File ACT/007/026 #2

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DIVISION OF OIL
GAS & MINING

CONSULTANTS/ENGINEERS
HANSEN ALLEN & LUCE INC
6771 SOUTH 900 EAST
MIDVALE, UTAH 84047
(801) 566-5599

August 24, 1987

Mr. Lowell Braxton
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center Suite 350
Salt Lake City, Utah 84180-1203

RE: Plateau Mining Company Channel Reclamation Requirements

Dear Mr. Braxton:

Plateau Mining Company is required by stipulation to their present mine permit application to submit calculations and design details for proposed channel reclamation at their Star Point Mine Facility at Wattis Utah. As stated in UMC 817.44, a 24-hour precipitation event is to be used for design of all permanent channels and diversions. It has been our experience to date that the only 24-hour distribution that is acceptable to the Division of Oil, Gas, and Mining is the Soil Conservation Service Type II 24-hour distribution. We also feel that it is common knowledge among the hydrologic community that the SCS 24-hour Type II distribution is an extreme distribution that is not characteristic of storms in Utah. In fact it is also common knowledge that 24-hour storms are not characteristic of Utah storms and that the short duration storms are the storms that result in the highest flows. Therefore, the purpose of this letter is to present information, findings, and conclusions regarding not only various precipitation distributions but also with regard to the duration of the design event and request that the Division make a determination with regard to the appropriate hydrologic design approach for channel reclamation at the Plateau Mine.

Various studies have been undertaken to identify appropriate precipitation distributions for various locations throughout the United States. Perhaps the most frequently referenced storm distribution, used when a local distribution is not available, is the SCS Type II 24-hour storm distribution (see Figure 1). The SCS Type II storm distribution is a generic distribution

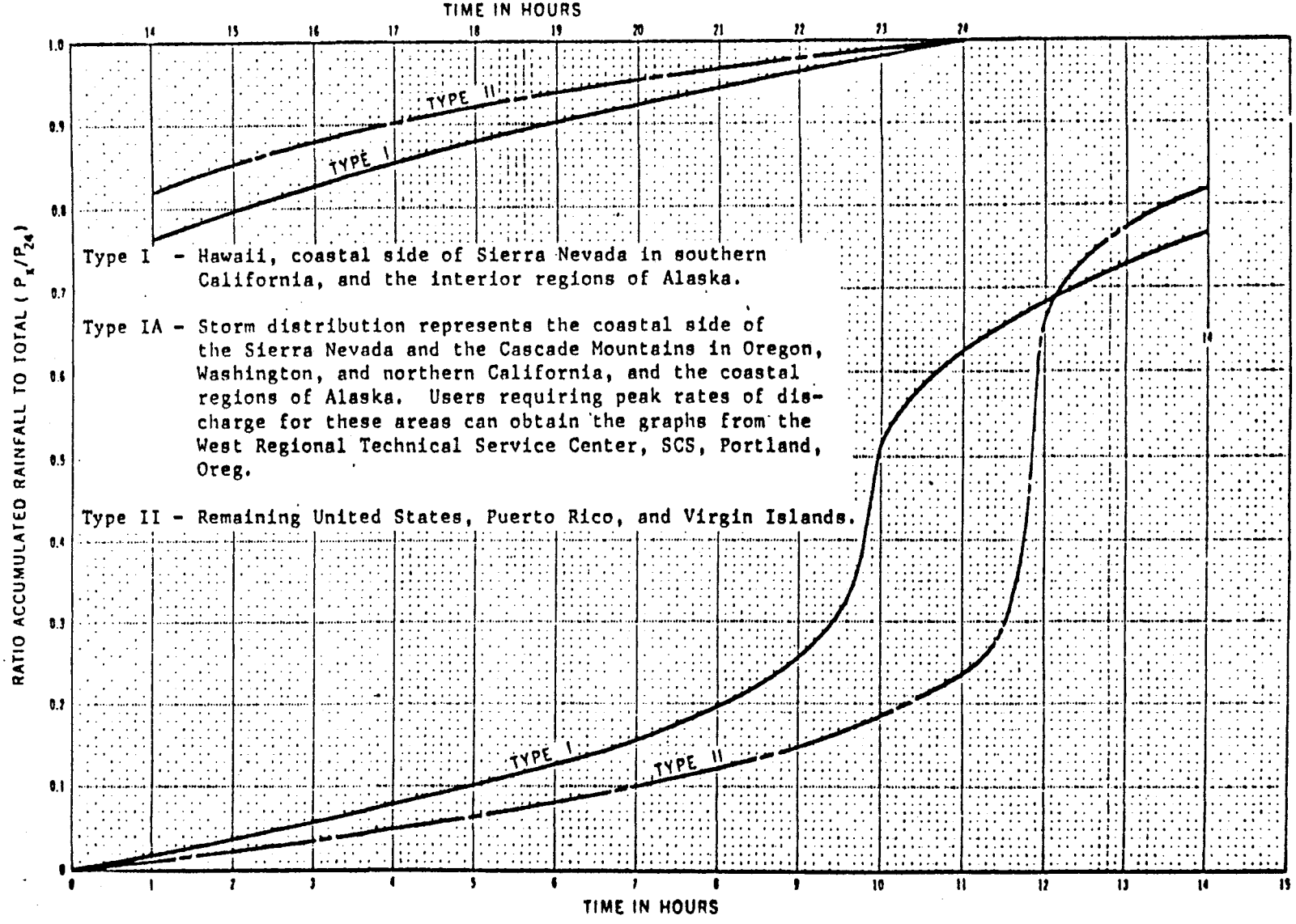
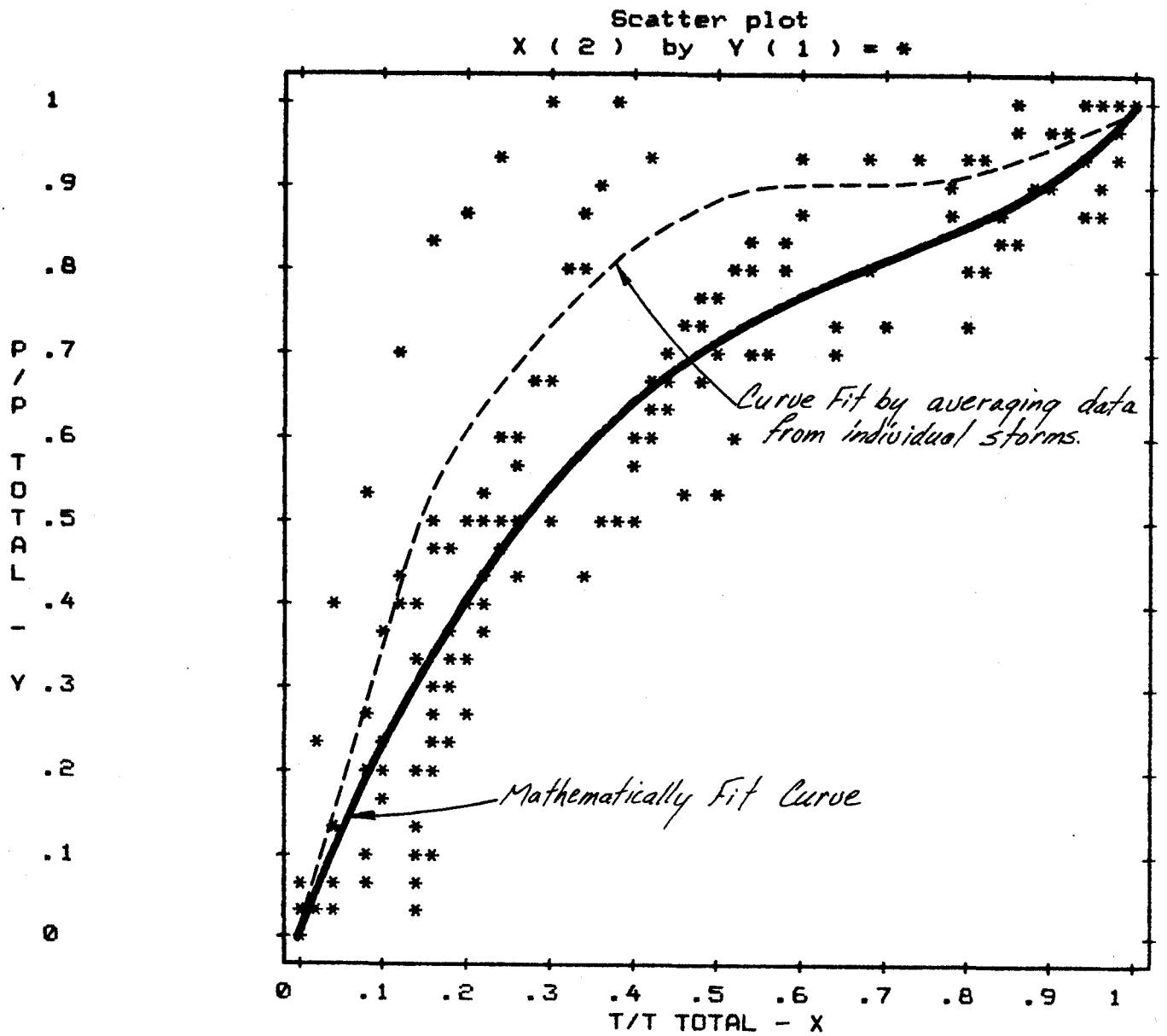


FIGURE 1 SCS TWENTY-FOUR-HOUR RAINFALL DISTRIBUTIONS (FROM KENT, 1973).

applicable for the entire United states, Puerto Rico, and the Virgin Islands with the exception of Hawaii; the coastal side of the Sierra Nevada and Cascade mountains in California, Oregon, and Washington; and Alaska. Attempts have been made by Dr. Richard Hawkins of Utah State University to acquire the data used to develop the SCS 24 hour distribution in an effort to study its local applicability. To date he has been unsuccessful in his attempts to acquire the data from which it was derived. Data presented below will illustrate how extreme this distribution is when compared with a local distribution derived from precipitation data collected on the western side of the Wasatch Plateau near Ephraim, Utah over the period from 1919 to 1965.

