
           272          LG    0.35    0.35    4.70    0.31       0
           273          UI     234     923    1540    1684    1252     768     471     298     172     120
           274          UI      45      44      44       0       0       0       0       0       0       0
                        *

           275          KK    C910 COMBINE
           276          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
           277          HC       2
                        *

           278          KK  910915   ROUTE
           279          KM   Proposed Channel
           280          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
           281          KM    STRUCTURE ID(s): RR91010
           282          KM    Slope=(1668.1 - 1623.5) / 3390.4
           283          RS       2    FLOW      -1
           284          RC   0.045   0.045   0.045  3390.40.013146   104.0
           285          RX     0.0    12.0    62.0    71.0   121.0   130.0   180.0   192.0
           286          RY   104.0   100.0   100.0    97.0    97.0   100.0   100.0   104.0
                        *

           287          KK    S915   BASIN
           288          KM    Compute runoff from subbasin 915
           289          BA   1.126
           290          LG    0.25    0.38    6.40    0.16       1
           291          UI     102     175     410     534     662     809    1162    1191     903     742
           292          UI     603     468     294     180     156     102      68      31      32      32
           293          UI      31      32       0       0       0       0       0       0       0       0
                        *

           294          KK    C915 COMBINE
           295          KM      Combine runoff from S915 with C910 (or outflow if basin)
           296          HC       2
                        *
1                                          HEC-1 INPUT                                                    PAGE  8

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


           297          KK  915920   ROUTE
           298          KM   Proposed Channel
           299          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
           300          KM    STRUCTURE ID(s): C92010
           301          KM    Slope=(1623.5 - 1532.6) / 8861.8
           302          RS       5    FLOW      -1
           303          RC   0.045   0.045   0.045  8861.80.010265   105.0
           304          RX     0.0    15.0    75.0    91.0   151.0   167.0   227.0   242.0
           305          RY   105.0   100.0   100.0    96.0    96.0   100.0   100.0   105.0
                        *

           306          KK    S920   BASIN
           307          KM        Compute runoff from subbasin 920
           308          BA   3.291
           309          LG    0.35    0.38    5.60    0.22       0
           310          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
           311          UI    2073    1666    1376    1100     654     455     421     261     240      81
           312          UI      80      80      81      80      81       0       0       0       0       0
           313          UI       0       0       0       0       0       0       0       0       0       0
                        *

           314          KK    C920 COMBINE
           315          KM        Combine flows in Trilby Wash tributary
           316          HC       2
           317          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING           (--->) DIVERSION OR PUMP FLOW

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

    59        S100
                .
                .
    67          .        S102
                .          .
```

```
                .          .
 74        C102............
              V
              V
 77       RR102
              .
              .
 89           .-------->    CF02
 86        D102
              V
              V
 92      100105
              .
              .
 98           .        S105
              .          .
              .          .
108           .          .          .<-------    CF02
106           .          .       CF02
              .          .          V
              .          .          V
109           .          .     102105
              .          .          .
              .          .          .
115       C105U.......................
              .
              .
120           .        S110
              .          V
              .          V
127           .       RR110
              .          V
              .          V
137           .      11015I
              .          .
              .          .
146           .          .       S115A
              .          .          .
              .          .          .
153           .       C115A...........
              .          V
              .          V
156           .      15I15A
              .          .
              .          .
165           .          .       S115B
              .          .          .
              .          .          .
170           .       C115B...........
              .          V
              .          V
173           .      15I15B
              .          .
              .          .
182           .          .       S115C
              .          .          .
              .          .          .
187           .       C115C...........
              .          .
              .          .
195           .          .-------->    DOUT
190           .       D115C
              .          V
              .          V
200           .      115120
              .          .
              .          .
209           .          .        S120
              .          .          .
              .          .          .
216           .        C120...........
              .          .
              .          .
224           .          .-------->    DOUT
219           .        D120
              .          .
              .          .
229       C105D...........
              .
              .
232           .        S900
              .          V
              .          V
241           .       RR900
              .          V
              .          V
251           .      90091A
              .          V
              .          V
260           .      90091B
              .          .
              .          .
269           .          .        S910
              .          .          .
              .          .          .
```

```
  275          .        C910............
               .           V
               .           V
  278          .      910915
               .           .
               .           .
  287          .           .        S915
               .           .           .
               .           .           .
  294          .        C915............
               .           V
               .           V
  297          .      915920
               .           .
               .           .
  306          .           .        S920
               .           .           .
               .           .           .
  314          .        C920............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   19APR06  TIME  13:04:48  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************
```

HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
- CAP SUBBAREA
- ALTERNATIVE B3 - EXCAVATED EARTHEN CHANNEL COMPANION CORRIDOR

Alternative Description
The purpose of Alternative B is to capture the upstream flow at the apex using online detention basins. The presence of the detention basins eliminates the downstream alluvial fan uncertainties by controlling the flow from the apices to the outfall. Alternative B3 is based on using a relatively larger on-line detention basin at the apex accompanied by smaller excavated channel sections in the down fan direction. The excavated earthen channels are complemented with a 120-foot wide adjacent riparian preservation corridor.

SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX6.DAT

100-YEAR 6-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
- MOUNTAIN
- DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
- UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
- HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
- MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

```
  38 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1JAN99  STARTING DATE
                       ITIME        1200  STARTING TIME
                          NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      8JAN99  ENDING DATE
                      NDTIME        1035  ENDING TIME
                       ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE  166.58 HOURS

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

```
              TEMPERATURE            DEGREES FAHRENHEIT

 39 JD          INDEX STORM NO. 1
                      STRM        3.20  PRECIPITATION DEPTH
                      TRDA         .10  TRANSPOSITION DRAINAGE AREA

 40 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 43 JD          INDEX STORM NO. 2
                      STRM        3.18  PRECIPITATION DEPTH
                      TRDA         .50  TRANSPOSITION DRAINAGE AREA

 44 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 47 JD          INDEX STORM NO. 3
                      STRM        3.12  PRECIPITATION DEPTH
                      TRDA        2.80  TRANSPOSITION DRAINAGE AREA

 48 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                     .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 51 JD          INDEX STORM NO. 4
                      STRM        2.95  PRECIPITATION DEPTH
                      TRDA       16.00  TRANSPOSITION DRAINAGE AREA

 52 PI            PRECIPITATION PATTERN
                     .01       .01       .00       .00       .00       .00       .00       .00       .00       .01
                     .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                     .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                     .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

 55 JD          INDEX STORM NO. 5
                      STRM        2.59  PRECIPITATION DEPTH
                      TRDA       90.00  TRANSPOSITION DRAINAGE AREA

 56 PI            PRECIPITATION PATTERN
                     .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                     .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01

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

            **************
            *            *
 77 KK      *     RR102  *      STORAGE
            *            *
            **************

 80 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
1
                                          RUNOFF SUMMARY
                                   FLOW IN CUBIC FEET PER SECOND
                                 TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
        OPERATION        STATION   FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                      6-HOUR      24-HOUR      72-HOUR
```

+	HYDROGRAPH AT	S100	4347.	4.67	899.	225.	75.	6.99
+	HYDROGRAPH AT	S102	2790.	4.33	417.	104.	35.	3.23
+	2 COMBINED AT	C102	5993.	4.50	1198.	300.	100.	10.23
+	ROUTED TO	RR102	127.	6.75	122.	104.	72.	10.23
+	DIVERSION TO	CF02	63.	6.75	61.	52.	36.	10.23
+	HYDROGRAPH AT	D102	63.	6.75	61.	52.	36.	10.23
+	ROUTED TO	100105	61.	11.42	59.	51.	36.	10.23
+	HYDROGRAPH AT	S105	2863.	4.50	495.	124.	41.	4.37
+	HYDROGRAPH AT	CF02	63.	6.75	61.	52.	36.	10.23
+	ROUTED TO	102105	63.	8.08	60.	51.	36.	10.23
+	3 COMBINED AT	C105U	2863.	4.50	554.	228.	121.	14.60
+	HYDROGRAPH AT	S110	662.	4.25	76.	19.	6.	.43
+	ROUTED TO	RR110	74.	5.08	59.	19.	6.	.43
+	ROUTED TO	11015I	74.	5.50	58.	19.	6.	.43
+	HYDROGRAPH AT	S115A	1540.	4.33	213.	53.	18.	1.40
+	2 COMBINED AT	C115A	1443.	4.33	252.	68.	23.	1.83
+	ROUTED TO	15I15A	1408.	4.42	251.	68.	23.	1.83
+	HYDROGRAPH AT	S115B	789.	4.17	57.	14.	5.	.42
+	2 COMBINED AT	C115B	1567.	4.42	288.	77.	26.	2.25
+	ROUTED TO	15I15B	1542.	4.58	287.	77.	26.	2.25
+	HYDROGRAPH AT	S115C	668.	4.17	58.	14.	5.	.43
+	2 COMBINED AT	C115C	1695.	4.50	320.	86.	29.	2.68
+	DIVERSION TO	DOUT	695.	4.50	55.	14.	5.	2.68
+	HYDROGRAPH AT	D115C	1000.	4.25	265.	72.	24.	2.68
+	ROUTED TO	115120	1002.	4.50	265.	72.	24.	2.68
+	HYDROGRAPH AT	S120	1838.	4.33	256.	64.	21.	2.00
+	2 COMBINED AT	C120	2398.	4.42	475.	125.	42.	4.68
+	DIVERSION TO	DOUT	433.	4.42	22.	5.	2.	4.68
+	HYDROGRAPH AT	D120	1996.	4.50	453.	119.	40.	4.68
+	2 COMBINED AT	C105D	3971.	4.50	794.	272.	126.	19.28
+	HYDROGRAPH AT	S900	936.	4.50	170.	43.	14.	1.03
	ROUTED TO							

```
+                        RR900        74.    6.17          69.         42.         14.        1.03

        ROUTED TO
+                       90091A        74.    6.33          69.         42.         14.        1.03

        ROUTED TO
+                       90091B        74.    6.67          69.         42.         14.        1.03

        HYDROGRAPH AT
+                         S910      1585.    4.17         138.         35.         12.         .98

        2 COMBINED AT
+                         C910      1223.    4.17         176.         70.         24.        2.02

        ROUTED TO
+                       910915      1157.    4.25         174.         70.         24.        2.02

        HYDROGRAPH AT
+                         S915      1400.    4.50         189.         47.         16.        1.13

        2 COMBINED AT
+                         C915      1989.    4.33         332.        108.         36.        3.14

        ROUTED TO
+                       915920      1897.    4.58         325.        108.         36.        3.14

        HYDROGRAPH AT
+                         S920      2660.    4.58         424.        106.         35.        3.29

        2 COMBINED AT
+                         C920      4053.    4.58         672.        193.         65.        6.43
1                          SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                     (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

PLAN  1 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION          1550.00           1556.00          1556.00
                          STORAGE              553.              2705.            2705.
                          OUTFLOW                0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                  OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
                 PMF     W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                1.00     1552.61         .00       1386.      222.        .00         6.33         .00

PLAN  2 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION          1550.00           1556.00          1556.00
                          STORAGE              553.              2705.            2705.
                          OUTFLOW                0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                  OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
                 PMF     W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                1.00     1552.59         .00       1380.      219.        .00         6.33         .00

PLAN  3 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION          1550.00           1556.00          1556.00
                          STORAGE              553.              2705.            2705.
                          OUTFLOW                0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                  OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
                 PMF     W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                1.00     1552.23         .00       1236.      163.        .00         6.58         .00

PLAN  4 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION          1550.00           1556.00          1556.00
                          STORAGE              553.              2705.            2705.
                          OUTFLOW                0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                  OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
                 PMF     W.S.ELEV     OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                1.00     1551.78         .00       1083.      114.        .00         6.75         .00

PLAN  5 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION          1550.00           1556.00          1556.00
                          STORAGE              553.              2705.            2705.
                          OUTFLOW                0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                  OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW   FAILURE
```

PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
1.00	1551.06	.00	868.	68.	.00	6.75	.00

*** NORMAL END OF HEC-1 ***

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN   1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   19APR06  TIME  13:04:48   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

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

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

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

```
1                                   HEC-1 INPUT                                   PAGE  1

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

        1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
        2           ID       - CAP SUBBAREA
        3           ID       - ALTERNATIVE B3 - EXCAVATED EARTHEN CHANNEL COMPANION CHANNEL
        4           ID
        5           ID   Alternative Description
        6           ID   The purpose of Alternative B is to capture the upstream flow at the
        7           ID   apex using online detention basins.  The presence of the detention
        8           ID   basins eliminates the downstream alluvial fan uncertainties by
        9           ID   controlling the flow from the apices to the outfall.  Alternative B3
       10           ID   is based on using a relatively larger on-line detention basin at the
       11           ID   apex accompanied by smaller excavated channel sections in the down fan
       12           ID   direction.  The excavated earthen channels are complemented with a
       13           ID   120-foot wide adjacent riparian preservation corridor.
       14           ID
       15           ID
       16           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
       17           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
       18           ID   MODELER: TRD LEHMAN
       19           ID   FILENAME: A4_EX24.DAT
       20           ID
       21           ID   100-YEAR 24-HOUR MODEL
       22           ID   EXISTING CONDITIONS
       23           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       24           ID            MODELED AREA = 76.8 SQ. MILES
       25           ID
       26           ID   GREEN-AMPT LOSS METHOD
       27           ID   S-GRAPH UNIT HYDROGRAPHS
       28           ID     - MOUNTAIN
       29           ID     - DESERT/RANGELAND
       30           ID   NORMAL-DEPTH CHANNEL ROUTING
       31           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
       32           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
       33           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
       34           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
       35           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
       36           IT       5  1JAN99    1200    2000
       37           IN      15
       38           IO       5
                    *DIAGRAM
                    *
       39           JD   4.198  0.1000
       40           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
       41           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
       42           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
       43           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
       44           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
       45           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
       46           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
       47           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
       48           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
       49           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
       50           JD   3.990    10.0
       51           JD   3.780    30.0
                    *
1                                   HEC-1 INPUT                                   PAGE  2

      LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
 52          KK    S100   BASIN
 53          KM        Compute runoff from subbasin 100
 54          BA   6.994
 55          LG    0.35    0.38    6.40    0.16       0
 56          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
 57          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
 58          UI     848     715     635     476     471     313     309     309     204     110
 59          UI     109     111     110     109     111     109     110     111       0       0
             *

 60          KK    S102   BASIN
 61          KM        Compute runoff from subbasin 102
 62          BA   3.234
 63          LG    0.35    0.38    5.60    0.22       0
 64          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
 65          UI    1179     890     674     542     377     300     232     193      81      82
 66          UI      81      81      83       0       0       0       0       0       0       0
             *

 67          KK    C102 COMBINE
 68          KM        Combine total inflow to detention area behind (north) of CAP Canal
 69          HC       2
             *

 70          KK   RR102 STORAGE
 71          KM        Route flows through storage area behind CAP Canal
 72          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
 73          KO
 74          RS       1    STOR      -1
 75          SV          553.00 1148.00 2316.00 2705.00
 76          SQ                  128.00  587.00  600.00
 77          SE  1543.0 1550.00 1552.00 1555.00 1556.00
 78          ST  1556.0  1320.0     3.2     1.5
             *

 79          KK    D102  DIVERT
 80          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
 81          KM        although the inverts are 0.5 feet different in elevation
 82          DT    CF02     0.0     0.0
 83          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
 84          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

 85          KK  100105   ROUTE
 86          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
 87          RS       9    FLOW      -1
 88          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
 89          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
 90          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 91          KK    S105   BASIN
 92          KM        Compute runoff from subbasin 105
 93          BA   4.370
 94          LG    0.35    0.35    4.80    0.30       0
 95          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 96          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 97          UI     288     235     238     126      83      85      84      84      84      84
 98          UI      84       0       0       0       0       0       0       0       0       0
             *

 99          KK    CF02RETRIEVE
100          KM        Retrieve flow from west CAP overchute.
101          DR    CF02
             *

102          KK  102105   ROUTE
103          KM        Route retrieved flow from west overchute to C105.
104          RS       6    FLOW      -1
105          RC   0.045   0.045   0.045 12096.90.016546   104.0
106          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
107          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
             *

108          KK   C105U COMBINE
109          KM        Combine runoff from S105 with routed flow from 100105 and 102105
110          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
111          KM        of Sun Valley Parkway.
112          HC       3  14.598
             *

113          KK    S110   BASIN
114          KM        Compute runoff from subbasin 110
115          BA   0.430
116          LG    0.25    0.37    5.20    0.25       6
117          UI      56     166     335     449     587     358     291     241     188     140
118          UI     121      86      68      56      43      32      27      22      11      11
119          UI      10      11      11       0       0       0       0       0       0       0
             *
```

```
 120          KK   RR110 STORAGE
 121          KM   Proposed Detention Basin
 122          KM    ROUTE COMBINED RUNOFF AT S110 THROUGH PROPOSED DETENTION BASIN
 123          KM    AT ALLUVIAL FAN APEX NO. 1
 124          KM    STRUCTURE ID:RR110
 125          KM    DIMENSIONS: L=800ft, W=400ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 30.9 ac-ft
 126          RS       1    STOR       0
 127          SV     0.0     2.9     5.9     8.9    11.9    14.9    18.0    21.2    24.4    30.9
 128          SE     0.0     0.5     1.0     1.5     2.0     2.5     3.0     3.5     4.0     5.0
 129          SQ     0.0    24.1    34.0    41.7    48.1    53.8    59.0    63.7    68.1    76.1
              *
1                                          HEC-1 INPUT                                          PAGE  4

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


 130          KK  11015I   ROUTE
 131          KM   Proposed Channel
 132          KM        Route flow from RR110 through subbasin 115 - first subsegment
 133          KM    STRUCTURE ID(s): RR11010
 134          KM    Slope=(1865.3 - 1692.1) / 7199.5
 135          RS       6    FLOW      -1
 136          RC   0.045   0.045   0.045  7199.5 0.02405   102.5
 137          RX     0.0     7.5    32.5    38.5    63.5    69.5    94.5   102.0
 138          RY   102.5   100.0   100.0    98.0    98.0   100.0   100.0   102.5
              *

 139          KK   S115A   BASIN
 140          KM        Compute runoff from subbasin 115A
 141          BA   1.397
 142          LG    0.31    0.38    5.60    0.22       3
 143          UI     145     288     671     992    1273    1374    1344    1137     854     658
 144          UI     504     380     290     232     162     129     100      80      35      35
 145          UI      35      35      36       0       0       0       0       0       0       0
              *

 146          KK   C115A COMBINE
 147          KM        Combine runoff from S115A with routed flow.
 148          HC       2
              *

 149          KK  15I15A   ROUTE
 150          KM   Proposed Channel
 151          KM        Route flows from split through S115 to Sun Valley Parkway
 152          KM    STRUCTURE ID(s): RR115A10
 153          KM    Slope=(1692.1 - 1633.3) / 3083.7
 154          RS       2    FLOW      -1
 155          RC   0.045   0.045   0.045  3083.70.019076   103.0
 156          RX     0.0     9.0    39.0    48.0    78.0    87.0   117.0   126.0
 157          RY   103.0   100.0   100.0    97.0    97.0   100.0   100.0   103.0
              *

 158          KK   S115B   BASIN
 159          BA   0.421
 160          LG    0.35    0.35    3.71    0.47       0
 161          UI     113     438     721     741     502     300     180     110      65      36
 162          UI      20      20       0       0       0       0       0       0       0       0
              *

 163          KK   C115B COMBINE
 164          KM        Combine runoff from S115B with routed flow.
 165          HC       2
              *

 166          KK  15I15B   ROUTE
 167          KM   Proposed - This is existing SV PKWY Channel
 168          KM        Route flows in existing Sun Valley Parkway channel
 169          KM    STRUCTURE ID(s): RR115B10
 170          KM    Slope=(1633.3 - 1537.8) / 8073.3
 171          RS       7    FLOW      -1
1                                          HEC-1 INPUT                                          PAGE  5

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

 172          RC    0.03    0.03    0.03  8073.30.011832   105.5
 173          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 174          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
              *

 175          KK   S115C   BASIN
 176          BA   0.429
 177          LG    0.35    0.35    4.00    0.47       0
 178          UI      64     250     457     595     594     444     299     208     135      93
 179          UI      62      44      23      15      16      16       0       0       0       0
              *

 180          KK   C115C COMBINE
 181          KM        Combine runoff from S115C with routed flow.
 182          HC       2
              *

 183          KK   D115C  DIVERT
 184          KM   Proposed Detention Basin
 185          KM   limit flow to capacity of existing Sun Valley Parkway
```

```
186          KM    STRUCTURE ID:D115C
187          KM    DIMENSIONS: L=950ft, W=450ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 34.7 ac-ft
188          DT    DOUT
189          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
190          DI  2500.0  3000.0
191          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
192          DQ  1500.0  2000.0
             *

193          KK  115120   ROUTE
194          KM   Proposed - This is existing SV PKWY Channel
195          KM   It is marked proposed to check for capacity
196          KM    STRUCTURE ID(s): C12010
197          KM    Slope=(1537.8 - 1496.4) / 4136.0
198          RS       3    FLOW      -1
199          RC    0.03    0.03    0.03  4136.00.010008   106.5
200          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
201          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

202          KK    S120   BASIN
203          KM        Compute runoff from subbasin 120
204          BA   2.004
205          LG    0.33    0.35    4.65    0.32       1
206          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
207          UI     731     551     418     336     234     186     143     120      50      51
208          UI      50      51      51       0       0       0       0       0       0       0
             *

209          KK    C120 COMBINE
210          KM        Combine flows at Wagner Wash at outlet of channel along SVP
211          HC       2   4.681
             *
1                                        HEC-1 INPUT                                          PAGE  6

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

212          KK    D120  DIVERT
213          KM   Proposed Detention Basin
214          KM   limit flow to capacity of existing Sun Valley Parkway
215          KM    STRUCTURE ID:D120
216          KM    DIMENSIONS: L=700ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 22.4 ac-ft
217          DT    DOUT
218          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
219          DI  3000.0  4000.0
220          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
221          DQ  1000.0  2000.0
             *

222          KK   C105D COMBINE
223          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
224          HC       2  19.279
             *

225          KK    S900   BASIN
226          KM        Compute runoff from subbasin 900
227          BA   1.035
228          LG    0.25    0.37    5.30    0.24       6
229          UI      75      77     215     338     472     551     650     871     671     496
230          UI     448     394     356     320     277     233     197     180     165     140
231          UI     116      97      89      83      65      59      58      37      38      37
232          UI      37      23      14      15      14      15      14      15      15      14
233          UI      15      14       0       0       0       0       0       0       0       0
             *

234          KK   RR900 STORAGE
235          KM   Proposed Detention Basin
236          KM    ROUTE RUNOFF FROM S900 THROUGH PROPOSED (BIG) DETENTION BASIN AT APEX FOR
237          KM    ALLUVIAL FAN NO. 2
238          KM    STRUCTURE ID:RR900
239          KM    DIMENSIONS: L=1400ft, W=525ft, D=6ft, Sideslope (?H:1V)= 3,  Vol.= 73 ac-ft
240          RS       1    STOR       0
241          SV     0.0     7.0    14.1    21.2    28.4    43.0    57.9    73.0    88.3   104.0
242          SE     0.0     0.5     1.0     1.5     2.0     3.0     4.0     5.0     6.0     7.0
243          SQ     0.0    24.1    34.0    41.7    48.1    59.0    68.1    76.1    83.4    90.0
             *

244          KK  90091A   ROUTE
245          KM   Proposed Channel
246          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
247          KM    STRUCTURE ID(s): C910A10
248          KM    Slope=(1818.8 - 1746.9) / 3620.4
249          RS       4    FLOW      -1
250          RC   0.045   0.045   0.045  3620.4 0.01985   104.0
251          RX     0.0     6.0    26.0    32.0    57.0    63.0    83.0    89.0
252          RY   104.0   102.0   102.0   100.0   100.0   102.0   102.0   104.0
             *
1                                        HEC-1 INPUT                                          PAGE  7

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

253          KK  90091B   ROUTE
254          KM   Proposed Channel
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255          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
256          KM     STRUCTURE ID(s): C910B10
257          KM     Slope=(1746.9 - 1667.9) / 4991.8
258          RS       4    FLOW      -1
259          RC   0.045   0.045   0.045  4991.8 0.01583   103.0
260          RX     0.0     9.0    44.0    50.0    85.0    91.0   126.0   135.0
261          RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
             *

262          KK    S910   BASIN
263          KM        Compute runoff from subbasin 910
264          BA   0.983
265          LG    0.35    0.35    4.70    0.31       0
266          UI     234     923    1540    1684    1252     768     471     298     172     120
267          UI      45      44      44       0       0       0       0       0       0       0
             *

268          KK    C910 COMBINE
269          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
270          HC       2
             *

271          KK  910915   ROUTE
272          KM   Proposed Channel
273          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
274          KM     STRUCTURE ID(s): RR91010
275          KM     Slope=(1668.1 - 1623.5) / 3390.4
276          RS       2    FLOW      -1
277          RC   0.045   0.045   0.045  3390.40.013146   104.0
278          RX     0.0    12.0    62.0    71.0   121.0   130.0   180.0   192.0
279          RY   104.0   100.0   100.0    97.0    97.0   100.0   100.0   104.0
             *

280          KK    S915   BASIN
281          KM    Compute runoff from subbasin 915
282          BA   1.126
283          LG    0.25    0.38    6.40    0.16       1
284          UI     102     175     410     534     662     809    1162    1191     903     742
285          UI     603     468     294     180     156     102      68      31      32      32
286          UI      31      32       0       0       0       0       0       0       0       0
             *

287          KK    C915 COMBINE
288          KM      Combine runoff from S915 with C910 (or outflow if basin)
289          HC       2
             *
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1 HEC-1 INPUT PAGE 8

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

290          KK  915920   ROUTE
291          KM   Proposed Channel
292          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
293          KM     STRUCTURE ID(s): C92010
294          KM     Slope=(1623.5 - 1532.6) / 8861.8
295          RS       5    FLOW      -1
296          RC   0.045   0.045   0.045  8861.80.010265   105.0
297          RX     0.0    15.0    75.0    91.0   151.0   167.0   227.0   242.0
298          RY   105.0   100.0   100.0    96.0    96.0   100.0   100.0   105.0
             *

299          KK    S920   BASIN
300          KM        Compute runoff from subbasin 920
301          BA   3.291
302          LG    0.35    0.38    5.60    0.22       0
303          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
304          UI    2073    1666    1376    1100     654     455     421     261     240      81
305          UI      80      80      81      80      81       0       0       0       0       0
306          UI       0       0       0       0       0       0       0       0       0       0
             *

307          KK    C920 COMBINE
308          KM        Combine flows in Trilby Wash tributary
309          HC       2
310          ZZ
```

