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JOHANSEN & TUTTLE
Engineering, Inc.

Consulting Engineering & Land Surveying
Castle Dale, Utah 84513

June 29, 1979

State Of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, UT 84118

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JUL 2 1979
STATE OF UTAH
Division of Oil, Gas & Mining

ATTN: Ronald Daniels

RE: Trail Mountain Coal Company
Surface Drainage Design

Dear Mr. Daniels,

Enclosed are seven copies of the surface design for Trail Mountain Coal Company.

Also enclosed is a copy of the storm hydrograph for Cottonwood Canyon, based on a 100 year storm for the area, that will drain into the 48" culvert and sediment pond. To obtain the acre feet entering the sediment pond, subtract the sub area from the total area.

The sediment pond has been designed for total containment, to contain the 100 year storm, with only one spillway which is the Emergency Spillway.

I have not had a hydrograph run of the 10 year storm, but this pond would contain several 10 year storms that were back to back.

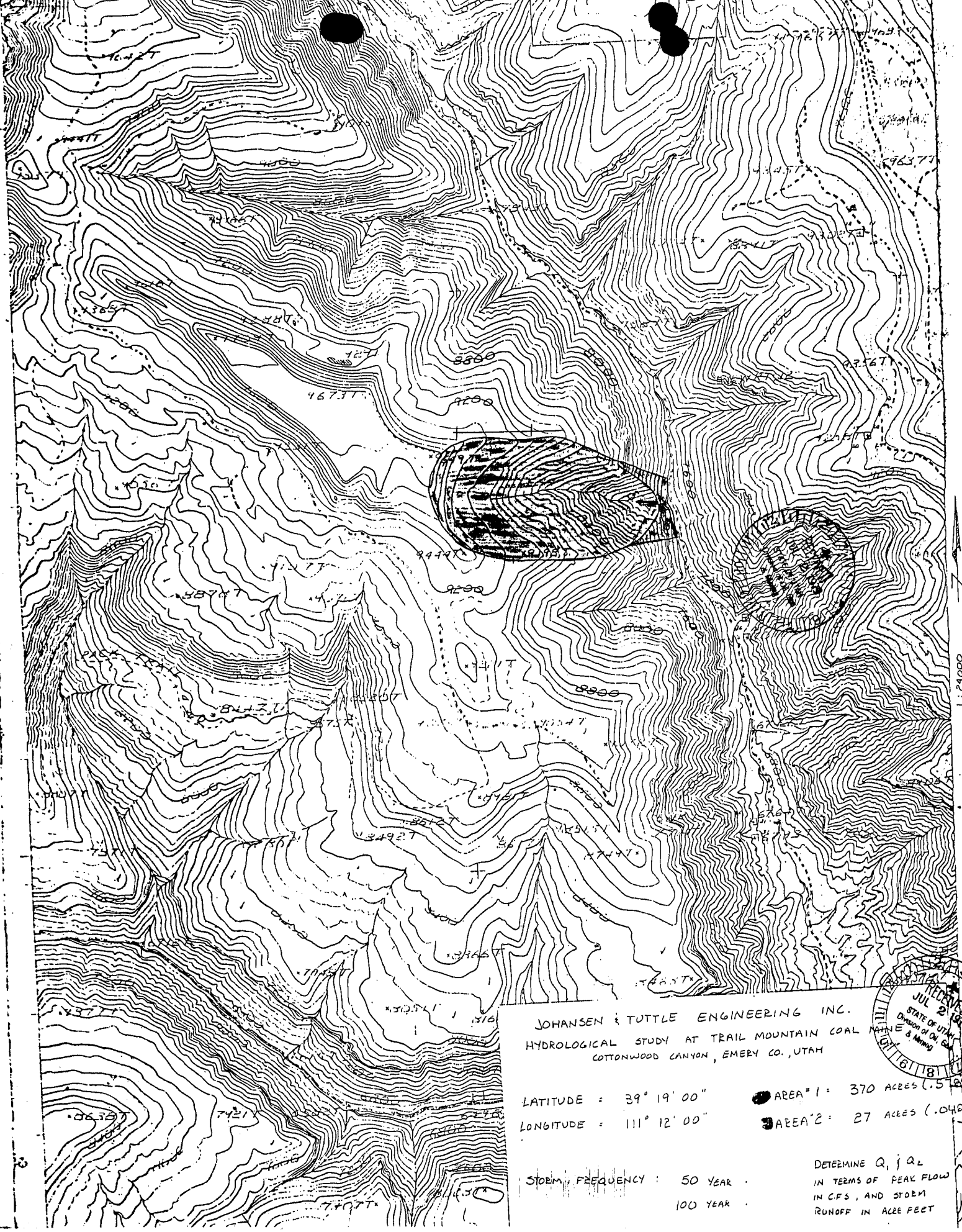
Please review the drawings and give me your comments.