Results questioning the applicability of the SCS 24 hour storm distribution for use in Utah, particularly for use in central Utah, were obtained by Hansen, Allen and Luce, Inc. (formerly Vaughn Hansen Associates) when an investigation was undertaken for Utah Power and Light Company to analyze rainfall data from the Great Basin Experimental Area near Ephraim, Utah to identify an appropriate local 24 hour storm distribution. The results of this study were previously submitted to DOGM in behalf of Utah Power and Light Company in a report entitled "24-Hour Distribution of Precipitation in Mountainous Areas of Central Utah" dated August 1985. An update to the 24-hour storm distribution data submitted in said report was submitted in a letter to Tom Munson of DOGM (dated October 29, 1985). First, second, and third quartile 24-hour storm distributions were generated from this study, referred to and illustrated on Figures 2, 3, and 4 as the GBEA first, second, and third quartile 24-hour storm distributions. The precipitation data obtained from the Great Basin Experimental Area over the period of from 1919 to 1965 indicate that very few storms could in actuality be classified as a true 24-hour storm. Only six storms over the 46-year period of record could be considered as continuous or nearly continuous over a 24-hour period. In order to obtain enough storms to provide a reasonable base for analysis, the criteria was established that a storm would be considered to be a 24-hour storm if precipitation occurred over a 24-hour period with no more than a single 4-hour break in precipitation. The majority of data show that a shorter duration storm in the vicinity of 6 hours or less is much more applicable to the area than the 24-hour distribution. Conclusions reached from the Ephraim data indicate that 24-hour storms are not typical of the mountain valley topography characteristic of the area.

A comparison of the GBEA and SCS 24-hour storm distributions highlights the fact that the SCS distribution predicts a peak runoff flow rate for sample watersheds (the data of which is

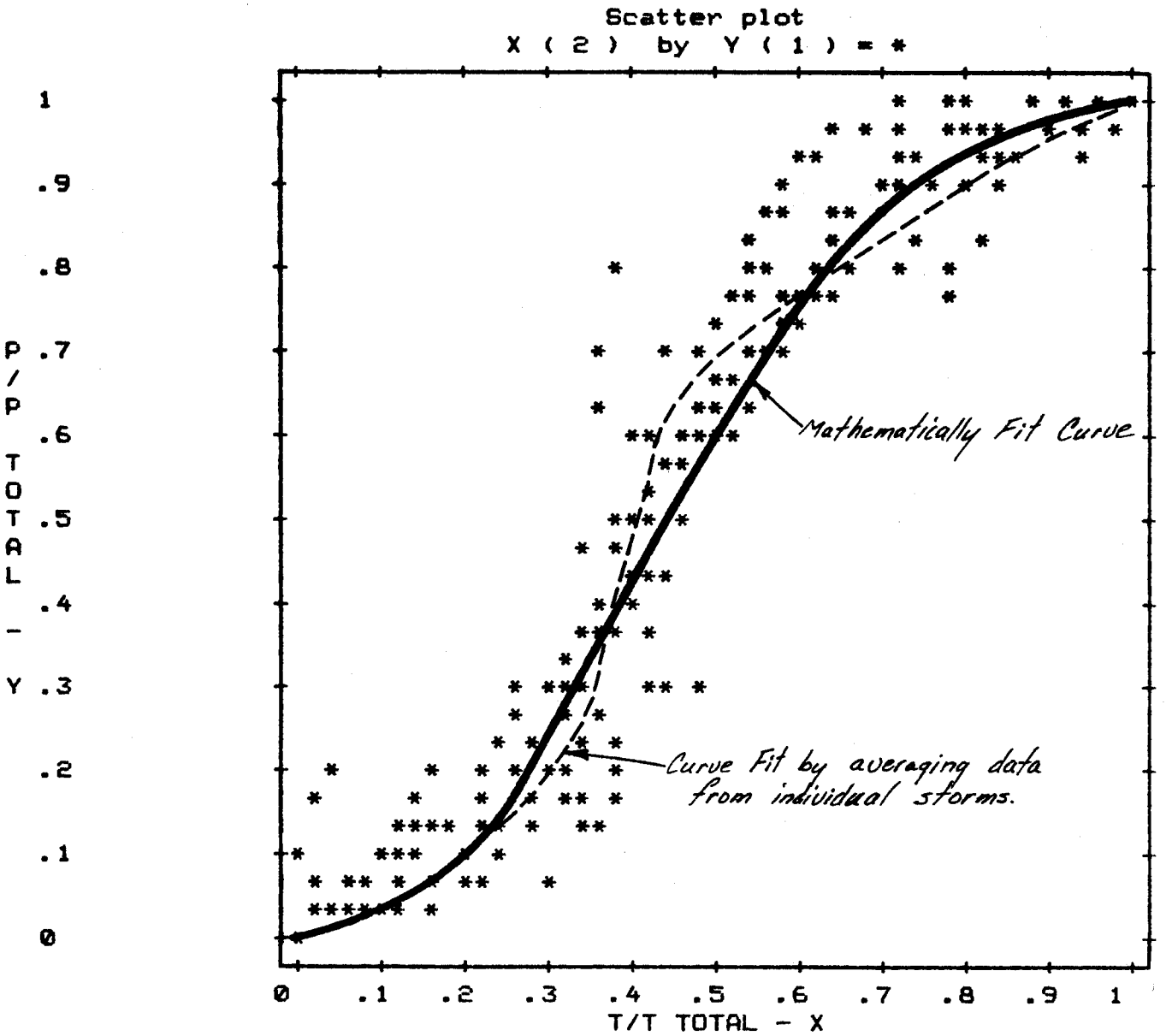


Best fit curve:

$$P/P_{TOTAL} = 0.004 + 2.5514(T/T_{TOTAL}) - 2.9508(T/T_{TOTAL})^2 + 1.3618(T/T_{TOTAL})^3$$

$$R^2 = 0.78$$

Figure 2. First Quartile combined storm distribution data and best fit curve (GBEA).

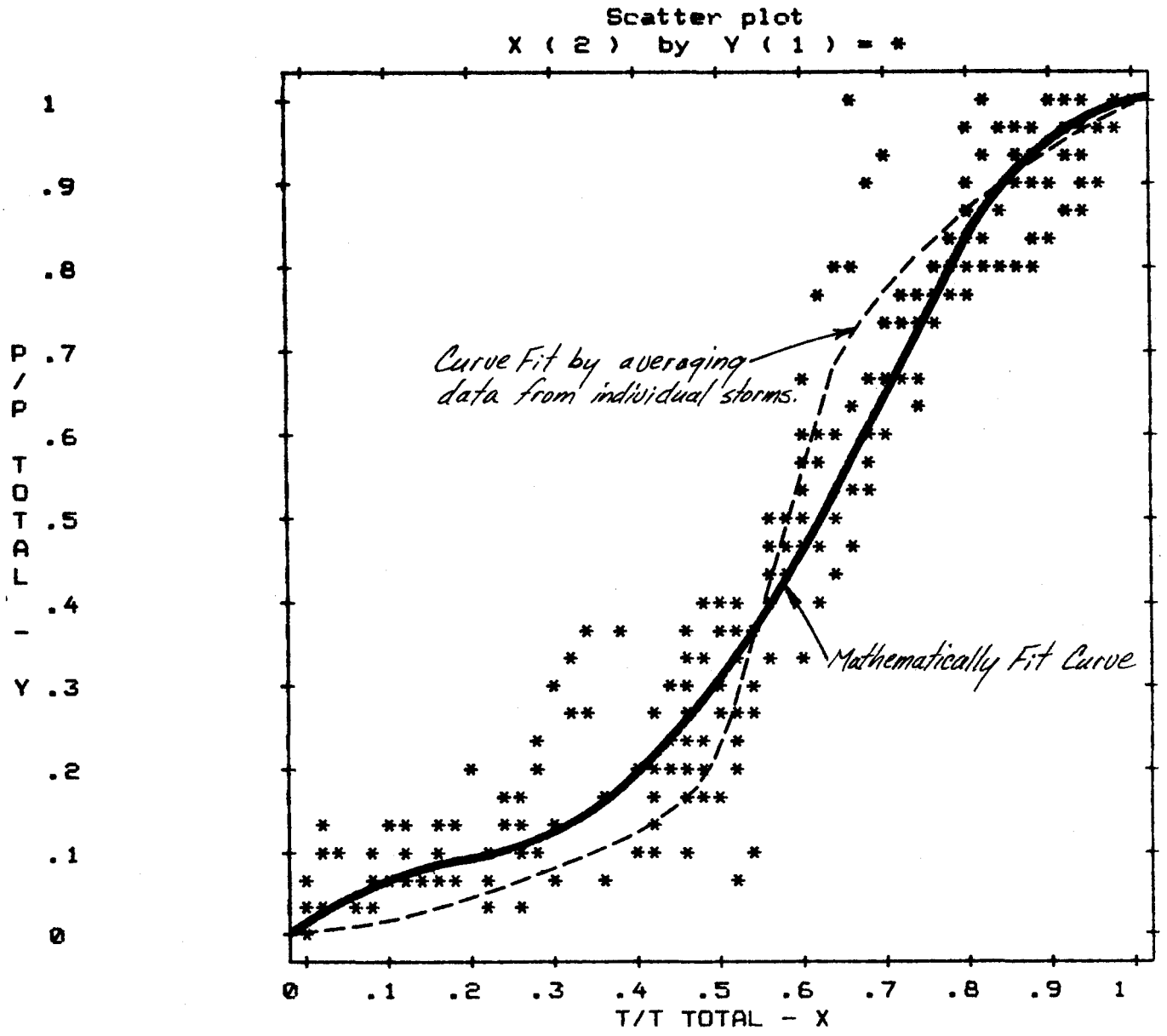


Best fit curve:

$$P/P_{TOTAL} = 0.05896 - 1.001(T/T_{TOTAL}) + 7.8682(T/T_{TOTAL})^2 - 8.9113(T/T_{TOTAL})^3 + 2.9530(T/T_{TOTAL})^4$$

$$R^2 = 0.93$$

Figure 3. Second Quartile combined storm distribution data and best fit curve (GBEA).