1

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

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

   52        S100
                .
                .
   60           .        S102
                .           .
                .           .
   67        C102............
                V
                V
   70       RR102
                .
                .
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 82          .-------->    CF02
 79       D102
             V
             V
 85     100105
            .
            .
 91         .        S105
            .           .
            .           .
101         .           .            .<-------    CF02
 99         .           .        CF02
            .           .           V
            .           .           V
102         .           .      102105
            .           .           .
            .           .           .
108      C105U.......................
            .
            .
113         .        S110
            .           V
            .           V
120         .       RR110
            .           V
            .           V
130         .      11015I
            .           .
            .           .
139         .           .       S115A
            .           .           .
            .           .           .
146         .       C115A............
            .           V
            .           V
149         .      15I15A
            .           .
            .           .
158         .           .       S115B
            .           .           .
            .           .           .
163         .       C115B............
            .           V
            .           V
166         .      15I15B
            .           .
            .           .
175         .           .       S115C
            .           .           .
            .           .           .
180         .       C115C............
            .           .
            .           .
188         .           .-------->    DOUT
183         .       D115C
            .           V
            .           V
193         .      115120
            .           .
            .           .
202         .           .        S120
            .           .           .
            .           .           .
209         .        C120............
            .           .
            .           .
217         .           .-------->    DOUT
212         .        D120
            .           .
            .           .
222      C105D............
            .
            .
225         .        S900
            .           V
            .           V
234         .       RR900
            .           V
            .           V
244         .      90091A
            .           V
            .           V
253         .      90091B
            .           .
            .           .
262         .           .        S910
            .           .           .
            .           .           .
268         .        C910............
            .           V
            .           V
271         .      910915
            .           .
            .           .
280         .           .        S915
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                .          .          .
                .          .          .
  287           .       C915............
                .          V
                .          V
  290           .     915920
                .          .
                .          .
  299           .          .       S920
                .          .          .
                .          .          .
  307           .       C920............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   19APR06  TIME  13:04:48  *
*                                      *
****************************************

                                                    ****************************************
                                                    *                                      *
                                                    *   U.S. ARMY CORPS OF ENGINEERS       *
                                                    *   HYDROLOGIC ENGINEERING CENTER      *
                                                    *         609 SECOND STREET            *
                                                    *      DAVIS, CALIFORNIA 95616         *
                                                    *          (916) 756-1104              *
                                                    *                                      *
                                                    ****************************************

                    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
                       - CAP SUBBAREA
                       - ALTERNATIVE B3 - EXCAVATED EARTHEN CHANNEL COMPANION CHANNEL

                   Alternative Description
                   The purpose of Alternative B is to capture the upstream flow at the
                   apex using online detention basins.  The presence of the detention
                   basins eliminates the downstream alluvial fan uncertainties by
                   controlling the flow from the apices to the outfall.  Alternative B3
                   is based on using a relatively larger on-line detention basin at the
                   apex accompanied by smaller excavated channel sections in the down fan
                   direction.  The excavated earthen channels are complemented with a
                   120-foot wide adjacent riparian preservation corridor.

                   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
                   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
                   MODELER: TED LEHMAN
                   FILENAME: A4_EX24.DAT

                   100-YEAR 24-HOUR MODEL
                   EXISTING CONDITIONS
                   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
                            MODELED AREA = 76.8 SQ. MILES

                   GREEN-AMPT LOSS METHOD
                   S-GRAPH UNIT HYDROGRAPHS
                     - MOUNTAIN
                     - DESERT/RANGELAND
                   NORMAL-DEPTH CHANNEL ROUTING
                   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
                     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
                     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
                     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
                   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

  38 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE     1JAN99  STARTING DATE
                       ITIME       1200  STARTING TIME
                          NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE     8JAN99  ENDING DATE
                      NDTIME       1035  ENDING TIME
                       ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE  166.58 HOURS

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

  39 JD          INDEX STORM NO. 1
                       STRM       4.20  PRECIPITATION DEPTH
                       TRDA        .10  TRANSPOSITION DRAINAGE AREA

  40 PI            PRECIPITATION PATTERN
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50 JD         INDEX STORM NO. 2
                STRM        3.99  PRECIPITATION DEPTH
                TRDA       10.00  TRANSPOSITION DRAINAGE AREA

 0 PI          PRECIPITATION PATTERN
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51 JD         INDEX STORM NO. 3
                STRM        3.78  PRECIPITATION DEPTH
                TRDA       30.00  TRANSPOSITION DRAINAGE AREA

 0 PI          PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
 70 KK    *     RR102  *      STORAGE
          *            *
          **************

 73 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                     TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
          OPERATION        STATION   FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR
          HYDROGRAPH AT
+                           S100     5214.   12.58         965.        241.         80.      6.99
          HYDROGRAPH AT
+                           S102     3434.   12.33         420.        105.         35.      3.23
          2 COMBINED AT
+                           C102     7803.   12.42        1367.        342.        114.     10.23
          ROUTED TO
+                          RR102      149.   14.42         141.        119.         82.     10.23
          DIVERSION TO
+                           CF02       75.   14.42          71.         59.         41.     10.23
          HYDROGRAPH AT
+                           D102       75.   14.42          71.         59.         41.     10.23
          ROUTED TO
+                         100105       71.   19.17          68.         58.         41.     10.23
          HYDROGRAPH AT
+                           S105     3466.   12.50         531.        133.         44.      4.37
          HYDROGRAPH AT
+                           CF02       75.   14.42          71.         59.         41.     10.23
          ROUTED TO
+                         102105       74.   15.92          70.         59.         41.     10.23
          3 COMBINED AT
+                          C105U     3466.   12.50         593.        239.        126.     14.60
          HYDROGRAPH AT
+                           S110      532.   12.17          62.         16.          5.       .43
          ROUTED TO
+                          RR110       67.   13.00          52.         16.          5.       .43
          ROUTED TO
+                         11015I       66.   13.42          51.         16.          5.       .43
          HYDROGRAPH AT
+                          S115A     1536.   12.33         193.         50.         17.     1.40
          2 COMBINED AT
+                          C115A     1534.   12.33         237.         65.         22.     1.83
          ROUTED TO
+                         15I15A     1491.   12.42         236.         65.         22.     1.83
          HYDROGRAPH AT
+                          S115B      619.   12.08          47.         12.          4.       .42
          2 COMBINED AT
+                          C115B     1691.   12.33         281.         77.         26.     2.25
          ROUTED TO
+                         15I15B     1676.   12.50         279.         77.         26.     2.25
          HYDROGRAPH AT
+                          S115C      534.   12.17          47.         12.          4.       .43
          2 COMBINED AT
+                          C115C     1937.   12.42         323.         88.         29.     2.68
```

+	DIVERSION TO DOUT	937.	12.42	68.	17.	6.	2.68
+	HYDROGRAPH AT D115C	1000.	12.25	254.	71.	24.	2.68
+	ROUTED TO 115120	1000.	12.50	253.	71.	24.	2.68
+	HYDROGRAPH AT S120	2032.	12.33	247.	62.	21.	2.00
+	2 COMBINED AT C120	2880.	12.42	493.	132.	44.	4.68
+	DIVERSION TO DOUT	880.	12.42	45.	11.	4.	4.68
+	HYDROGRAPH AT D120	2000.	12.17	448.	120.	40.	4.68
+	2 COMBINED AT C105D	5244.	12.50	983.	337.	156.	19.28
+	HYDROGRAPH AT S900	853.	12.50	150.	39.	13.	1.03
+	ROUTED TO RR900	70.	14.08	65.	38.	13.	1.03
+	ROUTED TO 90091A	70.	14.25	65.	38.	13.	1.03
+	ROUTED TO 90091B	70.	14.58	65.	38.	13.	1.03
+	HYDROGRAPH AT S910	1512.	12.17	122.	30.	10.	.98
+	2 COMBINED AT C910	1498.	12.17	171.	68.	23.	2.02
+	ROUTED TO 910915	1363.	12.25	169.	68.	23.	2.02
+	HYDROGRAPH AT S915	1305.	12.42	165.	42.	14.	1.13
+	2 COMBINED AT C915	2415.	12.33	329.	108.	36.	3.14
+	ROUTED TO 915920	2164.	12.58	322.	108.	36.	3.14
+	HYDROGRAPH AT S920	3157.	12.58	428.	107.	36.	3.29
+	2 COMBINED AT C920	5262.	12.58	736.	212.	71.	6.43

1 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION RR102
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.28	.00	1258.	171.	.00	14.42	.00

PLAN 2 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.14	.00	1204.	150.	.00	14.42	.00

PLAN 3 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.00	.00	1149.	128.	.00	14.50	.00

*** NORMAL END OF HEC-1 ***

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1*************************************                    *************************************
 *                                   *                    *                                   *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS     *
 *              JUN   1998           *                    *   HYDROLOGIC ENGINEERING CENTER   *
 *           VERSION 4.1             *                    *         609 SECOND STREET         *
 *                                   *                    *      DAVIS, CALIFORNIA 95616      *
 *  RUN DATE   03APR06  TIME  13:59:47   *                    *          (916) 756-1104           *
 *                                   *                    *                                   *
 *************************************                    *************************************

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

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

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

1                                          HEC-1 INPUT                                          PAGE  1

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

        1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
        2           ID       - CAP SUBBAREA
        3           ID       - ALTERNATIVE B5
        4           ID             - DESIGNED APEX SEDIMENTATION AREA PLUS OFFLINE BASIN
        5           ID               LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR
        6           ID
        7           ID   Alternative Description
        8           ID   The purpose of Alternative B is to capture the upstream flow at the
        9           ID   apex using online detention basins.  The presence of the detention basins
       10           ID   eliminates the downstream alluvial fan uncertainties by controlling the
       11           ID   flow from the apices to the outfall.  Alternative B5 is based on using a
       12           ID   relatively smaller on-line detention basin at the apex accompanied by larger
       13           ID   leveed channel sections in the down fan direction.
       14           ID
       15           ID
       16           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
       17           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
       18           ID   MODELER: TED LEHMAN
       19           ID   FILENAME: A4_EX6.DAT
       20           ID
       21           ID   100-YEAR 6-HOUR MODEL
       22           ID   EXISTING CONDITIONS
       23           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       24           ID            MODELED AREA = 76.8 SQ. MILES
       25           ID
       26           ID   GREEN-AMPT LOSS METHOD
       27           ID   S-GRAPH UNIT HYDROGRAPHS
       28           ID     - MOUNTAIN
       29           ID     - DESERT/RANGELAND
       30           ID   NORMAL-DEPTH CHANNEL ROUTING
       31           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
       32           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
       33           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
       34           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
       35           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
       36           IT       5  1JAN99    1200    2000
       37           IN      15
       38           IO       5
                    *DIAGRAM
                    *
       39           JD   3.196  0.1000
       40           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
       41           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
       42           PC   0.962   0.972   0.983   0.991   1.000
       43           JD   3.181  0.5000
       44           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
       45           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
       46           PC   0.962   0.972   0.983   0.991   1.000
       47           JD   3.120     2.8
       48           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.068   0.077
       49           PC   0.088   0.101   0.121   0.164   0.253   0.451   0.694   0.836   0.900   0.938
       50           PC   0.950   0.963   0.975   0.988   1.000
       51           JD   2.950    16.0
       52           PC   0.000   0.015   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
       53           PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
1                                          HEC-1 INPUT                                          PAGE  2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  54          PC   0.946   0.960   0.973   0.987   1.000
  55          JD   2.592    90.0
  56          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  57          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  58          PC   0.927   0.945   0.964   0.982   1.000
              *

  59          KK    S100   BASIN
  60          KM        Compute runoff from subbasin 100
  61          BA   6.994
  62          LG    0.35    0.38    6.40    0.16       0
  63          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  64          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  65          UI     848     715     635     476     471     313     309     309     204     110
  66          UI     109     111     110     109     111     109     110     111       0       0
              *

  67          KK    S102   BASIN
  68          KM        Compute runoff from subbasin 102
  69          BA   3.234
  70          LG    0.35    0.38    5.60    0.22       0
  71          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  72          UI    1179     890     674     542     377     300     232     193      81      82
  73          UI      81      81      83       0       0       0       0       0       0       0
              *

  74          KK    C102 COMBINE
  75          KM        Combine total inflow to detention area behind (north) of CAP Canal
  76          HC       2
              *

  77          KK   RR102 STORAGE
  78          KM        Route flows through storage area behind CAP Canal
  79          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  80          KO
  81          RS       1    STOR      -1
  82          SV          553.00 1148.00 2316.00 2705.00
  83          SQ                  128.00  587.00  600.00
  84          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  85          ST  1556.0  1320.0     3.2     1.5
              *

  86          KK    D102  DIVERT
  87          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  88          KM        although the inverts are 0.5 feet different in elevation
  89          DT    CF02     0.0     0.0
  90          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  91          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  92          KK  100105   ROUTE
  93          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  94          RS       9    FLOW      -1
  95          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  96          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  97          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *

  98          KK    S105   BASIN
  99          KM        Compute runoff from subbasin 105
 100          BA   4.370
 101          LG    0.35    0.35    4.80    0.30       0
 102          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 103          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 104          UI     288     235     238     126      83      85      84      84      84      84
 105          UI      84       0       0       0       0       0       0       0       0       0
              *

 106          KK    CF02RETRIEVE
 107          KM        Retrieve flow from west CAP overchute.
 108          DR    CF02
              *

 109          KK  102105   ROUTE
 110          KM        Route retrieved flow from west overchute to C105.
 111          RS       6    FLOW      -1
 112          RC   0.045   0.045   0.045 12096.90.016546   104.0
 113          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 114          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 115          KK   C105U COMBINE
 116          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 117          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 118          KM        of Sun Valley Parkway.
 119          HC       3  14.598
              *

 120          KK    S110   BASIN
```

```
 121          KM        Compute runoff from subbasin 110
 122          BA   0.430
 123          LG    0.25    0.37    5.20    0.25       6
 124          UI      56     166     335     449     587     358     291     241     188     140
 125          UI     121      86      68      56      43      32      27      22      11      11
 126          UI      10      11      11       0       0       0       0       0       0       0
              *

 127          KK    D110  DIVERT
 128          KM   Proposed Detention Basin
 129          KM   offline
 130          KM    STRUCTURE ID:D110
 131          KM    DIMENSIONS: L=200ft, W=100ft, D=4ft, Sideslope (?H:1V)= 3,  Vol.= 1 ac-ft
 132          DT    DOUT
 133          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1250.0  1500.0
1                                          HEC-1 INPUT                                          PAGE  4

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

 134          DI  2000.0  2500.0
 135          DQ     0.0     0.0     0.0     0.0   200.0   400.0   500.0   600.0   650.0   900.0
 136          DQ  1200.0  1900.0
              *

 137          KK  11015I   ROUTE
 138          KM   Proposed Channel
 139          KM        Route flow from RR110 through subbasin 115 - first subsegment
 140          KM    STRUCTURE ID(s): RR11010
 141          KM    Slope=(1865.3 - 1692.1) / 7199.5
 142          RS       6    FLOW      -1
 143          RC   0.045   0.045   0.045  7199.5 0.02405   104.0
 144          RX     0.0    12.0    12.0    12.0   262.0   262.0   262.0   274.0
 145          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 146          KK   S115A   BASIN
 147          KM        Compute runoff from subbasin 115A
 148          BA   1.397
 149          LG    0.31    0.38    5.60    0.22       3
 150          UI     145     288     671     992    1273    1374    1344    1137     854     658
 151          UI     504     380     290     232     162     129     100      80      35      35
 152          UI      35      35      36       0       0       0       0       0       0       0
              *

 153          KK   C115A COMBINE
 154          KM        Combine runoff from S115A with routed flow.
 155          HC       2
              *

 156          KK  15I15A   ROUTE
 157          KM   Proposed Channel
 158          KM        Route flows from split through S115 to Sun Valley Parkway
 159          KM    STRUCTURE ID(s): RR115A10
 160          KM    Slope=(1692.1 - 1633.3) / 3083.7
 161          RS       3    FLOW      -1
 162          RC   0.045   0.045   0.045  3083.70.019076   104.0
 163          RX     0.0    12.0    12.0    12.0   364.0   364.0   364.0   376.0
 164          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
              *

 165          KK   S115B   BASIN
 166          BA   0.421
 167          LG    0.35    0.35    3.71    0.47       0
 168          UI     113     438     721     741     502     300     180     110      65      36
 169          UI      20      20       0       0       0       0       0       0       0       0
              *

 170          KK   C115B COMBINE
 171          KM        Combine runoff from S115B with routed flow.
 172          HC       2
              *
1                                          HEC-1 INPUT                                          PAGE  5

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

 173          KK  15I15B   ROUTE
 174          KM   Proposed - This is existing SV PKWY Channel
 175          KM        Route flows in existing Sun Valley Parkway channel
 176          KM    STRUCTURE ID(s): RR115B10
 177          KM    Slope=(1633.3 - 1537.8) / 8073.3
 178          RS       7    FLOW      -1
 179          RC    0.03    0.03    0.03  8073.30.011832   105.5
 180          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 181          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
              *

 182          KK   S115C   BASIN
 183          BA   0.429
 184          LG    0.35    0.35    4.00    0.47       0
 185          UI      64     250     457     595     594     444     299     208     135      93
 186          UI      62      44      23      15      16      16       0       0       0       0
              *

 187          KK   C115C COMBINE
```

```
188          KM        Combine runoff from S115C with routed flow.
189          HC       2
             *

190          KK   D115C  DIVERT
191          KM   Proposed Detention Basin
192          KM   limit flow to capacity of existing Sun Valley Parkway
193          KM    STRUCTURE ID:D115C
194          KM    DIMENSIONS: L=900ft, W=440ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 32 ac-ft
195          DT    DOUT
196          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
197          DI  2500.0  3000.0
198          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
199          DQ  1500.0  2000.0
             *

200          KK  115120   ROUTE
201          KM   Proposed - This is existing SV PKWY Channel
202          KM   It is marked proposed to check for capacity
203          KM    STRUCTURE ID(s): C12010
204          KM    Slope=(1537.8 - 1496.4) / 4136.0
205          RS       3    FLOW      -1
206          RC    0.03    0.03    0.03  4136.00.010008   106.5
207          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
208          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

209          KK    S120   BASIN
210          KM        Compute runoff from subbasin 120
211          BA   2.004
212          LG    0.33    0.35    4.65    0.32       1
213          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
214          UI     731     551     418     336     234     186     143     120      50      51
215          UI      50      51      51       0       0       0       0       0       0       0
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

216          KK    C120 COMBINE
217          KM        Combine flows at Wagner Wash at outlet of channel along SVP
218          HC       2   4.681
             *

219          KK    D120  DIVERT
220          KM   Proposed Detention Basin
221          KM   limit flow to capacity of existing Sun Valley Parkway
222          KM    STRUCTURE ID:D120
223          KM    DIMENSIONS: L=500ft, W=240ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 9.2 ac-ft
224          DT    DOUT
225          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
226          DI  3000.0  4000.0
227          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
228          DQ  1000.0  2000.0
             *

229          KK   C105D COMBINE
230          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
231          HC       2  19.279
             *

232          KK    S900   BASIN
233          KM        Compute runoff from subbasin 900
234          BA   1.035
235          LG    0.25    0.37    5.30    0.24       6
236          UI      75      77     215     338     472     551     650     871     671     496
237          UI     448     394     356     320     277     233     197     180     165     140
238          UI     116      97      89      83      65      59      58      37      38      37
239          UI      37      23      14      15      14      15      14      15      15      14
240          UI      15      14       0       0       0       0       0       0       0       0
             *

241          KK    D900  DIVERT
242          KM   Proposed Detention Basin
243          KM   offline
244          KM    STRUCTURE ID:D900
245          KM    DIMENSIONS: L=300ft, W=190ft, D=4ft, Sideslope (?H:1V)= 3,  Vol.= 3.1 ac-ft
246          DT    DOUT
247          DI     0.0   200.0   400.0   600.0   800.0   840.0  1000.0  1200.0  1400.0  1500.0
248          DI  2000.0  2500.0
249          DQ     0.0     0.0     0.0     0.0     0.0     0.0   160.0   360.0   560.0   660.0
250          DQ  1160.0  1660.0
             *

251          KK  90091A   ROUTE
252          KM   Proposed Channel
253          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
254          KM    STRUCTURE ID(s): C910A10
255          KM    Slope=(1818.8 - 1746.9) / 3620.4
256          RS       5    FLOW      -1
257          RC   0.045   0.045   0.045  3620.4 0.01985   104.0
258          RX     0.0    12.0    12.0    12.0   264.0   264.0   264.0   276.0
259          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *
```

```
1                                          HEC-1 INPUT                                                    PAGE  7

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


           260          KK  90091B   ROUTE
           261          KM   Proposed Channel
           262          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
           263          KM    STRUCTURE ID(s): C910B10
           264          KM    Slope=(1746.9 - 1667.9) / 4991.8
           265          RS       4    FLOW      -1
           266          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
           267          RX     0.0    12.0    12.0    12.0   372.0   372.0   372.0   384.0
           268          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
                        *

           269          KK    S910   BASIN
           270          KM        Compute runoff from subbasin 910
           271          BA   0.983
           272          LG    0.35    0.35    4.70    0.31       0
           273          UI     234     923    1540    1684    1252     768     471     298     172     120
           274          UI      45      44      44       0       0       0       0       0       0       0
                        *

           275          KK    C910 COMBINE
           276          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
           277          HC       2
                        *

           278          KK  910915   ROUTE
           279          KM   Proposed Channel
           280          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
           281          KM    STRUCTURE ID(s): RR91010
           282          KM    Slope=(1668.1 - 1623.5) / 3390.4
           283          RS       3    FLOW      -1
           284          RC   0.045   0.045   0.045  3390.40.013146   104.5
           285          RX     0.0    13.5    13.5    13.5   413.5   413.5   413.5   427.0
           286          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
                        *

           287          KK    S915   BASIN
           288          KM    Compute runoff from subbasin 915
           289          BA   1.126
           290          LG    0.25    0.38    6.40    0.16       1
           291          UI     102     175     410     534     662     809    1162    1191     903     742
           292          UI     603     468     294     180     156     102      68      31      32      32
           293          UI      31      32       0       0       0       0       0       0       0       0
                        *

           294          KK    C915 COMBINE
           295          KM      Combine runoff from S915 with C910 (or outflow if basin)
           296          HC       2
                        *
1                                          HEC-1 INPUT                                                    PAGE  8

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


           297          KK  915920   ROUTE
           298          KM   Proposed Channel
           299          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
           300          KM    STRUCTURE ID(s): C92010
           301          KM    Slope=(1623.5 - 1532.6) / 8861.8
           302          RS       7    FLOW      -1
           303          RC   0.045   0.045   0.045  8861.80.010265   105.0
           304          RX     0.0    15.0    15.0    15.0   415.0   415.0   415.0   430.0
           305          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
                        *

           306          KK    S920   BASIN
           307          KM        Compute runoff from subbasin 920
           308          BA   3.291
           309          LG    0.35    0.38    5.60    0.22       0
           310          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
           311          UI    2073    1666    1376    1100     654     455     421     261     240      81
           312          UI      80      80      81      80      81       0       0       0       0       0
           313          UI       0       0       0       0       0       0       0       0       0       0
                        *

           314          KK    C920 COMBINE
           315          KM        Combine flows in Trilby Wash tributary
           316          HC       2
           317          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    59        S100
                .
                .
    67          .        S102
                .          .
```

```
                .           .
 74          C102............
                V
                V
 77         RR102
                .
                .
 89             .------->    CF02
 86          D102
                V
                V
 92        100105
                .
                .
 98             .        S105
                .           .
                .           .
108             .           .           .<-------    CF02
106             .           .        CF02
                .           .           V
                .           .           V
109             .           .      102105
                .           .           .
                .           .           .
115         C105U.......................
                .
                .
120             .        S110
                .           .
                .           .
132             .           .------->    DOUT
127             .        D110
                .           V
                .           V
137             .      11015I
                .           .
                .           .
146             .           .       S115A
                .           .           .
                .           .           .
153             .       C115A............
                .           V
                .           V
156             .      15I15A
                .           .
                .           .
165             .           .       S115B
                .           .           .
                .           .           .
170             .       C115B............
                .           V
                .           V
173             .      15I15B
                .           .
                .           .
182             .           .       S115C
                .           .           .
                .           .           .
187             .       C115C............
                .           .
                .           .
195             .           .------->    DOUT
190             .       D115C
                .           V
                .           V
200             .      115120
                .           .
                .           .
209             .           .        S120
                .           .           .
                .           .           .
216             .        C120............
                .           .
                .           .
224             .           .------->    DOUT
219             .        D120
                .           .
                .           .
229         C105D............
                .
                .
232             .        S900
                .           .
                .           .
246             .           .------->    DOUT
241             .        D900
                .           V
                .           V
251             .      90091A
                .           V
                .           V
260             .      90091B
                .           .
                .           .
269             .           .        S910
```

```
                .          .          .
                .          .          .
  275           .       C910...........
                .          V
                .          V
  278           .     910915
                .          .
                .          .
  287           .          .       S915
                .          .          .
                .          .          .
  294           .       C915...........
                .          V
                .          V
  297           .     915920
                .          .
                .          .
  306           .          .       S920
                .          .          .
                .          .          .
  314           .       C920...........

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998               *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   03APR06  TIME  13:59:47   *
 *                                       *
 *****************************************

                                                  ***************************************
                                                  *                                     *
                                                  *   U.S. ARMY CORPS OF ENGINEERS      *
                                                  *   HYDROLOGIC ENGINEERING CENTER     *
                                                  *         609 SECOND STREET           *
                                                  *      DAVIS, CALIFORNIA 95616        *
                                                  *          (916) 756-1104             *
                                                  *                                     *
                                                  ***************************************
```

HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
- CAP SUBBAREA
- ALTERNATIVE B5
  - DESIGNED APEX SEDIMENTATION AREA PLUS OFFLINE BASIN LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR

Alternative Description
The purpose of Alternative B is to capture the upstream flow at the apex using online detention basins. The presence of the detention basins eliminates the downstream alluvial fan uncertainties by controlling the flow from the apices to the outfall. Alternative B5 is based on using a relatively smaller on-line detention basin at the apex accompanied by larger leveed channel sections in the down fan direction.

SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX6.DAT

100-YEAR 6-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
- MOUNTAIN
- DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
- UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
- HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
- MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

```
  38 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE     1JAN99  STARTING DATE
                       ITIME       1200  STARTING TIME
                          NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE     8JAN99  ENDING DATE
                      NDTIME       1035  ENDING TIME
                       ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE  166.58 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
```

```
                STORAGE VOLUME        ACRE-FEET
                SURFACE AREA          ACRES
                TEMPERATURE           DEGREES FAHRENHEIT

 39 JD            INDEX STORM NO. 1
                        STRM        3.20  PRECIPITATION DEPTH
                        TRDA         .10  TRANSPOSITION DRAINAGE AREA

 40 PI              PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                        .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                        .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00

 43 JD            INDEX STORM NO. 2
                        STRM        3.18  PRECIPITATION DEPTH
                        TRDA         .50  TRANSPOSITION DRAINAGE AREA

 44 PI              PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                        .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                        .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00

 47 JD            INDEX STORM NO. 3
                        STRM        3.12  PRECIPITATION DEPTH
                        TRDA        2.80  TRANSPOSITION DRAINAGE AREA

 48 PI              PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                        .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                        .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00

 51 JD            INDEX STORM NO. 4
                        STRM        2.95  PRECIPITATION DEPTH
                        TRDA       16.00  TRANSPOSITION DRAINAGE AREA

 52 PI              PRECIPITATION PATTERN
                        .01       .01       .00       .00       .00       .00       .00       .00       .00       .01
                        .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                        .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                        .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                        .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00

 55 JD            INDEX STORM NO. 5
                        STRM        2.59  PRECIPITATION DEPTH
                        TRDA       90.00  TRANSPOSITION DRAINAGE AREA

 56 PI              PRECIPITATION PATTERN
                        .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                        .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                        .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01


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


                **************
                *            *
 77 KK          *     RR102  *      STORAGE
                *            *
                **************

 80 KO            OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
```

	OPERATION	STATION	FLOW	PEAK	6-HOUR	24-HOUR	72-HOUR	AREA	STAGE	MAX STAGE
+	HYDROGRAPH AT	S100	4347.	4.67	899.	225.	75.	6.99		
+	HYDROGRAPH AT	S102	2790.	4.33	417.	104.	35.	3.23		
+	2 COMBINED AT	C102	5993.	4.50	1198.	300.	100.	10.23		
+	ROUTED TO	RR102	127.	6.75	122.	104.	72.	10.23		
+	DIVERSION TO	CF02	63.	6.75	61.	52.	36.	10.23		
+	HYDROGRAPH AT	D102	63.	6.75	61.	52.	36.	10.23		
+	ROUTED TO	100105	61.	11.42	59.	51.	36.	10.23		
+	HYDROGRAPH AT	S105	2863.	4.50	495.	124.	41.	4.37		
+	HYDROGRAPH AT	CF02	63.	6.75	61.	52.	36.	10.23		
+	ROUTED TO	102105	63.	8.08	60.	51.	36.	10.23		
+	3 COMBINED AT	C105U	2863.	4.50	554.	228.	121.	14.60		
+	HYDROGRAPH AT	S110	662.	4.25	76.	19.	6.	.43		
+	DIVERSION TO	DOUT	62.	4.25	2.	0.	0.	.43		
+	HYDROGRAPH AT	D110	600.	4.17	74.	19.	6.	.43		
+	ROUTED TO	11015I	499.	4.67	74.	19.	6.	.43		
+	HYDROGRAPH AT	S115A	1540.	4.33	213.	53.	18.	1.40		
+	2 COMBINED AT	C115A	1529.	4.50	271.	68.	23.	1.83		
+	ROUTED TO	15I15A	1510.	4.58	270.	68.	23.	1.83		
+	HYDROGRAPH AT	S115B	789.	4.17	57.	14.	5.	.42		
+	2 COMBINED AT	C115B	1586.	4.50	308.	77.	26.	2.25		
+	ROUTED TO	15I15B	1571.	4.67	308.	77.	26.	2.25		
+	HYDROGRAPH AT	S115C	668.	4.17	58.	14.	5.	.43		
+	2 COMBINED AT	C115C	1659.	4.58	342.	86.	29.	2.68		
+	DIVERSION TO	DOUT	659.	4.58	56.	14.	5.	2.68		
+	HYDROGRAPH AT	D115C	1000.	4.33	286.	72.	24.	2.68		
+	ROUTED TO	115120	1002.	4.58	286.	72.	24.	2.68		
+	HYDROGRAPH AT	S120	1838.	4.33	256.	64.	21.	2.00		
+	2 COMBINED AT	C120	2278.	4.50	497.	125.	42.	4.68		
+	DIVERSION TO	DOUT	355.	4.50	18.	4.	1.	4.68		
+	HYDROGRAPH AT	D120	1936.	4.58	479.	120.	40.	4.68		
+	2 COMBINED AT	C105D	3747.	4.58	812.	273.	127.	19.28		

```
          HYDROGRAPH AT
+                         S900       936.    4.50        170.        43.        14.      1.03

          DIVERSION TO
+                         DOUT       139.    4.50          5.         1.         0.      1.03

          HYDROGRAPH AT
+                         D900       797.    4.50        165.        41.        14.      1.03

          ROUTED TO
+                       90091A       791.    4.67        165.        41.        14.      1.03

          ROUTED TO
+                       90091B       737.    5.00        164.        41.        14.      1.03

          HYDROGRAPH AT
+                         S910      1585.    4.17        138.        35.        12.       .98

          2 COMBINED AT
+                         C910      1227.    4.17        280.        70.        23.      2.02

          ROUTED TO
+                      910915      1111.    4.33        279.        70.        23.      2.02

          HYDROGRAPH AT
+                         S915      1400.    4.50        189.        47.        16.      1.13

          2 COMBINED AT
+                         C915      2030.    4.42        433.       109.        36.      3.14

          ROUTED TO
+                      915920      1746.    4.92        427.       109.        36.      3.14

          HYDROGRAPH AT
+                         S920      2660.    4.58        424.       106.        35.      3.29

          2 COMBINED AT
+                         C920      3228.    4.83        760.       194.        65.      6.43
1                   SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                  (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

PLAN  1 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION       1550.00           1556.00          1556.00
                              STORAGE             553.              2705.            2705.
                              OUTFLOW               0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                  OF     RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                 PMF      W.S.ELEV    OVER DAM    AC-FT       CFS       HOURS       HOURS       HOURS

                1.00      1552.61        .00       1386.      222.       .00         6.33        .00

PLAN  2 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION       1550.00           1556.00          1556.00
                              STORAGE             553.              2705.            2705.
                              OUTFLOW               0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                  OF     RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                 PMF      W.S.ELEV    OVER DAM    AC-FT       CFS       HOURS       HOURS       HOURS

                1.00      1552.59        .00       1380.      219.       .00         6.33        .00

PLAN  3 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION       1550.00           1556.00          1556.00
                              STORAGE             553.              2705.            2705.
                              OUTFLOW               0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                  OF     RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                 PMF      W.S.ELEV    OVER DAM    AC-FT       CFS       HOURS       HOURS       HOURS

                1.00      1552.23        .00       1236.      163.       .00         6.58        .00

PLAN  4 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION       1550.00           1556.00          1556.00
                              STORAGE             553.              2705.            2705.
                              OUTFLOW               0.               600.             600.

                RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                  OF     RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                 PMF      W.S.ELEV    OVER DAM    AC-FT       CFS       HOURS       HOURS       HOURS

                1.00      1551.78        .00       1083.      114.       .00         6.75        .00
```

PLAN 5 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1551.06	.00	868.	68.	.00	6.75	.00

*** NORMAL END OF HEC-1 ***

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   03APR06  TIME  13:59:48  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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

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

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

1                                          HEC-1 INPUT                                          PAGE  1

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

        1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
        2           ID       - CAP SUBBAREA
        3           ID       - ALTERNATIVE B5
        4           ID             - DESIGNED APEX SEDIMENTATION AREA PLUS OFFLINE BASIN
        5           ID               LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR
        6           ID
        7           ID   Alternative Description
        8           ID   The purpose of Alternative B is to capture the upstream flow at the
        9           ID   apex using online detention basins.  The presence of the detention basins
       10           ID   eliminates the downstream alluvial fan uncertainties by controlling the
       11           ID   flow from the apices to the outfall.  Alternative B5 is based on using a
       12           ID   relatively smaller on-line detention basin at the apex accompanied by larger
       13           ID   leveed channel sections in the down fan direction.
       14           ID
       15           ID
       16           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
       17           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
       18           ID   MODELER: TED LEHMAN
       19           ID   FILENAME: A4_EX24.DAT
       20           ID
       21           ID   100-YEAR 24-HOUR MODEL
       22           ID   EXISTING CONDITIONS
       23           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
       24           ID            MODELED AREA = 76.8 SQ. MILES
       25           ID
       26           ID   GREEN-AMPT LOSS METHOD
       27           ID   S-GRAPH UNIT HYDROGRAPHS
       28           ID     - MOUNTAIN
       29           ID     - DESERT/RANGELAND
       30           ID   NORMAL-DEPTH CHANNEL ROUTING
       31           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
       32           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
       33           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
       34           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
       35           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
       36           IT       5  1JAN99    1200    2000
       37           IN      15
       38           IO       5
                    *DIAGRAM
                    *
       39           JD   4.198  0.1000
       40           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
       41           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
       42           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
       43           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
       44           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
       45           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
       46           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
       47           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
       48           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
       49           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
       50           JD   3.990    10.0
       51           JD   3.780    30.0
                    *

1                                          HEC-1 INPUT                                          PAGE  2

      LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
52          KK    S100   BASIN
53          KM        Compute runoff from subbasin 100
54          BA   6.994
55          LG    0.35    0.38    6.40    0.16       0
56          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
57          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
58          UI     848     715     635     476     471     313     309     309     204     110
59          UI     109     111     110     109     111     109     110     111       0       0
            *

60          KK    S102   BASIN
61          KM        Compute runoff from subbasin 102
62          BA   3.234
63          LG    0.35    0.38    5.60    0.22       0
64          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
65          UI    1179     890     674     542     377     300     232     193      81      82
66          UI      81      81      83       0       0       0       0       0       0       0
            *

67          KK    C102 COMBINE
68          KM        Combine total inflow to detention area behind (north) of CAP Canal
69          HC       2
            *

70          KK   RR102 STORAGE
71          KM        Route flows through storage area behind CAP Canal
72          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
73          KO
74          RS       1    STOR      -1
75          SV          553.00 1148.00 2316.00 2705.00
76          SQ                  128.00  587.00  600.00
77          SE  1543.0 1550.00 1552.00 1555.00 1556.00
78          ST  1556.0  1320.0     3.2     1.5
            *

79          KK    D102  DIVERT
80          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
81          KM        although the inverts are 0.5 feet different in elevation
82          DT    CF02     0.0     0.0
83          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
84          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
            *

85          KK  100105   ROUTE
86          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
87          RS       9    FLOW      -1
88          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
89          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
90          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
            *
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1 HEC-1 INPUT PAGE 3

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

91          KK    S105   BASIN
92          KM        Compute runoff from subbasin 105
93          BA   4.370
94          LG    0.35    0.35    4.80    0.30       0
95          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
96          UI    2374    1903    1555    1291    1018     832     685     564     458     369
97          UI     288     235     238     126      83      85      84      84      84      84
98          UI      84       0       0       0       0       0       0       0       0       0
            *

99          KK    CF02RETRIEVE
100         KM        Retrieve flow from west CAP overchute.
101         DR    CF02
            *

102         KK  102105   ROUTE
103         KM        Route retrieved flow from west overchute to C105.
104         RS       6    FLOW      -1
105         RC   0.045   0.045   0.045 12096.90.016546   104.0
106         RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
107         RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
            *

108         KK   C105U COMBINE
109         KM        Combine runoff from S105 with routed flow from 100105 and 102105
110         KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
111         KM        of Sun Valley Parkway.
112         HC       3  14.598
            *

113         KK    S110   BASIN
114         KM        Compute runoff from subbasin 110
115         BA   0.430
116         LG    0.25    0.37    5.20    0.25       6
117         UI      56     166     335     449     587     358     291     241     188     140
118         UI     121      86      68      56      43      32      27      22      11      11
119         UI      10      11      11       0       0       0       0       0       0       0
            *
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120          KK    D110  DIVERT
121          KM   Proposed Detention Basin
122          KM   offline
123          KM    STRUCTURE ID:D110
124          KM    DIMENSIONS: L=200ft, W=100ft, D=4ft, Sideslope (?H:1V)= 3,  Vol.= 1 ac-ft
125          DT    DOUT
126          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1250.0  1500.0
127          DI  2000.0  2500.0
128          DQ     0.0     0.0     0.0     0.0   200.0   400.0   500.0   600.0   650.0   900.0
129          DQ  1200.0  1900.0
             *
1                                          HEC-1 INPUT                                          PAGE  4

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

130          KK  11015I   ROUTE
131          KM   Proposed Channel
132          KM        Route flow from RR110 through subbasin 115 - first subsegment
133          KM    STRUCTURE ID(s): RR11010
134          KM    Slope=(1865.3 - 1692.1) / 7199.5
135          RS       6    FLOW       -1
136          RC   0.045   0.045   0.045  7199.5 0.02405   104.0
137          RX     0.0    12.0    12.0    12.0   262.0   262.0   262.0   274.0
138          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

139          KK   S115A   BASIN
140          KM        Compute runoff from subbasin 115A
141          BA   1.397
142          LG    0.31    0.38    5.60    0.22       3
143          UI     145     288     671     992    1273    1374    1344    1137     854     658
144          UI     504     380     290     232     162     129     100      80      35      35
145          UI      35      35      36       0       0       0       0       0       0       0
             *

146          KK   C115A COMBINE
147          KM        Combine runoff from S115A with routed flow.
148          HC       2
             *

149          KK  15I15A   ROUTE
150          KM   Proposed Channel
151          KM        Route flows from split through S115 to Sun Valley Parkway
152          KM    STRUCTURE ID(s): RR115A10
153          KM    Slope=(1692.1 - 1633.3) / 3083.7
154          RS       3    FLOW       -1
155          RC   0.045   0.045   0.045  3083.70.019076   104.0
156          RX     0.0    12.0    12.0    12.0   364.0   364.0   364.0   376.0
157          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

158          KK   S115B   BASIN
159          BA   0.421
160          LG    0.35    0.35    3.71    0.47       0
161          UI     113     438     721     741     502     300     180     110      65      36
162          UI      20      20       0       0       0       0       0       0       0       0
             *

163          KK   C115B COMBINE
164          KM        Combine runoff from S115B with routed flow.
165          HC       2
             *

166          KK  15I15B   ROUTE
167          KM   Proposed - This is existing SV PKWY Channel
168          KM        Route flows in existing Sun Valley Parkway channel
169          KM    STRUCTURE ID(s): RR115B10
170          KM    Slope=(1633.3 - 1537.8) / 8073.3
171          RS       7    FLOW       -1
1                                          HEC-1 INPUT                                          PAGE  5

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

172          RC    0.03    0.03    0.03  8073.30.011832   105.5
173          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
174          RY   105.5   102.0   102.0   100.0   100.0   102.0   102.0   105.5
             *

175          KK   S115C   BASIN
176          BA   0.429
177          LG    0.35    0.35    4.00    0.47       0
178          UI      64     250     457     595     594     444     299     208     135      93
179          UI      62      44      23      15      16      16       0       0       0       0
             *

180          KK   C115C COMBINE
181          KM        Combine runoff from S115C with routed flow.
182          HC       2
             *

183          KK   D115C  DIVERT
184          KM   Proposed Detention Basin
185          KM   limit flow to capacity of existing Sun Valley Parkway
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186          KM    STRUCTURE ID:D115C
187          KM    DIMENSIONS: L=900ft, W=440ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 32 ac-ft
188          DT    DOUT
189          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
190          DI  2500.0  3000.0
191          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
192          DQ  1500.0  2000.0
             *

193          KK  115120   ROUTE
194          KM   Proposed - This is existing SV PKWY Channel
195          KM   It is marked proposed to check for capacity
196          KM    STRUCTURE ID(s): C12010
197          KM    Slope=(1537.8 - 1496.4) / 4136.0
198          RS       3    FLOW      -1
199          RC    0.03    0.03    0.03  4136.00.010008   106.5
200          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
201          RY   106.5   102.0   102.0   100.0   100.0   102.0   102.0   106.5
             *

202          KK    S120   BASIN
203          KM        Compute runoff from subbasin 120
204          BA   2.004
205          LG    0.33    0.35    4.65    0.32       1
206          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
207          UI     731     551     418     336     234     186     143     120      50      51
208          UI      50      51      51       0       0       0       0       0       0       0
             *

209          KK    C120 COMBINE
210          KM        Combine flows at Wagner Wash at outlet of channel along SVP
211          HC       2   4.681
             *
1                                        HEC-1 INPUT                                          PAGE  6

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

212          KK   C105D COMBINE
213          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
214          HC       2  19.279
             *

215          KK    D120  DIVERT
216          KM   Proposed Detention Basin
217          KM   limit flow to capacity of existing Sun Valley Parkway
218          KM    STRUCTURE ID:D120
219          KM    DIMENSIONS: L=500ft, W=240ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 9.2 ac-ft
220          DT    DOUT
221          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
222          DI  3000.0  4000.0
223          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
224          DQ  1000.0  2000.0
             *

225          KK    S900   BASIN
226          KM        Compute runoff from subbasin 900
227          BA   1.035
228          LG    0.25    0.37    5.30    0.24       6
229          UI      75      77     215     338     472     551     650     871     671     496
230          UI     448     394     356     320     277     233     197     180     165     140
231          UI     116      97      89      83      65      59      58      37      38      37
232          UI      37      23      14      15      14      15      14      15      15      14
233          UI      15      14       0       0       0       0       0       0       0       0
             *

234          KK    D900  DIVERT
235          KM   Proposed Detention Basin
236          KM   offline
237          KM    STRUCTURE ID:D900
238          KM    DIMENSIONS: L=300ft, W=190ft, D=4ft, Sideslope (?H:1V)= 3,  Vol.= 3.1 ac-ft
239          DT    DOUT
240          DI     0.0   200.0   400.0   600.0   800.0   840.0  1000.0  1200.0  1400.0  1500.0
241          DI  2000.0  2500.0
242          DQ     0.0     0.0     0.0     0.0     0.0     0.0   160.0   360.0   560.0   660.0
243          DQ  1160.0  1660.0
             *

244          KK  90091A   ROUTE
245          KM   Proposed Channel
246          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
247          KM    STRUCTURE ID(s): C910A10
248          KM    Slope=(1818.8 - 1746.9) / 3620.4
249          RS       5    FLOW      -1
250          RC   0.045   0.045   0.045  3620.4 0.01985   104.0
251          RX     0.0    12.0    12.0    12.0   264.0   264.0   264.0   276.0
252          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *
1                                        HEC-1 INPUT                                          PAGE  7

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

253          KK  90091B   ROUTE
254          KM   Proposed Channel
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255          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
256          KM    STRUCTURE ID(s): C910B10
257          KM    Slope=(1746.9 - 1667.9) / 4991.8
258          RS       4    FLOW      -1
259          RC   0.045   0.045   0.045  4991.8 0.01583   104.0
260          RX     0.0    12.0    12.0    12.0   372.0   372.0   372.0   384.0
261          RY   104.0   100.0   100.0   100.0   100.0   100.0   100.0   104.0
             *

262          KK    S910   BASIN
263          KM        Compute runoff from subbasin 910
264          BA   0.983
265          LG    0.35    0.35    4.70    0.31       0
266          UI     234     923    1540    1684    1252     768     471     298     172     120
267          UI      45      44      44       0       0       0       0       0       0       0
             *

268          KK    C910 COMBINE
269          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
270          HC       2
             *

271          KK  910915   ROUTE
272          KM   Proposed Channel
273          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
274          KM    STRUCTURE ID(s): RR91010
275          KM    Slope=(1668.1 - 1623.5) / 3390.4
276          RS       3    FLOW      -1
277          RC   0.045   0.045   0.045  3390.40.013146   104.5
278          RX     0.0    13.5    13.5    13.5   413.5   413.5   413.5   427.0
279          RY   104.5   100.0   100.0   100.0   100.0   100.0   100.0   104.5
             *

280          KK    S915   BASIN
281          KM    Compute runoff from subbasin 915
282          BA   1.126
283          LG    0.25    0.38    6.40    0.16       1
284          UI     102     175     410     534     662     809    1162    1191     903     742
285          UI     603     468     294     180     156     102      68      31      32      32
286          UI      31      32       0       0       0       0       0       0       0       0
             *

287          KK    C915 COMBINE
288          KM      Combine runoff from S915 with C910 (or outflow if basin)
289          HC       2
             *
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1 HEC-1 INPUT PAGE 8

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

290          KK  915920   ROUTE
291          KM   Proposed Channel
292          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
293          KM    STRUCTURE ID(s): C92010
294          KM    Slope=(1623.5 - 1532.6) / 8861.8
295          RS       7    FLOW      -1
296          RC   0.045   0.045   0.045  8861.80.010265   105.0
297          RX     0.0    15.0    15.0    15.0   415.0   415.0   415.0   430.0
298          RY   105.0   100.0   100.0   100.0   100.0   100.0   100.0   105.0
             *

299          KK    S920   BASIN
300          KM        Compute runoff from subbasin 920
301          BA   3.291
302          LG    0.35    0.38    5.60    0.22       0
303          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
304          UI    2073    1666    1376    1100     654     455     421     261     240      81
305          UI      80      80      81      80      81       0       0       0       0       0
306          UI       0       0       0       0       0       0       0       0       0       0
             *

307          KK    C920 COMBINE
308          KM        Combine flows in Trilby Wash tributary
309          HC       2
310          ZZ
```

1

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          SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   52        S100
                .
                .
   60           .        S102
                .           .
                .           .
   67        C102............
                V
                V
   70       RR102
                .
                .
```

```
 82          .-------->    CF02
 79       D102
             V
             V
 85     100105
             .
             .
 91          .        S105
             .           .
             .           .
101          .           .            .<--------    CF02
 99          .           .        CF02
             .           .           V
             .           .           V
102          .           .      102105
             .           .           .
             .           .           .
108      C105U.......................
             .
             .
113          .        S110
             .           .
             .           .
125          .           .-------->    DOUT
120          .        D110
             .           V
             .           V
130          .      11015I
             .           .
             .           .
139          .           .       S115A
             .           .           .
             .           .           .
146          .       C115A............
             .           V
             .           V
149          .      15I15A
             .           .
             .           .
158          .           .       S115B
             .           .           .
             .           .           .
163          .       C115B............
             .           V
             .           V
166          .      15I15B
             .           .
             .           .
175          .           .       S115C
             .           .           .
             .           .           .
180          .       C115C............
             .           .
             .           .
188          .           .-------->    DOUT
183          .       D115C
             .           V
             .           V
193          .      115120
             .           .
             .           .
202          .           .        S120
             .           .           .
             .           .           .
209          .        C120............
             .           .
             .           .
212      C105D............
             .
             .
220          .-------->    DOUT
215       D120
             .
             .
225          .        S900
             .           .
             .           .
239          .           .-------->    DOUT
234          .        D900
             .           V
             .           V
244          .      90091A
             .           V
             .           V
253          .      90091B
             .           .
             .           .
262          .           .        S910
             .           .           .
             .           .           .
268          .        C910............
             .           V
             .           V
271          .      910915
             .           .
```

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 280          .          .        S915
              .          .          .
              .          .          .
 287          .       C915............
              .          V
              .          V
 290          .     915920
              .          .
              .          .
 299          .          .        S920
              .          .          .
              .          .          .
 307          .       C920............

