NORSK INSTITUTT FOR VANNFORSKNING

V E D L E G G 1

APPENDIX

A,B,D,E,F

O- 66/72

UTSLIPP AV AVLØPSVANN FRA SKOGHALLSVERKEN

- Dimensjonering av utløpsledning og diffusor.
- Avløpsvannets primærfortynning.

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A P P E N D I X A

HYDRAULIC CALCULATION OF A MANIFOLD AND OUTFALL PIPELINE FOR WASTE WATER DISPOSAL BY MEANS OF A DIGITAL COMPUTER

1. Introduction

The flow distribution from the manifold is calculated after method presented by Rawn, Bowerman and Brooks, 1961 (22).

The rate of discharge $Q_{o,n}$ from port n can be expressed by:

$$Q_{o,n} = C_{D,n} A_{p,n} \sqrt{2gE_n} \tag{1}$$

where

$C_{D,n}$ = discharge coefficient for port n

$A_{p,n}$ = area of port n

E_n = total head at port n

V_n = velocity in the manifold between port n and n-1

$C_{D,n}$ is found to be a function of $\frac{V_n^2}{2g}/E_n$, and the design of the port. $C_{D,n}$ changes therefore along the manifold. Laboratory experiments for Reynolds numbers $VD_o/\nu_o > 20{,}000$ has shown that:

Sharp-edged ports, flowing full:

$$C_{D,n} = 0.63 - 0.58 \frac{V_n^2}{2g}/E_n \tag{2}$$

Smooth bellmouthed ports (with port area contraction ≈ 4:1 or more), flowing full:

$$C_{D,n} = 0.975\left(1 - \frac{V_n^2}{2g}/E_n\right) \tag{3}$$

The total head E_n of port n can be expressed by:

$$E_n = E_{n-1} + H_{f,n} + \frac{\Delta\gamma}{\gamma_o} \Delta y_n \tag{4}$$

where

E_{n-1} = total head at port n-1

$H_{f,n}$ = friction loss between port n and n-1

$\Delta\gamma$ = difference in specific gravity between waste water and receiving water

γ_o = specific gravity of waste water

Δy_n = change in elevation between port n and n-1

The above equation is based upon the assumption that there is no energy loss for the main flow in the manifold when passing a port. In other words, there is perfect pressure recovery compensating for reduction in velocity head in the main flow because of the laterial discharge.

The calculation of the flow distribution from the manifold is a successive procedure starting with the first port at the outer end of the manifold. The manifold is designed based upon a selected design flow and a number of initial assumed values.

The flow in the manifold and outfall pipeline must ensure a regular flushing and cleaning of settled material, excessive growth, etc. This may be achieved by selecting a design flow which is exceeded daily in the dry season, and provides a self-cleaning velocity at any place along the outfall system. To the design flow a maximum velocity in the manifold and outfall pipeline should further be specified. Since the flow in the manifold decreases from the design flow at the entrance to the relatively small discharge flow at the outer end, the diameter of the manifold may have to be changed in steps to meet the specified minimum and maximum velocities.

The diameter of the outer end of the manifold is selected according to a suitable standard pipe size. Corresponding to the selected design flow and a specified minimum velocity, the discharge out of the outer end or the first port is then determined. The discharge velocity, or

the total head at the outer end, has next to be selected in order to determine the area of the first port. The selected discharge velocity will influence the design of the manifold as well as the performance. The discharge velocity is of importance to the initial mixing of the waste water, the discharge load per length of manifold, number of ports, total length of manifold, total head, the capacity of the manifold to perform satisfactorily under varied discharge flows, etc.

The port size and the distance between the ports along the manifold must be selected to give a discharge load corresponding to the design flow. The ports are usually made small to achieve a high degree of initial mixing. The distance between the ports will also influence the degree of initial mixing as well as the design load and the total length of the manifold. Since the discharge of the outer port often is several times greater than the second port, the distance to the second port is also assumed to be greater than the distance between the other ports. This is done to ensure a uniform discharge load in the outer end of the manifold. A good assumption for the first design is to carry the calculation through, assuming the port size and the distance between the ports to be constant along the manifold.

When the accumulated discharge from each port equals the design flow, the inner end of the manifold is reached. The designed manifold has now to be tested for performance as well as to be evaluated from an economical standpoint. To optimize both the technical and the economic design, the initial assumed values have to be changed and the calculations repeated. Since each design is based upon many assumed initial values, the calculations may have to be repeated a great number of times to determine the best solution.

The velocity in the outfall pipeline may also be specified for the design flow. The velocity is largely responsible for the friction loss in the outfall pipeline and may have a dominating role in the total head necessary at the shoreline end of the outfall system. If a high velocity is selected, a pipeline with a small diameter may be installed. However, this may require an extremely high value for the total head at the shoreline to discharge the higher flows which in the wet season may far exceed the design flow.

The total head E at the shore necessary to convey and disperse the waste water is expressed by:

$$E = E_M + H_{f,p} + \frac{\Delta\gamma}{\gamma_o} \Delta y_p \qquad (5)$$

where

E_M = total head of the inner end of the manifold

$H_{f,p}$ = head loss due to friction in the outfall pipeline

Δy_p = depth of water at the inner end of the manifold

2. Computer Program

The computer program is written in the computer language Fortran IV. The computer, UNIVAC 1108 of Computas A/S, Økernvn. 145, Oslo 5, was used to carry out the numerical calculations presented in this report.

List of Symbols

Mathematical Symbols	Program Symbols	Description
Geometric:		
	DIAST(I)	Standard I.D. pipe size
	X(I)	Horizontal distance from the shore along the outfall pipeline profile
y	Y(I)	Depth along the outfall pipeline profile
	DIST(N)	Horizontal distance from the shore along the outfall pipeline profile to port n
	DIAP	Diameter of outfall pipeline
	DIA(N)	Diameter of manifold between port n and n-1
$D_{p,n}$	D(N)	Diameter of port n
	DE(N)	Effective diameter of jet at port n
L_n	DL(N)	Distance between port n and n-1
	SL(N)	Total length of manifold from port 1 to n
Δy_n	H(N)	Change in elevation between port n and n-1
	K1,K2,K3	Port numbers for introducing changes in the geometry of the manifold
Hydraulic:		
	QDES	Design discharge flow
V_n	V(N)	Velocity in manifold between port n and n-1
	VMIN	Minimum velocity in manifold specified for design flow
	VMAX	Maximum velocity in manifold specified for design flow
E_n	E(N)	Total head at port n
λ	FRM	Darcy friction factor in manifold
	FRICT(N)	Head loss due to friction between port n and n-1
γ_o		Specific gravity of waste water
$\Delta\gamma$		Difference in specific gravity between waste water and receiving water

Mathematical Symbols	Program Symbols	Description
$\Delta\gamma/\gamma_o$	DENS	
$C_{D,n}$	CD(N)	Discharge coefficient at port n
$U_{o,n}$	U(N)	Discharge velocity at port n
	FN(N)	Densimetric Froude number of jet at port n
$Q_{o,n}$	Q(N)	Discharge flow at port n
	SQ(N)	Total discharge from manifold up to port n, not including port n
	QY	Total discharge from manifold up to and including port n
	QX	Maximum flow in the manifold corresponding to maximum velocity for design flow at any pre-determined diameter
Q_L	QL(N)	Discharge load per unit length of manifold at port n
	VPIPE	Upper limit of velocity in outfall pipeline specified for design flow
λ	FRP	Darcy friction factor in outfall pipeline
$H_{f,p}$	FPIPE	Head loss due to friction in outfall pipeline
E	ESHORE	Total head at the shore

Input Data

The input of data is provided through seven input statements.

Input statement 5 contains the initial assumed values for the manifold calculation: DIA(2), DL(2), DL(3), D(2), U(1), VMAX, VMIN, QDES, DIST(1), DENS, FRM.

Input statement 6 contains the initial assumed values for the outfall pipeline calculation: FRP, VPIPE.

Input statement 7, 8 and 9 contain data for changing the geometry of the manifold: K1, DIA(K1), DL(K1), L(K1), K2, etc.

Input statement 10 gives the bottom profile along the outfall pipeline through 25 corresponding values of X(I) and Y(I).

Input statement 11 contains a list of 25 standard I.D. pipe sizes.

Program

The main program, called MANIFI, calculates the flow out of each port and follows the step by step procedure described earlier. In a subroutine program BOTTOM(XX,N) the slope and the depth at the bottom is calculated for any distance offshore. This subroutine program is called upon for each port.

The calculation of the manifold is first carried out assuming design flow and constant diameter of the ports and distance between the ports from port 2 and inwards. This is achieved by giving K1, K2 and K3 the value 0 which never will be a number of a port.

As the flow in the manifold increases toward shore, the velocity in the manifold will also increase. When the maximum velocity for the design flow VMAX is exceeded, a new diameter of the manifold is calculated based upon the minimum velocity VMIN. The program then provides for a selection of the nearest standard pipe size with diameter smaller or equal to the calculated diameter. In this way we are insured that the minimum flushing velocity is maintained. Before the calculation proceeds further to the next port, a check is carried out if another increase in the diameter is necessary before reaching the inner end of the manifold. If this is not the case a new diameter is calculated based upon the maximum velocity at the inner end of the manifold, and

the program selects the nearest standard pipe size. However, this time the standard pipe size equal or greater to the calculated diameter is selected to ensure that the maximum velocity for design flow is not violated.

The friction loss in the manifold and the outfall pipeline is calculated according to Darcy's equation.

$$H_f = \lambda \frac{L}{D} \frac{V^2}{2g} \tag{6}$$

where

H_f = head loss due to friction

λ = Darcy friction factor

D = diameter of pipe

L = length of pipe

The discharge load along the manifold is found by dividing the discharge out of port n-1 with the following distance to port n, and is expressed by:

$$\frac{Q_{o,(n-1)}}{L_n}$$

The ports are assumed to be sharp-edged and the contraction coefficient is programmed:

$$C_{D,n} = 0.63 - 0.58 \frac{V_n^2}{2g}/E_n$$

For bellmouthed ports this equation must be replaced by Equation (B.3).

The program provides for the possibility of changing the geometry at three different ports along the manifold. This is achieved by specifying the port numbers K1, K2 and K3 and the corresponding values of DIA(K1), DL(K1), D(K1), etc. The diameter of the manifold DIA(K1)

may be selected freely, except that the maximum velocity VMAX for design flow cannot be violated. If this is the case, the program will cause the immediate selection of a new standard pipe size as if the VMAX has been exceeded by normal calculation procedure. The distance between the ports DL(K1) and the port size D(K1) can be given any value.

When the accumulated discharge from each port exceeds or equals the design flow, the inner end of the manifold is reached.

The manifold is now designed according to the design flow and initial assumed values. The location and the geometry of the manifold is permanently stored for the rest of the program.