Best fit curve:

$$P/P_{TOTAL} = 0.01026 + 0.945(T/T_{TOTAL}) - 4.572(T/T_{TOTAL})^2 + 10.8685(T/T_{TOTAL})^3 - 6.3054(T/T_{TOTAL})^4$$

$$R^2 = 0.93$$

Figure 4. Third Quartile combined storm distribution data and best fit curve (GBEA).

presented below) on the order of three times that of the critical GBEA storm distribution. Since the GBEA distribution was developed from local data, the validity of the SCS distribution for Utah must be questioned, particularly when the cost is taken into consideration of constructing runoff conveyance facilities for a design event that probably has a much greater return period than is required by the regulations. This is reasonable due to the fact that the SCS distribution was probably developed based on data originating from non Utah data sources in areas not topographically similar. Reason stands that local distribution development should and must be considered more reliable and accurate than that developed at remote and distant locations.

Other local researchers have also had interest in identifying appropriate storm distribution patterns for Utah areas. One such research team from Utah State University (Dr's Farmer and Fletcher) used data developed from precipitation gages in the Farmington area which lies along the Wasatch Front to the north of Salt Lake City. In their study they found that the most representative storm for the area had a 6-hour or lesser duration. The storm distribution resulting from their investigation has become known as the Farmer-Fletcher Storm Distribution. It was noted by Farmer and Fletcher that the intensity and timing of rainfall also varied with storm. Some of the storms showed that the greatest intensity occurred during the first quartile (first quarter of the storm) while other storms indicated that the greatest storm intensity occurred during the second quartile (second quarter of the storm). The first and second quartile Farmer-Fletcher storm distributions are shown on Figure 5.

In order to analyze what variations might be expected in peak flows from a runoff producing event for sample watersheds at Plateau, the SCS 24-hour distribution was compared to the runoff derived using the GBEA third quartile 24-hour distribution for a 100-year precipitation event. Peak flows were also generated for 100-year 6-hour, 100-year 4-hour, 100-year 3-hour, 100-year 2-hour, and 100-year 1-hour events using the SCS 6-hour storm distribution and the Farmer Fletcher second quartile storm distribution. The comparison is shown in Table 1. Computer generated hydrographs for the sample watersheds are attached.

These results illustrate the extreme nature of the SCS 24-hour storm distribution and that when this distribution is neglected in favor of the local distribution, the 24-hour storm is not the governing storm. Nor does the 6-hour event produce the peak flowrate that can be expected from the 100-year storm. The peak flowrate occurs from the 1- or 2-hour event.

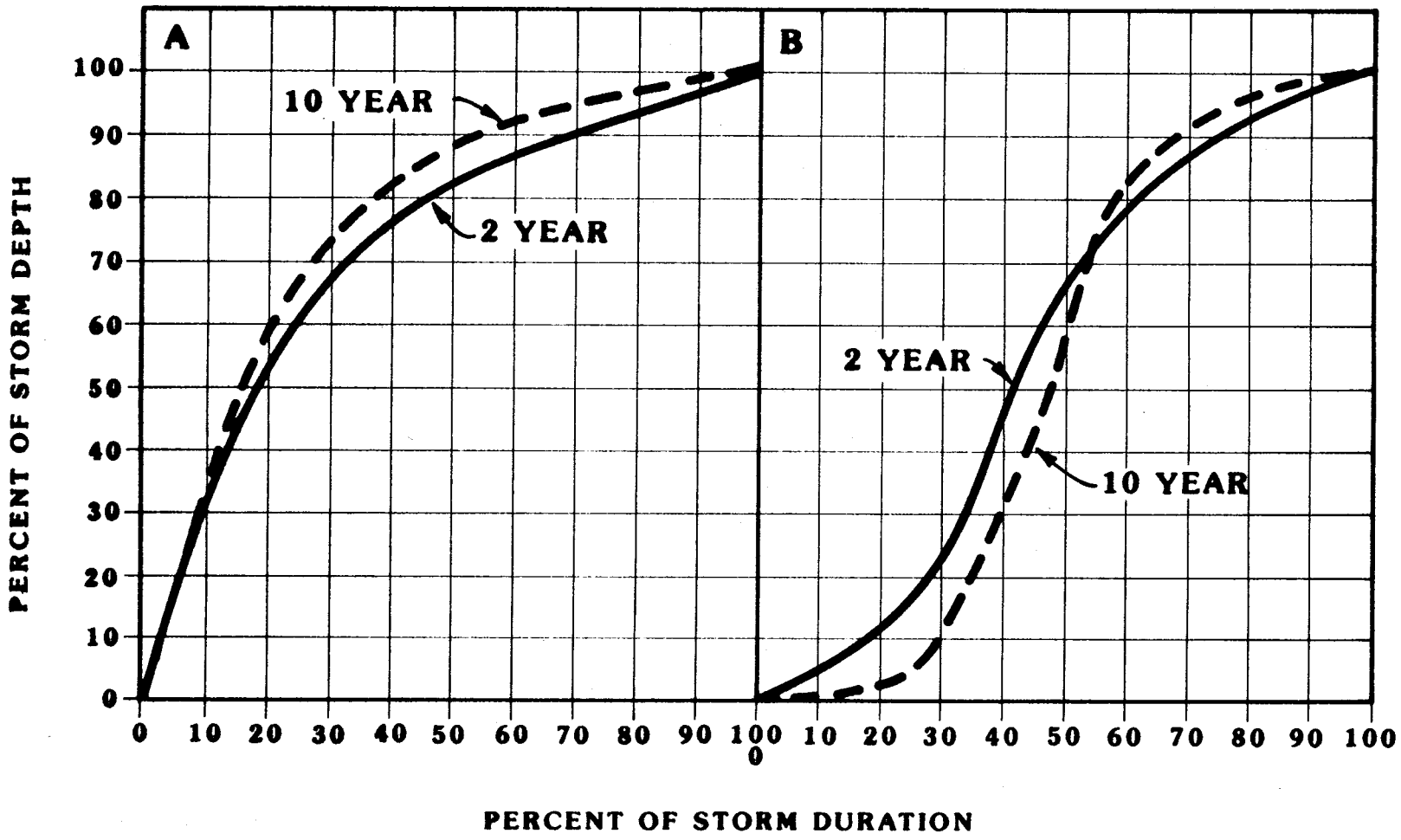


Figure 5. The time distribution of first (A), and second (B) quartile storms that contained one or more 10 minute rainfall bursts with recurrence intervals of 2 and 10 years. (From Farmer and Fletcher, 1972)

TABLE 1. Comparison of Predicted Flows Using SCS, GBEA and Farmer-Fletcher Storm Distributions.

Storm Duration (Hours)	Distribution Used	Hydrograph Peak (cfs)
Watershed Tributary to Reclaimed Culvert 25B		
24	SCS 24 Hour	150.8
24	GBEA 24 Hour - 3rd Quartile	38.9
6	SCS 6 Hour	41.9
4	SCS 6 Hour	42.2
3	SCS 6 Hour	39.3
2	SCS 6 Hour	42.3
1	SCS 6 Hour	51.3
6	Farmer-Fletcher 6 Hr - 2nd Quartile	51.1
4	Farmer-Fletcher 6 Hr - 2nd Quartile	62.1
3	Farmer-Fletcher 6 Hr - 2nd Quartile	67.5
2	Farmer-Fletcher 6 Hr - 2nd Quartile	75.6
1	Farmer-Fletcher 6 Hr - 2nd Quartile	77.9
Watershed Tributary to Reclaimed Pond 4		
24	SCS 24 Hour	451.7
24	GBEA 24 Hour - 3rd Quartile	149.4
6	SCS 6 hour	119.4
4	SCS 6 hour	125.8
3	SCS 6 hour	130.6
2	SCS 6 hour	147.3
1	SCS 6 hour	175.9
6	Farmer-Fletcher 6 Hr - 2nd Quartile	179.8
4	Farmer-Fletcher 6 Hr - 2nd Quartile	211.3
3	Farmer-Fletcher 6 Hr - 2nd Quartile	215.2
2	Farmer-Fletcher 6 Hr - 2nd Quartile	226.6
1	Farmer-Fletcher 6 Hr - 2nd Quartile	211.3

Observations made by Plateau Mining Company (PMC) personnel confirm the fact that the 24 hour storm is not applicable for

design purposes in the Central Utah area. PMC personnel have noted that the storms developing the greatest runoff potential are those which are of high intensity and short duration. Over the last few years locations within the PMC mine permit area have received as much as 1.75 inches in an approximate 20 minute period. The majority of other storms noted by PMC personnel are similarly of relatively short duration. In fact very few storms have been noted to have lasted more than a few hours without interruption.

Because of the findings of both Hansen, Allen and Luce, Inc. and USU research teams, along with the observations of PMC mining personnel, we are submitting to the State Division of Oil, Gas and Mining, that the SCS 24-hour storm distribution is not an appropriate design criteria for Utah coal mines since it does not compare favorably with other locally developed storm distributions. Based on the results presented above, we recommend that reclamation channels at the mine site be designed for the 100-year event with the most critical duration period, which according to the data presented above appears to be the 1- or 2-hour duration.

In summary of the above mentioned findings, PMC proposes to use the Farmer-Fletcher second quartile storm distribution for the design of all future surface facilities including channel reclamation. According to standard hydrologic procedures, the design of all future channels will also include an analysis of storm duration for the 1-, 2-, 3-, 4- and 6-hour storm events such that the critical precipitation event is used for design. Design according to this procedure will assure that the critical runoff prediction is obtained and accounted for in design rather than blindly designing for a runoff event based upon a given storm duration and distribution which may or may not be the critical storm.

The Farmer-Fletcher second quartile storm distribution is proposed for use because, based on the data presented above 1), it predicts peak flows greater than those developed by the GBEA 24-hour storm distribution or the SCS 6-hour distribution and is thereby conservative, and 2) it is a distribution developed for mountainous areas in Utah and therefore, more reasonably fits the storm distribution patterns experienced in the Price River area. For the above reasons, we feel that the application of the Farmer-Fletcher second quartile storm distribution is not only most applicable to the design of appropriate runoff facilities, but also produces more reasonable results when compared to the extreme SCS 24-hour distribution developed out of state.

Therefore, as indicated at the beginning of this letter, we request that the Division approve the hydrologic design approach presented herein for the design of surface conveyance facilities at the Plateau Mine.