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   03APR06  TIME  13:59:48  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
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```
HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
   - CAP SUBBAREA
   - ALTERNATIVE B5
         - DESIGNED APEX SEDIMENTATION AREA PLUS OFFLINE BASIN
           LEVEE DOWNSTREAM FLOOD CONTROL CORRIDOR

Alternative Description
The purpose of Alternative B is to capture the upstream flow at the
apex using online detention basins.  The presence of the detention basins
eliminates the downstream alluvial fan uncertainties by controlling the
flow from the apices to the outfall.  Alternative B5 is based on using a
relatively smaller on-line detention basin at the apex accompanied by larger
leveed channel sections in the down fan direction.


SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
MODELER: TED LEHMAN
FILENAME: A4_EX24.DAT

100-YEAR 24-HOUR MODEL
EXISTING CONDITIONS
AREA 4 WATERSHED AREA = 90.5 SQ. MILES
         MODELED AREA = 76.8 SQ. MILES

GREEN-AMPT LOSS METHOD
S-GRAPH UNIT HYDROGRAPHS
  - MOUNTAIN
  - DESERT/RANGELAND
NORMAL-DEPTH CHANNEL ROUTING
LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
  - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
  - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
  - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

 38 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT        HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1JAN99  STARTING DATE
                    ITIME       1200  STARTING TIME
                       NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE     8JAN99  ENDING DATE
                   NDTIME       1035  ENDING TIME
                    ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                  TOTAL TIME BASE  166.58 HOURS

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

 39 JD         INDEX STORM NO. 1
                    STRM        4.20  PRECIPITATION DEPTH
                    TRDA         .10  TRANSPOSITION DRAINAGE AREA
```

40 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00		

50 JD INDEX STORM NO. 2
STRM 3.99 PRECIPITATION DEPTH
TRDA 10.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
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51 JD INDEX STORM NO. 3
STRM 3.78 PRECIPITATION DEPTH
TRDA 30.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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                    .00      .00      .00      .00      .00      .00      .00      .00

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

          **************
          *            *
   70 KK  *    RR102   *      STORAGE
          *            *
          **************

   73 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       OSCAL          0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                        TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN    MAXIMUM    TIME OF
          OPERATION        STATION  FLOW    PEAK                                          AREA     STAGE     MAX STAGE
+                                                       6-HOUR     24-HOUR     72-HOUR

          HYDROGRAPH AT
+                            S100   5214.   12.58        965.        241.         80.     6.99
          HYDROGRAPH AT
+                            S102   3434.   12.33        420.        105.         35.     3.23
          2 COMBINED AT
+                            C102   7803.   12.42       1367.        342.        114.    10.23
          ROUTED TO
+                           RR102    149.   14.42        141.        119.         82.    10.23
          DIVERSION TO
+                            CF02     75.   14.42         71.         59.         41.    10.23
          HYDROGRAPH AT
+                            D102     75.   14.42         71.         59.         41.    10.23
          ROUTED TO
+                          100105     71.   19.17         68.         58.         41.    10.23
          HYDROGRAPH AT
+                            S105   3466.   12.50        531.        133.         44.     4.37
          HYDROGRAPH AT
+                            CF02     75.   14.42         71.         59.         41.    10.23
          ROUTED TO
+                          102105     74.   15.92         70.         59.         41.    10.23
          3 COMBINED AT
+                           C105U   3466.   12.50        593.        239.        126.    14.60
          HYDROGRAPH AT
+                            S110    532.   12.17         62.         16.          5.      .43
          DIVERSION TO
+                            DOUT      0.     .00          0.          0.          0.      .43
          HYDROGRAPH AT
+                            D110    532.   12.17         62.         16.          5.      .43
          ROUTED TO
+                          11015I    404.   12.67         62.         16.          5.      .43
          HYDROGRAPH AT
+                           S115A   1536.   12.33        193.         50.         17.     1.40
          2 COMBINED AT
+                           C115A   1569.   12.33        253.         65.         22.     1.83
          ROUTED TO
+                          15I15A   1540.   12.50        253.         65.         22.     1.83
          HYDROGRAPH AT
+                           S115B    619.   12.08         47.         12.          4.      .42
          2 COMBINED AT
+                           C115B   1681.   12.42        298.         77.         26.     2.25
          ROUTED TO
+                          15I15B   1656.   12.58        298.         77.         26.     2.25
          HYDROGRAPH AT
```

```
+                    S115C     534.  12.17      47.      12.      4.     .43

     2 COMBINED AT
+                    C115C    1783.  12.58     343.      88.     29.    2.68

     DIVERSION TO
+                     DOUT     783.  12.58      65.      16.      5.    2.68

     HYDROGRAPH AT
+                    D115C    1000.  12.33     277.      72.     24.    2.68

     ROUTED TO
+                   115120    1000.  12.58     277.      72.     24.    2.68

     HYDROGRAPH AT
+                     S120    2032.  12.33     247.      62.     21.    2.00

     2 COMBINED AT
+                     C120    2842.  12.42     519.     133.     44.    4.68

     2 COMBINED AT
+                    C105D    5911.  12.42    1044.     347.    159.   19.28

     DIVERSION TO
+                     DOUT    3911.  12.42     389.      97.     32.   19.28

     HYDROGRAPH AT
+                     D120    2000.  12.08     655.     250.    126.   19.28

     HYDROGRAPH AT
+                     S900     853.  12.50     150.      39.     13.    1.03

     DIVERSION TO
+                     DOUT      22.  12.50       0.       0.      0.    1.03

     HYDROGRAPH AT
+                     D900     831.  12.50     149.      39.     13.    1.03

     ROUTED TO
+                   90091A     809.  12.67     149.      39.     13.    1.03

     ROUTED TO
+                   90091B     700.  13.00     149.      39.     13.    1.03

     HYDROGRAPH AT
+                     S910    1512.  12.17     122.      30.     10.     .98

     2 COMBINED AT
+                     C910    1501.  12.17     267.      69.     23.    2.02

     ROUTED TO
+                   910915    1295.  12.33     267.      69.     23.    2.02

     HYDROGRAPH AT
+                     S915    1305.  12.42     165.      42.     14.    1.13

     2 COMBINED AT
+                     C915    2440.  12.33     427.     109.     36.    3.14

     ROUTED TO
+                   915920    1977.  12.83     421.     109.     36.    3.14

     HYDROGRAPH AT
+                     S920    3157.  12.58     428.     107.     36.    3.29

     2 COMBINED AT
+                     C920    3976.  12.75     829.     214.     71.    6.43
1                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

PLAN  1 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00          1556.00
                          STORAGE            553.             2705.            2705.
                          OUTFLOW              0.              600.             600.

          RATIO     MAXIMUM      MAXIMUM     MAXIMUM     MAXIMUM     DURATION     TIME OF      TIME OF
           OF      RESERVOIR     DEPTH       STORAGE     OUTFLOW     OVER TOP    MAX OUTFLOW   FAILURE
          PMF      W.S.ELEV     OVER DAM     AC-FT        CFS         HOURS        HOURS       HOURS

          1.00     1552.28        .00        1258.       171.         .00         14.42        .00

PLAN  2 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                          ELEVATION        1550.00           1556.00          1556.00
                          STORAGE            553.             2705.            2705.
                          OUTFLOW              0.              600.             600.

          RATIO     MAXIMUM      MAXIMUM     MAXIMUM     MAXIMUM     DURATION     TIME OF      TIME OF
           OF      RESERVOIR     DEPTH       STORAGE     OUTFLOW     OVER TOP    MAX OUTFLOW   FAILURE
          PMF      W.S.ELEV     OVER DAM     AC-FT        CFS         HOURS        HOURS       HOURS

          1.00     1552.14        .00        1204.       150.         .00         14.42        .00
```

PLAN 3 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.00	.00	1149.	128.	.00	14.50	.00

*** NORMAL END OF HEC-1 ***

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1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   19APR06  TIME  14:41:22  *
*                                      *
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

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

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

```
1                                    HEC-1 INPUT                                    PAGE  1

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

  1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
  2           ID       - CAP SUBBAREA
  3           ID       - ALTERNATIVE C - NO APEX BASIN; CONCRETE COMPANION CHANNEL
  4           ID
  5           ID   Alternative Description
  6           ID   Alternative C is based on the concept of an excavated concrete-lined
  7           ID   channel from the apex to the outfall, without providing any detention
  8           ID   basin is at the apex.  To address sedimentation associated with the
  9           ID   alluvial fan systems, sedimentation basins are provided throughout the
 10           ID   system.  The excavated concrete channels are complemented with a 120-foot
 11           ID   wide adjacent riparian preservation corridor.
 12           ID
 13           ID
 14           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
 15           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
 16           ID   MODELER: TED LEHMAN
 17           ID   FILENAME: A4_EX6.DAT
 18           ID
 19           ID   100-YEAR 6-HOUR MODEL
 20           ID   EXISTING CONDITIONS
 21           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
 22           ID            MODELED AREA = 76.8 SQ. MILES
 23           ID
 24           ID   GREEN-AMPT LOSS METHOD
 25           ID   S-GRAPH UNIT HYDROGRAPHS
 26           ID     - MOUNTAIN
 27           ID     - DESERT/RANGELAND
 28           ID   NORMAL-DEPTH CHANNEL ROUTING
 29           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
 30           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
 31           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
 32           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
 33           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
 34           IT       5  1JAN99    1200    2000
 35           IN      15
 36           IO       5
              *DIAGRAM
              *
 37           JD   3.196  0.1000
 38           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 39           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 40           PC   0.962   0.972   0.983   0.991   1.000
 41           JD   3.181  0.5000
 42           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 43           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 44           PC   0.962   0.972   0.983   0.991   1.000
 45           JD   3.120     2.8
 46           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.068   0.077
 47           PC   0.088   0.101   0.121   0.164   0.253   0.451   0.694   0.836   0.900   0.938
 48           PC   0.950   0.963   0.975   0.988   1.000
 49           JD   2.950    16.0
 50           PC   0.000   0.015   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
 51           PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
 52           PC   0.946   0.960   0.973   0.987   1.000
 53           JD   2.592    90.0
1                                    HEC-1 INPUT                                    PAGE  2
```

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

  54          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  55          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  56          PC   0.927   0.945   0.964   0.982   1.000
              *

  57          KK    S100   BASIN
  58          KM        Compute runoff from subbasin 100
  59          BA   6.994
  60          LG    0.35    0.38    6.40    0.16       0
  61          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
  62          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
  63          UI     848     715     635     476     471     313     309     309     204     110
  64          UI     109     111     110     109     111     109     110     111       0       0
              *

  65          KK    S102   BASIN
  66          KM        Compute runoff from subbasin 102
  67          BA   3.234
  68          LG    0.35    0.38    5.60    0.22       0
  69          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
  70          UI    1179     890     674     542     377     300     232     193      81      82
  71          UI      81      81      83       0       0       0       0       0       0       0
              *

  72          KK    C102 COMBINE
  73          KM        Combine total inflow to detention area behind (north) of CAP Canal
  74          HC       2
              *

  75          KK   RR102 STORAGE
  76          KM        Route flows through storage area behind CAP Canal
  77          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
  78          KO
  79          RS       1    STOR      -1
  80          SV          553.00 1148.00 2316.00 2705.00
  81          SQ                  128.00  587.00  600.00
  82          SE  1543.0 1550.00 1552.00 1555.00 1556.00
  83          ST  1556.0  1320.0     3.2     1.5
              *

  84          KK    D102  DIVERT
  85          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
  86          KM        although the inverts are 0.5 feet different in elevation
  87          DT    CF02     0.0     0.0
  88          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
  89          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
              *

  90          KK  100105   ROUTE
  91          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
  92          RS       9    FLOW      -1
  93          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
  94          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
  95          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
              *
1                                          HEC-1 INPUT                                          PAGE  3

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

  96          KK    S105   BASIN
  97          KM        Compute runoff from subbasin 105
  98          BA   4.370
  99          LG    0.35    0.35    4.80    0.30       0
 100          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 101          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 102          UI     288     235     238     126      83      85      84      84      84      84
 103          UI      84       0       0       0       0       0       0       0       0       0
              *

 104          KK    CF02RETRIEVE
 105          KM        Retrieve flow from west CAP overchute.
 106          DR    CF02
              *

 107          KK  102105   ROUTE
 108          KM        Route retrieved flow from west overchute to C105.
 109          RS       6    FLOW      -1
 110          RC   0.045   0.045   0.045 12096.90.016546   104.0
 111          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
 112          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
              *

 113          KK   C105U COMBINE
 114          KM        Combine runoff from S105 with routed flow from 100105 and 102105
 115          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
 116          KM        of Sun Valley Parkway.
 117          HC       3  14.598
              *

 118          KK    S110   BASIN
 119          KM        Compute runoff from subbasin 110
 120          BA   0.430
```

```
 121          LG    0.25    0.37    5.20    0.25       6
 122          UI      56     166     335     449     587     358     291     241     188     140
 123          UI     121      86      68      56      43      32      27      22      11      11
 124          UI      10      11      11       0       0       0       0       0       0       0
              *

 125          KK  11015I   ROUTE
 126          KM   Proposed Channel
 127          KM        Route flow from RR110 through subbasin 115 - first subsegment
 128          KM    STRUCTURE ID(s): RR11010
 129          KM    Slope=(1865.3 - 1692.1) / 7199.5
 130          RS       3    FLOW      -1
 131          RC    0.02    0.02    0.02  7199.5 0.02405   103.0
 132          RX     0.0     9.0    19.0    23.5    53.5    58.0    68.0    77.0
 133          RY   103.0   100.0   100.0    98.5    98.5   100.0   100.0   103.0
              *
1                                          HEC-1 INPUT                                                PAGE  4

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


 134          KK   S115A   BASIN
 135          KM        Compute runoff from subbasin 115A
 136          BA   1.397
 137          LG    0.31    0.38    5.60    0.22       3
 138          UI     145     288     671     992    1273    1374    1344    1137     854     658
 139          UI     504     380     290     232     162     129     100      80      35      35
 140          UI      35      35      36       0       0       0       0       0       0       0
              *

 141          KK   C115A COMBINE
 142          KM        Combine runoff from S115A with routed flow.
 143          HC       2
              *

 144          KK  15I15A   ROUTE
 145          KM   Proposed Channel
 146          KM        Route flows from split through S115 to Sun Valley Parkway
 147          KM    STRUCTURE ID(s): RR115A10
 148          KM    Slope=(1692.1 - 1633.3) / 3083.7
 149          RS       1    FLOW      -1
 150          RC    0.02    0.02    0.02  3083.70.019076   103.0
 151          RX     0.0     9.0    24.0    33.0    68.0    77.0    92.0   101.0
 152          RY   103.0   100.0   100.0    97.0    97.0   100.0   100.0   103.0
              *

 153          KK   S115B   BASIN
 154          BA   0.421
 155          LG    0.35    0.35    3.71    0.47       0
 156          UI     113     438     721     741     502     300     180     110      65      36
 157          UI      20      20       0       0       0       0       0       0       0       0
              *

 158          KK   C115B COMBINE
 159          KM        Combine runoff from S115B with routed flow.
 160          HC       2
              *

 161          KK  15I15B   ROUTE
 162          KM   Proposed - This is existing SV PKWY Channel
 163          KM        Route flows in existing Sun Valley Parkway channel
 164          KM    STRUCTURE ID(s): RR115B10
 165          KM    Slope=(1633.3 - 1537.8) / 8073.3
 166          RS       8    FLOW      -1
 167          RC    0.03    0.03    0.03  8073.30.011832   103.5
 168          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 169          RY   103.5   100.0   100.0    98.0    98.0   100.0   100.0   103.5
              *

 170          KK   S115C   BASIN
 171          BA   0.429
 172          LG    0.35    0.35    4.00    0.47       0
 173          UI      64     250     457     595     594     444     299     208     135      93
 174          UI      62      44      23      15      16      16       0       0       0       0
              *
1                                          HEC-1 INPUT                                                PAGE  5

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


 175          KK   C115C COMBINE
 176          KM        Combine runoff from S115C with routed flow.
 177          HC       2
              *

 178          KK   D115C  DIVERT
 179          KM   Proposed Detention Basin
 180          KM   limit flow to capacity of existing Sun Valley Parkway
 181          KM    STRUCTURE ID:D115C
 182          KM    DIMENSIONS: L=1200ft, W=570ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 56.2 ac-f
 183          DT    DOUT
 184          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
 185          DI  2500.0  3000.0
 186          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
 187          DQ  1500.0  2000.0
```

```
                *

188             KK  115120   ROUTE
189             KM   Proposed - This is existing SV PKWY Channel
190             KM   It is marked proposed to check for capacity
191             KM    STRUCTURE ID(s): C12010
192             KM    Slope=(1537.8 - 1496.4) / 4136.0
193             RS       2    FLOW      -1
194             RC    0.03    0.03    0.03  4136.00.010008   104.5
195             RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
196             RY   104.5   100.0   100.0    98.0    98.0   100.0   100.0   104.5
                *

197             KK    S120   BASIN
198             KM         Compute runoff from subbasin 120
199             BA   2.004
200             LG    0.33    0.35    4.65    0.32       1
201             UI     206     408     954    1419    1824    1969    1911    1637    1230     944
202             UI     731     551     418     336     234     186     143     120      50      51
203             UI      50      51      51       0       0       0       0       0       0       0
                *

204             KK    C120 COMBINE
205             KM         Combine flows at Wagner Wash at outlet of channel along SVP
206             HC       2   4.681
                *

207             KK    D120  DIVERT
208             KM   Proposed Detention Basin
209             KM   limit flow to capacity of existing Sun Valley Parkway
210             KM    STRUCTURE ID:D120
211             KM    DIMENSIONS: L=720ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 23.1 ac-ft
212             DT    DOUT
213             DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
214             DI  3000.0  4000.0
215             DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
216             DQ  1000.0  2000.0
                *
1                                          HEC-1 INPUT                                          PAGE  6

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

217             KK   C105D COMBINE
218             KM         Combine flows from C105 and C120 just D/S of Sun Valley Parkway
219             HC       2  19.279
                *

220             KK    S900   BASIN
221             KM         Compute runoff from subbasin 900
222             BA   1.035
223             LG    0.25    0.37    5.30    0.24       6
224             UI      75      77     215     338     472     551     650     871     671     496
225             UI     448     394     356     320     277     233     197     180     165     140
226             UI     116      97      89      83      65      59      58      37      38      37
227             UI      37      23      14      15      14      15      14      15      15      14
228             UI      15      14       0       0       0       0       0       0       0       0
                *

229             KK  90091A   ROUTE
230             KM   Proposed Channel
231             KM         Route runoff from subbasin 900 through subbasin 910 - first subsegment
232             KM    STRUCTURE ID(s): C910A10
233             KM    Slope=(1818.8 - 1746.9) / 3620.4
234             RS       2    FLOW      -1
235             RC    0.02    0.02    0.02  3620.4 0.01985   103.0
236             RX     0.0     9.0    24.0    30.0    55.0    61.0    76.0    85.0
237             RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
                *

238             KK  90091B   ROUTE
239             KM   Proposed Channel
240             KM         Route runoff from subbasin 900 through subbasin 910 - second subsegment
241             KM    STRUCTURE ID(s): C910B10
242             KM    Slope=(1746.9 - 1667.9) / 4991.8
243             RS       2    FLOW      -1
244             RC    0.02    0.02    0.02  4991.8 0.01583   103.0
245             RX     0.0     9.0    24.0    30.0    60.0    66.0    81.0    90.0
246             RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
                *

247             KK    S910   BASIN
248             KM         Compute runoff from subbasin 910
249             BA   0.983
250             LG    0.35    0.35    4.70    0.31       0
251             UI     234     923    1540    1684    1252     768     471     298     172     120
252             UI      45      44      44       0       0       0       0       0       0       0
                *

253             KK    C910 COMBINE
254             KM         Combine runoff from S910 with routed flow at Sun Valley Parkway
255             HC       2
                *
1                                          HEC-1 INPUT                                          PAGE  7
```

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

 256          KK  910915   ROUTE
 257          KM   Proposed Channel
 258          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
 259          KM    STRUCTURE ID(s): RR91010
 260          KM    Slope=(1668.1 - 1623.5) / 3390.4
 261          RS       1    FLOW      -1
 262          RC    0.02    0.02    0.02  3390.40.013146   103.0
 263          RX     0.0     9.0    34.0    40.0   100.0   106.0   131.0   140.0
 264          RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
              *

 265          KK    S915   BASIN
 266          KM    Compute runoff from subbasin 915
 267          BA   1.126
 268          LG    0.25    0.38    6.40    0.16       1
 269          UI     102     175     410     534     662     809    1162    1191     903     742
 270          UI     603     468     294     180     156     102      68      31      32      32
 271          UI      31      32       0       0       0       0       0       0       0       0
              *

 272          KK    C915 COMBINE
 273          KM      Combine runoff from S915 with C910 (or outflow if basin)
 274          HC       2
              *

 275          KK  915920   ROUTE
 276          KM   Proposed Channel
 277          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
 278          KM    STRUCTURE ID(s): C92010
 279          KM    Slope=(1623.5 - 1532.6) / 8861.8
 280          RS       3    FLOW      -1
 281          RC    0.02    0.02    0.02  8861.80.010265   105.0
 282          RX     0.0    15.0    40.0    49.0   109.0   118.0   143.0   158.0
 283          RY   105.0   100.0   100.0    97.0    97.0   100.0   100.0   105.0
              *

 284          KK    S920   BASIN
 285          KM        Compute runoff from subbasin 920
 286          BA   3.291
 287          LG    0.35    0.38    5.60    0.22       0
 288          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
 289          UI    2073    1666    1376    1100     654     455     421     261     240      81
 290          UI      80      80      81      80      81       0       0       0       0       0
 291          UI       0       0       0       0       0       0       0       0       0       0
              *

 292          KK    C920 COMBINE
 293          KM        Combine flows in Trilby Wash tributary
 294          HC       2
 295          ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   57         S100
                .
                .
   65           .        S102
                .           .
                .           .
   72         C102...........
                V
                V
   75        RR102
                .
                .
   87           .-------->    CF02
   84         D102
                V
                V
   90       100105
                .
                .
   96           .        S105
                .           .
                .           .
  106           .           .          .<-------    CF02
  104           .           .       CF02
                .           .          V
                .           .          V
  107           .           .     102105
                .           .          .
                .           .          .
  113        C105U........................
                .
                .
  118           .        S110
                .           V
                .           V
```

```
 125          .      11015I
              .           .
              .           .
 134          .           .       S115A
              .           .           .
              .           .           .
 141          .       C115A............
              .           V
              .           V
 144          .      15I15A
              .           .
              .           .
 153          .           .       S115B
              .           .           .
              .           .           .
 158          .       C115B............
              .           V
              .           V
 161          .      15I15B
              .           .
              .           .
 170          .           .       S115C
              .           .           .
              .           .           .
 175          .       C115C............
              .           .
              .           .
 183          .           .-------->    DOUT
 178          .       D115C
              .           V
              .           V
 188          .      115120
              .           .
              .           .
 197          .           .        S120
              .           .           .
              .           .           .
 204          .        C120............
              .           .
              .           .
 212          .           .-------->    DOUT
 207          .        D120
              .           .
              .           .
 217       C105D............
              .
              .
 220          .        S900
              .           V
              .           V
 229          .      90091A
              .           V
              .           V
 238          .      90091B
              .           .
              .           .
 247          .           .        S910
              .           .           .
              .           .           .
 253          .        C910............
              .           V
              .           V
 256          .      910915
              .           .
              .           .
 265          .           .        S915
              .           .           .
              .           .           .
 272          .        C915............
              .           V
              .           V
 275          .      915920
              .           .
              .           .
 284          .           .        S920
              .           .           .
              .           .           .
 292          .        C920............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   19APR06  TIME  14:41:22  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
                    - CAP SUBBAREA
                    - ALTERNATIVE C - NO APEX BASIN; CONCRETE COMPANION CHANNEL

                  Alternative Description
                  Alternative C is based on the concept of an excavated concrete-lined
                  channel from the apex to the outfall, without providing any detention
                  basin is at the apex.  To address sedimentation associated with the
                  alluvial fan systems, sedimentation basins are provided throughout the
                  system.  The excavated concrete channels are complemented with a 120-foot
                  wide adjacent riparian preservation corridor.


                  SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
                  JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
                  MODELER: TED LEHMAN
                  FILENAME: A4_EX6.DAT

                  100-YEAR 6-HOUR MODEL
                  EXISTING CONDITIONS
                  AREA 4 WATERSHED AREA = 90.5 SQ. MILES
                           MODELED AREA = 76.8 SQ. MILES

                  GREEN-AMPT LOSS METHOD
                  S-GRAPH UNIT HYDROGRAPHS
                    - MOUNTAIN
                    - DESERT/RANGELAND
                  NORMAL-DEPTH CHANNEL ROUTING
                  LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
                    - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
                    - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
                    - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
                  SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

36 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE     1JAN99  STARTING DATE
                     ITIME       1200  STARTING TIME
                        NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE     8JAN99  ENDING DATE
                    NDTIME       1035  ENDING TIME
                     ICENT         19  CENTURY MARK

               COMPUTATION INTERVAL     .08 HOURS
                    TOTAL TIME BASE  166.58 HOURS

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

37 JD          INDEX STORM NO. 1
                      STRM       3.20  PRECIPITATION DEPTH
                      TRDA        .10  TRANSPOSITION DRAINAGE AREA

38 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                    .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                    .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00

41 JD          INDEX STORM NO. 2
                      STRM       3.18  PRECIPITATION DEPTH
                      TRDA        .50  TRANSPOSITION DRAINAGE AREA

42 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                    .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                    .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00

45 JD          INDEX STORM NO. 3
                      STRM       3.12  PRECIPITATION DEPTH
                      TRDA       2.80  TRANSPOSITION DRAINAGE AREA

46 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

