

V E D L E G G 2

APPENDIX C

0- 66/72

UTSLIPP AV AVLØPSVANN
FRA SKOGHALLSVERKEN

- Dimensjonering av utløpsledning og diffusor.
- Avløpsvannets primærfortynning.

Rapporten avsluttet: 2.10.1972

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siv.ing. Ph.D.

A P P E N D I X C

EDB-BEREGNINGER AV UTLØPSLEDNINGENS
OG DIFFUSORENS HYDRAULIKK, ALTERNATIVENE 1-5

BOTTOM PROFILE

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	1.00
40.00	2.00
50.00	3.50
62.00	5.00
75.00	6.50
90.00	8.50
100.00	9.00
120.00	9.00
125.00	9.00
130.00	9.50
175.00	10.00
200.00	11.00
210.00	11.50
225.00	12.00
250.00	12.50
275.00	13.00
300.00	13.50
325.00	13.60
350.00	14.00
375.00	14.00
400.00	14.00
450.00	14.00
510.00	14.00

MANIFOLD 1
TRACE A

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- Q(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FR(N) = DENNITIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SN(N) = TOTAL DISCHARGE UP TO PORT N
- GN(N) = DISCHARGE OF PORT N
- GL(N) = DISCHARGE LOAD PER LENGTH OF MANIFOLD
- QDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW. - SPEC.GRAV. WATERS.)/(SPEC.GRAV. WATERS.)
- FRF = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VTYPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QUES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .30 M/SEC
DIST(1) = 500.00 M
U(1) = 3.00 M/SEC
DIA(2) = .925 M
DL(2) = 15.00 M
D(2) = .30 M
DL(3) = 15.00 M
D(3) = .001
VPIPE = 1.20 M/SEC
FR1 = .100
FR2 = .100
PORT NO K1 = 10
DIA(K1) = 2.000 M
DL(K1) = 15.00 M
D(K1) = .30 M
PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M
PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD, AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2). IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO I = K TO DIA(K), DL(K) AND D(K).

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	J/A(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	Fw(N)	E(N) M	SA(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		3.00	55.91	.46		202.61	
2	14.00	485.00	.928	15.00	.30	.30	3.02	62.71	.47	.20	133.05	13.52
3	14.00	470.00	.928	15.00	.30	.50	3.09	64.31	.49	.34	133.90	8.87
4	14.00	455.00	.928	15.00	.30	.69	3.21	67.22	.53	.47	136.52	8.93
5	14.00	440.00	.928	15.00	.30	.90	3.41	71.72	.59	.61	141.74	9.10
6	14.00	425.00	.928	15.00	.30	1.11	3.69	77.98	.69	.75	150.19	9.45
7	14.00	410.00	.928	15.00	.30	1.33	4.06	86.15	.84	.90	162.53	10.01
8	14.00	395.00	.928	15.00	.30	1.57	4.52	96.32	1.04	1.06	178.45	10.82
9	14.00	380.00	.928	15.00	.30	1.83	5.09	108.63	1.32	1.24	198.80	11.90
10	14.00	365.00	2.000	15.00	.30	.46	5.10	105.74	1.33	1.44	224.80	13.25
11	14.00	350.00	2.000	15.00	.30	.53	5.12	100.23	1.34	1.66	225.16	14.99
12	14.00	335.00	2.000	15.00	.30	.60	5.15	108.85	1.35	1.89	225.70	15.01
13	13.76	320.00	2.000	15.00	.30	.67	5.18	107.63	1.37	2.11	226.48	15.05
14	13.70	305.00	2.000	15.00	.30	.75	5.22	108.55	1.39	2.34	227.49	15.10
15	13.64	290.00	2.000	15.00	.30	.82	5.27	109.64	1.42	2.57	228.77	15.17
16	13.54	275.01	2.000	15.00	.30	.89	5.33	110.92	1.45	2.80	230.39	15.25
17	13.04	260.01	2.000	15.00	.30	.96	5.39	112.39	1.48	3.03	232.34	15.36
18	12.74	245.01	2.000	15.00	.30	1.04	5.47	114.07	1.52	3.26	234.66	15.49
19	12.44	230.01	2.000	15.00	.30	1.11	5.55	115.95	1.57	3.49	237.36	15.64
20	12.14	215.02	2.000	15.00	.30	1.19	5.65	118.05	1.63	3.73	240.48	15.82
21	11.64	200.03	2.000	15.00	.30	1.26	5.75	120.39	1.69	3.97	244.05	16.03

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.22 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.34 M/SEC
 TOTAL LENGTH OF MAINFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 2.62 M

FLOW CHARACTERISTICS FOR U(1) = 1.0n M/SEC

N	DEPTH(N) M	DIST(N) M	JIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.37		1.00	18.64	.05		67.60	
2	14.00	485.00	.928	15.00	.30	.10	1.01	20.90	.05	.07	44.35	4.51
3	14.00	470.00	.928	15.00	.30	.17	1.03	21.44	.05	.11	44.63	2.96
4	14.00	455.00	.928	15.00	.30	.23	1.07	22.41	.06	.16	45.51	2.98
5	14.00	440.00	.928	15.00	.30	.30	1.14	23.91	.07	.20	47.25	3.03
6	14.00	425.00	.928	15.00	.30	.37	1.23	25.99	.08	.25	50.06	3.15
7	14.00	410.00	.928	15.00	.30	.44	1.35	28.72	.09	.30	54.11	3.34
8	14.00	395.00	.928	15.00	.30	.52	1.51	32.11	.12	.35	59.48	3.61
9	14.00	380.00	.928	15.00	.30	.61	1.70	36.21	.15	.41	66.27	3.97
10	14.00	365.00	2.000	15.00	.30	.15	1.70	35.25	.15	.48	74.93	4.42
11	14.00	350.00	2.000	15.00	.30	.18	1.71	35.41	.15	.55	75.05	5.00
12	14.00	335.00	2.000	15.00	.30	.20	1.72	35.62	.15	.63	75.23	5.00
13	13.76	320.00	2.000	15.00	.30	.22	1.73	35.90	.15	.70	75.55	5.02
14	13.70	305.00	2.000	15.00	.30	.25	1.74	36.21	.15	.78	75.90	5.04
15	13.64	290.00	2.000	15.00	.30	.27	1.76	36.58	.16	.86	76.34	5.06
16	13.34	275.01	2.000	15.00	.30	.30	1.78	37.04	.16	.93	76.94	5.09
17	13.04	260.01	2.000	15.00	.30	.32	1.80	37.56	.17	1.01	77.66	5.13
18	12.74	245.01	2.000	15.00	.30	.35	1.83	38.15	.17	1.09	78.50	5.18
19	12.44	230.01	2.000	15.00	.30	.37	1.86	38.80	.18	1.17	79.46	5.23
20	12.14	215.02	2.000	15.00	.30	.40	1.89	39.53	.18	1.24	80.56	5.30
21	11.64	200.03	2.000	15.00	.30	.42	1.93	40.35	.19	1.33	81.85	5.37

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.41 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .45 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .30 M

1 FLOW CHARACTERISTICS FOR U(1) = 2.0 m M/SEC

N	DEPTH(N) M	DIST(N) M	U(A(N)) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37	.20	2.00	37.28	.20		135.21	
2	14.00	485.00	.928	15.00	.30	.20	2.02	41.81	.21	.14	88.70	9.01
3	14.00	470.00	.928	15.00	.30	.33	2.06	42.87	.22	.22	89.27	5.91
4	14.00	455.00	.928	15.00	.30	.46	2.14	44.81	.23	.31	91.01	5.95
5	14.00	440.00	.928	15.00	.30	.60	2.27	47.81	.26	.40	94.49	6.07
6	14.00	425.00	.928	15.00	.30	.74	2.46	51.99	.31	.50	100.13	6.30
7	14.00	410.00	.928	15.00	.30	.89	2.70	57.43	.37	.60	108.22	6.68
8	14.00	395.00	.928	15.00	.30	1.05	3.01	64.21	.46	.71	118.97	7.21
9	14.00	380.00	.928	15.00	.30	1.22	3.39	72.42	.59	.83	132.53	7.93
10	14.00	365.00	2.000	15.00	.30	.31	3.40	70.49	.59	.96	149.87	8.84
11	14.00	350.00	2.000	15.00	.30	.35	3.41	70.82	.59	1.11	150.11	9.99
12	14.00	335.00	2.000	15.00	.30	.40	3.43	71.24	.60	1.26	150.47	10.01
13	13.76	320.00	2.000	15.00	.30	.45	3.45	71.76	.61	1.41	151.00	10.03
14	13.70	305.00	2.000	15.00	.30	.50	3.48	72.38	.62	1.56	151.68	10.07
15	13.64	290.00	2.000	15.00	.30	.55	3.51	73.11	.63	1.71	152.54	10.11
16	13.34	275.01	2.000	15.00	.30	.59	3.55	73.97	.64	1.86	153.64	10.17
17	13.04	260.01	2.000	15.00	.30	.64	3.60	74.96	.66	2.02	154.96	10.24
18	12.74	245.01	2.000	15.00	.30	.69	3.65	76.08	.68	2.17	156.53	10.33
19	12.44	230.01	2.000	15.00	.30	.74	3.70	77.35	.70	2.33	158.35	10.44
20	12.14	215.02	2.000	15.00	.30	.79	3.77	78.76	.72	2.49	160.44	10.56
21	11.64	200.03	2.000	15.00	.30	.84	3.84	80.33	.75	2.65	162.85	10.70

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.61 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .90 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 1.17 M

1 FLOW CHARACTERISTICS FOR U(1) = 4.0 m M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M·SEC
1	14.00	500.00			.37		4.00	74.55	.82		270.41	
2	14.00	465.00	.928	15.00	.30	.40	4.03	83.62	.83	.27	177.40	18.03
3	14.00	470.00	.928	15.00	.30	.66	4.12	85.74	.86	.45	178.53	11.83
4	14.00	455.00	.928	15.00	.30	.93	4.28	89.63	.94	.63	182.03	11.90
5	14.00	440.00	.928	15.00	.30	1.20	4.55	95.62	1.05	.81	188.98	12.14
6	14.00	425.00	.928	15.00	.30	1.48	4.92	103.98	1.23	1.00	200.25	12.60
7	14.00	410.00	.928	15.00	.30	1.77	5.41	114.86	1.49	1.20	216.44	13.35
8	14.00	395.00	.928	15.00	.30	2.09	6.03	126.43	1.85	1.41	237.94	14.43
9	14.00	380.00	.928	15.00	.30	2.44	6.78	144.84	2.34	1.65	265.07	15.86
10	14.00	365.00	2.000	15.00	.30	.61	6.80	140.99	2.36	1.62	299.74	17.67
11	14.00	350.00	2.000	15.00	.30	.71	6.83	141.64	2.38	2.22	300.21	19.98
12	14.00	335.00	2.000	15.00	.30	.80	6.86	142.47	2.40	2.52	300.93	20.01
13	13.76	320.00	2.000	15.00	.30	.90	6.91	143.50	2.43	2.82	301.96	20.06
14	13.70	305.00	2.000	15.00	.30	.99	6.96	144.73	2.47	3.12	303.30	20.13
15	13.64	290.00	2.000	15.00	.30	1.09	7.03	146.18	2.52	3.42	305.01	20.22
16	13.34	275.01	2.000	15.00	.30	1.19	7.10	147.88	2.57	3.73	307.15	20.33
17	13.04	260.01	2.000	15.00	.30	1.29	7.19	149.84	2.63	4.04	309.74	20.48
18	12.74	245.01	2.000	15.00	.30	1.38	7.29	152.06	2.71	4.35	312.82	20.65
19	12.44	230.01	2.000	15.00	.30	1.48	7.40	154.57	2.79	4.66	316.41	20.85
20	12.14	215.02	2.000	15.00	.30	1.58	7.53	157.36	2.89	4.97	320.55	21.09
21	11.64	200.03	2.000	15.00	.30	1.69	7.67	160.47	3.00	5.29	325.28	21.37

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.79 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 4.65 M

1 FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00	.928	15.00	.37	.50	5.00	93.19	1.27	338.01	338.01	22.53
2	14.00	435.00	.928	15.00	.30	.83	5.04	104.52	1.29	221.75	221.75	14.78
3	14.00	470.00	.928	15.00	.30	.83	5.15	107.18	1.35	223.17	223.17	14.88
4	14.00	455.00	.928	15.00	.30	1.16	5.36	112.03	1.46	227.53	227.53	15.17
5	14.00	440.00	.928	15.00	.30	1.49	5.68	119.53	1.65	230.23	230.23	15.75
6	14.00	425.00	.928	15.00	.30	1.84	6.15	129.97	1.93	250.32	250.32	16.69
7	14.00	410.00	.928	15.00	.30	2.21	6.76	143.58	2.33	270.55	270.55	18.04
8	14.00	395.00	.928	15.00	.30	2.61	7.53	160.53	2.89	297.42	297.42	19.83
9	14.00	380.00	.928	15.00	.30	3.05	8.48	181.05	3.66	331.34	331.34	22.09
10	14.00	365.00	2.000	15.00	.30	.76	8.50	170.24	3.68	374.67	374.67	24.98
11	14.00	350.00	2.000	15.00	.30	.88	8.54	177.06	3.71	375.27	375.27	25.02
12	14.00	335.00	2.000	15.00	.30	1.00	8.58	170.09	3.75	376.17	376.17	25.08
13	13.76	320.00	2.000	15.00	.30	1.12	8.64	179.37	3.80	377.44	377.44	25.16
14	13.64	305.00	2.000	15.00	.30	1.24	8.70	180.90	3.86	379.11	379.11	25.27
15	13.64	290.00	2.000	15.00	.30	1.36	8.78	182.72	3.93	381.26	381.26	25.42
16	13.34	275.01	2.000	15.00	.30	1.48	8.88	184.84	4.02	383.92	383.92	25.59
17	13.04	260.01	2.000	15.00	.30	1.61	8.98	187.29	4.11	367.15	367.15	25.81
18	12.74	245.01	2.000	15.00	.30	1.73	9.11	190.06	4.23	390.99	390.99	26.07
19	12.44	230.01	2.000	15.00	.30	1.85	9.25	193.19	4.36	395.47	395.47	26.36
20	12.14	215.02	2.000	15.00	.30	1.98	9.41	196.68	4.51	400.64	400.64	26.71
21	11.64	200.03	2.000	15.00	.30	2.11	9.58	200.56	4.68	406.54	406.54	

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.24 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 7.25 M

FLOW CHARACTERISTICS FOR U(1) = 6.0 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		6.00	111.83	1.83		405.62	
2	14.00	485.00	.928	15.00	.30	.60	6.05	125.43	1.86	.41	266.10	27.04
3	14.00	470.00	.928	15.00	.30	.99	6.18	128.61	1.95	.67	267.80	17.74
4	14.00	455.00	.928	15.00	.30	1.39	6.43	134.44	2.10	.94	273.04	17.85
5	14.00	440.00	.928	15.00	.30	1.79	6.82	143.43	2.37	1.21	283.47	18.20
6	14.00	425.00	.928	15.00	.30	2.21	7.38	155.96	2.77	1.50	300.38	18.90
7	14.00	410.00	.928	15.00	.30	2.66	8.11	172.29	3.36	1.80	324.65	20.03
8	14.00	395.00	.928	15.00	.30	3.14	9.04	192.64	4.17	2.12	356.90	21.64
9	14.00	380.00	.928	15.00	.30	3.67	10.17	217.26	5.27	2.48	397.60	23.79
10	14.00	365.00	2.000	15.00	.30	.92	10.20	211.48	5.31	2.88	449.61	26.51
11	14.00	350.00	2.000	15.00	.30	1.06	10.24	212.47	5.35	3.33	450.32	29.97
12	14.00	335.00	2.000	15.00	.30	1.20	10.30	213.71	5.40	3.78	451.40	30.02
13	13.76	320.00	2.000	15.00	.30	1.35	10.36	215.24	5.47	4.23	452.92	30.09
14	13.70	305.00	2.000	15.00	.30	1.49	10.44	217.08	5.56	4.68	454.93	30.19
15	13.64	290.00	2.000	15.00	.30	1.64	10.54	219.26	5.66	5.13	457.50	30.33
16	13.34	275.01	2.000	15.00	.30	1.78	10.65	221.81	5.78	5.59	460.70	30.50
17	13.04	260.01	2.000	15.00	.30	1.93	10.78	224.73	5.92	6.05	464.57	30.71
18	12.74	245.01	2.000	15.00	.30	2.08	10.93	228.06	6.09	6.52	469.16	30.97
19	12.44	230.01	2.000	15.00	.30	2.23	11.10	231.81	6.28	6.99	474.54	31.28
20	12.14	215.02	2.000	15.00	.30	2.38	11.29	236.00	6.49	7.46	480.74	31.64
21	11.64	200.03	2.000	15.00	.30	2.53	11.50	240.65	6.74	7.94	487.81	32.05

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.43 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.68 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 10.44 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M*SEC
1	14.00	500.00			.37		7.00	130.46	2.50		473.22	
2	14.00	465.00	.928	15.00	.30	.70	7.06	146.33	2.54	.47	310.45	31.55
3	14.00	470.00	.928	15.00	.30	1.16	7.21	150.05	2.65	.78	312.43	20.70
4	14.00	445.00	.928	15.00	.30	1.62	7.50	156.84	2.87	1.10	318.55	20.83
5	14.00	440.00	.928	15.00	.30	2.09	7.96	167.34	3.23	1.41	330.72	21.24
6	14.00	425.00	.928	15.00	.30	2.58	8.61	181.96	3.78	1.75	350.44	22.05
7	14.00	410.00	.928	15.00	.30	3.10	9.47	201.01	4.57	2.10	378.76	23.36
8	14.00	395.00	.928	15.00	.30	3.66	10.55	224.75	5.67	2.47	419.39	25.25
9	14.00	360.00	.928	15.00	.30	4.28	11.87	253.47	7.18	2.89	463.87	27.76
10	14.00	365.00	2.000	15.00	.30	1.07	11.90	246.73	7.22	3.35	524.54	30.92
11	14.00	350.00	2.000	15.00	.30	1.24	11.95	247.88	7.28	3.88	525.37	34.97
12	14.00	335.00	2.000	15.00	.30	1.40	12.01	249.33	7.35	4.40	526.53	35.02
13	13.76	320.00	2.000	15.00	.30	1.57	12.09	251.11	7.45	4.93	528.40	35.11
14	13.70	305.00	2.000	15.00	.30	1.74	12.18	253.26	7.56	5.46	530.75	35.23
15	13.64	290.00	2.000	15.00	.30	1.91	12.29	255.80	7.70	5.99	533.75	35.38
16	13.34	275.01	2.000	15.00	.30	2.08	12.43	258.77	7.87	6.52	537.47	35.58
17	13.04	260.01	2.000	15.00	.30	2.25	12.58	262.18	8.06	7.06	541.98	35.83
18	12.74	245.01	2.000	15.00	.30	2.42	12.75	266.07	8.29	7.60	547.34	36.13
19	12.44	230.01	2.000	15.00	.30	2.60	12.95	270.44	8.55	8.15	553.61	36.49
20	12.14	215.02	2.000	15.00	.30	2.77	13.17	275.33	8.84	8.70	560.84	36.91
21	11.64	200.03	2.000	15.00	.30	2.95	13.42	280.75	9.17	9.27	569.08	37.39

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.33 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 3.13 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 14.20 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	UA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		8.00	149.10	3.26		540.82	36.05
2	14.00	435.00	.928	15.00	.30	.80	8.06	167.24	3.31	.54	354.80	23.65
3	14.00	470.00	.928	15.00	.30	1.32	8.24	171.49	3.46	.90	357.07	23.80
4	14.00	435.00	.928	15.00	.30	1.85	8.57	179.25	3.74	1.25	364.06	24.27
5	14.00	440.00	.928	15.00	.30	2.39	9.09	191.24	4.21	1.62	377.96	25.20
6	14.00	425.00	.928	15.00	.30	2.95	9.84	207.95	4.93	1.99	400.50	26.70
7	14.00	410.00	.928	15.00	.30	3.54	10.82	229.72	5.96	2.40	432.87	28.86
8	14.00	395.00	.928	15.00	.30	4.18	12.05	256.85	7.41	2.83	475.97	31.72
9	14.00	360.00	.928	15.00	.30	4.89	13.56	289.68	9.37	3.30	530.14	35.34
10	14.00	335.00	2.000	15.00	.30	1.22	13.60	291.98	9.43	3.83	599.48	39.97
11	14.00	350.00	2.000	15.00	.30	1.41	13.66	283.29	9.51	4.43	600.43	40.03
12	14.00	335.00	2.000	15.00	.30	1.60	13.73	284.94	9.61	5.03	601.86	40.12
13	13.76	320.00	2.000	15.00	.30	1.79	13.82	288.98	9.73	5.64	603.89	40.26
14	13.70	305.00	2.000	15.00	.30	1.99	13.92	289.44	9.88	6.24	608.57	40.44
15	13.64	290.00	2.000	15.00	.30	2.18	14.05	292.35	10.06	6.85	609.99	40.67
16	13.34	275.01	2.000	15.00	.30	2.37	14.20	295.74	10.28	7.46	614.25	40.95
17	13.04	260.01	2.000	15.00	.30	2.57	14.37	299.63	10.53	8.07	619.40	41.29
18	12.74	245.01	2.000	15.00	.30	2.77	14.57	304.07	10.82	8.69	625.52	41.70
19	12.44	230.01	2.000	15.00	.30	2.97	14.80	309.07	11.16	9.32	632.68	42.18
20	12.14	215.02	2.000	15.00	.30	3.17	15.05	314.65	11.54	9.95	640.94	42.73
21	11.64	200.03	2.000	15.00	.30	3.37	15.33	320.84	11.98	10.59	650.36	

OUTFALL PIPELINE

TOTAL DISCHARGE = 11.24 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 3.58 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 16.54 M

BOTTOM PROFILE

MANIFOLD 1
TRACE B

DISTANCE M	DEPTH M
.00	.00
25.00	.00
40.00	1.00
50.00	3.00
60.00	4.50
65.00	5.00
75.00	6.50
90.00	7.00
100.00	8.50
125.00	9.00
150.00	9.10
175.00	9.50
200.00	9.80
225.00	10.20
250.00	10.50
275.00	10.50
300.00	10.50
325.00	10.50
350.00	10.80
375.00	10.80
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.50
510.00	11.60

LIST OF SYMBOLS

- H = NO OF PORT
- DEPTH(H) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FH(N) = DENSI-METRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT POINT N
- Sq(N) = TOTAL DISCHARGE UP TO PORT N
- Q(N) = DISCHARGE OF PORT N
- QL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
- QDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DLFS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRA = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPRF = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QUES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .30 M/SEC
D1ST(1) = 500.00 M
U(1) = 3.00 M/SEC
DIA(2) = .928 M
DL(2) = 15.00 M
D(2) = .30 M
DL(3) = 15.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 10
DIA(K1) = 2.000 M
DL(N1) = 15.00 M
D(K1) = .50 M

PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K TO DIA(K), DL(K) AND D(K).

FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M*SEC
1	11.57	500.00			.57		3.00	55.91	.46		202.81	
2	11.53	435.00	.928	15.00	.30	.30	3.02	62.72	.47	.20	133.06	13.52
3	11.49	470.00	.928	15.00	.30	.50	3.09	64.31	.49	.34	133.91	8.87
4	11.19	455.00	.928	15.00	.30	.69	3.21	67.24	.53	.47	136.58	8.93
5	10.89	440.01	.928	15.00	.30	.90	3.41	71.76	.59	.61	141.83	9.11
6	10.89	425.01	.928	15.00	.30	1.11	3.69	78.02	.69	.75	150.28	9.46
7	10.89	410.01	.928	15.00	.30	1.33	4.06	88.19	.84	.90	162.42	10.02
8	10.89	395.01	.928	15.00	.30	1.57	4.52	98.36	1.04	1.06	178.54	10.83
9	10.77	380.01	.928	15.00	.30	1.83	5.09	108.68	1.32	1.24	198.91	11.90
10	10.65	365.01	2.000	15.00	.30	.46	5.10	105.90	1.33	1.44	224.92	13.26
11	10.65	350.01	2.000	15.00	.30	.53	5.12	100.29	1.34	1.66	225.28	14.99
12	10.65	335.01	2.000	15.00	.30	.60	5.15	100.91	1.35	1.89	225.82	15.02
13	10.47	320.01	2.000	15.00	.30	.67	5.18	107.68	1.37	2.11	226.59	15.05
14	10.47	305.01	2.000	15.00	.30	.75	5.22	108.60	1.39	2.34	227.59	15.11
15	10.47	290.01	2.000	15.00	.30	.82	5.27	109.69	1.2	2.57	228.88	15.17
16	10.47	275.01	2.000	15.00	.30	.89	5.33	110.96	1.5	2.80	230.47	15.26
17	10.47	260.01	2.000	15.00	.30	.96	5.39	112.42	1.48	3.03	232.40	15.36
18	10.47	245.01	2.000	15.00	.30	1.04	5.47	114.09	1.52	3.26	234.69	15.49
19	10.29	230.01	2.000	15.00	.30	1.11	5.55	115.97	1.57	3.49	237.39	15.65
20	10.11	215.01	2.000	15.00	.30	1.19	5.65	118.07	1.63	3.73	240.50	15.83
21	9.87	200.01	2.000	15.00	.30	1.27	5.75	120.39	1.69	3.97	244.05	16.03

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.22 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.34 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 2.62 M

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SFC	Q(N) L/SEC	QL(N) L/M*SEC
1	11.57	500.00			.37		1.00	18.64	.05		67.60	
2	11.53	485.00	.928	15.00	.30	.10	1.01	20.91	.05	.07	44.37	4.51
3	11.49	470.00	.928	15.00	.30	.17	1.03	21.45	.05	.11	44.67	2.96
4	11.19	455.00	.928	15.00	.30	.23	1.07	22.48	.06	.16	45.67	2.98
5	10.89	440.01	.928	15.00	.30	.30	1.14	24.03	.07	.20	47.53	3.04
6	10.89	425.01	.928	15.00	.30	.37	1.24	26.12	.08	.25	50.33	3.17
7	10.89	410.01	.928	15.00	.30	.44	1.36	28.84	.09	.30	54.37	3.36
8	10.89	395.01	.928	15.00	.30	.52	1.51	32.24	.12	.35	59.75	3.62
9	10.77	380.01	.928	15.00	.30	.61	1.70	36.36	.15	.41	66.58	3.98
10	10.65	365.01	2.000	15.00	.30	.15	1.71	35.41	.15	.48	75.29	4.44
11	10.65	350.01	2.000	15.00	.30	.18	1.72	35.58	.15	.56	75.41	5.02
12	10.65	335.01	2.000	15.00	.30	.20	1.72	35.79	.15	.63	75.59	5.03
13	10.47	320.01	2.000	15.00	.30	.23	1.74	36.06	.15	.71	75.89	5.04
14	10.47	305.01	2.000	15.00	.30	.25	1.75	36.37	.16	.78	76.22	5.06
15	10.47	290.01	2.000	15.00	.30	.27	1.77	36.73	.16	.86	76.65	5.08
16	10.47	275.01	2.000	15.00	.30	.30	1.78	37.16	.16	.94	77.19	5.11
17	10.47	260.01	2.000	15.00	.30	.32	1.81	37.65	.17	1.01	77.83	5.15
18	10.47	245.01	2.000	15.00	.30	.35	1.83	38.20	.17	1.09	78.60	5.19
19	10.29	230.01	2.000	15.00	.30	.37	1.86	38.85	.18	1.17	79.54	5.24
20	10.11	215.01	2.000	15.00	.30	.40	1.89	39.57	.18	1.25	80.61	5.30
21	9.07	200.01	2.000	15.00	.30	.42	1.93	40.37	.19	1.33	81.85	5.37

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.41 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .45 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .30 M

1 FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	11.57	500.00			.57		2.00	37.28	.20		135.21	9.01
2	11.53	485.00	.928	15.00	.50	.20	2.02	41.81	.21	.14	88.71	5.91
3	11.49	470.00	.928	15.00	.50	.33	2.06	42.88	.22	.22	89.28	5.95
4	11.19	455.00	.928	15.00	.50	.46	2.14	44.85	.23	.31	91.10	6.07
5	10.89	440.01	.928	15.00	.50	.60	2.28	47.87	.26	.40	94.63	6.31
6	10.89	425.01	.928	15.00	.50	.74	2.46	52.05	.31	.50	100.26	6.68
7	10.89	410.01	.928	15.00	.50	.89	2.71	57.49	.37	.60	108.35	7.22
8	10.89	395.01	.928	15.00	.50	1.05	3.02	64.28	.46	.71	119.10	7.94
9	10.77	380.01	.928	15.00	.50	1.22	3.39	72.50	.59	.83	132.69	8.85
10	10.65	365.01	2.000	15.00	.50	.31	3.40	70.58	.59	.86	150.05	10.00
11	10.65	350.01	2.000	15.00	.50	.35	3.42	70.91	.60	1.11	150.29	10.02
12	10.65	335.01	2.000	15.00	.50	.40	3.44	71.32	.60	1.26	150.65	10.04
13	10.47	320.01	2.000	15.00	.50	.45	3.46	71.84	.61	1.41	151.17	10.08
14	10.47	305.01	2.000	15.00	.50	.50	3.49	72.45	.62	1.56	151.84	10.12
15	10.47	290.01	2.000	15.00	.50	.55	3.52	73.18	.63	1.71	152.70	10.18
16	10.47	275.01	2.000	15.00	.50	.59	3.55	74.03	.64	1.87	153.76	10.25
17	10.47	260.01	2.000	15.00	.50	.64	3.60	75.00	.66	2.02	155.05	10.34
18	10.47	245.01	2.000	15.00	.50	.69	3.65	76.11	.68	2.17	156.58	10.44
19	10.29	230.01	2.000	15.00	.50	.74	3.70	77.37	.70	2.33	158.39	10.56
20	10.11	215.01	2.000	15.00	.50	.79	3.77	78.78	.72	2.49	160.47	10.70
21	9.87	200.01	2.000	15.00	.50	.84	3.84	80.34	.75	2.65	162.85	

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.81 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .90 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 1.17 M

FLOW CHARACTERISTICS FOR U(1) = 4.0₀ M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M·SEC
1	11.57	500.00			.57		4.00	74.55	.82		270.41	19.03
2	11.53	485.00	.928	15.00	.30	.40	4.03	83.62	.83	.27	177.41	11.83
3	11.49	470.00	.928	15.00	.30	.66	4.12	85.75	.86	.45	173.54	11.90
4	11.19	455.00	.928	15.00	.30	.93	4.29	89.64	.94	.63	182.07	12.14
5	10.89	440.01	.928	15.00	.30	1.20	4.55	95.65	1.05	.81	189.05	12.60
6	10.89	425.01	.928	15.00	.30	1.48	4.92	104.01	1.23	1.00	200.32	13.35
7	10.89	410.01	.928	15.00	.30	1.77	5.41	114.89	1.49	1.20	216.50	14.43
8	10.89	395.01	.928	15.00	.30	2.09	6.03	126.46	1.85	1.41	238.00	15.87
9	10.77	380.01	.928	15.00	.30	2.44	6.78	144.88	2.34	1.65	265.15	17.68
10	10.65	365.01	2.000	15.00	.30	.61	6.80	141.03	2.36	1.92	299.53	19.99
11	10.65	350.01	2.000	15.00	.30	.71	6.83	141.69	2.38	2.22	300.30	20.02
12	10.65	335.01	2.000	15.00	.30	.80	6.87	142.51	2.40	2.52	301.02	20.07
13	10.47	320.01	2.000	15.00	.30	.90	6.91	143.54	2.43	2.82	302.04	20.14
14	10.47	305.01	2.000	15.00	.30	.99	6.96	144.77	2.47	3.12	303.38	20.23
15	10.47	290.01	2.000	15.00	.30	1.09	7.03	146.22	2.52	3.42	305.09	20.34
16	10.47	275.01	2.000	15.00	.30	1.19	7.10	147.91	2.57	3.73	307.22	20.48
17	10.47	250.01	2.000	15.00	.30	1.29	7.19	149.86	2.63	4.04	309.79	20.65
18	10.47	245.01	2.000	15.00	.30	1.38	7.29	152.08	2.71	4.35	312.84	20.86
19	10.29	230.01	2.000	15.00	.30	1.48	7.40	154.58	2.79	4.66	316.43	21.10
20	10.11	215.01	2.000	15.00	.30	1.58	7.53	157.37	2.89	4.98	320.57	21.37
21	9.87	200.01	2.000	15.00	.30	1.69	7.67	160.47	3.00	5.30	325.29	

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.92 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.79 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 4.65 M

1 FLOW CHARACTERISTICS FOR U(1) = 5.0 M/SEC

N	DEPTH(N) M	DIST(N) M	UA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.37		5.00	93.19	1.27		338.01	22.53
2	11.53	485.00	.928	15.00	.30	.50	5.04	104.52	1.29	.34	221.76	14.78
3	11.49	470.00	.928	15.00	.30	.83	5.15	107.18	1.35	.56	223.17	14.88
4	11.19	435.00	.928	15.00	.30	1.16	5.36	112.05	1.46	.78	227.57	15.17
5	10.89	440.01	.928	15.00	.30	1.49	5.08	119.55	1.65	1.01	236.28	15.75
6	10.69	425.01	.928	15.00	.30	1.84	6.15	129.99	1.93	1.25	250.37	16.69
7	10.89	410.01	.928	15.00	.30	2.21	6.76	143.60	2.33	1.50	270.60	18.04
8	10.89	395.01	.928	15.00	.30	2.61	7.54	160.56	2.89	1.77	297.47	19.83
9	10.77	360.01	.928	15.00	.30	3.05	8.48	181.08	3.66	2.07	331.40	22.09
10	10.65	365.01	2.000	15.00	.30	.76	8.50	176.27	3.69	2.40	374.74	24.98
11	10.65	350.01	2.000	15.00	.30	.88	8.54	177.09	3.72	2.77	375.34	25.02
12	10.65	335.01	2.000	15.00	.30	1.00	8.58	176.12	3.75	3.15	376.24	25.08
13	10.47	320.01	2.000	15.00	.30	1.12	8.64	179.40	3.80	3.52	377.51	25.17
14	10.47	305.01	2.000	15.00	.30	1.24	8.70	180.64	3.86	3.90	379.18	25.28
15	10.47	290.01	2.000	15.00	.30	1.36	8.78	182.75	3.93	4.28	381.32	25.42
16	10.47	275.01	2.000	15.00	.30	1.48	8.88	184.87	4.02	4.66	383.97	25.60
17	10.47	260.01	2.000	15.00	.30	1.61	8.99	187.30	4.11	5.04	387.19	25.81
18	10.47	245.01	2.000	15.00	.30	1.73	9.11	190.07	4.23	5.43	391.01	26.07
19	10.29	230.01	2.000	15.00	.30	1.85	9.25	193.20	4.36	5.82	395.49	26.57
20	10.11	215.01	2.000	15.00	.30	1.98	9.41	196.69	4.51	6.22	400.65	26.71
21	9.87	200.01	2.000	15.00	.30	2.11	9.58	200.56	4.68	6.62	406.54	

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.24 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 7.25 M

FLOW CHARACTERISTICS FOR U(1) = 6.0 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M-SEC
1	11.57	500.00			.37		6.00	111.83	1.83		405.62	27.04
2	11.53	485.00	.928	15.00	.30	.60	6.05	125.43	1.86	.41	266.11	17.74
3	11.49	470.00	.928	15.00	.30	.99	6.18	128.62	1.95	.67	267.30	17.85
4	11.19	455.00	.928	15.00	.30	1.39	6.43	134.45	2.11	.94	273.07	18.20
5	10.89	440.01	.928	15.00	.30	1.79	6.82	143.45	2.37	1.21	283.52	18.90
6	10.89	425.01	.928	15.00	.30	2.21	7.38	155.98	2.77	1.50	300.42	20.03
7	10.09	410.01	.928	15.00	.30	2.66	8.11	174.31	3.36	1.80	324.70	21.65
8	10.89	395.01	.928	15.00	.30	3.14	9.04	192.66	4.17	2.12	356.95	23.80
9	10.77	380.01	.928	15.00	.30	3.67	10.17	217.28	5.27	2.48	397.66	26.51
10	10.65	365.01	2.000	15.00	.30	.92	10.20	211.51	5.31	2.88	449.57	29.98
11	10.65	350.01	2.000	15.00	.30	1.06	10.24	212.49	5.35	3.33	450.38	30.03
12	10.65	335.01	2.000	15.00	.30	1.20	10.30	213.74	5.40	3.78	451.46	30.10
13	10.47	320.01	2.000	15.00	.30	1.35	10.36	215.27	5.47	4.23	452.98	30.20
14	10.47	305.01	2.000	15.00	.30	1.49	10.44	217.11	5.56	4.68	454.99	30.33
15	10.47	290.01	2.000	15.00	.30	1.64	10.54	219.29	5.66	5.14	457.55	30.50
16	10.47	275.01	2.000	15.00	.30	1.78	10.65	221.83	5.78	5.59	460.74	30.72
17	10.47	260.01	2.000	15.00	.30	1.93	10.78	224.75	5.92	6.05	464.60	30.97
18	10.47	245.01	2.000	15.00	.30	2.08	10.93	229.07	6.09	6.52	469.18	31.28
19	10.29	230.01	2.000	15.00	.30	2.23	11.10	231.82	6.28	6.99	474.55	31.64
20	10.11	215.01	2.000	15.00	.30	2.38	11.29	236.01	6.49	7.46	480.75	32.05
21	9.87	200.01	2.000	15.00	.30	2.53	11.50	240.65	6.74	7.94	487.81	

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.43 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.68 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 10.44 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(W) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00			.57		8.00	149.10	3.26		540.82	36.05
2	11.53	485.00	.928	15.00	.50	.80	8.06	167.24	3.31	.54	354.81	23.65
3	11.49	470.00	.928	15.00	.50	1.32	8.24	171.49	3.46	.90	357.07	23.80
4	11.19	455.00	.928	15.00	.50	1.85	8.57	179.26	3.74	1.25	364.08	24.27
5	10.89	440.01	.928	15.00	.50	2.39	9.09	191.26	4.21	1.62	378.00	25.20
6	10.89	425.01	.928	15.00	.50	2.95	9.84	207.97	4.93	1.99	400.54	26.70
7	10.89	410.01	.928	15.00	.50	3.54	10.82	229.74	5.97	2.40	432.91	28.86
8	10.89	395.01	.928	15.00	.50	4.18	12.06	256.87	7.41	2.83	475.91	31.73
9	10.77	380.01	.928	15.00	.50	4.89	13.56	289.70	9.38	3.30	530.18	35.35
10	10.65	365.01	2.000	15.00	.50	1.22	13.60	282.00	9.43	3.83	599.52	39.97
11	10.65	350.01	2.000	15.00	.50	1.41	13.66	283.31	9.51	4.43	600.47	40.03
12	10.65	335.01	2.000	15.00	.50	1.60	13.73	284.96	9.61	5.03	601.91	40.13
13	10.47	320.01	2.000	15.00	.50	1.79	13.82	287.01	9.73	5.64	603.93	40.26
14	10.47	305.01	2.000	15.00	.50	1.99	13.92	289.46	9.88	6.24	606.61	40.44
15	10.47	290.01	2.000	15.00	.50	2.18	14.05	292.36	10.06	6.85	610.03	40.67
16	10.47	275.01	2.000	15.00	.50	2.37	14.20	295.75	10.28	7.46	614.28	40.95
17	10.47	260.01	2.000	15.00	.50	2.57	14.37	299.65	10.53	8.07	619.42	41.29
18	10.47	245.01	2.000	15.00	.50	2.77	14.57	304.08	10.82	8.69	625.54	41.70
19	10.29	230.01	2.000	15.00	.50	2.97	14.80	309.08	11.16	9.32	632.69	42.18
20	10.11	215.01	2.000	15.00	.50	3.17	15.05	314.66	11.54	9.95	640.95	42.73
21	9.87	200.01	2.000	15.00	.50	3.37	15.33	320.84	11.98	10.59	650.36	

OUTFALL PIPELINE

TOTAL DISCHARGE = 11.24 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 3.58 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 18.54 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	UJA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SFC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00			.57		7.00	130.46	2.50		473.22	31.55
2	11.53	485.00	.928	15.00	.30	.70	7.06	145.33	2.54	.47	310.46	20.70
3	11.49	470.00	.928	15.00	.30	1.16	7.21	150.05	2.65	.78	312.44	20.83
4	11.19	455.00	.928	15.00	.30	1.62	7.50	159.85	2.87	1.10	318.57	21.24
5	10.89	440.01	.928	15.00	.30	2.09	7.96	167.35	3.23	1.41	330.76	22.05
6	10.89	425.01	.928	15.00	.30	2.58	8.61	181.97	3.78	1.75	350.48	23.37
7	10.89	410.01	.928	15.00	.30	3.10	9.47	201.03	4.57	2.10	378.80	25.25
8	10.89	395.01	.928	15.00	.30	3.66	10.55	224.77	5.67	2.47	416.43	27.76
9	10.77	380.01	.928	15.00	.30	4.28	11.87	253.49	7.18	2.89	463.92	30.93
10	10.65	365.01	2.000	15.00	.30	1.07	11.90	249.76	7.22	3.36	524.59	34.97
11	10.65	350.01	2.000	15.00	.30	1.24	11.95	247.90	7.28	3.88	525.42	35.03
12	10.65	335.01	2.000	15.00	.30	1.40	12.01	249.35	7.36	4.41	526.68	35.11
13	10.47	320.01	2.000	15.00	.30	1.57	12.09	251.14	7.45	4.93	523.45	35.23
14	10.47	305.01	2.000	15.00	.30	1.74	12.18	253.28	7.57	5.46	530.80	35.39
15	10.47	290.01	2.000	15.00	.30	1.91	12.30	255.83	7.71	5.99	533.79	35.59
16	10.47	275.01	2.000	15.00	.30	2.08	12.43	258.79	7.87	6.52	537.51	35.83
17	10.47	260.01	2.000	15.00	.30	2.25	12.58	262.20	8.06	7.06	542.01	36.13
18	10.47	245.01	2.000	15.00	.30	2.42	12.75	266.08	8.29	7.60	547.36	36.49
19	10.29	230.01	2.000	15.00	.30	2.60	12.95	270.45	8.55	8.15	553.62	36.91
20	10.11	215.01	2.000	15.00	.30	2.77	13.17	275.33	8.84	8.71	560.84	37.39
21	9.87	200.01	2.000	15.00	.30	2.95	13.42	280.75	9.17	9.27	569.08	

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.84 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 3.13 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 14.20 M

BOTTOM PROFILE

MANIFOLD 1
TRACE C

DISTANCE M	DEPTH M
0.00	0.00
25.00	0.00
35.00	0.50
40.00	1.50
50.00	3.00
60.00	4.00
70.00	6.00
90.00	8.00
100.00	9.00
125.00	9.20
150.00	9.30
175.00	9.50
200.00	9.80
225.00	9.80
250.00	9.80
275.00	9.90
300.00	10.00
325.00	10.00
350.00	10.50
375.00	10.50
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.10
500.00	11.30

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- DN = DIAMETER OF PORT N
- VC(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- UC(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = GEOMETRIC FROUDE NO OF JET AT PORT N
- F(N) = TOTAL HEAD AT PORT N
- SQ(N) = TOTAL DISCHARGE UP TO PORT N
- Q(N) = DISCHARGE OF PORT N
- QL(N) = DISCHARGE LOAD FR LENGTH OF MANIFOLD
- COES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WAS-EW.)
- FRN = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR TO OUTFALL PIPELINE
- VPTM = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QWES = 1.000 CUM/SEC
 VMAA = 2.00 M/SEC
 VMIN = .30 M/SEC
 U(1) = 500.00 M
 U(2) = 3.00 M/SEC
 U(3) = 15.00 M
 U(4) = .928 M
 U(5) = .30 M
 U(6) = 15.00 M
 U(7) = .001
 VPIPE = 1.20 M/SEC
 FKW = .100
 FNP = .100
 PORT NO K1 = 10
 DIA(K1) = 2.000 M
 DL(K1) = 15.00 M
 R(K1) = .50 M
 PORT NO K2 = 0
 DIA(K2) = .000 M
 DL(K2) = .00 M
 R(K2) = .00 M
 PORT NO K3 = 0
 DIA(K3) = .000 M
 DL(K3) = .00 M
 R(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
 DIA(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
 U(N) RESPECTIVELY DL(3) AND U(2).
 IF WANTED THE DIA(N), DL(N) AND U(N) CAN BE CHANGED FOR PORT NO
 N = K TO DIA(N), DL(K) AND U(K).