Sincerely,

Marvin E. Allen

Marvin E. Allen, P.E.
Executive Vice-President

cc: Ben Grimes
Plateau Mining Co.

HYDROLOGIC RUNOFF

PREDICTION CALCULATIONS

PROJECT : RECLAIMED CULVERT 25B 100 YR. 24 HR. SCS 2-7-5

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.95 INCHES
STORM DURATION= 24.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 SCS 24-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
10.83	.6646	.0000	.0000	.0	.00
10.87	.6717	.0000	.0000	36.5	.00
10.91	.6788	.0000	.0000	226.1	.00
10.95	.6858	.0001	.0000	483.3	.01
10.98	.6929	.0002	.0000	668.3	.04
11.02	.7018	.0004	.0002	727.9	.09
11.06	.7122	.0006	.0002	681.9	.17
11.09	.7225	.0009	.0003	575.6	.29
11.13	.7329	.0013	.0004	450.2	.45
11.17	.7433	.0017	.0004	332.2	.65
11.21	.7537	.0022	.0005	234.1	.89
11.24	.7641	.0028	.0006	159.0	1.15
11.28	.7745	.0034	.0006	104.7	1.42
11.32	.7849	.0041	.0007	67.2	1.71
11.36	.7953	.0048	.0007	42.2	1.99
11.39	.8057	.0056	.0008	26.0	2.28
11.43	.8161	.0064	.0008	15.8	2.57
11.47	.8265	.0073	.0009	9.4	2.86
11.51	.8513	.0097	.0024	5.6	3.20
11.54	.9353	.0200	.0103	3.2	4.09
11.58	1.0193	.0337	.0137	1.9	6.97
11.62	1.1034	.0506	.0168	1.1	12.88
11.66	1.1874	.0704	.0198	.6	21.88
11.69	1.2715	.0929	.0225	.3	33.33
11.73	1.3555	.1180	.0251	.2	46.37
11.77	1.4395	.1455	.0275	.1	60.21
11.81	1.5236	.1752	.0298	.0	74.23
11.84	1.6076	.2071	.0319	.0	88.04
11.88	1.6916	.2411	.0339	.0	101.38
11.92	1.7757	.2769	.0358	.0	114.12
11.96	1.8597	.3145	.0376	.0	126.20
11.99	1.9438	.3538	.0393	.0	137.62
12.03	1.9695	.3661	.0124	.0	147.36
12.07	1.9854	.3738	.0077	.0	150.84
12.11	2.0013	.3816	.0078	.0	145.20

PROJECT : RECLAIMED CULVERT 25B 100 YR. 24 HR. SCS 2-7-5
(Continued)

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
12.14	2.0172	.3894	.0078	.0	131.84
12.18	2.0332	.3973	.0079	.0	114.49
12.22	2.0491	.4053	.0079	.0	96.75
12.26	2.0650	.4133	.0080	.0	80.98
12.29	2.0809	.4213	.0080	.0	68.24

HYDROGRAPH PEAK= 150.84 cfs
TIME TO PEAK= 12.07 Hours
RUNOFF VOLUME= 13.95 Acre-Feet

PROJECT : Plateau Mining Company - Reclaimed Culvert 25B GBEA 3rd Quart.

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.95 INCHES
STORM DURATION= 24.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 GBEA 3rd Quartile

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
12.07	.6625	.0000	.0000	.0	.00
12.11	.6777	.0000	.0000	36.5	.00
12.14	.6929	.0002	.0002	226.1	.01
12.18	.7081	.0005	.0003	483.3	.07
12.22	.7233	.0009	.0004	668.3	.19
12.26	.7385	.0015	.0006	727.9	.41
12.29	.7537	.0022	.0007	681.9	.72
12.33	.7689	.0030	.0008	575.6	1.11
12.37	.7841	.0040	.0010	450.2	1.58
12.41	.7993	.0051	.0011	332.2	2.10
12.44	.8145	.0063	.0012	234.1	2.65
12.48	.8297	.0076	.0013	159.0	3.23
12.52	.8449	.0090	.0014	104.7	3.82
12.56	.8601	.0106	.0016	67.2	4.42
12.59	.8753	.0123	.0017	42.2	5.01
12.63	.8905	.0141	.0018	26.0	5.61
12.67	.9057	.0160	.0019	15.8	6.20
12.71	.9209	.0180	.0020	9.4	6.78
12.74	.9361	.0202	.0021	5.6	7.36
12.78	.9513	.0224	.0022	3.2	7.93
12.82	.9666	.0248	.0024	1.9	8.49
12.86	.9818	.0272	.0025	1.1	9.05
12.89	.9970	.0298	.0026	.6	9.60
12.93	1.0122	.0324	.0027	.3	10.14
12.97	1.0274	.0352	.0028	.2	10.68
13.01	1.0426	.0381	.0029	.1	11.20
13.04	1.0578	.0411	.0030	.0	11.73
15.41	1.9790	.3707	.0080	.0	37.25
15.44	1.9956	.3788	.0081	.0	37.57
15.48	2.0121	.3869	.0081	.0	37.88
15.52	2.0287	.3951	.0082	.0	38.18
15.56	2.0453	.4034	.0083	.0	38.49
15.59	2.0619	.4117	.0083	.0	38.79
15.63	2.0706	.4161	.0044	.0	38.94

PROJECT : Plateau Mining Company - Reclaimed Culvert 25B GBEA 3rd Quart.
(Continued)

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
15.67	2.0775	.4196	.0035	.0	38.30
15.71	2.0844	.4231	.0035	.0	36.45
15.74	2.0914	.4266	.0035	.0	33.60
15.78	2.0983	.4301	.0035	.0	30.32
15.82	2.1052	.4336	.0035	.0	27.13
15.86	2.1121	.4372	.0035	.0	24.36

HYDROGRAPH PEAK= 38.94 cfs
TIME TO PEAK= 15.63 Hours
RUNOFF VOLUME= 13.95 Acre-Feet

PROJECT : Reclaimed ●lvert 25B 100 year 6 Hr.●CS 2-7-5

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.00 INCHES
STORM DURATION= 6.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
2.14	.6621	.0000	.0000	.0	.00
2.17	.7175	.0008	.0008	36.5	.03
2.21	.7730	.0033	.0025	226.1	.27
2.25	.8285	.0075	.0042	483.3	1.09
2.29	.8840	.0133	.0058	668.3	2.89
2.32	.9394	.0206	.0073	727.9	5.86
2.36	.9949	.0294	.0088	681.9	9.95
2.40	1.0504	.0396	.0102	575.6	15.01
2.44	1.1059	.0511	.0115	450.2	20.76
2.47	1.1613	.0639	.0128	332.2	26.98
2.51	1.2045	.0747	.0108	234.1	33.32
2.55	1.2195	.0787	.0039	159.0	38.82
2.59	1.2345	.0827	.0040	104.7	41.89
2.62	1.2495	.0867	.0041	67.2	41.94
2.66	1.2645	.0909	.0042	42.2	39.64
2.70	1.2795	.0952	.0043	26.0	36.15
2.74	1.2945	.0995	.0043	15.8	32.46
2.77	1.3095	.1039	.0044	9.4	29.20
2.81	1.3245	.1084	.0045	5.6	26.63
2.85	1.3395	.1130	.0046	3.2	24.78
2.89	1.3545	.1176	.0047	1.9	23.57
2.92	1.3695	.1224	.0047	1.1	22.86
2.96	1.3845	.1272	.0048	.6	22.51
3.00	1.3995	.1321	.0049	.3	22.43
3.04	1.4116	.1361	.0040	.2	22.47
3.07	1.4236	.1401	.0040	.1	22.45
3.11	1.4355	.1441	.0041	.0	22.23

HYDROGRAPH PEAK= 41.94 cfs
TIME TO PEAK= 2.62 Hours
RUNOFF VOLUME= 5.72 Acre-Feet

PROJECT : RECLAIMED CULVERT 25B 100 YEAR 4 HOUR SCS 2-7-5

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.90 INCHES
STORM DURATION= 4.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.42	.6290	.0000	.0000	.0	.00
1.46	.7080	.0005	.0005	36.5	.02
1.50	.7871	.0042	.0037	226.1	.25
1.54	.8661	.0113	.0071	483.3	1.34
1.57	.9452	.0215	.0102	668.3	4.09
1.61	1.0242	.0346	.0132	727.9	9.04
1.65	1.1033	.0506	.0159	681.9	16.25
1.69	1.1514	.0615	.0110	575.6	25.14
1.72	1.1728	.0667	.0052	450.2	33.77
1.76	1.1942	.0721	.0054	332.2	39.76
1.80	1.2155	.0776	.0055	234.1	42.23
1.84	1.2369	.0833	.0057	159.0	41.82
1.87	1.2583	.0892	.0059	104.7	39.79
1.91	1.2796	.0952	.0060	67.2	37.22
1.95	1.3010	.1014	.0062	42.2	34.84
1.99	1.3224	.1078	.0064	26.0	32.99
2.02	1.3410	.1135	.0057	15.8	31.72
2.06	1.3581	.1188	.0053	9.4	30.83
2.10	1.3752	.1242	.0054	5.6	30.08
2.14	1.3923	.1297	.0055	3.2	29.36
2.17	1.4093	.1353	.0056	1.9	28.69
2.21	1.4264	.1410	.0057	1.1	28.16
2.25	1.4435	.1468	.0058	.6	27.79
2.29	1.4606	.1527	.0059	.3	27.61
2.32	1.4777	.1587	.0060	.2	27.59
2.36	1.4908	.1634	.0046	.1	27.66
2.40	1.5026	.1676	.0042	.0	27.55

HYDROGRAPH PEAK= 42.23 cfs
TIME TO PEAK= 1.80 Hours
RUNOFF VOLUME= 4.97 Acre-Feet