```
                    .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                    .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                    .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00

 49 JD          INDEX STORM NO. 4
                     STRM        2.95  PRECIPITATION DEPTH
                     TRDA       16.00  TRANSPOSITION DRAINAGE AREA

 50 PI            PRECIPITATION PATTERN
                    .01       .01       .00       .00       .00       .00       .00       .00       .00       .01
                    .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                    .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                    .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                    .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00

 53 JD          INDEX STORM NO. 5
                     STRM        2.59  PRECIPITATION DEPTH
                     TRDA       90.00  TRANSPOSITION DRAINAGE AREA

 54 PI            PRECIPITATION PATTERN
                    .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                    .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                    .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01

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

            **************
            *            *
 75 KK      *    RR102   *      STORAGE
            *            *
            **************

 78 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                   TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
          OPERATION       STATION  FLOW    PEAK                                          AREA      STAGE     MAX STAGE
+                                                     6-HOUR     24-HOUR     72-HOUR

          HYDROGRAPH AT
+                          S100    4347.   4.67        899.        225.         75.      6.99

          HYDROGRAPH AT
+                          S102    2790.   4.33        417.        104.         35.      3.23

          2 COMBINED AT
+                          C102    5993.   4.50       1198.        300.        100.     10.23

          ROUTED TO
+                         RR102     127.   6.75        122.        104.         72.     10.23

          DIVERSION TO
+                          CF02      63.   6.75         61.         52.         36.     10.23

          HYDROGRAPH AT
+                          D102      63.   6.75         61.         52.         36.     10.23

          ROUTED TO
+                        100105      61.  11.42         59.         51.         36.     10.23

          HYDROGRAPH AT
+                          S105    2863.   4.50        495.        124.         41.      4.37

          HYDROGRAPH AT
+                          CF02      63.   6.75         61.         52.         36.     10.23

          ROUTED TO
+                        102105      63.   8.08         60.         51.         36.     10.23

          3 COMBINED AT
+                         C105U    2863.   4.50        554.        228.        121.     14.60

          HYDROGRAPH AT
+                          S110     662.   4.25         76.         19.          6.       .43

          ROUTED TO
```

```
+                    11015I     648.   4.33      76.      19.       6.     .43
        HYDROGRAPH AT
+                     S115A    1540.   4.33     213.      53.      18.    1.40
        2 COMBINED AT
+                     C115A    1901.   4.33     271.      68.      23.    1.83
        ROUTED TO
+                    15I15A    1882.   4.42     271.      68.      23.    1.83
        HYDROGRAPH AT
+                     S115B     789.   4.17      57.      14.       5.     .42
        2 COMBINED AT
+                     C115B    2069.   4.33     308.      77.      26.    2.25
        ROUTED TO
+                    15I15B    2038.   4.50     308.      77.      26.    2.25
        HYDROGRAPH AT
+                     S115C     668.   4.17      58.      14.       5.     .43
        2 COMBINED AT
+                     C115C    2168.   4.50     343.      86.      29.    2.68
        DIVERSION TO
+                      DOUT    1168.   4.50      98.      25.       8.    2.68
        HYDROGRAPH AT
+                     D115C    1000.   4.25     244.      61.      20.    2.68
        ROUTED TO
+                    115120    1000.   5.00     244.      61.      20.    2.68
        HYDROGRAPH AT
+                      S120    1838.   4.33     256.      64.      21.    2.00
        2 COMBINED AT
+                      C120    2429.   4.42     461.     115.      38.    4.68
        DIVERSION TO
+                      DOUT     430.   4.42      23.       6.       2.    4.68
        HYDROGRAPH AT
+                      D120    2000.   4.50     437.     110.      37.    4.68
        2 COMBINED AT
+                     C105D    3990.   4.50     787.     266.     124.   19.28
        HYDROGRAPH AT
+                      S900     936.   4.50     170.      43.      14.    1.03
        ROUTED TO
+                    90091A     922.   4.58     170.      43.      14.    1.03
        ROUTED TO
+                    90091B     902.   4.67     170.      43.      14.    1.03
        HYDROGRAPH AT
+                      S910    1585.   4.17     138.      35.      12.     .98
        2 COMBINED AT
+                      C910    1491.   4.25     282.      71.      24.    2.02
        ROUTED TO
+                    910915    1466.   4.33     282.      71.      24.    2.02
        HYDROGRAPH AT
+                      S915    1400.   4.50     189.      47.      16.    1.13
        2 COMBINED AT
+                      C915    2409.   4.42     434.     109.      36.    3.14
        ROUTED TO
+                    915920    2363.   4.50     434.     109.      36.    3.14
        HYDROGRAPH AT
+                      S920    2660.   4.58     424.     106.      35.    3.29
        2 COMBINED AT
+                      C920    4470.   4.58     775.     194.      65.    6.43
1                 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

PLAN  1 ...............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                            ELEVATION       1550.00           1556.00          1556.00
                            STORAGE            553.              2705.            2705.
                            OUTFLOW              0.               600.             600.

                RATIO     MAXIMUM     MAXIMUM    MAXIMUM    MAXIMUM    DURATION    TIME OF     TIME OF
                  OF     RESERVOIR     DEPTH     STORAGE    OUTFLOW    OVER TOP   MAX OUTFLOW  FAILURE
                 PMF      W.S.ELEV    OVER DAM    AC-FT       CFS       HOURS       HOURS       HOURS
```

1.00	1552.61	.00	1386.	222.	.00	6.33	.00

PLAN 2 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.59	.00	1380.	219.	.00	6.33	.00

PLAN 3 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1552.23	.00	1236.	163.	.00	6.58	.00

PLAN 4 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1551.78	.00	1083.	114.	.00	6.75	.00

PLAN 5 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1550.00	1556.00	1556.00
STORAGE	553.	2705.	2705.
OUTFLOW	0.	600.	600.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1551.06	.00	868.	68.	.00	6.75	.00

*** NORMAL END OF HEC-1 ***

```
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN   1998              *
 *            VERSION 4.1               *
 *                                      *
 *  RUN DATE   19APR06  TIME  14:41:23  *
 *                                      *
 ****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

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

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

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

```
1                                    HEC-1 INPUT                                    PAGE  1

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

  1           ID    HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
  2           ID       - CAP SUBBAREA
  3           ID       - ALTERNATIVE C - NO APEX BASIN; CONCRETE COMPANION CHANNEL
  4           ID
  5           ID   Alternative Description
  6           ID   Alternative C is based on the concept of an excavated concrete-lined
  7           ID   channel from the apex to the outfall, without providing any detention
  8           ID   basin is at the apex.  To address sedimentation associated with the
  9           ID   alluvial fan systems, sedimentation basins are provided throughout the
 10           ID   system.  The excavated concrete channels are complemented with a 120-foot
 11           ID   wide adjacent riparian preservation corridor.
 12           ID
 13           ID
 14           ID   SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
 15           ID   JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
 16           ID   MODELER: TED LEHMAN
 17           ID   FILENAME: A4_EX24.DAT
 18           ID
 19           ID   100-YEAR 24-HOUR MODEL
 20           ID   EXISTING CONDITIONS
 21           ID   AREA 4 WATERSHED AREA = 90.5 SQ. MILES
 22           ID            MODELED AREA = 76.8 SQ. MILES
 23           ID
 24           ID   GREEN-AMPT LOSS METHOD
 25           ID   S-GRAPH UNIT HYDROGRAPHS
 26           ID     - MOUNTAIN
 27           ID     - DESERT/RANGELAND
 28           ID   NORMAL-DEPTH CHANNEL ROUTING
 29           ID   LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
 30           ID     - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
 31           ID     - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
 32           ID     - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
 33           ID   SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)
 34           IT       5  1JAN99    1200    2000
 35           IN      15
 36           IO       5
              *DIAGRAM
              *
 37           JD   4.198  0.1000
 38           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
 39           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
 40           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
 41           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
 42           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
 43           PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
 44           PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
 45           PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
 46           PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
 47           PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
 48           JD   3.990    10.0
 49           JD   3.780    30.0
              *
1                                    HEC-1 INPUT                                    PAGE  2

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
 50          KK    S100   BASIN
 51          KM        Compute runoff from subbasin 100
 52          BA   6.994
 53          LG    0.35    0.38    6.40    0.16       0
 54          UI     449     455     964    1717    2422    3046    3616    4050    4275    4281
 55          UI    4178    3867    3211    2766    2319    1968    1698    1387    1198     990
 56          UI     848     715     635     476     471     313     309     309     204     110
 57          UI     109     111     110     109     111     109     110     111       0       0
             *

 58          KK    S102   BASIN
 59          KM        Compute runoff from subbasin 102
 60          BA   3.234
 61          LG    0.35    0.38    5.60    0.22       0
 62          UI     333     657    1539    2292    2943    3178    3083    2643    1985    1523
 63          UI    1179     890     674     542     377     300     232     193      81      82
 64          UI      81      81      83       0       0       0       0       0       0       0
             *

 65          KK    C102 COMBINE
 66          KM        Combine total inflow to detention area behind (north) of CAP Canal
 67          HC       2
             *

 68          KK   RR102 STORAGE
 69          KM        Route flows through storage area behind CAP Canal
 70          KM        Stage-storage-discharge data from Wagner Wash FDS Hydrology (1991)
 71          KO
 72          RS       1    STOR      -1
 73          SV          553.00 1148.00 2316.00 2705.00
 74          SQ                  128.00  587.00  600.00
 75          SE  1543.0 1550.00 1552.00 1555.00 1556.00
 76          ST  1556.0  1320.0     3.2     1.5
             *

 77          KK    D102  DIVERT
 78          KM        Divide flow evenly over the two 18-foot wide CAP overchutes
 79          KM        although the inverts are 0.5 feet different in elevation
 80          DT    CF02     0.0     0.0
 81          DI     0.0   100.0  1000.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0
 82          DQ     0.0    50.0   500.0  5000.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

 83          KK  100105   ROUTE
 84          KM        Route outflows from east CAP overchute to Sun Valley Parkway.
 85          RS       9    FLOW      -1
 86          RC   0.035   0.045   0.035 11235.0  0.0045   105.0
 87          RX     0.0   120.0   240.0   250.0   590.0   600.0   720.0   840.0
 88          RY   105.0   102.5   100.0   100.0   100.0   100.0   102.5   105.0
             *
```



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

 89          KK    S105   BASIN
 90          KM        Compute runoff from subbasin 105
 91          BA   4.370
 92          LG    0.35    0.35    4.80    0.30       0
 93          UI     345     380    1112    1723    2334    2867    3143    3344    3176    2865
 94          UI    2374    1903    1555    1291    1018     832     685     564     458     369
 95          UI     288     235     238     126      83      85      84      84      84      84
 96          UI      84       0       0       0       0       0       0       0       0       0
             *

 97          KK    CF02RETRIEVE
 98          KM        Retrieve flow from west CAP overchute.
 99          DR    CF02
             *

100          KK  102105   ROUTE
101          KM        Route retrieved flow from west overchute to C105.
102          RS       6    FLOW      -1
103          RC   0.045   0.045   0.045 12096.90.016546   104.0
104          RX     0.0    40.0   120.0   130.0   250.0   260.0   340.0   380.0
105          RY   104.0   102.0   101.0   100.0   100.0   101.0   102.0   104.0
             *

106          KK   C105U COMBINE
107          KM        Combine runoff from S105 with routed flow from 100105 and 102105
108          KM        (CAP overchute flows). This is the total flow in Wagner Wash upstream
109          KM        of Sun Valley Parkway.
110          HC       3  14.598
             *

111          KK    S110   BASIN
112          KM        Compute runoff from subbasin 110
113          BA   0.430
114          LG    0.25    0.37    5.20    0.25       6
115          UI      56     166     335     449     587     358     291     241     188     140
116          UI     121      86      68      56      43      32      27      22      11      11
117          UI      10      11      11       0       0       0       0       0       0       0
             *

118          KK  11015I   ROUTE
```

```
 119          KM   Proposed Channel
 120          KM        Route flow from RR110 through subbasin 115 - first subsegment
 121          KM    STRUCTURE ID(s): RR11010
 122          KM    Slope=(1865.3 - 1692.1) / 7199.5
 123          RS       3    FLOW      -1
 124          RC    0.02    0.02    0.02  7199.5 0.02405   103.0
 125          RX     0.0     9.0    19.0    23.5    53.5    58.0    68.0    77.0
 126          RY   103.0   100.0   100.0    98.5    98.5   100.0   100.0   103.0
              *
1                                          HEC-1 INPUT                                                    PAGE  4

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


 127          KK   S115A   BASIN
 128          KM        Compute runoff from subbasin 115A
 129          BA   1.397
 130          LG    0.31    0.38    5.60    0.22       3
 131          UI     145     288     671     992    1273    1374    1344    1137     854     658
 132          UI     504     380     290     232     162     129     100      80      35      35
 133          UI      35      35      36       0       0       0       0       0       0       0
              *

 134          KK   C115A COMBINE
 135          KM        Combine runoff from S115A with routed flow.
 136          HC       2
              *

 137          KK  15I15A   ROUTE
 138          KM   Proposed Channel
 139          KM        Route flows from split through S115 to Sun Valley Parkway
 140          KM    STRUCTURE ID(s): RR115A10
 141          KM    Slope=(1692.1 - 1633.3) / 3083.7
 142          RS       1    FLOW      -1
 143          RC    0.02    0.02    0.02  3083.70.019076   103.0
 144          RX     0.0     9.0    24.0    33.0    68.0    77.0    92.0   101.0
 145          RY   103.0   100.0   100.0    97.0    97.0   100.0   100.0   103.0
              *

 146          KK   S115B   BASIN
 147          BA   0.421
 148          LG    0.35    0.35    3.71    0.47       0
 149          UI     113     438     721     741     502     300     180     110      65      36
 150          UI      20      20       0       0       0       0       0       0       0       0
              *

 151          KK   C115B COMBINE
 152          KM        Combine runoff from S115B with routed flow.
 153          HC       2
              *

 154          KK  15I15B   ROUTE
 155          KM   Proposed - This is existing SV PKWY Channel
 156          KM        Route flows in existing Sun Valley Parkway channel
 157          KM    STRUCTURE ID(s): RR115B10
 158          KM    Slope=(1633.3 - 1537.8) / 8073.3
 159          RS       8    FLOW      -1
 160          RC    0.03    0.03    0.03  8073.30.011832   103.5
 161          RX     0.0    14.0    38.0    44.0    64.0    70.0    94.0   108.0
 162          RY   103.5   100.0   100.0    98.0    98.0   100.0   100.0   103.5
              *

 163          KK   S115C   BASIN
 164          BA   0.429
 165          LG    0.35    0.35    4.00    0.47       0
 166          UI      64     250     457     595     594     444     299     208     135      93
 167          UI      62      44      23      15      16      16       0       0       0       0
              *
1                                          HEC-1 INPUT                                                    PAGE  5

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


 168          KK   C115C COMBINE
 169          KM        Combine runoff from S115C with routed flow.
 170          HC       2
              *

 171          KK   D115C  DIVERT
 172          KM   Proposed Detention Basin
 173          KM   limit flow to capacity of existing Sun Valley Parkway
 174          KM    STRUCTURE ID:D115C
 175          KM    DIMENSIONS: L=1200ft, W=570ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 56.2 ac-f
 176          DT    DOUT
 177          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1100.0  1200.0  1500.0  2000.0
 178          DI  2500.0  3000.0
 179          DQ     0.0     0.0     0.0     0.0     0.0     0.0   100.0   200.0   500.0  1000.0
 180          DQ  1500.0  2000.0
              *

 181          KK  115120   ROUTE
 182          KM   Proposed - This is existing SV PKWY Channel
 183          KM   It is marked proposed to check for capacity
 184          KM    STRUCTURE ID(s): C12010
 185          KM    Slope=(1537.8 - 1496.4) / 4136.0
```

```
186          RS       2    FLOW      -1
187          RC    0.03    0.03    0.03  4136.00.010008   104.5
188          RX     0.0    18.0    52.0    58.0    78.0    84.0   118.0   136.0
189          RY   104.5   100.0   100.0    98.0    98.0   100.0   100.0   104.5
             *

190          KK    S120   BASIN
191          KM        Compute runoff from subbasin 120
192          BA   2.004
193          LG    0.33    0.35    4.65    0.32       1
194          UI     206     408     954    1419    1824    1969    1911    1637    1230     944
195          UI     731     551     418     336     234     186     143     120      50      51
196          UI      50      51      51       0       0       0       0       0       0       0
             *

197          KK    C120 COMBINE
198          KM        Combine flows at Wagner Wash at outlet of channel along SVP
199          HC       2   4.681
             *

200          KK    D120  DIVERT
201          KM   Proposed Detention Basin
202          KM   limit flow to capacity of existing Sun Valley Parkway
203          KM    STRUCTURE ID:D120
204          KM    DIMENSIONS: L=720ft, W=400ft, D=5ft, Sideslope (?H:1V)= 3,  Vol.= 23.1 ac-ft
205          DT    DOUT
206          DI     0.0   200.0   400.0   600.0   800.0  1000.0  1200.0  1500.0  2000.0  2500.0
207          DI  3000.0  4000.0
208          DQ     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   500.0
209          DQ  1000.0  2000.0
             *
1                                          HEC-1 INPUT                                          PAGE  6

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

210          KK   C105D COMBINE
211          KM        Combine flows from C105 and C120 just D/S of Sun Valley Parkway
212          HC       2  19.279
             *

213          KK    S900   BASIN
214          KM        Compute runoff from subbasin 900
215          BA   1.035
216          LG    0.25    0.37    5.30    0.24       6
217          UI      75      77     215     338     472     551     650     871     671     496
218          UI     448     394     356     320     277     233     197     180     165     140
219          UI     116      97      89      83      65      59      58      37      38      37
220          UI      37      23      14      15      14      15      14      15      15      14
221          UI      15      14       0       0       0       0       0       0       0       0
             *

222          KK  90091A   ROUTE
223          KM   Proposed Channel
224          KM        Route runoff from subbasin 900 through subbasin 910 - first subsegment
225          KM    STRUCTURE ID(s): C910A10
226          KM    Slope=(1818.8 - 1746.9) / 3620.4
227          RS       2    FLOW      -1
228          RC    0.02    0.02    0.02  3620.4 0.01985   103.0
229          RX     0.0     9.0    24.0    30.0    55.0    61.0    76.0    85.0
230          RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
             *

231          KK  90091B   ROUTE
232          KM   Proposed Channel
233          KM        Route runoff from subbasin 900 through subbasin 910 - second subsegment
234          KM    STRUCTURE ID(s): C910B10
235          KM    Slope=(1746.9 - 1667.9) / 4991.8
236          RS       2    FLOW      -1
237          RC    0.02    0.02    0.02  4991.8 0.01583   103.0
238          RX     0.0     9.0    24.0    30.0    60.0    66.0    81.0    90.0
239          RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
             *

240          KK    S910   BASIN
241          KM        Compute runoff from subbasin 910
242          BA   0.983
243          LG    0.35    0.35    4.70    0.31       0
244          UI     234     923    1540    1684    1252     768     471     298     172     120
245          UI      45      44      44       0       0       0       0       0       0       0
             *

246          KK    C910 COMBINE
247          KM        Combine runoff from S910 with routed flow at Sun Valley Parkway
248          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  7

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

249          KK  910915   ROUTE
250          KM   Proposed Channel
251          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
252          KM    STRUCTURE ID(s): RR91010
```

```
253          KM    Slope=(1668.1 - 1623.5) / 3390.4
254          RS       1    FLOW      -1
255          RC    0.02    0.02    0.02  3390.40.013146   103.0
256          RX     0.0     9.0    34.0    40.0   100.0   106.0   131.0   140.0
257          RY   103.0   100.0   100.0    98.0    98.0   100.0   100.0   103.0
             *

258          KK    S915   BASIN
259          KM    Compute runoff from subbasin 915
260          BA   1.126
261          LG    0.25    0.38    6.40    0.16       1
262          UI     102     175     410     534     662     809    1162    1191     903     742
263          UI     603     468     294     180     156     102      68      31      32      32
264          UI      31      32       0       0       0       0       0       0       0       0
             *

265          KK    C915 COMBINE
266          KM      Combine runoff from S915 with C910 (or outflow if basin)
267          HC       2
             *

268          KK  915920   ROUTE
269          KM   Proposed Channel
270          KM        Route combined flow to C920, outlet at Trilby Wash tributary.
271          KM    STRUCTURE ID(s): C92010
272          KM    Slope=(1623.5 - 1532.6) / 8861.8
273          RS       3    FLOW      -1
274          RC    0.02    0.02    0.02  8861.80.010265   105.0
275          RX     0.0    15.0    40.0    49.0   109.0   118.0   143.0   158.0
276          RY   105.0   100.0   100.0    97.0    97.0   100.0   100.0   105.0
             *

277          KK    S920   BASIN
278          KM        Compute runoff from subbasin 920
279          BA   3.291
280          LG    0.35    0.38    5.60    0.22       0
281          UI     261     301     931    1253    1508    1769    2164    3112    3037    2404
282          UI    2073    1666    1376    1100     654     455     421     261     240      81
283          UI      80      80      81      80      81       0       0       0       0       0
284          UI       0       0       0       0       0       0       0       0       0       0
             *

285          KK    C920 COMBINE
286          KM        Combine flows in Trilby Wash tributary
287          HC       2
288          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   50         S100
                .
                .
   58           .        S102
                .          .
                .          .
   65         C102............
                V
                V
   68        RR102
                .
                .
   80           .-------->    CF02
   77         D102
                V
                V
   83       100105
                .
                .
   89           .        S105
                .          .
                .          .
   99           .          .          .<--------    CF02
   97           .          .        CF02
                .          .          V
                .          .          V
  100           .          .      102105
                .          .          .
                .          .          .
  106        C105U........................
                .
                .
  111           .        S110
                .          V
                .          V
  118           .      110151
                .          .
                .          .
  127           .          .       S115A
                .          .          .
                .          .          .
  134           .       C115A............
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                .          V
                .          V
  137           .      15I15A
                .          .
                .          .
  146           .          .       S115B
                .          .           .
                .          .           .
  151           .      C115B............
                .          V
                .          V
  154           .      15I15B
                .          .
                .          .
  163           .          .       S115C
                .          .           .
                .          .           .
  168           .      C115C............
                .          .
                .          .
  176           .          .-------->    DOUT
  171           .      D115C
                .          V
                .          V
  181           .      115120
                .          .
                .          .
  190           .          .        S120
                .          .           .
                .          .           .
  197           .       C120............
                .          .
                .          .
  205           .          .-------->    DOUT
  200           .       D120
                .          .
                .          .
  210       C105D............
                .
                .
  213           .       S900
                .          V
                .          V
  222           .      90091A
                .          V
                .          V
  231           .      90091B
                .          .
                .          .
  240           .          .        S910
                .          .           .
                .          .           .
  246           .       C910............
                .          V
                .          V
  249           .      910915
                .          .
                .          .
  258           .          .        S915
                .          .           .
                .          .           .
  265           .       C915............
                .          V
                .          V
  268           .      915920
                .          .
                .          .
  277           .          .        S920
                .          .           .
                .          .           .
  285           .       C920............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   19APR06  TIME  14:41:23  *
*                                      *
****************************************

****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

HYDROLOGY FOR STEP 2 ALTERNATIVES FOR SUN VALLEY ADMP
- CAP SUBBAREA
- ALTERNATIVE C - NO APEX BASIN; CONCRETE COMPANION CHANNEL

Alternative Description
Alternative C is based on the concept of an excavated concrete-lined channel from the apex to the outfall, without providing any detention basin is at the apex. To address sedimentation associated with the

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                    alluvial fan systems, sedimentation basins are provided throughout the
                    system.  The excavated concrete channels are complemented with a 120-foot
                    wide adjacent riparian preservation corridor.