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) "	DL(N) H	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.37		3.00	55.91	.46		202.81	
2	11.16	455.00	.928	15.00	.30	.30	3.02	62.72	.47	.20	133.06	13.52
3	11.07	478.00	.928	15.00	.30	.50	3.09	64.32	.49	.34	133.92	8.87
4	11.01	425.00	.928	15.00	.30	.69	3.21	67.23	.53	.47	136.55	8.93
5	10.95	440.00	.928	15.00	.30	.90	3.41	71.73	.59	.61	141.78	9.10
6	10.95	425.00	.928	15.00	.30	1.11	3.69	78.00	.69	.75	150.23	9.45
7	10.95	410.00	.928	15.00	.30	1.33	4.06	86.17	.84	.90	162.37	10.02
8	10.95	395.00	.928	15.00	.30	1.57	4.52	95.74	1.04	1.06	178.49	10.82
9	10.05	369.00	.928	15.00	.30	1.83	5.09	108.66	1.32	1.24	198.88	11.90
10	10.35	365.01	2.000	15.00	.30	.46	5.10	105.79	1.33	1.44	224.90	13.20
11	10.35	350.01	2.000	15.00	.30	.53	5.12	105.28	1.34	1.66	225.26	14.99
12	10.35	335.01	2.000	15.00	.30	.60	5.15	106.00	1.35	1.89	225.60	15.02
13	10.05	320.01	2.000	15.00	.30	.67	5.18	107.68	1.37	2.11	226.58	15.05
14	10.05	305.01	2.000	15.00	.30	.75	5.22	108.60	1.39	2.34	227.59	15.11
15	10.05	290.01	2.000	15.00	.30	.82	5.27	109.69	1.42	2.57	228.87	15.17
16	9.99	275.01	2.000	15.00	.30	.89	5.33	110.86	1.45	2.80	230.47	15.26
17	9.93	260.01	2.000	15.00	.30	.96	5.39	112.42	1.48	3.03	232.40	15.36
18	9.87	245.01	2.000	15.00	.30	1.04	5.47	114.09	1.52	3.26	234.70	15.49
19	9.87	230.01	2.000	15.00	.30	1.11	5.55	115.86	1.57	3.49	237.38	15.65
20	9.87	215.01	2.000	15.00	.30	1.19	5.65	117.85	1.63	3.73	240.47	15.83
21	9.87	200.01	2.000	15.00	.30	1.27	5.75	120.37	1.69	3.97	244.00	16.03

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.22 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.34 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 2.62 M

1 FLOW CHARACTERISTICS FOR U(1) = 4.0 M/SEC

N	DEPTH(M)	DIST(N)	JIA(N)	DL(N)	D(N)	V(N)	U(N)	FN(N)	E(N)	M	CUM/SEC	SO(N)	L/SEC	OL(N)
	M	M	M	M	M	M/SEC	M/SEC							L/M/SEC
1	11.24	500.00			.37		4.00	74.55	.82				270.41	
2	11.16	485.00	.928	15.00	.30	.40	4.03	83.52	.83			.27	177.41	18.03
3	11.07	470.00	.928	15.00	.30	.63	4.12	85.75	.86			.45	178.55	11.63
4	11.01	455.00	.928	15.00	.30	.93	4.28	89.64	.94			.63	182.05	11.90
5	10.95	440.00	.928	15.00	.30	1.20	4.55	95.63	1.05			.81	189.01	12.14
6	10.95	425.00	.928	15.00	.30	1.48	4.92	103.09	1.23			1.00	200.28	12.60
7	10.95	410.00	.928	15.00	.30	1.77	5.41	114.88	1.49			1.20	216.47	13.35
8	10.95	395.00	.928	15.00	.30	2.09	6.03	126.44	1.85			1.41	237.97	14.43
9	10.65	380.00	.928	15.00	.30	2.44	6.78	144.07	2.34			1.65	265.12	15.66
10	10.35	365.01	2.000	15.00	.30	.61	6.80	141.02	2.36			1.02	209.81	17.67
11	10.35	350.01	2.000	15.00	.30	.71	6.83	141.68	2.38			2.22	300.29	19.99
12	10.35	335.01	2.000	15.00	.30	.80	6.87	142.51	2.40			2.52	301.01	20.02
13	10.05	320.01	2.000	15.00	.30	.90	6.91	143.53	2.43			2.82	302.03	20.07
14	10.05	305.01	2.000	15.00	.30	.99	6.96	144.76	2.47			3.12	303.37	20.14
15	10.05	290.01	2.000	15.00	.30	1.09	7.03	146.21	2.52			3.42	305.08	20.22
16	9.99	275.01	2.000	15.00	.30	1.19	7.10	147.91	2.57			3.73	307.21	20.34
17	9.93	260.01	2.000	15.00	.30	1.29	7.19	149.86	2.63			4.04	309.79	20.48
18	9.87	245.01	2.000	15.00	.30	1.38	7.29	152.08	2.71			4.35	312.95	20.65
19	9.87	230.01	2.000	15.00	.30	1.48	7.40	154.57	2.79			4.66	316.42	20.86
20	9.87	215.01	2.000	15.00	.30	1.58	7.53	157.36	2.89			4.98	320.55	21.09
21	9.87	200.01	2.000	15.00	.30	1.69	7.67	160.46	3.00			5.30	325.25	21.37

CUTFALL PIPELINE

TOTAL DISCHARGE = 5.02 CUM/SEC
 DIAMETER OF CUTFALL PIPELINE = 2.000 M
 VELOCITY IN CUTFALL PIPELINE = 1.79 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF CUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 4.64 M

FLOW CHARACTERISTICS FOR U(1) = 5.0 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M*SEC
1	11.24	500.00			.37		5.00	93.19	1.27		338.01	
2	11.16	465.00	.928	15.00	.30	.50	5.04	104.53	1.29	.34	221.76	22.53
3	11.07	470.00	.928	15.00	.30	.83	5.15	107.19	1.35	.56	223.18	14.78
4	11.01	455.00	.928	15.00	.30	1.16	5.36	112.04	1.46	.78	227.55	14.88
5	10.95	440.00	.928	15.00	.30	1.49	5.68	119.54	1.65	1.01	236.25	15.17
6	10.95	425.00	.928	15.00	.30	1.84	6.15	129.08	1.93	1.25	250.34	15.75
7	10.95	410.00	.928	15.00	.30	2.21	6.76	143.59	2.33	1.50	270.57	16.69
8	10.95	395.00	.928	15.00	.30	2.61	7.53	160.55	2.89	1.77	297.45	18.04
9	10.95	380.00	.928	15.00	.30	3.05	8.48	161.07	3.66	2.07	331.38	19.83
10	10.35	365.01	2.000	15.00	.30	.76	8.50	176.26	3.69	2.40	374.73	22.09
11	10.35	350.01	2.000	15.00	.30	.88	8.54	177.08	3.72	2.77	375.33	24.98
12	10.35	335.01	2.000	15.00	.30	1.00	8.58	176.12	3.75	3.15	376.23	25.02
13	10.05	320.01	2.000	15.00	.30	1.12	8.64	179.40	3.80	3.52	377.50	25.08
14	10.05	305.01	2.000	15.00	.30	1.24	8.70	180.63	3.86	3.90	379.17	25.17
15	10.05	290.01	2.000	15.00	.30	1.36	8.78	182.75	3.93	4.28	381.31	25.28
16	9.99	275.01	2.000	15.00	.30	1.48	8.98	184.87	4.02	4.66	383.97	25.42
17	9.93	260.01	2.000	15.00	.30	1.61	8.99	187.30	4.11	5.04	387.19	25.60
18	9.87	245.01	2.000	15.00	.30	1.73	9.11	190.07	4.23	5.43	391.01	25.81
19	9.87	230.01	2.000	15.00	.30	1.85	9.25	193.20	4.36	5.82	395.48	26.07
20	9.87	215.01	2.000	15.00	.30	1.98	9.41	196.68	4.51	6.22	400.64	26.37
21	9.87	200.01	2.000	15.00	.30	2.11	9.58	200.55	4.68	6.62	406.52	26.71

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.24 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 7.25 M

FLOW CHARACTERISTICS FOR U(1) = 6.0% M/SEC

N	DEPTH(M)	DIST(N)	JIA(N)	DL(N)	D(N)	V(N)	U(N)	FN(N)	E(N)	SA(N)	Q(N)	QL(N)
	M	M	M	M	M	M/SEC	M/SEC		M	CUM/SEC	L/SEC	L/M/SEC
1	11.24	500.00			.37		6.00	111.03	1.83		405.62	27.04
2	11.16	405.00	.928	15.00	.30	.60	6.05	125.43	1.86	.41	266.11	17.74
3	11.07	470.00	.928	15.00	.30	.99	6.18	126.62	1.95	.67	267.81	17.85
4	11.01	455.00	.928	15.00	.30	1.39	6.43	134.45	2.11	.84	273.06	18.20
5	10.95	440.00	.928	15.00	.30	1.79	6.82	143.44	2.37	1.21	283.49	18.90
6	10.95	425.00	.928	15.00	.30	2.21	7.38	155.97	2.77	1.50	300.40	20.03
7	10.95	410.00	.928	15.00	.30	2.66	8.11	172.30	3.36	1.80	324.68	21.65
8	10.95	395.00	.928	15.00	.30	3.14	9.04	192.65	4.17	2.12	356.93	23.80
9	10.95	380.00	.928	15.00	.30	3.67	10.17	217.28	5.27	2.48	397.64	26.51
10	10.95	365.01	2.000	15.00	.30	.92	10.20	211.51	5.31	2.08	409.66	29.98
11	10.95	350.01	2.000	15.00	.30	1.06	10.24	212.49	5.35	1.33	450.37	30.02
12	10.95	335.01	2.000	15.00	.30	1.20	10.30	213.73	5.40	3.78	451.45	30.10
13	10.95	320.01	2.000	15.00	.30	1.35	10.36	215.27	5.47	4.23	452.97	30.20
14	10.95	305.01	2.000	15.00	.30	1.49	10.44	217.11	5.56	4.68	454.98	30.33
15	10.95	290.01	2.000	15.00	.30	1.64	10.54	219.28	5.66	5.14	457.55	30.50
16	9.99	275.01	2.000	15.00	.30	1.76	10.65	221.83	5.78	5.59	460.74	30.72
17	9.93	260.01	2.000	15.00	.30	1.93	10.78	224.75	5.92	6.05	464.60	30.97
18	9.87	245.01	2.000	15.00	.30	2.08	10.93	228.07	6.09	6.52	469.18	31.28
19	9.87	230.01	2.000	15.00	.30	2.23	11.10	231.82	6.28	6.99	474.55	31.64
20	9.87	215.01	2.000	15.00	.30	2.38	11.29	236.00	6.49	7.46	480.73	32.05
21	9.87	200.01	2.000	15.00	.30	2.53	11.50	240.64	6.74	7.94	487.79	

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.43 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.68 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 10.43 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH (M)	DIST (M)	QIA (M)	DL (M)	D (M)	V (M/SEC)	U (M/SEC)	FN (M)	E (M)	SA (M/SEC)	Q (L/SEC)	OL (M/SEC)
1	1.24	500.00			.57		7.00	130.46	2.50		473.22	31.55
2	1.16	465.00	.928	15.00	.30	.70	7.06	146.33	2.54	.07	310.46	20.70
3	1.07	470.00	.928	15.00	.30	1.16	7.21	150.06	2.65	.78	312.44	20.83
4	1.01	455.00	.928	15.00	.30	1.62	7.50	150.85	2.87	1.10	318.56	21.24
5	1.05	440.00	.928	15.00	.30	2.09	7.96	167.34	3.23	1.41	330.74	22.05
6	1.05	425.00	.928	15.00	.30	2.58	8.61	181.97	3.78	1.75	350.46	23.36
7	1.05	410.00	.928	15.00	.30	3.10	9.47	201.62	4.57	2.10	378.78	25.25
8	1.05	395.00	.928	15.00	.30	3.66	10.55	224.76	5.67	2.47	416.41	27.76
9	1.05	380.00	.928	15.00	.30	4.28	11.67	253.48	7.18	2.89	463.90	30.93
10	1.05	365.01	2.000	15.00	.30	1.07	11.90	248.75	7.22	3.35	524.59	34.97
11	1.05	350.01	2.000	15.00	.30	1.24	11.95	247.90	7.28	3.88	525.42	35.03
12	1.05	335.01	2.000	15.00	.30	1.40	12.01	249.35	7.36	4.40	526.67	35.11
13	1.05	320.01	2.000	15.00	.30	1.57	12.09	251.13	7.45	4.93	528.45	35.25
14	1.05	305.01	2.000	15.00	.30	1.74	12.18	253.28	7.57	5.46	530.79	35.39
15	1.05	290.01	2.000	15.00	.30	1.91	12.30	255.82	7.71	5.99	533.79	35.59
16	1.05	275.01	2.000	15.00	.30	2.08	12.43	258.79	7.87	6.52	537.50	35.83
17	1.05	260.01	2.000	15.00	.30	2.25	12.58	262.20	8.06	7.06	542.01	36.13
18	1.05	245.01	2.000	15.00	.30	2.42	12.75	266.08	8.29	7.60	547.36	36.49
19	1.05	230.01	2.000	15.00	.30	2.60	12.95	270.45	8.55	8.15	553.61	36.91
20	1.05	215.01	2.000	15.00	.30	2.77	13.17	275.33	8.84	8.71	560.83	37.39
21	1.05	200.01	2.000	15.00	.30	2.95	13.41	280.74	9.17	9.27	569.06	

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.34 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 3.13 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 14.20 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

H	DEPTH(N) M	DIST(H) M	DIA(N) M	DL(M) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M*SEC
1	11.24	500.00			.57		8.00	149.10	3.26		540.82	
2	11.16	465.00	.928	15.00	.50	.80	8.06	167.24	3.31	.54	354.81	36.05
3	11.07	470.00	.928	15.00	.50	1.32	8.24	171.49	3.46	.00	357.07	23.65
4	11.01	455.00	.928	15.00	.50	1.85	8.57	179.26	3.74	1.25	364.07	23.80
5	10.95	440.00	.928	15.00	.50	2.39	9.09	191.25	4.21	1.62	377.98	24.27
6	10.95	425.00	.928	15.00	.50	2.95	9.84	207.96	4.93	1.89	400.52	25.20
7	10.95	410.00	.928	15.00	.50	3.54	10.82	229.73	5.97	2.40	432.89	26.70
8	10.95	395.00	.928	15.00	.50	4.18	12.06	250.86	7.41	2.83	475.89	28.86
9	10.65	380.00	.928	15.00	.50	4.89	13.56	289.69	9.38	3.30	530.17	31.73
10	10.35	365.01	2.000	15.00	.50	1.22	13.80	202.00	9.43	3.83	599.51	35.34
11	10.35	350.01	2.000	15.00	.50	1.41	13.86	283.31	9.51	4.43	600.46	39.97
12	10.35	335.01	2.000	15.00	.50	1.60	13.73	284.96	9.61	5.03	601.90	40.03
13	10.05	320.01	2.000	15.00	.50	1.79	13.82	287.00	9.73	5.64	603.93	40.13
14	10.05	305.01	2.000	15.00	.50	1.99	13.92	289.45	9.88	6.24	606.61	40.26
15	10.05	290.01	2.000	15.00	.50	2.16	14.05	292.76	10.06	6.85	610.03	40.44
16	9.99	275.01	2.000	15.00	.50	2.37	14.20	295.75	10.28	7.46	614.28	40.67
17	9.93	260.01	2.000	15.00	.50	2.57	14.37	299.65	10.53	8.07	619.42	40.95
18	9.87	245.01	2.000	15.00	.50	2.77	14.57	304.08	10.82	8.69	625.54	41.29
19	9.87	230.01	2.000	15.00	.50	2.97	14.80	309.07	11.16	9.32	632.69	41.70
20	9.57	215.01	2.000	15.00	.50	3.17	15.05	314.65	11.54	9.95	640.94	42.18
21	9.87	200.01	2.000	15.00	.50	3.37	15.33	320.84	11.98	10.59	650.34	42.73

OUTFALL PIPELINE

TOTAL DISCHARGE = 11.24 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 3.58 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 14.54 M

MANIFOLD 2
TRACE A

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	1.00
40.00	2.00
50.00	3.50
62.00	5.00
75.00	6.50
90.00	8.50
100.00	9.00
120.00	9.00
125.00	9.00
150.00	9.50
175.00	10.00
200.00	11.00
210.00	11.50
225.00	12.00
250.00	12.50
275.00	13.00
300.00	13.50
325.00	13.60
350.00	14.00
375.00	14.00
400.00	14.00
450.00	14.00
510.00	14.00

LIST OF SYMBOLS

N = NO OF PORT
 DEPTH(N) = DEPTH AT PORT N
 DIST(N) = DISTANCE FROM SHORE
 DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
 DL(N) = LENGTH BETWEEN PORT N AND N-1
 D(N) = DIAMETER OF PORT N
 V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
 U(N) = DISCHARGE VELOCITY OF PORT N
 FN(N) = DENSIMETRIC FROUDE NO OF JET AT PORT N
 E(N) = TOTAL HEAD AT PORT N
 SQ(N) = TOTAL DISCHARGE UP TO PORT N
 Q(N) = DISCHARGE OF PORT N
 QL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
 QDES = DESIGN DISCHARGE FLOW
 VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
 VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
 DENS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
 FRM = DARCY FRICTION FACTOR IN MANIFOLD
 FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
 VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .40 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .928 M
DL(2) = 15.00 M
D(2) = .27 M
DL(3) = 15.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 9
DIA(K1) = 2.000 M
DL(K1) = 15.00 M
D(K1) = .27 M

PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K TO DIA(K), DL(K) AND D(K).

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	14.00	500.00			.37		4.00	74.55	.82		270.41	
2	14.00	485.00	.928	15.00	.27	.40	4.03	88.14	.83	.27	143.70	18.03
3	14.00	470.00	.928	15.00	.27	.61	4.11	90.03	.86	.41	144.66	9.58
4	14.00	455.00	.928	15.00	.27	.83	4.24	93.28	.92	.56	147.11	9.64
5	14.00	440.00	.928	15.00	.27	1.04	4.44	98.15	1.01	.71	151.62	9.81
6	14.00	425.00	.928	15.00	.27	1.27	4.73	104.85	1.14	.86	158.68	10.11
7	14.00	410.00	.928	15.00	.27	1.50	5.10	113.52	1.32	1.02	168.64	10.58
8	14.00	395.00	.928	15.00	.27	1.75	5.56	124.27	1.58	1.18	181.79	11.24
9	14.00	380.00	2.000	15.00	.27	.44	5.58	121.78	1.58	1.37	199.40	12.12
10	14.00	365.00	2.000	15.00	.27	.50	5.59	122.20	1.59	1.57	199.66	13.29
11	14.00	350.00	2.000	15.00	.27	.56	5.61	122.72	1.61	1.77	200.03	13.31
12	14.00	335.00	2.000	15.00	.27	.63	5.64	123.36	1.62	1.97	200.53	13.34
13	13.76	320.00	2.000	15.00	.27	.69	5.67	124.13	1.64	2.17	201.20	13.37
14	13.70	305.00	2.000	15.00	.27	.75	5.71	125.03	1.66	2.37	202.03	13.41
15	13.64	290.00	2.000	15.00	.27	.82	5.75	126.07	1.69	2.57	203.06	13.47
16	13.34	275.01	2.000	15.00	.27	.88	5.80	127.28	1.72	2.77	204.30	13.54
17	13.04	260.01	2.000	15.00	.27	.95	5.86	128.65	1.75	2.98	205.77	13.62
18	12.74	245.01	2.000	15.00	.27	1.01	5.93	130.19	1.79	3.18	207.47	13.72
19	12.44	230.01	2.000	15.00	.27	1.08	6.00	131.90	1.84	3.39	209.43	13.83
20	12.14	215.02	2.000	15.00	.27	1.15	6.08	133.81	1.89	3.60	211.66	13.96
21	11.64	200.03	2.000	15.00	.27	1.21	6.18	135.91	1.94	3.81	214.18	14.11

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.28 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 2.80 M

1 FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N)		DIST(N)	DIA(N)		DL(N)	D(N)	V(N)	U(N)	FN(N)	E(N)	SO(N)	Q(N)	QL(N)
	M	M		M	M									
1	14.00	500.00					.37	1.00		18.64	.05		67.60	4.51
2	14.00	485.00	.928	15.00			.27	1.01		22.04	.05	.07	35.92	2.39
3	14.00	470.00	.928	15.00			.27	1.03		22.51	.05	.10	36.17	2.41
4	14.00	455.00	.928	15.00			.27	1.06		23.32	.06	.14	36.78	2.45
5	14.00	440.00	.928	15.00			.27	1.11		24.54	.06	.18	37.91	2.53
6	14.00	425.00	.928	15.00			.27	1.18		26.21	.07	.21	39.67	2.64
7	14.00	410.00	.928	15.00			.27	1.27		28.38	.08	.25	42.16	2.81
8	14.00	395.00	.928	15.00			.27	1.39		31.07	.10	.30	45.45	3.03
9	14.00	380.00	2.000	15.00			.27	1.39		30.45	.10	.34	49.85	3.32
10	14.00	365.00	2.000	15.00			.27	1.40		30.55	.10	.39	49.91	3.33
11	14.00	350.00	2.000	15.00			.27	1.40		30.68	.10	.44	50.01	3.33
12	14.00	335.00	2.000	15.00			.27	1.41		30.84	.10	.49	50.13	3.33
13	13.70	320.00	2.000	15.00			.27	1.42		31.07	.10	.54	50.36	3.34
14	13.70	305.00	2.000	15.00			.27	1.43		31.30	.10	.59	50.58	3.36
15	13.64	290.00	2.000	15.00			.27	1.44		31.57	.11	.64	50.85	3.37
16	13.34	275.01	2.000	15.00			.27	1.46		31.91	.11	.69	51.23	3.39
17	13.04	260.01	2.000	15.00			.27	1.47		32.29	.11	.74	51.66	3.42
18	12.74	245.01	2.000	15.00			.27	1.49		32.72	.11	.80	52.16	3.44
19	12.44	230.01	2.000	15.00			.27	1.51		33.18	.12	.85	52.71	3.48
20	12.14	215.02	2.000	15.00			.27	1.53		33.70	.12	.90	53.33	3.51
21	11.64	200.03	2.000	15.00			.27	1.56		34.28	.12	.95	54.07	3.56

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .32 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .19 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		2.00	37.28	.20		135.21	9.01
2	14.00	485.00	.928	15.00	.27	.20	2.02	44.07	.21	.14	71.85	4.79
3	14.00	470.00	.928	15.00	.27	.31	2.05	45.02	.21	.21	72.33	4.82
4	14.00	455.00	.928	15.00	.27	.41	2.12	46.64	.23	.28	73.56	4.90
5	14.00	440.00	.928	15.00	.27	.52	2.22	49.08	.25	.35	75.81	5.05
6	14.00	425.00	.928	15.00	.27	.63	2.36	52.42	.28	.43	79.34	5.29
7	14.00	410.00	.928	15.00	.27	.75	2.55	56.76	.33	.51	84.32	5.62
8	14.00	395.00	.928	15.00	.27	.88	2.78	62.14	.39	.59	90.89	6.06
9	14.00	380.00	2.000	15.00	.27	.22	2.79	60.89	.40	.68	99.70	6.65
10	14.00	365.00	2.000	15.00	.27	.25	2.80	61.10	.40	.78	99.83	6.66
11	14.00	350.00	2.000	15.00	.27	.28	2.81	61.36	.40	.88	100.01	6.67
12	14.00	335.00	2.000	15.00	.27	.31	2.82	61.68	.41	.98	100.26	6.68
13	13.76	320.00	2.000	15.00	.27	.34	2.84	62.08	.41	1.08	100.62	6.71
14	13.70	305.00	2.000	15.00	.27	.38	2.86	62.53	.42	1.18	101.04	6.74
15	13.64	290.00	2.000	15.00	.27	.41	2.88	63.06	.42	1.28	101.56	6.77
16	13.34	275.01	2.000	15.00	.27	.44	2.90	63.68	.43	1.39	102.21	6.81
17	13.04	260.01	2.000	15.00	.27	.47	2.93	64.38	.44	1.49	102.97	6.86
18	12.74	245.01	2.000	15.00	.27	.51	2.97	65.16	.45	1.59	103.85	6.92
19	12.44	230.01	2.000	15.00	.27	.54	3.01	66.04	.46	1.70	104.86	6.99
20	12.14	215.02	2.000	15.00	.27	.57	3.05	67.00	.47	1.80	106.00	7.07
21	11.64	200.03	2.000	15.00	.27	.61	3.09	68.08	.49	1.91	107.30	

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .64 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .71 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		3.00	55.91	.46		202.81	
2	14.00	485.00	.928	15.00	.27	.30	3.02	66.11	.47	.20	107.77	13.52
3	14.00	470.00	.928	15.00	.27	.46	3.08	67.52	.48	.31	108.50	7.18
4	14.00	455.00	.928	15.00	.27	.62	3.18	69.96	.52	.42	110.33	7.23
5	14.00	440.00	.928	15.00	.27	.78	3.33	73.61	.57	.53	113.72	7.36
6	14.00	425.00	.928	15.00	.27	.95	3.54	78.64	.64	.64	119.01	7.58
7	14.00	410.00	.928	15.00	.27	1.13	3.82	85.14	.74	.76	126.48	7.93
8	14.00	395.00	.928	15.00	.27	1.31	4.17	93.21	.89	.89	136.34	8.43
9	14.00	380.00	2.000	15.00	.27	.33	4.18	91.34	.89	1.02	149.55	9.09
10	14.00	365.00	2.000	15.00	.27	.37	4.19	91.65	.90	1.17	149.74	9.97
11	14.00	350.00	2.000	15.00	.27	.42	4.21	92.04	.90	1.32	150.02	9.98
12	14.00	335.00	2.000	15.00	.27	.47	4.23	92.52	.91	1.47	150.40	10.00
13	13.76	320.00	2.000	15.00	.27	.52	4.25	93.10	.92	1.62	150.91	10.03
14	13.70	305.00	2.000	15.00	.27	.57	4.28	93.78	.93	1.78	151.54	10.06
15	13.64	290.00	2.000	15.00	.27	.61	4.32	94.56	.95	1.93	152.30	10.10
16	13.34	275.01	2.000	15.00	.27	.66	4.35	95.47	.97	2.08	153.25	10.15
17	13.04	260.01	2.000	15.00	.27	.71	4.40	96.51	.99	2.23	154.36	10.22
18	12.74	245.01	2.000	15.00	.27	.76	4.45	97.67	1.01	2.39	155.65	10.29
19	12.44	230.01	2.000	15.00	.27	.81	4.50	98.96	1.03	2.54	157.13	10.38
20	12.14	215.02	2.000	15.00	.27	.86	4.57	100.39	1.06	2.70	158.81	10.48
21	11.64	200.03	2.000	15.00	.27	.91	4.63	101.98	1.09	2.86	160.72	10.59

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .96 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 1.58 M

1 FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		5.00	93.19	1.27		338.01	
2	14.00	485.00	.928	15.00	.27	.50	5.04	110.18	1.29	.34	179.62	22.53
3	14.00	470.00	.928	15.00	.27	.77	5.13	112.54	1.34	.52	180.83	11.97
4	14.00	455.00	.928	15.00	.27	1.03	5.30	116.60	1.43	.70	183.89	12.06
5	14.00	440.00	.928	15.00	.27	1.31	5.55	122.69	1.57	.88	189.53	12.26
6	14.00	425.00	.928	15.00	.27	1.59	5.91	131.06	1.78	1.07	198.35	12.64
7	14.00	410.00	.928	15.00	.27	1.88	6.37	141.90	2.07	1.27	210.81	13.22
8	14.00	395.00	.928	15.00	.27	2.19	6.95	155.34	2.46	1.48	227.24	14.05
9	14.00	380.00	2.000	15.00	.27	.54	6.97	152.23	2.48	1.71	249.25	15.15
10	14.00	365.00	2.000	15.00	.27	.62	6.99	152.75	2.49	1.96	249.57	16.62
11	14.00	350.00	2.000	15.00	.27	.70	7.02	153.40	2.51	2.21	250.03	16.64
12	14.00	335.00	2.000	15.00	.27	.78	7.05	154.20	2.53	2.46	250.66	16.67
13	13.76	320.00	2.000	15.00	.27	.86	7.09	155.16	2.56	2.71	251.49	16.71
14	13.70	305.00	2.000	15.00	.27	.94	7.14	156.28	2.60	2.96	252.53	16.77
15	13.64	290.00	2.000	15.00	.27	1.02	7.19	157.58	2.64	3.21	253.81	16.84
16	13.34	275.01	2.000	15.00	.27	1.10	7.26	159.09	2.68	3.47	255.36	16.92
17	13.04	260.01	2.000	15.00	.27	1.19	7.33	160.79	2.74	3.72	257.18	17.02
18	12.74	245.01	2.000	15.00	.27	1.27	7.41	162.71	2.80	3.98	259.31	17.15
19	12.44	230.01	2.000	15.00	.27	1.35	7.50	164.85	2.87	4.24	261.75	17.29
20	12.14	215.02	2.000	15.00	.27	1.43	7.60	167.23	2.95	4.50	264.53	17.45
21	11.64	200.03	2.000	15.00	.27	1.52	7.72	169.85	3.04	4.76	267.67	17.64

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.60 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 4.36 M

1 FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	GL(N) L/M, SEC
1	14.00	500.00			.37		6.00	111.83	1.83		405.62	27.04
2	14.00	485.00	.928	15.00	.27	.60	6.05	132.21	1.86	.41	215.54	14.37
3	14.00	470.00	.928	15.00	.27	.92	6.16	135.05	1.93	.62	217.00	14.47
4	14.00	455.00	.928	15.00	.27	1.24	6.36	139.92	2.06	.84	220.67	14.71
5	14.00	440.00	.928	15.00	.27	1.57	6.66	147.23	2.26	1.06	227.43	15.16
6	14.00	425.00	.928	15.00	.27	1.90	7.09	157.27	2.56	1.29	238.02	15.87
7	14.00	410.00	.928	15.00	.27	2.25	7.65	170.28	2.98	1.52	252.97	16.86
8	14.00	395.00	.928	15.00	.27	2.63	8.34	186.41	3.55	1.78	272.68	18.18
9	14.00	380.00	2.000	15.00	.27	.65	8.36	182.67	3.57	2.05	299.11	19.94
10	14.00	365.00	2.000	15.00	.27	.75	8.39	183.30	3.59	2.35	299.48	19.97
11	14.00	350.00	2.000	15.00	.27	.84	8.42	184.08	3.61	2.65	300.04	20.00
12	14.00	335.00	2.000	15.00	.27	.94	8.46	185.04	3.65	2.95	300.79	20.05
13	13.76	320.00	2.000	15.00	.27	1.03	8.51	186.18	3.69	3.25	301.79	20.12
14	13.70	305.00	2.000	15.00	.27	1.13	8.56	187.53	3.74	3.55	303.03	20.20
15	13.64	290.00	2.000	15.00	.27	1.23	8.63	189.10	3.80	3.85	304.56	20.30
16	13.34	275.01	2.000	15.00	.27	1.32	8.71	190.90	3.86	4.16	306.42	20.43
17	13.04	260.01	2.000	15.00	.27	1.42	8.79	192.94	3.94	4.47	308.60	20.57
18	12.74	245.01	2.000	15.00	.27	1.52	8.89	195.24	4.03	4.77	311.15	20.74
19	12.44	230.01	2.000	15.00	.27	1.62	9.00	197.81	4.13	5.08	314.07	20.94
20	12.14	215.02	2.000	15.00	.27	1.72	9.12	200.65	4.24	5.40	317.40	21.16
21	11.64	200.03	2.000	15.00	.27	1.82	9.26	203.79	4.37	5.72	321.16	

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.92 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 6.27 M

FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.37		7.00	130.46	2.50		473.22	
2	14.00	485.00	.928	15.00	.27	.70	7.06	154.25	2.54	.47	251.47	31.55
3	14.00	470.00	.928	15.00	.27	1.07	7.19	157.55	2.63	.72	253.16	16.76
4	14.00	455.00	.928	15.00	.27	1.45	7.42	163.24	2.80	.98	257.45	16.88
5	14.00	440.00	.928	15.00	.27	1.83	7.77	171.77	3.08	1.24	265.34	17.16
6	14.00	425.00	.928	15.00	.27	2.22	8.27	183.49	3.49	1.50	277.69	17.69
7	14.00	410.00	.928	15.00	.27	2.63	8.92	198.66	4.06	1.78	295.13	18.51
8	14.00	395.00	.928	15.00	.27	3.07	9.74	217.48	4.83	2.07	318.13	19.68
9	14.00	380.00	2.000	15.00	.27	.76	9.76	213.12	4.85	2.39	348.96	21.21
10	14.00	365.00	2.000	15.00	.27	.87	9.79	213.85	4.88	2.74	349.40	23.26
11	14.00	350.00	2.000	15.00	.27	.98	9.82	214.76	4.92	3.09	350.04	23.29
12	14.00	335.00	2.000	15.00	.27	1.10	9.87	215.87	4.97	3.44	350.92	23.34
13	13.76	320.00	2.000	15.00	.27	1.21	9.93	217.21	5.02	3.79	352.08	23.39
14	13.70	305.00	2.000	15.00	.27	1.32	9.99	218.78	5.09	4.14	353.54	23.47
15	13.64	290.00	2.000	15.00	.27	1.43	10.07	220.61	5.17	4.50	355.32	23.57
16.	13.34	275.01	2.000	15.00	.27	1.55	10.16	222.71	5.26	4.85	357.48	23.69
17	13.04	260.01	2.000	15.00	.27	1.66	10.26	225.09	5.36	5.21	360.02	23.83
18	12.74	245.01	2.000	15.00	.27	1.77	10.37	227.77	5.48	5.57	362.99	24.00
19	12.44	230.01	2.000	15.00	.27	1.89	10.50	230.77	5.62	5.93	366.40	24.20
20	12.14	215.02	2.000	15.00	.27	2.01	10.64	234.08	5.77	6.30	370.28	24.43
21	11.64	200.03	2.000	15.00	.27	2.12	10.80	237.74	5.95	6.67	374.66	24.69

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.24 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 8.53 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(H) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.37		8.00	149.10	3.26		540.82	
2	14.00	485.00	.928	15.00	.27	.80	8.06	176.28	3.31	.54	287.39	36.05
3	14.00	470.00	.928	15.00	.27	1.23	8.21	180.06	3.44	.83	289.33	19.16
4	14.00	455.00	.928	15.00	.27	1.65	8.48	186.56	3.66	1.12	294.22	19.29
5	14.00	440.00	.928	15.00	.27	2.09	8.88	196.30	4.02	1.41	303.24	19.61
6	14.00	425.00	.928	15.00	.27	2.54	9.45	209.70	4.55	1.72	317.35	20.22
7	14.00	410.00	.928	15.00	.27	3.01	10.20	227.04	5.30	2.03	337.29	21.16
8	14.00	395.00	.928	15.00	.27	3.51	11.13	248.55	6.31	2.37	363.58	22.49
9	14.00	380.00	2.000	15.00	.27	.87	11.15	243.56	6.34	2.73	398.81	24.24
10	14.00	365.00	2.000	15.00	.27	1.00	11.19	244.40	6.38	3.13	399.31	26.59
11	14.00	350.00	2.000	15.00	.27	1.13	11.23	245.44	6.43	3.53	400.05	26.62
12	13.76	335.00	2.000	15.00	.27	1.38	11.34	246.71	6.49	3.93	401.06	26.67
13	13.70	320.00	2.000	15.00	.27	1.51	11.42	248.24	6.56	4.33	402.38	26.74
14	13.64	290.00	2.000	15.00	.27	1.64	11.51	250.04	6.65	4.73	404.04	26.83
15	13.34	275.01	2.000	15.00	.27	1.77	11.61	252.12	6.75	5.14	406.08	26.94
16	13.04	260.01	2.000	15.00	.27	1.90	11.72	254.52	6.87	5.54	408.54	27.07
17	12.74	245.01	2.000	15.00	.27	2.03	11.85	257.24	7.00	5.95	411.45	27.24
18	12.44	230.01	2.000	15.00	.27	2.16	12.00	260.30	7.16	6.36	414.83	27.43
19	12.14	215.02	2.000	15.00	.27	2.29	12.16	263.72	7.34	6.78	418.73	27.66
20	11.64	200.03	2.000	15.00	.27	2.43	12.35	267.51	7.54	7.20	423.16	27.92
21					.27			271.69	7.77	7.62	428.16	28.21

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.05 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.56 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 11.14 M

BOTTOM PROFILE

MANIFOLD 2
TRACE B

DISTANCE M	DEPTH M
.00	.00
25.00	.00
40.00	1.00
50.00	3.00
60.00	4.50
65.00	5.00
75.00	6.50
90.00	7.00
100.00	8.50
125.00	9.00
150.00	9.10
175.00	9.50
200.00	9.80
225.00	10.20
250.00	10.50
275.00	10.50
300.00	10.50
325.00	10.50
350.00	10.80
375.00	10.80
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.50
510.00	11.60

LIST OF SYMBOLS

N = NO OF PORT
 DEPTH(N) = DEPTH AT PORT N
 DIST(N) = DISTANCE FROM SHORE
 DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
 DL(N) = LENGTH BETWEEN PORT N AND N-1
 D(N) = DIAMETER OF PORT N
 V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
 U(N) = DISCHARGE VELOCITY OF PORT N
 FN(N) = DENSIMETRIC FROUDE NO OF JET AT PORT N
 E(N) = TOTAL HEAD AT PORT N
 SQ(N) = TOTAL DISCHARGE UP TO PORT N
 Q(N) = DISCHARGE OF PORT N
 GL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
 QDES = DESIGN DISCHARGE FLOW
 VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
 VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
 DENS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
 FRM = DARCY FRICTION FACTOR IN MANIFOLD
 FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
 VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .40 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .928 M
DL(2) = 15.00 M
D(2) = .27 M
DL(3) = 15.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 9
DIA(K1) = 2.000 M
DL(K1) = 15.00 M
D(K1) = .27 M
PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M
PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO N = K TO DIA(K), DL(K) AND D(K).

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00			.37		4.00	74.55	.82		270.41	
2	11.53	485.00	.928	15.00	.27	.40	4.03	88.14	.83	.27	143.70	18.03
3	11.49	470.00	.928	15.00	.27	.61	4.11	90.04	.86	.41	144.67	9.58
4	11.19	455.00	.928	15.00	.27	.83	4.24	93.30	.92	.56	147.14	9.64
5	10.89	440.01	.928	15.00	.27	1.04	4.44	98.19	1.01	.71	151.68	9.81
6	10.89	425.01	.928	15.00	.27	1.27	4.73	104.88	1.14	.86	158.73	10.11
7	10.89	410.01	.928	15.00	.27	1.50	5.10	113.55	1.33	1.02	168.70	10.58
8	10.89	395.01	.928	15.00	.27	1.75	5.56	124.31	1.58	1.19	181.84	11.25
9	10.77	380.01	2.000	15.00	.27	.44	5.58	121.82	1.59	1.37	199.47	12.12
10	10.65	365.01	2.000	15.00	.27	.50	5.59	122.24	1.60	1.57	199.73	13.30
11	10.65	350.01	2.000	15.00	.27	.56	5.62	122.76	1.61	1.77	200.10	13.32
12	10.65	335.01	2.000	15.00	.27	.63	5.64	123.40	1.62	1.97	200.60	13.34
13	10.47	320.01	2.000	15.00	.27	.69	5.67	124.17	1.64	2.17	201.27	13.37
14	10.47	305.01	2.000	15.00	.27	.75	5.71	125.07	1.66	2.37	202.10	13.42
15	10.47	290.01	2.000	15.00	.27	.82	5.76	126.11	1.69	2.57	203.12	13.47
16	10.47	275.01	2.000	15.00	.27	.88	5.81	127.30	1.72	2.77	204.34	13.54
17	10.47	260.01	2.000	15.00	.27	.95	5.86	128.66	1.75	2.98	205.79	13.62
18	10.47	245.01	2.000	15.00	.27	1.01	5.93	130.19	1.79	3.18	207.48	13.72
19	10.29	230.01	2.000	15.00	.27	1.08	6.00	131.91	1.84	3.39	209.43	13.83
20	10.11	215.01	2.000	15.00	.27	1.15	6.08	133.80	1.89	3.60	211.66	13.96
21	9.87	200.01	2.000	15.00	.27	1.21	6.17	135.90	1.94	3.81	214.16	14.11

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.28 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 2.79 M

1 FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00			.37		1.00	18.64	.05		67.60	
2	11.53	485.00	.928	15.00	.27	.10	1.01	22.04	.05	.07	35.94	4.51
3	11.49	470.00	.928	15.00	.27	.15	1.03	22.53	.05	.10	36.20	2.40
4	11.19	455.00	.928	15.00	.27	.21	1.06	23.40	.06	.14	36.91	2.41
5	10.89	440.01	.928	15.00	.27	.26	1.12	24.67	.06	.18	38.13	2.46
6	10.89	425.01	.928	15.00	.27	.32	1.19	26.34	.07	.21	39.99	2.54
7	10.89	410.01	.928	15.00	.27	.38	1.28	28.51	.08	.25	42.38	2.66
8	10.89	395.01	.928	15.00	.27	.44	1.40	31.20	.10	.30	45.66	2.83
9	10.77	380.01	2.000	15.00	.27	.11	1.40	30.60	.10	.34	50.10	3.04
10	10.65	365.01	2.000	15.00	.27	.13	1.41	30.72	.10	.39	50.20	3.34
11	10.65	350.01	2.000	15.00	.27	.14	1.41	30.85	.10	.44	50.29	3.35
12	10.65	335.01	2.000	15.00	.27	.16	1.42	31.01	.10	.49	50.42	3.35
13	10.47	320.01	2.000	15.00	.27	.17	1.43	31.23	.10	.54	50.62	3.36
14	10.47	305.01	2.000	15.00	.27	.19	1.44	31.45	.11	.59	50.83	3.37
15	10.47	290.01	2.000	15.00	.27	.21	1.45	31.72	.11	.65	51.09	3.39
16	10.47	275.01	2.000	15.00	.27	.22	1.46	32.02	.11	.70	51.39	3.41
17	10.47	260.01	2.000	15.00	.27	.24	1.47	32.36	.11	.75	51.76	3.43
18	10.47	245.01	2.000	15.00	.27	.25	1.49	32.74	.11	.80	52.18	3.45
19	10.29	230.01	2.000	15.00	.27	.27	1.51	33.19	.12	.85	52.71	3.48
20	10.11	215.01	2.000	15.00	.27	.29	1.53	33.69	.12	.90	53.31	3.51
21	9.87	200.01	2.000	15.00	.27	.30	1.56	34.25	.12	.96	53.99	3.55

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .32 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .19 M

1 FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.37		2.00	37.28	.20		135.21	
2	11.53	485.00	.928	15.00	.27	.20	2.02	44.08	.21	.14	71.86	9.01
3	11.49	470.00	.928	15.00	.27	.31	2.05	45.02	.21	.21	72.35	4.70
4	11.19	455.00	.928	15.00	.27	.41	2.12	46.68	.23	.28	73.62	4.82
5	10.89	440.01	.928	15.00	.27	.52	2.22	49.14	.25	.35	75.93	4.91
6	10.89	425.01	.928	15.00	.27	.63	2.37	52.49	.29	.43	79.45	5.06
7	10.89	410.01	.928	15.00	.27	.75	2.55	56.83	.33	.51	84.43	5.30
8	10.89	395.01	.928	15.00	.27	.88	2.78	62.20	.40	.59	91.00	5.63
9	10.77	380.01		15.00	.27	.22	2.79	60.97	.40	.68	99.83	6.07
10	10.65	365.01	2.000	15.00	.27	.25	2.80	61.19	.40	.78	99.87	6.66
11	10.65	350.01	2.000	15.00	.27	.28	2.81	61.45	.40	.88	100.15	6.66
12	10.65	335.01	2.000	15.00	.27	.31	2.82	61.76	.41	.98	100.41	6.68
13	10.47	320.01	2.000	15.00	.27	.35	2.84	62.16	.41	1.08	100.76	6.60
14	10.47	305.01	2.000	15.00	.27	.38	2.86	62.61	.42	1.18	101.17	6.72
15	10.47	290.01	2.000	15.00	.27	.41	2.88	63.13	.42	1.29	101.68	6.74
16	10.47	275.01	2.000	15.00	.27	.44	2.91	63.73	.43	1.39	102.29	6.78
17	10.47	260.01	2.000	15.00	.27	.47	2.94	64.41	.44	1.49	103.02	6.82
18	10.47	245.01	2.000	15.00	.27	.51	2.97	65.17	.45	1.59	103.86	6.87
19	10.29	230.01	2.000	15.00	.27	.54	3.01	66.04	.46	1.70	104.86	6.82
20	10.11	215.01	2.000	15.00	.27	.57	3.05	67.00	.47	1.80	105.99	6.99
21	9.87	200.01	2.000	15.00	.27	.61	3.09	68.06	.49	1.91	107.26	7.07

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .64 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .71 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.37		3.00	55.91	.46		202.81	
2	11.53	485.00	.928	15.00	.27	.30	3.02	66.11	.47	.20	107.78	13.52
3	11.49	470.00	.928	15.00	.27	.46	3.08	67.53	.48	.31	108.51	7.10
4	11.19	455.00	.928	15.00	.27	.62	3.18	69.99	.52	.42	110.38	7.23
5	10.89	440.01	.928	15.00	.27	.78	3.33	73.66	.57	.53	113.79	7.36
6	10.89	425.01	.928	15.00	.27	.95	3.55	78.68	.64	.64	119.08	7.59
7	10.89	410.01	.928	15.00	.27	1.13	3.83	85.18	.75	.76	126.56	7.94
8	10.89	395.01	.928	15.00	.27	1.31	4.17	93.25	.89	.89	136.41	8.44
9	10.77	380.01	2.000	15.00	.27	.33	4.18	91.39	.89	1.03	149.64	9.09
10	10.65	365.01	2.000	15.00	.27	.37	4.20	91.71	.90	1.17	149.84	9.08
11	10.65	350.01	2.000	15.00	.27	.42	4.21	92.10	.90	1.32	150.11	9.99
12	10.65	335.01	2.000	15.00	.27	.47	4.23	92.58	.91	1.47	150.49	10.01
13	10.47	320.01	2.000	15.00	.27	.52	4.26	93.16	.92	1.63	151.00	10.03
14	10.47	305.01	2.000	15.00	.27	.57	4.28	93.83	.94	1.78	151.62	10.07
15	10.47	290.01	2.000	15.00	.27	.61	4.32	94.61	.95	1.93	152.38	10.11
16	10.47	275.01	2.000	15.00	.27	.66	4.36	95.51	.97	2.08	153.30	10.16
17	10.47	260.01	2.000	15.00	.27	.71	4.40	96.53	.99	2.23	154.39	10.22
18	10.47	245.01	2.000	15.00	.27	.76	4.45	97.67	1.01	2.39	155.66	10.29
19	10.29	230.01	2.000	15.00	.27	.81	4.50	98.96	1.03	2.54	157.13	10.38
20	10.11	215.01	2.000	15.00	.27	.86	4.56	100.39	1.06	2.70	158.80	10.48
21	9.87	200.01	2.000	15.00	.27	.91	4.63	101.97	1.09	2.86	160.69	10.59

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .96 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 1.58 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00			.37		5.00	93.19	1.27		338.01	
2	11.53	485.00	.928	15.00	.27	.50	5.04	110.18	1.29	.34	170.62	22.53
3	11.49	470.00	.928	15.00	.27	.77	5.13	112.54	1.34	.52	180.84	11.97
4	11.19	455.00	.928	15.00	.27	1.03	5.30	116.61	1.43	.70	183.92	12.06
5	10.89	440.01	.928	15.00	.27	1.31	5.55	122.72	1.57	.88	189.57	12.26
6	10.89	425.01	.928	15.00	.27	1.59	5.91	131.09	1.78	1.07	198.30	12.64
7	10.89	410.01	.928	15.00	.27	1.88	6.37	141.92	2.07	1.27	210.85	13.23
8	10.89	395.01	.928	15.00	.27	2.19	6.96	155.37	2.47	1.48	227.28	14.06
9	10.77	380.01	2.000	15.00	.27	.54	6.97	152.26	2.48	1.71	249.30	15.15
10	10.65	365.01	2.000	15.00	.27	.62	6.99	152.78	2.49	1.96	249.63	16.62
11	10.65	350.01	2.000	15.00	.27	.70	7.02	153.44	2.51	2.21	250.09	16.64
12	10.65	335.01	2.000	15.00	.27	.78	7.05	154.23	2.53	2.46	250.72	16.67
13	10.47	320.01	2.000	15.00	.27	.86	7.09	155.19	2.56	2.71	251.55	16.71
14	10.47	305.01	2.000	15.00	.27	.94	7.14	156.31	2.60	2.96	252.58	16.77
15	10.47	290.01	2.000	15.00	.27	1.02	7.19	157.61	2.64	3.21	253.86	16.84
16	10.47	275.01	2.000	15.00	.27	1.10	7.26	159.11	2.68	3.47	255.39	16.92
17	10.47	260.01	2.000	15.00	.27	1.19	7.33	160.81	2.74	3.72	257.20	17.03
18	10.47	245.01	2.000	15.00	.27	1.27	7.41	162.72	2.80	3.98	259.31	17.15
19	10.29	230.01	2.000	15.00	.27	1.35	7.50	164.86	2.87	4.24	261.75	17.20
20	10.11	215.01	2.000	15.00	.27	1.43	7.60	167.23	2.95	4.50	264.52	17.45
21	9.87	200.01	2.000	15.00	.27	1.52	7.72	169.84	3.04	4.76	267.65	17.63

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.60 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 4.36 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	O(N) L/SEC	OL(N) L/M,SEC
1	11.57	500.00			.37		6.00	111.83	1.83		405.62	
2	11.53	485.00	.928	15.00	.27	.60	6.05	132.21	1.86	.41	215.55	27.04
3	11.49	470.00	.928	15.00	.27	.92	6.16	135.05	1.93	.62	217.00	14.37
4	11.19	455.00	.928	15.00	.27	1.24	6.36	139.93	2.06	.84	220.69	14.47
5	10.89	440.01	.928	15.00	.27	1.57	6.66	147.25	2.26		227.47	14.71
6	10.89	425.01	.928	15.00	.27	1.90	7.09	157.30	2.56	1.29	238.05	15.16
7	10.89	410.01	.928	15.00	.27	2.25	7.65	170.30	2.98	1.52	253.00	15.87
8	10.89	395.01	.928	15.00	.27	2.63	8.35	186.43	3.55	1.78	272.72	16.87
9	10.77	380.01	2.000	15.00	.27	.65	8.37	182.70	3.57	2.05	299.15	18.18
10	10.65	365.01	2.000	15.00	.27	.75	8.39	183.33	3.59	2.35	299.53	19.04
11	10.65	350.01	2.000	15.00	.27	.84	8.42	184.11	3.62	2.65	300.08	19.97
12	10.65	335.01	2.000	15.00	.27	.94	8.46	185.06	3.65	2.95	300.84	20.01
13	10.47	320.01	2.000	15.00	.27	1.03	8.51	186.21	3.69	3.25	301.83	20.06
14	10.47	305.01	2.000	15.00	.27	1.13	8.57	187.56	3.74	3.55	303.08	20.12
15	10.47	290.01	2.000	15.00	.27	1.23	8.63	189.12	3.80	3.85	304.60	20.21
16	10.47	275.01	2.000	15.00	.27	1.32	8.71	190.91	3.86	4.16	306.44	20.31
17	10.47	260.01	2.000	15.00	.27	1.42	8.79	192.95	3.94	4.47	308.62	20.43
18	10.47	245.01	2.000	15.00	.27	1.52	8.89	195.25	4.03	4.77	311.15	20.57
19	10.29	230.01	2.000	15.00	.27	1.62	9.00	197.81	4.13	5.09	314.07	20.74
20	10.11	215.01	2.000	15.00	.27	1.72	9.12	200.65	4.24	5.40	317.40	20.94
21	9.87	200.01	2.000	15.00	.27	1.82	9.26	203.79	4.37	5.72	321.15	21.16

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.92 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 6.27 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SFC	QL(N) L/M.SFC
1	11.57	500.00			.37		7.00	130.46	2.50		473.22	
2	11.53	485.00	.928	15.00	.27	.70	7.06	154.25	2.54	.47	251.47	31.55
3	11.49	470.00	.928	15.00	.27	1.07	7.19	157.56	2.63	.72	253.17	16.76
4	11.19	455.00	.928	15.00	.27	1.45	7.42	163.25	2.81	.98	257.46	16.88
5	10.89	440.01	.928	15.00	.27	1.83	7.77	171.79	3.08	1.24	265.37	17.16
6	10.89	425.01	.928	15.00	.27	2.22	8.27	183.51	3.49	1.50	277.72	17.69
7	10.89	410.01	.928	15.00	.27	2.63	8.92	198.68	4.06	1.78	295.16	18.51
8	10.89	395.01	.928	15.00	.27	3.07	9.74	217.50	4.83	2.07	318.16	19.68
9	10.77	380.01	2.000	15.00	.27	.76	9.76	213.14	4.85	2.39	348.99	21.21
10	10.65	365.01	2.000	15.00	.27	.87	9.79	213.87	4.88	2.74	349.44	23.27
11	10.65	350.01	2.000	15.00	.27	.98	9.83	214.79	4.92	3.09	350.08	23.30
12	10.65	335.01	2.000	15.00	.27	1.10	9.87	215.90	4.97	3.44	350.97	23.34
13	10.47	320.01	2.000	15.00	.27	1.21	9.93	217.24	5.02	3.79	352.12	23.40
14	10.47	305.01	2.000	15.00	.27	1.32	9.99	218.81	5.09	4.14	353.57	23.47
15	10.47	290.01	2.000	15.00	.27	1.43	10.07	220.63	5.17	4.50	355.36	23.57
16	10.47	275.01	2.000	15.00	.27	1.55	10.16	222.72	5.26	4.85	357.50	23.69
17	10.47	260.01	2.000	15.00	.27	1.66	10.26	225.10	5.36	5.21	360.04	23.83
18	10.47	245.01	2.000	15.00	.27	1.77	10.37	227.78	5.48	5.57	362.99	24.00
19	10.29	230.01	2.000	15.00	.27	1.89	10.50	230.77	5.62	5.93	366.40	24.20
20	10.11	215.01	2.000	15.00	.27	2.01	10.64	234.08	5.77	6.30	370.27	24.43
21	9.87	200.01	2.000	15.00	.27	2.12	10.80	237.73	5.95	6.67	374.65	24.68

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.24 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 8.53 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00			.37		8.00	149.10	3.26		540.82	
2	11.53	485.00	.928	15.00	.27	.80	8.06	176.28	3.31	.54	287.39	36.05
3	11.49	470.00	.928	15.00	.27	1.23	8.21	180.06	3.44	.83	289.33	19.16
4	11.19	455.00	.928	15.00	.27	1.65	8.48	186.57	3.66	1.12	294.24	19.29
5	10.89	440.01	.928	15.00	.27	2.09	8.88	196.32	4.02	1.41	303.27	19.62
6	10.89	425.01	.928	15.00	.27	2.54	9.45	209.72	4.55	1.72	317.39	20.22
7	10.89	410.01	.928	15.00	.27	3.01	10.20	227.05	5.30	2.03	337.32	21.16
8	10.89	395.01	.928	15.00	.27	3.51	11.13	248.56	6.31	2.37	363.60	22.49
9	10.77	380.01	2.000	15.00	.27	.87	11.15	243.58	6.34	2.73	398.84	24.24
10	10.65	365.01	2.000	15.00	.27	1.00	11.19	244.42	6.38	3.13	399.35	26.59
11	10.65	350.01	2.000	15.00	.27	1.12	11.23	245.46	6.43	3.53	400.09	26.62
12	10.65	335.01	2.000	15.00	.27	1.25	11.28	246.74	6.49	3.93	401.09	26.67
13	10.47	320.01	2.000	15.00	.27	1.38	11.34	248.26	6.56	4.33	402.41	26.74
14	10.47	305.01	2.000	15.00	.27	1.51	11.42	250.06	6.65	4.74	404.07	26.83
15	10.47	290.01	2.000	15.00	.27	1.64	11.51	252.14	6.75	5.14	406.11	26.94
16	10.47	275.01	2.000	15.00	.27	1.77	11.61	254.53	6.87	5.55	408.56	27.07
17	10.47	260.01	2.000	15.00	.27	1.90	11.72	257.25	7.01	5.95	411.46	27.24
18	10.47	245.01	2.000	15.00	.27	2.03	11.85	260.31	7.16	6.37	414.83	27.43
19	10.29	230.01	2.000	15.00	.27	2.16	12.00	263.72	7.34	6.78	418.73	27.66
20	10.11	215.01	2.000	15.00	.27	2.29	12.16	267.51	7.54	7.20	423.15	27.92
21	9.87	200.01	2.000	15.00	.27	2.43	12.34	271.69	7.77	7.62	428.15	28.21

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.05 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.56 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 11.14 M

MANIFOLD 2
TRACE C

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	.50
40.00	1.50
50.00	3.00
60.00	4.00
70.00	6.00
90.00	8.00
100.00	9.00
125.00	9.20
150.00	9.30
175.00	9.50
200.00	9.80
225.00	9.80
250.00	9.80
275.00	9.90
300.00	10.00
325.00	10.00
350.00	10.50
375.00	10.50
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.10
510.00	11.30

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DENSIMETRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SO(N) = TOTAL DISCHARGE UP TO PORT N
- G(N) = DISCHARGE OF PORT N
- GL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
- GDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW. - SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

GDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .40 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .928 M
DL(2) = 15.00 M
D(2) = .27 M
DL(3) = 15.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 9
DIA(K1) = 2.000 M
DL(K1) = 15.00 M
D(K1) = .27 M
PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M
PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2). IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO. N = K TO DIA(K), DL(K) AND D(K).