PROJECT : RECLAIMED CULVERT 25B 100 YEAR 3 HOUR SCS 2-7-5

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.80 INCHES
STORM DURATION= 3.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.09	.6458	.0000	.0000	.0	.00
1.12	.7456	.0018	.0018	36.5	.07
1.16	.8455	.0091	.0073	226.1	.68
1.20	.9453	.0215	.0124	483.3	2.98
1.24	1.0452	.0386	.0171	668.3	8.17
1.27	1.0976	.0493	.0107	727.9	16.44
1.31	1.1246	.0553	.0060	681.9	25.74
1.35	1.1516	.0616	.0063	575.6	33.23
1.39	1.1785	.0681	.0066	450.2	37.63
1.42	1.2055	.0750	.0068	332.2	39.25
1.46	1.2325	.0821	.0071	234.1	39.11
1.50	1.2595	.0895	.0074	159.0	38.20
1.54	1.2812	.0957	.0061	104.7	37.17
1.57	1.3028	.1019	.0063	67.2	36.14
1.61	1.3244	.1084	.0064	42.2	35.11
1.65	1.3460	.1150	.0066	26.0	34.15
1.69	1.3676	.1218	.0068	15.8	33.37
1.72	1.3891	.1287	.0069	9.4	32.85
1.76	1.4086	.1351	.0064	5.6	32.58
1.80	1.4235	.1400	.0049	3.2	32.38
1.84	1.4383	.1451	.0050	1.9	31.90
1.87	1.4532	.1501	.0051	1.1	31.04
1.91	1.4680	.1553	.0052	.6	29.92
1.95	1.4828	.1605	.0052	.3	28.77
1.99	1.4977	.1658	.0053	.2	27.76
2.02	1.5117	.1709	.0051	.1	26.97
2.06	1.5252	.1758	.0049	.0	26.37

HYDROGRAPH PEAK= 39.25 cfs
TIME TO PEAK= 1.42 Hours
RUNOFF VOLUME= 4.32 Acre-Feet

PROJECT : RECLAIMED CULVERT 25B 100 YEAR 2 HOUR SCS 2-7-5

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.70 INCHES
STORM DURATION= 2.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.71	.5628	.0000	.0000	.0	.00
.75	.7042	.0004	.0004	36.5	.02
.79	.8457	.0091	.0087	226.1	.41
.82	.9871	.0281	.0190	483.3	2.86
.86	1.0494	.0394	.0113	668.3	9.19
.90	1.0876	.0472	.0078	727.9	18.14
.94	1.1258	.0556	.0084	681.9	26.84
.97	1.1640	.0646	.0090	575.6	33.54
1.01	1.1998	.0735	.0089	450.2	37.99
1.05	1.2304	.0816	.0080	332.2	40.63
1.09	1.2610	.0899	.0084	234.1	41.91
1.12	1.2916	.0987	.0087	159.0	42.32
1.16	1.3222	.1077	.0091	104.7	42.32
1.20	1.3444	.1145	.0068	67.2	42.20
1.24	1.3654	.1211	.0066	42.2	41.76
1.27	1.3865	.1278	.0067	26.0	40.81
1.31	1.4075	.1347	.0069	15.8	39.50
1.35	1.4277	.1415	.0067	9.4	38.08
1.39	1.4468	.1480	.0065	5.6	36.75
1.42	1.4659	.1546	.0066	3.2	35.59
1.46	1.4850	.1613	.0067	1.9	34.63
1.50	1.5042	.1682	.0069	1.1	33.90
1.54	1.5195	.1738	.0056	.6	33.37
1.57	1.5348	.1794	.0056	.3	32.82
1.61	1.5501	.1851	.0057	.2	32.10
1.65	1.5654	.1909	.0058	.1	31.28
1.69	1.5807	.1967	.0058	.0	30.47

HYDROGRAPH PEAK= 42.32 cfs
TIME TO PEAK= 1.16 Hours
RUNOFF VOLUME= 3.65 Acre-Feet

PROJECT : RECLAIMED CULVERT 25B 100 YEAR 1 HOUR SCS 2-7-5

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.52 INCHES
STORM DURATION= 1.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.37	.6297	.0000	.0000	.0	.00
.41	.8826	.0131	.0131	36.5	.48
.45	.9724	.0257	.0126	226.1	3.43
.49	1.0408	.0378	.0121	483.3	9.63
.52	1.1001	.0499	.0121	668.3	18.02
.56	1.1548	.0624	.0125	727.9	26.98
.60	1.2020	.0741	.0117	681.9	35.27
.64	1.2397	.0840	.0100	575.6	42.05
.67	1.2765	.0943	.0103	450.2	46.83
.71	1.3107	.1043	.0100	332.2	49.65
.75	1.3449	.1147	.0104	234.1	50.96
.79	1.3723	.1233	.0086	159.0	51.27
.82	1.3996	.1321	.0088	104.7	50.81
.86	1.4270	.1412	.0091	67.2	49.80
.90	1.4543	.1506	.0093	42.2	48.58
.94	1.4798	.1595	.0089	26.0	47.44
.97	1.5038	.1680	.0086	15.8	46.46
1.01	1.5038	.1680	.0000	9.4	45.28
1.05	1.5038	.1680	.0000	5.6	42.53
1.09	1.5038	.1680	.0000	3.2	37.64
1.12	1.5038	.1680	.0000	1.9	31.28
1.16	1.5038	.1680	.0000	1.1	24.52
1.20	1.5038	.1680	.0000	.6	18.28
1.24	1.5038	.1680	.0000	.3	13.05
1.27	1.5038	.1680	.0000	.2	8.99
1.31	1.5038	.1680	.0000	.1	6.00
1.35	1.5038	.1680	.0000	.0	3.90

HYDROGRAPH PEAK= 51.27 cfs
TIME TO PEAK= .79 Hours
RUNOFF VOLUME= 2.53 Acre-Feet

PROJECT : Plateau Mining Company - Culvert 25B Reclaimed - F/F 2nd Quart

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.00 INCHES
STORM DURATION= 6.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
2.44	.6340	.0000	.0000	.0	.00
2.47	.6690	.0000	.0000	36.5	.00
2.51	.7039	.0004	.0004	226.1	.02
2.55	.7389	.0015	.0011	483.3	.13
2.59	.7739	.0033	.0018	668.3	.52
2.62	.8089	.0058	.0025	727.9	1.32
2.66	.8439	.0089	.0031	681.9	2.60
2.70	.8789	.0127	.0038	575.6	4.35
2.74	.9153	.0173	.0046	450.2	6.50
2.77	.9518	.0225	.0052	332.2	8.99
2.81	.9883	.0283	.0058	234.1	11.75
2.85	1.0247	.0347	.0064	159.0	14.69
2.89	1.0612	.0418	.0070	104.7	17.73
2.92	1.0977	.0494	.0076	67.2	20.81
2.96	1.1342	.0575	.0082	42.2	23.87
3.00	1.1707	.0662	.0087	26.0	26.89
3.04	1.2067	.0753	.0091	15.8	29.85
3.07	1.2427	.0849	.0096	9.4	32.70
3.11	1.2786	.0949	.0101	5.6	35.45
3.15	1.3146	.1055	.0105	3.2	38.08
3.19	1.3506	.1164	.0110	1.9	40.62
3.22	1.3866	.1279	.0114	1.1	43.09
3.26	1.4226	.1397	.0119	.6	45.48
3.30	1.4586	.1520	.0123	.3	47.82
3.34	1.4816	.1601	.0081	.2	49.93
3.37	1.5041	.1681	.0080	.1	51.09
3.41	1.5266	.1763	.0082	.0	50.93
3.45	1.5491	.1847	.0084	.0	49.69
3.49	1.5716	.1932	.0085	.0	47.93
3.52	1.5940	.2018	.0087	.0	46.16
3.56	1.6165	.2106	.0088	.0	44.69
3.60	1.6390	.2196	.0089	.0	43.65

HYDROGRAPH PEAK= 51.09 cfs
TIME TO PEAK= 3.37 Hours
RUNOFF VOLUME= 5.73 Acre-Feet

PROJECT : Plateau Mining Company - Reclaimed Culvert 25B Farmer 4 hour

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.90 INCHES
STORM DURATION= 4.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.65	.6355	.0000	.0000	.0	.00
1.69	.6854	.0001	.0001	36.5	.00
1.72	.7352	.0014	.0013	226.1	.07
1.76	.7851	.0041	.0027	483.3	.44
1.80	.8349	.0081	.0040	668.3	1.44
1.84	.8869	.0136	.0056	727.9	3.34
1.87	.9388	.0205	.0069	681.9	6.24
1.91	.9908	.0287	.0082	575.6	10.12
1.95	1.0428	.0381	.0094	450.2	14.78
1.99	1.0948	.0487	.0106	332.2	20.03
2.02	1.1463	.0603	.0116	234.1	25.62
2.06	1.1976	.0730	.0126	159.0	31.37
2.10	1.2489	.0866	.0136	104.7	37.12
2.14	1.3002	.1012	.0146	67.2	42.77
2.17	1.3514	.1167	.0155	42.2	48.26
2.21	1.3968	.1312	.0145	26.0	53.50
2.25	1.4289	.1419	.0107	15.8	58.03
2.29	1.4609	.1528	.0110	9.4	60.97
2.32	1.4930	.1641	.0113	5.6	62.06
2.36	1.5250	.1758	.0116	3.2	61.74
2.40	1.5571	.1877	.0119	1.9	60.75
2.44	1.5753	.1946	.0069	1.1	59.50
2.47	1.5931	.2015	.0069	.6	57.51
2.51	1.6109	.2084	.0069	.3	54.52
2.55	1.6287	.2155	.0070	.2	50.86
2.59	1.6465	.2226	.0071	.1	47.09
2.62	1.6620	.2289	.0063	.0	43.68

HYDROGRAPH PEAK= 62.06 cfs
TIME TO PEAK= 2.32 Hours
RUNOFF VOLUME= 4.99 Acre-Feet