                    SUN VALLEY AREA DRAINAGE MASTER PLAN (SVADMP) - FCD 2004C049
                    JE FULLER / HYDROLOGY & GEOMORPHOLOGY, INC.
                    MODELER: TED LEHMAN
                    FILENAME: A4_EX24.DAT

                    100-YEAR 24-HOUR MODEL
                    EXISTING CONDITIONS
                    AREA 4 WATERSHED AREA = 90.5 SQ. MILES
                           MODELED AREA = 76.8 SQ. MILES

                    GREEN-AMPT LOSS METHOD
                    S-GRAPH UNIT HYDROGRAPHS
                      - MOUNTAIN
                      - DESERT/RANGELAND
                    NORMAL-DEPTH CHANNEL ROUTING
                    LAND USE DATA FROM EXAMINATION OF SLOPE FROM 10-FT DTM TO DISTINGUISH
                      - UNDEVELOPED DESERT RANGELAND (NDR) - SLOPES < 5 %
                      - HILLSLOPES, SONORAN DESERT (NHS) - SLOPES 5 - 10 %
                      - MOUNTAIN TERRAIN (NMT) - SLOPES > 10 %
                    SOILS DATA FROM FCDMC GIS DATABASE (RECEIVED FROM FCDMC JULY 2005)

36 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1JAN99  STARTING DATE
                     ITIME       1200  STARTING TIME
                        NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      8JAN99  ENDING DATE
                    NDTIME       1035  ENDING TIME
                     ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE  166.58 HOURS

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

37 JD          INDEX STORM NO. 1
                     STRM       4.20  PRECIPITATION DEPTH
                     TRDA        .10  TRANSPOSITION DRAINAGE AREA

38 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                    .00       .00       .00       .00       .00       .00       .00       .01       .00       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
                    .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
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                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00

48 JD          INDEX STORM NO. 2
                     STRM       3.99  PRECIPITATION DEPTH
                     TRDA      10.00  TRANSPOSITION DRAINAGE AREA

 0 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00

 49 JD          INDEX STORM NO. 3
                     STRM        3.78  PRECIPITATION DEPTH
                     TRDA       30.00  TRANSPOSITION DRAINAGE AREA

  0 PI           PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .01       .00       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .03       .03
                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00

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

            **************
            *            *
 68 KK      *     RR102  *      STORAGE
            *            *
            **************

 71 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
1
                                                RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                       TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
        OPERATION        STATION   FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                       6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                         S100     5214.   12.58        965.        241.         80.      6.99

        HYDROGRAPH AT
+                         S102     3434.   12.33        420.        105.         35.      3.23

        2 COMBINED AT
+                         C102     7803.   12.42       1367.        342.        114.     10.23
```

+	ROUTED TO	RR102	149.	14.42	141.	119.	82.	10.23
+	DIVERSION TO	CF02	75.	14.42	71.	59.	41.	10.23
+	HYDROGRAPH AT	D102	75.	14.42	71.	59.	41.	10.23
+	ROUTED TO	100105	71.	19.17	68.	58.	41.	10.23
+	HYDROGRAPH AT	S105	3466.	12.50	531.	133.	44.	4.37
+	HYDROGRAPH AT	CF02	75.	14.42	71.	59.	41.	10.23
+	ROUTED TO	102105	74.	15.92	70.	59.	41.	10.23
+	3 COMBINED AT	C105U	3466.	12.50	593.	239.	126.	14.60
+	HYDROGRAPH AT	S110	532.	12.17	62.	16.	5.	.43
+	ROUTED TO	11015I	518.	12.33	62.	16.	5.	.43
+	HYDROGRAPH AT	S115A	1536.	12.33	193.	50.	17.	1.40
+	2 COMBINED AT	C115A	2035.	12.33	253.	65.	22.	1.83
+	ROUTED TO	15I15A	2000.	12.33	253.	65.	22.	1.83
+	HYDROGRAPH AT	S115B	619.	12.08	47.	12.	4.	.42
+	2 COMBINED AT	C115B	2291.	12.33	298.	77.	26.	2.25
+	ROUTED TO	15I15B	2262.	12.42	298.	77.	26.	2.25
+	HYDROGRAPH AT	S115C	534.	12.17	47.	12.	4.	.43
+	2 COMBINED AT	C115C	2543.	12.42	343.	88.	29.	2.68
+	DIVERSION TO	DOUT	1543.	12.42	113.	28.	9.	2.68
+	HYDROGRAPH AT	D115C	1000.	12.17	230.	60.	20.	2.68
+	ROUTED TO	115120	1000.	12.92	230.	60.	20.	2.68
+	HYDROGRAPH AT	S120	2032.	12.33	247.	62.	21.	2.00
+	2 COMBINED AT	C120	2887.	12.33	472.	121.	40.	4.68
+	DIVERSION TO	DOUT	887.	12.33	47.	12.	4.	4.68
+	HYDROGRAPH AT	D120	2000.	12.17	425.	109.	36.	4.68
+	2 COMBINED AT	C105D	5244.	12.50	962.	326.	152.	19.28
+	HYDROGRAPH AT	S900	853.	12.50	150.	39.	13.	1.03
+	ROUTED TO	90091A	838.	12.50	150.	39.	13.	1.03
+	ROUTED TO	90091B	825.	12.58	150.	39.	13.	1.03
+	HYDROGRAPH AT	S910	1512.	12.17	122.	30.	10.	.98
+	2 COMBINED AT	C910	1703.	12.17	268.	69.	23.	2.02
+	ROUTED TO	910915	1634.	12.25	268.	69.	23.	2.02

```
        HYDROGRAPH AT
+                       S915      1305.   12.42        165.        42.        14.       1.13

        2 COMBINED AT
+                       C915      2641.   12.33        428.       109.        36.       3.14

        ROUTED TO
+                     915920      2597.   12.42        428.       109.        36.       3.14

        HYDROGRAPH AT
+                       S920      3157.   12.58        428.       107.        36.       3.29

        2 COMBINED AT
+                       C920      5660.   12.50        845.       214.        71.       6.43
1                          SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION    RR102
                     (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED  DURING BREACH FORMATION)

    PLAN  1 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION          1550.00           1556.00          1556.00
                              STORAGE                553.             2705.            2705.
                              OUTFLOW                  0.              600.             600.

                 RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW  FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                 1.00      1552.28         .00      1258.       171.        .00        14.42         .00

    PLAN  2 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION          1550.00           1556.00          1556.00
                              STORAGE                553.             2705.            2705.
                              OUTFLOW                  0.              600.             600.

                 RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW  FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

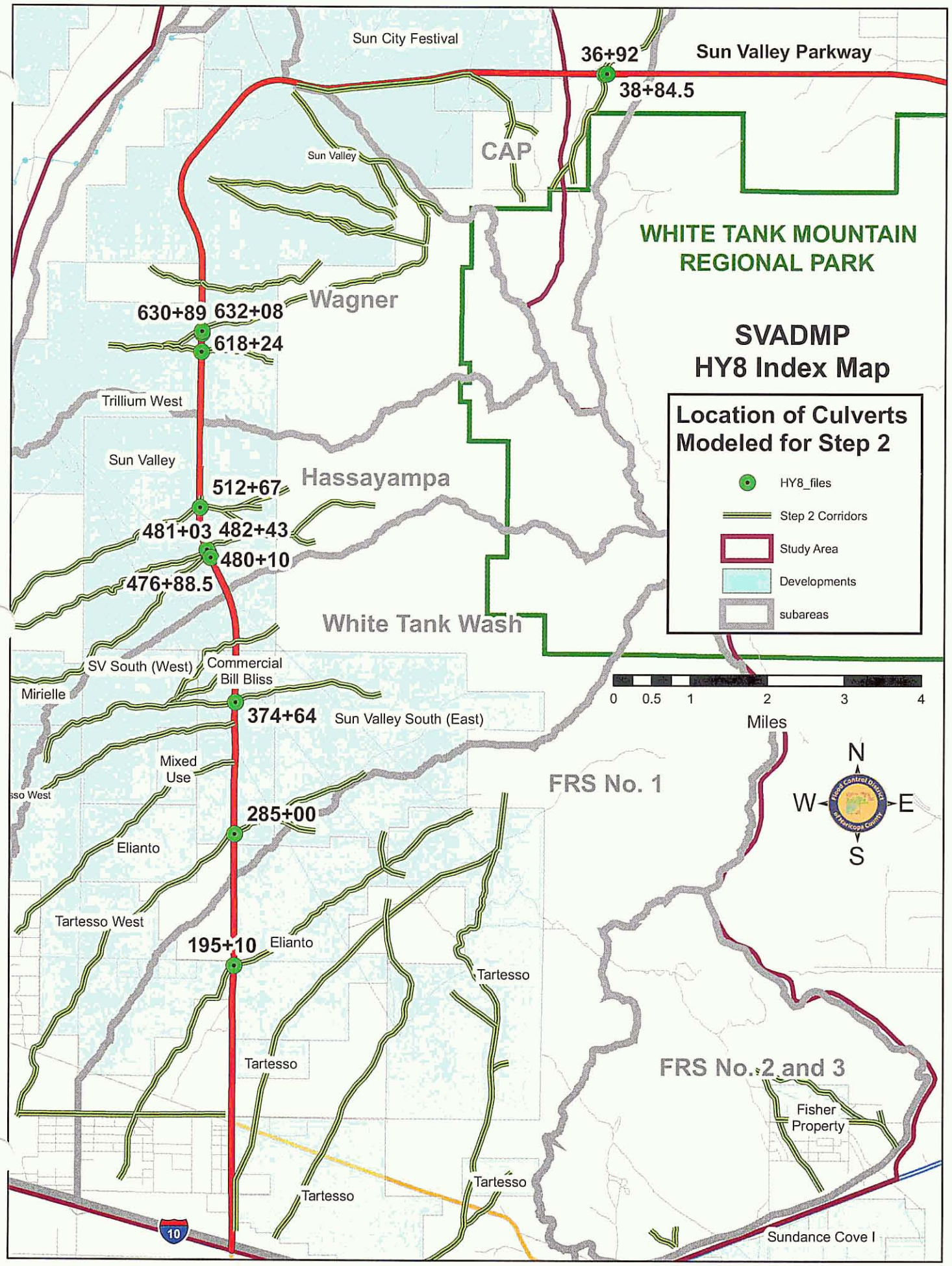
                 1.00      1552.14         .00      1204.       150.        .00        14.42         .00

    PLAN  3 ..............                    INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                              ELEVATION          1550.00           1556.00          1556.00
                              STORAGE                553.             2705.            2705.
                              OUTFLOW                  0.              600.             600.

                 RATIO     MAXIMUM      MAXIMUM    MAXIMUM    MAXIMUM    DURATION     TIME OF     TIME OF
                   OF     RESERVOIR      DEPTH     STORAGE    OUTFLOW    OVER TOP    MAX OUTFLOW  FAILURE
                  PMF      W.S.ELEV    OVER DAM     AC-FT       CFS       HOURS        HOURS       HOURS

                 1.00      1552.00         .00      1149.       128.        .00        14.50         .00