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.24	500.00			.37		4.00	74.55	.82		270.41	
2	11.16	485.00	.928	15.00	.27	.40	4.03	88.15	.83	.27	143.70	18.03
3	11.07	470.00	.928	15.00	.27	.61	4.11	90.04	.86	.41	144.68	9.58
4	11.01	455.00	.928	15.00	.27	.83	4.24	93.29	.92	.56	147.13	9.65
5	10.95	440.00	.928	15.00	.27	1.04	4.44	98.17	1.01	.71	151.65	9.81
6	10.95	425.00	.928	15.00	.27	1.27	4.73	104.86	1.14	.86	158.70	10.11
7	10.95	410.00	.928	15.00	.27	1.50	5.10	113.53	1.32	1.02	168.67	10.58
8	10.95	395.00	.928	15.00	.27	1.75	5.56	124.29	1.58	1.18	181.81	11.24
9	10.65	380.00	2.000	15.00	.27	.44	5.58	121.81	1.59	1.37	190.45	12.12
10	10.35	365.01	2.000	15.00	.27	.50	5.59	122.24	1.60	1.57	199.72	13.10
11	10.35	350.01	2.000	15.00	.27	.56	5.62	122.76	1.61	1.77	200.09	13.31
12	10.35	335.01	2.000	15.00	.27	.63	5.64	123.40	1.62	1.97	200.59	13.34
13	10.05	320.01	2.000	15.00	.27	.69	5.67	124.17	1.64	2.17	201.27	13.37
14	10.05	305.01	2.000	15.00	.27	.75	5.71	125.07	1.66	2.37	202.10	13.42
15	10.05	290.01	2.000	15.00	.27	.82	5.76	126.11	1.69	2.57	203.12	13.47
16	9.99	275.01	2.000	15.00	.27	.88	5.81	127.31	1.72	2.77	204.35	13.54
17	9.93	260.01	2.000	15.00	.27	.95	5.86	128.67	1.75	2.98	205.80	13.62
18	9.87	245.01	2.000	15.00	.27	1.01	5.93	130.20	1.79	3.18	207.49	13.72
19	9.87	230.01	2.000	15.00	.27	1.08	6.00	131.91	1.84	3.39	209.43	13.83
20	9.87	215.01	2.000	15.00	.27	1.15	6.08	133.80	1.89	3.60	211.64	13.96
21	9.87	200.01	2.000	15.00	.27	1.21	6.17	135.88	1.94	3.81	214.14	14.11

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.28 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 2.79 M

1 FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N)		DIST(N)	DIA(N)		DL(N)	D(N)	V(N)	U(N)	FN(N)	E(N)	SQ(N)	O(N)	OL(N)
	M	M		M	M									
1	11.24	500.00					.37	1.00	18.64	.05	.07	67.60	4.51	
2	11.16	485.00		.928		15.00	.27	1.01	22.05	.05	.10	35.05	2.40	
3	11.07	470.00		.928		15.00	.27	1.03	22.54	.05	.14	36.23	2.42	
4	11.01	455.00		.928		15.00	.27	1.06	23.37	.06	.18	38.00	2.46	
5	10.95	440.00		.928		15.00	.27	1.11	24.60	.06	.21	39.77	2.53	
6	10.95	425.00		.928		15.00	.27	1.18	26.27	.07	.25	42.26	2.65	
7	10.95	410.00		.928		15.00	.27	1.28	28.44	.08	.30	45.55	2.82	
8	10.95	395.00		.928		15.00	.27	1.39	31.13	.10	.34	50.03	3.04	
9	10.65	380.00		2.000		15.00	.27	1.40	30.55	.10	.39	50.17	3.34	
10	10.35	365.01		2.000		15.00	.27	1.41	30.70	.10	.44	50.26	3.34	
11	10.35	350.01		2.000		15.00	.27	1.41	30.84	.10	.49	50.39	3.35	
12	10.35	335.01		2.000		15.00	.27	1.42	30.99	.10	.54	50.63	3.36	
13	10.05	320.01		2.000		15.00	.27	1.43	31.23	.10	.59	50.83	3.38	
14	10.05	305.01		2.000		15.00	.27	1.44	31.45	.11	.64	51.09	3.39	
15	10.05	290.01		2.000		15.00	.27	1.45	31.71	.11	.70	51.41	3.41	
16	9.99	275.01		2.000		15.00	.27	1.46	32.02	.11	.75	51.79	3.43	
17	9.93	260.01		2.000		15.00	.27	1.48	32.37	.11	.80	52.22	3.45	
18	9.87	245.01		2.000		15.00	.27	1.49	32.76	.11	.85	52.71	3.48	
19	9.87	230.01		2.000		15.00	.27	1.51	33.19	.12	.90	53.26	3.51	
20	9.87	215.01		2.000		15.00	.27	1.53	33.66	.12	.96	53.89	3.55	
21	9.87	200.01		2.000		15.00	.27	1.55	34.19	.12				

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .32 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .19 M

1 FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	Q(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/5FC	QL(N) L/M,SEC
1	11.24	500.00			.37		2.00	37.28	.20		135.21	
2	11.16	485.00	.928	15.00	.27	.20	2.02	44.08	.21	.14	71.86	9.01
3	11.07	470.00	.928	15.00	.27	.31	2.05	45.03	.22	.21	72.16	4.79
4	11.01	455.00	.928	15.00	.27	.41	2.12	46.66	.23	.28	73.60	4.82
5	10.95	440.00	.928	15.00	.27	.52	2.22	49.11	.25	.35	75.86	4.91
6	10.95	425.00	.928	15.00	.27	.63	2.36	52.45	.28	.43	79.39	5.06
7	10.95	410.00	.928	15.00	.27	.75	2.55	56.79	.33	.51	84.37	5.29
8	10.95	395.00	.928	15.00	.27	.88	2.78	62.17	.39	.59	90.94	5.62
9	10.65	380.00	2.000	15.00	.27	.22	2.79	60.95	.40	.68	99.79	6.06
10	10.35	365.01	2.000	15.00	.27	.25	2.80	61.18	.40	.78	99.96	6.65
11	10.35	350.01	2.000	15.00	.27	.28	2.81	61.44	.40	.88	100.14	6.66
12	10.35	335.01	2.000	15.00	.27	.31	2.82	61.76	.41	.98	100.39	6.68
13	10.05	320.01	2.000	15.00	.27	.35	2.84	62.16	.41	1.08	100.76	6.69
14	10.05	305.01	2.000	15.00	.27	.38	2.86	62.61	.42	1.18	101.17	6.72
15	10.05	290.01	2.000	15.00	.27	.41	2.88	63.13	.42	1.29	101.68	6.74
16	9.99	275.01	2.000	15.00	.27	.44	2.91	63.73	.43	1.39	102.30	6.78
17	9.93	260.01	2.000	15.00	.27	.47	2.94	64.42	.44	1.49	103.03	6.82
18	9.87	245.01	2.000	15.00	.27	.51	2.97	65.18	.45	1.59	103.89	6.87
19	9.87	230.01	2.000	15.00	.27	.54	3.01	66.04	.46	1.70	104.86	6.93
20	9.87	215.01	2.000	15.00	.27	.57	3.05	66.98	.47	1.80	105.96	6.99
21	9.87	200.01	2.000	15.00	.27	.61	3.09	68.03	.49	1.91	107.21	7.06

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .64 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .71 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.37		3.00	55.91	.46		202.81	
2	11.16	485.00	.928	15.00	.27	.30	3.02	66.11	.47	.20	107.78	13.52
3	11.07	470.00	.928	15.00	.27	.46	3.08	67.53	.48	.31	108.52	7.19
4	11.01	455.00	.928	15.00	.27	.62	3.18	69.98	.52	.42	110.36	7.23
5	10.95	440.00	.928	15.00	.27	.78	3.33	73.63	.57	.53	113.75	7.36
6	10.95	425.00	.928	15.00	.27	.95	3.55	78.66	.64	.64	119.04	7.58
7	10.95	410.00	.928	15.00	.27	1.13	3.82	85.16	.75	.76	126.52	7.94
8	10.95	395.00	.928	15.00	.27	1.31	4.17	93.23	.89	.89	136.37	8.43
9	10.65	380.00	2.000	15.00	.27	.33	4.18	91.37	.89	1.03	149.61	9.09
10	10.35	365.01	2.000	15.00	.27	.37	4.20	91.70	.90	1.17	149.83	9.97
11	10.35	350.01	2.000	15.00	.27	.42	4.21	92.09	.90	1.32	150.10	9.99
12	10.35	335.01	2.000	15.00	.27	.47	4.23	92.57	.91	1.47	150.48	10.01
13	10.05	320.01	2.000	15.00	.27	.52	4.26	93.16	.92	1.63	151.00	10.03
14	10.05	305.01	2.000	15.00	.27	.57	4.28	93.83	.94	1.78	151.62	10.07
15	10.05	290.01	2.000	15.00	.27	.61	4.32	94.61	.95	1.93	152.39	10.11
16	9.99	275.01	2.000	15.00	.27	.66	4.36	95.51	.97	2.08	153.31	10.16
17	9.93	260.01	2.000	15.00	.27	.71	4.40	96.53	.99	2.23	154.40	10.22
18	9.87	245.01	2.000	15.00	.27	.76	4.45	97.68	1.01	2.39	155.67	10.28
19	9.87	230.01	2.000	15.00	.27	.81	4.50	98.96	1.03	2.54	157.13	10.38
20	9.87	215.01	2.000	15.00	.27	.86	4.56	100.38	1.06	2.70	158.79	10.48
21	9.87	200.01	2.000	15.00	.27	.91	4.63	101.95	1.09	2.86	160.66	10.59

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .96 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 1.58 M

1 FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	C(N) L/SEC	QL(N) L/M ² SEC
1	11.24	500.00			.37		5.00	93.19	1.27		338.01	
2	11.16	485.00	.928	15.00	.27	.50	5.04	110.18	1.29	.34	179.63	22.53
3	11.07	470.00	.928	15.00	.27	.77	5.13	112.55	1.34	.52	180.84	11.08
4	11.01	455.00	.928	15.00	.27	1.03	5.30	116.61	1.43	.70	183.91	12.06
5	10.95	440.00	.928	15.00	.27	1.31	5.55	122.70	1.57	.88	189.55	12.26
6	10.95	425.00	.928	15.00	.27	1.59	5.91	131.07	1.78	1.07	198.37	12.64
7	10.95	410.00	.928	15.00	.27	1.88	6.37	141.91	2.07	1.27	210.83	13.22
8	10.95	395.00	.928	15.00	.27	2.19	6.95	155.35	2.47	1.48	227.26	14.06
9	10.65	360.00	2.000	15.00	.27	.54	6.97	152.25	2.48	1.71	249.29	15.15
10	10.35	365.01	2.000	15.00	.27	.62	6.99	152.78	2.49	1.96	249.62	16.62
11	10.35	350.01	2.000	15.00	.27	.70	7.02	153.43	2.51	2.21	250.08	16.64
12	10.35	335.01	2.000	15.00	.27	.78	7.05	154.23	2.53	2.46	250.71	16.67
13	10.05	320.01	2.000	15.00	.27	.86	7.09	155.19	2.56	2.71	251.55	16.71
14	10.05	305.01	2.000	15.00	.27	.94	7.14	156.31	2.60	2.96	252.58	16.77
15	10.05	290.01	2.000	15.00	.27	1.02	7.19	157.61	2.64	3.21	253.86	16.84
16	9.99	275.01	2.000	15.00	.27	1.10	7.26	159.11	2.68	3.47	255.39	16.92
17	9.93	260.01	2.000	15.00	.27	1.19	7.33	160.81	2.74	3.72	257.21	17.03
18	9.87	245.01	2.000	15.00	.27	1.27	7.41	162.72	2.80	3.98	259.32	17.15
19	9.87	230.01	2.000	15.00	.27	1.35	7.50	164.86	2.87	4.24	261.75	17.29
20	9.87	215.01	2.000	15.00	.27	1.43	7.60	167.22	2.95	4.50	264.51	17.45
21	9.87	200.01	2.000	15.00	.27	1.52	7.72	169.83	3.03	4.76	267.63	17.63

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.60 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 4.36 M

1 FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.37		6.00	111.83	1.83		405.62	27.04
2	11.16	485.00	.928	15.00	.27	.60	6.05	132.21	1.86	.41	215.55	14.37
3	11.07	470.00	.928	15.00	.27	.92	6.16	135.05	1.93	.62	217.01	14.47
4	11.01	455.00	.928	15.00	.27	1.24	6.36	139.93	2.06	.84	220.68	14.71
5	10.95	440.00	.928	15.00	.27	1.57	6.66	147.24	2.26	1.06	227.45	15.16
6	10.95	425.00	.928	15.00	.27	1.90	7.09	157.28	2.56	1.29	238.03	15.87
7	10.95	410.00	.928	15.00	.27	2.25	7.65	170.29	2.98	1.52	252.98	16.37
8	10.95	395.00	.928	15.00	.27	2.63	8.35	186.42	3.55	1.78	272.70	18.18
9	10.65	380.00	2.000	15.00	.27	.65	8.36	182.69	3.57	2.05	299.14	19.94
10	10.35	365.01	2.000	15.00	.27	.75	8.39	183.32	3.59	2.35	299.53	19.97
11	10.35	350.01	2.000	15.00	.27	.84	8.42	184.11	3.62	2.65	300.88	20.01
12	10.35	335.01	2.000	15.00	.27	.94	8.46	185.06	3.65	2.95	300.84	20.06
13	10.05	320.01	2.000	15.00	.27	1.03	8.51	186.21	3.69	3.25	301.83	20.12
14	10.05	305.01	2.000	15.00	.27	1.13	8.57	187.56	3.74	3.55	303.08	20.21
15	10.05	290.01	2.000	15.00	.27	1.23	8.63	189.12	3.80	3.85	304.60	20.31
16	9.99	275.01	2.000	15.00	.27	1.32	8.71	190.92	3.86	4.16	306.45	20.43
17	9.93	260.01	2.000	15.00	.27	1.42	8.79	192.95	3.94	4.47	308.62	20.57
18	9.87	245.01	2.000	15.00	.27	1.52	8.89	195.25	4.03	4.77	311.16	20.74
19	9.87	230.01	2.000	15.00	.27	1.62	9.00	197.81	4.13	5.09	314.07	20.94
20	9.87	215.01	2.000	15.00	.27	1.72	9.12	200.65	4.24	5.40	317.39	20.94
21	9.87	200.01	2.000	15.00	.27	1.82	9.26	203.78	4.37	5.72	321.13	21.16

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.92 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 6.27 M

FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.37		7.00	130.46	2.50		473.22	
2	11.16	485.00	.928	15.00	.27	.70	7.06	154.25	2.54	.47	251.47	31.55
3	11.07	470.00	.928	15.00	.27	1.07	7.19	157.56	2.63	.72	253.17	16.76
4	11.01	455.00	.928	15.00	.27	1.45	7.42	163.25	2.81	.98	257.46	16.48
5	10.95	440.00	.928	15.00	.27	1.83	7.77	171.77	3.08	1.24	265.35	17.16
6	10.95	425.00	.928	15.00	.27	2.22	8.27	183.50	3.49	1.50	277.70	17.60
7	10.95	410.00	.928	15.00	.27	2.63	8.92	198.67	4.06	1.78	295.14	18.51
8	10.95	395.00	.928	15.00	.27	3.07	9.74	217.49	4.83	2.07	318.14	19.68
9	10.65	380.00	2.000	15.00	.27	.76	9.76	213.13	4.85	2.39	348.98	21.21
10	10.35	365.01	2.000	15.00	.27	.87	9.79	213.87	4.88	2.74	349.44	23.27
11	10.35	350.01	2.000	15.00	.27	.98	9.83	214.78	4.92	3.09	350.08	23.30
12	10.35	335.01	2.000	15.00	.27	1.10	9.87	215.90	4.97	3.44	350.96	23.34
13	10.05	320.01	2.000	15.00	.27	1.21	9.93	217.24	5.02	3.79	352.12	23.40
14	10.05	305.01	2.000	15.00	.27	1.32	9.99	218.81	5.09	4.14	353.57	23.47
15	10.05	290.01	2.000	15.00	.27	1.43	10.07	220.63	5.17	4.50	355.36	23.57
16	9.99	275.01	2.000	15.00	.27	1.55	10.16	222.72	5.26	4.85	357.50	23.60
17	9.93	260.01	2.000	15.00	.27	1.66	10.26	225.10	5.36	5.21	360.04	23.83
18	9.87	245.01	2.000	15.00	.27	1.77	10.37	227.78	5.48	5.57	363.00	24.00
19	9.87	230.01	2.000	15.00	.27	1.89	10.50	230.77	5.62	5.93	366.40	24.20
20	9.87	215.01	2.000	15.00	.27	2.01	10.64	234.08	5.77	6.30	370.27	24.43
21	9.87	200.01	2.000	15.00	.27	2.12	10.80	237.73	5.95	6.67	374.63	24.68

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.24 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 8.53 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.37		8.00	149.10	3.26		540.82	
2	11.16	485.00	.928	15.00	.27	.80	8.06	176.28	3.31	.54	287.39	36.05
3	11.07	470.00	.928	15.00	.27	1.23	8.21	180.07	3.44	.83	289.34	19.16
4	11.01	455.00	.928	15.00	.27	1.65	8.48	186.56	3.66	1.12	294.23	19.29
5	10.95	440.00	.928	15.00	.27	2.09	8.88	196.31	4.02	1.41	303.26	19.62
6	10.95	425.00	.928	15.00	.27	2.54	9.45	209.71	4.55	1.72	317.37	20.22
7	10.95	410.00	.928	15.00	.27	3.01	10.20	227.04	5.30	2.03	337.30	21.16
8	10.95	395.00	.928	15.00	.27	3.51	11.13	248.56	6.31	2.37	363.59	22.49
9	10.65	380.00	2.000	15.00	.27	.87	11.15	243.58	6.34	2.73	398.83	24.24
10	10.35	365.01	2.000	15.00	.27	1.00	11.19	244.42	6.38	3.13	399.34	26.59
11	10.35	350.01	2.000	15.00	.27	1.12	11.23	245.46	6.43	3.53	400.08	26.62
12	10.35	335.01	2.000	15.00	.27	1.25	11.28	246.73	6.49	3.93	401.09	26.67
13	10.05	320.01	2.000	15.00	.27	1.38	11.34	248.26	6.56	4.33	402.41	26.74
14	10.05	305.01	2.000	15.00	.27	1.51	11.42	250.06	6.65	4.74	404.07	26.83
15	10.05	290.01	2.000	15.00	.27	1.64	11.51	252.14	6.75	5.14	406.11	26.94
16	9.99	275.01	2.000	15.00	.27	1.77	11.61	254.53	6.87	5.55	408.56	27.07
17	9.93	260.01	2.000	15.00	.27	1.90	11.72	257.25	7.01	5.95	411.46	27.24
18	9.87	245.01	2.000	15.00	.27	2.03	11.85	260.31	7.16	6.37	414.84	27.43
19	9.87	230.01	2.000	15.00	.27	2.16	12.00	263.72	7.34	6.78	418.73	27.66
20	9.87	215.01	2.000	15.00	.27	2.29	12.16	267.51	7.54	7.20	423.15	27.92
21	9.87	200.01	2.000	15.00	.27	2.43	12.34	271.68	7.77	7.62	428.14	28.21

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.05 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.56 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 11.14 M

BOTTOM PROFILE

MANIFOLD 3
TRACE A

DISTANCE H	DEPTH H
.00	.00
25.00	.00
35.00	1.00
40.00	2.00
50.00	3.50
62.00	5.00
75.00	6.50
90.00	8.50
100.00	9.00
120.00	9.00
125.00	9.00
150.00	9.50
175.00	10.00
200.00	11.00
210.00	11.50
225.00	12.00
250.00	12.50
275.00	13.00
300.00	13.50
325.00	13.60
350.00	14.00
375.00	14.00
400.00	14.00
450.00	14.00
510.00	14.00

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DENSI-METRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SQ(N) = TOTAL DISCHARGE UP TO PORT N
- Q(N) = DISCHARGE OF PORT N
- OL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
- QDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW. - SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .40 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .928 M
DL(2) = 10.00 M
D(2) = .25 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 11
DIA(K1) = 2.000 M
DL(K1) = 10.00 M
D(K1) = .21 M

PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K TO DIA(K), DL(K) AND D(K).

FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	14.00	500.00			.37		4.00	74.55	.82		270.41	
2	14.00	490.00	.928	10.00	.25	.40	4.02	91.36	.82	.27	122.86	27.04
3	14.00	480.00	.928	10.00	.25	.58	4.07	92.61	.84	.39	123.02	12.29
4	14.00	470.00	.928	10.00	.25	.76	4.14	94.65	.87	.52	125.75	12.30
5	14.00	460.00	.928	10.00	.25	.95	4.26	97.64	.92	.64	125.31	12.37
6	14.00	450.00	.928	10.00	.25	1.13	4.42	101.69	.99	.77	127.96	12.53
7	14.00	440.00	.928	10.00	.25	1.32	4.63	106.90	1.09	.89	131.90	12.80
8	14.00	430.00	.928	10.00	.25	1.52	4.89	113.34	1.22	1.03	137.28	13.19
9	14.00	420.00	.928	10.00	.25	1.72	5.20	121.07	1.38	1.16	144.25	13.73
10	14.00	410.00	.928	10.00	.25	1.93	5.58	130.13	1.58	1.31	152.88	14.42
11	14.00	400.00	2.000	10.00	.21	.46	5.59	138.34	1.59	1.46	120.73	15.29
12	14.00	390.00	2.000	10.00	.21	.50	5.60	138.66	1.60	1.58	120.84	12.07
13	14.00	380.00	2.000	10.00	.21	.54	5.61	139.02	1.60	1.70	120.99	12.08
14	14.00	370.00	2.000	10.00	.21	.58	5.62	139.44	1.61	1.82	121.16	12.10
15	14.00	360.00	2.000	10.00	.21	.62	5.64	139.90	1.62	1.94	121.37	12.12
16	14.00	350.00	2.000	10.00	.21	.66	5.66	140.42	1.63	2.06	121.62	12.14
17	14.00	340.00	2.000	10.00	.21	.70	5.68	141.00	1.65	2.19	121.90	12.16
18	13.84	330.00	2.000	10.00	.21	.74	5.71	141.65	1.66	2.31	122.24	12.19
19	13.68	320.00	2.000	10.00	.21	.77	5.73	142.36	1.67	2.43	122.62	12.22
20	13.64	310.00	2.000	10.00	.21	.81	5.76	143.14	1.69	2.55	123.04	12.26
21	13.60	300.00	2.000	10.00	.21	.85	5.79	143.98	1.71	2.68	123.51	12.30
22	13.56	290.00	2.000	10.00	.21	.89	5.83	144.89	1.73	2.80	124.04	12.35
23	13.36	280.00	2.000	10.00	.21	.93	5.86	145.88	1.75	2.92	124.62	12.40
24	13.16	270.01	2.000	10.00	.21	.97	5.90	146.95	1.78	3.05	125.26	12.46
25	12.96	260.01	2.000	10.00	.21	1.01	5.95	148.09	1.80	3.17	125.97	12.53
26	12.76	250.01	2.000	10.00	.21	1.05	5.99	149.32	1.83	3.30	126.73	12.60
27	12.56	240.01	2.000	10.00	.21	1.09	6.04	150.62	1.86	3.43	127.56	12.67
28	12.36	230.01	2.000	10.00	.21	1.13	6.10	152.01	1.90	3.55	128.45	12.76
29	12.16	220.02	2.000	10.00	.21	1.17	6.15	153.49	1.93	3.68	129.41	12.84
30	11.83	210.02	2.000	10.00	.21	1.21	6.21	155.06	1.97	3.81	130.44	12.94
31	11.49	200.03	2.000	10.00	.21	1.26	6.28	156.71	2.01	3.94	131.55	13.04

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.07 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.30 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 2.88 M

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SG(N) CUM/SEC	G(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		1.00	18.64	.05		67.60	
2	14.00	490.00	.928	10.00	.25	.10	1.01	22.84	.05	.07	30.72	6.76
3	14.00	480.00	.928	10.00	.25	.15	1.02	23.15	.05	.10	30.75	3.07
4	14.00	470.00	.928	10.00	.25	.19	1.04	23.66	.05	.13	30.94	3.08
5	14.00	460.00	.928	10.00	.25	.24	1.06	24.41	.06	.16	31.33	3.09
6	14.00	450.00	.928	10.00	.25	.28	1.10	25.42	.06	.19	31.99	3.13
7	14.00	440.00	.928	10.00	.25	.33	1.16	26.73	.07	.22	32.97	3.20
8	14.00	430.00	.928	10.00	.25	.38	1.22	28.34	.08	.26	34.32	3.30
9	14.00	420.00	.928	10.00	.25	.43	1.30	30.27	.09	.29	36.06	3.43
10	14.00	410.00	.928	10.00	.25	.48	1.39	32.53	.10	.33	38.22	3.61
11	14.00	400.00	2.000	10.00	.21	.12	1.40	34.58	.10	.36	30.18	3.82
12	14.00	390.00	2.000	10.00	.21	.13	1.40	34.66	.10	.40	30.21	3.02
13	14.00	380.00	2.000	10.00	.21	.14	1.40	34.76	.10	.43	30.25	3.02
14	14.00	370.00	2.000	10.00	.21	.15	1.41	34.86	.10	.46	30.29	3.02
15	14.00	360.00	2.000	10.00	.21	.15	1.41	34.98	.10	.49	30.34	3.03
16	14.00	350.00	2.000	10.00	.21	.16	1.42	35.11	.10	.52	30.40	3.03
17	14.00	340.00	2.000	10.00	.21	.17	1.42	35.25	.10	.55	30.48	3.04
18	13.84	330.00	2.000	10.00	.21	.18	1.43	35.44	.10	.58	30.58	3.05
19	13.68	320.00	2.000	10.00	.21	.19	1.44	35.64	.10	.61	30.70	3.06
20	13.64	310.00	2.000	10.00	.21	.20	1.44	35.84	.11	.64	30.81	3.07
21	13.60	300.00	2.000	10.00	.21	.21	1.45	36.06	.11	.67	30.93	3.08
22	13.56	290.00	2.000	10.00	.21	.22	1.46	36.29	.11	.70	31.07	3.09
23	13.36	280.00	2.000	10.00	.21	.23	1.47	36.57	.11	.73	31.24	3.11
24	13.16	270.01	2.000	10.00	.21	.24	1.48	36.87	.11	.76	31.43	3.12
25	12.96	260.01	2.000	10.00	.21	.25	1.49	37.18	.11	.79	31.63	3.14
26	12.76	250.01	2.000	10.00	.21	.26	1.51	37.52	.12	.83	31.85	3.16
27	12.56	240.01	2.000	10.00	.21	.27	1.52	37.87	.12	.86	32.08	3.19
28	12.36	230.01	2.000	10.00	.21	.28	1.53	38.25	.12	.89	32.33	3.21
29	12.16	220.02	2.000	10.00	.21	.29	1.55	38.65	.12	.92	32.60	3.23
30	11.83	210.02	2.000	10.00	.21	.30	1.57	39.08	.13	.95	32.90	3.26
31	11.49	200.03	2.000	10.00	.21	.31	1.58	39.54	.13	.99	33.22	3.29

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .32 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .19 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		2.00	37.28	.20		135.21	
2	14.00	490.00	.928	10.00	.25	.20	2.01	45.68	.21	.14	61.43	13.52
3	14.00	480.00	.928	10.00	.25	.29	2.03	46.30	.21	.20	61.51	6.14
4	14.00	470.00	.928	10.00	.25	.38	2.07	47.33	.22	.26	61.87	6.15
5	14.00	460.00	.928	10.00	.25	.47	2.13	48.82	.23	.32	62.66	6.19
6	14.00	450.00	.928	10.00	.25	.57	2.21	50.85	.25	.38	63.98	6.27
7	14.00	440.00	.928	10.00	.25	.66	2.31	53.45	.27	.45	65.95	6.40
8	14.00	430.00	.928	10.00	.25	.76	2.44	56.67	.30	.51	68.64	6.59
9	14.00	420.00	.928	10.00	.25	.86	2.60	60.53	.34	.58	72.12	6.86
10	14.00	410.00	.928	10.00	.25	.97	2.79	65.06	.40	.65	76.44	7.21
11	14.00	400.00	2.000	10.00	.21	.23	2.79	69.17	.40	.73	60.37	7.64
12	14.00	390.00	2.000	10.00	.21	.25	2.80	69.33	.40	.79	60.42	6.04
13	14.00	380.00	2.000	10.00	.21	.27	2.80	69.51	.40	.85	60.49	6.04
14	14.00	370.00	2.000	10.00	.21	.29	2.81	69.72	.40	.91	60.58	6.05
15	14.00	360.00	2.000	10.00	.21	.31	2.82	69.95	.41	.97	60.69	6.06
16	14.00	350.00	2.000	10.00	.21	.33	2.83	70.21	.41	1.03	60.81	6.07
17	14.00	340.00	2.000	10.00	.21	.35	2.84	70.50	.41	1.09	60.95	6.08
18	13.84	330.00	2.000	10.00	.21	.37	2.85	70.84	.41	1.15	61.13	6.10
19	13.68	320.00	2.000	10.00	.21	.39	2.87	71.20	.42	1.22	61.33	6.11
20	13.64	310.00	2.000	10.00	.21	.41	2.88	71.59	.42	1.28	61.54	6.13
21	13.60	300.00	2.000	10.00	.21	.43	2.91	72.01	.43	1.34	61.78	6.15
22	13.56	290.00	2.000	10.00	.21	.45	2.91	72.47	.43	1.40	62.04	6.18
23	13.56	280.00	2.000	10.00	.21	.47	2.93	72.98	.44	1.46	62.35	6.20
24	13.16	270.01	2.000	10.00	.21	.49	2.95	73.53	.44	1.52	62.68	6.23
25	12.96	260.01	2.000	10.00	.21	.51	2.98	74.11	.45	1.59	63.04	6.27
26	12.76	250.01	2.000	10.00	.21	.53	3.00	74.73	.46	1.65	63.43	6.30
27	12.56	240.01	2.000	10.00	.21	.55	3.03	75.40	.47	1.71	63.86	6.34
28	12.36	230.01	2.000	10.00	.21	.57	3.05	76.11	.48	1.78	64.31	6.39
29	12.16	220.02	2.000	10.00	.21	.59	3.08	76.85	.48	1.84	64.80	6.43
30	11.83	210.02	2.000	10.00	.21	.61	3.11	77.66	.49	1.91	65.34	6.48
31	11.49	200.03	2.000	10.00	.21	.63	3.14	78.50	.50	1.97	65.91	6.53

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .65 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .73 M

FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SFC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		3.00	55.91	.46		202.81	
2	14.00	490.00	.928	10.00	.25	.30	3.02	68.52	.46	.20	92.15	20.28
3	14.00	480.00	.928	10.00	.25	.44	3.05	69.46	.47	.29	92.26	9.21
4	14.00	470.00	.928	10.00	.25	.57	3.11	70.99	.49	.39	92.81	9.23
5	14.00	460.00	.928	10.00	.25	.71	3.19	73.23	.52	.48	93.98	9.28
6	14.00	450.00	.928	10.00	.25	.85	3.31	76.27	.56	.57	95.97	9.40
7	14.00	440.00	.928	10.00	.25	.99	3.47	80.18	.61	.67	98.92	9.60
8	14.00	430.00	.928	10.00	.25	1.14	3.66	85.01	.68	.77	102.96	9.89
9	14.00	420.00	.928	10.00	.25	1.29	3.90	90.80	.78	.87	108.19	10.30
10	14.00	410.00	.928	10.00	.25	1.45	4.18	97.60	.88	.98	114.66	10.82
11	14.00	400.00	2.000	10.00	.21	.35	4.19	103.75	.89	1.09	90.55	11.47
12	14.00	390.00	2.000	10.00	.21	.38	4.20	103.99	.90	1.19	90.63	9.05
13	14.00	380.00	2.000	10.00	.21	.41	4.21	104.27	.90	1.28	90.74	9.06
14	14.00	370.00	2.000	10.00	.21	.44	4.22	104.58	.91	1.37	90.87	9.07
15	14.00	360.00	2.000	10.00	.21	.46	4.23	104.93	.91	1.46	91.03	9.09
16	14.00	350.00	2.000	10.00	.21	.49	4.25	105.32	.92	1.55	91.21	9.10
17	14.00	340.00	2.000	10.00	.21	.52	4.26	105.75	.93	1.64	91.43	9.12
18	13.84	330.00	2.000	10.00	.21	.55	4.28	106.24	.93	1.73	91.68	9.14
19	13.68	320.00	2.000	10.00	.21	.58	4.30	106.78	.94	1.82	91.97	9.17
20	13.64	310.00	2.000	10.00	.21	.61	4.32	107.36	.95	1.91	92.29	9.20
21	13.60	300.00	2.000	10.00	.21	.64	4.34	107.99	.96	2.01	92.64	9.23
22	13.56	290.00	2.000	10.00	.21	.67	4.37	108.68	.97	2.10	93.04	9.26
23	13.36	280.00	2.000	10.00	.21	.70	4.40	109.43	.99	2.19	93.48	9.30
24	13.16	270.01	2.000	10.00	.21	.73	4.43	110.23	1.00	2.29	93.97	9.35
25	12.96	260.01	2.000	10.00	.21	.76	4.46	111.10	1.01	2.38	94.50	9.40
26	12.76	250.01	2.000	10.00	.21	.79	4.50	112.02	1.03	2.47	95.07	9.45
27	12.56	240.01	2.000	10.00	.21	.82	4.53	113.00	1.05	2.57	95.70	9.51
28	12.36	230.01	2.000	10.00	.21	.85	4.57	114.05	1.07	2.67	96.37	9.57
29	12.16	220.02	2.000	10.00	.21	.88	4.62	115.16	1.09	2.76	97.10	9.64
30	11.83	210.02	2.000	10.00	.21	.91	4.66	116.34	1.11	2.86	97.88	9.71
31	11.49	200.03	2.000	10.00	.21	.94	4.71	117.59	1.13	2.96	98.71	9.79

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .97 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 1.63 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	GL(N) L/M, SEC
1	14.00	500.00			.37		5.00	93.19	1.27		338.01	
2	14.00	490.00	.928	10.00	.25	.50	5.03	114.20	1.29	.34	153.58	33.80
3	14.00	480.00	.928	10.00	.25	.73	5.08	115.76	1.32	.49	153.77	15.36
4	14.00	470.00	.928	10.00	.25	.95	5.18	118.32	1.37	.65	154.68	15.38
5	14.00	460.00	.928	10.00	.25	1.18	5.32	122.05	1.44	.80	156.64	15.47
6	14.00	450.00	.928	10.00	.25	1.42	5.52	127.12	1.55	.96	159.95	15.66
7	14.00	440.00	.928	10.00	.25	1.65	5.78	133.63	1.70	1.12	164.87	15.99
8	14.00	430.00	.928	10.00	.25	1.90	6.11	141.68	1.90	1.28	171.61	16.49
9	14.00	420.00	.928	10.00	.25	2.15	6.50	151.33	2.15	1.45	180.31	17.16
10	14.00	410.00	.928	10.00	.25	2.42	6.97	162.66	2.48	1.63	191.10	18.03
11	14.00	400.00	2.000	10.00	.21	.58	6.98	172.92	2.48	1.82	150.91	19.11
12	14.00	390.00	2.000	10.00	.21	.63	7.00	173.32	2.49	1.98	151.06	15.09
13	14.00	380.00	2.000	10.00	.21	.68	7.01	173.78	2.51	2.13	151.24	15.11
14	14.00	370.00	2.000	10.00	.21	.73	7.03	174.29	2.52	2.28	151.45	15.12
15	14.00	360.00	2.000	10.00	.21	.77	7.05	174.88	2.53	2.43	151.72	15.15
16	14.00	350.00	2.000	10.00	.21	.82	7.08	175.53	2.55	2.58	152.02	15.17
17	14.00	340.00	2.000	10.00	.21	.87	7.10	176.26	2.57	2.73	152.38	15.20
18	13.84	330.00	2.000	10.00	.21	.92	7.13	177.06	2.59	2.89	152.80	15.24
19	13.68	320.00	2.000	10.00	.21	.97	7.17	177.95	2.62	3.04	153.27	15.28
20	13.64	310.00	2.000	10.00	.21	1.02	7.20	178.91	2.64	3.19	153.79	15.33
21	13.60	300.00	2.000	10.00	.21	1.07	7.24	179.96	2.67	3.35	154.38	15.38
22	13.56	290.00	2.000	10.00	.21	1.11	7.28	181.10	2.70	3.50	155.04	15.44
23	13.36	280.00	2.000	10.00	.21	1.16	7.33	182.34	2.74	3.65	155.77	15.50
24	13.16	270.01	2.000	10.00	.21	1.21	7.38	183.67	2.78	3.81	156.57	15.58
25	12.96	260.01	2.000	10.00	.21	1.26	7.43	185.10	2.82	3.97	157.44	15.66
26	12.76	250.01	2.000	10.00	.21	1.31	7.49	186.63	2.86	4.12	158.39	15.74
27	12.56	240.01	2.000	10.00	.21	1.36	7.55	188.25	2.91	4.28	159.42	15.84
28	12.36	230.01	2.000	10.00	.21	1.41	7.62	189.99	2.96	4.44	160.53	15.94
29	12.16	220.02	2.000	10.00	.21	1.47	7.69	191.83	3.02	4.60	161.73	16.05
30	11.83	210.02	2.000	10.00	.21	1.52	7.77	193.78	3.07	4.76	163.02	16.17
31	11.49	200.03	2.000	10.00	.21	1.57	7.85	195.85	3.14	4.93	164.39	16.30

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.09 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.62 M/SEC
 TOTAL LENGTH OF HANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 4.49 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	14.00	500.00			.37		6.00	111.83	1.83		405.62	
2	14.00	490.00	.928	10.00	.25	.60	6.03	137.04	1.85	.41	184.29	40.56
3	14.00	480.00	.928	10.00	.25	.87	6.10	138.91	1.90	.59	184.53	18.43
4	14.00	470.00	.928	10.00	.25	1.15	6.21	141.98	1.97	.77	185.62	18.45
5	14.00	460.00	.928	10.00	.25	1.42	6.39	146.46	2.08	.96	187.97	18.56
6	14.00	450.00	.928	10.00	.25	1.70	6.63	152.54	2.24	1.15	191.94	18.80
7	14.00	440.00	.928	10.00	.25	1.98	6.94	160.35	2.45	1.34	197.84	19.19
8	14.00	430.00	.928	10.00	.25	2.27	7.33	170.01	2.74	1.54	205.93	19.78
9	14.00	420.00	.928	10.00	.25	2.58	7.80	181.60	3.10	1.74	216.37	20.59
10	14.00	410.00	.928	10.00	.25	2.90	8.36	195.19	3.56	1.96	229.32	21.64
11	14.00	400.00	2.000	10.00	.21	.70	8.38	207.51	3.58	2.19	181.10	22.93
12	14.00	390.00	2.000	10.00	.21	.75	8.39	207.99	3.59	2.37	181.27	18.11
13	14.00	380.00	2.000	10.00	.21	.81	8.41	208.53	3.61	2.55	181.48	18.13
14	14.00	370.00	2.000	10.00	.21	.87	8.44	209.15	3.63	2.73	181.74	18.15
15	14.00	360.00	2.000	10.00	.21	.93	8.46	209.85	3.65	2.92	182.06	18.17
16	14.00	350.00	2.000	10.00	.21	.99	8.49	210.64	3.67	3.10	182.43	18.21
17	14.00	340.00	2.000	10.00	.21	1.04	8.52	211.51	3.70	3.28	182.86	18.24
18	13.84	330.00	2.000	10.00	.21	1.10	8.56	212.47	3.73	3.46	183.35	18.29
19	13.68	320.00	2.000	10.00	.21	1.16	8.60	213.53	3.77	3.65	183.92	18.34
20	13.64	310.00	2.000	10.00	.21	1.22	8.64	214.69	3.81	3.83	184.55	18.39
21	13.60	300.00	2.000	10.00	.21	1.28	8.69	215.95	3.85	4.01	185.26	18.45
22	13.56	290.00	2.000	10.00	.21	1.34	8.74	217.32	3.89	4.20	186.04	18.53
23	13.36	280.00	2.000	10.00	.21	1.40	8.80	218.80	3.94	4.39	186.91	18.60
24	13.16	270.01	2.000	10.00	.21	1.46	8.86	220.39	4.00	4.57	187.87	18.69
25	12.96	260.01	2.000	10.00	.21	1.52	8.92	222.11	4.06	4.76	188.92	18.79
26	12.76	250.01	2.000	10.00	.21	1.58	8.99	223.94	4.12	4.95	190.06	18.89
27	12.56	240.01	2.000	10.00	.21	1.64	9.06	225.89	4.19	5.14	191.29	19.01
28	12.36	230.01	2.000	10.00	.21	1.70	9.14	227.97	4.26	5.33	192.62	19.13
29	12.16	220.02	2.000	10.00	.21	1.76	9.23	230.17	4.34	5.52	194.06	19.26
30	11.83	210.02	2.000	10.00	.21	1.82	9.32	232.51	4.43	5.72	195.60	19.41
31	11.49	200.03	2.000	10.00	.21	1.88	9.41	234.99	4.52	5.91	197.25	19.56

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.11 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.95 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 6.46 M

FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(H) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.37		7.00	130.46	2.50		473.22	47.32
2	14.00	490.00	.928	10.00	.25	.70	7.04	159.87	2.52	.47	215.01	21.50
3	14.00	480.00	.928	10.00	.25	1.02	7.12	162.07	2.58	.69	215.28	21.53
4	14.00	470.00	.928	10.00	.25	1.34	7.25	165.65	2.68	.90	216.56	21.66
5	14.00	460.00	.928	10.00	.25	1.66	7.45	170.87	2.83	1.12	219.30	21.93
6	14.00	450.00	.928	10.00	.25	1.98	7.73	177.96	3.05	1.34	223.93	22.39
7	14.00	440.00	.928	10.00	.25	2.31	8.09	187.08	3.34	1.56	230.82	23.08
8	14.00	430.00	.928	10.00	.25	2.65	8.55	198.35	3.73	1.79	240.25	24.02
9	14.00	420.00	.928	10.00	.25	3.01	9.10	211.87	4.22	2.03	252.43	25.24
10	14.00	410.00	.928	10.00	.25	3.38	9.76	227.72	4.85	2.29	267.54	26.75
11	14.00	400.00	2.000	10.00	.21	.81	9.77	242.09	4.87	2.55	277.77	27.77
12	14.00	390.00	2.000	10.00	.21	.88	9.79	242.65	4.89	2.77	281.48	28.14
13	14.00	380.00	2.000	10.00	.21	.95	9.82	243.29	4.91	2.98	285.19	28.52
14	14.00	370.00	2.000	10.00	.21	1.02	9.84	244.01	4.94	3.19	288.90	28.89
15	14.00	360.00	2.000	10.00	.21	1.08	9.87	244.83	4.97	3.40	292.61	29.26
16	14.00	350.00	2.000	10.00	.21	1.15	9.91	245.74	5.00	3.61	296.32	29.63
17	14.00	340.00	2.000	10.00	.21	1.22	9.94	246.76	5.04	3.83	300.03	30.00
18	13.84	330.00	2.000	10.00	.21	1.29	9.99	247.88	5.08	4.04	303.74	30.37
19	13.68	320.00	2.000	10.00	.21	1.35	10.03	249.12	5.13	4.25	307.45	30.74
20	13.64	310.00	2.000	10.00	.21	1.42	10.08	250.47	5.18	4.47	311.16	31.11
21	13.60	300.00	2.000	10.00	.21	1.49	10.14	251.94	5.24	4.68	314.87	31.48
22	13.56	290.00	2.000	10.00	.21	1.56	10.20	253.53	5.30	4.90	318.58	31.85
23	13.36	280.00	2.000	10.00	.21	1.63	10.26	255.26	5.37	5.12	322.29	32.22
24	13.16	270.01	2.000	10.00	.21	1.70	10.33	257.12	5.44	5.33	326.00	32.60
25	12.96	260.01	2.000	10.00	.21	1.77	10.41	259.11	5.52	5.55	329.71	32.97
26	12.76	250.01	2.000	10.00	.21	1.84	10.49	261.25	5.61	5.77	333.42	33.34
27	12.56	240.01	2.000	10.00	.21	1.91	10.58	263.52	5.70	6.00	337.13	33.71
28	12.36	230.01	2.000	10.00	.21	1.98	10.67	265.95	5.80	6.22	340.84	34.08
29	12.16	220.02	2.000	10.00	.21	2.05	10.77	268.52	5.91	6.44	344.55	34.45
30	11.83	210.02	2.000	10.00	.21	2.12	10.87	271.25	6.02	6.67	348.26	34.82
31	11.49	200.03	2.000	10.00	.21	2.20	10.98	274.13	6.15	6.90	351.97	35.19

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.13 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.27 M/SEC
 TOTAL LENGTH OF HANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 8.79 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(H) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.37		8.00	149.10	3.26		540.82	54.08
2	14.00	400.00	.928	10.00	.25	.80	8.04	182.71	3.30	.54	245.73	24.57
3	14.00	480.00	.928	10.00	.25	1.16	8.13	185.22	3.37	.79	246.04	24.60
4	14.00	470.00	.928	10.00	.25	1.53	8.29	189.31	3.50	1.03	247.49	24.75
5	14.00	460.00	.928	10.00	.25	1.89	8.52	195.28	3.70	1.28	250.62	25.06
6	14.00	450.00	.928	10.00	.25	2.26	8.83	203.39	3.98	1.53	255.92	25.59
7	14.00	440.00	.928	10.00	.25	2.64	9.25	213.81	4.36	1.79	263.79	26.38
8	14.00	430.00	.928	10.00	.25	3.03	9.77	226.69	4.87	2.05	274.57	27.46
9	14.00	420.00	.928	10.00	.25	3.44	10.40	242.14	5.52	2.32	288.50	28.85
10	14.00	410.00	.928	10.00	.25	3.87	11.15	260.26	6.34	2.61	305.76	30.58
11	14.00	400.00	2.000	10.00	.21	.93	11.17	276.68	6.36	2.92	241.46	24.15
12	14.00	390.00	2.000	10.00	.21	1.01	11.19	277.31	6.39	3.16	241.69	24.17
13	14.00	380.00	2.000	10.00	.21	1.08	11.22	278.04	6.42	3.40	241.98	24.20
14	14.00	370.00	2.000	10.00	.21	1.16	11.25	278.87	6.45	3.64	242.33	24.23
15	14.00	360.00	2.000	10.00	.21	1.24	11.28	279.80	6.49	3.89	242.74	24.27
16	14.00	350.00	2.000	10.00	.21	1.32	11.32	280.85	6.53	4.13	243.24	24.32
17	14.00	340.00	2.000	10.00	.21	1.39	11.36	282.01	6.58	4.37	243.81	24.38
18	13.84	330.00	2.000	10.00	.21	1.47	11.41	283.29	6.64	4.62	244.47	24.45
19	13.68	320.00	2.000	10.00	.21	1.55	11.46	284.71	6.70	4.86	245.22	24.52
20	13.64	310.00	2.000	10.00	.21	1.63	11.52	286.25	6.77	5.11	246.06	24.61
21	13.60	300.00	2.000	10.00	.21	1.70	11.58	287.93	6.84	5.35	247.00	24.70
22	13.56	290.00	2.000	10.00	.21	1.78	11.65	289.75	6.92	5.60	248.05	24.80
23	13.36	280.00	2.000	10.00	.21	1.86	11.73	291.72	7.01	5.85	249.21	24.92
24	13.16	270.01	2.000	10.00	.21	1.94	11.81	293.85	7.11	6.10	250.48	25.05
25	12.96	260.01	2.000	10.00	.21	2.02	11.89	296.12	7.21	6.35	251.88	25.19
26	12.76	250.01	2.000	10.00	.21	2.10	11.99	298.56	7.32	6.60	253.39	25.34
27	12.56	240.01	2.000	10.00	.21	2.18	12.09	301.16	7.44	6.85	255.04	25.50
28	12.36	230.01	2.000	10.00	.21	2.26	12.19	303.93	7.58	7.11	256.81	25.68
29	12.16	220.02	2.000	10.00	.21	2.35	12.30	306.87	7.72	7.36	258.72	25.87
30	11.93	210.02	2.000	10.00	.21	2.43	12.42	309.98	7.87	7.62	260.77	26.08
31	11.49	200.03	2.000	10.00	.21	2.51	12.55	313.28	8.03	7.88	262.96	26.28

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.15 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.59 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 11.48 M

BOTTOM PROFILE

MANIFOLD 8
TRACE B

DISTANCE M	DEPTH M
.00	.00
25.00	.00
40.00	1.00
50.00	3.00
60.00	4.50
65.00	5.00
75.00	6.50
90.00	7.00
100.00	8.50
125.00	9.00
150.00	9.10
175.00	9.50
200.00	9.80
225.00	10.20
250.00	10.50
275.00	10.50
300.00	10.50
325.00	10.50
350.00	10.80
375.00	10.80
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.50
510.00	11.60

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DENSIMETRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SG(N) = TOTAL DISCHARGE UP TO PORT N
- Q(N) = DISCHARGE OF PORT N
- QDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAU. - SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRW = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .40 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .928 H
DL(2) = 10.00 M
P(2) = .25 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRN = .100
FRP = .100
PORT NO K1 = 11
DIA(K1) = 2.000 H
DL(K1) = 10.00 H
D(K1) = .21 M

PORT NO K2 = 0
DIA(K2) = .000 H
DL(K2) = .00 H
D(K2) = .00 H

PORT NO K3 = 0
DIA(K3) = .000 H
DL(K3) = .00 H
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K TO DIA(K), DL(K) AND D(K).

FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	PIA(H) M	DL(N) M	D(M)	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00		10.00	.37		4.00	74.55	.82		270.41	
2	11.54	490.00	.928	10.00	.25	.40	4.02	91.36	.82	.27	122.86	27.04
3	11.51	480.00	.928	10.00	.25	.58	4.07	92.61	.84	.39	123.02	12.29
4	11.49	470.00	.928	10.00	.25	.76	4.14	94.66	.87	.52	123.75	12.30
5	11.29	460.00	.928	10.00	.25	.95	4.26	97.66	.92	.64	125.33	12.38
6	11.09	450.00	.928	10.00	.25	1.13	4.42	101.72	1.00	.77	127.99	12.53
7	10.89	440.01	.928	10.00	.25	1.32	4.63	106.94	1.09	.89	131.94	12.80
8	10.89	430.01	.928	10.00	.25	1.52	4.89	113.38	1.22	1.03	137.33	13.19
9	10.89	420.01	.928	10.00	.25	1.72	5.20	121.10	1.38	1.16	144.29	13.73
10	10.89	410.01	.928	10.00	.25	1.93	5.58	130.16	1.59	1.31	152.93	14.43
11	10.89	400.01	2.000	10.00	.21	.46	5.59	138.38	1.59	1.46	120.76	15.29
12	10.89	390.01	2.000	10.00	.21	.50	5.60	138.69	1.60	1.58	120.88	12.08
13	10.81	380.01	2.000	10.00	.21	.54	5.61	139.06	1.60	1.70	121.02	12.09
14	10.73	370.01	2.000	10.00	.21	.58	5.63	139.48	1.61	1.82	121.20	12.10
15	10.73	360.01	2.000	10.00	.21	.62	5.64	139.95	1.62	1.94	121.41	12.12
16	10.73	350.01	2.000	10.00	.21	.66	5.66	140.47	1.63	2.07	121.66	12.14
17	10.73	340.01	2.000	10.00	.21	.70	5.68	141.05	1.65	2.19	121.94	12.17
18	10.61	330.01	2.000	10.00	.21	.74	5.71	141.70	1.66	2.31	122.28	12.19
19	10.49	320.01	2.000	10.00	.21	.77	5.73	142.41	1.68	2.43	122.65	12.23
20	10.49	310.01	2.000	10.00	.21	.81	5.76	143.18	1.69	2.55	123.07	12.27
21	10.49	300.01	2.000	10.00	.21	.85	5.79	144.02	1.71	2.68	123.55	12.31
22	10.49	290.01	2.000	10.00	.21	.89	5.83	144.93	1.73	2.80	124.07	12.35
23	10.49	280.01	2.000	10.00	.21	.93	5.87	145.91	1.75	2.92	124.65	12.41
24	10.49	270.01	2.000	10.00	.21	.97	5.91	146.97	1.78	3.05	125.28	12.46
25	10.49	260.01	2.000	10.00	.21	1.01	5.95	148.11	1.80	3.17	125.98	12.53
26	10.49	250.01	2.000	10.00	.21	1.05	6.00	149.32	1.83	3.30	126.73	12.60
27	10.49	240.01	2.000	10.00	.21	1.09	6.04	150.62	1.86	3.43	127.55	12.67
28	10.37	230.01	2.000	10.00	.21	1.13	6.10	152.01	1.89	3.55	128.44	12.76
29	10.25	220.01	2.000	10.00	.21	1.17	6.15	153.48	1.95	3.68	129.40	12.84
30	10.09	210.01	2.000	10.00	.21	1.21	6.21	155.04	1.97	3.81	130.43	12.94
31	9.93	200.01	2.000	10.00	.21	1.26	6.28	156.69	2.01	3.94	131.53	13.04

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.07 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.30 M/SEC
 TOTAL LENGTH OF HANIFOLD = 309.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 2.88 M

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00	.928	10.00	.37	.10	1.00	18.64	.05	.07	67.60	6.76
2	11.54	490.00	.928	10.00	.25	.15	1.01	22.85	.05	.10	30.72	3.07
3	11.51	480.00	.928	10.00	.25	.19	1.02	23.16	.05	.13	30.77	3.08
4	11.49	470.00	.928	10.00	.25	.24	1.04	23.68	.05	.16	30.96	3.10
5	11.29	460.00	.928	10.00	.25	.28	1.07	24.47	.06	.19	31.41	3.14
6	11.09	450.00	.928	10.00	.25	.33	1.11	25.52	.06	.22	32.13	3.21
7	10.89	440.01	.928	10.00	.25	.38	1.16	26.86	.07	.26	33.17	3.32
8	10.89	430.01	.928	10.00	.25	.43	1.23	28.47	.08	.29	34.51	3.45
9	10.89	420.01	.928	10.00	.25	.48	1.31	30.40	.09	.33	36.24	3.62
10	10.89	410.01	.928	10.00	.25	.53	1.40	32.67	.10	.37	38.60	3.84
11	10.89	400.01	2.000	10.00	.21	.12	1.40	34.73	.10	.40	30.34	3.03
12	10.89	390.01	2.000	10.00	.21	.14	1.41	34.81	.10	.43	30.39	3.03
13	10.81	380.01	2.000	10.00	.21	.15	1.41	34.92	.10	.46	30.45	3.04
14	10.73	370.01	2.000	10.00	.21	.16	1.42	35.03	.10	.49	30.50	3.04
15	10.73	360.01	2.000	10.00	.21	.16	1.42	35.15	.10	.52	30.56	3.05
16	10.73	350.01	2.000	10.00	.21	.17	1.42	35.28	.10	.55	30.63	3.06
17	10.73	340.01	2.000	10.00	.21	.18	1.43	35.43	.10	.58	30.73	3.06
18	10.61	330.01	2.000	10.00	.21	.19	1.43	35.61	.10	.61	30.84	3.07
19	10.49	320.01	2.000	10.00	.21	.20	1.44	35.81	.11	.64	30.95	3.08
20	10.49	310.01	2.000	10.00	.21	.21	1.45	36.00	.11	.67	31.06	3.09
21	10.49	300.01	2.000	10.00	.21	.21	1.46	36.21	.11	.70	31.20	3.11
22	10.49	290.01	2.000	10.00	.21	.22	1.47	36.44	.11	.73	31.34	3.12
23	10.49	280.01	2.000	10.00	.21	.23	1.47	36.68	.11	.77	31.50	3.13
24	10.49	270.01	2.000	10.00	.21	.24	1.48	36.95	.11	.80	31.67	3.15
25	10.49	260.01	2.000	10.00	.21	.25	1.50	37.23	.11	.83	31.86	3.17
26	10.49	250.01	2.000	10.00	.21	.26	1.51	37.54	.12	.86	32.07	3.19
27	10.49	240.01	2.000	10.00	.21	.27	1.52	37.86	.12	.89	32.31	3.21
28	10.37	230.01	2.000	10.00	.21	.28	1.53	38.23	.12	.92	32.56	3.23
29	10.25	220.01	2.000	10.00	.21	.29	1.55	38.62	.12	.96	32.84	3.26
30	10.09	210.01	2.000	10.00	.21	.30	1.56	39.03	.12	.99	33.14	3.28
31	9.93	200.01	2.000	10.00	.21	.32	1.58	39.47	.13			

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .33 M/SEC
 TOTAL LENGTH OF HANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .19 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	11.57	500.00			.37	.20	2.00	37.28	.20		135.21	
2	11.54	490.00	.928	10.00	.25	.20	2.01	45.68	.21	.14	61.44	13.52
3	11.51	480.00	.928	10.00	.25	.29	2.03	46.31	.21	.20	61.52	6.14
4	11.49	470.00	.928	10.00	.25	.38	2.07	47.34	.22	.26	61.89	6.15
5	11.29	460.00	.928	10.00	.25	.47	2.13	48.85	.23	.32	62.70	6.19
6	11.09	450.00	.928	10.00	.25	.57	2.21	50.90	.25	.38	64.05	6.27
7	10.89	440.01	.928	10.00	.25	.66	2.32	53.52	.27	.45	66.04	6.41
8	10.89	430.01	.928	10.00	.25	.76	2.45	56.74	.30	.51	68.74	6.60
9	10.89	420.01	.928	10.00	.25	.86	2.60	60.60	.35	.58	72.22	6.87
10	10.89	410.01	.928	10.00	.25	.97	2.79	65.13	.40	.65	76.53	7.22
11	10.89	400.01	2.000	10.00	.21	.93	2.80	69.24	.40	.73	80.43	7.65
12	10.89	390.01	2.000	10.00	.21	.25	2.80	69.40	.40	.79	80.49	6.04
13	10.81	380.01	2.000	10.00	.21	.27	2.81	69.59	.40	.85	80.57	6.05
14	10.73	370.01	2.000	10.00	.21	.29	2.82	69.81	.40	.91	80.66	6.06
15	10.73	360.01	2.000	10.00	.21	.31	2.82	70.04	.41	.97	80.76	6.07
16	10.73	350.01	2.000	10.00	.21	.33	2.83	70.30	.41	1.03	80.89	6.08
17	10.73	340.01	2.000	10.00	.21	.35	2.84	70.59	.41	1.09	81.03	6.09
18	10.61	330.01	2.000	10.00	.21	.37	2.86	70.92	.42	1.16	81.20	6.10
19	10.49	320.01	2.000	10.00	.21	.39	2.87	71.28	.42	1.22	81.40	6.12
20	10.49	310.01	2.000	10.00	.21	.41	2.88	71.67	.42	1.28	81.61	6.14
21	10.49	300.01	2.000	10.00	.21	.43	2.90	72.09	.43	1.34	81.84	6.16
22	10.49	290.01	2.000	10.00	.21	.45	2.92	72.55	.43	1.40	82.11	6.18
23	10.49	280.01	2.000	10.00	.21	.47	2.94	73.04	.44	1.46	82.40	6.21
24	10.49	270.01	2.000	10.00	.21	.49	2.96	73.57	.45	1.53	82.71	6.24
25	10.49	260.01	2.000	10.00	.21	.51	2.98	74.14	.45	1.59	83.06	6.27
26	10.49	250.01	2.000	10.00	.21	.53	3.00	74.75	.46	1.65	83.44	6.31
27	10.49	240.01	2.000	10.00	.21	.55	3.03	75.39	.47	1.71	83.85	6.34
28	10.37	230.01	2.000	10.00	.21	.57	3.05	76.10	.47	1.78	84.30	6.38
29	10.25	220.01	2.000	10.00	.21	.59	3.08	76.84	.48	1.84	84.79	6.43
30	10.09	210.01	2.000	10.00	.21	.61	3.11	77.63	.49	1.91	85.31	6.48
31	9.93	200.01	2.000	10.00	.21	.63	3.14	78.46	.50	1.97	85.87	6.53

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .65 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .73 M

FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.57	500.00	.928	10.00	.37	.30	3.00	55.91	.46	.20	202.81	20.28
2	11.54	400.00	.928	10.00	.25	.44	3.05	68.52	.46	.29	92.15	9.21
3	11.51	480.00	.928	10.00	.25	.57	3.11	71.00	.49	.39	92.82	9.23
4	11.49	470.00	.928	10.00	.25	.71	3.19	73.25	.52	.48	94.01	9.28
5	11.29	460.00	.928	10.00	.25	.85	3.31	76.30	.56	.57	96.02	9.40
6	11.09	450.00	.928	10.00	.25	.99	3.47	80.22	.61	.67	98.99	9.60
7	10.89	440.01	.928	10.00	.25	1.14	3.67	85.05	.69	.77	103.03	9.90
8	10.89	430.01	.928	10.00	.25	1.29	3.90	90.85	.78	.87	108.25	10.30
9	10.89	420.01	.928	10.00	.25	1.45	4.18	97.64	.89	.98	114.72	10.82
10	10.89	410.01	.928	10.00	.21	1.35	4.19	103.80	.90	1.10	90.59	11.47
11	10.89	400.01	2.000	10.00	.21	.38	4.20	104.04	.90	1.19	90.68	9.06
12	10.89	390.01	2.000	10.00	.21	.41	4.21	104.32	.90	1.28	90.79	9.07
13	10.81	380.01	2.000	10.00	.21	.44	4.22	104.64	.91	1.37	90.92	9.08
14	10.73	370.01	2.000	10.00	.21	.46	4.23	104.99	.91	1.46	91.08	9.09
15	10.73	360.01	2.000	10.00	.21	.49	4.25	105.38	.92	1.55	91.27	9.11
16	10.73	350.01	2.000	10.00	.21	.52	4.26	105.81	.93	1.64	91.48	9.13
17	10.73	340.01	2.000	10.00	.21	.55	4.28	106.30	.93	1.73	91.73	9.15
18	10.61	330.01	2.000	10.00	.21	.58	4.30	106.84	.94	1.82	92.02	9.17
19	10.49	320.01	2.000	10.00	.21	.61	4.32	107.41	.95	1.92	92.33	9.20
20	10.49	310.01	2.000	10.00	.21	.64	4.35	108.04	.96	2.01	92.69	9.23
21	10.49	300.01	2.000	10.00	.21	.67	4.37	108.73	.97	2.10	93.08	9.27
22	10.49	290.01	2.000	10.00	.21	.70	4.40	109.46	.99	2.19	93.51	9.31
23	10.49	280.01	2.000	10.00	.21	.73	4.43	110.26	1.00	2.29	93.99	9.35
24	10.49	270.01	2.000	10.00	.21	.76	4.46	111.11	1.02	2.38	94.51	9.40
25	10.49	260.01	2.000	10.00	.21	.79	4.50	112.03	1.03	2.48	95.08	9.45
26	10.49	250.01	2.000	10.00	.21	.82	4.53	113.00	1.05	2.57	95.69	9.51
27	10.49	240.01	2.000	10.00	.21	.85	4.57	114.04	1.07	2.67	96.36	9.57
28	10.37	230.01	2.000	10.00	.21	.88	4.62	115.15	1.09	2.76	97.08	9.64
29	10.25	220.01	2.000	10.00	.21	.91	4.66	116.32	1.11	2.86	97.86	9.71
30	10.09	210.01	2.000	10.00	.21	.94	4.71	117.57	1.13	2.96	98.69	9.79
31	9.93	200.01	2.000	10.00	.21							

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .97 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 1.62 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(H) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	CUM/SEC	SO(N) L/SEC	Q(N) L/SEC	PL(N) L/M/SEC
1	11.57	500.00			.37		5.00	93.19	1.27			338.01	
2	11.54	490.00	.928	10.00	.25	.50	5.03	114.20	1.29	.34		153.58	33.80
3	11.51	480.00	.928	10.00	.25	.73	5.08	115.76	1.32	.49		153.78	15.36
4	11.49	470.00	.928	10.00	.25	.95	5.18	118.32	1.37	.65		154.69	15.38
5	11.29	460.00	.928	10.00	.25	1.18	5.32	122.06	1.44	.80		156.66	15.47
6	11.09	450.00	.928	10.00	.25	1.42	5.52	127.14	1.55	.96		159.98	15.67
7	10.89	440.01	.928	10.00	.25	1.65	5.78	133.66	1.70	1.12		164.91	16.00
8	10.89	430.01	.928	10.00	.25	1.90	6.11	141.70	1.90	1.28		171.64	16.49
9	10.89	420.01	.928	10.00	.25	2.15	6.50	151.36	2.16	1.45		180.35	17.16
10	10.89	410.01	.928	10.00	.25	2.42	6.97	162.69	2.48	1.63		191.14	18.03
11	10.89	400.01	2.000	10.00	.21	.58	6.98	172.95	2.49	1.82		150.94	19.11
12	10.89	390.01	2.000	10.00	.21	.63	7.00	173.35	2.50	1.98		151.08	15.09
13	10.81	380.01	2.000	10.00	.21	.68	7.01	173.81	2.51	2.13		151.26	15.11
14	10.73	370.01	2.000	10.00	.21	.73	7.03	174.33	2.52	2.28		151.49	15.13
15	10.73	360.01	2.000	10.00	.21	.77	7.05	174.91	2.54	2.43		151.75	15.15
16	10.73	350.01	2.000	10.00	.21	.82	7.08	175.57	2.55	2.58		152.05	15.17
17	10.73	340.01	2.000	10.00	.21	.87	7.10	176.29	2.57	2.73		152.41	15.21
18	10.61	330.01	2.000	10.00	.21	.92	7.13	177.10	2.59	2.89		152.83	15.24
19	10.49	320.01	2.000	10.00	.21	.97	7.17	177.98	2.62	3.04		153.30	15.28
20	10.49	310.01	2.000	10.00	.21	1.02	7.20	178.95	2.64	3.19		153.82	15.33
21	10.49	300.01	2.000	10.00	.21	1.07	7.24	179.99	2.67	3.35		154.41	15.38
22	10.49	290.01	2.000	10.00	.21	1.11	7.28	181.13	2.70	3.50		155.06	15.44
23	10.49	280.01	2.000	10.00	.21	1.16	7.33	182.36	2.74	3.66		155.79	15.51
24	10.49	270.01	2.000	10.00	.21	1.21	7.38	183.69	2.78	3.81		156.58	15.58
25	10.49	260.01	2.000	10.00	.21	1.26	7.43	185.11	2.82	3.97		157.45	15.66
26	10.49	250.01	2.000	10.00	.21	1.31	7.49	186.63	2.86	4.12		158.39	15.74
27	10.49	240.01	2.000	10.00	.21	1.36	7.55	188.25	2.91	4.28		159.42	15.84
28	10.37	230.01	2.000	10.00	.21	1.41	7.62	189.98	2.96	4.44		160.53	15.94
29	10.25	220.01	2.000	10.00	.21	1.47	7.69	191.82	3.01	4.60		161.72	16.05
30	10.09	210.01	2.000	10.00	.21	1.52	7.77	193.77	3.07	4.77		163.01	16.17
31	9.93	200.01	2.000	10.00	.21	1.57	7.84	195.83	3.14	4.93		164.38	16.30

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.09 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.62 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 4.49 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(H) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.37		6.00	111.83	1.83		405.62	
2	11.54	400.00	.928	10.00	.25	.60	6.03	137.04	1.85	.41	184.30	40.56
3	11.51	480.00	.928	10.00	.25	.87	6.10	138.92	1.90	.59	184.53	18.43
4	11.49	470.00	.928	10.00	.25	1.15	6.21	141.98	1.97	.77	185.62	18.45
5	11.29	460.00	.928	10.00	.25	1.42	6.39	146.47	2.08	.96	187.98	18.56
6	10.89	450.00	.928	10.00	.25	1.70	6.63	152.56	2.24	1.15	191.96	18.80
7	10.89	440.01	.928	10.00	.25	1.98	6.94	160.38	2.45	1.34	197.88	19.20
8	10.89	430.01	.928	10.00	.25	2.27	7.33	170.04	2.74	1.54	205.96	19.79
9	10.89	420.01	.928	10.00	.25	2.58	7.80	181.62	3.10	1.74	216.40	20.60
10	10.89	410.01	.928	10.00	.25	2.90	8.36	195.21	3.57	1.96	229.35	21.64
11	10.89	400.01	2.000	10.00	.21	.70	8.38	207.53	3.58	2.19	181.12	22.94
12	10.89	390.01	2.000	10.00	.21	.76	8.40	208.01	3.59	2.37	181.29	18.11
13	10.81	380.01	2.000	10.00	.21	.81	8.42	208.56	3.61	2.55	181.51	18.13
14	10.73	370.01	2.000	10.00	.21	.87	8.44	209.18	3.63	2.73	181.77	18.15
15	10.73	360.01	2.000	10.00	.21	.93	8.46	209.88	3.65	2.92	182.08	18.18
16	10.73	350.01	2.000	10.00	.21	.99	8.49	210.67	3.68	3.10	182.45	18.21
17	10.73	340.01	2.000	10.00	.21	1.04	8.52	211.54	3.70	3.28	182.88	18.25
18	10.61	330.01	2.000	10.00	.21	1.10	8.56	212.50	3.73	3.46	183.38	18.29
19	10.49	320.01	2.000	10.00	.21	1.16	8.60	213.56	3.77	3.65	183.94	18.34
20	10.49	310.01	2.000	10.00	.21	1.22	8.64	214.72	3.81	3.83	184.57	18.39
21	10.49	300.01	2.000	10.00	.21	1.28	8.69	215.98	3.85	4.01	185.28	18.46
22	10.49	290.01	2.000	10.00	.21	1.34	8.74	217.34	3.89	4.20	186.06	18.53
23	10.49	280.01	2.000	10.00	.21	1.40	8.80	218.82	3.94	4.39	186.93	18.61
24	10.49	270.01	2.000	10.00	.21	1.46	8.86	220.41	4.00	4.57	187.88	18.69
25	10.49	260.01	2.000	10.00	.21	1.52	8.92	222.11	4.06	4.76	188.92	18.79
26	10.49	250.01	2.000	10.00	.21	1.58	8.99	223.94	4.12	4.95	190.06	18.89
27	10.49	240.01	2.000	10.00	.21	1.64	9.06	225.89	4.19	5.14	191.29	19.01
28	10.37	230.01	2.000	10.00	.21	1.70	9.14	227.96	4.26	5.33	192.62	19.13
29	10.25	220.01	2.000	10.00	.21	1.76	9.23	230.17	4.34	5.52	194.05	19.26
30	10.09	210.01	2.000	10.00	.21	1.82	9.32	232.50	4.43	5.72	195.59	19.41
31	9.93	200.01	2.000	10.00	.21	1.88	9.41	234.97	4.52	5.91	197.23	19.56

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.11 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.95 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 6.46 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.37		7.00	130.46	2.50		473.22	47.32
2	11.54	490.00	.928	10.00	.25	.70	7.04	159.88	2.52	.47	215.01	21.50
3	11.51	480.00	.928	10.00	.25	1.02	7.12	162.07	2.58	.69	216.56	21.53
4	11.49	470.00	.928	10.00	.25	1.34	7.25	165.65	2.68	.90	219.31	21.66
5	11.29	460.00	.928	10.00	.25	1.66	7.45	170.88	2.83	1.12	223.95	21.93
6	11.09	450.00	.928	10.00	.25	1.98	7.73	177.98	3.05	1.34	230.85	22.39
7	10.89	440.01	.928	10.00	.25	2.31	8.10	187.10	3.34	1.56	240.27	23.08
8	10.89	430.01	.928	10.00	.25	2.65	8.55	198.37	3.73	1.79	252.46	24.03
9	10.89	420.01	.928	10.00	.25	3.01	9.10	211.89	4.22	2.03	267.57	25.25
10	10.89	410.01	.928	10.00	.25	3.38	9.76	227.74	4.85	2.29	277.57	26.76
11	10.89	400.01	2.000	10.00	.21	.81	9.77	242.11	4.87	2.55	281.30	26.76
12	10.89	390.01	2.000	10.00	.21	.88	9.79	242.67	4.89	2.77	281.50	26.76
13	10.81	380.01	2.000	10.00	.21	.95	9.82	243.31	4.91	2.98	281.75	26.76
14	10.73	370.01	2.000	10.00	.21	1.02	9.84	244.04	4.94	3.19	281.75	26.76
15	10.73	360.01	2.000	10.00	.21	1.08	9.87	244.85	4.97	3.40	281.75	26.76
16	10.73	350.01	2.000	10.00	.21	1.15	9.91	245.77	5.00	3.61	281.75	26.76
17	10.73	340.01	2.000	10.00	.21	1.22	9.94	246.78	5.04	3.83	281.75	26.76
18	10.61	330.01	2.000	10.00	.21	1.29	9.99	247.91	5.08	4.04	281.75	26.76
19	10.49	320.01	2.000	10.00	.21	1.35	10.03	249.14	5.13	4.25	281.75	26.76
20	10.49	310.01	2.000	10.00	.21	1.42	10.08	250.49	5.18	4.47	281.75	26.76
21	10.49	300.01	2.000	10.00	.21	1.49	10.14	251.96	5.24	4.68	281.75	26.76
22	10.49	290.01	2.000	10.00	.21	1.56	10.20	253.56	5.30	4.90	281.75	26.76
23	10.49	280.01	2.000	10.00	.21	1.63	10.26	255.28	5.37	5.12	281.75	26.76
24	10.49	270.01	2.000	10.00	.21	1.70	10.33	257.13	5.44	5.33	281.75	26.76
25	10.49	260.01	2.000	10.00	.21	1.77	10.41	259.12	5.52	5.55	281.75	26.76
26	10.49	250.01	2.000	10.00	.21	1.84	10.49	261.25	5.61	5.77	281.75	26.76
27	10.49	240.01	2.000	10.00	.21	1.91	10.58	263.52	5.70	6.00	281.75	26.76
28	10.37	230.01	2.000	10.00	.21	1.98	10.67	265.95	5.80	6.22	281.75	26.76
29	10.25	220.01	2.000	10.00	.21	2.05	10.77	268.52	5.91	6.44	281.75	26.76
30	10.09	210.01	2.000	10.00	.21	2.12	10.87	271.24	6.02	6.67	281.75	26.76
31	9.93	200.01	2.000	10.00	.21	2.20	10.98	274.12	6.15	6.90	281.75	26.76

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.13 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.27 M/SEC
 TOTAL LENGTH OF MAINFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 8.79 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.37		8.00	149.10	3.26		540.82	
2	11.54	490.00	.928	10.00	.25	.80	8.04	182.71	3.30	.54	245.73	54.08
3	11.51	480.00	.928	10.00	.25	1.16	8.13	185.22	3.37	.79	246.04	24.57
4	11.49	470.00	.928	10.00	.25	1.53	8.29	189.31	3.50	1.03	247.50	24.60
5	11.29	460.00	.928	10.00	.25	1.89	8.52	195.29	3.70	1.28	250.63	24.75
6	11.09	450.00	.928	10.00	.25	2.26	8.84	203.40	3.98	1.53	255.94	25.06
7	10.89	440.01	.928	10.00	.25	2.64	9.25	213.82	4.36	1.79	263.82	25.59
8	10.89	430.01	.928	10.00	.25	3.03	9.77	226.70	4.87	2.05	274.59	26.36
9	10.89	420.01	.928	10.00	.25	3.44	10.40	242.15	5.52	2.33	288.52	27.46
10	10.89	410.01	.928	10.00	.25	3.87	11.15	260.27	6.34	2.61	305.78	28.85
11	10.89	400.01	2.000	10.00	.21	.93	11.17	276.70	6.36	2.92	241.48	30.58
12	10.89	390.01	2.000	10.00	.21	1.01	11.19	277.33	6.39	3.16	241.71	24.15
13	10.81	380.01	2.000	10.00	.21	1.08	11.22	278.06	6.42	3.40	241.99	24.17
14	10.73	370.01	2.000	10.00	.21	1.16	11.25	278.89	6.45	3.64	242.35	24.20
15	10.73	360.01	2.000	10.00	.21	1.24	11.28	279.83	6.49	3.89	242.76	24.23
16	10.73	350.01	2.000	10.00	.21	1.32	11.32	280.87	6.53	4.13	243.26	24.28
17	10.73	340.01	2.000	10.00	.21	1.39	11.36	282.03	6.58	4.37	243.83	24.33
18	10.61	330.01	2.000	10.00	.21	1.47	11.41	283.32	6.64	4.62	244.49	24.38
19	10.49	320.01	2.000	10.00	.21	1.55	11.46	284.73	6.70	4.86	245.24	24.45
20	10.49	310.01	2.000	10.00	.21	1.63	11.52	286.27	6.77	5.11	246.08	24.52
21	10.49	300.01	2.000	10.00	.21	1.70	11.59	287.95	6.84	5.35	247.02	24.61
22	10.49	290.01	2.000	10.00	.21	1.78	11.65	289.77	6.92	5.60	248.07	24.70
23	10.49	280.01	2.000	10.00	.21	1.86	11.73	291.74	7.01	5.85	249.22	24.81
24	10.49	270.01	2.000	10.00	.21	1.94	11.81	293.86	7.11	6.10	250.49	24.92
25	10.49	260.01	2.000	10.00	.21	2.02	11.89	296.13	7.21	6.35	251.88	25.05
26	10.49	250.01	2.000	10.00	.21	2.10	11.99	298.56	7.32	6.60	253.39	25.19
27	10.49	240.01	2.000	10.00	.21	2.18	12.09	301.16	7.44	6.85	255.03	25.34
28	10.37	230.01	2.000	10.00	.21	2.26	12.19	303.93	7.58	7.11	256.81	25.50
29	10.25	220.01	2.000	10.00	.21	2.35	12.30	306.87	7.72	7.36	258.71	25.68
30	10.09	210.01	2.000	10.00	.21	2.43	12.42	309.98	7.87	7.62	260.76	25.87
31	9.93	200.01	2.000	10.00	.21	2.51	12.55	313.27	8.03	7.88	262.95	26.08

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.15 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.59 M/SEC
 TOTAL LENGTH OF HANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 11.43 M

MANIFOLD 3 TRACE C

BOTTOM PROFILE

DISTANCE M	DEPTH M
.00	.00
25.00	.00
33.00	.50
40.00	1.50
50.00	3.00
60.00	4.00
70.00	6.00
90.00	8.00
100.00	9.00
125.00	9.20
150.00	9.30
175.00	9.50
200.00	9.80
225.00	9.80
250.00	9.80
275.00	9.90
300.00	10.00
325.00	10.00
350.00	10.50
375.00	10.50
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.10
510.00	11.30

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(H) = DEPTH AT PORT H
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = GEOMETRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT H
- SQ(H) = TOTAL DISCHARGE UP TO PORT N
- Q(H) = DISCHARGE OF PORT N
- QL(N) = DISCHARGE LOAD OR LENGTH OF MANIFOLD
- QDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAU.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

ODES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .40 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .928 H
DL(2) = 10.00 M
D(2) = .25 M
DL(3) = 10.00 H
DEMS = .001
VPIPE = 1.20 M/SEC
FRN = .100
FRP = .100
PORT NO K1 = 11
DIA(K1) = 2.000 H
DL(K1) = 10.00 H
D(K1) = .21 M

PORT NO K2 = 0
DIA(K2) = .000 H
DL(K2) = .00 H
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 H
DL(K3) = .00 H
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K TO DIA(K), DL(K) AND D(K).

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.24	500.00			.37		4.00	74.55	.82		270.41	
2	11.19	490.00	.928	10.00	.25	.40	4.02	91.36	.82	.27	122.87	27.04
3	11.13	480.00	.928	10.00	.25	.58	4.07	92.62	.84	.39	123.03	12.29
4	11.07	470.00	.928	10.00	.25	.76	4.14	94.66	.88	.52	123.76	12.30
5	11.03	460.00	.928	10.00	.25	.95	4.26	97.65	.92	.64	125.33	12.38
6	10.99	450.00	.928	10.00	.25	1.13	4.42	101.71	.99	.77	127.98	12.53
7	10.95	440.00	.928	10.00	.25	1.32	4.63	106.92	1.09	.89	131.92	12.80
8	10.95	430.00	.928	10.00	.25	1.52	4.89	113.36	1.22	1.03	137.30	13.19
9	10.95	420.00	.928	10.00	.25	1.72	5.20	121.08	1.38	1.16	144.27	13.73
10	10.95	410.00	.928	10.00	.25	1.93	5.58	130.14	1.58	1.31	152.90	14.43
11	10.95	400.00	2.000	10.00	.21	.46	5.59	138.36	1.59	1.46	120.75	15.29
12	10.95	390.00	2.000	10.00	.21	.50	5.60	138.67	1.60	1.58	120.86	12.07
13	10.75	380.00	2.000	10.00	.21	.54	5.61	139.05	1.60	1.70	121.01	12.09
14	10.55	370.00	2.000	10.00	.21	.58	5.63	139.47	1.61	1.82	121.19	12.10
15	10.55	360.00	2.000	10.00	.21	.62	5.64	139.94	1.62	1.94	121.40	12.12
16	10.55	350.00	2.000	10.00	.21	.66	5.66	140.46	1.63	2.06	121.65	12.14
17	10.55	340.00	2.000	10.00	.21	.70	5.68	141.04	1.65	2.19	121.94	12.16
18	10.35	330.01	2.000	10.00	.21	.74	5.71	141.69	1.66	2.31	122.27	12.19
19	10.15	320.01	2.000	10.00	.21	.77	5.73	142.40	1.68	2.43	122.65	12.23
20	10.15	310.01	2.000	10.00	.21	.81	5.76	143.17	1.69	2.55	123.07	12.27
21	10.15	300.01	2.000	10.00	.21	.85	5.79	144.01	1.71	2.68	123.54	12.31
22	10.15	290.01	2.000	10.00	.21	.89	5.83	144.92	1.73	2.80	124.07	12.35
23	10.11	280.01	2.000	10.00	.21	.93	5.87	145.91	1.75	2.92	124.65	12.41
24	10.07	270.01	2.000	10.00	.21	.97	5.91	146.97	1.78	3.05	125.28	12.46
25	10.03	260.01	2.000	10.00	.21	1.01	5.95	148.11	1.80	3.17	125.98	12.53
26	9.99	250.01	2.000	10.00	.21	1.05	6.00	149.33	1.83	3.30	126.74	12.60
27	9.95	240.01	2.000	10.00	.21	1.09	6.04	150.63	1.86	3.43	127.56	12.67
28	9.95	230.01	2.000	10.00	.21	1.13	6.10	152.01	1.89	3.55	128.44	12.76
29	9.95	220.01	2.000	10.00	.21	1.17	6.15	153.48	1.93	3.68	129.40	12.84
30	9.95	210.01	2.000	10.00	.21	1.21	6.21	155.03	1.97	3.81	130.42	12.94
31	9.95	200.01	2.000	10.00	.21	1.26	6.28	156.68	2.01	3.94	131.51	13.04

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.07 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.30 M/SEC
 TOTAL LENGTH OF HANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 2.88 M

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	11.24	500.00			.37		1.00	18.64	.05		67.60	
2	11.19	490.00	.928	10.00	.25	.10	1.01	22.85	.05	.07	30.73	6.76
3	11.13	480.00	.928	10.00	.25	.15	1.02	23.18	.05	.10	30.79	3.07
4	11.07	470.00	.928	10.00	.25	.19	1.04	23.70	.05	.13	30.99	3.08
5	11.03	460.00	.928	10.00	.25	.24	1.07	24.46	.06	.16	31.39	3.10
6	10.99	450.00	.928	10.00	.25	.28	1.11	25.48	.06	.19	32.06	3.14
7	10.95	440.00	.928	10.00	.25	.33	1.16	26.79	.07	.22	33.06	3.21
8	10.95	430.00	.928	10.00	.25	.38	1.22	28.40	.08	.26	34.40	3.31
9	10.95	420.00	.928	10.00	.25	.43	1.30	30.33	.09	.29	36.14	3.44
10	10.95	410.00	.928	10.00	.25	.48	1.40	32.60	.10	.33	38.30	3.61
11	10.95	400.00	2.000	10.00	.21	.12	1.40	34.66	.10	.37	30.24	3.83
12	10.95	390.00	2.000	10.00	.21	.13	1.40	34.73	.10	.40	30.27	3.02
13	10.75	380.00	2.000	10.00	.21	.14	1.41	34.86	.10	.43	30.34	3.03
14	10.55	370.00	2.000	10.00	.21	.15	1.41	35.00	.10	.46	30.41	3.03
15	10.55	360.00	2.000	10.00	.21	.16	1.42	35.12	.10	.49	30.47	3.04
16	10.55	350.00	2.000	10.00	.21	.16	1.42	35.25	.10	.52	30.53	3.05
17	10.55	340.00	2.000	10.00	.21	.17	1.43	35.39	.10	.55	30.60	3.05
18	10.35	330.01	2.000	10.00	.21	.18	1.43	35.58	.10	.58	30.71	3.06
19	10.15	320.01	2.000	10.00	.21	.19	1.44	35.79	.11	.61	30.83	3.07
20	10.15	310.01	2.000	10.00	.21	.20	1.45	35.99	.11	.64	30.94	3.08
21	10.15	300.01	2.000	10.00	.21	.21	1.46	36.20	.11	.67	31.06	3.09
22	10.15	290.01	2.000	10.00	.21	.22	1.46	36.42	.11	.70	31.19	3.11
23	10.11	280.01	2.000	10.00	.21	.23	1.47	36.68	.11	.73	31.34	3.12
24	10.07	270.01	2.000	10.00	.21	.24	1.48	36.95	.11	.76	31.50	3.13
25	10.03	260.01	2.000	10.00	.21	.25	1.50	37.24	.11	.80	31.68	3.15
26	9.99	250.01	2.000	10.00	.21	.26	1.51	37.55	.12	.83	31.88	3.17
27	9.95	240.01	2.000	10.00	.21	.27	1.52	37.88	.12	.86	32.09	3.18
28	9.95	230.01	2.000	10.00	.21	.28	1.53	38.23	.12	.89	32.31	3.21
29	9.95	220.01	2.000	10.00	.21	.29	1.55	38.59	.12	.92	32.55	3.23
30	9.95	210.01	2.000	10.00	.21	.30	1.56	38.98	.12	.96	32.80	3.25
31	9.95	200.01	2.000	10.00	.21	.32	1.58	39.40	.13	.99	33.08	3.28

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .33 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .19 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	11.24	500.00			.37		2.00	37.28	.20		135.21	
2	11.19	490.00	.928	10.00	.25	.20	2.01	45.68	.21	.14	61.44	13.52
3	11.13	480.00	.928	10.00	.25	.29	2.03	46.32	.21	.20	61.53	6.14
4	11.07	470.00	.928	10.00	.25	.38	2.07	47.35	.22	.26	61.90	6.15
5	11.03	460.00	.928	10.00	.25	.47	2.13	48.84	.23	.32	62.69	6.19
6	10.99	450.00	.928	10.00	.25	.57	2.21	50.87	.25	.38	64.02	6.27
7	10.95	440.00	.928	10.00	.25	.66	2.31	53.48	.27	.45	65.99	6.40
8	10.95	430.00	.928	10.00	.25	.76	2.44	56.70	.30	.51	68.68	6.60
9	10.95	420.00	.928	10.00	.25	.86	2.60	60.57	.35	.58	72.17	6.87
10	10.95	410.00	.928	10.00	.25	.97	2.79	65.10	.40	.65	76.48	7.22
11	10.95	400.00	2.000	10.00	.21	.93	2.79	69.20	.40	.73	80.40	7.65
12	10.95	390.00	2.000	10.00	.21	.25	2.80	69.36	.40	.79	80.45	6.04
13	10.75	380.00	2.000	10.00	.21	.27	2.81	69.56	.40	.85	80.54	6.05
14	10.55	370.00	2.000	10.00	.21	.29	2.82	69.79	.40	.91	80.64	6.05
15	10.55	360.00	2.000	10.00	.21	.31	2.82	70.02	.41	.97	80.75	6.06
16	10.55	350.00	2.000	10.00	.21	.33	2.83	70.28	.41	1.03	80.87	6.07
17	10.55	340.00	2.000	10.00	.21	.35	2.84	70.57	.41	1.09	81.01	6.09
18	10.35	330.01	2.000	10.00	.21	.37	2.86	70.91	.42	1.15	81.19	6.10
19	10.15	320.01	2.000	10.00	.21	.39	2.87	71.28	.42	1.22	81.39	6.12
20	10.15	310.01	2.000	10.00	.21	.41	2.88	71.66	.42	1.28	81.60	6.14
21	10.15	300.01	2.000	10.00	.21	.43	2.90	72.08	.43	1.34	81.84	6.16
22	10.15	290.01	2.000	10.00	.21	.45	2.92	72.54	.43	1.40	82.10	6.18
23	10.11	280.01	2.000	10.00	.21	.47	2.94	73.03	.44	1.46	82.39	6.21
24	10.07	270.01	2.000	10.00	.21	.49	2.96	73.57	.45	1.53	82.71	6.24
25	10.03	260.01	2.000	10.00	.21	.51	2.98	74.14	.45	1.59	83.06	6.27
26	9.99	250.01	2.000	10.00	.21	.53	3.00	74.75	.46	1.65	83.45	6.31
27	9.95	240.01	2.000	10.00	.21	.55	3.03	75.40	.47	1.71	83.86	6.34
28	9.95	230.01	2.000	10.00	.21	.57	3.05	76.09	.47	1.78	84.30	6.39
29	9.95	220.01	2.000	10.00	.21	.59	3.08	76.83	.48	1.84	84.78	6.43
30	9.95	210.01	2.000	10.00	.21	.61	3.11	77.61	.49	1.91	85.29	6.48
31	9.95	200.01	2.000	10.00	.21	.63	3.14	78.43	.50	1.97	85.83	6.53

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .65 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .73 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	11.24	500.00			.37		3.00	55.91	.46		202.81	
2	11.19	490.00	.928	10.00	.25	.30	3.02	68.52	.46	.20	92.15	20.28
3	11.13	480.00	.928	10.00	.25	.44	3.05	69.47	.47	.29	92.28	9.22
4	11.07	470.00	.928	10.00	.25	.57	3.11	71.00	.49	.39	92.83	9.23
5	11.03	460.00	.928	10.00	.25	.71	3.19	73.25	.52	.48	94.00	9.28
6	10.99	450.00	.928	10.00	.25	.85	3.31	76.29	.56	.57	95.99	9.40
7	10.95	440.00	.928	10.00	.25	.99	3.47	80.20	.61	.67	98.95	9.60
8	10.95	430.00	.928	10.00	.25	1.14	3.67	85.03	.68	.77	102.99	9.89
9	10.95	420.00	.928	10.00	.25	1.29	3.90	90.82	.78	.87	108.21	10.30
10	10.95	410.00	.928	10.00	.25	1.45	4.18	97.62	.89	.98	114.69	10.82
11	10.95	400.00	2.000	10.00	.21	.35	4.19	103.78	.89	1.09	90.57	11.47
12	10.95	390.00	2.000	10.00	.21	.38	4.20	104.02	.90	1.19	90.65	9.06
13	10.95	380.00	2.000	10.00	.21	.41	4.21	104.30	.90	1.28	90.77	9.07
14	10.55	370.00	2.000	10.00	.21	.44	4.22	104.62	.91	1.37	90.91	9.08
15	10.55	360.00	2.000	10.00	.21	.46	4.23	104.97	.91	1.46	91.07	9.09
16	10.55	350.00	2.000	10.00	.21	.49	4.25	105.36	.92	1.55	91.25	9.11
17	10.55	340.00	2.000	10.00	.21	.52	4.26	105.80	.93	1.64	91.47	9.13
18	10.35	330.01	2.000	10.00	.21	.55	4.28	106.29	.93	1.73	91.73	9.15
19	10.15	320.01	2.000	10.00	.21	.58	4.30	106.83	.94	1.82	92.02	9.17
20	10.15	310.01	2.000	10.00	.21	.61	4.32	107.41	.95	1.92	92.33	9.20
21	10.15	300.01	2.000	10.00	.21	.64	4.35	108.04	.96	2.01	92.68	9.23
22	10.15	290.01	2.000	10.00	.21	.67	4.37	108.72	.97	2.10	93.08	9.27
23	10.11	280.01	2.000	10.00	.21	.70	4.40	109.46	.99	2.19	93.51	9.31
24	10.07	270.01	2.000	10.00	.21	.73	4.43	110.26	1.00	2.29	93.99	9.35
25	10.03	260.01	2.000	10.00	.21	.76	4.46	111.11	1.02	2.38	94.51	9.40
26	9.99	250.01	2.000	10.00	.21	.79	4.50	112.03	1.03	2.48	95.08	9.45
27	9.95	240.01	2.000	10.00	.21	.82	4.53	113.01	1.05	2.57	95.70	9.51
28	9.95	230.01	2.000	10.00	.21	.85	4.57	114.04	1.07	2.67	96.36	9.57
29	9.95	220.01	2.000	10.00	.21	.88	4.62	115.14	1.09	2.76	97.08	9.64
30	9.95	210.01	2.000	10.00	.21	.91	4.66	116.31	1.11	2.86	97.84	9.71
31	9.95	200.01	2.000	10.00	.21	.94	4.71	117.54	1.13	2.96	98.66	9.78