PROJECT : Plateau Mining Company - Reclaimed Culvert 25B Farmer 3 Hour

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.80 INCHES
STORM DURATION= 3.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.27	.6650	.0000	.0000	.0	.00
1.31	.7280	.0011	.0011	36.5	.04
1.35	.7910	.0045	.0034	226.1	.37
1.39	.8566	.0102	.0058	483.3	1.51
1.42	.9223	.0182	.0080	668.3	3.96
1.46	.9879	.0282	.0100	727.9	8.01
1.50	1.0536	.0402	.0120	681.9	13.62
1.54	1.1184	.0539	.0137	575.6	20.52
1.57	1.1832	.0693	.0154	450.2	28.33
1.61	1.2479	.0863	.0170	332.2	36.67
1.65	1.3127	.1049	.0186	234.1	45.23
1.69	1.3537	.1174	.0125	159.0	53.54
1.72	1.3942	.1303	.0129	104.7	60.24
1.76	1.4346	.1438	.0135	67.2	64.56
1.80	1.4751	.1578	.0140	42.2	66.78
1.84	1.4980	.1659	.0081	26.0	67.45
1.87	1.5205	.1741	.0082	15.8	66.36
1.91	1.5430	.1824	.0083	9.4	63.54
1.95	1.5655	.1909	.0085	5.6	59.63
1.99	1.5836	.1978	.0069	3.2	55.40
2.02	1.6016	.2048	.0070	1.9	51.24
2.06	1.6196	.2118	.0071	1.1	47.38
2.10	1.6375	.2190	.0072	.6	44.01
2.14	1.6490	.2236	.0046	.3	41.17
2.17	1.6602	.2281	.0046	.2	38.48
2.21	1.6714	.2327	.0046	.1	35.72
2.25	1.6827	.2373	.0046	.0	32.95

HYDROGRAPH PEAK= 67.45 cfs
TIME TO PEAK= 1.84 Hours
RUNOFF VOLUME= 4.32 Acre-Feet

PROJECT : Plateau Mining Company - Reclaimed Culvert 25B Farmer 2 Hour

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.70 INCHES
STORM DURATION= 2.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.86	.6578	.0000	.0000	.0	.00
.90	.7470	.0019	.0019	36.5	.07
.94	.8400	.0086	.0067	226.1	.67
.97	.9331	.0197	.0111	483.3	2.83
1.01	1.0257	.0349	.0152	668.3	7.57
1.05	1.1174	.0537	.0188	727.9	15.35
1.09	1.2092	.0759	.0222	681.9	26.00
1.12	1.2785	.0949	.0189	575.6	38.71
1.16	1.3358	.1119	.0170	450.2	51.56
1.20	1.3932	.1300	.0181	332.2	62.61
1.24	1.4254	.1407	.0107	234.1	70.79
1.27	1.4573	.1516	.0109	159.0	75.11
1.31	1.4871	.1620	.0105	104.7	75.58
1.35	1.5126	.1712	.0092	67.2	73.20
1.39	1.5381	.1806	.0094	42.2	69.10
1.42	1.5574	.1878	.0072	26.0	64.27
1.46	1.5733	.1939	.0060	15.8	59.15
1.50	1.5892	.2000	.0061	9.4	53.90
1.54	1.6051	.2062	.0062	5.6	48.78
1.57	1.6211	.2124	.0063	3.2	44.14
1.61	1.6340	.2176	.0051	1.9	40.21
1.65	1.6404	.2201	.0025	1.1	36.82
1.69	1.6467	.2227	.0026	.6	33.44
1.72	1.6531	.2253	.0026	.3	29.85
1.76	1.6595	.2278	.0026	.2	26.23
1.80	1.6659	.2304	.0026	.1	22.88
1.84	1.6722	.2330	.0026	.0	20.04

HYDROGRAPH PEAK= 75.58 cfs
TIME TO PEAK= 1.31 Hours
RUNOFF VOLUME= 3.66 Acre-Feet

PROJECT : Plateau Mining Company - Reclaimed Culvert 25B Farmer 1 Hour

AREA= 180.4 ACRES
AVERAGE BASIN SLOPE= 55.0 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.52 INCHES
STORM DURATION= 1.0 HOURS
HYDRAULIC LENGTH= 4600. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .1874 HOURS QPCFS= 727.94 CFS QPIN= 4.0017 INCHES
C3= 19.7242 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.41	.5084	.0000	.0000	.0	.00
.45	.6679	.0000	.0000	36.5	.00
.49	.8543	.0080	.0080	226.1	.29
.52	.9991	.0302	.0221	483.3	2.62
.56	1.1431	.0596	.0294	668.3	9.96
.60	1.2457	.0857	.0261	727.9	23.66
.64	1.3030	.1020	.0163	681.9	41.35
.67	1.3524	.1170	.0150	575.6	58.10
.71	1.3925	.1298	.0128	450.2	70.32
.75	1.4209	.1392	.0094	332.2	76.80
.79	1.4494	.1489	.0097	234.1	77.92
.82	1.4667	.1548	.0060	159.0	75.04
.86	1.4781	.1589	.0040	104.7	69.37
.90	1.4895	.1629	.0040	67.2	61.87
.94	1.5009	.1670	.0041	42.2	53.63
.97	1.5123	.1711	.0041	26.0	45.69
1.01	1.5123	.1711	.0000	15.8	38.62
1.05	1.5123	.1711	.0000	9.4	32.11
1.09	1.5123	.1711	.0000	5.6	25.90
1.12	1.5123	.1711	.0000	3.2	20.10
1.16	1.5123	.1711	.0000	1.9	14.99
1.20	1.5123	.1711	.0000	1.1	10.77
1.24	1.5123	.1711	.0000	.6	7.48
1.27	1.5123	.1711	.0000	.3	5.05
1.31	1.5123	.1711	.0000	.2	3.31
1.35	1.5123	.1711	.0000	.1	2.13
1.39	1.5123	.1711	.0000	.0	1.34

HYDROGRAPH PEAK= 77.92 cfs
TIME TO PEAK= .79 Hours
RUNOFF VOLUME= 2.57 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YR. 24 HR. SCS 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.95 INCHES
STORM DURATION= 24.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 SCS 24-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
10.83	.6646	.0000	.0000	.0	.00
10.90	.6779	.0000	.0000	77.1	.00
10.97	.6913	.0002	.0001	477.1	.03
11.04	.7087	.0005	.0003	1019.7	.13
11.12	.7283	.0011	.0006	1410.0	.41
11.19	.7479	.0019	.0008	1536.0	.96
11.26	.7676	.0030	.0010	1438.8	1.83
11.33	.7872	.0042	.0012	1214.5	3.04
11.40	.8068	.0057	.0014	949.9	4.52
11.47	.8265	.0073	.0017	701.0	6.22
11.54	.9257	.0187	.0114	494.0	8.82
11.61	1.0845	.0465	.0279	335.5	16.57
11.68	1.2432	.0850	.0385	220.9	36.86
11.75	1.4019	.1329	.0479	141.8	74.61
11.82	1.5607	.1891	.0562	89.0	129.88
11.89	1.7194	.2527	.0636	54.9	199.15
11.97	1.8781	.3229	.0703	33.3	277.38
12.04	1.9712	.3669	.0440	19.9	357.22
12.11	2.0013	.3816	.0146	11.7	421.63
12.18	2.0314	.3964	.0148	6.8	451.65
12.25	2.0614	.4114	.0150	3.9	443.69
12.32	2.0915	.4267	.0152	2.3	408.34
12.39	2.1216	.4421	.0154	1.3	360.27
12.46	2.1517	.4577	.0156	.7	311.36
12.53	2.1752	.4700	.0123	.4	268.36
12.60	2.1906	.4781	.0082	.2	232.56
12.67	2.2061	.4863	.0082	.1	202.15
12.74	2.2215	.4946	.0082	.0	175.67

HYDROGRAPH PEAK= 451.65 cfs
TIME TO PEAK= 12.18 hours
RUNOFF VOLUME= 55.54 Acre-Feet

PROJECT : Plateau Mining Company - Reclaimed Pond 4 GBEA 3rd Quartile

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.95 INCHES
STORM DURATION= 24.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 GBEA 3rd Quartile

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
12.04	.6489	.0000	.0000	.0	.00
12.11	.6776	.0000	.0000	77.1	.00
12.18	.7063	.0005	.0004	477.1	.05
12.25	.7351	.0014	.0009	1019.7	.31
12.32	.7638	.0027	.0014	1410.0	1.03
12.39	.7925	.0046	.0018	1536.0	2.39
12.46	.8212	.0068	.0023	1438.8	4.44
12.53	.8499	.0096	.0027	1214.5	7.15
12.60	.8787	.0127	.0031	949.9	10.40
12.67	.9074	.0162	.0035	701.0	14.04
12.74	.9361	.0201	.0039	494.0	17.96
12.81	.9648	.0245	.0043	335.5	22.03
12.89	.9935	.0292	.0047	220.9	26.18
12.96	1.0222	.0343	.0051	141.8	30.34
13.03	1.0510	.0397	.0055	89.0	34.47
13.10	1.0797	.0455	.0058	54.9	38.56
13.17	1.1084	.0517	.0062	33.3	42.57
13.24	1.1347	.0576	.0059	19.9	46.47
13.31	1.1590	.0634	.0058	11.7	50.01
13.38	1.1834	.0694	.0060	6.8	52.96
13.45	1.2078	.0756	.0062	3.9	55.28
13.52	1.2322	.0820	.0064	2.3	57.15
13.59	1.2565	.0887	.0067	1.3	58.81
13.66	1.2809	.0956	.0069	.7	60.44
13.74	1.3053	.1027	.0071	.4	62.14
13.81	1.3296	.1100	.0073	.2	63.95
13.88	1.3540	.1175	.0075	.1	65.86
13.95	1.3784	.1252	.0077	.0	67.86
15.22	1.8978	.3321	.0145	.0	133.81
15.29	1.9291	.3468	.0147	.0	136.84
15.36	1.9605	.3618	.0150	.0	139.68
15.43	1.9918	.3769	.0152	.0	142.36
15.51	2.0231	.3923	.0154	.0	144.93
15.58	2.0545	.4079	.0156	.0	147.41

PROJECT : Plateau Mining Company - Reclaimed Pond 4 GBEA 3rd Quartile
(Continued)

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
15.65	2.0737	.4176	.0097	.0	149.35
15.72	2.0867	.4242	.0066	.0	148.51
15.79	2.0998	.4309	.0067	.0	142.96
15.86	2.1128	.4376	.0067	.0	133.13
15.93	2.1259	.4443	.0067	.0	121.03
16.00	2.1389	.4510	.0068	.0	108.85
16.07	2.1520	.4578	.0068	.0	98.08