*** NORMAL END OF HEC-1 ***
```


SVADMP
HY8 Index Map
Location of Culverts Modeled for Step 2
HY8_files
Step 2 Corridors
Study Area
Developments
subareas
0 0.5 1 2 3 4
Miles
N
W
E
S
Sun City Festival
Sun Valley Parkway
36+92
38+84.5
Sun Valley
CAP
WHITE TANK MOUNTAIN REGIONAL PARK
Wagner
630+89
632+08
618+24
Trillium West
Sun Valley
Hassayampa
512+67
481+03
482+43
480+10
476+88.5
White Tank Wash
SV South (West)
Commercial
Bill Bliss
Mirielle
374+64
Sun Valley South (East)
Mixed Use
FRS No. 1
285+00
Elianto
Tartesso West
195+10
Elianto
Tartesso
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FRS No. 2 and 3
Fisher Property
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10
Sundance Cove I

CURRENT DATE: 10-20-2005
CURRENT TIME: 19:37:34

FILE DATE: 10-20-2005
FILE NAME: SVC37464

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	62.80	62.17	100.00	4 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVC37464 DATE: 10-20-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
62.80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
63.80	120.0	120.0	0.0	0.0	0.0	0.0	0.0	0.00	1
64.39	240.0	240.0	0.0	0.0	0.0	0.0	0.0	0.00	1
64.89	360.0	360.0	0.0	0.0	0.0	0.0	0.0	0.00	1
65.34	480.0	480.0	0.0	0.0	0.0	0.0	0.0	0.00	1
65.78	600.0	600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
65.81	610.0	610.0	0.0	0.0	0.0	0.0	0.0	0.00	1
66.72	840.0	840.0	0.0	0.0	0.0	0.0	0.0	0.00	1
67.28	960.0	960.0	0.0	0.0	0.0	0.0	0.0	0.00	1
67.90	1080.0	1080.0	0.0	0.0	0.0	0.0	0.0	0.00	1
68.57	1200.0	1192.7	0.0	0.0	0.0	0.0	0.0	6.20	5
68.49	1179.7	1179.7	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVC37464 DATE: 10-20-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
62.80	0.000	0.00	0.00	0.00
63.80	0.000	120.00	0.00	0.00
64.39	0.000	240.00	0.00	0.00
64.89	0.000	360.00	0.00	0.00
65.34	0.000	480.00	0.00	0.00
65.78	0.000	600.00	0.00	0.00
65.81	0.000	610.00	0.00	0.00
66.72	0.000	840.00	0.00	0.00
67.28	0.000	960.00	0.00	0.00
67.90	0.000	1080.00	0.00	0.00
68.57	-0.003	1200.00	1.08	0.09

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-20-2005 FILE DATE: 10-20-2005
CURRENT TIME: 19:37:34 FILE NAME: SVC37464

PERFORMANCE CURVE FOR CULVERT 1 - 4(10.00 (ft) BY 3.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	62.80	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
120.00	63.80	1.00	1.00	1-S2n	0.50	0.66	0.51	0.87	5.87	3.74
240.00	64.39	1.59	1.59	1-S2n	0.78	1.04	0.80	1.32	7.50	4.83
360.00	64.89	2.09	2.09	1-S2n	1.02	1.36	0.96	1.68	9.35	5.60
480.00	65.34	2.54	2.54	1-S2n	1.23	1.65	1.29	1.99	9.32	6.20
600.00	65.78	2.98	2.98	1-S2n	1.42	1.92	1.50	2.26	9.97	6.70
610.00	65.81	3.01	3.01	5-S2n	1.44	1.94	1.52	2.29	10.05	6.74
840.00	66.72	3.92	3.92	5-S2n	1.78	2.40	1.91	2.76	11.01	7.52
960.00	67.28	4.48	4.48	5-S2n	1.94	2.62	2.10	2.98	11.42	7.87
1080.00	67.90	5.10	4.75	4-FFt	2.11	2.84	2.11	3.19	12.81	8.19
1192.72	68.56	5.76	5.44	4-S2n	2.25	3.00	2.46	3.39	12.12	8.48

El. inlet face invert 62.80 ft El. outlet invert 62.17 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       62.80 ft
      OUTLET STATION                       100.00 ft
      OUTLET ELEVATION                      62.17 ft
      NUMBER OF BARRELS                      4
      SLOPE (V/H)                            0.0063
      CULVERT LENGTH ALONG SLOPE           100.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             3.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-20-2005 FILE DATE: 10-20-2005
CURRENT TIME: 19:37:34 FILE NAME: SVC37464

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	35.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.010
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	62.17 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	62.17 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	62.17	0.000	0.00	0.00	0.00
120.00	63.04	0.704	0.87	3.74	0.55
240.00	63.49	0.741	1.32	4.83	0.82
360.00	63.85	0.762	1.68	5.60	1.05
480.00	64.16	0.775	1.99	6.20	1.24
600.00	64.43	0.785	2.26	6.70	1.41
610.00	64.46	0.786	2.29	6.74	1.43
840.00	64.93	0.799	2.76	7.52	1.72
960.00	65.15	0.804	2.98	7.87	1.86
1080.00	65.36	0.808	3.19	8.19	1.99
1200.00	65.56	0.812	3.39	8.48	2.11

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	80.00 ft
CREST LENGTH	100.00 ft
OVERTOPPING CREST ELEVATION	68.49 ft

CURRENT DATE: 10-21-2005
CURRENT TIME: 08:11:53

FILE DATE: 10-21-2005
FILE NAME: SVP28500

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	8.56	7.96	135.00	4 RCB	10.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP28500 DATE: 10-21-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
8.56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
9.67	140.0	140.0	0.0	0.0	0.0	0.0	0.0	0.00	1
10.32	280.0	280.0	0.0	0.0	0.0	0.0	0.0	0.00	1
10.88	420.0	420.0	0.0	0.0	0.0	0.0	0.0	0.00	1
11.37	560.0	560.0	0.0	0.0	0.0	0.0	0.0	0.00	1
11.79	688.0	688.0	0.0	0.0	0.0	0.0	0.0	0.00	1
12.27	840.0	840.0	0.0	0.0	0.0	0.0	0.0	0.00	1
12.71	980.0	980.0	0.0	0.0	0.0	0.0	0.0	0.00	1
13.17	1120.0	1120.0	0.0	0.0	0.0	0.0	0.0	0.00	1
13.67	1260.0	1260.0	0.0	0.0	0.0	0.0	0.0	0.00	1
14.23	1400.0	1389.7	0.0	0.0	0.0	0.0	0.0	8.65	3
14.08	1367.2	1367.2	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP28500 DATE: 10-21-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
8.56	0.000	0.00	0.00	0.00
9.67	0.000	140.00	0.00	0.00
10.32	0.000	280.00	0.00	0.00
10.88	0.000	420.00	0.00	0.00
11.37	0.000	560.00	0.00	0.00
11.79	0.000	688.00	0.00	0.00
12.27	0.000	840.00	0.00	0.00
12.71	0.000	980.00	0.00	0.00
13.17	0.000	1120.00	0.00	0.00
13.67	0.000	1260.00	0.00	0.00
14.23	-0.004	1400.00	1.66	0.12

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-21-2005 FILE DATE: 10-21-2005
CURRENT TIME: 08:11:53 FILE NAME: SVP28500

PERFORMANCE CURVE FOR CULVERT 1 - 4(10.00 (ft) BY 4.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	8.56	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
140.00	9.67	1.11	1.11	1-S2n	0.61	0.73	0.53	1.09	6.65	3.05
280.00	10.32	1.76	1.76	1-S2n	0.96	1.15	0.95	1.64	7.35	3.94
420.00	10.88	2.32	2.32	1-S2n	1.26	1.51	1.21	2.09	8.67	4.55
560.00	11.37	2.81	2.81	1-S2n	1.53	1.83	1.55	2.47	9.01	5.04
688.00	11.79	3.23	3.23	1-S2n	1.75	2.10	1.70	2.79	10.12	5.41
840.00	12.27	3.71	3.71	1-S2n	2.01	2.40	2.05	3.13	10.22	5.80
980.00	12.71	4.15	4.15	5-S2n	2.23	2.66	2.29	3.43	10.71	6.11
1120.00	13.17	4.61	4.61	5-S2n	2.44	2.90	2.50	3.70	11.18	6.38
1260.00	13.67	5.11	5.11	5-S2n	2.65	3.14	2.73	3.96	11.53	6.64
1389.69	14.23	5.61	5.67	4-FFt	2.84	3.35	4.00	4.21	8.69	6.87

El. inlet face invert 8.56 ft El. outlet invert 7.96 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                        8.56 ft
      OUTLET STATION                       135.00 ft
      OUTLET ELEVATION                       7.96 ft
      NUMBER OF BARRELS                      4
      SLOPE (V/H)                            0.0044
      CULVERT LENGTH ALONG SLOPE           135.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             4.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-21-2005
CURRENT TIME: 08:11:53

FILE DATE: 10-21-2005
FILE NAME: SVP28500

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	40.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.005
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	7.96 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	7.96 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	7.96	0.000	0.00	0.00	0.00
140.00	9.05	0.515	1.09	3.05	0.34
280.00	9.60	0.541	1.64	3.94	0.51
420.00	10.05	0.556	2.09	4.55	0.65
560.00	10.43	0.565	2.47	5.04	0.77
688.00	10.75	0.571	2.79	5.41	0.87
840.00	11.09	0.577	3.13	5.80	0.98
980.00	11.39	0.581	3.43	6.11	1.07
1120.00	11.66	0.585	3.70	6.38	1.15
1260.00	11.92	0.588	3.96	6.64	1.24
1400.00	12.17	0.590	4.21	6.87	1.31

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	14.08 ft

CURRENT DATE: 10-21-2005
CURRENT TIME: 09:48:42

FILE DATE: 10-21-2005
FILE NAME: SVP19510

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	33.92	33.44	140.00	6 RCB	10.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP19510 DATE: 10-21-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
33.92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
35.51	360.0	360.0	0.0	0.0	0.0	0.0	0.0	0.00	1
36.46	720.0	720.0	0.0	0.0	0.0	0.0	0.0	0.00	1
37.25	1080.0	1080.0	0.0	0.0	0.0	0.0	0.0	0.00	1
38.47	1440.0	1440.0	0.0	0.0	0.0	0.0	0.0	0.00	1
39.59	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
39.65	1820.0	1820.0	0.0	0.0	0.0	0.0	0.0	0.00	1
41.47	2520.0	2264.7	0.0	0.0	0.0	0.0	0.0	255.75	3
42.21	2880.0	2400.1	0.0	0.0	0.0	0.0	0.0	480.38	3
42.89	3240.0	2513.1	0.0	0.0	0.0	0.0	0.0	726.08	3
43.53	3600.0	2615.2	0.0	0.0	0.0	0.0	0.0	987.04	3
40.05	1924.3	1924.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP19510 DATE: 10-21-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
33.92	0.000	0.00	0.00	0.00
35.51	0.000	360.00	0.00	0.00
36.46	0.000	720.00	0.00	0.00
37.25	0.000	1080.00	0.00	0.00
38.47	0.000	1440.00	0.00	0.00
39.59	0.000	1800.00	0.00	0.00
39.65	0.000	1820.00	0.00	0.00
41.47	0.001	2520.00	-0.42	-0.02
42.21	0.001	2880.00	-0.45	-0.02
42.89	-0.001	3240.00	0.86	0.03
43.53	0.003	3600.00	-2.27	-0.06

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-21-2005 FILE DATE: 10-21-2005
CURRENT TIME: 09:48:42 FILE NAME: SVP19510

PERFORMANCE CURVE FOR CULVERT 1 - 6(10.00 (ft) BY 4.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	33.92	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
360.00	35.51	1.59	1.59	1-S2n	0.95	1.04	0.84	1.79	7.14	3.76
720.00	36.46	2.54	2.54	1-S2n	1.50	1.65	1.45	2.69	8.27	4.82
1080.00	37.25	3.33	3.33	1-S2n	1.97	2.16	1.96	3.42	9.17	5.56
1440.00	38.47	4.09	4.55	4-FFt	2.40	2.62	4.00	4.04	6.00	6.13
1800.00	39.59	4.89	5.67	4-FFt	2.81	3.04	4.00	4.60	7.50	6.61
1820.00	39.65	4.94	5.73	4-FFt	2.83	3.06	4.00	4.63	7.58	6.63
2264.67	41.46	6.11	7.54	4-FFt	3.30	3.54	4.00	5.58	9.44	7.38
2400.07	42.21	6.51	8.29	4-FFt	3.44	3.68	4.00	6.02	10.00	7.71
2513.07	42.89	6.87	8.97	4-FFt	3.55	3.80	4.00	6.44	10.47	8.00
2615.23	43.53	7.21	9.61	4-FFt	4.00	3.90	4.00	6.84	10.90	8.27

El. inlet face invert 33.92 ft El. outlet invert 33.44 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       33.92 ft
      OUTLET STATION                       140.00 ft
      OUTLET ELEVATION                      33.44 ft
      NUMBER OF BARRELS                      6
      SLOPE (V/H)                            0.0034
      CULVERT LENGTH ALONG SLOPE           140.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             4.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-21-2005
CURRENT TIME: 09:48:42

FILE DATE: 10-21-2005
FILE NAME: SVP19510

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	50.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.004
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	33.44 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	33.44 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	33.44	0.000	0.00	0.00	0.00
360.00	35.23	0.495	1.79	3.76	0.45
720.00	36.13	0.518	2.69	4.82	0.67
1080.00	36.86	0.530	3.42	5.56	0.85
1440.00	37.48	0.537	4.04	6.13	1.01
1800.00	38.04	0.543	4.60	6.61	1.15
1820.00	38.07	0.543	4.63	6.63	1.16
2520.00	39.02	0.551	5.58	7.38	1.39
2880.00	39.46	0.553	6.02	7.71	1.50
3240.00	39.88	0.556	6.44	8.00	1.61
3600.00	40.28	0.558	6.84	8.27	1.71

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	40.05 ft

CURRENT DATE: 10-24-2005
CURRENT TIME: 16:06:55

FILE DATE: 10-24-2005
FILE NAME: SVP3692

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	58.40	57.70	140.00	6 RCB	10.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP3692 DATE: 10-24-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
58.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
59.47	200.0	200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
60.10	400.0	400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
60.64	600.0	600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
61.12	800.0	800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
61.56	1000.0	1000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
61.77	1100.0	1100.0	0.0	0.0	0.0	0.0	0.0	0.00	1
62.40	1400.0	1400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
62.83	1600.0	1600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
63.29	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
63.78	2000.0	2000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
64.55	2278.1	2278.1	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP3692 DATE: 10-24-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
58.40	0.000	0.00	0.00	0.00
59.47	0.000	200.00	0.00	0.00
60.10	0.000	400.00	0.00	0.00
60.64	0.000	600.00	0.00	0.00
61.12	0.000	800.00	0.00	0.00
61.56	0.000	1000.00	0.00	0.00
61.77	0.000	1100.00	0.00	0.00
62.40	0.000	1400.00	0.00	0.00
62.83	0.000	1600.00	0.00	0.00
63.29	0.000	1800.00	0.00	0.00
63.78	0.000	2000.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 16:06:55 FILE NAME: SVP3692

PERFORMANCE CURVE FOR CULVERT 1 - 6(10.00 (ft) BY 4.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	58.40	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200.00	59.47	1.07	1.07	1-S2n	0.57	0.70	0.50	0.69	6.63	3.57
400.00	60.10	1.70	1.70	1-S2n	0.90	1.12	0.82	1.04	8.17	4.68
600.00	60.64	2.24	2.24	1-S2n	1.18	1.46	1.19	1.33	8.39	5.47
800.00	61.12	2.72	2.72	1-S2n	1.41	1.77	1.45	1.58	9.21	6.11
1000.00	61.56	3.16	3.16	1-S2n	1.64	2.06	1.69	1.80	9.89	6.65
1100.00	61.77	3.37	3.37	1-S2n	1.75	2.19	1.81	1.90	10.14	6.89
1400.00	62.40	4.00	4.00	1-S2n	2.06	2.57	2.13	2.20	10.94	7.55
1600.00	62.83	4.43	4.43	5-S2n	2.26	2.81	2.35	2.38	11.34	7.93
1800.00	63.29	4.89	4.89	5-S2n	2.45	3.04	2.55	2.55	11.76	8.28
2000.00	63.78	5.38	5.38	5-S2n	2.64	3.26	2.75	2.72	12.11	8.61

El. inlet face invert 58.40 ft El. outlet invert 57.70 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       58.40 ft
      OUTLET STATION                       140.00 ft
      OUTLET ELEVATION                      57.70 ft
      NUMBER OF BARRELS                     6
      SLOPE (V/H)                           0.0050
      CULVERT LENGTH ALONG SLOPE           140.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             4.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-24-2005
CURRENT TIME: 16:06:55

FILE DATE: 10-24-2005
FILE NAME: SVP3692

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	80.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.012
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	57.70 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	57.70 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	57.70	0.000	0.00	0.00	0.00
200.00	58.39	0.759	0.69	3.57	0.51
400.00	58.74	0.808	1.04	4.68	0.78
600.00	59.03	0.837	1.33	5.47	0.99
800.00	59.28	0.858	1.58	6.11	1.18
1000.00	59.50	0.873	1.80	6.65	1.35
1100.00	59.60	0.880	1.90	6.89	1.43
1400.00	59.90	0.897	2.20	7.55	1.65
1600.00	60.08	0.906	2.38	7.93	1.78
1800.00	60.25	0.914	2.55	8.28	1.91
2000.00	60.42	0.921	2.72	8.61	2.04

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	64.55 ft

CURRENT DATE: 10-24-2005
CURRENT TIME: 16:28:28

FILE DATE: 10-24-2005
FILE NAME: SVP3884

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	58.40	57.60	136.00	2 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP3884 DATE: 10-24-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
58.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
59.40	60.0	60.0	0.0	0.0	0.0	0.0	0.0	0.00	1
59.99	120.0	120.0	0.0	0.0	0.0	0.0	0.0	0.00	1
60.49	180.0	180.0	0.0	0.0	0.0	0.0	0.0	0.00	1
60.94	240.0	240.0	0.0	0.0	0.0	0.0	0.0	0.00	1
61.38	300.0	300.0	0.0	0.0	0.0	0.0	0.0	0.00	1
61.83	360.0	360.0	0.0	0.0	0.0	0.0	0.0	0.00	1
62.32	420.0	420.0	0.0	0.0	0.0	0.0	0.0	0.00	1
62.88	480.0	480.0	0.0	0.0	0.0	0.0	0.0	0.00	1
63.50	540.0	540.0	0.0	0.0	0.0	0.0	0.0	0.00	1
63.87	600.0	571.6	0.0	0.0	0.0	0.0	0.0	27.79	4
63.54	543.1	543.1	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP3884 DATE: 10-24-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
58.40	0.000	0.00	0.00	0.00
59.40	0.000	60.00	0.00	0.00
59.99	0.000	120.00	0.00	0.00
60.49	0.000	180.00	0.00	0.00
60.94	0.000	240.00	0.00	0.00
61.38	0.000	300.00	0.00	0.00
61.83	0.000	360.00	0.00	0.00
62.32	0.000	420.00	0.00	0.00
62.88	0.000	480.00	0.00	0.00
63.50	0.000	540.00	0.00	0.00
63.87	-0.002	600.00	0.62	0.10

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 16:28:28 FILE NAME: SVP3884

PERFORMANCE CURVE FOR CULVERT 1 - 2(10.00 (ft) BY 3.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	58.40	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
60.00	59.40	1.00	1.00	1-S2n	0.51	0.66	0.46	0.76	6.59	3.66
120.00	59.99	1.59	1.59	1-S2n	0.80	1.04	0.74	1.15	8.11	4.70
180.00	60.49	2.09	2.09	1-S2n	1.04	1.36	0.96	1.45	9.35	5.41
240.00	60.94	2.54	2.54	1-S2n	1.25	1.65	1.29	1.72	9.30	5.97
300.00	61.38	2.98	2.98	1-S2n	1.45	1.92	1.50	1.95	9.98	6.43
360.00	61.83	3.43	3.43	5-S2n	1.64	2.16	1.70	2.17	10.57	6.82
420.00	62.32	3.92	3.92	5-S2n	1.82	2.40	1.90	2.37	11.07	7.17
480.00	62.88	4.48	4.48	5-S2n	1.99	2.62	2.09	2.55	11.48	7.49
540.00	63.50	5.10	5.10	5-S2n	2.15	2.84	2.28	2.73	11.87	7.77
571.59	63.87	5.47	5.47	5-S2n	2.24	2.94	2.37	2.90	12.04	8.03

El. inlet face invert 58.40 ft El. outlet invert 57.60 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       58.40 ft
      OUTLET STATION                       136.00 ft
      OUTLET ELEVATION                      57.60 ft
      NUMBER OF BARRELS                      2
      SLOPE (V/H)                            0.0059
      CULVERT LENGTH ALONG SLOPE           136.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             3.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 16:28:28 FILE NAME: SVP3884

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	20.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.012
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	57.60 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	57.60 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	57.60	0.000	0.00	0.00	0.00
60.00	58.36	0.740	0.76	3.66	0.57
120.00	58.74	0.774	1.15	4.70	0.86
180.00	59.05	0.791	1.45	5.41	1.09
240.00	59.32	0.802	1.72	5.97	1.29
300.00	59.55	0.810	1.95	6.43	1.46
360.00	59.77	0.816	2.17	6.82	1.62
420.00	59.97	0.821	2.37	7.17	1.77
480.00	60.15	0.825	2.55	7.49	1.91
540.00	60.33	0.829	2.73	7.77	2.04
600.00	60.50	0.831	2.90	8.03	2.17

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	63.54 ft

CURRENT DATE: 12-06-2005
CURRENT TIME: 12:14:19

FILE DATE: 12-06-2005
FILE NAME: SVP47688

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	12.90	11.50	137.01	1 RCB	6.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP47688 DATE: 12-06-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
12.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
14.14	25.0	25.0	0.0	0.0	0.0	0.0	0.0	0.00	1
14.88	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.51	75.0	75.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.12	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.79	125.0	125.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.82	126.0	126.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.07	175.0	163.8	0.0	0.0	0.0	0.0	0.0	10.03	6
18.25	200.0	168.6	0.0	0.0	0.0	0.0	0.0	30.65	4
18.39	225.0	172.2	0.0	0.0	0.0	0.0	0.0	51.17	3
18.52	250.0	175.4	0.0	0.0	0.0	0.0	0.0	73.19	3
17.90	159.3	159.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP47688 DATE: 12-06-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
12.90	0.000	0.00	0.00	0.00
14.14	0.000	25.00	0.00	0.00
14.88	0.000	50.00	0.00	0.00
15.51	0.000	75.00	0.00	0.00
16.12	0.000	100.00	0.00	0.00
16.79	0.000	125.00	0.00	0.00
16.82	0.000	126.00	0.00	0.00
18.07	-0.006	175.00	1.15	0.66
18.25	-0.003	200.00	0.76	0.38
18.39	-0.007	225.00	1.68	0.75
18.52	-0.006	250.00	1.42	0.57

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 12-06-2005 FILE DATE: 12-06-2005
CURRENT TIME: 12:14:19 FILE NAME: SVP47688

PERFORMANCE CURVE FOR CULVERT 1 - 1(6.00 (ft) BY 3.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	12.90	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
25.00	14.14	1.24	1.24	1-S2n	0.55	0.82	0.55	0.47	7.64	3.12
50.00	14.88	1.98	1.98	1-S2n	0.86	1.29	0.79	0.71	10.49	4.02
75.00	15.51	2.61	2.61	1-S2n	1.13	1.70	1.18	0.91	10.62	4.65
100.00	16.12	3.22	3.22	5-S2n	1.38	2.06	1.45	1.07	11.53	5.14
125.00	16.79	3.89	3.89	5-S2n	1.61	2.38	1.71	1.22	12.15	5.55
126.00	16.82	3.92	3.92	5-S2n	1.62	2.40	1.73	1.23	12.16	5.56
163.82	18.06	5.16	5.16	5-S2n	1.95	2.86	2.10	1.48	13.03	6.21
168.59	18.25	5.35	5.35	5-S2n	1.99	2.91	2.14	1.60	13.12	6.49
172.16	18.39	5.49	5.49	5-S2n	2.02	2.95	2.17	1.72	13.21	6.74
175.39	18.51	5.61	5.61	5-S2n	2.05	2.99	2.21	1.82	13.23	6.98

El. inlet face invert 12.90 ft El. outlet invert 11.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       12.90 ft
      OUTLET STATION                       137.00 ft
      OUTLET ELEVATION                      11.50 ft
      NUMBER OF BARRELS                      1
      SLOPE (V/H)                            0.0102
      CULVERT LENGTH ALONG SLOPE           137.01 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN             6.00 ft
      BARREL RISE             3.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 12-06-2005
CURRENT TIME: 12:14:19

FILE DATE: 12-06-2005
FILE NAME: SVP47688

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	16.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.016
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	11.50 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	11.50 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	11.50	0.000	0.00	0.00	0.00
25.00	11.97	0.799	0.47	3.12	0.47
50.00	12.21	0.839	0.71	4.02	0.71
75.00	12.41	0.860	0.91	4.65	0.90
100.00	12.57	0.874	1.07	5.14	1.07
125.00	12.72	0.884	1.22	5.55	1.22
126.00	12.73	0.885	1.23	5.56	1.23
175.00	12.98	0.898	1.48	6.21	1.48
200.00	13.10	0.903	1.60	6.49	1.60
225.00	13.22	0.907	1.72	6.74	1.71
250.00	13.32	0.912	1.82	6.98	1.82

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	17.90 ft

CURRENT DATE: 12-06-2005
CURRENT TIME: 13:02:20

FILE DATE: 12-06-2005
FILE NAME: SVP48010

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	11.50	11.00	142.00	6 RCB	10.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP48010 DATE: 12-06-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
14.66	1000.0	1000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.07	1200.0	1200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.46	1400.0	1400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.84	1600.0	1600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.21	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.59	2000.0	2000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.97	2200.0	2200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.37	2400.0	2400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.80	2600.0	2600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.24	2800.0	2800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.69	3000.0	2986.6	0.0	0.0	0.0	0.0	0.0	12.13	3
18.50	2907.3	2907.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP48010 DATE: 12-06-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
14.66	0.000	1000.00	0.00	0.00
15.07	0.000	1200.00	0.00	0.00
15.46	0.000	1400.00	0.00	0.00
15.84	0.000	1600.00	0.00	0.00
16.21	0.000	1800.00	0.00	0.00
16.59	0.000	2000.00	0.00	0.00
16.97	0.000	2200.00	0.00	0.00
17.37	0.000	2400.00	0.00	0.00
17.80	0.000	2600.00	0.00	0.00
18.24	0.000	2800.00	0.00	0.00
18.69	-0.002	3000.00	1.31	0.04

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 12-06-2005 FILE DATE: 12-06-2005
CURRENT TIME: 13:02:20 FILE NAME: SVP48010

PERFORMANCE CURVE FOR CULVERT 1 - 6(10.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
1000.00	14.66	3.16	3.16	1-S2n	1.85	2.06	1.76	1.83	9.50	8.58
1200.00	15.07	3.57	3.57	1-S2n	2.10	2.32	2.02	2.04	9.90	9.18
1400.00	15.46	3.96	3.96	1-S2n	2.33	2.57	2.27	2.23	10.27	9.72
1600.00	15.84	4.34	4.34	1-S2n	2.56	2.81	2.58	2.42	10.35	10.20
1800.00	16.21	4.71	4.71	1-S2n	2.77	3.04	2.80	2.59	10.72	10.65
2000.00	16.59	5.09	5.09	5-S2n	2.99	3.26	3.01	2.76	11.06	11.06
2200.00	16.97	5.47	5.47	5-S2n	3.20	3.48	3.22	2.92	11.37	11.45
2400.00	17.37	5.87	5.87	5-S2n	3.40	3.68	3.43	3.07	11.66	11.81
2600.00	17.80	6.30	6.30	5-S2n	3.60	3.89	3.63	3.22	11.93	12.15
2800.00	18.24	6.74	6.74	5-S2n	3.80	4.08	3.83	3.36	12.18	12.47
2986.57	18.69	7.19	7.19	5-S2n	3.99	4.26	4.01	3.50	12.41	12.78

El. inlet face invert 11.50 ft El. outlet invert 11.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       11.50 ft
      OUTLET STATION                       142.00 ft
      OUTLET ELEVATION                      11.00 ft
      NUMBER OF BARRELS                     6
      SLOPE (V/H)                           0.0035
      CULVERT LENGTH ALONG SLOPE           142.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             5.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 12-06-2005 FILE DATE: 12-06-2005
CURRENT TIME: 13:02:20 FILE NAME: SVP48010

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	60.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.020
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	11.00 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	11.00 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
1000.00	12.83	1.118	1.83	8.58	2.28
1200.00	13.04	1.133	2.04	9.18	2.55
1400.00	13.23	1.146	2.23	9.72	2.79
1600.00	13.42	1.156	2.42	10.20	3.02
1800.00	13.59	1.165	2.59	10.65	3.24
2000.00	13.76	1.173	2.76	11.06	3.44
2200.00	13.92	1.181	2.92	11.45	3.64
2400.00	14.07	1.187	3.07	11.81	3.84
2600.00	14.22	1.193	3.22	12.15	4.02
2800.00	14.36	1.198	3.36	12.47	4.20
3000.00	14.50	1.203	3.50	12.78	4.37

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	18.50 ft

CURRENT DATE: 12-06-2005
CURRENT TIME: 13:11:11

FILE DATE: 12-06-2005
FILE NAME: SVP48103

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	11.50	11.00	143.00	6 RCB	10.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP48103 DATE: 12-06-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
14.66	1000.0	1000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.07	1200.0	1200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.46	1400.0	1400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
15.84	1600.0	1600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.21	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.59	2000.0	2000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.97	2200.0	2200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.37	2400.0	2400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.80	2600.0	2600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.24	2800.0	2800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.69	3000.0	2988.0	0.0	0.0	0.0	0.0	0.0	9.46	3
18.55	2928.3	2928.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP48103 DATE: 12-06-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
14.66	0.000	1000.00	0.00	0.00
15.07	0.000	1200.00	0.00	0.00
15.46	0.000	1400.00	0.00	0.00
15.84	0.000	1600.00	0.00	0.00
16.21	0.000	1800.00	0.00	0.00
16.59	0.000	2000.00	0.00	0.00
16.97	0.000	2200.00	0.00	0.00
17.37	0.000	2400.00	0.00	0.00
17.80	0.000	2600.00	0.00	0.00
18.24	0.000	2800.00	0.00	0.00
18.69	-0.005	3000.00	2.58	0.09

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 12-06-2005 FILE DATE: 12-06-2005
CURRENT TIME: 13:11:11 FILE NAME: SVP48103

PERFORMANCE CURVE FOR CULVERT 1 - 6(10.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
1000.00	14.66	3.16	3.16	1-S2n	1.85	2.06	1.76	1.83	9.50	8.58
1200.00	15.07	3.57	3.57	1-S2n	2.10	2.32	2.02	2.04	9.90	9.18
1400.00	15.46	3.96	3.96	1-S2n	2.33	2.57	2.27	2.23	10.27	9.72
1600.00	15.84	4.34	4.34	1-S2n	2.56	2.81	2.58	2.42	10.35	10.20
1800.00	16.21	4.71	4.71	1-S2n	2.77	3.04	2.80	2.59	10.72	10.65
2000.00	16.59	5.09	5.09	5-S2n	2.99	3.26	3.01	2.76	11.06	11.06
2200.00	16.97	5.47	5.47	5-S2n	3.20	3.48	3.22	2.92	11.37	11.45
2400.00	17.37	5.87	5.87	5-S2n	3.40	3.68	3.43	3.07	11.66	11.81
2600.00	17.80	6.30	6.30	5-S2n	3.60	3.89	3.63	3.22	11.93	12.15
2800.00	18.24	6.74	6.74	5-S2n	3.80	4.08	3.83	3.36	12.19	12.47
2987.96	18.69	7.19	7.19	5-S2n	3.99	4.26	4.01	3.50	12.41	12.78

El. inlet face invert 11.50 ft El. outlet invert 11.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       11.50 ft
      OUTLET STATION                       143.00 ft
      OUTLET ELEVATION                      11.00 ft
      NUMBER OF BARRELS                      6
      SLOPE (V/H)                            0.0035
      CULVERT LENGTH ALONG SLOPE           143.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             5.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 12-06-2005
CURRENT TIME: 13:11:11

FILE DATE: 12-06-2005
FILE NAME: SVP48103

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	60.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.020
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	11.00 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	11.00 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
1000.00	12.83	1.118	1.83	8.58	2.28
1200.00	13.04	1.133	2.04	9.18	2.55
1400.00	13.23	1.146	2.23	9.72	2.79
1600.00	13.42	1.156	2.42	10.20	3.02
1800.00	13.59	1.165	2.59	10.65	3.24
2000.00	13.76	1.173	2.76	11.06	3.44
2200.00	13.92	1.181	2.92	11.45	3.64
2400.00	14.07	1.187	3.07	11.81	3.84
2600.00	14.22	1.193	3.22	12.15	4.02