A series of hydraulic calculations of the manifold is next carried out to show the performance of the designed manifold for various discharge flows. The initial assumed discharge velocity out of the first port U(1) is varied from 1 m/sec to 8 m/sec to cover a large variation in the flow.

For each hydraulic calculation of the manifold, the program also calculates the flow through the outfall pipeline. In the first calculation for design flow, the geometry of the outfall pipeline is determined according to the bottom profile and the specified maximum pipeline velocity VPIPE. The program selects the closest standard pipe size which gives the velocity equal to or less than VPIPE. The total length of the pipeline is determined by calculating the length along the bottom profile from the shoreline to the inner end of the manifold. The bottom profile is assumed to be a straight line between each value of horizontal distance from shore vs. depth given in the input. When the program repeats the manifold calculation for various discharge flows, the

corresponding flow condition in the outfall pipeline is also calculated. The total head at the shoreline is finally determined for the total waste water disposal system at the various discharge flows.

The programmed waste disposal system consists of an outfall pipeline with one manifold at the end. The larger outfall systems sometimes have two identical manifolds in a Y-shape at the end of the outfall pipeline. The described program can easily be changed to this situation by requiring that the outfall pipeline has to convey twice the flow entering one manifold.

The program is written in the Metric technical system. All input and output data are described in m and sec except for in output where the flow out of each port is given in ℓ/sec and the discharge load in ℓ/m,sec.

Output

The bottom profile is first printed, listing the horizontal distance from the shore and the corresponding depth.

The next printout is a list of symbols used in the printouts.

A list of initial assumed values is then given.

Next, the hydraulic calculation of the manifold is shown in a table. For each port the following values are printed: N, DEPTH(N), DIST(N), DIA(N), DL(N), D(N), V(N), U(N), FN(N), E(N), SQ(N), Q(N) and QL(N).

Immediately following the table of manifold calculations is a summary of calculated data for the outfall pipeline.

The table showing results from the manifold calculations and the following summary of outfall pipeline data is repeated several times, corresponding to the selected discharge velocities from 1 m/sec to 8 m/sec.

A P P E N D I X B

CALCULATION OF THE JET MIXING BY SUBMERGED WASTE WATER DISPOSAL BY MEANS OF DIGITAL COMPUTER

1. INTRODUCTION

Theoretical description of turbulent jet mixing in the zone of established jet flow in stagnant receiving water with stable density stratification has been presented by Loh-Nien Fan and Norman H. Brooks, 1969 (3). Based upon this theoretical work, and earlier computer programme by John D. Ditmars, 1969 (4), a new computer programme for the calculation of the initial dilution of a single three dimensional round jet as well as the two dimensional slot jet has been developed at NIVA.

2. BASIC ASSUMPTIONS AND EQUATIONS

Assumptions

The theoretical analysis of turbulent jet mixing in based upon the following assumptions:

A : The fluids are incompressible.

B : Flow is fully turbulent. Molecular transport can be neglected. Density has linear mixing properties.

C : The jet flow is stationary.

D : Pressure is hydrostatic throughout the flow field.

E : Variation of fluid density throughout the flow field are small compared with the reference density chosen. The variation of density can be neglected in considering the inertia terms, but must be included in the gravity terms. Since the variation in density is assumed small, this leads to the approximation that the conservation of mass flux can be replaced by the conservation of volume flux.

F : The initial horizontal momentum is conserved throughout the flow field.

G : The curved jet, under the influence of buoyancy, retains its axial symmetry in a plane perpendicular to the axis.

H : The mean velocity and concentration distribution in the plane perpendicular to the axis of the jet are of similar form throughout the zone of established flow, and can be approximated by the Gaussian normal probability function.

I. Dilution water is entrained unrestricted by boundaries. The momentum of entrainment is balanced across the jet axis and may be neglected in the momentum equation.

Definitions

Fixed space coordinates are (x, y, z) with z in the vertical downwards direction. The mean velocity in the jet lies in the x, z plane. The centerline of the jet is also found in the x, z plane. The cross-section planes normal to the centerline, are defined by the distance s along the centerline from a chosen reference point. The points in such a cross-section are defined by polar coordinates (r,ϕ) for a circular jet, and by the distance n in the x, z plane from the centerline for the two dimensional jet.

Figures 1 and 2 show schematic diagrams of a single round jet and the two dimensional slot jet.

The coordinates (s, r, ϕ) and (s, n, y) then define a point in space. For the scalar field in space, the following functions can be written:

Three dim. round jet	Two dim. slot jet	
$u^*(s,r)$	$u^*(s,n)$	Velocity in s-direction
$\rho_a^*(s,r,\phi)$	$\rho_a^*(s,n)$	Ambient density
$\rho^*(s,r,\phi)$	$\rho^*(s,n)$	Jet density
$c^*(s,r,\ )$	$c^*(s,n)$	Tracer concentration

For the centerline

$u(s)$	velocity in s-direction
$\rho_a(s)$	ambient density
$\rho(s)$	jet density
$c(s)$	tracer concentration
$b(s)$	nominal width of jet
$\theta(s)$	angle between x-axis and tangent to centerline

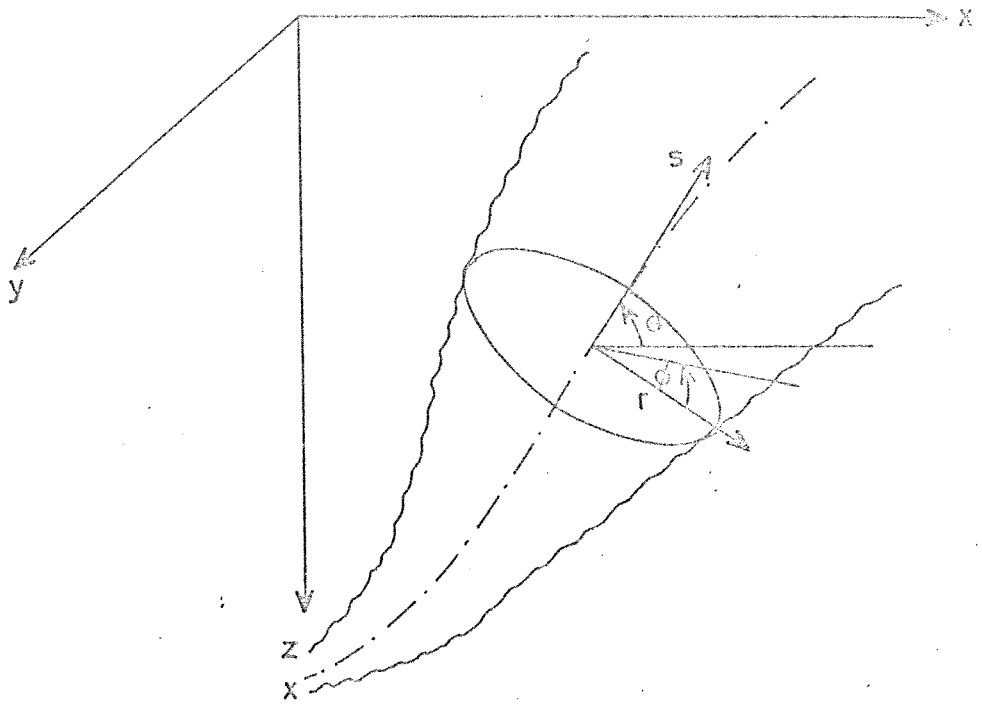

Fig. B 1 Circular symmetric jet

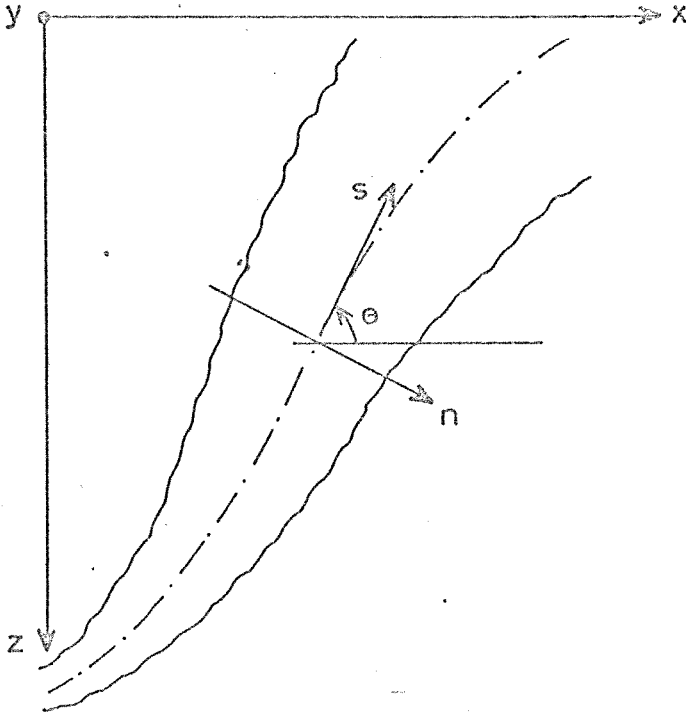

Fig. B 2 Two-dimensional jet

3. ZONE OF ESTABLISHED JET FLOW

Flow entrainment and cross-sectional distribution

The entrainment relation or volume flux derivate is for the three dimensional round jet given by the equation

$$dQ/ds = 2\pi\alpha ub \tag{1}$$

where α is a coefficient of entrainment, assumed constant.

The velocity profiles are similar at all cross-sections normal to the jet trajectory. Also, the profiles for buoyancy and concentration of a tracer are assumed similar. The analysis applies only to the zone of established flow and the similarity is met by using axisymmetric Gaussian profiles, as follows,

Velocity $$u^x(s,r) = u(s)e^{-r^2/b^2} \tag{2}$$

Buoyancy $$\frac{\rho_a{}^x(s,r) - \rho^x(s,r)}{\rho_o} \equiv \frac{\rho_a(s) - \rho(s)}{\rho_o} e^{-r^2/(\lambda b)^2} \tag{3}$$

Tracer $$c^x(r,s) = c(s)e^{-r^2/(\lambda b)^2} \tag{4}$$

where λ^2 is the turbulent Schmidt number.
For the two dimensional jet, the identical equations with r replaced by n, are formulated.

The value of the constants λ and α has been determined through experiments. For round buoyant jet λ and α is set to 1.16 and 0.082, respectively, For two dimensional buoyant jet, λ and α are determined to 0.89 and 0.16.

Equations

Continuity relations for volume, momentum in x-direction, momentum in z-direction, buoyancy and tracer, together with geometric relations, yield the following system of simultaneous differential equations.