HYDROGRAPH PEAK= 149.35 cfs
TIME TO PEAK= 15.65 Hours
RUNOFF VOLUME= 55.45 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YEAR 6 HOUR SCS 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.00 INCHES
STORM DURATION= 6.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
2.12	.6436	.0000	.0000	.0	.00
2.19	.7483	.0020	.0020	77.1	.15
2.27	.8531	.0099	.0079	477.1	1.54
2.34	.9579	.0234	.0135	1019.7	6.82
2.41	1.0627	.0421	.0187	1410.0	18.73
2.48	1.1675	.0654	.0234	1536.0	38.67
2.55	1.2195	.0787	.0132	1438.8	65.24
2.62	1.2479	.0863	.0076	1214.5	91.57
2.69	1.2762	.0942	.0079	949.9	110.28
2.76	1.3045	.1024	.0082	701.0	118.91
2.83	1.3328	.1110	.0085	494.0	119.40
2.90	1.3611	.1197	.0088	335.5	115.22
2.97	1.3895	.1288	.0091	220.9	109.44
3.04	1.4142	.1369	.0081	141.8	103.95
3.12	1.4369	.1446	.0076	89.0	99.25
3.19	1.4595	.1524	.0078	54.9	95.15
3.26	1.4822	.1603	.0080	33.3	91.57
3.33	1.5048	.1684	.0081	19.9	88.59
3.40	1.5275	.1767	.0083	11.7	86.36
3.47	1.5502	.1851	.0084	6.8	84.91
3.54	1.5688	.1922	.0070	3.9	84.10
3.61	1.5844	.1981	.0060	2.3	83.22
3.68	1.6000	.2042	.0060	1.3	81.51
3.75	1.6155	.2103	.0061	.7	78.87
3.82	1.6311	.2164	.0062	.4	75.72
3.89	1.6467	.2227	.0062	.2	72.63
3.96	1.6623	.2290	.0063	.1	69.99
4.04	1.6771	.2351	.0061	.0	67.96

HYDROGRAPH PEAK= 119.40 cfs
TIME TO PEAK= 2.83 Hours
RUNOFF VOLUME= 22.61 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YEAR 4 HOUR SCS 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.90 INCHES
STORM DURATION= 4.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.42	.6114	.0000	.0000	.0	.00
1.49	.7607	.0026	.0026	77.1	.20
1.56	.9100	.0166	.0140	477.1	2.31
1.63	1.0593	.0414	.0248	1019.7	11.21
1.70	1.1586	.0633	.0219	1410.0	31.42
1.77	1.1989	.0733	.0100	1536.0	60.19
1.84	1.2393	.0839	.0107	1438.8	88.09
1.91	1.2796	.0952	.0113	1214.5	108.40
1.98	1.3200	.1071	.0119	949.9	120.04
2.05	1.3543	.1176	.0105	701.0	125.09
2.12	1.3866	.1279	.0103	494.0	125.80
2.19	1.4188	.1385	.0106	335.5	123.93
2.27	1.4511	.1494	.0110	220.9	120.97
2.34	1.4830	.1606	.0111	141.8	118.05
2.41	1.5052	.1685	.0079	89.0	115.56
2.48	1.5274	.1766	.0081	54.9	112.64
2.55	1.5496	.1849	.0082	33.3	108.74
2.62	1.5718	.1933	.0084	19.9	104.21
2.69	1.5933	.2016	.0083	11.7	99.72
2.76	1.6135	.2094	.0079	6.8	95.74
2.83	1.6336	.2174	.0080	3.9	92.35
2.90	1.6538	.2255	.0081	2.3	89.56
2.97	1.6740	.2338	.0082	1.3	87.41
3.04	1.6916	.2410	.0073	.7	85.81
3.12	1.7078	.2478	.0067	.4	84.36
3.19	1.7239	.2546	.0068	.2	82.61
3.26	1.7401	.2615	.0069	.1	80.51
3.33	1.7562	.2684	.0069	.0	78.31

HYDROGRAPH PEAK= 125.80 cfs
TIME TO PEAK= 2.12 Hours
RUNOFF VOLUME= 19.76 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YEAR 3 HOUR SCS 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.80 INCHES
STORM DURATION= 3.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.06	.5792	.0000	.0000	.0	.00
1.13	.7678	.0030	.0030	77.1	.23
1.20	.9564	.0232	.0202	477.1	2.98
1.27	1.0976	.0493	.0262	1019.7	14.69
1.35	1.1486	.0609	.0115	1410.0	38.16
1.42	1.1995	.0734	.0126	1536.0	66.19
1.49	1.2505	.0870	.0136	1438.8	91.00
1.56	1.2932	.0991	.0121	1214.5	109.35
1.63	1.3340	.1113	.0122	949.9	121.00
1.70	1.3748	.1241	.0128	701.0	127.24
1.77	1.4119	.1362	.0121	494.0	129.94
1.84	1.4400	.1456	.0094	335.5	130.36
1.91	1.4680	.1553	.0097	220.9	128.60
1.98	1.4960	.1652	.0099	141.8	124.99
2.05	1.5222	.1747	.0095	89.0	120.42
2.12	1.5476	.1842	.0094	54.9	115.67
2.19	1.5731	.1938	.0096	33.3	111.24
2.27	1.5975	.2032	.0094	19.9	107.49
2.34	1.6179	.2112	.0080	11.7	104.37
2.41	1.6383	.2193	.0081	6.8	101.37
2.48	1.6587	.2275	.0082	3.9	98.22
2.55	1.6791	.2359	.0083	2.3	95.12
2.62	1.6995	.2443	.0084	1.3	92.37
2.69	1.7198	.2529	.0086	.7	90.21
2.76	1.7398	.2614	.0085	.4	88.73
2.83	1.7577	.2690	.0077	.2	87.77
2.90	1.7755	.2768	.0078	.1	86.88
2.97	1.7934	.2846	.0078	.0	85.85

HYDROGRAPH PEAK= 130.36 cfs
TIME TO PEAK= 1.84 Hours
RUNOFF VOLUME= 17.05 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YEAR 2 HOUR SCS 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.70 INCHES
STORM DURATION= 2.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.71	.5470	.0000	.0000	.0	.00
.78	.8142	.0063	.0063	77.1	.48
.85	1.0366	.0370	.0307	477.1	5.35
.92	1.1088	.0518	.0148	1019.7	22.17
.99	1.1810	.0688	.0170	1410.0	48.51
1.06	1.2406	.0843	.0155	1536.0	77.31
1.13	1.2984	.1006	.0163	1438.8	103.05
1.20	1.3467	.1152	.0146	1214.5	123.25
1.27	1.3864	.1278	.0126	949.9	137.15
1.35	1.4256	.1407	.0129	701.0	144.78
1.42	1.4617	.1531	.0124	494.0	147.30
1.49	1.4978	.1659	.0128	335.5	146.38
1.56	1.5280	.1769	.0110	220.9	143.60
1.63	1.5569	.1876	.0108	141.8	139.65
1.70	1.5858	.1987	.0110	89.0	134.94
1.77	1.6147	.2099	.0113	54.9	130.11
1.84	1.6432	.2213	.0113	33.3	125.79
1.91	1.6684	.2315	.0102	19.9	122.29
1.98	1.6937	.2419	.0104	11.7	119.34
2.05	1.6937	.2419	.0000	6.8	115.89
2.12	1.6937	.2419	.0000	3.9	108.56
2.19	1.6937	.2419	.0000	2.3	95.92
2.27	1.6937	.2419	.0000	1.3	79.60
2.34	1.6937	.2419	.0000	.7	62.35
2.41	1.6937	.2419	.0000	.4	46.45
2.48	1.6937	.2419	.0000	.2	33.16
2.55	1.6937	.2419	.0000	.1	22.83
2.62	1.6937	.2419	.0000	.0	15.24

HYDROGRAPH PEAK= 147.30 cfs
TIME TO PEAK= 1.42 Hours
RUNOFF VOLUME= 14.49 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YEAR 1 HOUR SCS 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.52 INCHES
STORM DURATION= 1.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.35	.4891	.0000	.0000	.0	.00
.42	.9268	.0188	.0188	77.1	1.45
.50	1.0560	.0407	.0219	477.1	10.67
.57	1.1609	.0638	.0231	1019.7	31.43
.64	1.2396	.0840	.0202	1410.0	61.45
.71	1.3069	.1032	.0191	1536.0	94.46
.78	1.3662	.1213	.0182	1438.8	124.43
.85	1.4179	.1382	.0168	1214.5	147.82
.92	1.4692	.1557	.0176	949.9	163.64
.99	1.5144	.1719	.0162	701.0	172.92
1.06	1.5144	.1719	.0000	494.0	175.91
1.13	1.5144	.1719	.0000	335.5	168.98
1.20	1.5144	.1719	.0000	220.9	151.29
1.27	1.5144	.1719	.0000	141.8	126.43
1.35	1.5144	.1719	.0000	89.0	99.41
1.42	1.5144	.1719	.0000	54.9	74.22
1.49	1.5144	.1719	.0000	33.3	53.04
1.56	1.5144	.1719	.0000	19.9	36.54
1.63	1.5144	.1719	.0000	11.7	24.40
1.70	1.5144	.1719	.0000	6.8	15.87
1.77	1.5144	.1719	.0000	3.9	10.09
1.84	1.5144	.1719	.0000	2.3	6.29
1.91	1.5144	.1719	.0000	1.3	3.85
1.98	1.5144	.1719	.0000	.7	2.32
2.05	1.5144	.1719	.0000	.4	1.38
2.12	1.5144	.1719	.0000	.2	.81
2.19	1.5144	.1719	.0000	.1	.47
2.27	1.5144	.1719	.0000	.0	.27

HYDROGRAPH PEAK= 175.91 cfs
TIME TO PEAK= 1.06 Hours
RUNOFF VOLUME= 10.30 Acre-Feet