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.00 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .97 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 1.62 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00	.28	10.00	.37	.50	5.00	93.19	1.27	.34	338.01	33.80
2	11.19	490.00	.28	10.00	.25	.73	5.03	114.20	1.29	.49	153.58	15.36
3	11.13	480.00	.28	10.00	.25	.95	5.08	118.33	1.32	.65	154.69	15.38
4	11.07	470.00	.28	10.00	.25	1.18	5.18	122.06	1.37	.80	156.65	15.47
5	11.03	460.00	.28	10.00	.25	1.42	5.32	127.13	1.44	.96	159.96	15.67
6	10.99	450.00	.28	10.00	.25	1.65	5.52	133.64	1.55	1.12	164.89	16.00
7	10.95	440.00	.28	10.00	.25	1.90	6.11	141.69	1.70	1.28	171.62	16.49
8	10.95	430.00	.28	10.00	.25	2.15	6.50	151.35	1.90	1.45	180.33	17.16
9	10.95	420.00	.28	10.00	.25	2.42	6.97	162.67	2.16	1.63	191.12	18.03
10	10.95	410.00	.28	10.00	.21	.58	6.98	172.94	2.48	1.82	150.93	19.11
11	10.95	400.00	2.000	10.00	.21	.63	7.00	173.34	2.49	1.98	151.07	15.09
12	10.95	390.00	2.000	10.00	.21	.68	7.01	173.80	2.51	2.13	151.25	15.11
13	10.75	380.00	2.000	10.00	.21	.73	7.03	174.32	2.52	2.28	151.48	15.13
14	10.55	370.00	2.000	10.00	.21	.77	7.05	174.91	2.54	2.43	151.74	15.15
15	10.55	360.00	2.000	10.00	.21	.82	7.08	175.56	2.55	2.58	152.05	15.17
16	10.55	350.00	2.000	10.00	.21	.87	7.10	176.28	2.57	2.73	152.41	15.20
17	10.55	340.00	2.000	10.00	.21	.92	7.13	177.09	2.59	2.89	152.82	15.24
18	10.35	330.01	2.000	10.00	.21	.97	7.17	177.98	2.59	3.04	153.29	15.28
19	10.15	320.01	2.000	10.00	.21	1.02	7.20	178.94	2.62	3.19	153.82	15.33
20	10.15	310.01	2.000	10.00	.21	1.07	7.24	179.99	2.64	3.35	154.41	15.38
21	10.15	300.01	2.000	10.00	.21	1.11	7.28	181.13	2.67	3.50	155.06	15.44
22	10.15	290.01	2.000	10.00	.21	1.16	7.33	182.36	2.70	3.65	155.79	15.51
23	10.11	280.01	2.000	10.00	.21	1.21	7.38	183.69	2.74	3.81	156.58	15.58
24	10.07	270.01	2.000	10.00	.21	1.26	7.44	185.11	2.78	3.97	157.45	15.66
25	10.03	260.01	2.000	10.00	.21	1.31	7.49	186.63	2.82	4.12	158.40	15.75
26	9.99	250.01	2.000	10.00	.21	1.36	7.55	188.26	2.86	4.28	159.42	15.84
27	9.95	240.01	2.000	10.00	.21	1.41	7.62	189.98	2.91	4.44	160.53	15.94
28	9.95	230.01	2.000	10.00	.21	1.47	7.69	191.82	2.96	4.60	161.72	16.05
29	9.95	220.01	2.000	10.00	.21	1.52	7.77	193.76	3.01	4.76	163.00	16.17
30	9.95	210.01	2.000	10.00	.21	1.57	7.84	195.82	3.07	4.93	164.37	16.30
31	9.95	200.01	2.000	10.00	.21				3.14			

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.09 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.62 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 4.49 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(H) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.37		6.00	111.83	1.83		405.62	
2	11.19	400.00	.928	10.00	.25	.60	6.03	137.04	1.85	.41	184.30	40.56
3	11.13	480.00	.928	10.00	.25	.87	6.10	138.92	1.90	.59	184.54	18.43
4	11.07	470.00	.928	10.00	.25	1.15	6.21	141.99	1.97	.77	185.63	18.45
5	11.03	460.00	.928	10.00	.25	1.42	6.39	146.47	2.08	.96	187.98	18.56
6	10.99	450.00	.928	10.00	.25	1.70	6.63	152.55	2.24	1.15	191.95	18.80
7	10.95	440.00	.928	10.00	.25	1.98	6.94	160.36	2.45	1.34	197.86	19.20
8	10.95	430.00	.928	10.00	.25	2.27	7.33	170.02	2.74	1.54	205.94	19.79
9	10.95	420.00	.928	10.00	.25	2.58	7.80	181.61	3.10	1.74	216.39	20.59
10	10.95	410.00	.928	10.00	.25	2.90	8.36	195.20	3.57	1.96	229.33	21.64
11	10.95	400.00	2.000	10.00	.21	2.70	8.38	207.52	3.58	2.19	181.11	22.93
12	10.95	390.00	2.000	10.00	.21	.75	8.40	208.00	3.59	2.37	181.28	18.11
13	10.75	330.00	2.000	10.00	.21	.81	8.41	208.55	3.61	2.55	181.50	18.13
14	10.55	370.00	2.000	10.00	.21	.87	8.44	209.18	3.63	2.73	181.77	18.15
15	10.55	360.00	2.000	10.00	.21	.53	8.46	209.88	3.65	2.92	182.08	18.18
16	10.55	350.00	2.000	10.00	.21	.99	8.49	210.66	3.68	3.10	182.45	18.21
17	10.55	340.00	2.000	10.00	.21	1.04	8.52	211.53	3.70	3.28	182.88	18.24
18	10.35	330.01	2.000	10.00	.21	1.10	8.56	212.50	3.73	3.46	183.37	18.29
19	10.15	320.01	2.000	10.00	.21	1.16	8.60	213.56	3.77	3.65	183.94	18.34
20	10.15	310.01	2.000	10.00	.21	1.22	8.64	214.72	3.81	3.83	184.57	18.39
21	10.15	300.01	2.000	10.00	.21	1.28	8.69	215.98	3.85	4.01	185.28	18.46
22	10.15	290.01	2.000	10.00	.21	1.34	8.74	217.34	3.89	4.20	186.06	18.53
23	10.11	280.01	2.000	10.00	.21	1.40	8.80	218.82	3.94	4.39	186.93	18.61
24	10.07	270.01	2.000	10.00	.21	1.46	8.86	220.41	4.00	4.57	187.88	18.69
25	10.03	260.01	2.000	10.00	.21	1.52	8.92	222.11	4.06	4.76	188.93	18.79
26	9.99	250.01	2.000	10.00	.21	1.58	8.99	223.94	4.12	4.95	190.06	18.89
27	9.95	240.01	2.000	10.00	.21	1.64	9.06	225.80	4.19	5.14	191.29	19.01
28	9.95	230.01	2.000	10.00	.21	1.70	9.14	227.96	4.26	5.33	192.62	19.13
29	9.95	220.01	2.000	10.00	.21	1.76	9.23	230.16	4.34	5.52	194.05	19.26
30	9.95	210.01	2.000	10.00	.21	1.82	9.32	232.50	4.43	5.72	195.58	19.40
31	9.95	200.01	2.000	10.00	.21	1.88	9.41	234.96	4.52	5.91	197.22	19.56

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.11 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.95 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 6.46 M

FLOW CHARACTERISTICS FOR U(1) - 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	OL(N) L/M,SEC
1	11.24	500.00			.37		7.00	130.46	2.50		473.22	
2	11.19	490.00	.928	10.00	.25	.70	7.04	159.88	2.52	.47	215.01	47.32
3	11.13	480.00	.928	10.00	.25	1.02	7.12	162.07	2.58	.69	215.29	21.50
4	11.07	470.00	.928	10.00	.25	1.34	7.25	165.65	2.68	.90	216.56	21.53
5	11.03	460.00	.928	10.00	.25	1.66	7.45	170.88	2.83	1.12	219.31	21.66
6	10.99	450.00	.928	10.00	.25	1.98	7.73	177.97	3.05	1.34	223.94	21.93
7	10.95	440.00	.928	10.00	.25	2.31	8.09	187.09	3.34	1.56	230.83	22.39
8	10.95	430.00	.928	10.00	.25	2.65	8.55	198.36	3.73	1.79	240.26	23.08
9	10.95	420.00	.928	10.00	.25	3.01	9.10	211.88	4.22	2.03	252.45	24.03
10	10.95	410.00	.928	10.00	.25	3.38	9.76	227.73	4.85	2.29	267.55	25.24
11	10.95	400.00	2.000	10.00	.21	.81	9.77	242.10	4.87	2.55	271.29	26.76
12	10.95	390.00	2.000	10.00	.21	.88	9.79	242.66	4.89	2.77	271.49	21.13
13	10.75	380.00	2.000	10.00	.21	.95	9.82	243.30	4.91	2.98	271.74	21.15
14	10.55	370.00	2.000	10.00	.21	1.02	9.84	244.03	4.94	3.19	272.05	21.17
15	10.55	360.00	2.000	10.00	.21	1.08	9.87	244.85	4.97	3.40	272.42	21.21
16	10.55	350.00	2.000	10.00	.21	1.15	9.91	245.76	5.00	3.61	272.85	21.24
17	10.55	340.00	2.000	10.00	.21	1.22	9.94	246.78	5.04	3.83	273.35	21.29
18	10.35	330.01	2.000	10.00	.21	1.29	9.99	247.90	5.08	4.04	273.93	21.34
19	10.15	320.01	2.000	10.00	.21	1.35	10.03	249.14	5.13	4.25	274.59	21.39
20	10.15	310.01	2.000	10.00	.21	1.42	10.08	250.49	5.18	4.47	275.32	21.46
21	10.15	300.01	2.000	10.00	.21	1.49	10.14	251.96	5.24	4.68	276.15	21.53
22	10.15	290.01	2.000	10.00	.21	1.56	10.20	253.55	5.30	4.90	277.06	21.61
23	10.11	280.01	2.000	10.00	.21	1.63	10.26	255.28	5.37	5.12	278.07	21.71
24	10.07	270.01	2.000	10.00	.21	1.70	10.33	257.13	5.44	5.33	279.19	21.81
25	10.03	260.01	2.000	10.00	.21	1.77	10.41	259.12	5.52	5.55	280.40	21.92
26	9.99	250.01	2.000	10.00	.21	1.84	10.49	261.25	5.61	5.77	281.73	22.04
27	9.95	240.01	2.000	10.00	.21	1.91	10.58	263.53	5.70	6.00	283.16	22.17
28	9.95	230.01	2.000	10.00	.21	1.98	10.67	265.94	5.80	6.22	284.71	22.32
29	9.95	220.01	2.000	10.00	.21	2.05	10.77	268.51	5.91	6.44	286.38	22.47
30	9.95	210.01	2.000	10.00	.21	2.12	10.87	271.23	6.02	6.67	288.17	22.64
31	9.95	200.01	2.000	10.00	.21	2.20	10.98	274.11	6.15	6.90	290.08	22.82

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.13 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.27 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 8.79 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	CU(M/SEC)	SO(N) L/SEC	Q(N) L/SEC	GL(N) L/M, SEC
1	11.24	500.00	.928	10.00	.37	.80	8.00	149.10	3.26		540.82	245.73	54.08
2	11.19	490.00	.928	10.00	.25	1.16	8.04	182.72	3.30	.54	245.73	246.04	24.57
3	11.13	480.00	.928	10.00	.25	1.53	8.13	185.22	3.37	.79	246.04	247.50	24.60
4	11.07	470.00	.928	10.00	.25	1.89	8.29	189.31	3.50	1.03	247.50	250.63	24.75
5	11.03	460.00	.928	10.00	.25	2.26	8.52	195.29	3.70	1.28	250.63	255.93	25.06
6	10.99	450.00	.928	10.00	.25	2.64	8.83	203.39	3.98	1.53	255.93	263.80	25.59
7	10.95	440.00	.928	10.00	.25	3.03	9.25	213.81	4.36	1.79	263.80	274.58	26.38
8	10.95	430.00	.928	10.00	.25	3.44	9.77	226.69	4.87	2.05	274.58	288.51	27.46
9	10.95	420.00	.928	10.00	.25	3.87	10.40	242.14	5.52	2.33	288.51	305.77	28.85
10	10.95	410.00	.928	10.00	.25	4.31	11.15	260.26	6.34	2.61	305.77	241.47	30.58
11	10.95	400.00	2.000	10.00	.21	4.77	11.17	276.69	6.36	2.92	241.47	241.70	24.15
12	10.95	390.00	2.000	10.00	.21	5.25	11.19	277.32	6.39	3.16	241.70	241.99	24.17
13	10.75	380.00	2.000	10.00	.21	5.74	11.22	278.06	6.42	3.40	241.99	242.34	24.20
14	10.55	370.00	2.000	10.00	.21	6.24	11.25	278.89	6.45	3.64	242.34	242.76	24.23
15	10.55	360.00	2.000	10.00	.21	6.74	11.28	279.82	6.49	3.89	242.76	243.25	24.28
16	10.55	350.00	2.000	10.00	.21	7.25	11.32	280.87	6.53	4.13	243.25	243.82	24.33
17	10.55	340.00	2.000	10.00	.21	7.77	11.36	282.03	6.58	4.37	243.82	244.48	24.38
18	10.35	330.01	2.000	10.00	.21	8.30	11.41	283.31	6.64	4.62	244.48	245.23	24.45
19	10.15	320.01	2.000	10.00	.21	8.84	11.46	284.73	6.70	4.86	245.23	246.08	24.52
20	10.15	310.01	2.000	10.00	.21	9.39	11.52	286.27	6.77	5.11	246.08	247.02	24.61
21	10.15	300.01	2.000	10.00	.21	9.94	11.59	287.95	6.84	5.35	247.02	248.06	24.70
22	10.15	290.01	2.000	10.00	.21	1.05	11.65	289.77	6.92	5.60	248.06	249.22	24.81
23	10.11	280.01	2.000	10.00	.21	1.16	11.73	291.74	7.01	5.85	249.22	250.49	24.92
24	10.07	270.01	2.000	10.00	.21	1.27	11.81	293.86	7.11	6.10	250.49	251.88	25.05
25	10.03	260.01	2.000	10.00	.21	1.38	11.89	296.13	7.21	6.35	251.88	253.40	25.19
26	9.99	250.01	2.000	10.00	.21	1.49	11.99	298.57	7.32	6.60	253.40	255.04	25.34
27	9.95	240.01	2.000	10.00	.21	1.60	12.09	301.16	7.44	6.85	255.04	256.81	25.50
28	9.95	230.01	2.000	10.00	.21	1.71	12.19	303.93	7.58	7.11	256.81	258.71	25.68
29	9.95	220.01	2.000	10.00	.21	1.82	12.30	306.86	7.72	7.36	258.71	260.76	25.87
30	9.95	210.01	2.000	10.00	.21	1.93	12.42	309.97	7.87	7.62	260.76	262.94	26.08
31	9.95	200.01	2.000	10.00	.21	2.04	12.55	313.26	8.03	7.88	262.94		

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.15 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.59 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 11.48 M

BOTTOM PROFILE

MANIFOLD 4
TRACE A

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	1.00
40.00	2.00
50.00	3.50
62.00	5.00
75.00	6.50
90.00	8.50
100.00	9.00
120.00	9.00
125.00	9.00
150.00	9.50
175.00	10.00
200.00	11.00
210.00	11.50
225.00	12.00
250.00	12.50
275.00	13.00
300.00	13.50
325.00	13.60
350.00	14.00
375.00	14.00
400.00	14.00
450.00	14.00
510.00	14.00

LIST OF SYMBOLS

N = NO OF PORT
 DEPTH(N) = DEPTH AT PORT N
 DIST(N) = DISTANCE FROM SHORE
 DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
 DL(N) = LENGTH BETWEEN PORT N AND N-1
 D(N) = DIAMETER OF PORT N
 V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
 U(N) = DISCHARGE VELOCITY OF PORT N
 FN(N) = CENSIMETRIC FROUDE NO OF JET AT PORT N
 E(N) = TOTAL HEAD AT PORT N
 SQ(N) = TOTAL DISCHARGE UP TO PORT N
 G(N) = DISCHARGE OF PORT N
 QL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
 QDES = DESIGN DISCHARGE FLOW
 VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
 VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
 DENS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
 FRM = DARCY FRICTION FACTOR IN MANIFOLD
 FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
 VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.100 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .50 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .794 M
DL(2) = 10.00 M
D(2) = .22 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRN = .100
FRP = .100
PORT NO K1 = 20
DIA(K1) = 2.000 M
DL(K1) = 10.00 M
D(K1) = .22 M

PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO N = K TO DIA(K), DL(K) AND D(K).

FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	r(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M ² /SEC
1	14.00	500.00			.35		4.00	76.22	.82		247.45	
2	14.00	490.00	.794	10.00	.22	.50	4.04	97.04	.83	.25	95.08	24.74
3	14.00	480.00	.794	10.00	.22	.69	4.11	100.04	.86	.34	95.65	9.51
4	14.00	470.00	.794	10.00	.22	.89	4.23	103.29	.91	.44	96.06	9.56
5	14.00	460.00	.794	10.00	.22	1.08	4.40	107.89	.99	.54	98.27	9.70
6	14.00	450.00	.794	10.00	.22	1.28	4.63	113.86	1.09	.63	102.78	9.93
7	14.00	440.00	.794	10.00	.22	1.49	4.92	121.61	1.24	.74	107.65	10.28
8	14.00	430.00	.794	10.00	.22	1.71	5.28	130.92	1.42	.84	114.02	10.77
9	14.00	420.00	.794	10.00	.22	1.94	5.71	141.85	1.66	.96	121.07	11.40
10	14.00	410.00	1.598	10.00	.22	.54	5.73	138.71	1.67	1.08	135.67	12.20
11	14.00	400.00	1.598	10.00	.22	.61	5.75	139.27	1.68	1.22	135.86	13.57
12	14.00	390.00	1.598	10.00	.22	.67	5.77	139.95	1.70	1.35	136.13	13.59
13	14.00	380.00	1.598	10.00	.22	.74	5.80	140.76	1.72	1.49	136.48	13.61
14	14.00	370.00	1.598	10.00	.22	.81	5.84	141.71	1.74	1.62	136.94	13.65
15	14.00	360.00	1.598	10.00	.22	.88	5.88	142.81	1.76	1.76	137.51	13.69
16	14.00	350.00	1.598	10.00	.22	.95	5.93	144.08	1.79	1.90	138.21	13.75
17	14.00	340.00	1.598	10.00	.22	1.02	5.98	145.51	1.82	2.04	139.04	13.82
18	13.84	330.00	1.598	10.00	.22	1.09	6.04	147.13	1.86	2.18	140.01	13.90
19	13.68	320.00	1.598	10.00	.22	1.16	6.11	148.93	1.90	2.32	141.15	14.00
20	13.64	310.00	2.000	10.00	.22	.78	6.17	148.86	1.92	2.46	144.36	14.11
21	13.60	300.00	2.000	10.00	.22	.83	6.17	149.60	1.94	2.60	144.77	14.48
22	13.56	290.00	2.000	10.00	.22	.87	6.20	150.42	1.96	2.75	145.24	14.48
23	13.36	280.00	2.000	10.00	.22	.92	6.23	151.32	1.98	2.89	145.79	14.52
24	13.16	270.01	2.000	10.00	.22	.97	6.27	152.31	2.00	3.04	146.40	14.58
25	12.96	260.01	2.000	10.00	.22	1.01	6.31	153.38	2.03	3.18	147.08	14.64
26	12.76	250.01	2.000	10.00	.22	1.06	6.35	154.54	2.06	3.33	147.84	14.71
27	12.56	240.01	2.000	10.00	.22	1.11	6.40	155.80	2.09	3.48	148.68	14.78
28	12.36	230.01	2.000	10.00	.22	1.16	6.46	157.15	2.12	3.63	149.59	14.87
29	12.16	220.02	2.000	10.00	.22	1.20	6.51	158.59	2.16	3.78	150.59	14.96
30	11.83	210.02	2.000	10.00	.22	1.25	6.57	160.14	2.20	3.93	151.68	15.06
31	11.49	200.03	2.000	10.00	.22	1.30	6.64	161.79	2.24	4.08	152.86	15.17

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.23 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.35 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 3.19 M

1 FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SG(N) CUM/SEC	O(N) L/SEC	OL(N) L/M, SEC
1	14.00	500.00			.35		1.00	19.06	.05		61.86	
2	14.00	490.00	.794	10.00	.22	.13	1.01	24.48	.05	.06	23.77	6.10
3	14.00	480.00	.794	10.00	.22	.17	1.03	25.01	.05	.09	23.91	2.39
4	14.00	470.00	.794	10.00	.22	.22	1.06	25.82	.06	.11	24.24	2.39
5	14.00	460.00	.794	10.00	.22	.27	1.10	26.97	.06	.13	24.82	2.42
6	14.00	450.00	.794	10.00	.22	.32	1.16	28.49	.07	.16	25.69	2.48
7	14.00	440.00	.794	10.00	.22	.37	1.23	30.40	.08	.18	26.91	2.57
8	14.00	430.00	.794	10.00	.22	.43	1.32	32.73	.09	.21	28.51	2.60
9	14.00	420.00	.794	10.00	.22	.48	1.43	35.49	.10	.24	30.49	2.85
10	14.00	410.00	1.598	10.00	.22	.13	1.43	34.68	.10	.27	33.92	3.05
11	14.00	400.00	1.598	10.00	.22	.15	1.44	34.82	.11	.30	33.97	3.39
12	14.00	390.00	1.598	10.00	.22	.17	1.44	34.99	.11	.34	34.03	3.40
13	14.00	380.00	1.598	10.00	.22	.19	1.45	35.19	.11	.37	34.12	3.40
14	14.00	370.00	1.598	10.00	.22	.20	1.46	35.43	.11	.41	34.24	3.41
15	14.00	360.00	1.598	10.00	.22	.22	1.47	35.70	.11	.44	34.38	3.42
16	14.00	350.00	1.598	10.00	.22	.24	1.48	36.02	.11	.47	34.55	3.44
17	14.00	340.00	1.598	10.00	.22	.25	1.50	36.38	.11	.51	34.76	3.46
18	13.84	330.00	1.598	10.00	.22	.27	1.51	36.81	.12	.54	35.03	3.48
19	13.68	320.00	1.598	10.00	.22	.29	1.53	37.28	.12	.58	35.33	3.50
20	13.64	310.00	2.000	10.00	.22	.20	1.54	37.27	.12	.61	36.14	3.53
21	13.60	300.00	2.000	10.00	.22	.21	1.54	37.46	.12	.65	36.25	3.61
22	13.56	290.00	2.000	10.00	.22	.22	1.55	37.67	.12	.69	36.37	3.63
23	13.36	280.00	2.000	10.00	.22	.23	1.56	37.92	.12	.72	36.54	3.64
24	13.16	270.01	2.000	10.00	.22	.24	1.57	38.20	.13	.76	36.72	3.65
25	12.96	260.01	2.000	10.00	.22	.25	1.58	38.49	.13	.80	36.92	3.67
26	12.76	250.01	2.000	10.00	.22	.27	1.60	38.81	.13	.83	37.14	3.69
27	12.56	240.01	2.000	10.00	.22	.28	1.61	39.15	.13	.87	37.37	3.71
28	12.36	230.01	2.000	10.00	.22	.29	1.62	39.51	.13	.91	37.63	3.74
29	12.16	220.02	2.000	10.00	.22	.30	1.64	39.90	.14	.95	37.90	3.76
30	11.83	210.02	2.000	10.00	.22	.31	1.66	40.33	.14	.98	38.22	3.79
31	11.49	200.03	2.000	10.00	.22	.33	1.67	40.79	.14	1.02	38.56	3.82

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .34 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .21 M

1. FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		2.00	38.11	.20		123.72	
2	14.00	490.00	.794	10.00	.22	.25	2.02	48.07	.21	.12	47.54	12.37
3	14.00	480.00	.794	10.00	.22	.35	2.06	50.02	.22	.17	47.82	4.75
4	14.00	470.00	.794	10.00	.22	.44	2.12	51.65	.23	.22	48.48	4.78
5	14.00	460.00	.794	10.00	.22	.54	2.20	53.94	.25	.27	49.63	4.85
6	14.00	450.00	.794	10.00	.22	.64	2.32	56.98	.27	.32	51.30	4.96
7	14.00	440.00	.794	10.00	.22	.74	2.46	60.80	.31	.37	53.83	5.14
8	14.00	430.00	.794	10.00	.22	.85	2.64	65.46	.36	.42	57.01	5.38
9	14.00	420.00	.794	10.00	.22	.97	2.86	70.98	.42	.48	60.98	5.70
10	14.00	410.00	1.598	10.00	.22	.27	2.86	69.35	.42	.54	67.84	6.10
11	14.00	400.00	1.598	10.00	.22	.30	2.87	69.63	.42	.61	67.83	6.78
12	14.00	390.00	1.598	10.00	.22	.34	2.89	69.97	.42	.68	68.06	6.70
13	14.00	380.00	1.598	10.00	.22	.37	2.90	70.38	.43	.74	68.24	6.91
14	14.00	370.00	1.598	10.00	.22	.41	2.92	70.85	.43	.81	68.47	6.92
15	14.00	360.00	1.598	10.00	.22	.44	2.94	71.41	.44	.88	68.76	6.85
16	14.00	350.00	1.598	10.00	.22	.47	2.96	72.04	.45	.95	69.10	6.88
17	14.00	340.00	1.598	10.00	.22	.51	2.99	72.76	.46	1.02	69.52	6.91
18	13.84	330.00	1.598	10.00	.22	.54	3.02	73.57	.47	1.09	70.02	6.95
19	13.68	320.00	1.598	10.00	.22	.58	3.06	74.48	.48	1.16	70.50	7.00
20	13.64	310.00	2.000	10.00	.22	.39	3.07	74.45	.48	1.23	72.20	7.06
21	13.60	300.00	2.000	10.00	.22	.41	3.08	74.82	.48	1.30	72.41	7.22
22	13.56	290.00	2.000	10.00	.22	.44	3.10	75.23	.49	1.37	72.65	7.24
23	13.36	280.00	2.000	10.00	.22	.46	3.12	75.70	.50	1.45	72.93	7.26
24	13.16	270.01	2.000	10.00	.22	.48	3.14	76.20	.50	1.52	73.25	7.29
25	12.96	260.01	2.000	10.00	.22	.51	3.16	76.75	.51	1.59	73.60	7.32
26	12.76	250.01	2.000	10.00	.22	.53	3.18	77.34	.52	1.67	73.99	7.36
27	12.56	240.01	2.000	10.00	.22	.55	3.21	77.98	.52	1.74	74.42	7.40
28	12.36	230.01	2.000	10.00	.22	.58	3.23	78.66	.53	1.81	74.89	7.44
29	12.16	220.02	2.000	10.00	.22	.60	3.26	79.40	.54	1.89	75.40	7.48
30	11.83	210.02	2.000	10.00	.22	.63	3.29	80.19	.55	1.96	75.96	7.54
31	11.49	200.03	2.000	10.00	.22	.65	3.32	81.03	.56	2.04	76.57	7.60

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.12 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .67 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .81 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		3.00	57.17	.46		185.58	
2	14.00	490.00	.794	10.00	.22	.37	3.03	73.45	.47	.19	71.31	18.56
3	14.00	480.00	.794	10.00	.22	.52	3.08	75.03	.49	.26	71.74	7.13
4	14.00	470.00	.794	10.00	.22	.66	3.17	77.47	.51	.33	72.72	7.17
5	14.00	460.00	.794	10.00	.22	.81	3.30	80.92	.56	.40	74.45	7.27
6	14.00	450.00	.794	10.00	.22	.96	3.47	85.47	.61	.48	77.08	7.45
7	14.00	440.00	.794	10.00	.22	1.12	3.69	91.21	.70	.55	80.74	7.71
8	14.00	430.00	.794	10.00	.22	1.28	3.96	98.19	.80	.63	85.52	8.07
9	14.00	420.00	.794	10.00	.22	1.45	4.28	106.47	.94	.72	91.48	8.55
10	14.00	410.00	1.598	10.00	.22	.40	4.30	104.03	.94	.81	101.76	9.15
11	14.00	400.00	1.598	10.00	.22	.46	4.31	104.45	.95	.91	101.90	10.18
12	14.00	390.00	1.598	10.00	.22	.51	4.33	104.96	.96	1.01	102.10	10.19
13	14.00	380.00	1.598	10.00	.22	.56	4.35	105.57	.97	1.12	102.36	10.21
14	14.00	370.00	1.598	10.00	.22	.61	4.38	106.28	.98	1.22	102.71	10.24
15	14.00	360.00	1.598	10.00	.22	.66	4.41	107.11	.99	1.32	103.13	10.27
16	14.00	350.00	1.598	10.00	.22	.71	4.45	108.06	1.01	1.42	103.65	10.31
17	14.00	340.00	1.598	10.00	.22	.76	4.49	109.13	1.03	1.53	104.28	10.37
18	13.84	330.00	1.598	10.00	.22	.81	4.53	110.35	1.05	1.63	105.01	10.43
19	13.68	320.00	1.598	10.00	.22	.87	4.58	111.71	1.07	1.74	105.87	10.50
20	13.64	310.00	2.000	10.00	.22	.59	4.60	111.65	1.08	1.84	108.27	10.59
21	13.60	300.00	2.000	10.00	.22	.62	4.62	112.21	1.09	1.95	108.59	10.83
22	13.56	290.00	2.000	10.00	.22	.66	4.65	112.82	1.10	2.06	108.94	10.86
23	13.56	280.00	2.000	10.00	.22	.69	4.67	113.51	1.11	2.17	109.36	10.89
24	13.16	270.01	2.000	10.00	.22	.73	4.70	114.25	1.13	2.28	109.92	10.94
25	12.96	260.01	2.000	10.00	.22	.76	4.73	115.06	1.14	2.39	110.34	10.98
26	12.76	250.01	2.000	10.00	.22	.80	4.77	115.94	1.16	2.50	110.91	11.03
27	12.56	240.01	2.000	10.00	.22	.83	4.80	116.88	1.18	2.61	111.54	11.09
28	12.36	230.01	2.000	10.00	.22	.87	4.84	117.90	1.20	2.72	112.23	11.15
29	12.16	220.02	2.000	10.00	.22	.90	4.89	118.98	1.22	2.83	112.98	11.22
30	11.83	210.02	2.000	10.00	.22	.94	4.93	120.15	1.24	2.95	113.81	11.30
31	11.49	200.03	2.000	10.00	.22	.97	4.98	121.40	1.26	3.06	114.70	11.38

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.17 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.01 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 1.80 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	R(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		5.00	95.28	1.27		309.31	
2	14.00	490.00	.794	10.00	.22	.62	5.05	122.42	1.30	.31	118.85	30.93
3	14.00	480.00	.794	10.00	.22	.87	5.14	125.05	1.35	.43	119.56	11.89
4	14.00	470.00	.794	10.00	.22	1.11	5.29	129.12	1.43	.55	121.20	11.96
5	14.00	460.00	.794	10.00	.22	1.35	5.50	134.86	1.54	.67	124.08	12.12
6	14.00	450.00	.794	10.00	.22	1.60	5.79	142.45	1.71	.92	128.47	12.41
7	14.00	440.00	.794	10.00	.22	1.86	6.15	152.01	1.93	.92	134.57	12.85
8	14.00	430.00	.794	10.00	.22	2.13	6.60	163.64	2.22	1.06	142.53	13.46
9	14.00	420.00	.794	10.00	.22	2.42	7.14	177.44	2.60	1.20	152.46	14.25
10	14.00	410.00	1.598	10.00	.22	.67	7.16	173.38	2.61	1.35	169.59	15.25
11	14.00	400.00	1.598	10.00	.22	.76	7.19	174.08	2.63	1.52	169.83	16.96
12	14.00	390.00	1.598	10.00	.22	.84	7.22	174.93	2.65	1.69	170.16	16.98
13	14.00	380.00	1.598	10.00	.22	.93	7.25	175.95	2.68	1.86	170.60	17.02
14	14.00	370.00	1.598	10.00	.22	1.01	7.30	177.14	2.72	2.03	171.18	17.06
15	14.00	360.00	1.598	10.00	.22	1.10	7.35	178.52	2.75	2.20	171.80	17.12
16	14.00	350.00	1.598	10.00	.22	1.18	7.41	180.10	2.80	2.37	172.76	17.19
17	14.00	340.00	1.598	10.00	.22	1.27	7.48	181.89	2.85	2.55	173.79	17.28
18	13.84	330.00	1.598	10.00	.22	1.36	7.55	183.91	2.91	2.72	175.02	17.38
19	13.68	320.00	1.598	10.00	.22	1.44	7.64	186.16	2.98	2.90	176.43	17.50
20	13.64	310.00	2.000	10.00	.22	.98	7.67	186.07	3.00	3.07	180.44	17.64
21	13.60	300.00	2.000	10.00	.22	1.04	7.71	188.99	3.03	3.25	180.95	18.04
22	13.56	290.00	2.000	10.00	.22	1.09	7.75	188.01	3.06	3.43	181.55	18.10
23	13.36	280.00	2.000	10.00	.22	1.15	7.79	189.14	3.09	3.62	182.22	18.15
24	13.16	270.01	2.000	10.00	.22	1.21	7.84	190.37	3.13	3.80	182.99	18.22
25	12.96	260.01	2.000	10.00	.22	1.27	7.89	191.71	3.17	3.98	183.88	18.30
26	12.76	250.01	2.000	10.00	.22	1.33	7.94	193.16	3.22	4.16	184.78	18.38
27	12.56	240.01	2.000	10.00	.22	1.39	8.00	194.72	3.26	4.35	185.82	18.48
28	12.36	230.01	2.000	10.00	.22	1.44	8.07	196.41	3.32	4.53	186.96	18.58
29	12.16	220.02	2.000	10.00	.22	1.50	8.14	198.21	3.38	4.72	188.21	18.70
30	11.83	210.02	2.000	10.00	.22	1.56	8.21	200.14	3.44	4.91	189.57	18.82
31	11.49	200.03	2.000	10.00	.22	1.62	8.29	202.20	3.51	5.10	191.04	18.95

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.29 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.68 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 4.97 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		6.00	114.33	1.83		371.17	
2	14.00	490.00	.794	10.00	.22	.75	6.06	146.91	1.87	.37	142.62	37.12
3	14.00	480.00	.794	10.00	.22	1.04	6.17	150.06	1.94	.51	143.47	14.26
4	14.00	470.00	.794	10.00	.22	1.33	6.35	154.94	2.05	.66	145.44	14.35
5	14.00	460.00	.794	10.00	.22	1.62	6.60	161.83	2.22	.80	148.90	14.54
6	14.00	450.00	.794	10.00	.22	1.92	6.95	170.94	2.46	.95	154.16	14.80
7	14.00	440.00	.794	10.00	.22	2.23	7.39	182.41	2.78	1.11	161.48	15.42
8	14.00	430.00	.794	10.00	.22	2.56	7.92	196.37	3.20	1.27	171.03	16.15
9	14.00	420.00	.794	10.00	.22	2.91	8.57	212.93	3.74	1.44	182.95	17.10
10	14.00	410.00	1.598	10.00	.22	.81	8.59	208.06	3.76	1.62	203.51	18.30
11	14.00	400.00	1.598	10.00	.22	.91	8.62	208.90	3.79	1.82	203.79	20.35
12	14.00	390.00	1.598	10.00	.22	1.01	8.66	209.92	3.82	2.03	204.19	20.38
13	14.00	380.00	1.598	10.00	.22	1.11	8.71	211.14	3.86	2.23	204.72	20.42
14	14.00	370.00	1.598	10.00	.22	1.22	8.76	212.56	3.91	2.44	205.41	20.47
15	14.00	360.00	1.598	10.00	.22	1.32	8.82	214.22	3.97	2.64	206.27	20.54
16	14.00	350.00	1.598	10.00	.22	1.42	8.89	216.12	4.03	2.85	207.31	20.63
17	14.00	340.00	1.598	10.00	.22	1.52	8.97	218.27	4.10	3.06	208.55	20.73
18	13.84	330.00	1.598	10.00	.22	1.63	9.07	220.69	4.19	3.26	210.02	20.86
19	13.68	320.00	1.598	10.00	.22	1.73	9.17	223.39	4.28	3.48	211.71	21.00
20	13.64	310.00	2.000	10.00	.22	1.17	9.21	223.27	4.32	3.69	216.52	21.17
21	13.60	300.00	2.000	10.00	.22	1.24	9.25	224.39	4.36	3.90	217.14	21.65
22	13.56	290.00	2.000	10.00	.22	1.31	9.29	225.61	4.40	4.12	217.85	21.71
23	13.36	280.00	2.000	10.00	.22	1.38	9.35	226.96	4.45	4.34	218.66	21.79
24	13.16	270.01	2.000	10.00	.22	1.45	9.40	228.44	4.51	4.56	219.57	21.87
25	12.96	260.01	2.000	10.00	.22	1.52	9.46	230.04	4.57	4.78	220.59	21.96
26	12.76	250.01	2.000	10.00	.22	1.59	9.53	231.78	4.63	5.00	221.72	22.06
27	12.56	240.01	2.000	10.00	.22	1.66	9.60	233.65	4.70	5.22	222.97	22.17
28	12.36	230.01	2.000	10.00	.22	1.73	9.68	235.67	4.78	5.44	224.34	22.30
29	12.16	220.02	2.000	10.00	.22	1.80	9.77	237.83	4.86	5.67	225.83	22.43
30	11.83	210.02	2.000	10.00	.22	1.88	9.86	240.14	4.95	5.89	227.46	22.58
31	11.49	200.03	2.000	10.00	.22	1.95	9.95	242.61	5.05	6.12	229.22	22.75

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.35 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.02 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 7.15 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.35		7.00	133.39	2.50		433.03	
2	14.00	490.00	.794	10.00	.87		7.07	171.30	2.55	.43	166.30	43.30
3	14.00	480.00	.794	10.00	1.21		7.20	175.07	2.64	.60	167.38	16.64
4	14.00	470.00	.794	10.00	1.55		7.41	180.77	2.79	.77	169.68	16.74
5	14.00	460.00	.794	10.00	1.89		7.70	188.81	3.02	.94	173.72	16.07
6	14.00	450.00	.794	10.00	2.24		8.10	199.43	3.35	1.11	179.86	17.37
7	14.00	440.00	.794	10.00	2.61		8.62	212.81	3.78	1.29	188.30	17.00
8	14.00	430.00	.794	10.00	2.99		9.25	229.10	4.36	1.48	199.54	18.84
9	14.00	420.00	.794	10.00	3.39		10.00	248.42	5.09	1.68	213.44	19.05
10	14.00	410.00	1.598	10.00	.94		10.03	242.73	5.12	1.89	237.43	21.34
11	14.00	400.00	1.598	10.00	1.06		10.06	243.71	5.16	2.13	237.76	23.74
12	14.00	390.00	1.598	10.00	1.18		10.10	244.90	5.20	2.37	238.22	23.78
13	14.00	380.00	1.598	10.00	1.30		10.16	244.32	5.26	2.60	239.85	23.82
14	14.00	370.00	1.598	10.00	1.42		10.22	247.99	5.32	2.84	239.65	23.88
15	14.00	360.00	1.598	10.00	1.54		10.29	249.92	5.40	3.08	240.65	23.96
16	14.00	350.00	1.598	10.00	1.66		10.37	252.14	5.48	3.32	241.86	24.06
17	14.00	340.00	1.598	10.00	1.78		10.47	254.65	5.59	3.57	243.31	24.19
18	13.84	330.00	1.598	10.00	1.90		10.58	257.47	5.70	3.81	245.02	24.33
19	13.68	320.00	1.598	10.00	2.02		10.70	260.62	5.83	4.05	246.99	24.50
20	13.64	310.00	2.000	10.00	1.37		10.74	260.48	5.88	4.30	252.61	24.70
21	13.60	300.00	2.000	10.00	1.45		10.79	261.78	5.93	4.55	253.33	25.26
22	13.56	290.00	2.000	10.00	1.53		10.84	263.21	5.99	4.81	254.16	25.33
23	13.36	280.00	2.000	10.00	1.61		10.90	264.78	6.06	5.06	255.10	25.42
24	13.16	270.01	2.000	10.00	1.69		10.97	266.50	6.13	5.32	256.16	25.51
25	12.96	260.01	2.000	10.00	1.77		11.04	268.37	6.21	5.57	257.35	25.62
26	12.76	250.01	2.000	10.00	1.86		11.12	270.40	6.30	5.83	258.67	25.73
27	12.56	240.01	2.000	10.00	1.94		11.20	272.58	6.40	6.09	260.12	25.87
28	12.36	230.01	2.000	10.00	2.02		11.29	274.93	6.50	6.35	261.71	26.01
29	12.16	220.02	2.000	10.00	2.11		11.39	277.46	6.61	6.61	263.45	26.17
30	11.85	210.02	2.000	10.00	2.19		11.50	280.15	6.74	6.87	265.35	26.35
31	11.49	200.03	2.000	10.00	2.27		11.61	283.03	6.87	7.14	267.40	26.53

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.41 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.36 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 9.73 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		8.00	152.45	3.26		494.80	
2	14.00	490.00	.794	10.00	.22	1.00	8.08	195.88	3.33	.49	190.16	49.40
3	14.00	480.00	.794	10.00	.22	1.38	8.23	200.08	3.45	.69	191.30	19.02
4	14.00	470.00	.794	10.00	.22	1.77	8.46	206.59	3.65	.88	193.92	19.13
5	14.00	460.00	.794	10.00	.22	2.16	8.80	215.78	3.95	1.07	198.53	19.30
6	14.00	450.00	.794	10.00	.22	2.56	9.26	227.92	4.37	1.27	205.55	19.85
7	14.00	440.00	.794	10.00	.22	2.98	9.85	243.22	4.94	1.47	215.31	20.56
8	14.00	430.00	.794	10.00	.22	3.41	10.57	261.83	5.69	1.69	228.04	21.53
9	14.00	410.00	1.598	10.00	.22	3.87	11.43	283.91	6.65	1.92	243.93	22.80
10	14.00	400.00	1.598	10.00	.22	4.08	11.46	277.41	6.69	2.16	271.35	24.30
11	14.00	390.00	1.598	10.00	.22	1.21	11.50	278.53	6.74	2.43	271.72	27.13
12	14.00	390.00	1.598	10.00	.22	1.35	11.55	270.89	6.80	2.70	272.25	27.17
13	14.00	380.00	1.598	10.00	.22	1.49	11.61	281.51	6.87	2.98	272.97	27.23
14	14.00	370.00	1.598	10.00	.22	1.62	11.68	283.42	6.95	3.25	273.88	27.30
15	14.00	360.00	1.598	10.00	.22	1.76	11.76	285.63	7.05	3.52	275.02	27.30
16	14.00	350.00	1.598	10.00	.22	1.90	11.86	288.16	7.16	3.80	276.41	27.50
17	14.00	340.00	1.598	10.00	.22	2.03	11.96	291.02	7.30	4.08	278.07	27.64
18	13.84	330.00	1.598	10.00	.22	2.17	12.09	294.25	7.45	4.35	280.02	27.81
19	13.68	320.00	1.598	10.00	.22	2.31	12.22	297.85	7.62	4.63	282.28	28.00
20	13.60	310.00	2.000	10.00	.22	1.57	12.27	297.69	7.68	4.92	284.69	28.23
21	13.60	300.00	2.000	10.00	.22	1.66	12.33	299.17	7.75	5.20	286.52	28.47
22	13.56	290.00	2.000	10.00	.22	1.75	12.39	300.81	7.83	5.49	290.46	28.95
23	13.36	280.00	2.000	10.00	.22	1.84	12.46	302.61	7.91	5.78	291.54	29.05
24	13.16	270.01	2.000	10.00	.22	1.93	12.54	304.57	8.01	6.08	292.75	29.15
25	12.96	260.01	2.000	10.00	.22	2.03	12.62	306.71	8.11	6.37	294.11	29.28
26	12.76	250.01	2.000	10.00	.22	2.12	12.71	309.02	8.23	6.66	295.61	29.41
27	12.56	240.01	2.000	10.00	.22	2.22	12.80	311.52	8.36	6.96	297.27	29.56
28	12.36	230.01	2.000	10.00	.22	2.31	12.91	314.20	8.49	7.26	299.00	29.73
29	12.16	220.02	2.000	10.00	.22	2.41	13.02	317.08	8.64	7.55	301.08	29.91
30	11.83	210.02	2.000	10.00	.22	2.50	13.14	320.16	8.80	7.86	303.24	30.11
31	11.49	200.03	2.000	10.00	.22	2.60	13.27	323.44	8.97	8.16	305.59	30.32

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.46 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.70 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 12.70 M

BOTTOM PROFILE

DISTANCE M	DEPTH M	MANIFOLD 4 TRACE B
.00	.00	
25.00	.00	
40.00	1.00	
50.00	3.00	
60.00	4.50	
65.00	5.00	
75.00	6.50	
90.00	7.00	
100.00	8.50	
125.00	9.00	
150.00	9.10	
175.00	9.50	
200.00	9.80	
225.00	10.20	
250.00	10.50	
275.00	10.50	
300.00	10.50	
325.00	10.50	
350.00	10.80	
375.00	10.80	
400.00	11.00	
425.00	11.00	
450.00	11.00	
475.00	11.50	
510.00	11.60	

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = LENSIMETRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SO(N) = TOTAL DISCHARGE UP TO PORT N
- Q(N) = DISCHARGE OF PORT N
- QL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
- GDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.100 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .50 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .794 M
DL(2) = 10.00 M
D(2) = .22 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 20
DIA(K1) = 2.000 M
DL(K1) = 10.00 M
D(K1) = .22 M

PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2). IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO N = K TO DIA(K), DL(K) AND D(K).