Simple round jet

$$\frac{du}{ds} = -2\alpha\frac{u}{b} + \frac{2g\lambda^2}{\rho_o} \cdot \frac{\sin\theta\,(\rho_a - \rho)}{u} \tag{5}$$

$$\frac{db}{ds} = 2\alpha - \frac{g\lambda^2}{\rho_o}\,\frac{b\sin\theta\,(\rho_a - \rho)}{u^2} \tag{6}$$

$$\frac{d(\rho_a - \rho)}{ds} = - \frac{1 + \lambda^2}{\lambda^2} \frac{d \rho_a}{dz} \sin \theta - 2\alpha \frac{\rho_a - \rho}{b} \tag{7}$$

$$\frac{d\theta}{ds} = \frac{2g\lambda^2}{\rho_o} \cdot \frac{\cos \theta (\rho_a - \rho)}{u^2} \tag{8}$$

$$\frac{d}{ds} (cub^2) = 0 \tag{9}$$

$$\frac{dx}{ds} = \cos \theta \tag{10}$$

$$\frac{dz}{ds} = - \sin \theta \tag{11}$$

Eq. (9) integrates into an algebraic equation for the tracer concentration

$$c = c_o \frac{u_o b_o^2}{ub^2} \tag{12}$$

or for the centerline dilution $S = \frac{c_o}{c}$

$$S = \frac{ub^2}{u_o b_o^2} \tag{13}$$

Two dimensional jet

$$\frac{du}{ds} = - \frac{2\alpha}{\sqrt{\pi}} \frac{u}{b} + \frac{\sqrt{2}\, g\lambda}{\rho_o} \cdot \frac{\sin \theta (\rho_a - \rho)}{u} \tag{14}$$

$$\frac{db}{ds} = \frac{4\alpha}{\sqrt{\pi}} - \frac{\sqrt{2}\, g\lambda}{\rho_o} \cdot \frac{b \sin \theta (\rho_a - \rho)}{u^2} \tag{15}$$

$$\frac{d (\rho_a \rho}{ds} = \sqrt{\frac{1 + \lambda^2}{\lambda^2}} \frac{d\rho_a}{dz} \sin \theta - \frac{2\alpha}{\sqrt{\pi}} \cdot \rho_a \rho \tag{16}$$

$$\frac{d\theta}{ds} = \frac{\sqrt{2}\, g\lambda}{\rho_o} \frac{\cos \theta (\rho_a - \rho)}{u^2} \tag{17}$$

$$\frac{d}{ds} (cub) = 0 \tag{18}$$

$$\frac{dx}{ds} = \cos \theta \tag{19}$$

$$\frac{dz}{ds} = -\sin\theta \tag{20}$$

and

$$c = c_o \frac{u_o b_o}{ub} \tag{21}$$

$$S = \frac{ub}{u_o b_o} \tag{22}$$

4. ZONE OF FLOW ESTABLISHMENT

The mixing of the jet in the zone of established jet flow has to meet the boundary conditions of the zone of flow establishment.

Simple round jet

The jet is discharged from a round port with diameter D and with uniform discharge-velocity U, density ρ_d, dilution 1 and the initial discharge angle θ. Deflection is neglected in the zone of flow establishment .
The length s_1 of the zone of flow establishment is through experiments determined to

$$s_1 = 6{,}2\ D \tag{23}$$

The end of the zone of flow establishment is characterized by a Gaussian velocity profile where

$$u_1 = U \tag{24}$$

Continuity and geometric relations then give

$$b_1 = \frac{D}{\sqrt{2}} \tag{25}$$

$$(\rho_a - \rho)_1 = (\rho_a(s_1) - \rho_d) \cdot \frac{1 + \lambda^2}{2\lambda^2} \tag{26}$$

$$\theta_1 = \theta_o \tag{27}$$

$$x_1 = 6.2 \cdot D \cos \theta_o \qquad (x_o \text{ is set to zero}) \tag{28}$$

$$z_1 = -6.2\, D \sin \theta_o + z_o \tag{29}$$

$$S_1 = \frac{2\lambda^2}{1 + \lambda^2} \tag{30}$$

Equations (24) - (29) are used as initial values for the equations (5) - (8), (10) and (11), and equation (30) is used for correction of equation (13) into :

$$S = \frac{4\lambda^2}{1 + \lambda^2} \cdot \frac{ub^2}{UD^2} \tag{31}$$

Two dimensional jet

The two dimensional jet is assumed discharged from an infinite slot of width B. The discharge-velocity, initial density, dilution and discharge angle are given as for the round jet.
The length of the zone of flow establishment has been determined by experiments to

$$s_1 = 5.2 \cdot B \tag{32}$$

The following equations can be written

$$b_1 = \sqrt{\frac{2}{\pi}}\, B \tag{33}$$

$$(\rho_a - \rho) = (\rho_a(s_1) - \rho_d) \cdot \sqrt{\frac{1 + \lambda^2}{2\lambda^2}} \tag{34}$$

$$x_1 = 5.2 \cdot B \cos \theta_o \tag{35}$$

$$z_1 = z_o - 5.2 \cdot B \sin \theta_o \tag{36}$$

$$S_1 = \frac{2\lambda^2}{1 + \lambda^2} \tag{37}$$

$$u_1 = U \tag{38}$$

$$\theta_1 = \theta_o \tag{39}$$

The dilution S may now be expressed as

$$S = \sqrt{\frac{\pi\lambda^2}{1 + \lambda^2}} \cdot \frac{ub}{UB} \qquad (40)$$

Density of the jet and the ambient receiving water

For sea water the density ρ_a of the ambient receiving water is calculated from the following formula :

$$\sigma_a \quad (\rho_a - 1) \cdot 1000$$

$$\sigma_a = Z_T + (R_o + 0.1324) \cdot (1 - A_T + B_T \cdot (R_o - o.1324))$$

where

$$Z_T = - \frac{(T - 3.98)^2 \cdot (T + 283)}{503.57 \cdot (T + 67.26)}$$

$$A_T = T \cdot (4.7867 - 0.098185 \cdot T + 0.0010843 \cdot T^2) \cdot 10^{-3}$$

$$B_T = T \cdot (18.030 - 0.9164 \cdot T + 0.01667 \cdot T^2) \cdot 10^{-6}$$

$$R_o = - 0.069 + 1.4708 \cdot K - 0.001370 \cdot K^2 + 0.0000398 \cdot K^3$$

T = Water temperature in ^oC
S = " salinity in o/oo
K = " clorinity in o/oo

where

$$S = 1.80655 \cdot K$$

For fresh water the density is calculated based upon linear interpolation between the values given in the following table :

^{o}C	ρ_a
0	0.9998679
1	0.9999267
2	0.9999679
3	0.9999922
4	1.0000000
5	0.9999919
6	0.9999681
7	0.9999295
8	0.9998762
9	0.9998088
10	0.9997277
11	0.9996328
12	0.9995247
13	0.9994040
14	0.9992712
15	0.9991265
16	0.9989701
17	0.0088022
18	0.9986232
19	0.9984331
20	0.9982323
21	0.9980210
22	0.9977993
23	0.9975674
24	0.9973256
25	0.9970739
26	0.9968128
27	0.9965421
28	0.9962623
29	0.9959735
30	0.9956756

The density of the jet is found by assuming a linear mixing of the density of the jet and the density of the ambient receiving water.

5. COMPUTER PROGRAM

Jet mixing

The computer program is written in the computer language FORTRAN and named JET MIXING. UNIVAC 1108 of Computas A/S, Økernveien 145, Oslo 5, was used to carry out the numerical calculations presented in this report.

Program

The differential equations described earlier are solved step by step along the jet curve. Each step is calculated by the Runge-Kutta method with given initial conditions.

The neutral depth, i.e. the depth where the density of the jet is equal to the density of the ambient medium, is calculated and interpreted as the equilibrium depth. Besides the maximum and minimum depths, the input constants can be solved on catalogued files.

Input Data

There are three kinds of input data:

- constants
- density profile in the receiving water (temperature,salinity)
- initial values of jet discharge

a) Constants:

DELTAS	Step length along the curve (m).
XLIM	Max. distance from discharge (m) for limitation of the calculations.
GRAV	Acceleration of gravity (m/s^2).
ALPHA	Entrainment coefficient.
LAMBDA	Squareroot of turbulent Schmidt number.

b) Density profile data:

STATION	Name of station.
REG.TIME	Registration time (two items).
DENSWW	Density of waste water.
DEPTH	Depth (m).
TEMP	Temperature (^oC).
SAL	Salinity (0/00).

c) Jet data:

OUTFALL SITE	Name of outfall site.
MANIFOLD NO.	Number identifying manifold.

Up to ten sets of the following:

N	Hole number
DEPTH (N)	Discharge depth (m).
DIST (N)	Discharge distance from shore (m).
DEFF (N)	Effective hole diameter (m).
THETA (N)	Discharge velocity of jet (m/s).
U (N)	Initial velocity of jet (m/s).

Output data

Normal output from a normal set of data:

MANIFOLD NO.	As inputted (not used).
OUTFALL SITE	As inputted (not used).
DENSITY PROFILE NO.	Given by user.
DISCHARGE N	As inputted (not used).
DEPTH (N)	As inputted.
DIST (N)	As inputted.
DEFF (N)	As inputted.
THETA (N)	As inputted.
U (N)	As inputted.
DENSWW	As inputted.
DEPTH (j)	"y-coordinate" (m).
DIST (j)	"x-coordinate" from discharge (m).
WIDTH (j)	Width of jet (m).
DILUT (j)	Dilution of jet.
AMBDENS (j)	Ambient density
VEL (j)	Jet velocity (m/s).

Special lines printed have the following meaning:

DEPTH/MIN or DEPTH/MAX: Horizontal tangent to the curve. The jet is passing an extremal point.

DEPTH/NEUTRAL: Equilibrium point.

The diagnostic and error message are explained in "User Manual".