Sincerely yours,

Howard Tuttle

Howard Tuttle

pl
cc
enclosures



JOHANSEN & TUTTLE ENGINEERING INC.

HYDROLOGICAL STUDY AT TRAIL MOUNTAIN COAL MINE

COTTONWOOD CANYON, EMERY CO., UTAH

LATITUDE : 39° 19' 00"

LONGITUDE : 111° 12' 00"

AREA #1 : 370 ACRES (.5 [illegible]

AREA #2 : 27 ACRES (.04 [illegible]

STORM FREQUENCY : 50 YEAR

100 YEAR

DETERMINE Q_1 & Q_2 IN TERMS OF PEAK FLOW IN C.F.S., AND STORM RUNOFF IN ACRE FEET

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STORM HYDROGRAPH NO. 2 FOR COTTONWOOD CANYON SUB AREA DEC 1978

INPUT PARAMETERS NP,PPT,NU,DT,CT,TNAME,CN,QFACT,IROUT, PPC

61	1.800	14	.100	1.000	(HOURS)	90.00	1.000	0	.925	100 Yr

TIME (HOURS)	DISCHARGE (CFS)
.000	.0
.100	.0
.200	.0
.300	.0
.400	.0
.500	.0
.600	.0
.700	.0
.800	.0
.900	.0
1.000	.0
1.100	.0
1.200	.0
1.300	.0
1.400	.0
1.500	.0
1.600	.0
1.700	.4
1.800	1.6
1.900	4.3
2.000	9.6
2.100	19.9
2.200	38.6
2.300	68.6
2.400	110.2
2.500	157.2
2.600	196.7
2.700	217.8
2.800	217.4
2.900	199.7
3.000	172.9
3.100	146.1
3.200	125.0
3.300	110.3
3.400	100.1
3.500	92.5
3.600	86.2
3.700	80.8
3.800	75.8
3.900	71.1
4.000	66.8
4.100	63.2
4.200	60.4
4.300	58.3

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4.400	56.8
4.500	55.4
4.600	54.0
4.700	52.5
4.800	50.8
4.900	49.1
5.000	47.4
5.100	46.0
5.200	45.0
5.300	44.5
5.400	44.2
5.500	44.0
5.600	43.7
5.700	43.2
5.800	42.5
5.900	41.4
6.000	39.2
6.100	34.5
6.200	26.9
6.300	18.3
6.400	11.2
6.500	6.5
6.600	3.8
6.700	2.1
6.800	1.2
6.900	.6
7.000	.2
7.100	.0
7.200	.0
7.300	.0

TOTAL DISCHARGE = 28.57 ACRE-FEET

STORM HYDROGRAPH NO. 2 FOR COTTONWOOD CANYON TOTAL AREA DEC 1978

100 year

INPUT PARAMETERS NP,PPT,NU,DT,CT,TNAME,CN,QFACT,IROUT, PPC

61	1.800	14	.100	1.000	(HOURS)	90.00	1.000	0	.925

TIME (HOURS)	DISCHARGE (CFS)
.000	.0
.100	.0
.200	.0
.300	.0
.400	.0
.500	.0
.600	.0
.700	.0
.800	.0
.900	.0
1.000	.0
1.100	.0
1.200	.0
1.300	.0
1.400	.0
1.500	.0
1.600	.0
1.700	.3
1.800	1.5
1.900	4.1
2.000	9.3
2.100	19.3
2.200	37.6
2.300	67.2
2.400	109.0
2.500	157.6
2.600	200.7
2.700	226.5
2.800	230.6
2.900	215.7
3.000	189.7
3.100	161.9
3.200	138.8
3.300	122.2
3.400	110.5
3.500	101.7
3.600	94.5
3.700	88.3
3.800	82.6
3.900	77.4
4.000	72.7
4.100	68.6
4.200	65.5
4.300	63.1

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4.400	61.3
4.500	59.8
4.600	58.3
4.700	56.6
4.800	54.8
4.900	53.0
5.000	51.1
5.100	49.6
5.200	48.5
5.300	47.8
5.400	47.4
5.500	47.2
5.600	46.8
5.700	46.3
5.800	45.6
5.900	44.6
6.000	42.4
6.100	37.9
6.200	30.4
6.300	21.6
6.400	13.8
6.500	8.3
6.600	4.9
6.700	2.9
6.800	1.7
6.900	.9
7.000	.4
7.100	.1
7.200	.0
7.300	.0

TOTAL DISCHARGE = 30.58 ACRE-FEET

Run-off Total Area - 30.58 Ac-ft

Run-off Sub Area - 28.57 Ac-ft

Discharge into Sed. Pond - 2.01 Ac-ft