PROJECT : RECLAIMED POND 4 100 YEAR 6 HOUR FARMER FLETCHER 2-7-5

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 2.00 INCHES
STORM DURATION= 6.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
2.41	.6067	.0000	.0000	.0	.00
2.48	.6728	.0000	.0000	77.1	.00
2.55	.7389	.0015	.0015	477.1	.12
2.62	.8050	.0055	.0040	1019.7	1.04
2.69	.8711	.0118	.0063	1410.0	3.95
2.76	.9396	.0207	.0088	1536.0	9.91
2.83	1.0085	.0318	.0111	1438.8	19.47
2.90	1.0774	.0451	.0133	1214.5	32.55
2.97	1.1463	.0603	.0153	949.9	48.60
3.04	1.2147	.0774	.0170	701.0	66.77
3.12	1.2826	.0961	.0187	494.0	86.19
3.19	1.3506	.1164	.0204	335.5	106.08
3.26	1.4186	.1384	.0220	220.9	125.87
3.33	1.4766	.1583	.0199	141.8	144.96
3.40	1.5191	.1736	.0153	89.0	161.56
3.47	1.5615	.1894	.0158	54.9	173.03
3.54	1.6040	.2057	.0163	33.3	178.67
3.61	1.6436	.2214	.0157	19.9	179.83
3.68	1.6672	.2310	.0096	11.7	177.77
3.75	1.6908	.2407	.0097	6.8	171.93
3.82	1.7144	.2506	.0099	3.9	162.52
3.89	1.7380	.2606	.0100	2.3	151.12
3.96	1.7573	.2689	.0083	1.3	139.55
4.04	1.7762	.2771	.0082	.7	128.61
4.11	1.7951	.2854	.0083	.4	118.67
4.18	1.8139	.2938	.0084	.2	110.06
4.25	1.8280	.3001	.0063	.1	102.88
4.32	1.8398	.3054	.0053	.0	96.42

HYDROGRAPH PEAK= 179.83 cfs
TIME TO PEAK= 3.61 Hours
RUNOFF VOLUME= 22.72 Acre-Feet

PROJECT : Plateau Mining Co. - Farmer-Fletcher 2nd Quart. 4 hr storm

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.90 INCHES
STORM DURATION= 4.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.63	.6078	.0000	.0000	.0	.00
1.70	.7020	.0004	.0004	77.1	.03
1.77	.7961	.0048	.0045	477.1	.52
1.84	.8926	.0143	.0095	1019.7	3.24
1.91	.9908	.0287	.0144	1410.0	10.72
1.98	1.0890	.0475	.0188	1536.0	24.87
2.05	1.1862	.0701	.0226	1438.8	46.16
2.12	1.2831	.0962	.0261	1214.5	73.68
2.19	1.3799	.1257	.0295	949.9	105.76
2.27	1.4431	.1467	.0210	701.0	139.74
2.34	1.5036	.1680	.0213	494.0	170.08
2.41	1.5614	.1894	.0214	335.5	192.88
2.48	1.5951	.2022	.0129	220.9	207.01
2.55	1.6287	.2155	.0132	141.8	211.34
2.62	1.6605	.2282	.0128	89.0	206.81
2.69	1.6874	.2393	.0110	54.9	196.29
2.76	1.7143	.2505	.0112	33.3	182.60
2.83	1.7366	.2600	.0095	19.9	168.05
2.90	1.7534	.2672	.0072	11.7	153.73
2.97	1.7702	.2745	.0073	6.8	139.66
3.04	1.7871	.2818	.0074	3.9	126.14
3.12	1.8039	.2893	.0074	2.3	113.86
3.19	1.8207	.2968	.0075	1.3	103.47
3.26	1.8294	.3007	.0039	.7	94.97
3.33	1.8361	.3037	.0030	.4	87.08
3.40	1.8429	.3068	.0030	.2	78.68
3.47	1.8496	.3098	.0031	.1	69.80
3.54	1.8563	.3129	.0031	.0	61.14

HYDROGRAPH PEAK= 211.34 cfs
TIME TO PEAK= 2.55 Hours
RUNOFF VOLUME= 19.86 Acre-Feet

PROJECT : Plateau Mining Co. - Farmer-Fletcher 2nd Quart. 3 hr storm

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.80 INCHES
STORM DURATION= 3.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
1.27	.6650	.0000	.0000	.0	.00
1.35	.7840	.0040	.0040	77.1	.31
1.42	.9077	.0162	.0123	477.1	2.85
1.49	1.0317	.0360	.0198	1019.7	11.44
1.56	1.1544	.0622	.0262	1410.0	29.58
1.63	1.2767	.0944	.0321	1536.0	58.57
1.70	1.3672	.1216	.0273	1438.8	96.63
1.77	1.4436	.1469	.0252	1214.5	137.55
1.84	1.5005	.1668	.0200	949.9	174.09
1.91	1.5430	.1824	.0156	701.0	200.44
1.98	1.5816	.1970	.0146	494.0	213.80
2.05	1.6155	.2103	.0132	335.5	215.20
2.12	1.6452	.2221	.0118	220.9	207.84
2.19	1.6664	.2307	.0086	141.8	194.98
2.27	1.6877	.2394	.0087	89.0	178.80
2.34	1.7089	.2483	.0089	54.9	161.36
2.41	1.7289	.2567	.0084	33.3	144.63
2.48	1.7374	.2603	.0036	19.9	129.54
2.55	1.7459	.2639	.0036	11.7	115.11
2.62	1.7544	.2676	.0037	6.8	100.75
2.69	1.7629	.2713	.0037	3.9	86.95
2.76	1.7713	.2750	.0037	2.3	74.57
2.83	1.7798	.2787	.0037	1.3	64.25
2.90	1.7883	.2824	.0037	.7	56.17
2.97	1.7968	.2862	.0037	.4	50.21
3.04	1.7968	.2862	.0000	.2	45.72
3.12	1.7968	.2862	.0000	.1	41.09
3.19	1.7968	.2862	.0000	.0	35.42

HYDROGRAPH PEAK= 215.20 cfs
TIME TO PEAK= 2.05 Hours
RUNOFF VOLUME= 17.15 Acre-Feet

PROJECT : Plateau Mining Co. - Farmer-Fletcher 2nd Quart. 2 hr storm

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.70 INCHES
STORM DURATION= 2.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.85	.6281	.0000	.0000	.0	.00
.92	.7987	.0050	.0050	77.1	.39
.99	.9744	.0260	.0210	477.1	4.02
1.06	1.1480	.0607	.0347	1019.7	17.81
1.13	1.2912	.0986	.0378	1410.0	47.97
1.20	1.3971	.1313	.0327	1536.0	93.28
1.27	1.4573	.1516	.0203	1438.8	144.16
1.35	1.5097	.1702	.0186	1214.5	187.44
1.42	1.5538	.1865	.0163	949.9	215.28
1.49	1.5839	.1979	.0115	701.0	226.56
1.56	1.6140	.2096	.0117	494.0	223.59
1.63	1.6368	.2187	.0091	335.5	210.79
1.70	1.6489	.2235	.0048	220.9	192.15
1.77	1.6609	.2284	.0049	141.8	169.98
1.84	1.6729	.2333	.0049	89.0	146.54
1.91	1.6850	.2383	.0050	54.9	124.16
1.98	1.6970	.2433	.0050	33.3	104.64
2.05	1.6970	.2433	.0000	19.9	88.46
2.12	1.6970	.2433	.0000	11.7	74.07
2.19	1.6970	.2433	.0000	6.8	60.29
2.27	1.6970	.2433	.0000	3.9	47.22
2.34	1.6970	.2433	.0000	2.3	35.50
2.41	1.6970	.2433	.0000	1.3	25.68
2.48	1.6970	.2433	.0000	.7	17.94
2.55	1.6970	.2433	.0000	.4	12.15
2.62	1.6970	.2433	.0000	.2	8.01
2.69	1.6970	.2433	.0000	.1	5.15
2.76	1.6970	.2433	.0000	.0	3.25

HYDROGRAPH PEAK= 226.56 cfs
TIME TO PEAK= 1.49 Hours
RUNOFF VOLUME= 14.58 Acre-Feet

PROJECT : Plateau Mining Co. - Farmer-Fletcher 2nd Quart. 1 hr storm

AREA= 719.0 ACRES
AVERAGE BASIN SLOPE= 53.4 PERCENT
CURVE NUMBER= 75.0
DESIGN STORM= 1.52 INCHES
STORM DURATION= 1.0 HOURS
HYDRAULIC LENGTH= 10000. FEET
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .3540 HOURS QPCFS= 1535.98 CFS QPIN= 2.1185 INCHES
C3= 10.4423 ITERATIONS= 8 Farmer-Fletcher 2nd

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.42	.5616	.0000	.0000	.0	.00
.50	.8712	.0118	.0118	77.1	.91
.57	1.1545	.0623	.0505	477.1	9.53
.64	1.3030	.1020	.0397	1019.7	39.19
.71	1.3893	.1287	.0268	1410.0	89.13
.78	1.4431	.1467	.0179	1536.0	143.94
.85	1.4743	.1575	.0108	1438.8	187.18
.92	1.4958	.1652	.0076	1214.5	209.72
.99	1.5173	.1730	.0078	949.9	211.32
1.06	1.5173	.1730	.0000	701.0	197.28
1.13	1.5173	.1730	.0000	494.0	172.59
1.20	1.5173	.1730	.0000	335.5	142.24
1.27	1.5173	.1730	.0000	220.9	111.07
1.35	1.5173	.1730	.0000	141.8	82.72
1.42	1.5173	.1730	.0000	89.0	59.14
1.49	1.5173	.1730	.0000	54.9	40.81
1.56	1.5173	.1730	.0000	33.3	27.33
1.63	1.5173	.1730	.0000	19.9	17.83
1.70	1.5173	.1730	.0000	11.7	11.37
1.77	1.5173	.1730	.0000	6.8	7.10
1.84	1.5173	.1730	.0000	3.9	4.36
1.91	1.5173	.1730	.0000	2.3	2.64
1.98	1.5173	.1730	.0000	1.3	1.58
2.05	1.5173	.1730	.0000	.7	.93
2.12	1.5173	.1730	.0000	.4	.54
2.19	1.5173	.1730	.0000	.2	.31
2.27	1.5173	.1730	.0000	.1	.18
2.34	1.5173	.1730	.0000	.0	.10

HYDROGRAPH PEAK= 211.32 cfs
TIME TO PEAK= .99 Hours
RUNOFF VOLUME= 10.36 Acre-Feet