A P P E N D I X D

EDB-BEREGNINGER AV AVLØPSSTRÅLENES FORTYNNING FRA DIFFUSOR, ALTERNATIV 3

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO A DENSITY PROFILE NO 1

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	18.00	500.00	.292	20.0	4.00	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.38	1.70	.21	1.15	.99973	4.00
16.69	3.58	.53	2.97	.99973	1.55
15.99	5.45	.86	4.80	.99973	.96
15.27	7.32	1.19	6.63	.99973	.70
14.53	9.18	1.51	8.46	.99973	.55
13.75	11.02	1.83	10.30	.99973	.46
12.94	12.84	2.15	12.15	.99973	.39
12.08	14.65	2.46	14.01	.99973	.34
11.17	16.43	2.77	15.88	.99973	.31
10.21	18.19	3.08	17.77	.99973	.28
9.20	19.91	3.37	19.67	.99973	.26
8.13	21.60	3.67	21.59	.99973	.24
7.01	23.26	3.95	23.53	.99973	.22
5.83	24.87	4.23	25.50	.99973	.21
4.60	26.45	4.50	27.49	.99973	.20
3.31	27.98	4.76	29.51	.99973	.19
1.97	29.47	5.02	31.56	.99973	.19
.59	30.91	5.26	33.64	.99973	.18
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	18.00	500.00	.292	30.0	4.00	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.09	1.57	.21	1.15	.99973	4.00
16.09	3.30	.53	2.97	.99973	1.55
15.08	5.02	.86	4.80	.99973	.96
14.05	6.74	1.18	6.63	.99973	.70
13.00	8.44	1.51	8.47	.99973	.55
11.92	10.12	1.83	10.32	.99973	.46
10.81	11.79	2.14	12.18	.99973	.40
9.66	13.43	2.45	14.05	.99973	.35
8.48	15.04	2.75	15.94	.99973	.31
7.26	16.62	3.05	17.85	.99973	.28
5.99	18.17	3.35	19.77	.99973	.26
4.69	19.68	3.63	21.72	.99973	.24
3.34	21.16	3.91	23.70	.99973	.23
1.95	22.60	4.18	25.70	.99973	.22
.52	24.00	4.45	27.73	.99973	.21
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
2	18.00	490.00	.197	20.0	4.02	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.58	1.15	.14	1.15	.99973	4.02
16.39	3.03	.47	3.85	.99973	1.20
16.19	4.90	.79	6.56	.99973	.71
15.46	6.76	1.12	9.27	.99973	.50
14.70	8.61	1.44	12.00	.99973	.39
13.89	10.44	1.76	14.73	.99973	.32
13.02	12.24	2.07	17.49	.99973	.28
12.10	14.02	2.38	20.27	.99973	.24
11.12	15.76	2.68	23.08	.99973	.22
10.07	17.46	2.98	25.92	.99973	.20
8.95	19.12	3.26	28.79	.99973	.18
7.77	20.73	3.54	31.71	.99973	.17
6.52	22.29	3.80	34.67	.99973	.16
5.20	23.80	4.06	37.69	.99973	.16
3.83	25.25	4.31	40.76	.99973	.15
2.40	26.65	4.56	43.89	.99973	.14
.93	28.00	4.79	47.08	.99973	.14
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
2	18.00	490.00	.197	30.0	4.02	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.39	1.06	.14	1.15	.99973	4.02
16.39	2.79	.47	3.85	.99973	1.20
15.37	4.51	.79	6.56	.99973	.71
14.33	6.22	1.12	9.28	.99973	.51
13.26	7.91	1.44	12.01	.99973	.40
12.16	9.58	1.75	14.77	.99973	.33
11.01	11.22	2.06	17.55	.99973	.28
9.82	12.82	2.36	20.35	.99973	.25
8.57	14.39	2.66	23.19	.99973	.22
7.28	15.91	2.95	26.07	.99973	.20
5.94	17.39	3.23	28.99	.99973	.19
4.54	18.83	3.50	31.96	.99973	.18
3.10	20.21	3.76	34.99	.99973	.17
1.61	21.55	4.02	38.06	.99973	.16
.08	22.83	4.27	41.20	.99973	.15
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
31	15.49	200.00	.163	20.0	6.28	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.14	.95	.12	1.15	.99973	6.28
14.46	2.83	.44	4.41	.99973	1.63
13.77	4.70	.77	7.68	.99973	.94
13.06	6.53	1.10	10.95	.99973	.66
12.34	8.44	1.42	14.23	.99973	.51
11.59	10.30	1.75	17.52	.99973	.42

10.82	12.14	2.07	20.81	.99973	.35
10.01	13.97	2.39	24.12	.99973	.31
9.17	15.78	2.70	27.44	.99973	.27
8.29	17.58	3.01	30.78	.99973	.25
7.37	19.36	3.32	34.14	.99973	.22
6.40	21.11	3.63	37.53	.99973	.21
5.39	22.83	3.92	40.93	.99973	.19
4.33	24.53	4.22	44.37	.99973	.18
3.23	26.20	4.50	47.84	.99973	.17
2.07	27.83	4.78	51.34	.99973	.16
.87	29.43	5.06	54.88	.99973	.16

.00 DEPTHLIM/MIN REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
31	15.49	200.00	.163	30.0	6.28	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.98	.88	.12	1.15	.99973	6.28
13.98	2.01	.44	4.41	.99973	1.63
12.98	4.33	.77	7.68	.99973	.94
11.96	6.06	1.10	10.96	.99973	.66
10.92	7.77	1.42	14.24	.99973	.51
9.87	9.47	1.74	17.54	.99973	.42
8.80	11.15	2.06	20.85	.99973	.36
7.69	12.82	2.38	24.17	.99973	.31
6.56	14.47	2.69	27.52	.99973	.28
5.40	16.10	3.00	30.88	.99973	.25
4.21	17.71	3.30	34.28	.99973	.23
2.98	19.28	3.60	37.70	.99973	.21
1.72	20.83	3.89	41.15	.99973	.20
.42	22.35	4.18	44.64	.99973	.19

.00 DEPTHLIM/MIN REACHED.

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO A DENSITY PROFILE NO 2

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
1	18.00	500.00	.292	20.0	4.00	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.38	1.70	.21	1.15	.99985	4.00
16.69	3.58	.53	2.97	.99984	1.55
15.98	5.45	.86	4.80	.99984	.96
15.25	7.31	1.18	6.63	.99984	.70
14.47	9.15	1.51	8.47	.99983	.55
13.66	10.98	1.83	10.32	.99979	.46
13.00	12.37	DEPTH/NEUTRAL			
12.80	12.79	2.15	12.18	.99972	.39
11.97	14.60	2.49	14.03	.99968	.34
11.21	16.46	2.85	15.87	.99963	.29
10.64	18.37	3.24	17.67	.99960	.25
10.37	20.35	3.61	19.45	.99959	.22
10.37	20.59	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
1	18.00	500.00	.292	30.0	4.00	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.09	1.57	.21	1.15	.99985	4.00
16.09	3.30	.53	2.97	.99984	1.55
15.07	5.02	.86	4.80	.99984	.97
14.03	6.72	1.18	6.64	.99982	.71
12.95	8.41	1.50	8.48	.99973	.56
12.15	9.63	DEPTH/NEUTRAL			
11.86	10.08	1.83	10.34	.99967	.46
10.77	11.76	2.17	12.19	.99961	.38
9.76	13.49	2.54	14.01	.99956	.32
8.92	15.30	2.95	15.80	.99953	.27
8.41	17.23	3.37	17.52	.99951	.23
8.34	18.25	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
2	18.00	490.00	.197	20.0	4.02	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.58	1.15	.14	1.15	.99985	4.02
16.89	3.02	.47	3.65	.99985	1.20
16.16	4.89	.79	6.56	.99984	.71
15.43	6.75	1.12	9.28	.99984	.51
14.62	8.53	1.44	12.02	.99983	.40
13.77	10.30	1.75	14.77	.99980	.33

13.36	11.21	DEPTH/NEUTRAL			
12.88	12.18	2.08	17.54	.99973	.27
12.07	14.01	2.45	20.28	.99968	.23
11.49	15.92	2.85	22.96	.99965	.19
11.35	17.46	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	18.00	490.00	.197	30.0	4.02	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.39	1.06	.14	1.15	.99985	4.02
16.38	2.79	.47	3.85	.99984	1.20
15.36	4.50	.79	6.56	.99984	.71
14.30	6.20	1.11	9.29	.99982	.51
13.21	7.88	1.43	12.04	.99975	.40
12.69	8.64	DEPTH/NEUTRAL			
12.09	9.54	1.76	14.80	.99968	.32
11.04	11.23	2.13	17.53	.99962	.26
10.19	13.04	2.56	20.17	.99958	.21
9.82	15.00	2.96	22.72	.99956	.18
9.82	15.00	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	15.49	200.00	.163	20.0	6.28	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.14	.95	.12	1.15	.99984	6.28
14.46	2.83	.44	4.41	.99983	1.63
13.76	4.70	.77	7.68	.99980	.94
13.05	6.57	1.10	10.96	.99974	.66
12.88	7.02	DEPTH/NEUTRAL			
12.33	8.44	1.43	14.23	.99970	.51
11.04	10.32	1.76	17.50	.99966	.41
11.02	12.22	2.11	20.75	.99962	.34
10.54	14.16	2.46	23.96	.99960	.29
10.27	16.14	2.81	27.14	.99958	.25
10.26	16.85	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	15.49	200.00	.163	30.0	6.28	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.98	.88	.12	1.15	.99984	6.28
13.98	2.61	.44	4.41	.99982	1.64
12.97	4.33	.77	7.68	.99973	.94
12.46	5.38	DEPTH/NEUTRAL			
12.20	5.64	1.02	10.17	.99969	.71
11.19	7.37	1.35	13.44	.99963	.54
10.20	9.11	1.69	16.70	.99958	.43
9.30	10.89	2.05	19.92	.99955	.35
8.55	12.74	2.42	23.08	.99952	.29