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.35		4.00	76.22	.82		247.45	
2	11.54	490.00	.794	10.00	.22	.50	4.04	97.94	.83	.25	95.08	24.74
3	11.51	480.00	.794	10.00	.22	.69	4.11	100.04	.86	.34	95.65	9.51
4	11.49	470.00	.794	10.00	.22	.89	4.23	103.30	.91	.44	96.97	9.57
5	11.29	460.00	.794	10.00	.22	1.08	4.40	107.91	.99	.54	98.28	9.70
6	11.09	450.00	.794	10.00	.22	1.28	4.63	113.98	1.09	.63	102.80	9.93
7	10.89	440.01	.794	10.00	.22	1.49	4.93	121.64	1.24	.74	107.69	10.28
8	10.89	430.01	.794	10.00	.22	1.71	5.28	130.95	1.42	.84	114.05	10.77
9	10.89	420.01	.794	10.00	.22	1.94	5.71	141.99	1.66	.96	122.00	11.41
10	10.89	410.01	1.598	10.00	.22	.54	5.73	138.74	1.67	1.08	135.71	12.20
11	10.89	400.01	1.598	10.00	.22	.61	5.75	139.30	1.69	1.22	135.90	13.57
12	10.89	390.01	1.598	10.00	.22	.67	5.78	139.98	1.70	1.35	136.16	13.50
13	10.81	380.01	1.598	10.00	.22	.74	5.81	140.79	1.72	1.49	136.52	13.62
14	10.73	370.01	1.598	10.00	.22	.81	5.84	141.75	1.74	1.63	136.88	13.65
15	10.73	360.01	1.598	10.00	.22	.88	5.88	142.85	1.76	1.76	137.55	13.70
16	10.73	350.01	1.598	10.00	.22	.95	5.93	144.12	1.79	1.90	138.25	13.76
17	10.73	340.01	1.598	10.00	.22	1.02	5.98	145.55	1.82	2.04	139.08	13.82
18	10.61	330.01	1.598	10.00	.22	1.09	6.05	147.17	1.86	2.18	140.05	13.81
19	10.49	320.01	1.598	10.00	.22	1.16	6.11	148.97	1.91	2.32	141.19	14.01
20	10.49	310.01	2.000	10.00	.22	.78	6.14	148.89	1.92	2.46	144.39	14.12
21	10.49	300.01	2.000	10.00	.22	.83	6.17	149.63	1.94	2.60	144.80	14.44
22	10.49	290.01	2.000	10.00	.22	.88	6.20	150.45	1.96	2.75	145.28	14.48
23	10.49	280.01	2.000	10.00	.22	.92	6.23	151.35	1.98	2.89	145.81	14.53
24	10.49	270.01	2.000	10.00	.22	.97	6.27	152.33	2.00	3.04	146.42	14.58
25	10.49	260.01	2.000	10.00	.22	1.01	6.31	153.39	2.03	3.19	147.09	14.64
26	10.49	250.01	2.000	10.00	.22	1.06	6.36	154.55	2.06	3.33	147.84	14.71
27	10.49	240.01	2.000	10.00	.22	1.11	6.40	155.80	2.09	3.48	148.67	14.78
28	10.37	230.01	2.000	10.00	.22	1.16	6.46	157.14	2.12	3.63	149.59	14.87
29	10.25	220.01	2.000	10.00	.22	1.20	6.51	158.59	2.16	3.78	150.58	14.96
30	10.09	210.01	2.000	10.00	.22	1.25	6.57	160.13	2.20	3.93	151.67	15.06
31	9.93	200.01	2.000	10.00	.22	1.30	6.64	161.77	2.24	4.08	152.84	15.17

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.23 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M.
 VELOCITY IN OUTFALL PIPELINE = 1.35 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 3.18 M

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.35		1.00	19.06	.05		61.86	
2	11.54	490.00	.794	10.00	.22	.13	1.01	24.49	.05	.06	23.78	6.10
3	11.51	480.00	.794	10.00	.22	.17	1.03	25.02	.05	.09	23.03	2.38
4	11.49	470.00	.794	10.00	.22	.22	1.06	25.84	.06	.11	24.26	2.30
5	11.29	460.00	.794	10.00	.22	.27	1.10	27.03	.06	.13	24.88	2.43
6	11.09	450.00	.794	10.00	.22	.32	1.16	28.59	.07	.18	25.80	2.40
7	10.89	440.01	.794	10.00	.22	.37	1.24	30.54	.08	.18	27.06	2.58
8	10.89	430.01	.794	10.00	.22	.43	1.33	32.86	.09	.21	28.64	2.71
9	10.89	420.01	.794	10.00	.22	.49	1.43	35.62	.10	.24	30.63	2.86
10	10.89	410.01	1.598	10.00	.22	.14	1.44	34.81	.11	.27	34.05	3.06
11	10.89	400.01	1.598	10.00	.22	.15	1.44	34.95	.11	.30	34.10	3.41
12	10.89	390.01	1.598	10.00	.22	.17	1.45	35.12	.11	.34	34.17	3.41
13	10.81	380.01	1.598	10.00	.22	.19	1.46	35.34	.11	.37	34.27	3.42
14	10.73	370.01	1.598	10.00	.22	.20	1.47	35.59	.11	.41	34.40	3.43
15	10.73	360.01	1.598	10.00	.22	.22	1.48	35.87	.11	.44	34.54	3.44
16	10.73	350.01	1.598	10.00	.22	.24	1.49	36.18	.11	.48	34.71	3.45
17	10.73	340.01	1.598	10.00	.22	.25	1.50	36.54	.12	.51	34.92	3.47
18	10.61	330.01	1.598	10.00	.22	.27	1.52	36.96	.12	.55	35.18	3.49
19	10.49	320.01	1.598	10.00	.22	.29	1.54	37.43	.12	.58	35.48	3.52
20	10.49	310.01	2.000	10.00	.22	.20	1.54	37.41	.12	.62	36.29	3.55
21	10.49	300.01	2.000	10.00	.22	.21	1.55	37.60	.12	.65	36.39	3.63
22	10.49	290.01	2.000	10.00	.22	.22	1.56	37.80	.12	.69	36.51	3.64
23	10.49	280.01	2.000	10.00	.22	.23	1.57	38.03	.12	.73	36.64	3.65
24	10.49	270.01	2.000	10.00	.22	.24	1.58	38.27	.13	.76	36.79	3.66
25	10.49	260.01	2.000	10.00	.22	.25	1.59	38.54	.13	.80	36.96	3.68
26	10.49	250.01	2.000	10.00	.22	.27	1.60	38.83	.13	.84	37.15	3.70
27	10.49	240.01	2.000	10.00	.22	.28	1.61	39.14	.13	.87	37.36	3.71
28	10.37	230.01	2.000	10.00	.22	.29	1.62	39.50	.13	.91	37.60	3.74
29	10.25	220.01	2.000	10.00	.22	.30	1.64	39.88	.14	.95	37.87	3.76
30	10.09	210.01	2.000	10.00	.22	.31	1.65	40.28	.14	.99	38.16	3.79
31	9.93	200.01	2.000	10.00	.22	.33	1.67	40.72	.14	1.02	38.48	3.82

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .34 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .21 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00	.794	10.00	.35	.25	2.00	38.11	.20	.12	123.72	12.37
2	11.54	490.00	.794	10.00	.22	.35	2.02	48.97	.21	.17	47.54	4.75
3	11.51	480.00	.794	10.00	.22	.44	2.06	50.03	.22	.22	47.83	4.78
4	11.49	470.00	.794	10.00	.22	.54	2.12	51.66	.23	.27	48.49	4.85
5	11.29	460.00	.794	10.00	.22	.64	2.20	53.98	.25	.32	49.67	4.97
6	11.09	450.00	.794	10.00	.22	.74	2.32	57.03	.27	.37	51.44	5.14
7	10.89	440.01	.794	10.00	.22	.85	2.46	60.87	.31	.42	53.90	5.30
8	10.89	430.01	.794	10.00	.22	.97	2.64	65.53	.36	.48	57.08	5.71
9	10.89	420.01	.794	10.00	.22	.27	2.86	71.04	.42	.54	61.05	6.11
10	10.89	410.01	1.598	10.00	.22	.30	2.87	69.42	.42	.61	67.90	6.70
11	10.89	400.01	1.598	10.00	.22	.34	2.88	69.70	.42	.68	68.00	6.80
12	10.89	390.01	1.598	10.00	.22	.37	2.89	70.04	.43	.74	68.13	6.81
13	10.81	380.01	1.598	10.00	.22	.41	2.90	70.45	.43	.81	68.32	6.83
14	10.73	370.01	1.598	10.00	.22	.44	2.92	70.94	.44	.88	68.55	6.86
15	10.73	360.01	1.598	10.00	.22	.47	2.94	71.49	.44	.95	68.84	6.88
16	10.73	350.01	1.598	10.00	.22	.51	2.97	72.12	.45	1.02	69.18	6.88
17	10.73	340.01	1.598	10.00	.22	.54	2.99	72.84	.46	1.09	69.60	6.92
18	10.61	330.01	1.598	10.00	.22	.58	3.03	73.65	.47	1.16	70.09	7.01
19	10.49	320.01	1.598	10.00	.22	.39	3.06	74.56	.48	1.23	70.67	7.07
20	10.49	310.01	2.000	10.00	.22	.41	3.07	74.52	.48	1.30	72.27	7.23
21	10.49	300.01	2.000	10.00	.22	.44	3.09	74.89	.49	1.37	72.48	7.25
22	10.49	290.01	2.000	10.00	.22	.46	3.10	75.30	.49	1.45	72.71	7.25
23	10.49	280.01	2.000	10.00	.22	.48	3.12	75.75	.50	1.52	72.98	7.27
24	10.49	270.01	2.000	10.00	.22	.51	3.14	76.24	.50	1.59	73.28	7.30
25	10.49	260.01	2.000	10.00	.22	.53	3.16	76.77	.51	1.67	73.62	7.33
26	10.49	250.01	2.000	10.00	.22	.55	3.18	77.35	.52	1.74	74.00	7.36
27	10.49	240.01	2.000	10.00	.22	.58	3.20	77.98	.52	1.82	74.41	7.40
28	10.37	230.01	2.000	10.00	.22	.60	3.23	78.66	.53	1.89	74.88	7.44
29	10.25	220.01	2.000	10.00	.22	.63	3.26	79.38	.54	1.97	75.38	7.49
30	10.09	210.01	2.000	10.00	.22	.65	3.29	80.17	.55	2.04	75.93	7.54
31	9.93	200.01	2.000	10.00	.22		3.32	81.00	.56		76.53	7.59

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.12 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .67 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .81 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.35		3.00	57.17	.46		185.58	
2	11.54	490.00	.794	10.00	.22	.37	3.03	73.46	.47	.19	71.31	18.56
3	11.51	480.00	.794	10.00	.22	.52	3.09	75.03	.49	.26	71.74	7.13
4	11.49	470.00	.794	10.00	.22	.66	3.17	77.48	.51	.33	72.73	7.17
5	11.29	460.00	.794	10.00	.22	.81	3.30	80.94	.56	.40	74.47	7.27
6	11.09	450.00	.794	10.00	.22	.96	3.47	85.50	.62	.48	77.12	7.45
7	10.89	440.01	.794	10.00	.22	1.12	3.69	91.25	.70	.55	80.79	7.71
8	10.89	430.01	.794	10.00	.22	1.28	3.96	98.23	.80	.63	85.56	8.08
9	10.89	420.01	.794	10.00	.22	1.45	4.29	106.51	.94	.72	91.52	8.56
10	10.89	410.01	1.598	10.00	.22	.40	4.30	104.07	.94	.81	101.80	9.15
11	10.89	400.01	1.598	10.00	.22	.46	4.31	104.49	.95	.91	101.94	10.18
12	10.89	390.01	1.598	10.00	.22	.51	4.33	105.00	.96	1.01	102.14	10.19
13	10.81	380.01	1.598	10.00	.22	.56	4.35	105.62	.97	1.12	102.41	10.21
14	10.73	370.01	1.598	10.00	.22	.61	4.38	106.34	.98	1.22	102.76	10.24
15	10.73	360.01	1.598	10.00	.22	.66	4.41	107.16	.99	1.32	103.19	10.28
16	10.73	350.01	1.598	10.00	.22	.71	4.45	108.11	1.01	1.43	103.71	10.32
17	10.73	340.01	1.598	10.00	.22	.76	4.49	109.19	1.03	1.53	104.33	10.37
18	10.61	330.01	1.598	10.00	.22	.81	4.54	110.40	1.05	1.63	105.07	10.43
19	10.49	320.01	1.598	10.00	.22	.87	4.59	111.76	1.07	1.74	105.92	10.51
20	10.49	310.01	2.000	10.00	.22	.59	4.61	111.70	1.08	1.84	108.32	10.59
21	10.49	300.01	2.000	10.00	.22	.62	4.63	112.26	1.09	1.95	108.63	10.83
22	10.49	290.01	2.000	10.00	.22	.66	4.65	112.87	1.10	2.06	108.99	10.86
23	10.49	280.01	2.000	10.00	.22	.69	4.68	113.54	1.11	2.17	109.39	10.90
24	10.49	270.01	2.000	10.00	.22	.73	4.70	114.28	1.13	2.28	109.84	10.94
25	10.49	260.01	2.000	10.00	.22	.76	4.73	115.08	1.14	2.39	110.35	10.98
26	10.49	250.01	2.000	10.00	.22	.80	4.77	115.94	1.16	2.50	110.91	11.03
27	10.49	240.01	2.000	10.00	.22	.83	4.80	116.88	1.18	2.61	111.53	11.09
28	10.37	230.01	2.000	10.00	.22	.87	4.84	117.89	1.20	2.72	112.22	11.15
29	10.25	220.01	2.000	10.00	.22	.90	4.89	118.97	1.22	2.83	112.97	11.22
30	10.09	210.01	2.000	10.00	.22	.94	4.93	120.14	1.24	2.95	113.79	11.30
31	9.93	200.01	2.000	10.00	.22	.97	4.98	121.37	1.26	3.06	114.67	11.38

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.18 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.01 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 1.80 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N)		DIST(N)		DIA(N)		DL(N)		D(N)		V(N)		U(N)		FN(N)		E(N)		SQ(N)		Q(N)		QL(N)	
	M	M	M	M	M	M	M	M	M	M	M/SEC	M/SEC	M/SEC	M/SEC	M/SEC	M	M	M	M	CUM/SEC	L/SEC	L/SEC	L/SEC	L/SEC
1	11.57	500.00							.35				5.00		95.28	1.27					309.31			30.93
2	11.54	490.00	.794	10.00	.22			.62				5.05		122.42	1.30					.31		118.85		11.89
3	11.51	480.00	.794	10.00	.22			.87				5.14		125.05	1.35					.43		119.56		11.96
4	11.49	470.00	.794	10.00	.22			1.11				5.29		129.12	1.43					.55		121.21		12.12
5	11.29	460.00	.794	10.00	.22			1.35				5.50		134.87	1.54					.67		124.10		12.41
6	11.09	450.00	.794	10.00	.22			1.60				5.79		142.47	1.71					.79		128.49		12.85
7	10.89	440.01	.794	10.00	.22			1.86				6.16		152.04	1.93					.92		134.60		13.46
8	10.89	430.01	.794	10.00	.22			2.13				6.61		163.67	2.22					1.20		142.55		14.26
9	10.89	420.01	.794	10.00	.22			2.42				7.14		177.47	2.60					1.52		152.49		15.25
10	10.89	410.01	1.598	10.00	.22			.67				7.16		173.41	2.61					1.35		169.62		16.96
11	10.89	400.01	1.598	10.00	.22			.76				7.19		174.11	2.63					1.52		169.85		16.96
12	10.89	390.01	1.598	10.00	.22			.84				7.22		174.96	2.66					1.69		170.19		17.09
13	10.81	380.01	1.598	10.00	.22			.93				7.26		175.98	2.68					1.86		170.63		17.09
14	10.73	370.01	1.598	10.00	.22			1.01				7.30		177.17	2.72					2.03		171.21		17.06
15	10.73	360.01	1.598	10.00	.22			1.10				7.35		178.55	2.75					2.20		171.92		17.12
16	10.73	350.01	1.598	10.00	.22			1.18				7.41		180.13	2.80					2.37		172.79		17.19
17	10.73	340.01	1.598	10.00	.22			1.27				7.48		181.92	2.85					2.55		173.83		17.28
18	10.61	330.01	1.598	10.00	.22			1.36				7.56		183.94	2.91					2.72		175.05		17.38
19	10.49	320.01	1.598	10.00	.22			1.44				7.64		186.19	2.98					2.90		176.46		17.50
20	10.49	310.01	2.000	10.00	.22			.98				7.67		186.10	3.00					3.07		180.47		17.65
21	10.49	300.01	2.000	10.00	.22			1.04				7.71		187.02	3.03					3.25		180.98		18.05
22	10.49	290.01	2.000	10.00	.22			1.09				7.75		188.04	3.06					3.43		181.57		18.10
23	10.49	280.01	2.000	10.00	.22			1.15				7.79		189.16	3.09					3.62		182.24		18.16
24	10.49	270.01	2.000	10.00	.22			1.21				7.84		190.39	3.13					3.80		183.00		18.22
25	10.49	260.01	2.000	10.00	.22			1.27				7.89		191.72	3.17					3.98		183.84		18.30
26	10.49	250.01	2.000	10.00	.22			1.33				7.94		193.16	3.22					4.16		184.78		18.38
27	10.49	240.01	2.000	10.00	.22			1.39				8.00		194.72	3.26					4.35		185.82		18.48
28	10.37	230.01	2.000	10.00	.22			1.44				8.07		196.40	3.32					4.54		186.96		18.58
29	10.25	220.01	2.000	10.00	.22			1.50				8.14		198.20	3.38					4.72		188.20		18.70
30	10.09	210.01	2.000	10.00	.22			1.56				8.21		200.13	3.44					4.91		189.55		18.82
31	9.93	200.01	2.000	10.00	.22			1.62				8.29		202.18	3.51					5.10		191.02		18.96

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.29 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.69 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 4.97 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.35		6.00	114.33	1.83		371.17	
2	11.54	490.00	.794	10.00	.22	.75	6.06	146.91	1.87	.37	142.62	37.12
3	11.51	480.00	.794	10.00	.22	1.04	6.17	150.06	1.94	.51	143.47	14.26
4	11.49	470.00	.794	10.00	.22	1.33	6.35	154.95	2.05	.66	145.44	14.35
5	11.29	460.00	.794	10.00	.22	1.62	6.60	161.84	2.22	.80	148.01	14.54
6	11.09	450.00	.794	10.00	.22	1.92	6.95	170.96	2.46	.95	154.18	14.89
7	10.89	440.01	.794	10.00	.22	2.23	7.39	182.43	2.78	1.11	161.50	15.42
8	10.89	430.01	.794	10.00	.22	2.56	7.93	196.40	3.20	1.27	171.05	16.15
9	10.89	420.01	.794	10.00	.22	2.91	8.57	212.95	3.74	1.44	182.97	17.11
10	10.89	410.01	.794	10.00	.22	.81	8.59	208.98	3.76	1.62	203.53	18.30
11	10.89	400.01	1.598	10.00	.22	.91	8.62	208.92	3.79	1.82	203.81	20.35
12	10.89	390.01	1.598	10.00	.22	1.01	8.66	209.94	3.82	2.03	204.21	20.38
13	10.81	380.01	1.598	10.00	.22	1.11	8.71	211.16	3.86	2.23	204.75	20.42
14	10.73	370.01	1.598	10.00	.22	1.22	8.76	212.59	3.91	2.44	205.44	20.47
15	10.73	360.01	1.598	10.00	.22	1.32	8.82	214.25	3.97	2.64	206.29	20.54
16	10.73	350.01	1.598	10.00	.22	1.42	8.89	216.14	4.03	2.85	207.34	20.63
17	10.73	340.01	1.598	10.00	.22	1.52	8.97	218.30	4.10	3.06	208.58	20.73
18	10.61	330.01	1.598	10.00	.22	1.63	9.07	220.72	4.19	3.27	210.04	20.86
19	10.49	320.01	1.598	10.00	.22	1.73	9.17	223.41	4.29	3.48	211.74	21.00
20	10.49	310.01	2.000	10.00	.22	1.17	9.21	223.30	4.32	3.69	216.55	21.17
21	10.49	300.01	2.000	10.00	.22	1.24	9.25	224.41	4.36	3.90	217.16	21.65
22	10.49	290.01	2.000	10.00	.22	1.31	9.30	225.63	4.40	4.12	217.87	21.72
23	10.49	280.01	2.000	10.00	.22	1.38	9.35	226.98	4.45	4.34	218.68	21.79
24	10.49	270.01	2.000	10.00	.22	1.45	9.40	228.45	4.51	4.56	219.59	21.87
25	10.49	260.01	2.000	10.00	.22	1.52	9.46	230.05	4.57	4.78	220.60	21.96
26	10.49	250.01	2.000	10.00	.22	1.59	9.53	231.78	4.63	5.00	221.72	22.06
27	10.49	240.01	2.000	10.00	.22	1.66	9.60	233.65	4.70	5.22	222.97	22.17
28	10.37	230.01	2.000	10.00	.22	1.73	9.68	235.67	4.78	5.44	224.33	22.30
29	10.25	220.01	2.000	10.00	.22	1.80	9.77	237.83	4.86	5.67	225.82	22.43
30	10.09	210.01	2.000	10.00	.22	1.88	9.85	240.14	4.95	5.89	227.45	22.58
31	9.93	200.01	2.000	10.00	.22	1.95	9.95	242.60	5.05	6.12	229.20	22.74

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.35 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.02 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 7.15 M

FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.35		7.00	133.39	2.50		433.03	
2	11.54	490.00	.794	10.00	.22	.87	7.07	171.39	2.55	.43	166.39	43.30
3	11.51	480.00	.794	10.00	.22	1.21	7.20	175.07	2.64	.60	167.39	16.64
4	11.49	470.00	.794	10.00	.22	1.55	7.41	180.77	2.79	.77	169.68	16.74
5	11.29	460.00	.794	10.00	.22	1.89	7.70	188.82	3.03	.94	173.73	16.97
6	11.09	450.00	.794	10.00	.22	2.24	8.11	199.44	3.35	1.11	179.87	17.37
7	10.89	440.01	.794	10.00	.22	2.61	8.62	212.83	3.78	1.29	188.41	17.99
8	10.89	430.01	.794	10.00	.22	2.99	9.25	229.12	4.36	1.48	199.55	18.84
9	10.89	420.01	.794	10.00	.22	3.39	10.00	248.44	5.10	1.68	213.46	19.06
10	10.89	410.01	1.598	10.00	.22	.94	10.03	242.75	5.12	1.89	237.45	21.35
11	10.89	400.01	1.598	10.00	.22	1.06	10.06	243.73	5.16	2.13	237.78	23.75
12	10.89	390.01	1.598	10.00	.22	1.18	10.11	244.92	5.20	2.37	238.24	23.78
13	10.81	380.01	1.598	10.00	.22	1.30	10.16	246.35	5.26	2.60	238.87	23.82
14	10.73	370.01	1.598	10.00	.22	1.42	10.22	248.02	5.32	2.84	239.67	23.89
15	10.73	360.01	1.598	10.00	.22	1.54	10.29	249.95	5.40	3.08	240.67	23.97
16	10.73	350.01	1.598	10.00	.22	1.66	10.37	252.16	5.49	3.32	241.88	24.07
17	10.73	340.01	1.598	10.00	.22	1.78	10.47	254.67	5.59	3.57	243.33	24.19
18	10.61	330.01	1.598	10.00	.22	1.90	10.58	257.49	5.70	3.81	245.04	24.33
19	10.49	320.01	1.598	10.00	.22	2.02	10.70	260.64	5.83	4.05	247.02	24.50
20	10.49	310.01	2.000	10.00	.22	1.37	10.74	260.51	5.88	4.30	252.63	24.70
21	10.49	300.01	2.000	10.00	.22	1.45	10.79	261.80	5.93	4.55	253.35	25.26
22	10.49	290.01	2.000	10.00	.22	1.53	10.84	263.23	5.99	4.81	254.17	25.33
23	10.49	280.01	2.000	10.00	.22	1.61	10.90	264.80	6.06	5.06	255.11	25.42
24	10.49	270.01	2.000	10.00	.22	1.69	10.97	266.51	6.13	5.32	256.17	25.51
25	10.49	260.01	2.000	10.00	.22	1.77	11.04	268.38	6.21	5.57	257.35	25.62
26	10.49	250.01	2.000	10.00	.22	1.86	11.12	270.40	6.30	5.83	258.67	25.74
27	10.49	240.01	2.000	10.00	.22	1.94	11.20	272.58	6.40	6.09	260.12	25.87
28	10.37	230.01	2.000	10.00	.22	2.02	11.29	274.93	6.50	6.35	261.71	26.01
29	10.25	220.01	2.000	10.00	.22	2.11	11.39	277.45	6.61	6.61	263.45	26.17
30	10.09	210.01	2.000	10.00	.22	2.19	11.50	280.15	6.74	6.87	265.34	26.34
31	9.93	200.01	2.000	10.00	.22	2.27	11.61	283.02	6.87	7.14	267.39	26.53

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.41 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.36 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 9.72 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	CUM/SEC	SO(N) L/SFC	Q(N) L/M ² SFC	QL(N)
1	11.57	500.00			.35		8.00	152.45	3.26		494.89		
2	11.54	490.00	.794	10.00	.22	1.00	8.08	195.88	3.33	.49	190.16	49.49	
3	11.51	480.00	.794	10.00	.22	1.38	8.23	200.08	3.45	.69	191.30	19.02	
4	11.49	470.00	.794	10.00	.22	1.77	8.46	206.59	3.65	.88	193.92	19.13	
5	11.29	460.00	.794	10.00	.22	2.16	8.80	215.79	3.95	1.07	198.54	19.30	
6	11.09	450.00	.794	10.00	.22	2.56	9.26	227.93	4.37	1.27	205.57	19.85	
7	10.89	440.01	.794	10.00	.22	2.98	9.85	243.23	4.94	1.47	215.32	20.56	
8	10.89	430.01	.794	10.00	.22	3.41	10.57	261.85	5.69	1.69	228.06	21.53	
9	10.89	420.01	.794	10.00	.22	3.88	11.43	283.92	6.66	1.92	243.95	22.81	
10	10.89	410.01	1.598	10.00	.22	1.08	11.46	277.43	6.69	2.16	271.37	24.40	
11	10.89	400.01	1.598	10.00	.22	1.21	11.50	278.55	6.74	2.43	271.74	27.14	
12	10.89	390.01	1.598	10.00	.22	1.35	11.55	279.91	6.80	2.70	272.27	27.17	
13	10.81	380.01	1.598	10.00	.22	1.49	11.61	281.53	6.87	2.98	272.98	27.23	
14	10.73	370.01	1.598	10.00	.22	1.62	11.68	283.44	6.95	3.25	273.90	27.30	
15	10.73	360.01	1.598	10.00	.22	1.76	11.76	285.65	7.05	3.52	275.04	27.39	
16	10.73	350.01	1.598	10.00	.22	1.90	11.86	288.18	7.16	3.80	276.43	27.50	
17	10.73	340.01	1.598	10.00	.22	2.03	11.97	291.04	7.30	4.08	278.09	27.64	
18	10.61	330.01	1.598	10.00	.22	2.17	12.09	294.27	7.45	4.35	280.04	27.81	
19	10.49	320.01	1.598	10.00	.22	2.31	12.23	297.86	7.62	4.63	282.30	28.00	
20	10.49	310.01	2.000	10.00	.22	1.57	12.28	297.71	7.68	4.92	288.71	28.23	
21	10.49	300.01	2.000	10.00	.22	1.66	12.33	299.19	7.75	5.20	289.53	28.87	
22	10.49	290.01	2.000	10.00	.22	1.75	12.39	300.83	7.83	5.49	290.48	28.95	
23	10.49	280.01	2.000	10.00	.22	1.84	12.46	302.62	7.91	5.78	291.55	29.05	
24	10.49	270.01	2.000	10.00	.22	1.94	12.54	304.58	8.01	6.08	292.76	29.16	
25	10.49	260.01	2.000	10.00	.22	2.03	12.62	306.71	8.12	6.37	294.11	29.28	
26	10.49	250.01	2.000	10.00	.22	2.12	12.71	309.02	8.23	6.66	295.61	29.41	
27	10.37	240.01	2.000	10.00	.22	2.22	12.80	311.52	8.36	6.96	297.27	29.56	
28	10.37	230.01	2.000	10.00	.22	2.31	12.91	314.20	8.49	7.26	299.09	29.73	
29	10.25	220.01	2.000	10.00	.22	2.41	13.02	317.08	8.64	7.55	301.07	29.91	
30	10.09	210.01	2.000	10.00	.22	2.50	13.14	320.16	8.80	7.86	303.24	30.11	
31	9.93	200.01	2.000	10.00	.22	2.60	13.27	323.44	8.97	8.16	305.58	30.32	

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.46 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.70 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 12.70 M

BOTTOM PROFILE

MANIFOLD 4
TRACE C

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	.50
40.00	1.50
50.00	3.00
60.00	4.00
70.00	6.00
90.00	8.00
100.00	9.00
125.00	9.20
150.00	9.30
175.00	9.50
200.00	9.80
225.00	9.80
250.00	9.80
275.00	9.90
300.00	10.00
325.00	10.00
350.00	10.50
375.00	10.50
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.10
510.00	11.30

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIAM(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DIMENSIONLESS FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SO(N) = TOTAL DISCHARGE UP TO PORT N
- Q(N) = DISCHARGE OF PORT N
- QL(N) = DISCHARGE LOAD PR LENGTH OF MANIFOLD
- QDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD .

QDES = 4.100 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .50 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .794 M
DL(2) = 10.00 M
D(2) = .22 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 20
DIA(K1) = 2.000 M
DL(K1) = 10.00 M
D(K1) = .22 M

PORT NO K2 = 0
DIA(K2) = .000 M
DL(K2) = .00 M
D(K2) = .00 M

PORT NO K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
D(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS D(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO N = K TO DIA(K), DL(K) AND D(K).

FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.35		4.00	76.22	.82		247.45	
2	11.19	490.00	.794	10.00	.22	.50	4.04	97.04	.83	.25	95.08	24.74
3	11.13	480.00	.794	10.00	.22	.69	4.11	100.04	.86	.34	95.65	9.51
4	11.07	470.00	.794	10.00	.22	.89	4.23	103.30	.91	.44	96.97	9.57
5	11.03	460.00	.794	10.00	.22	1.08	4.40	107.90	.99	.54	99.28	9.70
6	10.99	450.00	.794	10.00	.22	1.28	4.63	113.97	1.09	.63	102.79	9.93
7	10.95	440.00	.794	10.00	.22	1.49	4.92	121.62	1.24	.74	107.67	10.28
8	10.95	430.00	.794	10.00	.22	1.71	5.28	130.93	1.42	.84	114.04	10.77
9	10.95	420.00	.794	10.00	.22	1.94	5.71	141.97	1.66	.96	121.98	11.40
10	10.95	410.00	1.598	10.00	.22	.54	5.73	138.72	1.67	1.08	135.69	12.20
11	10.95	400.00	1.598	10.00	.22	.61	5.75	139.28	1.69	1.22	135.88	13.57
12	10.95	390.00	1.598	10.00	.22	.67	5.77	139.96	1.70	1.35	136.14	13.59
13	10.75	380.00	1.598	10.00	.22	.74	5.80	140.78	1.72	1.49	136.51	13.61
14	10.55	370.00	1.598	10.00	.22	.81	5.84	141.74	1.74	1.63	136.97	13.65
15	10.55	360.00	1.598	10.00	.22	.88	5.88	142.85	1.76	1.76	137.54	13.70
16	10.55	350.00	1.598	10.00	.22	.95	5.93	144.11	1.79	1.90	138.24	13.75
17	10.55	340.00	1.598	10.00	.22	1.02	5.98	145.54	1.82	2.04	139.07	13.82
18	10.35	330.01	1.598	10.00	.22	1.09	6.05	147.16	1.86	2.18	140.05	13.91
19	10.15	320.01	1.598	10.00	.22	1.16	6.11	148.97	1.91	2.32	141.18	14.00
20	10.15	310.01	2.000	10.00	.22	.78	6.14	148.89	1.92	2.46	144.30	14.12
21	10.15	300.01	2.000	10.00	.22	.83	6.17	149.63	1.94	2.60	144.80	14.44
22	10.15	290.01	2.000	10.00	.22	.87	6.20	150.45	1.96	2.75	145.27	14.48
23	10.11	280.01	2.000	10.00	.22	.92	6.23	151.35	1.98	2.89	145.81	14.53
24	10.07	270.01	2.000	10.00	.22	.97	6.27	152.33	2.00	3.04	146.42	14.58
25	10.03	260.01	2.000	10.00	.22	1.01	6.31	153.40	2.03	3.18	147.10	14.64
26	9.99	250.01	2.000	10.00	.22	1.06	6.36	154.55	2.06	3.33	147.85	14.71
27	9.95	240.01	2.000	10.00	.22	1.11	6.40	155.80	2.09	3.48	148.68	14.78
28	9.95	230.01	2.000	10.00	.22	1.16	6.46	157.14	2.12	3.63	149.59	14.87
29	9.95	220.01	2.000	10.00	.22	1.20	6.51	158.58	2.16	3.78	150.58	14.96
30	9.95	210.01	2.000	10.00	.22	1.25	6.57	160.12	2.20	3.93	151.66	15.06
31	9.95	200.01	2.000	10.00	.22	1.30	6.63	161.76	2.24	4.08	152.83	15.17

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.23 CUM/SFC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.35 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 3.18 M

1 FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.35		1.00	19.06	.05		61.86	
2	11.19	490.00	.794	10.00	.22	.13	1.01	24.50	.05	.06	23.78	6.19
3	11.13	480.00	.794	10.00	.22	.17	1.03	25.04	.05	.09	23.94	2.38
4	11.07	470.00	.794	10.00	.22	.22	1.06	25.86	.06	.11	24.28	2.30
5	11.03	460.00	.794	10.00	.22	.27	1.10	27.02	.06	.13	24.86	2.43
6	10.99	450.00	.794	10.00	.22	.32	1.16	28.54	.07	.16	25.75	2.40
7	10.95	440.00	.794	10.00	.22	.37	1.23	30.46	.08	.18	26.98	2.57
8	10.95	430.00	.794	10.00	.22	.43	1.32	32.79	.09	.21	28.57	2.70
9	10.95	420.00	.794	10.00	.22	.48	1.43	35.55	.10	.24	30.55	2.86
10	10.95	410.00	1.598	10.00	.22	.13	1.43	34.74	.10	.27	33.98	3.06
11	10.95	400.00	1.598	10.00	.22	.15	1.44	34.88	.11	.30	34.03	3.40
12	10.95	390.00	1.598	10.00	.22	.17	1.45	35.05	.11	.34	34.10	3.40
13	10.75	380.00	1.598	10.00	.22	.19	1.45	35.29	.11	.37	34.22	3.41
14	10.55	370.00	1.598	10.00	.22	.20	1.47	35.56	.11	.41	34.36	3.42
15	10.55	360.00	1.598	10.00	.22	.22	1.48	35.83	.11	.44	34.51	3.44
16	10.55	350.00	1.598	10.00	.22	.24	1.49	36.15	.11	.48	34.68	3.45
17	10.55	340.00	1.598	10.00	.22	.25	1.50	36.51	.11	.51	34.89	3.47
18	10.35	330.01	1.598	10.00	.22	.27	1.52	36.94	.12	.55	35.16	3.49
19	10.15	320.01	1.598	10.00	.22	.29	1.54	37.42	.12	.58	35.48	3.52
20	10.15	310.01	2.000	10.00	.22	.20	1.54	37.40	.12	.62	36.28	3.55
21	10.15	300.01	2.000	10.00	.22	.21	1.55	37.59	.12	.65	36.38	3.63
22	10.15	290.01	2.000	10.00	.22	.22	1.56	37.79	.12	.69	36.50	3.64
23	10.11	280.01	2.000	10.00	.22	.23	1.57	38.02	.12	.73	36.64	3.65
24	10.07	270.01	2.000	10.00	.22	.24	1.58	38.28	.13	.76	36.79	3.66
25	10.03	260.01	2.000	10.00	.22	.25	1.59	38.55	.13	.80	36.97	3.68
26	9.99	250.01	2.000	10.00	.22	.27	1.60	38.84	.13	.84	37.16	3.70
27	9.95	240.01	2.000	10.00	.22	.28	1.61	39.16	.13	.87	37.38	3.72
28	9.95	230.01	2.000	10.00	.22	.29	1.62	39.50	.13	.91	37.60	3.74
29	9.95	220.01	2.000	10.00	.22	.30	1.64	39.86	.14	.95	37.85	3.76
30	9.95	210.01	2.000	10.00	.22	.31	1.65	40.24	.14	.99	38.12	3.79
31	9.95	200.01	2.000	10.00	.22	.33	1.67	40.65	.14	1.02	38.41	3.81

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .34 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .21 M

1 FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SG(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M, SEC
1	11.24	500.00			.35		2.00	38.11	.20		123.72	
2	11.19	490.00	.794	10.00	.22	.25	2.02	48.98	.21	.12	47.55	12.37
3	11.13	480.00	.794	10.00	.22	.35	2.06	50.03	.22	.17	47.84	4.75
4	11.07	470.00	.794	10.00	.22	.44	2.12	51.67	.23	.22	48.50	4.78
5	11.03	460.00	.794	10.00	.22	.54	2.20	53.97	.25	.27	49.66	4.85
6	10.99	450.00	.794	10.00	.22	.64	2.32	57.01	.27	.32	51.42	4.97
7	10.95	440.00	.794	10.00	.22	.74	2.46	60.84	.31	.37	53.86	5.14
8	10.95	430.00	.794	10.00	.22	.85	2.64	65.49	.36	.42	57.04	5.39
9	10.95	420.00	.794	10.00	.22	.97	2.86	71.01	.42	.48	61.01	5.70
10	10.95	410.00	1.598	10.00	.22	.27	2.87	69.39	.42	.54	67.87	6.10
11	10.95	400.00	1.598	10.00	.22	.30	2.88	69.67	.42	.61	67.06	6.79
12	10.95	390.00	1.598	10.00	.22	.34	2.89	70.01	.43	.68	68.10	6.80
13	10.75	380.00	1.598	10.00	.22	.37	2.90	70.43	.43	.74	68.29	6.81
14	10.55	370.00	1.598	10.00	.22	.41	2.92	70.92	.44	.81	68.54	6.83
15	10.55	360.00	1.598	10.00	.22	.44	2.94	71.47	.44	.88	68.82	6.85
16	10.55	350.00	1.598	10.00	.22	.47	2.97	72.10	.45	.95	69.17	6.88
17	10.55	340.00	1.598	10.00	.22	.51	2.99	72.82	.46	1.02	69.58	6.92
18	10.35	330.01	1.598	10.00	.22	.54	3.03	73.64	.47	1.09	70.08	6.96
19	10.15	320.01	1.598	10.00	.22	.58	3.06	74.56	.48	1.16	70.66	7.01
20	10.15	310.01	2.000	10.00	.22	.39	3.07	74.52	.48	1.23	72.27	7.07
21	10.15	300.01	2.000	10.00	.22	.41	3.09	74.89	.49	1.30	72.47	7.23
22	10.15	290.01	2.000	10.00	.22	.44	3.10	75.30	.49	1.37	72.71	7.25
23	10.11	280.01	2.000	10.00	.22	.46	3.12	75.75	.50	1.45	72.98	7.27
24	10.07	270.01	2.000	10.00	.22	.48	3.14	76.24	.50	1.52	73.29	7.30
25	10.03	260.01	2.000	10.00	.22	.51	3.16	76.78	.51	1.59	73.63	7.33
26	9.99	250.01	2.000	10.00	.22	.53	3.18	77.36	.52	1.67	74.00	7.36
27	9.95	240.01	2.000	10.00	.22	.55	3.21	77.99	.52	1.74	74.42	7.40
28	9.95	230.01	2.000	10.00	.22	.58	3.23	78.66	.53	1.82	74.88	7.44
29	9.95	220.01	2.000	10.00	.22	.60	3.26	79.38	.54	1.89	75.37	7.49
30	9.95	210.01	2.000	10.00	.22	.63	3.29	80.14	.55	1.97	75.91	7.54
31	9.95	200.01	2.000	10.00	.22	.65	3.32	80.96	.56	2.04	76.50	7.59

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.12 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .67 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .80 M

FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	11.24	500.00			.35		3.00	57.17	.46		185.58	
2	11.19	490.00	.794	10.00	.22	.37	3.03	73.46	.47	.19	71.32	18.56
3	11.13	480.00	.794	10.00	.22	.52	3.09	75.04	.49	.26	71.75	7.13
4	11.07	470.00	.794	10.00	.22	.66	3.17	77.48	.51	.33	72.73	7.17
5	11.03	460.00	.794	10.00	.22	.81	3.30	80.93	.56	.40	74.47	7.27
6	10.99	450.00	.794	10.00	.22	.96	3.47	85.49	.62	.48	77.10	7.45
7	10.95	440.00	.794	10.00	.22	1.12	3.69	91.23	.70	.55	80.76	7.71
8	10.95	430.00	.794	10.00	.22	1.28	3.96	98.21	.80	.63	85.54	8.08
9	10.95	420.00	.794	10.00	.22	1.45	4.29	106.49	.94	.72	91.50	8.55
10	10.95	410.00	1.598	10.00	.22	.40	4.30	104.05	.94	.81	101.78	9.15
11	10.95	400.00	1.598	10.00	.22	.46	4.31	104.47	.95	.91	101.92	10.18
12	10.95	390.00	1.598	10.00	.22	.51	4.33	104.98	.96	1.01	102.12	10.19
13	10.75	380.00	1.598	10.00	.22	.56	4.35	105.60	.97	1.12	102.39	10.21
14	10.55	370.00	1.598	10.00	.22	.61	4.38	106.33	.98	1.22	102.75	10.24
15	10.55	360.00	1.598	10.00	.22	.66	4.41	107.15	.99	1.32	103.18	10.27
16	10.55	350.00	1.598	10.00	.22	.71	4.45	108.10		1.42	103.70	10.32
17	10.55	340.00	1.598	10.00	.22	.76	4.49	109.18	1.03	1.53	104.32	10.37
18	10.35	330.01	1.598	10.00	.22	.81	4.53	110.40	1.05	1.63	105.06	10.43
19	10.15	320.01	1.598	10.00	.22	.87	4.59	111.75	1.07	1.74	105.92	10.51
20	10.15	310.01	2.000	10.00	.22	.59	4.61	111.70	1.08	1.84	108.32	10.50
21	10.15	300.01	2.000	10.00	.22	.62	4.63	112.25	1.09	1.95	108.63	10.83
22	10.15	290.01	2.000	10.00	.22	.66	4.65	112.86	1.10	2.06	108.98	10.86
23	10.11	280.01	2.000	10.00	.22	.69	4.68	113.54	1.11	2.17	109.39	10.90
24	10.07	270.01	2.000	10.00	.22	.73	4.70	114.28	1.13	2.28	109.84	10.94
25	10.03	260.01	2.000	10.00	.22	.76	4.73	115.08	1.14	2.39	110.35	10.98
26	9.99	250.01	2.000	10.00	.22	.80	4.77	115.95	1.16	2.50	110.92	11.04
27	9.95	240.01	2.000	10.00	.22	.83	4.80	116.88	1.18	2.61	111.54	11.08
28	9.95	230.01	2.000	10.00	.22	.87	4.84	117.89	1.20	2.72	112.22	11.15
29	9.95	220.01	2.000	10.00	.22	.90	4.88	118.97	1.22	2.83	112.97	11.22
30	9.95	210.01	2.000	10.00	.22	.94	4.93	120.12	1.24	2.95	113.78	11.30
31	9.95	200.01	2.000	10.00	.22	.97	4.98	121.35	1.26	3.06	114.65	11.38

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.18 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.01 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 1.80 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SFC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SFC	Q(N) L/SFC	QL(N) L/M,SFC
1	11.24	500.00			.35		5.00	95.28	1.27		309.31	
2	11.19	490.00	.794	10.00	.22	.62	5.05	122.43	1.30	.31	118.85	30.03
3	11.13	480.00	.794	10.00	.22	.87	5.14	125.05	1.35	.43	119.57	11.89
4	11.07	470.00	.794	10.00	.22	1.11	5.29	129.13	1.43	.55	121.21	11.96
5	11.03	460.00	.794	10.00	.22	1.35	5.50	134.87	1.54	.67	124.09	12.12
6	10.99	450.00	.794	10.00	.22	1.60	5.79	142.46	1.71	.79	128.48	12.41
7	10.95	440.00	.794	10.00	.22	1.86	6.16	152.02	1.93	.92	134.58	12.85
8	10.95	430.00	.794	10.00	.22	2.13	6.60	163.66	2.22	1.06	142.54	13.46
9	10.95	420.00	.794	10.00	.22	2.42	7.14	177.46	2.60	1.20	152.47	14.25
10	10.95	410.00	1.598	10.00	.22	.67	7.16	173.39	2.61	1.35	160.61	15.25
11	10.95	400.00	1.598	10.00	.22	.76	7.19	174.09	2.63	1.52	169.84	16.06
12	10.95	390.00	1.598	10.00	.22	.84	7.22	174.95	2.66	1.69	170.17	16.08
13	10.75	380.00	1.598	10.00	.22	.93	7.26	175.97	2.68	1.86	170.62	17.02
14	10.55	370.00	1.598	10.00	.22	1.01	7.30	177.16	2.72	2.03	171.20	17.06
15	10.55	360.00	1.598	10.00	.22	1.10	7.35	178.54	2.75	2.20	171.92	17.12
16	10.55	350.00	1.598	10.00	.22	1.18	7.41	180.12	2.80	2.37	172.78	17.19
17	10.55	340.00	1.598	10.00	.22	1.27	7.48	181.92	2.85	2.55	173.82	17.28
18	10.35	330.01	1.598	10.00	.22	1.36	7.56	183.94	2.91	2.72	175.04	17.38
19	10.15	320.01	1.598	10.00	.22	1.44	7.64	186.19	2.98	2.90	176.46	17.50
20	10.15	310.01	2.000	10.00	.22	.98	7.67	186.09	3.00	3.07	180.47	17.65
21	10.15	300.01	2.000	10.00	.22	1.04	7.71	187.02	3.03	3.25	180.98	18.05
22	10.15	290.01	2.000	10.00	.22	1.09	7.75	188.04	3.06	3.43	181.57	18.10
23	10.11	280.01	2.000	10.00	.22	1.15	7.79	189.16	3.09	3.62	182.24	18.16
24	10.07	270.01	2.000	10.00	.22	1.21	7.84	190.39	3.13	3.80	183.00	18.22
25	10.03	260.01	2.000	10.00	.22	1.27	7.89	191.72	3.17	3.98	183.85	18.30
26	9.99	250.01	2.000	10.00	.22	1.33	7.94	193.17	3.22	4.16	184.79	18.38
27	9.95	240.01	2.000	10.00	.22	1.39	8.00	194.73	3.26	4.35	185.82	18.48
28	9.95	230.01	2.000	10.00	.22	1.44	8.07	196.40	3.32	4.54	186.96	18.58
29	9.95	220.01	2.000	10.00	.22	1.50	8.14	198.20	3.38	4.72	188.20	18.70
30	9.95	210.01	2.000	10.00	.22	1.56	8.21	200.12	3.44	4.91	189.55	18.82
31	9.95	200.01	2.000	10.00	.22	1.62	8.29	202.17	3.51	5.10	191.01	18.95

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.29 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.69 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 4.97 M

1 FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.35		6.00	114.33	1.83		371.17	
2	11.19	490.00	.794	10.00	.22	.75	6.06	146.91	1.87	.37	142.62	37.12
3	11.13	480.00	.794	10.00	.22	1.04	6.17	150.06	1.94	.51	143.48	14.26
4	11.07	470.00	.794	10.00	.22	1.33	6.35	154.95	2.05	.66	145.45	14.35
5	11.03	460.00	.794	10.00	.22	1.62	6.60	161.84	2.22	.80	148.91	14.54
6	10.99	450.00	.794	10.00	.22	1.92	6.95	170.95	2.46	.95	154.17	14.89
7	10.95	440.00	.794	10.00	.22	2.23	7.39	182.42	3.20	1.27	161.49	15.42
8	10.95	430.00	.794	10.00	.22	2.56	7.93	196.38	3.74	1.44	171.04	16.15
9	10.95	420.00	.794	10.00	.22	2.91	8.57	212.94	3.76	1.62	182.96	17.10
10	10.95	410.00	1.598	10.00	.22	.81	8.59	208.07	3.76	1.62	203.52	18.30
11	10.95	400.00	1.598	10.00	.22	.91	8.62	208.91	3.79	1.82	203.80	20.35
12	10.95	390.00	1.598	10.00	.22	1.01	8.66	209.93	3.82	2.03	204.20	20.38
13	10.75	380.00	1.598	10.00	.22	1.11	8.71	211.15	3.86	2.23	204.74	20.42
14	10.55	370.00	1.598	10.00	.22	1.22	8.76	212.59	3.91	2.44	205.43	20.47
15	10.55	360.00	1.598	10.00	.22	1.32	8.82	214.24	3.97	2.64	206.29	20.54
16	10.55	350.00	1.598	10.00	.22	1.42	8.89	216.14	4.03	2.85	207.33	20.63
17	10.55	340.00	1.598	10.00	.22	1.52	8.97	218.29	4.10	3.06	208.57	20.73
18	10.35	330.01	1.598	10.00	.22	1.63	9.07	220.71	4.19	3.27	210.04	20.86
19	10.15	320.01	1.598	10.00	.22	1.73	9.17	223.41	4.29	3.48	211.74	21.00
20	10.15	310.01	2.000	10.00	.22	1.17	9.21	223.30	4.32	3.69	216.54	21.17
21	10.15	300.01	2.000	10.00	.22	1.24	9.25	224.41	4.36	3.90	217.16	21.65
22	10.15	290.01	2.000	10.00	.22	1.31	9.30	225.63	4.40	4.12	217.87	21.72
23	10.11	280.01	2.000	10.00	.22	1.38	9.35	226.98	4.45	4.34	218.68	21.79
24	10.07	270.01	2.000	10.00	.22	1.45	9.40	228.45	4.51	4.56	219.59	21.87
25	10.03	260.01	2.000	10.00	.22	1.52	9.46	230.05	4.57	4.78	220.60	21.96
26	9.99	250.01	2.000	10.00	.22	1.59	9.53	231.78	4.63	5.00	221.73	22.06
27	9.95	240.01	2.000	10.00	.22	1.66	9.60	233.65	4.70	5.22	222.97	22.17
28	9.95	230.01	2.000	10.00	.22	1.73	9.68	235.67	4.78	5.44	224.33	22.30
29	9.95	220.01	2.000	10.00	.22	1.80	9.76	237.82	4.86	5.67	225.82	22.43
30	9.95	210.01	2.000	10.00	.22	1.88	9.85	240.13	4.95	5.89	227.40	22.58
31	9.95	200.01	2.000	10.00	.22	1.95	9.95	242.59	5.05	6.12	229.19	22.74

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.35 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.02 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 7.15 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.35		7.00	133.39	2.50		433.03	43.30
2	11.19	490.00	.794	10.00	.22	.87	7.07	171.39	2.55	.43	166.39	16.64
3	11.13	480.00	.794	10.00	.22	1.21	7.20	175.07	2.64	.60	167.39	16.74
4	11.07	470.00	.794	10.00	.22	1.55	7.41	180.77	2.80	.77	169.69	16.97
5	11.03	460.00	.794	10.00	.22	1.89	7.70	188.81	3.02	.94	173.72	17.37
6	10.99	450.00	.794	10.00	.22	2.24	8.10	199.44	3.35	1.11	179.87	17.99
7	10.95	440.00	.794	10.00	.22	2.61	8.62	212.82	3.78	1.29	188.40	18.84
8	10.95	430.00	.794	10.00	.22	2.99	9.25	229.11	4.36	1.48	199.54	19.95
9	10.95	420.00	.794	10.00	.22	3.39	10.00	248.43	5.10	1.68	213.45	21.35
10	10.95	410.00	1.598	10.00	.22	.94	10.03	242.74	5.12	1.89	237.44	23.74
11	10.95	400.00	1.598	10.00	.22	1.06	10.06	243.72	5.16	2.13	237.77	23.77
12	10.95	390.00	1.598	10.00	.22	1.18	10.10	244.91	5.20	2.37	238.23	23.78
13	10.75	380.00	1.598	10.00	.22	1.30	10.16	246.34	5.26	2.60	238.86	23.82
14	10.55	370.00	1.598	10.00	.22	1.42	10.22	248.01	5.32	2.84	239.67	23.89
15	10.55	360.00	1.598	10.00	.22	1.54	10.29	249.94	5.40	3.08	240.66	23.97
16	10.55	350.00	1.598	10.00	.22	1.66	10.37	252.16	5.49	3.32	241.88	24.07
17	10.55	340.00	1.598	10.00	.22	1.78	10.47	254.66	5.59	3.57	243.33	24.19
18	10.35	330.01	1.598	10.00	.22	1.90	10.58	257.49	5.70	3.81	245.04	24.33
19	10.15	320.01	1.598	10.00	.22	2.02	10.70	260.64	5.83	4.05	247.01	24.50
20	10.15	310.01	2.000	10.00	.22	1.37	10.74	260.50	5.88	4.30	252.62	24.70
21	10.15	300.01	2.000	10.00	.22	1.45	10.79	261.80	5.93	4.55	253.35	25.26
22	10.15	290.01	2.000	10.00	.22	1.53	10.84	263.23	5.99	4.81	254.17	25.33
23	10.11	280.01	2.000	10.00	.22	1.61	10.90	264.80	6.06	5.06	255.11	25.42
24	10.07	270.01	2.000	10.00	.22	1.69	10.97	266.51	6.13	5.32	256.17	25.51
25	10.03	260.01	2.000	10.00	.22	1.77	11.04	268.38	6.21	5.57	257.36	25.62
26	9.99	250.01	2.000	10.00	.22	1.86	11.12	270.40	6.30	5.83	258.67	25.74
27	9.95	240.01	2.000	10.00	.22	1.94	11.20	272.59	6.40	6.09	260.12	25.87
28	9.95	230.01	2.000	10.00	.22	2.02	11.29	274.93	6.50	6.35	261.71	26.01
29	9.95	220.01	2.000	10.00	.22	2.11	11.39	277.45	6.61	6.61	263.45	26.17
30	9.95	210.01	2.000	10.00	.22	2.19	11.50	280.14	6.74	6.87	265.33	26.34
31	9.95	200.01	2.000	10.00	.22	2.27	11.61	283.01	6.87	7.14	267.39	26.53

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.41 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.36 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 9.72 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	CUM/SEC	SG(N) L/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.35		8.00	152.45	3.26		494.80		
2	11.19	490.00	.794	10.00	.22	1.00	8.08	195.88	3.33	.49	190.16		49.40
3	11.13	480.00	.794	10.00	.22	1.38	8.23	200.08	3.45	.69	191.30		19.02
4	11.07	470.00	.794	10.00	.22	1.77	8.46	206.59	3.65	.88	193.03		19.13
5	11.03	460.00	.794	10.00	.22	2.16	8.80	215.79	3.95	1.07	198.54		19.30
6	10.99	450.00	.794	10.00	.22	2.56	9.26	227.93	4.37	1.27	205.56		19.85
7	10.95	440.00	.794	10.00	.22	2.98	9.85	243.22	4.94	1.47	215.31		20.56
8	10.95	430.00	.794	10.00	.22	3.41	10.57	261.84	5.69	1.69	228.05		21.53
9	10.95	420.00	.794	10.00	.22	3.88	11.43	283.92	6.65	1.92	243.04		22.80
10	10.95	410.00	1.598	10.00	.22	1.08	11.46	277.42	6.69	2.16	271.36		24.39
11	10.95	400.00	1.598	10.00	.22	1.21	11.50	278.54	6.74	2.43	271.73		27.14
12	10.95	390.00	1.598	10.00	.22	1.35	11.55	279.90	6.80	2.70	272.26		27.17
13	10.75	380.00	1.598	10.00	.22	1.49	11.61	281.53	6.87	2.98	272.98		27.23
14	10.55	370.00	1.598	10.00	.22	1.62	11.68	283.44	6.95	3.25	273.90		27.30
15	10.55	360.00	1.598	10.00	.22	1.76	11.76	285.64	7.05	3.52	275.04		27.39
16	10.55	350.00	1.598	10.00	.22	1.90	11.86	288.17	7.16	3.80	276.43		27.50
17	10.55	340.00	1.598	10.00	.22	2.03	11.96	291.04	7.30	4.08	278.00		27.64
18	10.35	330.01	1.598	10.00	.22	2.17	12.09	294.27	7.45	4.35	280.04		27.81
19	10.15	320.01	1.598	10.00	.22	2.31	12.23	297.86	7.62	4.63	282.20		28.00
20	10.15	310.01	2.000	10.00	.22	1.57	12.28	297.71	7.68	4.92	288.71		28.23
21	10.15	300.01	2.000	10.00	.22	1.66	12.33	299.19	7.75	5.20	289.53		28.87
22	10.15	290.01	2.000	10.00	.22	1.75	12.39	300.82	7.83	5.49	290.48		28.95
23	10.11	280.01	2.000	10.00	.22	1.84	12.46	302.62	7.91	5.78	291.55		29.05
24	10.07	270.01	2.000	10.00	.22	1.94	12.54	304.58	8.01	6.08	292.76		29.16
25	10.03	260.01	2.000	10.00	.22	2.03	12.62	306.71	8.12	6.37	294.11		29.28
26	9.99	250.01	2.000	10.00	.22	2.12	12.71	309.02	8.23	6.66	295.61		29.41
27	9.95	240.01	2.000	10.00	.22	2.22	12.80	311.52	8.36	6.96	297.27		29.56
28	9.95	230.01	2.000	10.00	.22	2.31	12.91	314.20	8.49	7.26	299.09		29.73
29	9.95	220.01	2.000	10.00	.22	2.41	13.02	317.08	8.64	7.55	301.07		29.91
30	9.95	210.01	2.000	10.00	.22	2.50	13.14	320.15	8.80	7.86	303.23		30.11
31	9.95	200.01	2.000	10.00	.22	2.60	13.27	323.43	8.97	8.16	305.57		30.32

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.46 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.70 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 12.70 M

MANIFOLD 5
TRACE A

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	1.00
40.00	2.00
50.00	3.50
62.00	5.00
75.00	6.50
90.00	8.50
100.00	9.00
120.00	9.00
125.00	9.00
150.00	9.50
175.00	10.00
200.00	11.00
210.00	11.50
225.00	12.00
250.00	12.50
275.00	13.00
300.00	13.50
325.00	13.60
350.00	14.00
375.00	14.00
400.00	14.00
450.00	14.00
510.00	14.00

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DENSI-METRIC FROUDE NO OF JET AT PORT N
- L(N) = TOTAL HEAD AT PORT N
- SG(N) = TOTAL DISCHARGE UP TO PORT N
- W(N) = DISCHARGE OF PORT N
- GL(N) = DISCHARGE LOAD PK LENGTH OF MANIFOLD
- WDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPLC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

WDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .50 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .794 M
UL(2) = 10.00 M
U(2) = .23 M
UL(3) = 10.00 M
DENS = .001
PIPE = 1.20 M/SEC
FRW = .300
FRP = .100
PORT NO K1 = 10
DIA(K1) = 1.600 M
UL(K1) = 10.00 M
U(K1) = .22 M

PORT NO K2 = 20
DIA(K2) = 2.000 M
UL(K2) = 10.00 M
U(K2) = .21 M

PORT NO K3 = 0
DIA(K3) = .000 M
UL(K3) = .00 M
U(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
U(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K 10 DIA(K), DL(K) AND U(K).