2800.00	14.36	1.198	3.36	12.47	4.20
3000.00	14.50	1.203	3.50	12.78	4.37

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	60.00 ft
OVERTOPPING CREST ELEVATION	18.55 ft

CURRENT DATE: 12-06-2005
CURRENT TIME: 13:22:12

FILE DATE: 12-06-2005
FILE NAME: SVP48243

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	11.50	11.00	164.00	3 RCB	12.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP48243 DATE: 12-06-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
16.27	1100.0	1100.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.50	1172.0	1172.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.73	1244.0	1244.0	0.0	0.0	0.0	0.0	0.0	0.00	1
16.96	1316.0	1316.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.20	1388.0	1388.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.44	1460.0	1460.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.58	1500.0	1500.0	0.0	0.0	0.0	0.0	0.0	0.00	1
17.96	1604.0	1604.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.23	1676.0	1676.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.51	1748.0	1748.0	0.0	0.0	0.0	0.0	0.0	0.00	1
18.73	1820.0	1801.8	0.0	0.0	0.0	0.0	0.0	16.41	3
18.50	1817.1	1817.1	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP48243 DATE: 12-06-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
16.27	0.000	1100.00	0.00	0.00
16.50	0.000	1172.00	0.00	0.00
16.73	0.000	1244.00	0.00	0.00
16.96	0.000	1316.00	0.00	0.00
17.20	0.000	1388.00	0.00	0.00
17.44	0.000	1460.00	0.00	0.00
17.58	0.000	1500.00	0.00	0.00
17.96	0.000	1604.00	0.00	0.00
18.23	0.000	1676.00	0.00	0.00
18.51	0.000	1748.00	0.00	0.00
18.73	-0.004	1820.00	1.80	0.10

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 12-06-2005 FILE DATE: 12-06-2005
CURRENT TIME: 13:22:12 FILE NAME: SVP48243

PERFORMANCE CURVE FOR CULVERT 1 - 3(12.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
1100.00	16.27	4.77	4.77	1-S2n	2.88	3.08	2.78	2.45	11.00	10.02
1172.00	16.50	5.00	5.00	1-S2n	3.01	3.21	2.91	2.54	11.18	10.24
1244.00	16.73	5.23	5.23	5-S2n	3.14	3.34	3.04	2.63	11.36	10.46
1316.00	16.96	5.46	5.46	5-S2n	3.26	3.47	3.17	2.72	11.53	10.66
1388.00	17.20	5.70	5.70	5-S2n	3.39	3.60	3.30	2.80	11.70	10.86
1460.00	17.44	5.94	5.94	5-S2n	3.51	3.72	3.42	2.89	11.86	11.05
1500.00	17.58	6.08	6.08	5-S2n	3.58	3.79	3.49	2.93	11.95	11.15
1604.00	17.96	6.46	6.46	5-S2n	3.75	3.96	3.66	3.05	12.18	11.41
1676.00	18.23	6.73	6.73	5-S2n	3.87	4.08	3.78	3.13	12.33	11.58
1748.00	18.51	7.01	7.01	5-S2n	3.99	4.19	3.89	3.20	12.47	11.75
1801.79	18.73	7.23	7.23	5-S2n	4.08	4.28	3.98	3.28	12.58	11.91

El. inlet face invert 11.50 ft El. outlet invert 11.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       11.50 ft
      OUTLET STATION                       164.00 ft
      OUTLET ELEVATION                      11.00 ft
      NUMBER OF BARRELS                      3
      SLOPE (V/H)                            0.0030
      CULVERT LENGTH ALONG SLOPE           164.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            12.00 ft
      BARREL RISE             5.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 12-06-2005
CURRENT TIME: 13:22:12

FILE DATE: 12-06-2005
FILE NAME: SVP48243

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	40.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.020
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	11.00 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	11.00 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
1100.00	13.45	1.129	2.45	10.02	3.05
1172.00	13.54	1.133	2.54	10.24	3.17
1244.00	13.63	1.137	2.63	10.46	3.28
1316.00	13.72	1.140	2.72	10.66	3.39
1388.00	13.80	1.143	2.80	10.86	3.50
1460.00	13.89	1.146	2.89	11.05	3.60
1500.00	13.93	1.148	2.93	11.15	3.66
1604.00	14.05	1.152	3.05	11.41	3.81
1676.00	14.13	1.154	3.13	11.58	3.90
1748.00	14.20	1.157	3.20	11.75	4.00
1820.00	14.28	1.159	3.28	11.91	4.09

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	120.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	18.50 ft

CURRENT DATE: 11-21-2005
CURRENT TIME: 14:24:18

FILE DATE: 11-21-2005
FILE NAME: SVP51267

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	23.11	22.00	133.00	4 RCB	10.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP51267 DATE: 11-21-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
23.11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
24.51	200.0	200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
25.34	400.0	400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
26.05	600.0	600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
26.69	800.0	800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
27.32	1000.0	1000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
27.76	1132.0	1132.0	0.0	0.0	0.0	0.0	0.0	0.00	1
28.71	1400.0	1389.8	0.0	0.0	0.0	0.0	0.0	7.08	2
29.24	1600.0	1517.4	0.0	0.0	0.0	0.0	0.0	81.91	3
29.70	1800.0	1619.0	0.0	0.0	0.0	0.0	0.0	180.55	3
30.13	2000.0	1706.4	0.0	0.0	0.0	0.0	0.0	292.51	2
28.58	1357.2	1357.2	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP51267 DATE: 11-21-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
23.11	0.000	0.00	0.00	0.00
24.51	0.000	200.00	0.00	0.00
25.34	0.000	400.00	0.00	0.00
26.05	0.000	600.00	0.00	0.00
26.69	0.000	800.00	0.00	0.00
27.32	0.000	1000.00	0.00	0.00
27.76	0.000	1132.00	0.00	0.00
28.71	-0.009	1400.00	3.12	0.22
29.24	-0.002	1600.00	0.65	0.04
29.70	-0.001	1800.00	0.43	0.02
30.13	-0.002	2000.00	1.08	0.05

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 11-21-2005 FILE DATE: 11-21-2005
CURRENT TIME: 14:24:18 FILE NAME: SVP51267

PERFORMANCE CURVE FOR CULVERT 1 - 4(10.00 (ft) BY 4.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	23.11	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200.00	24.51	1.40	1.40	1-S2n	0.63	0.92	0.65	1.08	7.70	6.79
400.00	25.34	2.23	2.23	1-S2n	0.99	1.46	1.03	1.63	9.69	8.68
600.00	26.05	2.94	2.94	1-S2n	1.29	1.92	1.38	2.07	10.90	9.97
800.00	26.69	3.58	3.58	1-S2n	1.57	2.32	1.69	2.44	11.83	10.97
1000.00	27.32	4.21	4.21	5-S2n	1.82	2.69	1.99	2.77	12.54	11.81
1132.00	27.76	4.65	4.65	5-S2n	1.98	2.93	2.18	2.98	13.01	12.29
1389.80	28.71	5.60	5.60	5-S2n	2.28	3.35	2.53	3.36	13.71	13.15
1517.44	29.24	6.13	6.13	5-S2n	2.42	3.56	2.71	3.62	14.02	13.71
1619.02	29.70	6.59	6.59	5-S2n	2.53	3.71	2.84	3.87	14.23	14.22
1706.40	30.12	7.01	6.08	4-FFt	2.62	3.85	2.62	4.10	16.26	14.69

El. inlet face invert 23.11 ft El. outlet invert 22.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       23.11 ft
      OUTLET STATION                       133.00 ft
      OUTLET ELEVATION                      22.00 ft
      NUMBER OF BARRELS                     4
      SLOPE (V/H)                           0.0083
      CULVERT LENGTH ALONG SLOPE           133.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             4.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 11-21-2005
CURRENT TIME: 14:24:18

FILE DATE: 11-21-2005
FILE NAME: SVP51267

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	25.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.026
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	22.00 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	22.00 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	22.00	0.000	0.00	0.00	0.00
200.00	23.08	1.148	1.08	6.79	1.76
400.00	23.63	1.197	1.63	8.68	2.65
600.00	24.07	1.222	2.07	9.97	3.35
800.00	24.44	1.238	2.44	10.97	3.96
1000.00	24.77	1.250	2.77	11.81	4.50
1132.00	24.98	1.256	2.98	12.29	4.83
1400.00	25.36	1.265	3.36	13.15	5.45
1600.00	25.62	1.270	3.62	13.71	5.87
1800.00	25.87	1.275	3.87	14.22	6.27
2000.00	26.10	1.278	4.10	14.69	6.65

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	28.58 ft

CURRENT DATE: 10-24-2005
CURRENT TIME: 14:52:12

FILE DATE: 10-24-2005
FILE NAME: SVP61824

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	44.20	42.86	135.01	4 RCB	10.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP61824 DATE: 10-24-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
44.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
45.60	200.0	200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
46.42	400.0	400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
47.13	600.0	600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
47.76	800.0	800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
48.33	1000.0	1000.0	0.0	0.0	0.0	0.0	0.0	0.00	1
48.89	1200.0	1200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
49.46	1400.0	1400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
49.95	1565.0	1565.0	0.0	0.0	0.0	0.0	0.0	0.00	1
50.70	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
51.33	2000.0	1978.0	0.0	0.0	0.0	0.0	0.0	20.57	3
51.06	1902.0	1902.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP61824 DATE: 10-24-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
44.20	0.000	0.00	0.00	0.00
45.60	0.000	200.00	0.00	0.00
46.42	0.000	400.00	0.00	0.00
47.13	0.000	600.00	0.00	0.00
47.76	0.000	800.00	0.00	0.00
48.33	0.000	1000.00	0.00	0.00
48.89	0.000	1200.00	0.00	0.00
49.46	0.000	1400.00	0.00	0.00
49.95	0.000	1565.00	0.00	0.00
50.70	0.000	1800.00	0.00	0.00
51.33	-0.003	2000.00	1.45	0.07

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 14:52:12 FILE NAME: SVP61824

PERFORMANCE CURVE FOR CULVERT 1 - 4(10.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	44.20	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200.00	45.60	1.40	1.40	1-S2n	0.59	0.92	0.52	0.74	9.60	12.68
400.00	46.42	2.22	2.22	1-S2n	0.94	1.46	0.98	1.11	10.18	16.28
600.00	47.13	2.93	2.93	1-S2n	1.22	1.92	1.31	1.40	11.49	18.75
800.00	47.76	3.56	3.56	1-S2n	1.48	2.32	1.61	1.66	12.42	20.68
1000.00	48.33	4.13	4.13	1-S2n	1.71	2.69	1.89	1.89	13.21	22.28
1200.00	48.89	4.69	4.69	1-S2n	1.94	3.04	2.18	2.10	13.75	23.65
1400.00	49.46	5.26	5.26	5-S2n	2.15	3.37	2.44	2.29	14.34	24.88
1565.00	49.95	5.75	5.75	5-S2n	2.32	3.63	2.66	2.44	14.71	25.79
1800.00	50.70	6.50	6.50	5-S2n	2.56	3.99	2.96	2.64	15.23	26.96
1977.97	51.32	7.12	7.12	5-S2n	2.73	4.24	3.14	2.80	15.73	27.87

El. inlet face invert 44.20 ft El. outlet invert 42.86 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       44.20 ft
      OUTLET STATION                       135.00 ft
      OUTLET ELEVATION                      42.86 ft
      NUMBER OF BARRELS                      4
      SLOPE (V/H)                            0.0099
      CULVERT LENGTH ALONG SLOPE           135.01 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             5.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 14:52:12 FILE NAME: SVP61824

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	20.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.150
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	42.86 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	42.86 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	42.86	0.000	0.00	0.00	0.00
200.00	43.60	2.607	0.74	12.68	6.88
400.00	43.97	2.727	1.11	16.28	10.35
600.00	44.26	2.789	1.40	18.75	13.13
800.00	44.52	2.829	1.66	20.68	15.53
1000.00	44.75	2.857	1.89	22.28	17.67
1200.00	44.96	2.878	2.10	23.65	19.63
1400.00	45.15	2.898	2.29	24.88	21.43
1565.00	45.30	2.910	2.44	25.79	22.83
1800.00	45.50	2.924	2.64	26.96	24.72
2000.00	45.66	2.934	2.80	27.87	26.23

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	51.06 ft

CURRENT DATE: 10-24-2005
CURRENT TIME: 13:45:20

FILE DATE: 10-24-2005
FILE NAME: SVP63089

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	50.40	49.50	155.00	4 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP63089 DATE: 10-24-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
50.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
51.81	200.0	200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
52.65	400.0	400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
53.38	600.0	600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
54.15	800.0	800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
54.64	910.0	910.0	0.0	0.0	0.0	0.0	0.0	0.00	1
56.03	1200.0	1171.0	0.0	0.0	0.0	0.0	0.0	26.07	4
56.64	1400.0	1266.2	0.0	0.0	0.0	0.0	0.0	133.12	3
57.15	1600.0	1340.9	0.0	0.0	0.0	0.0	0.0	258.65	3
57.61	1800.0	1404.8	0.0	0.0	0.0	0.0	0.0	394.71	3
58.04	2000.0	1462.0	0.0	0.0	0.0	0.0	0.0	537.73	3
55.72	1117.9	1117.9	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP63089 DATE: 10-24-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
50.40	0.000	0.00	0.00	0.00
51.81	0.000	200.00	0.00	0.00
52.65	0.000	400.00	0.00	0.00
53.38	0.000	600.00	0.00	0.00
54.15	0.000	800.00	0.00	0.00
54.64	0.000	910.00	0.00	0.00
56.03	-0.009	1200.00	2.96	0.25
56.64	-0.002	1400.00	0.70	0.05
57.15	-0.001	1600.00	0.40	0.03
57.61	-0.001	1800.00	0.52	0.03
58.04	-0.001	2000.00	0.28	0.01

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 13:45:20 FILE NAME: SVP63089

PERFORMANCE CURVE FOR CULVERT 1 - 4(10.00 (ft) BY 3.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	50.40	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200.00	51.81	1.41	1.41	1-S2n	0.71	0.92	0.62	0.76	8.05	4.26
400.00	52.65	2.25	2.25	1-S2n	1.12	1.46	1.06	1.15	9.42	5.56
600.00	53.38	2.98	2.98	1-S2n	1.46	1.92	1.50	1.47	10.03	6.48
800.00	54.15	3.75	3.75	5-S2n	1.77	2.32	1.84	1.75	10.87	7.22
910.00	54.64	4.24	4.24	5-S2n	1.93	2.53	2.01	1.88	11.32	7.57
1170.97	56.03	5.63	5.63	5-S2n	2.29	2.99	2.41	2.22	12.14	8.38
1266.18	56.64	6.24	5.44	6-S2n	2.42	3.00	2.55	2.43	12.41	8.87
1340.95	57.15	6.75	5.85	6-S2n	2.51	3.00	2.67	2.63	12.56	9.31
1404.78	57.61	7.21	6.22	6-S2n	2.60	3.00	2.84	2.82	12.37	9.71
1461.99	58.04	7.64	6.56	4-S2n	2.67	3.00	2.90	3.00	12.60	10.09

El. inlet face invert 50.40 ft El. outlet invert 49.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       50.40 ft
      OUTLET STATION                       155.00 ft
      OUTLET ELEVATION                      49.50 ft
      NUMBER OF BARRELS                     4
      SLOPE (V/H)                           0.0058
      CULVERT LENGTH ALONG SLOPE           155.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             3.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-24-2005
CURRENT TIME: 13:45:20

FILE DATE: 10-24-2005
FILE NAME: SVP63089

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	60.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.015
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	49.50 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	49.50 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	49.50	0.000	0.00	0.00	0.00
200.00	50.26	0.859	0.76	4.26	0.71
400.00	50.65	0.911	1.15	5.56	1.08
600.00	50.97	0.941	1.47	6.48	1.38
800.00	51.25	0.963	1.75	7.22	1.63
910.00	51.38	0.972	1.88	7.57	1.76
1200.00	51.72	0.991	2.22	8.38	2.08
1400.00	51.93	1.002	2.43	8.87	2.28
1600.00	52.13	1.011	2.63	9.31	2.46
1800.00	52.32	1.019	2.82	9.71	2.64
2000.00	52.50	1.025	3.00	10.09	2.81

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	110.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	55.72 ft

CURRENT DATE: 10-24-2005
CURRENT TIME: 14:21:03

FILE DATE: 10-24-2005
FILE NAME: SVP63208

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	49.54	49.27	135.00	3 RCB	12.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: SVP63208 DATE: 10-24-2005

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
49.54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
51.19	200.0	200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
52.17	400.0	400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
52.98	600.0	600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
53.71	800.0	800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
54.08	910.0	910.0	0.0	0.0	0.0	0.0	0.0	0.00	1
55.01	1200.0	1200.0	0.0	0.0	0.0	0.0	0.0	0.00	1
55.60	1400.0	1400.0	0.0	0.0	0.0	0.0	0.0	0.00	1
56.16	1600.0	1600.0	0.0	0.0	0.0	0.0	0.0	0.00	1
56.64	1800.0	1770.2	0.0	0.0	0.0	0.0	0.0	30.22	2
57.12	2000.0	1885.9	0.0	0.0	0.0	0.0	0.0	113.51	3
56.30	1648.9	1648.9	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SVP63208 DATE: 10-24-2005

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
49.54	0.000	0.00	0.00	0.00
51.19	0.000	200.00	0.00	0.00
52.17	0.000	400.00	0.00	0.00
52.98	0.000	600.00	0.00	0.00
53.71	0.000	800.00	0.00	0.00
54.08	0.000	910.00	0.00	0.00
55.01	0.000	1200.00	0.00	0.00
55.60	0.000	1400.00	0.00	0.00
56.16	0.000	1600.00	0.00	0.00
56.64	0.001	1800.00	-0.44	-0.02
57.12	-0.001	2000.00	0.55	0.03

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-24-2005 FILE DATE: 10-24-2005
CURRENT TIME: 14:21:03 FILE NAME: SVP63208

PERFORMANCE CURVE FOR CULVERT 1 - 3(12.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	49.54	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200.00	51.19	1.51	1.65	3-M1t	1.06	0.99	1.28	1.28	4.35	5.69
400.00	52.17	2.40	2.63	3-M1t	1.67	1.57	1.92	1.92	5.80	7.24
600.00	52.98	3.16	3.44	3-M1t	2.19	2.06	2.42	2.42	6.88	8.30
800.00	53.71	3.84	4.17	3-M1t	2.66	2.49	2.86	2.86	7.78	9.12
910.00	54.08	4.19	4.54	3-M1t	2.91	2.71	3.07	3.07	8.23	9.51
1200.00	55.01	5.09	5.47	3-M1t	3.53	3.26	3.59	3.59	9.27	10.37
1400.00	55.60	5.74	6.06	3-M2t	3.93	3.62	3.92	3.92	9.93	10.88
1600.00	56.16	6.45	6.62	3-M2t	4.33	3.95	4.22	4.22	10.53	11.34
1770.22	56.64	7.10	7.09	3-M2t	5.00	4.23	4.51	4.51	10.92	11.75
1885.94	57.12	7.58	7.39	3-M2t	5.00	4.41	4.77	4.77	10.97	12.13

El. inlet face invert 49.54 ft El. outlet invert 49.27 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                       49.54 ft
      OUTLET STATION                       135.00 ft
      OUTLET ELEVATION                      49.27 ft
      NUMBER OF BARRELS                     3
      SLOPE (V/H)                           0.0020
      CULVERT LENGTH ALONG SLOPE           135.00 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            12.00 ft
      BARREL RISE             5.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.012
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 10-24-2005
CURRENT TIME: 14:21:03

FILE DATE: 10-24-2005
FILE NAME: SVP63208

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH	25.00 ft
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (ft/ft)	0.015
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	49.27 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	49.27 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	49.27	0.000	0.00	0.00	0.00
200.00	50.55	0.888	1.28	5.69	1.19
400.00	51.19	0.923	1.92	7.24	1.79
600.00	51.69	0.940	2.42	8.30	2.27
800.00	52.13	0.951	2.86	9.12	2.67
910.00	52.34	0.956	3.07	9.51	2.88
1200.00	52.86	0.964	3.59	10.37	3.36
1400.00	53.19	0.969	3.92	10.88	3.67
1600.00	53.49	0.972	4.22	11.34	3.95
1800.00	53.78	0.975	4.51	11.75	4.22
2000.00	54.04	0.978	4.77	12.13	4.47

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	100.00 ft
CREST LENGTH	50.00 ft
OVERTOPPING CREST ELEVATION	56.30 ft

The initial flow capacity for the existing channel located within the CAP sub-area along Sun Valley Parkway was initially designed by Collar Williams and White (1998). JEF performed preliminary analysis of these results using Flow Master Version 7.0. Table 1 below summarizes the results of Collar Williams and White. Table 2 summarizes the results of three separate parameters using Flow Master. The three parameters are described in Table 2. Flow Master results are shown in the following pages.

Table 1

Design Results			
Published Design Information			
Stationing Range	**Design Flow (cfs)**	**Water Depth**	**Manning's N Value**
850+00 to 875+00	**3790**	6.0	0.03
875+00 to 890+00	**3360**	6.0	0.03
890+00 to 910+00	**2145**	5.0	0.03
910+00 to 933+00	**2108**	5.0	0.03
933+00 to 946+00	**1906**	5.0	0.03
946+00 to 964+00	**1735**	5.0	0.03
964+00 to 986+00	**1464**	3.0	0.03
986+00 to 997+97	**654**	2.5	0.03

Table 2

		Flow Master Results (Note: Drop Structures not accounted for)								
		Test # 1- Comparable to Design Parameters with 1 Foot of Freeboard			Test # 2- Comparable Manning N values, but Water Depth raised to Max Channel Depth			Test # 3- Water depth raised to Max Channel Depth and Estimated N Values from 2005 aerials		
Stationing Range	**Design Flow (cfs)**	**Water Depth (ft)**	**Overall Manning's N Value**	**Discharge (cfs)**	**Water Depth (ft)**	**Overall Manning's N Value**	**Discharge (cfs)**	**Water Depth (ft)**	**Overall Manning's N Value**	**Discharge (cfs)**
850+00 to 875+00	**3790**	5.5	0.03	**1983**	6.5	0.03	**2920**	6.50	0.031	**2860**
875+00 to 890+00	**3360**	5.5	0.03	**1983**	6.5	0.03	**2920**	6.50	0.031	**2860**
890+00 to 910+00	**2145**	4.5	0.03	**1039**	5.5	0.03	**1678**	5.50	0.029	**1720**
910+00 to 933+00	**2108**	4.5	0.03	**1039**	5.5	0.03	**1678**	5.50	0.029	**1720**
933+00 to 946+00	**1906**	4.5	0.03	**1039**	5.5	0.03	**1678**	5.50	0.029	**1720**
946+00 to 964+00	**1735**	4.5	0.03	**1039**	5.5	0.03	**1678**	5.50	0.029	**1720**

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St850+00to890+00-Test1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.001500 ft/ft
Water Surface Elevation	6.00 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 6.50
Discharge	2,429.22 cfs
Flow Area	512.4 ft²
Wetted Perimeter	131.92 ft
Top Width	130.22 ft
Actual Depth	6.00 ft
Critical Elevation	4.08 ft
Critical Slope	0.009941 ft/ft
Velocity	4.74 ft/s
Velocity Head	0.35 ft
Specific Energy	6.35 ft
Froude Number	0.42
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+34	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	6.50
0+18	2.00

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+52	2.00
0+58	0.00
0+78	0.00
0+84	2.00
1+18	2.00
1+34	6.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St850+00to890+00-Test2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.001 ft/ft 500
Water Surface Elevation	6.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 6.50
Discharge	2,915.91 cfs
Flow Area	578.5 ft²
Wetted Perimeter	135.82 ft
Top Width	134.00 ft
Actual Depth	6.50 ft
Critical Elevation	4.41 ft
Critical Slope	0.009597 ft/ft
Velocity	5.04 ft/s
Velocity Head	0.39 ft
Specific Energy	6.89 ft
Froude Number	0.43
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+34	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	6.50

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+18	2.00
0+52	2.00
0+58	0.00
0+78	0.00
0+84	2.00
1+18	2.00
1+34	6.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St850+00to890+00-Test3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.001500 ft/ft
Water Surface Elevation	6.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results		
Mannings Coefficient	0.031	
Elevation Range	0.00 to 6.50	
Discharge	2,860.82	cfs
Flow Area	578.5	ft^2
Wetted Perimeter	135.82	ft
Top Width	134.00	ft
Actual Depth	6.50	ft
Critical Elevation	4.37	ft
Critical Slope	0.010008	ft/ft
Velocity	4.95	ft/s
Velocity Head	0.38	ft
Specific Energy	6.88	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+58	0.035
0+58	0+78	0.025
0+78	1+34	0.035

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	6.50
0+18	2.00
0+52	2.00
0+58	0.00
0+78	0.00
0+84	2.00
1+18	2.00
1+34	6.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St890+00to964+00-Test1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.001 ft/ft 500
Water Surface Elevation	5.00 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 5.50
Discharge	1,341.27 cfs
Flow Area	328.0 ft²
Wetted Perimeter	105.39 ft
Top Width	104.00 ft
Actual Depth	5.00 ft
Critical Elevation	3.40 ft
Critical Slope	0.010768 ft/ft
Velocity	4.09 ft/s
Velocity Head	0.26 ft
Specific Energy	5.26 ft
Froude Number	0.41
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+08	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	5.50

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+14	2.00
0+38	2.00
0+44	0.00
0+64	0.00
0+70	2.00
0+94	2.00
1+08	5.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St890+00to964+00-Test2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.001 ft/ft 500
Water Surface Elevation	5.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 5.50
Discharge	1,678.12 cfs
Flow Area	381.0 ft²
Wetted Perimeter	109.51 ft
Top Width	108.00 ft
Actual Depth	5.50 ft
Critical Elevation	3.72 ft
Critical Slope	0.010315 ft/ft
Velocity	4.40 ft/s
Velocity Head	0.30 ft
Specific Energy	5.80 ft
Froude Number	0.41
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+08	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	5.50

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+14	2.00
0+38	2.00
0+44	0.00
0+64	0.00
0+70	2.00
0+94	2.00
1+08	5.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St890+00to964+00-Test3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.001 ft/ft 500
Water Surface Elevation	5.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.029
Elevation Range	0.00 to 5.50
Discharge	1,721.53 cfs
Flow Area	381.0 ft²
Wetted Perimeter	109.51 ft
Top Width	108.00 ft
Actual Depth	5.50 ft
Critical Elevation	3.76 ft
Critical Slope	0.009754 ft/ft
Velocity	4.52 ft/s
Velocity Head	0.32 ft
Specific Energy	5.82 ft
Froude Number	0.42
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+44	0.035
0+44	0+64	0.025
0+64	1+08	0.035

Natural Channel Points

Worksheet
Worksheet for Irregular Channel

Station (ft)	Elevation (ft)
0+00	5.50
0+14	2.00
0+38	2.00
0+44	0.00
0+64	0.00
0+70	2.00
0+94	2.00
1+08	5.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St964+00to986+00-Test1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.003000 ft/ft
Water Surface Elevation	3.00 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 3.50
Discharge	1,428.49 cfs
Flow Area	276.0 ft²
Wetted Perimeter	104.74 ft
Top Width	104.00 ft
Actual Depth	3.00 ft
Critical Elevation	2.07 ft
Critical Slope	0.010674 ft/ft
Velocity	5.18 ft/s
Velocity Head	0.42 ft
Specific Energy	3.42 ft
Froude Number	0.56
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+08	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	3.50

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+14	0.00
0+94	0.00
1+08	3.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St964+00to986+00-Test2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.003000 ft/ft
Water Surface Elevation	3.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 3.50
Discharge	1,865.71 cfs
Flow Area	329.0 ft²
Wetted Perimeter	108.86 ft
Top Width	108.00 ft
Actual Depth	3.50 ft
Critical Elevation	2.46 ft
Critical Slope	0.010140 ft/ft
Velocity	5.67 ft/s
Velocity Head	0.50 ft
Specific Energy	4.00 ft
Froude Number	0.57
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+08	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	3.50

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+14	0.00
0+94	0.00
1+08	3.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St964+00to986+00-Test3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.003000 ft/ft
Water Surface Elevation	3.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.035
Elevation Range	0.00 to 3.50
Discharge	1,599.18 cfs
Flow Area	329.0 ft²
Wetted Perimeter	108.86 ft
Top Width	108.00 ft
Actual Depth	3.50 ft
Critical Elevation	2.23 ft
Critical Slope	0.014217 ft/ft
Velocity	4.86 ft/s
Velocity Head	0.37 ft
Specific Energy	3.87 ft
Froude Number	0.49
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+08	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	3.50

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+14	0.00
0+94	0.00
1+08	3.50

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St986+00to997+97-Test1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.004000 ft/ft
Water Surface Elevation	2.50 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 3.00
Discharge	776.47 cfs
Flow Area	150.0 ft²
Wetted Perimeter	70.62 ft
Top Width	70.00 ft
Actual Depth	2.50 ft
Critical Elevation	1.86 ft
Critical Slope	0.011214 ft/ft
Velocity	5.18 ft/s
Velocity Head	0.42 ft
Specific Energy	2.92 ft
Froude Number	0.62
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+74	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	3.00

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+12	0.00
0+62	0.00
0+74	3.00

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St986+00to997+97-Test2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.004000 ft/ft
Water Surface Elevation	3.00 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Elevation Range	0.00 to 3.00
Discharge	1,070.03 cfs
Flow Area	186.0 ft²
Wetted Perimeter	74.74 ft
Top Width	74.00 ft
Actual Depth	3.00 ft
Critical Elevation	2.27 ft
Critical Slope	0.010575 ft/ft
Velocity	5.75 ft/s
Velocity Head	0.51 ft
Specific Energy	3.51 ft
Froude Number	0.64
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+74	0.030

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	3.00

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+12	0.00
0+62	0.00
0+74	3.00

Worksheet
Worksheet for Irregular Channel

Project Description	
Worksheet	St986+00to997+97-Test3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.004000 ft/ft
Water Surface Elevation	3.00 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.035
Elevation Range	0.00 to 3.00
Discharge	917.17 cfs
Flow Area	186.0 ft²
Wetted Perimeter	74.74 ft
Top Width	74.00 ft
Actual Depth	3.00 ft
Critical Elevation	2.06 ft
Critical Slope	0.014803 ft/ft
Velocity	4.93 ft/s
Velocity Head	0.38 ft
Specific Energy	3.38 ft
Froude Number	0.55
Flow Type	Subcritical

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+74	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	3.00

Worksheet
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+12	0.00
0+62	0.00
0+74	3.00