8.06	14.68	2.81	26.16	.99950	.24
7.95	16.10	DEPTH/MIN			

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO A DENSITY PROFILE NO 3

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	18.00	500.00	.292	20.0	4.00	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.38	1.70	.21	1.15	.99927	4.00
16.69	3.58	.53	2.97	.99918	1.55
15.96	5.44	.86	4.80	.99909	.97
15.20	7.29	1.18	6.64	.99899	.70
14.60	8.69	DEPTH/NEUTRAL			
14.42	9.13	1.51	8.48	.99892	.55
13.64	10.98	1.84	10.32	.99883	.45
12.94	12.85	2.20	12.15	.99873	.37
12.44	14.78	2.57	13.94	.99867	.31
12.28	16.61	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	18.00	500.00	.292	30.0	4.00	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.09	1.57	.21	1.15	.99923	4.00
16.09	3.29	.53	2.97	.99910	1.55
15.05	5.01	.86	4.81	.99898	.97
14.00	6.71	1.18	6.65	.99889	.71
13.90	6.86	DEPTH/NEUTRAL			
12.94	8.41	1.52	8.49	.99873	.55
11.95	10.14	1.87	10.31	.99862	.44
11.11	11.96	2.26	12.09	.99856	.35
10.59	13.88	2.66	13.82	.99852	.29
10.52	14.91	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	18.00	490.00	.197	20.0	4.02	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.58	1.15	.14	1.15	.99929	4.02
16.89	3.02	.47	3.85	.99920	1.20
16.15	4.88	.79	6.57	.99911	.71
15.38	6.73	1.12	9.29	.99902	.51
15.25	7.04	DEPTH/NEUTRAL			
14.60	8.57	1.45	12.02	.99894	.39
13.90	10.44	1.80	14.76	.99887	.31
13.42	12.38	2.17	17.39	.99880	.25
13.33	13.56	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	18.00	490.00	.197	30.0	4.02	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.39	1.06	.14	1.15	.99927	4.02
16.38	2.78	.47	3.85	.99914	1.21
15.34	4.49	.79	6.57	.99901	.71
14.67	5.57	DEPTH/NEUTRAL			
14.54	5.78	1.04	8.65	.99893	.55
13.49	7.48	1.37	11.37	.99881	.41
12.53	9.24	1.74	14.05	.99869	.31
11.89	11.13	2.15	16.64	.99862	.24
11.82	12.01	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	15.49	200.00	.163	20.0	6.28	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.14	.95	.12	1.15	.99899	6.28
14.46	2.83	.44	4.41	.99892	1.64
13.75	4.70	.77	7.69	.99885	.94
13.12	6.33	DEPTH/NEUTRAL			
13.03	6.56	1.10	10.96	.99874	.66
12.32	8.43	1.43	14.24	.99866	.51
11.67	10.33	1.77	17.49	.99860	.40
11.19	12.27	2.13	20.71	.99856	.33
10.96	14.25	2.47	23.88	.99854	.28
10.96	14.54	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	15.49	200.00	.163	30.0	6.28	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.98	.88	.12	1.15	.99897	6.28
13.98	2.61	.44	4.41	.99888	1.64
12.97	4.33	.77	7.69	.99874	.94
12.77	4.66	DEPTH/NEUTRAL			
12.19	5.64	1.02	10.17	.99865	.71
11.19	7.37	1.36	13.44	.99856	.53
10.27	9.14	1.71	16.67	.99850	.41
9.51	10.99	2.08	19.83	.99846	.33
9.06	12.94	2.46	22.91	.99844	.27
9.00	13.92	DEPTH/MIN			

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO A DENSITY PROFILE NO 4

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	18.00	500.00	.292	20.0	4.00	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.38	1.70	.21	1.15	.99987	4.00
16.70	3.58	.53	2.97	.99987	1.54
16.02	5.46	.86	4.79	.99987	.96
15.35	7.35	1.19	6.61	.99987	.69
14.70	9.24	1.52	8.43	.99987	.54
14.06	11.13	1.85	10.24	.99987	.44
13.44	13.04	2.18	12.05	.99987	.38
12.85	14.95	2.52	13.86	.99987	.33
12.29	16.86	2.85	15.67	.99987	.29
11.76	18.79	3.19	17.47	.99987	.26
11.26	20.73	3.52	19.26	.99987	.23
10.81	22.68	3.86	21.05	.99987	.21
10.40	24.64	4.20	22.84	.99987	.19
10.05	26.61	4.54	24.62	.99987	.18
9.75	28.58	4.88	26.39	.99987	.16
9.52	30.57	5.22	28.17	.99987	.15
9.36	32.56	5.55	29.94	.99987	.14
9.26	34.56	5.88	31.70	.99987	.14
9.24	35.95	DEPTH/MIN			
9.25	36.56	6.21	33.47	.99987	.13
9.32	38.56	6.54	35.24	.99987	.12
9.47	40.55	6.85	37.01	.99987	.12
9.71	42.54	7.16	38.78	.99987	.11
10.04	44.51	7.46	40.56	.99987	.11
10.47	46.46	7.75	42.35	.99987	.10
10.99	48.40	8.03	44.15	.99987	.10
11.49	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	18.00	500.00	.292	30.0	4.00	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.09	1.57	.21	1.15	.99987	4.00
16.10	3.30	.53	2.97	.99987	1.54
15.10	5.04	.86	4.79	.99987	.95
14.12	6.78	1.19	6.61	.99987	.69
13.14	8.52	1.52	8.42	.99987	.54
12.18	10.28	1.86	10.23	.99987	.44
11.24	12.04	2.19	12.04	.99987	.37
10.32	13.82	2.53	13.84	.99987	.32
9.42	15.60	2.86	15.64	.99987	.28
8.55	17.41	3.21	17.42	.99987	.25
7.72	19.22	3.55	19.20	.99987	.23
6.93	21.06	3.89	20.97	.99987	.21
6.18	22.91	4.24	22.73	.99987	.19

5.47	24.79	4.59	24.49	.99987	.17
4.83	26.63	4.95	26.23	.99987	.16
4.24	28.59	5.30	27.96	.99987	.15
3.73	30.52	5.66	29.69	.99987	.14
3.29	32.43	6.01	31.41	.99987	.13
2.94	34.44	6.37	33.12	.99987	.12
2.67	36.43	6.71	34.82	.99987	.11
2.51	38.42	7.06	36.52	.99987	.11
2.45	40.42	7.39	38.22	.99987	.10
2.45	40.51	DEPTH/MIN			
2.50	42.42	7.71	39.91	.99987	.10
2.66	44.41	8.02	41.61	.99987	.10
2.94	46.39	8.32	43.32	.99987	.09
3.34	48.35	8.59	45.03	.99987	.09
3.78	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	18.00	490.00	.197	20.0	4.02	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.58	1.15	.14	1.15	.99987	4.02
16.90	3.03	.47	3.85	.99987	1.20
16.23	4.91	.80	6.55	.99987	.70
15.56	6.80	1.13	9.24	.99987	.50
14.92	8.69	1.46	11.94	.99987	.38
14.30	10.59	1.79	14.62	.99987	.31
13.71	12.50	2.12	17.30	.99987	.26
13.15	14.42	2.46	19.97	.99987	.23
12.64	16.36	2.79	22.64	.99987	.20
12.17	18.30	3.13	25.29	.99987	.18
11.76	20.26	3.47	27.94	.99987	.16
11.41	22.23	3.81	30.58	.99987	.14
11.14	24.21	4.14	33.21	.99987	.13
10.94	26.20	4.48	35.84	.99987	.12
10.83	28.20	4.82	38.46	.99987	.11
10.80	29.60	DEPTH/MIN			
10.81	30.20	5.14	41.08	.99987	.11
10.89	32.19	5.47	43.70	.99987	.10
11.08	34.19	5.78	46.32	.99987	.09
11.37	36.16	6.08	48.95	.99987	.09
11.78	38.12	6.37	51.60	.99987	.09
12.30	40.05	6.65	54.27	.99987	.08
12.93	41.95	6.91	56.95	.99987	.08
13.66	43.81	7.16	59.67	.99987	.08
14.51	45.62	7.40	62.42	.99987	.08
15.44	47.39	7.62	65.21	.99987	.08
16.47	49.10	7.83	68.04	.99987	.08
17.06	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	18.00	490.00	.197	30.0	4.02	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
17.39	1.06	.14	1.15	.99987	4.02
16.39	2.79	.47	3.85	.99987	1.20

15.40	4.53	.80	6.55	.99987	.70
14.42	6.27	1.13	9.24	.99987	.50
13.45	8.02	1.46	11.93	.99987	.38
12.51	9.78	1.79	14.60	.99987	.31
11.59	11.56	2.13	17.27	.99987	.26
10.70	13.35	2.47	19.93	.99987	.22
9.85	15.16	2.81	22.57	.99987	.19
9.04	16.99	3.15	25.20	.99987	.17
8.28	18.84	3.50	27.81	.99987	.15
7.59	20.72	3.85	30.41	.99987	.14
6.96	22.62	4.21	32.99	.99987	.13
6.41	24.54	4.56	35.55	.99987	.12
5.96	26.49	4.92	38.10	.99987	.11
5.60	28.45	5.27	40.64	.99987	.10
5.35	30.44	5.62	43.16	.99987	.09
5.22	32.43	5.96	45.68	.99987	.09
5.21	33.37	DEPTH/MIN			
5.23	34.43	6.29	48.19	.99987	.08
5.37	36.43	6.60	50.71	.99987	.08
5.65	38.41	6.89	53.24	.99987	.08
6.08	40.36	7.16	55.78	.99987	.07
6.64	42.28	7.41	58.35	.99987	.07
7.34	44.15	7.64	60.95	.99987	.07
8.17	45.97	7.85	63.58	.99987	.07
9.11	47.74	8.05	66.26	.99987	.07
10.17	49.44	8.22	68.98	.99987	.07
10.55	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSNW
31	15.49	200.00	.163	20.0	6.28	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.14	.95	.12	1.15	.99987	6.28
14.46	2.83	.44	4.41	.99987	1.63
13.78	4.71	.77	7.68	.99987	.94
13.11	6.59	1.10	10.94	.99987	.66
12.44	8.48	1.43	14.20	.99987	.51
11.79	10.37	1.76	17.45	.99987	.41
11.15	12.26	2.09	20.70	.99987	.34
10.53	14.16	2.42	23.95	.99987	.30
9.92	16.07	2.75	27.19	.99987	.26
9.34	17.99	3.09	30.43	.99987	.23
8.78	19.91	3.42	33.66	.99987	.21
8.26	21.84	3.76	36.88	.99987	.19
7.76	23.77	4.09	40.10	.99987	.17
7.30	25.72	4.43	43.30	.99987	.16
6.88	27.68	4.77	46.51	.99987	.15
6.51	29.64	5.11	49.70	.99987	.14
6.18	31.61	5.45	52.89	.99987	.13
5.89	33.59	5.79	56.07	.99987	.12
5.67	35.58	6.12	59.24	.99987	.11
5.50	37.57	6.46	62.41	.99987	.11
5.39	39.57	6.79	65.58	.99987	.10
5.35	41.57	7.12	68.75	.99987	.10
5.35	41.81	DEPTH/MIN			
5.37	43.57	7.45	71.91	.99987	.09
5.47	45.57	7.77	75.08	.99987	.09
5.64	47.56	8.09	78.25	.99987	.09
5.89	49.53	8.39	81.43	.99987	.08

5.96 50.00 XLIMIT REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	15.49	200.00	.163	30.0	6.28	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.98	.88	.12	1.15	.99987	6.28
13.99	2.61	.44	4.41	.99987	1.63
12.99	4.34	.77	7.68	.99987	.94
12.00	6.08	1.10	10.94	.99987	.66
11.01	7.82	1.43	14.19	.99987	.50
10.04	9.57	1.76	17.44	.99987	.41
9.08	11.32	2.09	20.69	.99987	.34
8.13	13.08	2.43	23.93	.99987	.30
7.20	14.85	2.76	27.16	.99987	.26
6.29	16.63	3.10	30.38	.99987	.23
5.40	18.42	3.44	33.59	.99987	.21
4.54	20.23	3.78	36.79	.99987	.19
3.70	22.05	4.12	39.97	.99987	.17
2.90	23.88	4.47	43.15	.99987	.16
2.14	25.73	4.82	46.31	.99987	.15
1.41	27.59	5.17	49.46	.99987	.13
.73	29.47	5.52	52.59	.99987	.13
.10	31.37	5.87	55.71	.99987	.12

.00 DEPTHLIM/MIN REACHED.