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SC(N) CUM/SEC	A(N) 1/SEC	CL(N) L/M/SEC
1	14.00	500.00			.35		4.00	76.22	.82		247.45	
2	14.00	490.00	.794	10.00	.23	.50	4.04	95.79	.83	.25	103.92	24.74
3	14.00	480.00	.794	10.00	.23	.71	4.12	97.96	.86	.35	104.50	10.39
4	14.00	470.00	.794	10.00	.23	.92	4.24	101.42	.92	.46	105.97	10.45
5	14.00	460.00	.794	10.00	.23	1.14	4.43	106.37	1.00	.56	109.67	10.60
6	14.00	450.00	.794	10.00	.23	1.35	4.69	112.96	1.12	.67	112.86	10.87
7	14.00	440.00	.794	10.00	.23	1.58	5.01	121.30	1.28	.78	118.75	11.29
8	14.00	430.00	.794	10.00	.23	1.82	5.41	131.47	1.49	.90	126.49	11.88
9	14.00	420.00	1.598	10.00	.23	.51	5.43	128.52	1.50	1.03	140.48	12.65
10	14.00	410.00	1.600	10.00	.22	.58	5.47	132.61	1.51	1.17	129.69	14.05
11	14.00	400.00	1.600	10.00	.22	.65	5.50	133.39	1.53	1.30	129.95	12.87
12	14.00	390.00	1.600	10.00	.22	.71	5.57	134.31	1.54	1.43	129.30	12.90
13	14.00	380.00	1.600	10.00	.22	.77	5.67	135.37	1.56	1.56	129.74	12.93
14	14.00	370.00	1.600	10.00	.22	.84	5.73	136.58	1.58	1.69	130.29	12.97
15	14.00	360.00	1.600	10.00	.22	.90	5.80	137.95	1.61	1.82	130.96	13.03
16	14.00	350.00	1.600	10.00	.22	.97	5.87	139.49	1.64	1.95	131.76	13.10
17	14.00	340.00	1.600	10.00	.22	1.03	5.92	141.21	1.67	2.08	132.69	13.19
18	13.84	330.00	1.600	10.00	.22	1.10	5.80	143.11	1.71	2.21	133.78	13.27
19	13.68	320.00	1.600	10.00	.22	1.17	5.87	146.40	1.76	2.35	135.02	13.39
20	13.64	310.00	2.000	10.00	.21	.79	5.90	147.18	1.77	2.48	126.13	13.50
21	13.60	300.00	2.000	10.00	.21	.83	5.92	148.03	1.79	2.61	126.56	12.61
22	13.58	290.00	2.000	10.00	.21	.87	5.96	148.97	1.81	2.73	127.04	12.66
23	13.36	280.00	2.000	10.00	.21	.91	5.99	149.97	1.83	2.86	127.57	12.70
24	13.16	270.01	2.000	10.00	.21	.95	6.03	151.06	1.85	2.99	128.16	12.76
25	12.96	260.01	2.000	10.00	.21	.99	6.07	152.22	1.88	3.12	128.81	12.82
26	12.76	250.01	2.000	10.00	.21	1.03	6.11	153.47	1.91	3.24	129.53	12.89
27	12.56	240.01	2.000	10.00	.21	1.07	6.16	154.80	1.94	3.37	130.30	12.95
28	12.36	230.01	2.000	10.00	.21	1.12	6.21	156.21	1.97	3.50	131.14	13.03
29	12.16	220.02	2.000	10.00	.21	1.16	6.27	157.72	2.00	3.64	132.05	13.11
30	11.96	210.02	2.000	10.00	.21	1.20	6.32	159.32	2.04	3.77	133.03	13.20
31	11.49	200.03	2.000	10.00	.21	1.24	6.39		2.08	3.90	134.08	13.30

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.28 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 2.93 M

1 FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		1.00	19.06	.05		61.86	6.10
2	14.00	490.00	.794	10.00	.23	.13	1.01	23.95	.05	.06	25.98	2.60
3	14.00	480.00	.794	10.00	.23	.18	1.03	24.49	.05	.09	26.12	2.61
4	14.00	470.00	.794	10.00	.23	.23	1.06	25.36	.06	.11	26.49	2.65
5	14.00	460.00	.794	10.00	.23	.28	1.11	26.59	.06	.14	27.17	2.72
6	14.00	450.00	.794	10.00	.23	.34	1.17	28.24	.07	.17	28.22	2.82
7	14.00	440.00	.794	10.00	.23	.40	1.25	30.32	.08	.20	29.69	2.97
8	14.00	430.00	.794	10.00	.23	.46	1.35	32.87	.09	.23	31.62	3.14
9	14.00	420.00	1.598	10.00	.23	.53	1.36	32.13	.09	.26	35.12	3.51
10	14.00	410.00	1.600	10.00	.22	.15	1.36	32.69	.09	.29	32.17	3.22
11	14.00	400.00	1.600	10.00	.22	.16	1.37	33.15	.10	.32	32.24	3.22
12	14.00	390.00	1.600	10.00	.22	.18	1.37	33.35	.10	.36	32.32	3.22
13	14.00	380.00	1.600	10.00	.22	.19	1.38	33.58	.10	.39	32.44	3.23
14	14.00	370.00	1.600	10.00	.22	.21	1.39	33.84	.10	.42	32.57	3.24
15	14.00	360.00	1.600	10.00	.22	.23	1.40	34.14	.10	.45	32.74	3.26
16	14.00	350.00	1.600	10.00	.22	.24	1.42	34.49	.10	.49	32.84	3.27
17	14.00	340.00	1.600	10.00	.22	.26	1.43	34.87	.10	.52	33.17	3.29
18	13.84	330.00	1.600	10.00	.22	.28	1.45	35.33	.11	.55	33.47	3.32
19	13.68	320.00	1.600	10.00	.22	.29	1.47	35.83	.11	.59	33.80	3.35
20	13.64	310.00	2.000	10.00	.21	.20	1.48	36.65	.11	.62	31.58	3.39
21	13.60	300.00	2.000	10.00	.21	.21	1.48	36.86	.11	.65	31.69	3.16
22	13.56	290.00	2.000	10.00	.21	.22	1.49	37.08	.11	.68	31.82	3.17
23	13.36	280.00	2.000	10.00	.21	.23	1.50	37.34	.11	.72	31.88	3.19
24	13.18	270.01	2.000	10.00	.21	.24	1.51	37.62	.12	.75	32.15	3.20
25	12.96	260.01	2.000	10.00	.21	.25	1.52	37.92	.12	.78	32.34	3.22
26	12.76	250.01	2.000	10.00	.21	.26	1.54	38.24	.12	.81	32.55	3.23
27	12.56	240.01	2.000	10.00	.21	.27	1.55	38.58	.12	.84	32.77	3.25
28	12.36	230.01	2.000	10.00	.21	.28	1.56	38.94	.12	.88	33.00	3.28
29	12.16	220.02	2.000	10.00	.21	.29	1.58	39.32	.13	.91	33.25	3.30
30	11.83	210.02	2.000	10.00	.21	.30	1.59	39.74	.13	.94	33.54	3.33
31	11.49	200.03	2.000	10.00	.21	.31	1.61	40.19	.13	.98	33.84	3.35

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .52 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .20 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N)		DIST(N)		DIA(N)		DL(N)		D(N)		V(N)		U(N)		FN(N)		E(N)		SO(N)		C(N)		CL(N)	
	M	M	M	M	M	M	M	M	M	M	M	M/SEC	M/SEC	M/SEC	M/SEC	M	M	M	M	CUM/SEC	L/SEC	L/SEC	L/M/SEC	L/M/SEC
1	14.00		500.00						.35			.25	2.00		38.11	.20			.12		123.72			12.37
2	14.00		490.00		.794		10.00		.23		.25	2.02		47.89	.21			.18		52.25			5.20	
3	14.00		480.00		.794		10.00		.23		.35	2.06		48.98	.22			.23		52.29			5.22	
4	14.00		470.00		.794		10.00		.23		.46	2.12		50.71	.23			.25		54.33			5.30	
5	14.00		460.00		.794		10.00		.23		.57	2.22		53.19	.25			.28		56.43			5.47	
6	14.00		450.00		.794		10.00		.23		.68	2.34		56.48	.28			.34		59.38			5.64	
7	14.00		440.00		.794		10.00		.23		.79	2.51		60.65	.32			.45		63.25			5.94	
8	14.00		430.00		.794		10.00		.23		.91	2.71		65.74	.37			.51		70.24			6.32	
9	14.00		420.00		1.598		10.00		.23		.26	2.71		64.26	.38			.58		64.35			7.02	
10	14.00		410.00		1.600		10.00		.22		.29	2.72		65.98	.38			.65		64.48			6.47	
11	14.00		400.00		1.600		10.00		.22		.32	2.74		66.31	.39			.71		64.65			6.45	
12	14.00		390.00		1.600		10.00		.22		.35	2.75		66.70	.39			.78		64.97			6.46	
13	14.00		380.00		1.600		10.00		.22		.39	2.77		67.15	.40			.84		65.15			6.51	
14	14.00		370.00		1.600		10.00		.22		.42	2.79		67.68	.40			.91		65.48			6.55	
15	14.00		360.00		1.600		10.00		.22		.45	2.81		68.29	.41			.97		65.98			6.59	
16	14.00		350.00		1.600		10.00		.22		.48	2.84		68.97	.42			1.04		66.35			6.63	
17	14.00		340.00		1.600		10.00		.22		.52	2.86		69.74	.43			1.11		66.90			6.60	
18	13.84		330.00		1.600		10.00		.22		.55	2.89		70.61	.44			1.17		67.53			6.60	
19	13.68		320.00		1.600		10.00		.22		.58	2.94		71.58	.44			1.24		68.09			6.60	
20	13.64		310.00		2.000		10.00		.21		.39	2.95		73.22	.45			1.30		68.30			6.31	
21	13.60		300.00		2.000		10.00		.21		.42	2.96		73.61	.45			1.37		68.54			6.33	
22	13.56		290.00		2.000		10.00		.21		.44	2.98		74.04	.45			1.43		68.82			6.35	
23	13.36		280.00		2.000		10.00		.21		.46	3.00		74.52	.46			1.49		69.13			6.39	
24	13.16		270.01		2.000		10.00		.21		.50	3.02		75.04	.47			1.56		69.46			6.41	
25	12.96		260.01		2.000		10.00		.21		.52	3.04		75.59	.48			1.62		69.83			6.45	
26	12.76		250.01		2.000		10.00		.21		.54	3.06		76.18	.48			1.69		70.23			6.48	
27	12.56		240.01		2.000		10.00		.21		.56	3.08		76.82	.49			1.75		70.66			6.52	
28	12.36		230.01		2.000		10.00		.21		.58	3.11		77.50	.50			1.82		71.12			6.57	
29	12.16		220.02		2.000		10.00		.21		.60	3.14		78.21	.51			1.88		71.63			6.61	
30	11.83		210.02		2.000		10.00		.21		.62	3.17		78.99	.52			1.95		72.17			6.66	
31	11.49		200.03		2.000		10.00		.21		.62	3.20		79.80	.52									

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .64 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = .74 M

FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	14.00	500.00			.35		3.00	57.17	.46		185.58	
2	14.00	490.00	.794	10.00	.23	.37	3.03	71.84	.47	.19	77.94	18.56
3	14.00	480.00	.794	10.00	.23	.53	3.00	73.47	.49	.26	78.37	7.79
4	14.00	470.00	.794	10.00	.23	.69	3.18	76.07	.52	.34	79.48	7.84
5	14.00	460.00	.794	10.00	.23	.85	3.32	79.78	.56	.42	81.50	7.95
6	14.00	450.00	.794	10.00	.23	1.02	3.51	84.72	.63	.50	84.65	8.15
7	14.00	440.00	.794	10.00	.23	1.19	3.76	90.97	.72	.59	89.07	8.46
8	14.00	430.00	.794	10.00	.23	1.37	4.06	98.60	.84	.68	94.97	8.91
9	14.00	420.00	1.598	10.00	.23	.38	4.07	96.39	.84	.77	105.36	9.49
10	14.00	410.00	1.600	10.00	.22	.44	4.09	98.97	.85	.88	96.52	10.54
11	14.00	400.00	1.600	10.00	.22	.48	4.10	99.46	.86	.97	96.71	9.65
12	14.00	390.00	1.600	10.00	.22	.53	4.12	100.73	.87	1.07	96.97	9.67
13	14.00	380.00	1.600	10.00	.22	.58	4.15	100.73	.88	1.17	97.31	9.70
14	14.00	370.00	1.600	10.00	.22	.63	4.18	101.53	.89	1.26	97.72	9.73
15	14.00	360.00	1.600	10.00	.22	.68	4.21	102.43	.91	1.36	98.22	9.77
16	14.00	350.00	1.600	10.00	.22	.73	4.25	103.46	.92	1.46	98.92	9.82
17	14.00	340.00	1.600	10.00	.22	.78	4.30	104.62	.94	1.56	99.52	9.88
18	13.84	330.00	1.600	10.00	.22	.83	4.35	105.91	.96	1.66	100.34	9.95
19	13.66	320.00	1.600	10.00	.22	.88	4.40	107.34	.99	1.76	101.27	10.03
20	13.64	310.00	2.000	10.00	.21	.59	4.42	109.81	1.00	1.86	94.61	10.13
21	13.60	300.00	2.000	10.00	.21	.62	4.44	110.39	1.01	1.95	94.93	9.46
22	13.56	290.00	2.000	10.00	.21	.65	4.47	111.04	1.02	2.05	95.29	9.49
23	13.56	280.00	2.000	10.00	.21	.68	4.49	111.74	1.03	2.15	95.69	9.53
24	13.16	270.01	2.000	10.00	.21	.71	4.52	112.50	1.04	2.24	96.14	9.57
25	12.96	260.01	2.000	10.00	.21	.74	4.55	113.32	1.06	2.34	96.63	9.61
26	12.76	250.01	2.000	10.00	.21	.81	4.59	114.20	1.07	2.43	97.17	9.66
27	12.56	240.01	2.000	10.00	.21	.84	4.62	115.13	1.09	2.53	97.76	9.72
28	12.36	230.01	2.000	10.00	.21	.87	4.66	116.14	1.11	2.63	98.39	9.78
29	12.16	220.02	2.000	10.00	.21	.90	4.70	117.20	1.13	2.73	99.07	9.84
30	11.95	210.02	2.000	10.00	.21	.93	4.75	118.34	1.15	2.83	99.81	9.91
31	11.49	200.03	2.000	10.00	.21	.93	4.79	119.54	1.17	2.93	100.61	9.98

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .96 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 1.66 M

1 FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	CO(N) L/SEC	CL(N) L/M/SEC
1	14.00	500.00			.35		5.00	95.28	1.27		300.31	
2	14.00	490.00	.794	10.00	.23	.62	5.05	119.73	1.30	.31	120.90	30.93
3	14.00	480.00	.794	10.00	.23	.89	5.15	126.45	1.35	.44	130.62	12.00
4	14.00	470.00	.794	10.00	.23	1.15	5.31	126.78	1.43	.57	130.46	13.06
5	14.00	460.00	.794	10.00	.23	1.42	5.54	132.06	1.56	.70	135.84	13.25
6	14.00	450.00	.794	10.00	.23	1.69	5.86	141.20	1.75	.84	141.08	13.59
7	14.00	440.00	.794	10.00	.23	1.98	6.26	151.62	2.00	.98	149.44	14.11
8	14.00	430.00	.794	10.00	.23	2.28	6.77	164.34	2.33	1.13	159.12	14.84
9	14.00	420.00	1.598	10.00	.23	.64	6.77	160.65	2.35	1.29	175.59	15.81
10	14.00	410.00	1.600	10.00	.22	.73	6.81	164.04	2.36	1.46	160.86	17.56
11	14.00	400.00	1.600	10.00	.22	.81	6.84	165.76	2.38	1.62	161.19	16.00
12	14.00	390.00	1.600	10.00	.22	.89	6.87	166.74	2.41	1.78	161.62	16.12
13	14.00	380.00	1.600	10.00	.22	.97	6.92	167.88	2.44	1.95	162.18	16.16
14	14.00	370.00	1.600	10.00	.22	1.05	6.97	169.21	2.47	2.11	162.97	16.22
15	14.00	360.00	1.600	10.00	.22	1.13	7.02	170.72	2.51	2.27	163.70	16.20
16	14.00	350.00	1.600	10.00	.22	1.21	7.09	172.44	2.56	2.43	164.70	16.37
17	14.00	340.00	1.600	10.00	.22	1.29	7.16	174.36	2.61	2.60	165.97	16.47
18	13.84	330.00	1.600	10.00	.22	1.38	7.24	176.51	2.67	2.76	167.22	16.50
19	13.68	320.00	1.600	10.00	.22	1.46	7.34	178.89	2.74	2.93	169.77	16.72
20	13.64	310.00	2.000	10.00	.21	.99	7.37	182.09	2.77	3.10	157.68	16.89
21	13.60	300.00	2.000	10.00	.21	1.04	7.41	183.97	2.79	3.26	159.19	15.77
22	13.56	290.00	2.000	10.00	.21	1.09	7.45	185.03	2.83	3.42	159.79	15.82
23	13.36	280.00	2.000	10.00	.21	1.14	7.49	186.20	2.86	3.57	159.45	15.88
24	13.16	270.01	2.000	10.00	.21	1.19	7.54	187.45	2.89	3.73	160.19	15.95
25	12.96	260.01	2.000	10.00	.21	1.24	7.59	188.80	2.93	3.89	161.00	16.02
26	12.76	250.01	2.000	10.00	.21	1.29	7.64	190.26	2.98	4.06	161.89	16.10
27	12.56	240.01	2.000	10.00	.21	1.34	7.70	191.81	3.02	4.22	162.85	16.10
28	12.36	230.01	2.000	10.00	.21	1.40	7.76	193.47	3.07	4.38	163.90	16.20
29	12.16	220.02	2.000	10.00	.21	1.45	7.83	195.23	3.13	4.54	165.03	16.30
30	11.85	210.02	2.000	10.00	.21	1.50	7.90	197.11	3.18	4.71	166.25	16.50
31	11.49	200.03	2.000	10.00	.21	1.55	7.98	199.10	3.25	4.88	167.56	16.62

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.61 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 4.56 M

1 FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SC(N) CUM/SEC	C(N) L/SEC	CL(N) L/M/SEC
1	14.00	500.00			.75		6.00	114.33	1.83		371.17	
2	14.00	490.00	.794	10.00	.23	.75	6.06	143.68	1.87	.37	155.88	37.12
3	14.00	480.00	.794	10.00	.23	1.06	6.18	146.94	1.84	.53	156.75	15.59
4	14.00	470.00	.794	10.00	.23	1.38	6.37	152.13	2.07	.68	158.96	15.67
5	14.00	460.00	.794	10.00	.23	1.70	6.65	158.56	2.25	.84	163.00	15.90
6	14.00	450.00	.794	10.00	.23	2.03	7.03	169.44	2.52	1.01	169.29	16.30
7	14.00	440.00	.794	10.00	.23	2.37	7.52	181.04	2.88	1.18	178.13	16.83
8	14.00	430.00	.794	10.00	.23	2.73	8.12	197.21	3.36	1.35	189.74	17.81
9	14.00	420.00	1.598	10.00	.23	.77	8.14	192.78	3.38	1.54	210.71	18.97
10	14.00	410.00	1.600	10.00	.22	.87	8.17	197.93	3.40	1.75	193.04	21.07
11	14.00	400.00	1.600	10.00	.22	.97	8.21	199.92	3.43	1.95	193.43	19.30
12	14.00	390.00	1.600	10.00	.22	1.06	8.25	200.99	3.47	2.14	193.95	19.34
13	14.00	380.00	1.600	10.00	.22	1.16	8.30	201.46	3.51	2.33	194.61	19.39
14	14.00	370.00	1.600	10.00	.22	1.26	8.36	203.05	3.56	2.53	195.44	19.46
15	14.00	360.00	1.600	10.00	.22	1.36	8.43	204.87	3.62	2.72	196.44	19.54
16	14.00	350.00	1.600	10.00	.22	1.45	8.51	206.92	3.69	2.92	197.64	19.64
17	14.00	340.00	1.600	10.00	.22	1.55	8.59	209.23	3.76	3.12	199.04	19.76
18	13.84	330.00	1.600	10.00	.22	1.65	8.69	211.81	3.85	3.32	200.66	19.90
19	13.68	320.00	1.600	10.00	.22	1.75	8.80	214.66	3.95	3.52	202.52	20.07
20	13.64	310.00	2.000	10.00	.21	1.18	8.84	219.58	3.99	3.72	199.19	20.25
21	13.60	300.00	2.000	10.00	.21	1.25	8.89	220.76	4.02	3.91	199.92	18.92
22	13.56	290.00	2.000	10.00	.21	1.31	8.93	222.03	4.07	4.10	199.54	48.98
23	13.36	280.00	2.000	10.00	.21	1.37	8.99	223.43	4.12	4.29	191.34	19.05
24	13.16	270.01	2.000	10.00	.21	1.43	9.04	224.93	4.17	4.48	199.22	19.13
25	12.96	260.01	2.000	10.00	.21	1.49	9.10	226.55	4.22	4.67	194.25	19.22
26	12.76	250.01	2.000	10.00	.21	1.55	9.17	228.29	4.29	4.87	194.25	19.32
27	12.56	240.01	2.000	10.00	.21	1.61	9.24	230.15	4.35	5.06	195.41	19.43
28	12.36	230.01	2.000	10.00	.21	1.67	9.32	232.14	4.42	5.26	196.66	19.54
29	12.16	220.02	2.000	10.00	.21	1.74	9.40	234.26	4.50	5.45	198.02	19.67
30	11.83	210.02	2.000	10.00	.21	1.80	9.48	236.51	4.58	5.65	199.48	19.80
31	11.49	200.03	2.000	10.00	.21	1.86	9.57	238.90	4.67	5.85	201.04	19.95

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.05 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.93 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 6.58 M

1 FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	CO(N) L/SEC	CL(N) L/M ³ SEC
1	14.00	500.00			.35		7.00	133.39	2.50		437.03	
2	14.00	490.00	.794	10.00	.23	.87	7.07	167.62	2.55	.43	181.86	43.30
3	14.00	480.00	.794	10.00	.23	1.24	7.20	171.44	2.65	.61	182.87	18.10
4	14.00	470.00	.794	10.00	.23	1.61	7.43	177.49	2.81	.80	185.45	18.29
5	14.00	460.00	.794	10.00	.23	1.99	7.76	186.15	3.07	.98	190.17	18.55
6	14.00	450.00	.794	10.00	.23	2.37	8.20	197.68	3.43	1.17	197.51	19.02
7	14.00	440.00	.794	10.00	.23	2.77	8.77	212.07	3.92	1.58	207.82	19.75
8	14.00	430.00	.794	10.00	.23	3.19	9.47	230.27	4.57	1.58	221.37	20.79
9	14.00	420.00	1.598	10.00	.23	.90	9.50	224.91	4.60	1.80	245.93	22.14
10	14.00	410.00	1.600	10.00	.22	1.02	9.53	230.92	4.63	2.05	225.21	24.58
11	14.00	400.00	1.600	10.00	.22	1.13	9.57	232.07	4.67	2.27	225.66	22.52
12	14.00	390.00	1.600	10.00	.22	1.24	9.62	233.44	4.72	2.50	226.27	22.57
13	14.00	380.00	1.600	10.00	.22	1.36	9.68	235.04	4.78	2.72	227.05	22.63
14	14.00	370.00	1.600	10.00	.22	1.47	9.75	236.89	4.85	2.95	228.01	22.70
15	14.00	360.00	1.600	10.00	.22	1.58	9.83	239.01	4.93	3.18	229.18	22.80
16	14.00	350.00	1.600	10.00	.22	1.70	9.92	241.41	5.02	3.41	230.58	22.92
17	14.00	340.00	1.600	10.00	.22	1.81	10.03	244.11	5.12	3.64	232.21	23.06
18	13.84	330.00	1.600	10.00	.22	1.93	10.14	247.11	5.24	3.87	234.11	23.22
19	13.68	320.00	1.600	10.00	.22	2.04	10.27	250.43	5.38	4.10	236.27	23.41
20	13.64	310.00	2.000	10.00	.21	1.38	10.32	256.18	5.42	4.34	220.72	23.63
21	13.60	300.00	2.000	10.00	.21	1.45	10.37	257.54	5.48	4.56	221.46	22.07
22	13.56	290.00	2.000	10.00	.21	1.52	10.42	259.04	5.54	4.78	222.29	22.15
23	13.36	280.00	2.000	10.00	.21	1.59	10.48	260.66	5.60	5.00	223.22	22.23
24	13.16	270.01	2.000	10.00	.21	1.67	10.55	262.41	5.67	5.23	224.25	22.32
25	12.96	260.01	2.000	10.00	.21	1.74	10.62	264.30	5.75	5.45	225.38	22.43
26	12.76	250.01	2.000	10.00	.21	1.81	10.70	266.33	5.83	5.68	226.62	22.54
27	12.56	240.01	2.000	10.00	.21	1.88	10.78	268.50	5.92	5.90	227.97	22.66
28	12.36	230.01	2.000	10.00	.21	1.95	10.87	270.82	6.02	6.13	229.43	22.80
29	12.16	220.02	2.000	10.00	.21	2.03	10.96	273.29	6.15	6.36	231.00	22.94
30	11.86	210.02	2.000	10.00	.21	2.10	11.06	275.91	6.24	6.59	232.71	23.10
31	11.49	200.03	2.000	10.00	.21	2.17	11.17	278.69	6.36	6.83	234.53	23.27

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.25 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 8.96 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	C(N) L/SEC	OL(N) L/M/SEC
1	14.00	500.00			.35		8.00	152.45	3.26		404.89	
2	14.00	490.00	.794	10.00	.23	1.00	8.08	191.57	3.33	.40	207.84	49.40
3	14.00	480.00	.794	10.00	.23	1.42	8.23	195.93	3.46	.70	200.00	24.70
4	14.00	470.00	.794	10.00	.23	1.84	8.40	202.85	3.67	.91	211.94	20.00
5	14.00	460.00	.794	10.00	.23	2.27	8.86	212.74	4.00	1.12	217.34	21.10
6	14.00	450.00	.794	10.00	.23	2.71	9.37	225.91	4.46	1.34	225.72	21.73
7	14.00	440.00	.794	10.00	.23	3.17	10.02	242.59	5.12	1.57	237.51	22.57
8	14.00	430.00	.794	10.00	.23	3.65	10.82	262.94	5.97	1.80	252.09	23.75
9	14.00	420.00	1.598	10.00	.23	1.03	10.86	257.04	6.01	2.06	280.95	25.30
10	14.00	410.00	1.600	10.00	.22	1.16	10.89	263.91	6.05	2.34	257.38	28.10
11	14.00	400.00	1.600	10.00	.22	1.29	10.94	265.22	6.10	2.60	257.20	25.74
12	14.00	390.00	1.600	10.00	.22	1.42	11.00	266.79	6.17	2.85	250.50	25.70
13	14.00	380.00	1.600	10.00	.22	1.55	11.07	268.62	6.24	3.11	250.48	25.86
14	14.00	370.00	1.600	10.00	.22	1.68	11.15	270.73	6.33	3.37	261.59	25.05
15	14.00	360.00	1.600	10.00	.22	1.81	11.24	273.16	6.44	3.63	261.93	26.06
16	14.00	350.00	1.600	10.00	.22	1.94	11.34	275.90	6.50	3.89	261.52	26.10
17	14.00	340.00	1.600	10.00	.22	2.07	11.46	278.98	6.69	4.16	267.39	26.35
18	13.84	330.00	1.600	10.00	.22	2.20	11.59	282.41	6.85	4.42	267.55	26.54
19	13.68	320.00	1.600	10.00	.22	2.33	11.74	286.21	7.02	4.69	270.02	26.76
20	13.64	310.00	2.000	10.00	.21	1.58	11.79	292.77	7.08	4.96	252.24	27.00
21	13.60	300.00	2.000	10.00	.21	1.66	11.85	294.33	7.15	5.21	253.09	25.22
22	13.50	290.00	2.000	10.00	.21	1.74	11.91	296.04	7.23	5.47	254.05	25.31
23	13.30	280.00	2.000	10.00	.21	1.82	11.98	297.80	7.32	5.72	255.11	25.40
24	13.16	270.01	2.000	10.00	.21	1.90	12.06	299.60	7.41	5.98	256.28	25.51
25	12.90	260.01	2.000	10.00	.21	1.98	12.14	302.05	7.51	6.23	257.57	25.63
26	12.70	250.01	2.000	10.00	.21	2.07	12.23	304.37	7.62	6.49	250.99	25.76
27	12.50	240.01	2.000	10.00	.21	2.15	12.32	306.85	7.74	6.75	260.52	25.00
28	12.30	230.01	2.000	10.00	.21	2.23	12.42	309.50	7.86	7.01	262.19	26.05
29	12.10	220.02	2.000	10.00	.21	2.32	12.53	312.32	8.00	7.27	264.00	26.22
30	11.80	210.02	2.000	10.00	.21	2.40	12.64	315.32	8.15	7.53	265.94	26.40
31	11.49	200.03	2.000	10.00	.21	2.48	12.77	318.49	8.31	7.80	268.02	26.50

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.07 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.57 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
 TOTAL HEAD AT SHORE = 11.69 M

BOTTOM PROFILE

MANIFOLD 5
TRACE B

DISTANCE M	DEPTH M
.00	.00
25.00	.00
40.00	1.00
50.00	3.00
60.00	4.50
65.00	5.00
75.00	6.50
90.00	7.00
100.00	8.50
125.00	9.00
150.00	9.10
175.00	9.50
200.00	9.80
225.00	10.20
250.00	10.50
275.00	10.50
300.00	10.50
325.00	10.50
350.00	10.80
375.00	10.80
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.50
510.00	11.60

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DIMENSIONLESS FROUDEL NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SO(N) = TOTAL DISCHARGE UP TO PORT N
- W(N) = DISCHARGE OF PORT N
- GL(N) = DISCHARGE LOAD PER LENGTH OF MANIFOLD
- WDES = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DENS = (SPEC.GRAV. SEAW. - SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRM = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

QDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .50 M/SFC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .794 M
UL(2) = 10.00 M
U(2) = .23 M
UL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 10
DJA(K1) = 1.600 M
UL(K1) = 10.00 M
U(K1) = .22 M
PORT NO K2 = 20
DJA(K2) = 2.000 M
UL(K2) = 10.00 M
U(K2) = .21 M
PORT NO K3 = 0
DJA(K3) = .000 M
UL(K3) = .00 M
U(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS U(N) ARE KLPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO RESPECTIVELY DL(3) AND D(2). IF WANTED THE DIA(N),DL(N) AND D(N) CAN BE CHANGED FOR PORT NO N = K TO DIA(K),DL(K) AND U(K).

FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SO(N) CUM/SEC	O(N) L/SEC	OL(N) L/M/SEC
1	11.57	500.00			.35		4.00	76.22	.82		247.45	
2	11.54	490.00	.794	10.00	.23	.50	4.04	95.79	.83	.25	103.92	24.74
3	11.51	480.00	.794	10.00	.23	.71	4.12	97.97	.86	.35	104.50	10.39
4	11.49	470.00	.794	10.00	.23	.92	4.25	101.43	.92	.46	105.98	10.45
5	11.29	460.00	.794	10.00	.23	1.14	4.43	106.39	1.00	.56	108.69	10.60
6	11.09	450.00	.794	10.00	.23	1.35	4.69	112.98	1.12	.67	112.89	10.87
7	10.89	440.01	.794	10.00	.23	1.58	5.01	121.33	1.28	.78	118.79	11.29
8	10.89	430.01	.794	10.00	.23	1.82	5.41	131.50	1.49	.90	126.53	11.89
9	10.89	420.01	1.598	10.00	.23	.51	5.43	128.55	1.50	1.03	140.51	12.65
10	10.89	410.01	1.600	10.00	.22	.58	5.45	131.99	1.51	1.17	128.72	14.05
11	10.89	400.01	1.600	10.00	.22	.65	5.47	132.65	1.53	1.30	128.98	12.87
12	10.89	390.01	1.600	10.00	.22	.71	5.50	133.43	1.54	1.43	129.33	12.90
13	10.81	380.01	1.600	10.00	.22	.77	5.54	134.35	1.56	1.56	129.78	12.93
14	10.73	370.01	1.600	10.00	.22	.84	5.57	135.41	1.58	1.69	130.33	12.99
15	10.73	360.01	1.600	10.00	.22	.90	5.62	136.62	1.61	1.82	131.00	13.03
16	10.73	350.01	1.600	10.00	.22	.97	5.67	137.99	1.64	1.95	131.80	13.10
17	10.73	340.01	1.600	10.00	.22	1.03	5.73	139.53	1.67	2.08	132.73	13.19
18	10.61	330.01	1.600	10.00	.22	1.10	5.80	141.25	1.71	2.21	133.82	13.27
19	10.49	320.01	1.600	10.00	.22	1.17	5.87	143.15	1.76	2.35	135.06	13.39
20	10.49	310.01	2.000	10.00	.21	.79	5.90	146.43	1.77	2.48	126.16	13.51
21	10.49	300.01	2.000	10.00	.21	.83	5.93	147.22	1.79	2.61	126.59	12.62
22	10.49	290.01	2.000	10.00	.21	.87	5.96	148.07	1.81	2.73	127.07	12.66
23	10.49	280.01	2.000	10.00	.21	.91	5.99	148.99	1.83	2.86	127.59	12.71
24	10.49	270.01	2.000	10.00	.21	.95	6.03	149.99	1.85	2.99	128.18	12.76
25	10.49	260.01	2.000	10.00	.21	.99	6.07	151.07	1.88	3.12	128.82	12.82
26	10.49	250.01	2.000	10.00	.21	1.03	6.11	152.23	1.91	3.25	129.53	12.89
27	10.49	240.01	2.000	10.00	.21	1.07	6.16	153.46	1.94	3.37	130.30	12.95
28	10.37	230.01	2.000	10.00	.21	1.12	6.21	154.79	1.97	3.51	131.13	13.03
29	10.25	220.01	2.000	10.00	.21	1.16	6.27	156.20	2.00	3.64	132.04	13.11
30	10.09	210.01	2.000	10.00	.21	1.20	6.32	157.71	2.04	3.77	133.01	13.20
31	9.93	200.01	2.000	10.00	.21	1.24	6.38	159.30	2.08	3.90	134.06	13.30

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.29 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 2.93 M

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M*SEC
1	11.57	500.00			.35		1.00	19.06	.05		61.86	
2	11.54	490.00	.794	10.00	.23	.13	1.01	23.95	.05	.06	25.09	6.10
3	11.51	480.00	.794	10.00	.23	.18	1.03	24.50	.05	.09	26.14	2.60
4	11.49	470.00	.794	10.00	.23	.23	1.06	25.37	.06	.11	26.51	2.61
5	11.29	460.00	.794	10.00	.23	.28	1.11	26.65	.06	.14	27.24	2.65
6	11.09	450.00	.794	10.00	.23	.34	1.18	28.34	.07	.17	28.33	2.72
7	10.89	440.01	.794	10.00	.23	.40	1.26	30.46	.08	.20	29.84	2.83
8	10.89	430.01	.794	10.00	.23	.46	1.36	33.00	.09	.23	31.77	2.90
9	10.89	420.01	1.598	10.00	.23	.53	1.36	32.26	.09	.26	35.26	3.18
10	10.89	410.01	1.600	10.00	.22	.55	1.37	33.12	.10	.29	32.31	3.53
11	10.89	400.01	1.600	10.00	.22	.61	1.37	33.29	.10	.33	32.37	3.23
12	10.89	390.01	1.600	10.00	.22	.68	1.38	33.48	.10	.36	32.46	3.24
13	10.81	380.01	1.600	10.00	.22	.75	1.39	33.73	.10	.39	32.58	3.25
14	10.75	370.01	1.600	10.00	.22	.82	1.40	34.00	.10	.42	32.73	3.26
15	10.75	360.01	1.600	10.00	.22	.89	1.41	34.31	.10	.46	32.90	3.27
16	10.75	350.01	1.600	10.00	.22	.96	1.42	34.65	.10	.49	33.10	3.29
17	10.75	340.01	1.600	10.00	.22	1.03	1.44	35.04	.11	.52	33.33	3.31
18	10.61	330.01	1.600	10.00	.22	1.10	1.46	35.49	.11	.55	33.62	3.33
19	10.49	320.01	1.600	10.00	.22	1.17	1.48	35.98	.11	.59	33.95	3.36
20	10.49	310.01	2.000	10.00	.21	1.24	1.49	36.51	.11	.62	34.71	3.40
21	10.49	300.01	2.000	10.00	.21	1.31	1.49	37.00	.11	.65	34.82	3.18
22	10.49	290.01	2.000	10.00	.21	1.38	1.50	37.21	.11	.69	34.04	3.19
23	10.49	280.01	2.000	10.00	.21	1.45	1.51	37.45	.12	.72	32.07	3.19
24	10.49	270.01	2.000	10.00	.21	1.52	1.52	37.70	.12	.75	32.22	3.21
25	10.49	260.01	2.000	10.00	.21	1.59	1.53	37.97	.12	.78	32.38	3.22
26	10.49	250.01	2.000	10.00	.21	1.66	1.54	38.26	.12	.81	32.56	3.24
27	10.49	240.01	2.000	10.00	.21	1.73	1.55	38.57	.12	.85	32.75	3.26
28	10.37	230.01	2.000	10.00	.21	1.80	1.56	38.92	.12	.88	32.97	3.27
29	10.25	220.01	2.000	10.00	.21	1.87	1.58	39.29	.13	.91	33.22	3.30
30	10.09	210.01	2.000	10.00	.21	1.94	1.59	39.69	.13	.95	33.48	3.32
31	9.93	200.01	2.000	10.00	.21	2.01	1.61	40.11	.13	.98	33.76	3.35

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .32 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .19 M

1 FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N) M	E(N) M	SC(N) CUM/SEC	Q(N) L/SEC	AL(N) L/M/SEC
1	11.57	500.00			.35		2.00	38.11	.20		123.72	
2	11.54	490.00	.794	10.00	.23	.25	2.02	47.90	.21	.12	51.96	12.37
3	11.51	480.00	.794	10.00	.23	.36	2.06	48.99	.22	.18	52.26	5.20
4	11.49	470.00	.794	10.00	.23	.46	2.12	50.72	.23	.23	53.00	5.23
5	11.29	460.00	.794	10.00	.23	.57	2.22	53.22	.25	.28	54.37	5.30
6	11.09	450.00	.794	10.00	.23	.68	2.34	56.53	.28	.34	56.49	5.44
7	10.89	440.01	.794	10.00	.23	.79	2.51	60.71	.32	.39	59.45	5.65
8	10.89	430.01	.794	10.00	.23	.91	2.71	65.80	.37	.45	63.32	5.95
9	10.89	420.01	1.598	10.00	.23	.26	2.72	64.33	.38	.51	70.31	6.33
10	10.89	410.01	1.600	10.00	.22	.29	2.73	66.04	.38	.58	64.41	7.03
11	10.89	400.01	1.600	10.00	.22	.32	2.74	66.37	.38	.65	64.54	6.44
12	10.89	390.01	1.600	10.00	.22	.36	2.75	66.76	.39	.71	64.72	6.45
13	10.81	380.01	1.600	10.00	.22	.39	2.77	67.23	.39	.78	64.94	6.47
14	10.73	370.01	1.600	10.00	.22	.42	2.79	67.76	.40	.84	65.23	6.49
15	10.73	360.01	1.600	10.00	.22	.45	2.81	68.37	.40	.91	65.56	6.52
16	10.73	350.01	1.600	10.00	.22	.48	2.84	69.06	.41	.97	65.96	6.56
17	10.73	340.01	1.600	10.00	.22	.52	2.87	69.83	.42	1.04	66.43	6.60
18	10.61	330.01	1.600	10.00	.22	.55	2.90	70.69	.43	1.11	66.98	6.64
19	10.49	320.01	1.600	10.00	.22	.58	2.94	71.65	.44	1.17	67.60	6.70
20	10.49	310.01	2.000	10.00	.21	.40	2.95	73.30	.44	1.24	63.15	6.76
21	10.49	300.01	2.000	10.00	.21	.42	2.97	73.69	.45	1.30	63.36	6.32
22	10.49	290.01	2.000	10.00	.21	.44	2.98	74.11	.45	1.37	63.60	6.34
23	10.49	280.01	2.000	10.00	.21	.46	3.00	74.58	.46	1.43	63.87	6.36
24	10.49	270.01	2.000	10.00	.21	.48	3.02	75.08	.46	1.50	64.16	6.39
25	10.49	260.01	2.000	10.00	.21	.50	3.04	75.61	.47	1.56	64.48	6.42
26	10.49	250.01	2.000	10.00	.21	.52	3.06	76.19	.48	1.62	64.83	6.45
27	10.49	240.01	2.000	10.00	.21	.54	3.08	76.81	.48	1.69	65.22	6.48
28	10.37	230.01	2.000	10.00	.21	.56	3.11	77.48	.49	1.75	65.64	6.52
29	10.25	220.01	2.000	10.00	.21	.58	3.14	78.20	.50	1.82	66.10	6.56
30	10.09	210.01	2.000	10.00	.21	.60	3.17	78.96	.51	1.89	66.60	6.61
31	9.93	200.01	2.000	10.00	.21	.62	3.20	79.76	.52	1.95	67.13	6.66

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .64 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = .74 M

1 FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	C(N) L/SFC	OL(N) L/M/SEC
1	11.57	500.00			.35		3.00	57.17	.46		185.58	
2	11.54	490.00	.794	10.00	.23	.37	3.03	71.84	.47	.19	77.94	18.56
3	11.51	480.00	.794	10.00	.23	.53	3.09	73.48	.49	.26	78.38	7.79
4	11.49	470.00	.794	10.00	.23	.69	3.18	76.07	.52	.34	79.49	7.84
5	11.29	460.00	.794	10.00	.23	.85	3.32	79.80	.56	.42	81.53	7.95
6	11.09	450.00	.794	10.00	.23	1.02	3.52	84.75	.63	.50	84.68	8.15
7	10.89	440.01	.794	10.00	.23	1.19	3.76	91.02	.72	.59	89.12	8.47
8	10.89	430.01	.794	10.00	.23	1.37	4.06	98.65	.84	.68	94.92	8.91
9	10.89	420.01	1.598	10.00	.23	.38	4.07	96.43	.85	.77	105.41	9.49
10	10.89	410.01	1.600	10.00	.22	.44	4.09	99.01	.85	.88	96.56	10.54
11	10.89	400.01	1.600	10.00	.22	.48	4.11	99.50	.86	.97	96.76	9.66
12	10.89	390.01	1.600	10.00	.22	.53	4.13	100.09	.87	1.07	97.02	9.69
13	10.81	380.01	1.600	10.00	.22	.58	4.15	100.78	.88	1.17	97.36	9.70
14	10.75	370.01	1.600	10.00	.22	.63	4.18	101.58	.89	1.26	97.77	9.74
15	10.75	360.01	1.600	10.00	.22	.68	4.22	102.49	.91	1.36	98.28	9.78
16	10.75	350.01	1.600	10.00	.22	.73	4.26	103.52	.92	1.46	98.87	9.83
17	10.75	340.01	1.600	10.00	.22	.78	4.30	104.67	.94	1.56	99.57	9.89
18	10.61	330.01	1.600	10.00	.22	.83	4.35	105.96	.96	1.66	100.39	9.96
19	10.49	320.01	1.600	10.00	.22	.88	4.40	107.39	.99	1.76	101.32	10.04
20	10.49	310.01	2.000	10.00	.21	.59	4.42	109.86	1.00	1.86	94.65	10.13
21	10.49	300.01	2.000	10.00	.21	.62	4.45	110.44	1.01	1.96	94.97	9.47
22	10.49	290.01	2.000	10.00	.21	.65	4.47	111.08	1.02	2.05	95.33	9.50
23	10.49	280.01	2.000	10.00	.21	.68	4.50	111.78	1.03	2.15	95.72	9.53
24	10.49	270.01	2.000	10.00	.21	.71	4.52	112.53	1.04	2.24	96.16	9.57
25	10.49	260.01	2.000	10.00	.21	.74	4.55	113.33	1.06	2.34	96.64	9.62
26	10.49	250.01	2.000	10.00	.21	.78	4.59	114.20	1.07	2.43	97.17	9.66
27	10.49	240.01	2.000	10.00	.21	.81	4.62	115.13	1.09	2.53	97.75	9.72
28	10.37	230.01	2.000	10.00	.21	.84	4.66	116.13	1.11	2.63	98.38	9.77
29	10.25	220.01	2.000	10.00	.21	.87	4.70	117.19	1.13	2.73	99.06	9.84
30	10.09	210.01	2.000	10.00	.21	.90	4.74	118.32	1.15	2.83	99.79	9.91
31	9.93	200.01	2.000	10.00	.21	.93	4.79	119.52	1.17	2.93	100.58	9.98