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO 5 DENSITY PROFILE NO 1

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSAW
1	15.57	500.00	.292	20.0	4.00	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.95	1.70	.21	1.15	.99973	4.00
14.26	3.58	.53	2.97	.99973	1.55
13.56	5.45	.86	4.80	.99973	.96
12.84	7.32	1.19	6.63	.99973	.70
12.10	9.18	1.51	8.46	.99973	.55
11.32	11.02	1.83	10.30	.99973	.46
10.51	12.84	2.15	12.15	.99973	.39
9.65	14.65	2.46	14.01	.99973	.34
8.74	16.43	2.77	15.88	.99973	.31
7.78	18.19	3.08	17.77	.99973	.28
6.77	19.91	3.37	19.67	.99973	.26
5.70	21.60	3.67	21.59	.99973	.24
4.58	23.26	3.95	23.53	.99973	.22
3.40	24.87	4.23	25.50	.99973	.21
2.17	26.45	4.50	27.49	.99973	.20
.88	27.98	4.76	29.51	.99973	.19
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSAW
1	15.57	500.00	.292	30.0	4.00	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.66	1.57	.21	1.15	.99973	4.00
13.66	3.30	.53	2.97	.99973	1.55
12.65	5.02	.86	4.80	.99973	.96
11.62	6.74	1.18	6.63	.99973	.70
10.57	8.44	1.51	8.47	.99973	.55
9.49	10.12	1.83	10.32	.99973	.46
8.38	11.79	2.14	12.18	.99973	.40
7.23	13.43	2.45	14.05	.99973	.35
6.05	15.04	2.75	15.94	.99973	.31
4.83	16.62	3.05	17.85	.99973	.28
3.56	18.17	3.35	19.77	.99973	.26
2.26	19.68	3.63	21.72	.99973	.24
.91	21.16	3.91	23.70	.99973	.23
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSAW
2	15.54	490.00	.197	20.0	4.02	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)

15.12	1.15	.14	1.15	.99973	4.02
14.43	3.03	.47	3.85	.99973	1.20
13.73	4.90	.79	6.56	.99973	.71
13.00	6.76	1.12	9.27	.99973	.50
12.24	8.61	1.44	12.00	.99973	.39
11.43	10.44	1.76	14.73	.99973	.32
10.56	12.24	2.07	17.49	.99973	.28
9.64	14.02	2.38	20.27	.99973	.24
8.66	15.76	2.68	23.08	.99973	.22
7.61	17.46	2.98	25.92	.99973	.20
6.49	19.12	3.26	28.79	.99973	.18
5.31	20.73	3.54	31.71	.99973	.17
4.06	22.29	3.80	34.67	.99973	.16
2.74	23.80	4.06	37.69	.99973	.16
1.37	25.25	4.31	40.76	.99973	.15
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.54	490.00	.197	30.0	4.02	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.93	1.06	.14	1.15	.99973	4.02
13.93	2.79	.47	3.85	.99973	1.20
12.91	4.51	.79	6.56	.99973	.71
11.87	6.22	1.12	9.28	.99973	.51
10.80	7.91	1.44	12.01	.99973	.40
9.70	9.58	1.75	14.77	.99973	.33
8.55	11.22	2.06	17.55	.99973	.28
7.36	12.82	2.36	20.35	.99973	.25
6.11	14.39	2.66	23.19	.99973	.22
4.82	15.91	2.95	26.07	.99973	.20
3.48	17.39	3.23	28.99	.99973	.19
2.08	18.83	3.50	31.96	.99973	.18
.64	20.21	3.76	34.99	.99973	.17
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.93	200.00	.163	20.0	6.28	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.58	.95	.12	1.15	.99973	6.28
12.90	2.83	.44	4.41	.99973	1.63
12.21	4.70	.77	7.68	.99973	.94
11.50	6.58	1.10	10.95	.99973	.66
10.78	8.44	1.42	14.23	.99973	.51
10.03	10.30	1.75	17.52	.99973	.42
9.26	12.14	2.07	20.81	.99973	.35
8.45	13.97	2.39	24.12	.99973	.31
7.61	15.78	2.70	27.44	.99973	.27
6.73	17.58	3.01	30.78	.99973	.25
5.81	19.36	3.32	34.14	.99973	.22
4.84	21.11	3.63	37.53	.99973	.21
3.83	22.83	3.92	40.95	.99973	.19
2.77	24.53	4.22	44.37	.99973	.18
1.67	26.20	4.50	47.84	.99973	.17

.51	27.83	4.73	51.34	.99973	.16

.00 DEPTHLIM/MIN REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
31	13.93	200.00	.163	30.0	6.28	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.42	.88	.12	1.15	.99973	6.28
12.42	2.61	.44	4.41	.99973	1.63
11.42	4.33	.77	7.68	.99973	.94
10.40	6.06	1.10	10.96	.99973	.66
9.36	7.77	1.42	14.24	.99973	.51
8.31	9.47	1.74	17.54	.99973	.42
7.24	11.15	2.06	20.85	.99973	.36
6.13	12.82	2.38	24.17	.99973	.31
5.00	14.47	2.69	27.52	.99973	.28
3.84	16.10	3.00	30.88	.99973	.25
2.65	17.71	3.30	34.28	.99973	.23
1.42	19.28	3.60	37.70	.99973	.21
.16	20.83	3.89	41.15	.99973	.20

.00 DEPTHLIM/MIN REACHED.

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO 8 DENSITY PROFILE NO 2

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSMW
1	15.57	500.00	.292	20.0	4.00	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.95	1.70	.21	1.15	.99984	4.00
14.26	3.58	.53	2.97	.99982	1.55
13.55	5.45	.86	4.80	.99978	.96
12.82	7.31	1.19	6.63	.99972	.70
12.07	9.16	1.51	8.47	.99968	.55
11.83	9.76	DEPTH/NEUTRAL			
11.31	11.01	1.84	10.30	.99964	.45
10.58	12.87	2.18	12.13	.99960	.38
9.91	14.76	2.53	13.95	.99957	.32
9.38	16.69	2.89	15.75	.99955	.28
9.06	18.66	3.25	17.53	.99954	.25
9.00	19.98	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSMW
1	15.57	500.00	.292	30.0	4.00	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.66	1.57	.21	1.15	.99983	4.00
13.66	3.30	.53	2.97	.99979	1.55
12.64	5.02	.86	4.80	.99971	.96
11.61	6.73	1.19	6.63	.99966	.70
11.20	7.40	DEPTH/NEUTRAL			
10.57	8.44	1.51	8.47	.99960	.55
9.55	10.16	1.85	10.30	.99955	.45
8.59	11.91	2.21	12.11	.99952	.37
7.72	13.72	2.58	13.89	.99949	.31
7.05	15.60	2.97	15.64	.99947	.26
6.66	17.56	3.35	17.36	.99946	.23
6.62	18.49	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSMW
2	15.54	490.00	.197	20.0	4.02	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.12	1.15	.14	1.15	.99984	4.02
14.43	3.02	.47	3.85	.99983	1.20
13.72	4.89	.79	6.56	.99979	.71
12.97	6.75	1.12	9.28	.99973	.50
12.51	7.87	DEPTH/NEUTRAL			
12.21	8.66	1.45	12.50	.99969	.39
11.47	10.46	1.78	14.72	.99965	.32

10.81	12.34	2.13	17.42	.99961	.26
10.34	14.29	2.50	20.07	.99959	.22
10.20	16.09	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSW
2	15.54	490.00	.197	30.0	4.02	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.93	1.06	.14	1.15	.99984	4.02
13.92	2.79	.47	3.85	.99981	1.20
12.90	4.51	.79	6.56	.99973	.71
12.03	5.95	DEPTH/NEUTRAL			
11.86	6.22	1.12	9.28	.99967	.50
10.84	7.93	1.45	12.00	.99961	.39
9.87	9.68	1.81	14.68	.99956	.31
9.05	11.50	2.19	17.32	.99954	.25
8.52	13.43	2.58	19.83	.99952	.20
8.42	14.70	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSW
31	13.93	200.00	.163	20.0	6.28	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.58	.95	.12	1.15	.99978	6.28
12.90	2.83	.44	4.41	.99973	1.63
12.20	4.70	.77	7.68	.99969	.94
11.50	6.58	1.10	10.95	.99965	.66
11.37	6.92	DEPTH/NEUTRAL			
10.79	8.45	1.43	14.23	.99961	.51
10.11	10.33	1.76	17.49	.99957	.41
9.48	12.23	2.10	20.74	.99955	.34
8.97	14.16	2.45	23.96	.99953	.29
8.64	16.13	2.80	27.15	.99952	.25
8.55	17.80	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSW
31	13.93	200.00	.163	30.0	6.28	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.42	.88	.12	1.15	.99977	6.28
12.42	2.61	.44	4.41	.99970	1.64
11.41	4.33	.77	7.68	.99965	.94
10.90	5.21	DEPTH/NEUTRAL			
10.65	5.64	1.02	10.17	.99960	.71
9.64	7.37	1.35	13.44	.99956	.54
8.60	9.12	1.69	16.69	.99952	.43
7.74	10.89	2.04	19.91	.99949	.35
6.95	12.73	2.41	23.09	.99947	.29
6.35	14.63	2.79	26.29	.99944	.24
6.09	16.61	3.19	29.25	.99943	.21
6.09	16.80	DEPTH/MIN			

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO B DENSITY PROFILE NO 3

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.57	500.00	.292	20.0	4.00	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.95	1.70	.21	1.15	.99896	4.00
14.26	3.58	.53	2.97	.99891	1.55
13.54	5.44	.86	4.80	.99882	.97
12.78	7.30	1.18	6.64	.99871	.70
12.31	8.42	DEPTH/NEUTRAL			
12.01	9.14	1.51	8.48	.99862	.55
11.26	11.00	1.85	10.31	.99857	.45
10.60	12.88	2.20	12.13	.99852	.37
10.11	14.82	2.56	13.93	.99849	.32
9.89	16.80	2.91	15.70	.99848	.27
9.88	17.06	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.57	500.00	.292	30.0	4.00	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.66	1.57	.21	1.15	.99893	4.00
13.66	3.30	.53	2.97	.99884	1.55
12.63	5.01	.86	4.80	.99870	.97
11.72	6.49	DEPTH/NEUTRAL			
11.58	6.72	1.19	6.64	.99859	.70
10.55	8.43	1.52	8.48	.99852	.55
9.55	10.16	1.86	10.30	.99846	.44
8.64	11.94	2.23	12.09	.99842	.36
7.92	13.80	2.62	13.85	.99839	.30
7.49	15.76	3.00	15.57	.99837	.26
7.43	16.77	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.54	490.00	.197	20.0	4.02	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.12	1.15	.14	1.15	.99899	4.02
14.43	3.02	.47	3.85	.99892	1.20
13.70	4.89	.79	6.57	.99884	.71
12.94	6.72	DEPTH/NEUTRAL			
12.93	6.73	1.12	9.29	.99873	.51
12.17	8.58	1.45	12.01	.99864	.39
11.50	10.47	1.80	14.71	.99859	.31
11.07	12.42	2.17	17.36	.99855	.25
11.00	13.54	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.54	490.00	.197	30.0	4.02	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.93	1.06	.14	1.15	.99896	4.02
13.92	2.78	.47	3.85	.99887	1.21
12.89	4.50	.79	6.57	.99873	.71
12.48	5.16	DEPTH/NEUTRAL			
12.09	5.79	1.04	8.64	.99863	.54
11.08	7.51	1.38	11.35	.99855	.40
10.18	9.30	1.75	14.01	.99849	.31
9.57	11.20	2.14	16.59	.99846	.25
9.46	12.47	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.93	200.00	.163	20.0	6.28	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.58	.95	.12	1.15	.99883	6.28
12.90	2.83	.44	4.41	.99873	1.64
12.19	4.70	.77	7.68	.99865	.94
11.66	6.09	DEPTH/NEUTRAL			
11.65	6.12	1.02	10.17	.99860	.71
10.94	7.99	1.35	13.44	.99854	.54
10.26	9.87	1.68	16.71	.99850	.43
9.65	11.77	2.03	19.95	.99846	.35
9.18	13.72	2.38	23.16	.99844	.30
8.94	15.70	2.73	26.34	.99843	.26
8.92	16.37	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.93	200.00	.163	30.0	6.28	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.42	.88	.12	1.15	.99880	6.28
12.42	2.61	.44	4.41	.99867	1.64
11.41	4.33	.77	7.69	.99858	.94
11.06	4.92	DEPTH/NEUTRAL			
10.64	5.64	1.02	10.17	.99852	.71
9.63	7.36	1.35	13.44	.99846	.53
8.66	9.12	1.69	16.69	.99842	.42
7.78	10.91	2.05	19.90	.99838	.34
7.07	12.78	2.43	23.04	.99836	.28
6.64	14.73	2.81	26.12	.99835	.24
6.57	15.84	DEPTH/MIN			

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO 5 DENSITY PROFILE NO 4

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.57	500.00	.292	20.0	4.00	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.95	1.70	.21	1.15	.99987	4.00
14.27	3.58	.53	2.97	.99987	1.54
13.59	5.46	.86	4.79	.99987	.96
12.92	7.35	1.19	6.61	.99987	.69
12.27	9.24	1.52	8.43	.99987	.54
11.63	11.13	1.85	10.24	.99987	.44
11.01	13.04	2.18	12.05	.99987	.38
10.42	14.95	2.52	13.86	.99987	.33
9.86	16.86	2.85	15.67	.99987	.29
9.33	18.79	3.19	17.47	.99987	.26
8.83	20.73	3.52	19.26	.99987	.23
8.38	22.68	3.86	21.05	.99987	.21
7.97	24.64	4.20	22.84	.99987	.19
7.62	26.61	4.54	24.62	.99987	.18
7.32	28.58	4.88	26.39	.99987	.16
7.09	30.57	5.22	28.17	.99987	.15
6.93	32.56	5.55	29.94	.99987	.14
6.83	34.56	5.88	31.70	.99987	.14
6.81	35.95	DEPTH/MIN			
6.82	36.56	6.21	33.47	.99987	.13
6.89	38.56	6.54	35.24	.99987	.12
7.04	40.55	6.83	37.01	.99987	.12
7.28	42.54	7.16	38.78	.99987	.11
7.61	44.51	7.46	40.56	.99987	.11
8.04	46.46	7.75	42.35	.99987	.10
8.56	48.40	8.03	44.15	.99987	.10
9.06	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.57	500.00	.292	30.0	4.00	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.66	1.57	.21	1.15	.99987	4.00
13.67	3.30	.53	2.97	.99987	1.54
12.67	5.04	.86	4.79	.99987	.95
11.69	6.78	1.19	6.61	.99987	.69
10.71	8.52	1.52	8.42	.99987	.54
9.75	10.26	1.86	10.23	.99987	.44
8.81	12.04	2.19	12.04	.99987	.37
7.89	13.82	2.53	13.84	.99987	.32
6.99	15.60	2.86	15.64	.99987	.28
6.12	17.41	3.21	17.42	.99987	.25
5.29	19.22	3.55	19.20	.99987	.23
4.50	21.06	3.89	20.97	.99987	.21
3.75	22.91	4.24	22.73	.99987	.19

3.04	24.79	4.59	24.49	.99987	.17
2.40	26.68	4.95	26.23	.99987	.16
1.81	28.59	5.30	27.96	.99987	.15
1.30	30.52	5.66	29.69	.99987	.14
.86	32.48	6.01	31.41	.99987	.13
.51	34.44	6.37	33.12	.99987	.12
.24	36.43	6.71	34.82	.99987	.11
.08	38.42	7.06	36.52	.99987	.11
.02	40.42	7.39	38.22	.99987	.10
.02	40.51	DEPTH/MIN			
.07	42.42	7.71	39.91	.99987	.10
.23	44.41	8.02	41.61	.99987	.10
.51	46.39	8.32	43.32	.99987	.09
.91	48.35	8.59	45.03	.99987	.09
1.35	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSOW
2	15.54	490.00	.197	20.0	4.02	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.12	1.15	.14	1.15	.99987	4.02
14.44	3.03	.47	3.85	.99987	1.20
13.77	4.91	.80	6.55	.99987	.70
13.10	6.80	1.13	9.24	.99987	.50
12.46	8.69	1.46	11.94	.99987	.38
11.84	10.59	1.79	14.62	.99987	.31
11.25	12.50	2.12	17.30	.99987	.26
10.69	14.42	2.46	19.97	.99987	.23
10.18	16.36	2.79	22.64	.99987	.20
9.71	18.30	3.13	25.29	.99987	.18
9.30	20.26	3.47	27.94	.99987	.16
8.95	22.23	3.81	30.58	.99987	.14
8.68	24.21	4.14	33.21	.99987	.13
8.48	26.20	4.48	35.84	.99987	.12
8.37	28.20	4.82	38.46	.99987	.11
8.34	29.60	DEPTH/MIN			
8.35	30.20	5.14	41.08	.99987	.11
8.43	32.19	5.47	43.70	.99987	.10
8.62	34.19	5.78	46.32	.99987	.09
8.91	36.16	6.08	48.95	.99987	.09
9.32	38.12	6.37	51.60	.99987	.09
9.84	40.05	6.65	54.27	.99987	.08
10.47	41.95	6.91	56.95	.99987	.08
11.20	43.81	7.16	59.67	.99987	.08
12.05	45.62	7.40	62.42	.99987	.08
12.98	47.39	7.62	65.21	.99987	.08
14.01	49.10	7.83	68.04	.99987	.08
14.60	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSOW
2	15.54	490.00	.197	30.0	4.02	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.93	1.06	.14	1.15	.99987	4.02
13.93	2.79	.47	3.85	.99987	1.20

12.94	4.53	.80	6.55	.99987	.70
11.96	6.27	1.13	9.24	.99987	.50
10.99	8.02	1.46	11.93	.99987	.38
10.05	9.78	1.79	14.60	.99987	.31
9.13	11.56	2.13	17.27	.99987	.26
8.24	13.35	2.47	19.93	.99987	.22
7.39	15.16	2.81	22.57	.99987	.19
6.58	16.99	3.15	25.20	.99987	.17
5.82	18.84	3.50	27.81	.99987	.15
5.13	20.72	3.85	30.41	.99987	.14
4.50	22.62	4.21	32.99	.99987	.13
3.95	24.54	4.56	35.55	.99987	.12
3.50	26.49	4.92	38.10	.99987	.11
3.14	28.45	5.27	40.64	.99987	.10
2.89	30.44	5.62	43.16	.99987	.09
2.76	32.43	5.96	45.68	.99987	.09
2.75	33.37	DEPTH/MIN			
2.77	34.43	6.29	48.19	.99987	.08
2.91	36.43	6.60	50.71	.99987	.08
3.19	38.41	6.89	53.24	.99987	.08
3.62	40.36	7.16	55.78	.99987	.07
4.18	42.28	7.41	58.35	.99987	.07
4.88	44.15	7.64	60.95	.99987	.07
5.71	45.97	7.85	63.58	.99987	.07
6.65	47.74	8.05	66.26	.99987	.07
7.71	49.44	8.22	68.98	.99987	.07
8.09	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
31	13.93	200.00	.163	20.9	6.28	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.58	.95	.12	1.15	.99987	6.28
12.90	2.83	.44	4.41	.99987	1.63
12.22	4.71	.77	7.68	.99987	.94
11.55	6.59	1.10	10.94	.99987	.66
10.88	8.48	1.43	14.20	.99987	.51
10.23	10.37	1.76	17.45	.99987	.41
9.59	12.26	2.09	20.70	.99987	.34
8.97	14.16	2.42	23.95	.99987	.30
8.36	16.07	2.75	27.19	.99987	.26
7.78	17.99	3.09	30.43	.99987	.23
7.22	19.91	3.42	33.66	.99987	.21
6.70	21.84	3.76	36.88	.99987	.19
6.20	23.77	4.09	40.10	.99987	.17
5.74	25.72	4.43	43.30	.99987	.16
5.32	27.68	4.77	46.51	.99987	.15
4.95	29.64	5.11	49.70	.99987	.14
4.62	31.61	5.45	52.89	.99987	.13
4.33	33.59	5.79	56.07	.99987	.12
4.11	35.58	6.12	59.24	.99987	.11
3.94	37.57	6.46	62.41	.99987	.11
3.83	39.57	6.79	65.58	.99987	.10
3.79	41.57	7.12	68.75	.99987	.10
3.79	41.81	DEPTH/MIN			
3.81	43.57	7.45	71.91	.99987	.09
3.91	45.57	7.77	75.08	.99987	.09
4.08	47.56	8.09	78.25	.99987	.09
4.33	49.54	8.39	81.43	.99987	.08

4.40 50.00 XLIMIT REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
31	13.93	200.00	.163	30.0	6.28	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.42	.88	.12	1.15	.99987	6.28
12.43	2.61	.44	4.41	.99987	1.65
11.43	4.34	.77	7.68	.99987	.94
10.44	6.08	1.10	10.94	.99987	.66
9.45	7.82	1.43	14.19	.99987	.50
8.48	9.57	1.76	17.44	.99987	.41
7.52	11.32	2.09	20.69	.99987	.34
6.57	13.08	2.43	23.93	.99987	.30
5.64	14.85	2.76	27.16	.99987	.26
4.73	16.63	3.10	30.38	.99987	.23
3.84	18.42	3.44	33.59	.99987	.21
2.98	20.23	3.78	36.79	.99987	.19
2.14	22.05	4.12	39.97	.99987	.17
1.34	23.88	4.47	43.15	.99987	.16
.58	25.73	4.82	46.31	.99987	.15
.00	DEPTHLIM/MIN REACHED.				