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .96 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 1.65 M

FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.57	500.00			.35		5.00	95.28	1.27		300.31	
2	11.54	490.00	.794	10.00	.23	.62	5.05	119.73	1.30	.31	120.90	30.93
3	11.51	480.00	.794	10.00	.23	.89	5.15	122.46	1.35	.44	130.62	12.99
4	11.49	470.00	.794	10.00	.23	1.15	5.31	126.78	1.44	.57	132.47	13.06
5	11.29	460.00	.794	10.00	.23	1.42	5.54	132.97	1.56	.70	135.95	13.25
6	11.09	450.00	.794	10.00	.23	1.69	5.86	141.22	1.75	.84	141.10	13.59
7	10.89	440.01	.794	10.00	.23	1.98	6.26	151.65	2.00	.98	149.47	14.11
8	10.89	430.01	.794	10.00	.23	2.28	6.77	164.37	2.33	1.13	159.15	14.85
9	10.89	420.01	1.598	10.00	.23	.64	6.79	160.68	2.35	1.29	175.62	15.81
10	10.89	410.01	1.600	10.00	.22	.73	6.81	164.97	2.36	1.46	160.99	17.56
11	10.89	400.01	1.600	10.00	.22	.81	6.84	165.79	2.38	1.62	161.22	16.00
12	10.89	390.01	1.600	10.00	.22	.89	6.88	166.77	2.41	1.78	161.65	16.12
13	10.81	380.01	1.600	10.00	.22	.97	6.92	167.91	2.44	1.95	162.21	16.16
14	10.73	370.01	1.600	10.00	.22	1.05	6.97	169.24	2.47	2.11	162.90	16.22
15	10.73	360.01	1.600	10.00	.22	1.13	7.02	170.75	2.52	2.27	163.74	16.29
16	10.73	350.01	1.600	10.00	.22	1.21	7.09	172.47	2.56	2.43	164.73	16.37
17	10.73	340.01	1.600	10.00	.22	1.29	7.16	174.39	2.62	2.60	165.90	16.47
18	10.61	330.01	1.600	10.00	.22	1.38	7.25	176.54	2.68	2.76	167.25	16.59
19	10.49	320.01	1.600	10.00	.22	1.46	7.34	178.92	2.74	2.93	169.90	16.73
20	10.49	310.01	2.000	10.00	.21	.99	7.37	183.02	2.77	3.10	157.69	16.88
21	10.49	300.01	2.000	10.00	.21	1.04	7.41	184.00	2.80	3.26	159.22	15.77
22	10.49	290.01	2.000	10.00	.21	1.09	7.45	185.06	2.83	3.42	159.81	15.82
23	10.49	280.01	2.000	10.00	.21	1.14	7.49	186.22	2.86	3.58	159.47	15.88
24	10.49	270.01	2.000	10.00	.21	1.19	7.54	187.47	2.90	3.73	160.20	15.95
25	10.49	260.01	2.000	10.00	.21	1.24	7.59	188.81	2.93	3.90	161.01	16.02
26	10.49	250.01	2.000	10.00	.21	1.29	7.64	190.26	2.98	4.06	161.99	16.10
27	10.49	240.01	2.000	10.00	.21	1.34	7.70	191.81	3.02	4.22	162.95	16.19
28	10.37	230.01	2.000	10.00	.21	1.40	7.76	193.46	3.07	4.38	163.89	16.28
29	10.25	220.01	2.000	10.00	.21	1.45	7.83	195.23	3.13	4.54	165.02	16.30
30	10.09	210.01	2.000	10.00	.21	1.50	7.90	197.10	3.18	4.71	166.24	16.50
31	9.93	200.01	2.000	10.00	.21	1.55	7.98	199.09	3.25	4.88	167.54	16.62

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.61 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 4.57 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SC(N) CUM/SEC	C(N) L/SEC	CL(N) L/M/SEC
1	11.57	500.00			.35		6.00	114.33	1.83		371.17	
2	11.54	490.00	.794	10.00	.23	.75	6.06	143.68	1.87	.37	155.88	37.12
3	11.51	480.00	.794	10.00	.23	1.06	6.18	146.95	1.84	.53	156.75	15.59
4	11.49	470.00	.794	10.00	.23	1.38	6.37	152.14	2.07	.68	158.96	15.67
5	11.29	460.00	.794	10.00	.23	1.70	6.65	159.57	2.25	.84	163.02	15.60
6	11.09	450.00	.794	10.00	.23	2.03	7.03	169.45	2.52	1.01	169.31	16.30
7	10.89	440.01	.794	10.00	.23	2.37	7.52	181.97	2.88	1.18	178.16	16.93
8	10.89	430.01	.794	10.00	.23	2.73	8.12	192.23	3.36	1.35	180.77	17.82
9	10.89	420.01	1.598	10.00	.23	.77	8.14	192.80	3.38	1.54	210.74	18.99
10	10.89	410.01	1.600	10.00	.22	.87	8.17	197.96	3.40	1.75	193.06	21.07
11	10.89	400.01	1.600	10.00	.22	.97	8.21	199.94	3.43	1.95	193.45	19.31
12	10.89	390.01	1.600	10.00	.22	1.07	8.25	200.11	3.47	2.14	193.97	19.30
13	10.81	380.01	1.600	10.00	.22	1.16	8.30	201.49	3.51	2.33	194.64	19.40
14	10.73	370.01	1.600	10.00	.22	1.26	8.36	203.08	3.56	2.53	195.47	19.46
15	10.73	360.01	1.600	10.00	.22	1.36	8.43	204.89	3.62	2.72	196.47	19.55
16	10.73	350.01	1.600	10.00	.22	1.45	8.51	206.95	3.69	2.92	197.67	19.65
17	10.73	340.01	1.600	10.00	.22	1.55	8.60	209.26	3.77	3.12	199.07	19.77
18	10.61	330.01	1.600	10.00	.22	1.65	8.69	211.84	3.85	3.32	200.69	19.91
19	10.49	320.01	1.600	10.00	.22	1.75	8.80	214.69	3.95	3.52	202.55	20.07
20	10.49	310.01	2.000	10.00	.21	1.18	8.84	219.61	3.99	3.72	199.21	20.25
21	10.49	300.01	2.000	10.00	.21	1.25	8.89	220.78	4.03	3.91	180.95	18.92
22	10.49	290.01	2.000	10.00	.21	1.31	8.93	222.06	4.07	4.10	190.56	18.98
23	10.49	280.01	2.000	10.00	.21	1.37	8.99	223.44	4.12	4.29	191.35	19.06
24	10.49	270.01	2.000	10.00	.21	1.43	9.04	224.94	4.17	4.48	192.23	19.14
25	10.49	260.01	2.000	10.00	.21	1.49	9.10	226.56	4.22	4.67	193.20	19.22
26	10.49	250.01	2.000	10.00	.21	1.55	9.17	228.29	4.29	4.87	194.25	19.32
27	10.49	240.01	2.000	10.00	.21	1.61	9.24	230.15	4.35	5.06	195.40	19.43
28	10.37	230.01	2.000	10.00	.21	1.67	9.32	232.14	4.42	5.26	196.66	19.54
29	10.25	220.01	2.000	10.00	.21	1.74	9.40	234.25	4.50	5.45	198.01	19.67
30	10.09	210.01	2.000	10.00	.21	1.80	9.48	236.50	4.58	5.65	199.47	19.80
31	9.93	200.01	2.000	10.00	.21	1.86	9.57	238.88	4.67	5.85	201.03	19.95

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.05 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.93 M/SEC
 TOTAL LENGTH OF MANTFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 6.58 M

FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

1

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	C(N) L/SEC	OL(N) L/M/SEC
1	11.57	500.00			.35		7.00	133.39	2.50		433.03	
2	11.54	490.00	.794	10.00	.23	.87	7.07	167.63	2.55	.43	181.96	43.30
3	11.51	480.00	.794	10.00	.23	1.24	7.20	171.44	2.65	.61	182.87	18.19
4	11.49	470.00	.794	10.00	.23	1.61	7.43	177.09	2.81	.80	185.45	18.20
5	11.29	460.00	.794	10.00	.23	1.99	7.76	186.16	3.07	.98	190.18	18.55
6	11.09	450.00	.794	10.00	.23	2.37	8.20	197.69	3.43	1.17	197.52	19.02
7	10.89	440.01	.794	10.00	.23	2.77	8.77	212.29	3.92	1.37	207.84	19.75
8	10.89	430.01	.794	10.00	.23	3.19	9.47	230.09	4.57	1.58	221.39	20.78
9	10.89	420.01	1.598	10.00	.23	.90	9.50	224.93	4.60	1.80	245.95	22.14
10	10.89	410.01	1.600	10.00	.22	1.02	9.53	230.94	4.63	2.05	225.23	24.50
11	10.89	400.01	1.600	10.00	.22	1.13	9.57	232.09	4.67	2.27	225.68	22.52
12	10.89	390.01	1.600	10.00	.22	1.24	9.63	233.46	4.72	2.50	226.29	22.57
13	10.81	380.01	1.600	10.00	.22	1.36	9.68	235.06	4.78	2.72	227.07	22.63
14	10.75	370.01	1.600	10.00	.22	1.47	9.75	236.92	4.85	2.95	228.04	22.71
15	10.75	360.01	1.600	10.00	.22	1.58	9.83	239.03	4.93	3.18	229.21	22.80
16	10.75	350.01	1.600	10.00	.22	1.70	9.92	241.43	5.02	3.41	230.60	22.92
17	10.75	340.01	1.600	10.00	.22	1.81	10.03	244.13	5.12	3.64	232.24	23.06
18	10.61	330.01	1.600	10.00	.22	1.93	10.14	247.13	5.24	3.87	234.13	23.22
19	10.49	320.01	1.600	10.00	.22	2.04	10.27	250.46	5.38	4.10	236.29	23.41
20	10.49	310.01	2.000	10.00	.21	1.38	10.32	256.20	5.42	4.34	220.73	23.63
21	10.49	300.01	2.000	10.00	.21	1.45	10.37	257.57	5.48	4.56	221.48	22.07
22	10.49	290.01	2.000	10.00	.21	1.52	10.42	259.06	5.54	4.78	222.31	22.15
23	10.49	280.01	2.000	10.00	.21	1.59	10.48	260.67	5.60	5.01	223.24	22.23
24	10.49	270.01	2.000	10.00	.21	1.67	10.55	262.42	5.67	5.23	224.26	22.30
25	10.49	260.01	2.000	10.00	.21	1.74	10.62	264.31	5.75	5.45	225.39	22.43
26	10.49	250.01	2.000	10.00	.21	1.81	10.70	266.33	5.83	5.68	226.62	22.54
27	10.49	240.01	2.000	10.00	.21	1.88	10.78	268.50	5.92	5.90	227.96	22.66
28	10.37	230.01	2.000	10.00	.21	1.95	10.87	270.82	6.02	6.13	229.42	22.80
29	10.25	220.01	2.000	10.00	.21	2.03	10.96	273.28	6.13	6.36	231.00	22.94
30	10.09	210.01	2.000	10.00	.21	2.10	11.06	275.90	6.24	6.59	232.70	23.10
31	9.93	200.01	2.000	10.00	.21	2.17	11.17	278.68	6.36	6.83	234.52	23.27

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.25 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 8.95 M

1 FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	C(N) L/SEC	CL(N) L/M/SEC
1	11.57	500.00			.35	1.00	8.00	152.45	3.26		400.89	49.40
2	11.54	490.00	.794	10.00	.23	1.42	8.23	191.57	3.33	.49	207.84	20.78
3	11.51	480.00	.794	10.00	.23	1.84	8.49	195.93	3.46	.91	209.00	20.90
4	11.49	470.00	.794	10.00	.23	2.27	8.86	202.85	3.67	1.12	211.95	21.19
5	11.29	460.00	.794	10.00	.23	2.71	9.37	212.75	4.00	1.34	217.35	21.73
6	11.09	450.00	.794	10.00	.23	3.17	10.02	225.93	4.48	1.57	225.53	22.57
7	10.89	440.01	.794	10.00	.23	3.65	10.83	242.61	5.12	1.80	237.01	23.75
8	10.89	430.01	.794	10.00	.23	4.03	10.86	257.06	6.01	2.06	280.97	25.30
9	10.89	420.01	1.598	10.00	.23	4.16	10.86	257.06	6.01	2.34	257.40	28.10
10	10.89	410.01	1.600	10.00	.22	4.29	10.89	263.93	6.05	2.60	257.92	25.74
11	10.89	400.01	1.600	10.00	.22	4.42	10.94	265.24	6.10	2.85	258.61	25.79
12	10.89	390.01	1.600	10.00	.22	4.55	11.00	266.80	6.17	3.11	259.50	25.86
13	10.81	380.01	1.600	10.00	.22	4.68	11.07	268.63	6.24	3.37	260.61	25.95
14	10.73	370.01	1.600	10.00	.22	4.81	11.15	270.75	6.33	3.63	261.95	26.06
15	10.73	360.01	1.600	10.00	.22	4.94	11.24	273.18	6.44	3.89	263.54	26.19
16	10.73	350.01	1.600	10.00	.22	5.07	11.34	275.92	6.56	4.16	265.41	26.35
17	10.73	340.01	1.600	10.00	.22	5.20	11.46	279.00	6.69	4.42	267.57	26.54
18	10.61	330.01	1.600	10.00	.22	5.33	11.59	282.43	6.85	4.69	270.04	26.76
19	10.49	320.01	1.600	10.00	.22	5.46	11.74	286.23	7.02	4.96	272.26	27.00
20	10.49	310.01	2.000	10.00	.21	5.59	11.79	292.79	7.09	5.21	253.11	25.23
21	10.49	300.01	2.000	10.00	.21	5.74	11.85	294.35	7.16	5.47	254.06	25.31
22	10.49	290.01	2.000	10.00	.21	5.87	11.91	296.06	7.23	5.72	255.12	25.41
23	10.49	280.01	2.000	10.00	.21	6.00	11.98	297.91	7.32	5.98	256.29	25.51
24	10.49	270.01	2.000	10.00	.21	6.13	12.06	299.90	7.41	6.23	257.58	25.63
25	10.49	260.01	2.000	10.00	.21	6.26	12.14	302.06	7.51	6.49	258.99	25.76
26	10.49	250.01	2.000	10.00	.21	6.39	12.23	304.37	7.62	6.75	260.52	25.90
27	10.49	240.01	2.000	10.00	.21	6.52	12.32	306.85	7.74	7.01	262.19	26.05
28	10.37	230.01	2.000	10.00	.21	6.65	12.42	309.50	7.86	7.27	263.99	26.22
29	10.25	220.01	2.000	10.00	.21	6.78	12.53	312.31	8.00	7.53	265.93	26.40
30	10.09	210.01	2.000	10.00	.21	6.91	12.64	315.31	8.15	7.80	268.01	26.59
31	9.93	200.01	2.000	10.00	.21	7.04	12.76	318.48	8.30			

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.07 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.57 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.62 M
 TOTAL HEAD AT SHORE = 11.69 M

MANIFOLD 5
TRACE C

DISTANCE M	DEPTH M
.00	.00
25.00	.00
35.00	.50
40.00	1.50
50.00	3.00
60.00	4.00
70.00	6.00
90.00	8.00
100.00	9.00
125.00	9.20
150.00	9.30
175.00	9.50
200.00	9.80
225.00	9.80
250.00	9.80
275.00	9.90
300.00	10.00
325.00	10.00
350.00	10.50
375.00	10.50
400.00	11.00
425.00	11.00
450.00	11.00
475.00	11.10
510.00	11.30

LIST OF SYMBOLS

- N = NO OF PORT
- DEPTH(N) = DEPTH AT PORT N
- DIST(N) = DISTANCE FROM SHORE
- DIA(N) = DIAMETER OF MANIFOLD BETWEEN PORT N AND N-1
- DL(N) = LENGTH BETWEEN PORT N AND N-1
- D(N) = DIAMETER OF PORT N
- V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
- U(N) = DISCHARGE VELOCITY OF PORT N
- FN(N) = DENSIMETRIC FROUDE NO OF JET AT PORT N
- E(N) = TOTAL HEAD AT PORT N
- SO(N) = TOTAL DISCHARGE UP TO PORT N
- W(N) = DISCHARGE OF PORT N
- WL(N) = DISCHARGE LOAD PK LENGTH OF MANIFOLD
- WDL5 = DESIGN DISCHARGE FLOW
- VMIN = MINIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- VMAX = MAXIMUM VELOCITY IN MANIFOLD FOR DESIGN FLOW
- DEHS = (SPEC.GRAV. SEAW.-SPEC.GRAV. WASTEW.)/(SPEC.GRAV. WASTEW.)
- FRN = DARCY FRICTION FACTOR IN MANIFOLD
- FRP = DARCY FRICTION FACTOR IN OUTFALL PIPELINE
- VPIPE = UPPER LIMIT FOR VELOCITY IN OUTFALL PIPELINE AT DESIGN FLOW

INITIAL VALUES FOR THE CALCULATION OF THE MANIFOLD

WDES = 4.000 CUM/SEC
VMAX = 2.00 M/SEC
VMIN = .50 M/SEC
DIST(1) = 500.00 M
U(1) = 4.00 M/SEC
DIA(2) = .794 M
DL(2) = 10.00 M
U(2) = .23 M
DL(3) = 10.00 M
DENS = .001
PIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NU K1 = 10
DIA(K1) = 1.600 M
DL(K1) = 10.00 M
U(K1) = .22 M
PORT NU K2 = 20
DIA(K2) = 2.000 M
DL(K2) = 10.00 M
U(K2) = .21 M
PORT NU K3 = 0
DIA(K3) = .000 M
DL(K3) = .00 M
U(K3) = .00 M

THE LENGTH BETWEEN THE PORTS DL(N) AND THE DIAMETER OF THE PORTS
U(N) ARE KEPT CONSTANT ALONG THE MANIFOLD AND SET EQUAL TO
RESPECTIVELY DL(3) AND D(2).
IF WANTED THE DIA(N), DL(N) AND D(N) CAN BE CHANGED FOR PORT NO
N = K TO DIA(K), DL(K) AND U(K).

FLOW CHARACTERISTICS FOR U(1) = 1.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	O(N) L/SEC	OL(N) L/M/SEC
1	11.24	500.00			.35		1.00	19.06	.05	.06	61.86	6.19
2	11.15	490.00	.794	10.00	.23	.13	1.01	23.96	.05	.09	25.99	2.60
3	11.13	480.00	.794	10.00	.23	.18	1.03	24.52	.06	.11	26.54	2.62
4	11.07	470.00	.794	10.00	.23	.23	1.06	25.39	.06	.14	27.22	2.65
5	11.03	460.00	.794	10.00	.23	.28	1.11	26.64	.07	.17	28.28	2.72
6	10.99	450.00	.794	10.00	.23	.34	1.17	28.29	.08	.20	29.76	2.83
7	10.95	440.00	.794	10.00	.23	.40	1.26	30.39	.09	.23	31.69	2.98
8	10.95	430.00	1.598	10.00	.23	.46	1.36	32.93	.09	.26	35.19	3.17
9	10.95	420.00	1.600	10.00	.22	.13	1.36	32.19	.09	.29	32.24	3.52
10	10.95	410.00	1.600	10.00	.22	.15	1.37	33.05	.10	.32	32.30	3.22
11	10.95	400.00	1.600	10.00	.22	.16	1.37	33.22	.10	.36	32.39	3.23
12	10.95	390.00	1.600	10.00	.22	.18	1.38	33.41	.10	.39	32.53	3.24
13	10.75	380.00	1.600	10.00	.22	.19	1.39	33.68	.10	.42	32.70	3.25
14	10.55	370.00	1.600	10.00	.22	.21	1.40	33.97	.10	.45	32.87	3.27
15	10.55	360.00	1.600	10.00	.22	.23	1.41	34.28	.10	.49	33.07	3.29
16	10.55	350.00	1.600	10.00	.22	.24	1.42	34.62	.10	.52	33.30	3.31
17	10.55	340.00	1.600	10.00	.22	.26	1.44	35.01	.11	.55	33.61	3.33
18	10.35	330.01	1.600	10.00	.22	.28	1.46	35.47	.11	.59	33.95	3.36
19	10.15	320.01	1.600	10.00	.22	.29	1.48	35.97	.11	.62	34.30	3.39
20	10.15	310.01	2.000	10.00	.21	.20	1.48	36.80	.11	.65	34.61	3.41
21	10.15	300.01	2.000	10.00	.21	.21	1.49	36.99	.11	.69	34.91	3.43
22	10.15	290.01	2.000	10.00	.21	.22	1.50	37.21	.12	.72	35.22	3.45
23	10.11	280.01	2.000	10.00	.21	.23	1.51	37.44	.12	.75	35.53	3.47
24	10.07	270.01	2.000	10.00	.21	.24	1.52	37.70	.12	.78	35.84	3.49
25	10.03	260.01	2.000	10.00	.21	.25	1.53	37.98	.12	.81	36.15	3.51
26	9.99	250.01	2.000	10.00	.21	.26	1.54	38.27	.12	.85	36.46	3.53
27	9.95	240.01	2.000	10.00	.21	.27	1.55	38.59	.12	.88	36.77	3.55
28	9.95	230.01	2.000	10.00	.21	.28	1.56	38.92	.13	.91	37.08	3.57
29	9.95	220.01	2.000	10.00	.21	.29	1.58	39.27	.13	.95	37.39	3.59
30	9.95	210.01	2.000	10.00	.21	.30	1.59	39.65	.13	.98	37.70	3.61
31	9.95	200.01	2.000	10.00	.21	.31	1.60	40.04	.13	.98	38.01	3.63

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.01 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .32 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .19 M

1 FLOW CHARACTERISTICS FOR U(1) = 4.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	CO(N) L/SEC	OL(N) L/M*SEC
1	11.24	500.00			.35		4.00	76.22	.82		247.45	
2	11.19	490.00	.794	10.00	.23	.50	4.04	95.79	.83	.25	107.92	24.74
3	11.15	480.00	.794	10.00	.23	.71	4.12	97.97	.86	.35	104.50	10.39
4	11.07	470.00	.794	10.00	.23	.92	4.25	101.43	.92	.46	105.98	10.45
5	11.03	460.00	.794	10.00	.23	1.14	4.43	106.38	1.00	.56	100.68	10.60
6	10.99	450.00	.794	10.00	.23	1.35	4.69	112.97	1.12	.67	112.98	10.87
7	10.95	440.00	.794	10.00	.23	1.58	5.01	121.31	1.28	.78	118.77	11.29
8	10.95	430.00	.794	10.00	.23	1.82	5.41	131.49	1.49	.90	126.51	11.88
9	10.95	420.00	1.598	10.00	.23	.51	5.43	128.54	1.50	1.03	140.49	12.65
10	10.95	410.00	1.600	10.00	.22	.58	5.45	131.97	1.51	1.17	128.71	14.05
11	10.95	400.00	1.600	10.00	.22	.65	5.47	132.63	1.53	1.30	128.97	12.87
12	10.95	390.00	1.600	10.00	.22	.71	5.50	133.41	1.54	1.43	129.31	12.90
13	10.75	380.00	1.600	10.00	.22	.77	5.53	134.33	1.56	1.56	129.77	12.93
14	10.55	370.00	1.600	10.00	.22	.84	5.57	135.40	1.58	1.69	130.33	12.98
15	10.55	360.00	1.600	10.00	.22	.90	5.62	136.61	1.61	1.82	131.00	13.03
16	10.55	350.00	1.600	10.00	.22	.97	5.67	137.98	1.64	1.95	131.79	13.10
17	10.55	340.00	1.600	10.00	.22	1.03	5.73	139.52	1.67	2.08	132.73	13.19
18	10.35	330.01	1.600	10.00	.22	1.10	5.80	141.25	1.71	2.21	133.91	13.27
19	10.15	320.01	1.600	10.00	.22	1.17	5.87	143.15	1.76	2.35	135.06	13.30
20	10.15	310.01	2.000	10.00	.21	.79	5.90	146.43	1.77	2.48	126.16	13.51
21	10.15	300.01	2.000	10.00	.21	.83	5.93	147.21	1.79	2.61	126.59	12.62
22	10.15	290.01	2.000	10.00	.21	.87	5.96	148.07	1.81	2.73	127.06	12.66
23	10.11	280.01	2.000	10.00	.21	.91	5.99	148.99	1.83	2.86	127.59	12.71
24	10.07	270.01	2.000	10.00	.21	.95	6.03	149.99	1.85	2.99	128.18	12.76
25	10.03	260.01	2.000	10.00	.21	.99	6.07	151.07	1.88	3.12	128.83	12.82
26	9.99	250.01	2.000	10.00	.21	1.03	6.11	152.23	1.91	3.25	129.53	12.88
27	9.95	240.01	2.000	10.00	.21	1.07	6.16	153.47	1.94	3.37	130.30	12.95
28	9.95	230.01	2.000	10.00	.21	1.12	6.21	154.79	1.97	3.50	131.13	13.03
29	9.95	220.01	2.000	10.00	.21	1.16	6.27	156.20	2.00	3.64	132.03	13.11
30	9.95	210.01	2.000	10.00	.21	1.20	6.32	157.70	2.04	3.77	133.00	13.20
31	9.95	200.01	2.000	10.00	.21	1.24	6.38	159.28	2.08	3.90	134.04	13.30

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.29 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 2.93 M

FLOW CHARACTERISTICS FOR U(1) = 2.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M/SEC
1	11.24	500.00			.35		2.00	38.11	.20		123.72	12.37
2	11.19	490.00	.794	10.00	.23	.25	2.02	47.90	.21	.12	51.97	5.20
3	11.15	480.00	.794	10.00	.23	.36	2.06	48.99	.22	.18	52.26	5.23
4	11.07	470.00	.794	10.00	.23	.46	2.12	50.73	.23	.23	53.01	5.30
5	11.05	460.00	.794	10.00	.23	.57	2.22	53.21	.25	.28	54.36	5.44
6	10.99	450.00	.794	10.00	.23	.68	2.34	56.51	.28	.34	56.06	5.65
7	10.95	440.00	.794	10.00	.23	.79	2.51	60.68	.32	.39	59.41	5.94
8	10.95	430.00	.794	10.00	.23	.91	2.71	65.77	.37	.45	63.28	6.33
9	10.95	420.00	1.598	10.00	.23	.26	2.72	64.29	.38	.51	70.27	7.03
10	10.95	410.00	1.600	10.00	.22	.29	2.72	66.01	.38	.58	64.38	6.44
11	10.95	400.00	1.600	10.00	.22	.32	2.74	66.34	.38	.65	64.51	6.45
12	10.95	390.00	1.600	10.00	.22	.36	2.75	66.73	.39	.71	64.68	6.47
13	10.75	380.00	1.600	10.00	.22	.39	2.77	67.20	.39	.78	64.92	6.49
14	10.55	370.00	1.600	10.00	.22	.42	2.79	67.75	.40	.84	65.21	6.52
15	10.55	360.00	1.600	10.00	.22	.45	2.81	68.36	.40	.91	65.55	6.55
16	10.55	350.00	1.600	10.00	.22	.48	2.84	69.04	.41	.97	65.95	6.59
17	10.55	340.00	1.600	10.00	.22	.52	2.87	69.81	.42	1.04	66.41	6.64
18	10.35	330.01	1.600	10.00	.22	.55	2.90	70.68	.43	1.11	66.97	6.70
19	10.15	320.01	1.600	10.00	.22	.58	2.94	71.65	.44	1.17	67.50	6.76
20	10.15	310.01	2.000	10.00	.21	.40	2.95	73.29	.44	1.24	63.15	6.31
21	10.15	300.01	2.000	10.00	.21	.42	2.97	73.68	.45	1.30	63.36	6.34
22	10.15	290.01	2.000	10.00	.21	.44	2.98	74.11	.45	1.37	63.60	6.36
23	10.11	280.01	2.000	10.00	.21	.46	3.00	74.57	.46	1.43	63.87	6.39
24	10.07	270.01	2.000	10.00	.21	.48	3.02	75.08	.46	1.49	64.16	6.42
25	10.05	260.01	2.000	10.00	.21	.50	3.04	75.62	.47	1.56	64.49	6.45
26	9.95	250.01	2.000	10.00	.21	.52	3.06	76.20	.48	1.62	64.84	6.48
27	9.95	240.01	2.000	10.00	.21	.54	3.08	76.82	.48	1.69	65.23	6.52
28	9.95	230.01	2.000	10.00	.21	.56	3.11	77.48	.49	1.75	65.64	6.56
29	9.95	220.01	2.000	10.00	.21	.58	3.14	78.19	.50	1.82	66.09	6.61
30	9.95	210.01	2.000	10.00	.21	.60	3.17	78.94	.51	1.89	66.58	6.65
31	9.95	200.01	2.000	10.00	.21	.62	3.20	79.73	.52	1.95	67.10	6.65

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.02 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .64 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = .74 M

FLOW CHARACTERISTICS FOR U(1) = 3.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SFC	Q(N) L/SFC	QL(N) L/M/SEC
1	11.24	500.00			.35		3.00	57.17	.46		185.58	
2	11.19	490.00	.794	10.00	.23	.37	3.03	71.84	.47	.19	77.95	18.56
3	11.15	480.00	.794	10.00	.23	.53	3.09	73.48	.49	.26	78.38	7.79
4	11.07	470.00	.794	10.00	.23	.69	3.18	76.08	.52	.34	79.49	7.84
5	11.03	460.00	.794	10.00	.23	.85	3.32	78.79	.56	.42	81.52	7.95
6	10.99	450.00	.794	10.00	.23	1.02	3.51	84.74	.63	.50	84.67	8.15
7	10.95	440.00	.794	10.00	.23	1.19	3.76	90.99	.72	.59	89.09	8.47
8	10.95	430.00	.794	10.00	.23	1.37	4.06	98.62	.84	.68	94.99	8.91
9	10.95	420.00	1.598	10.00	.23	.38	4.07	96.41	.84	.77	105.38	9.40
10	10.95	410.00	1.600	10.00	.22	.44	4.09	98.99	.85	.88	96.54	10.54
11	10.95	400.00	1.600	10.00	.22	.48	4.10	99.48	.86	.97	96.73	9.65
12	10.95	390.00	1.600	10.00	.22	.53	4.13	100.07	.87	1.07	96.99	9.67
13	10.75	380.00	1.600	10.00	.22	.58	4.15	100.76	.88	1.17	97.34	9.70
14	10.55	370.00	1.600	10.00	.22	.63	4.18	101.57	.89	1.26	97.76	9.73
15	10.55	360.00	1.600	10.00	.22	.68	4.22	102.48	.91	1.36	99.27	9.78
16	10.55	350.00	1.600	10.00	.22	.73	4.25	103.51	.92	1.46	99.86	9.83
17	10.55	340.00	1.600	10.00	.22	.78	4.30	104.66	.94	1.56	99.56	9.89
18	10.35	330.01	1.600	10.00	.22	.83	4.35	105.96	.96	1.66	100.38	9.96
19	10.15	320.01	1.600	10.00	.22	.88	4.40	107.39	.99	1.76	101.32	10.04
20	10.15	310.01	2.000	10.00	.21	.59	4.42	109.85	1.00	1.86	98.65	10.13
21	10.15	300.01	2.000	10.00	.21	.62	4.45	110.44	1.01	1.96	98.97	9.46
22	10.15	290.01	2.000	10.00	.21	.65	4.47	111.08	1.02	2.05	95.32	9.53
23	10.11	280.01	2.000	10.00	.21	.68	4.50	111.77	1.03	2.15	95.72	9.57
24	10.07	270.01	2.000	10.00	.21	.71	4.52	112.53	1.04	2.24	96.16	9.62
25	10.03	260.01	2.000	10.00	.21	.74	4.55	113.34	1.06	2.34	96.65	9.66
26	9.99	250.01	2.000	10.00	.21	.78	4.59	114.21	1.07	2.43	97.18	9.72
27	9.95	240.01	2.000	10.00	.21	.81	4.62	115.14	1.09	2.53	97.76	9.79
28	9.95	230.01	2.000	10.00	.21	.84	4.66	116.13	1.11	2.63	98.38	9.84
29	9.95	220.01	2.000	10.00	.21	.87	4.70	117.18	1.13	2.73	99.06	9.91
30	9.95	210.01	2.000	10.00	.21	.90	4.74	118.31	1.15	2.83	99.78	9.91
31	9.95	200.01	2.000	10.00	.21	.93	4.79	119.50	1.17	2.93	100.56	9.98

OUTFALL PIPELINE

TOTAL DISCHARGE = 3.03 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = .96 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 1.65 M

1 FLOW CHARACTERISTICS FOR U(1) = 5.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(F)	E(N) M	SO(N) CUM/SEC	C(N) L/SEC	OL(N) L/M/SEC
1	11.24	500.00			.35		5.00	95.28	1.27		300.31	30.83
2	11.19	490.00	.794	10.00	.23	.62	5.05	119.73	1.30	.31	120.90	12.90
3	11.15	480.00	.794	10.00	.23	.89	5.15	122.06	1.35	.44	130.63	13.06
4	11.07	470.00	.794	10.00	.23	1.15	5.31	126.79	1.44	.57	132.47	13.25
5	11.03	460.00	.794	10.00	.23	1.42	5.54	132.07	1.56	.70	135.95	13.59
6	10.99	450.00	.794	10.00	.23	1.69	5.86	141.21	1.75	.84	141.09	14.11
7	10.95	440.00	.794	10.00	.23	1.98	6.26	151.63	2.00	.98	148.46	14.85
8	10.95	430.00	.794	10.00	.23	2.28	6.77	164.35	2.33	1.13	158.13	15.81
9	10.95	420.00	1.598	10.00	.23	.64	6.79	160.66	2.35	1.29	175.61	17.56
10	10.95	410.00	1.600	10.00	.22	.73	6.81	164.06	2.36	1.46	160.98	16.09
11	10.95	400.00	1.600	10.00	.22	.81	6.84	165.78	2.38	1.62	161.20	16.12
12	10.95	390.00	1.600	10.00	.22	.89	6.88	166.75	2.41	1.78	161.63	16.16
13	10.75	380.00	1.600	10.00	.22	.97	6.92	167.90	2.44	1.95	162.20	16.22
14	10.55	370.00	1.600	10.00	.22	1.05	6.97	169.23	2.47	2.11	162.99	16.29
15	10.55	360.00	1.600	10.00	.22	1.13	7.02	170.75	2.52	2.27	163.73	16.37
16	10.55	350.00	1.600	10.00	.22	1.21	7.09	172.46	2.56	2.43	164.73	16.47
17	10.55	340.00	1.600	10.00	.22	1.29	7.16	174.39	2.62	2.60	165.89	16.59
18	10.35	330.01	1.600	10.00	.22	1.38	7.25	176.54	2.68	2.76	167.25	16.72
19	10.15	320.01	1.600	10.00	.22	1.46	7.34	178.92	2.74	2.93	168.90	16.89
20	10.15	310.01	2.000	10.00	.21	.99	7.37	183.02	2.77	3.10	157.68	15.77
21	10.15	300.01	2.000	10.00	.21	1.04	7.41	183.99	2.80	3.26	159.22	15.92
22	10.15	290.01	2.000	10.00	.21	1.09	7.45	185.06	2.83	3.42	159.81	15.88
23	10.11	280.01	2.000	10.00	.21	1.14	7.49	186.22	2.86	3.58	159.47	15.95
24	10.07	270.01	2.000	10.00	.21	1.19	7.54	187.47	2.90	3.73	160.21	16.02
25	10.03	260.01	2.000	10.00	.21	1.24	7.59	188.81	2.93	3.90	161.01	16.10
26	9.99	250.01	2.000	10.00	.21	1.29	7.64	190.26	2.98	4.06	161.89	16.18
27	9.95	240.01	2.000	10.00	.21	1.34	7.70	191.81	3.02	4.22	162.85	16.28
28	9.95	230.01	2.000	10.00	.21	1.40	7.76	193.46	3.07	4.38	163.89	16.39
29	9.95	220.01	2.000	10.00	.21	1.45	7.83	195.22	3.13	4.54	165.02	16.50
30	9.95	210.01	2.000	10.00	.21	1.50	7.90	197.09	3.18	4.71	166.23	16.62
31	9.95	200.01	2.000	10.00	.21	1.55	7.98	199.07	3.24	4.88	167.53	16.72

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.04 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.61 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 4.57 M

FLOW CHARACTERISTICS FOR U(1) = 6.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SQ(N) CUM/SEC	Q(N) L/SEC	CL(N) L/M/SEC
1	11.24	500.00		10.00	.35		6.00	114.33	1.83		371.17	
2	11.19	490.00	.794	10.00	.23	.75	6.06	143.68	1.87	.37	155.88	37.12
3	11.13	480.00	.794	10.00	.23	1.06	6.18	146.95	1.94	.53	156.75	15.59
4	11.07	470.00	.794	10.00	.23	1.38	6.37	152.14	2.07	.68	159.97	15.68
5	11.03	460.00	.794	10.00	.23	1.70	6.65	159.56	2.25	.84	163.01	15.80
6	10.99	450.00	.794	10.00	.23	2.03	7.03	169.45	2.52	1.01	169.30	16.30
7	10.95	440.00	.794	10.00	.23	2.37	7.52	181.95	2.88	1.19	178.14	16.93
8	10.95	430.00	.794	10.00	.23	2.73	8.12	197.22	3.36	1.35	180.75	17.81
9	10.95	420.00	1.598	10.00	.23	.77	8.14	192.79	3.38	1.54	210.72	18.88
10	10.95	410.00	1.600	10.00	.22	.87	8.17	197.64	3.40	1.75	193.05	21.07
11	10.95	400.00	1.600	10.00	.22	.97	8.21	198.93	3.43	1.95	193.44	19.30
12	10.95	390.00	1.600	10.00	.22	1.06	8.25	200.10	3.47	2.14	193.06	19.34
13	10.75	380.00	1.600	10.00	.22	1.16	8.30	201.48	3.51	2.33	194.63	19.40
14	10.55	370.00	1.600	10.00	.22	1.26	8.36	203.07	3.58	2.53	195.46	19.46
15	10.55	360.00	1.600	10.00	.22	1.36	8.43	204.89	3.62	2.72	196.47	19.55
16	10.55	350.00	1.600	10.00	.22	1.45	8.51	206.95	3.69	2.92	197.66	19.65
17	10.55	340.00	1.600	10.00	.22	1.55	8.60	209.26	3.77	3.12	199.06	19.77
18	10.35	330.01	1.600	10.00	.22	1.65	8.69	211.83	3.85	3.32	200.69	19.91
19	10.15	320.01	1.600	10.00	.22	1.75	8.80	214.68	3.95	3.52	202.54	20.07
20	10.15	310.01	2.000	10.00	.21	1.18	8.84	219.61	3.99	3.72	189.21	20.25
21	10.15	300.01	2.000	10.00	.21	1.25	8.89	220.78	4.03	3.91	189.84	18.92
22	10.15	290.01	2.000	10.00	.21	1.31	8.93	222.06	4.07	4.10	190.56	18.98
23	10.11	280.01	2.000	10.00	.21	1.37	8.99	223.44	4.12	4.29	191.35	19.06
24	10.07	270.01	2.000	10.00	.21	1.43	9.04	224.94	4.17	4.48	192.23	19.14
25	10.03	260.01	2.000	10.00	.21	1.49	9.10	226.56	4.22	4.67	193.20	19.22
26	9.99	250.01	2.000	10.00	.21	1.55	9.17	228.30	4.29	4.87	194.26	19.32
27	9.95	240.01	2.000	10.00	.21	1.61	9.24	230.16	4.35	5.06	195.41	19.43
28	9.95	230.01	2.000	10.00	.21	1.67	9.32	232.14	4.42	5.26	196.66	19.54
29	9.95	220.01	2.000	10.00	.21	1.74	9.40	234.25	4.50	5.45	198.01	19.67
30	9.95	210.01	2.000	10.00	.21	1.80	9.48	236.49	4.58	5.65	199.46	19.80
31	9.95	200.01	2.000	10.00	.21	1.86	9.57	238.87	4.67	5.85	201.02	19.95

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.05 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 1.93 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 6.58 M

FLOW CHARACTERISTICS FOR U(1) = 7.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M ² SEC
1	11.24	300.00			.35		7.00	133.39	2.50		433.03	
2	11.19	490.00	.794	10.00	.23	.87	7.07	167.63	2.55	.43	181.96	43.30
3	11.13	480.00	.794	10.00	.23	1.24	7.20	171.04	2.65	.61	182.87	18.10
4	11.07	470.00	.794	10.00	.23	1.61	7.43	177.50	2.81	.80	185.46	18.20
5	11.03	460.00	.794	10.00	.23	1.99	7.76	186.15	3.07	.98	190.18	18.55
6	10.99	450.00	.794	10.00	.23	2.37	8.20	197.68	3.43	1.17	197.52	19.02
7	10.95	440.00	.794	10.00	.23	2.77	8.77	212.28	3.92	1.37	207.83	19.75
8	10.95	430.00	.794	10.00	.23	3.19	9.47	230.08	4.57	1.58	221.38	20.79
9	10.95	420.00	1.598	10.00	.23	.90	9.50	224.92	4.60	1.80	245.84	22.14
10	10.95	410.00	1.600	10.00	.22	1.02	9.53	230.93	4.63	2.05	225.22	24.59
11	10.95	400.00	1.600	10.00	.22	1.13	9.57	232.08	4.67	2.27	225.67	22.52
12	10.95	390.00	1.600	10.00	.22	1.24	9.62	233.45	4.72	2.50	226.28	22.57
13	10.75	380.00	1.600	10.00	.22	1.36	9.68	235.05	4.78	2.72	227.06	22.63
14	10.55	370.00	1.600	10.00	.22	1.47	9.75	236.91	4.85	2.95	228.03	22.71
15	10.55	360.00	1.600	10.00	.22	1.58	9.83	239.03	4.93	3.19	229.20	22.80
16	10.55	350.00	1.600	10.00	.22	1.70	9.92	241.43	5.02	3.41	230.60	22.92
17	10.55	340.00	1.600	10.00	.22	1.81	10.03	244.12	5.12	3.64	232.23	23.06
18	10.35	330.01	1.600	10.00	.22	1.93	10.14	247.13	5.24	3.87	234.13	23.22
19	10.15	320.01	1.600	10.00	.22	2.04	10.27	250.46	5.38	4.10	236.29	23.41
20	10.15	310.01	2.000	10.00	.21	1.38	10.32	256.20	5.42	4.34	220.73	23.63
21	10.15	300.01	2.000	10.00	.21	1.45	10.37	257.56	5.48	4.56	221.48	22.07
22	10.15	290.01	2.000	10.00	.21	1.52	10.42	259.06	5.54	4.78	222.31	22.15
23	10.11	280.01	2.000	10.00	.21	1.59	10.48	260.67	5.60	5.01	223.24	22.23
24	10.07	270.01	2.000	10.00	.21	1.67	10.55	262.42	5.67	5.23	224.26	22.32
25	10.03	260.01	2.000	10.00	.21	1.74	10.62	264.31	5.75	5.45	225.39	22.43
26	9.99	250.01	2.000	10.00	.21	1.81	10.70	266.34	5.83	5.68	226.62	22.54
27	9.95	240.01	2.000	10.00	.21	1.88	10.78	268.50	5.92	5.90	227.97	22.66
28	9.95	230.01	2.000	10.00	.21	1.95	10.87	270.82	6.02	6.13	229.42	22.80
29	9.95	220.01	2.000	10.00	.21	2.03	10.96	273.28	6.13	6.36	231.00	22.94
30	9.95	210.01	2.000	10.00	.21	2.10	11.06	275.90	6.24	6.59	232.69	23.10
31	9.95	200.01	2.000	10.00	.21	2.17	11.17	278.67	6.36	6.83	234.51	23.27

OUTFALL PIPELINE

TOTAL DISCHARGE = 7.06 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.25 M/SEC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 8.95 M

FLOW CHARACTERISTICS FOR U(1) = 8.00 M/SEC

N	DEPTH(N) M	DIST(N) M	DIA(N) M	DL(N) M	D(N) M	V(N) M/SEC	U(N) M/SEC	FN(N)	E(N) M	SO(N) CUM/SEC	C(N) L/SEC	CL(N) L/M ² /SEC
1	11.24	500.00			.35		8.00	152.45	3.26		494.89	49.49
2	11.15	490.00	.794	10.00	.23	1.00	8.00	191.57	3.33	.49	207.84	20.78
3	11.13	480.00	.794	10.00	.23	1.42	8.23	195.93	3.46	.70	209.00	20.90
4	11.07	470.00	.794	10.00	.23	1.84	8.49	202.85	3.67	.91	211.95	21.19
5	11.03	460.00	.794	10.00	.23	2.27	8.86	212.75	4.00	1.12	217.35	21.73
6	10.99	450.00	.794	10.00	.23	2.71	9.37	225.92	4.48	1.34	225.73	22.57
7	10.95	440.00	.794	10.00	.23	3.17	10.02	242.60	5.12	1.57	237.52	23.75
8	10.95	430.00	.794	10.00	.23	3.65	10.83	262.95	5.97	1.80	253.00	25.30
9	10.95	420.00	1.598	10.00	.23	1.03	10.86	257.05	6.01	2.06	280.06	28.10
10	10.95	410.00	1.600	10.00	.22	1.16	10.89	263.92	6.05	2.34	257.39	25.74
11	10.95	400.00	1.600	10.00	.22	1.29	10.94	265.23	6.10	2.60	257.91	25.70
12	10.95	390.00	1.600	10.00	.22	1.42	11.00	266.79	6.17	2.85	259.60	25.86
13	10.75	380.00	1.600	10.00	.22	1.55	11.07	268.63	6.24	3.11	250.50	25.95
14	10.55	370.00	1.600	10.00	.22	1.68	11.15	270.75	6.33	3.37	260.60	26.06
15	10.55	360.00	1.600	10.00	.22	1.81	11.24	273.17	6.44	3.63	261.84	26.10
16	10.55	350.00	1.600	10.00	.22	1.94	11.34	275.91	6.56	3.89	263.54	26.35
17	10.55	340.00	1.600	10.00	.22	2.07	11.46	278.99	6.69	4.16	265.40	26.54
18	10.35	330.01	1.600	10.00	.22	2.20	11.59	282.43	6.85	4.42	267.57	26.76
19	10.15	320.01	1.600	10.00	.22	2.33	11.74	286.23	7.02	4.69	270.04	27.00
20	10.15	310.01	2.000	10.00	.21	1.58	11.79	292.79	7.09	4.96	259.26	25.23
21	10.15	300.01	2.000	10.00	.21	1.66	11.85	294.35	7.16	5.21	253.11	25.31
22	10.15	290.01	2.000	10.00	.21	1.74	11.91	296.06	7.23	5.47	254.06	25.41
23	10.11	280.01	2.000	10.00	.21	1.82	11.98	297.91	7.32	5.72	255.12	25.51
24	10.07	270.01	2.000	10.00	.21	1.90	12.06	299.91	7.41	5.98	256.29	25.63
25	9.99	260.01	2.000	10.00	.21	1.98	12.14	302.06	7.51	6.23	257.58	25.76
26	9.95	250.01	2.000	10.00	.21	2.07	12.23	304.37	7.62	6.49	259.09	25.90
27	9.95	240.01	2.000	10.00	.21	2.15	12.32	306.85	7.74	6.75	260.52	26.05
28	9.95	230.01	2.000	10.00	.21	2.23	12.42	309.50	7.86	7.01	262.19	26.22
29	9.95	220.01	2.000	10.00	.21	2.32	12.53	312.31	8.00	7.27	263.99	26.40
30	9.95	210.01	2.000	10.00	.21	2.40	12.64	315.30	8.15	7.53	265.93	26.40
31	9.95	200.01	2.000	10.00	.21	2.48	12.76	318.47	8.30	7.80	269.91	26.50

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.07 CUM/SEC
 DIAMETER OF OUTFALL PIPELINE = 2.000 M
 VELOCITY IN OUTFALL PIPELINE = 2.57 M/SFC
 TOTAL LENGTH OF MANIFOLD = 300.00 M
 TOTAL LENGTH OF OUTFALL PIPELINE = 200.63 M
 TOTAL HEAD AT SHORE = 11.69 M