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO C DENSITY PROFILE NO 1

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSNW
1	15.24	500.00	.292	20.0	4.00	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.62	1.70	.21	1.15	.99973	4.00
13.93	3.58	.53	2.97	.99973	1.55
13.23	5.45	.86	4.80	.99973	.96
12.51	7.32	1.19	6.63	.99973	.70
11.77	9.18	1.51	8.46	.99973	.55
10.99	11.02	1.83	10.30	.99973	.46
10.18	12.84	2.15	12.15	.99973	.39
9.32	14.65	2.46	14.01	.99973	.34
8.41	16.43	2.77	15.88	.99973	.31
7.45	18.19	3.08	17.77	.99973	.28
6.44	19.91	3.37	19.67	.99973	.26
5.37	21.60	3.67	21.59	.99973	.24
4.25	23.26	3.95	23.53	.99973	.22
3.07	24.87	4.23	25.50	.99973	.21
1.84	26.45	4.50	27.49	.99973	.20
.55	27.98	4.76	29.51	.99973	.19
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSNW
1	15.24	500.00	.292	30.0	4.00	.9983

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.33	1.57	.21	1.15	.99973	4.00
13.33	3.30	.53	2.97	.99973	1.55
12.32	5.02	.86	4.80	.99973	.96
11.29	6.74	1.18	6.63	.99973	.70
10.24	8.44	1.51	8.47	.99973	.55
9.16	10.12	1.83	10.32	.99973	.46
8.05	11.79	2.14	12.18	.99973	.40
6.90	13.43	2.45	14.05	.99973	.35
5.72	15.04	2.75	15.94	.99973	.31
4.50	16.62	3.05	17.85	.99973	.28
3.23	18.17	3.35	19.77	.99973	.26
1.93	19.68	3.63	21.72	.99973	.24
.58	21.16	3.91	23.70	.99973	.23
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSNW
2	15.19	493.00	.197	20.0	4.02	.9983

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)

14.77	1.15	.14	1.15	.99973	4.02
14.08	3.03	.47	3.85	.99973	1.20
13.38	4.90	.79	6.56	.99973	.71
12.65	6.76	1.12	9.27	.99973	.50
11.89	8.61	1.44	12.00	.99973	.39
11.08	10.44	1.76	14.73	.99973	.32
10.21	12.24	2.07	17.49	.99973	.28
9.29	14.02	2.38	20.27	.99973	.24
8.31	15.76	2.68	23.08	.99973	.22
7.26	17.46	2.98	25.92	.99973	.20
6.14	19.12	3.26	28.79	.99973	.18
4.96	20.73	3.54	31.71	.99973	.17
3.71	22.29	3.80	34.67	.99973	.16
2.39	23.80	4.06	37.69	.99973	.16
1.02	25.25	4.31	40.76	.99973	.15

.00 DEPTHLIM/MIN REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	30.0	4.02	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.58	1.06	.14	1.15	.99973	4.02
13.58	2.79	.47	3.85	.99973	1.20
12.56	4.51	.79	6.56	.99973	.71
11.52	6.22	1.12	9.28	.99973	.51
10.45	7.91	1.44	12.01	.99973	.40
9.35	9.58	1.75	14.77	.99973	.33
8.20	11.22	2.06	17.55	.99973	.28
7.01	12.82	2.36	20.35	.99973	.25
5.76	14.39	2.66	23.19	.99973	.22
4.47	15.91	2.95	26.07	.99973	.20
3.13	17.39	3.23	28.99	.99973	.19
1.73	18.83	3.50	31.96	.99973	.18
.29	20.21	3.76	34.99	.99973	.17

.00 DEPTHLIM/MIN REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.165	20.0	6.28	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.60	.95	.12	1.15	.99973	6.28
12.92	2.63	.44	4.41	.99973	1.63
12.23	4.70	.77	7.68	.99973	.94
11.52	6.58	1.10	10.95	.99973	.66
10.80	8.44	1.42	14.23	.99973	.51
10.05	10.30	1.75	17.52	.99973	.42
9.28	12.14	2.07	20.81	.99973	.35
8.47	13.97	2.39	24.12	.99973	.31
7.63	15.78	2.70	27.44	.99973	.27
6.75	17.58	3.01	30.78	.99973	.25
5.83	19.36	3.32	34.14	.99973	.22
4.86	21.11	3.63	37.53	.99973	.21
3.85	22.83	3.92	40.93	.99973	.19
2.79	24.53	4.22	44.37	.99973	.18
1.69	26.20	4.50	47.84	.99973	.17

.53	27.83	4.78	51.34	.99973	.16

.00 DEPTHLIM/MIN REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	30.0	6.28	.9988

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.44	.88	.12	1.15	.99973	6.28
12.44	2.61	.44	4.41	.99973	1.63
11.44	4.33	.77	7.68	.99973	.94
10.42	6.06	1.10	10.96	.99973	.66
9.38	7.77	1.42	14.24	.99973	.51
8.33	9.47	1.74	17.54	.99973	.42
7.26	11.15	2.06	20.85	.99973	.36
6.15	12.82	2.38	24.17	.99973	.31
5.02	14.47	2.69	27.52	.99973	.28
3.86	16.10	3.00	30.88	.99973	.25
2.67	17.71	3.30	34.28	.99973	.23
1.44	19.28	3.60	37.70	.99973	.21
.18	20.83	3.89	41.15	.99973	.20

.00 DEPTHLIM/MIN REACHED.

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO C DENSITY PROFILE NO 2

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.24	500.00	.292	20.0	4.00	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.62	1.70	.21	1.15	.99983	4.00
13.93	3.58	.53	2.97	.99981	1.55
13.22	5.45	.86	4.80	.99975	.96
12.50	7.31	1.19	6.63	.99971	.70
11.94	8.73	DEPTH/NEUTRAL			
11.76	9.17	1.51	8.46	.99967	.55
11.03	11.03	1.85	10.29	.99962	.45
10.34	12.91	2.19	12.12	.99959	.38
9.74	14.82	2.54	13.92	.99956	.32
9.30	16.77	2.90	15.71	.99955	.28
9.09	18.76	3.25	17.49	.99954	.25
9.08	19.25	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.24	500.00	.292	30.0	4.00	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.33	1.57	.21	1.15	.99983	4.00
13.33	3.30	.53	2.97	.99976	1.55
12.31	5.02	.86	4.80	.99970	.96
11.28	6.73	1.19	6.63	.99964	.70
10.87	7.40	DEPTH/NEUTRAL			
10.24	8.44	1.51	8.47	.99958	.55
9.22	10.16	1.85	10.30	.99954	.45
8.26	11.91	2.21	12.11	.99951	.37
7.40	13.72	2.58	13.89	.99948	.31
6.72	15.60	2.97	15.64	.99946	.26
6.34	17.56	3.35	17.36	.99944	.23
6.30	18.41	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	20.0	4.02	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.77	1.15	.14	1.15	.99983	4.02
14.08	3.02	.47	3.85	.99982	1.20
13.37	4.89	.79	6.56	.99976	.71
12.62	6.75	1.12	9.28	.99971	.50
12.16	7.87	DEPTH/NEUTRAL			
11.86	8.60	1.45	12.00	.99967	.39
11.12	10.46	1.78	14.72	.99963	.32

10.47	12.35	2.13	17.41	.99959	.26
10.02	14.29	2.50	20.07	.99957	.22
9.90	15.93	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	30.0	4.02	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.58	1.06	.14	1.15	.99983	4.02
13.57	2.79	.47	3.85	.99978	1.20
12.55	4.51	.79	6.56	.99971	.71
11.68	5.95	DEPTH/NEUTRAL			
11.52	6.22	1.12	9.28	.99965	.50
10.49	7.93	1.45	12.00	.99959	.39
9.52	9.68	1.81	14.68	.99955	.31
8.70	11.50	2.19	17.32	.99953	.25
8.17	13.43	2.58	19.88	.99951	.20
8.08	14.67	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	20.0	6.28	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.60	.95	.12	1.15	.99978	6.28
12.92	2.83	.44	4.41	.99973	1.63
12.22	4.70	.77	7.68	.99969	.94
11.52	6.58	1.10	10.95	.99965	.66
11.39	6.93	DEPTH/NEUTRAL			
10.81	8.45	1.43	14.23	.99961	.51
10.13	10.33	1.76	17.49	.99957	.41
9.50	12.22	2.10	20.74	.99955	.34
8.99	14.16	2.45	23.96	.99954	.29
8.66	16.13	2.80	27.15	.99952	.25
8.57	17.80	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	30.0	6.28	.9984

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.44	.88	.12	1.15	.99977	6.28
12.44	2.61	.44	4.41	.99970	1.64
11.43	4.33	.77	7.68	.99965	.94
10.92	5.21	DEPTH/NEUTRAL			
10.67	5.64	1.02	10.17	.99960	.71
9.66	7.37	1.35	13.44	.99956	.54
8.68	9.12	1.69	16.69	.99952	.43
7.76	10.89	2.04	19.91	.99949	.35
6.97	12.73	2.41	23.09	.99947	.29
6.37	14.63	2.79	26.20	.99944	.24
6.11	16.61	3.16	29.25	.99943	.21
6.11	16.80	DEPTH/MIN			

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO C DENSITY PROFILE NO 3

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.24	500.00	.292	20.0	4.00	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.62	1.70	.21	1.15	.99892	4.00
13.93	3.58	.53	2.97	.99888	1.55
13.21	5.44	.86	4.80	.99877	.97
12.46	7.30	1.19	6.63	.99868	.70
12.22	7.90	DEPTH/NEUTRAL			
11.71	9.15	1.51	8.47	.99860	.55
10.98	11.02	1.85	10.30	.99855	.45
10.34	12.91	2.20	12.12	.99850	.37
9.85	14.85	2.56	13.91	.99847	.32
9.59	16.83	2.91	15.69	.99846	.28
9.58	17.43	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.24	500.00	.292	30.0	4.00	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.33	1.57	.21	1.15	.99889	4.00
13.33	3.30	.53	2.97	.99879	1.55
12.30	5.01	.86	4.80	.99866	.97
11.42	6.45	DEPTH/NEUTRAL			
11.26	6.72	1.19	6.64	.99857	.70
10.22	8.43	1.52	8.47	.99850	.55
9.22	10.16	1.87	10.30	.99844	.44
8.33	11.95	2.23	12.09	.99841	.36
7.61	13.81	2.62	13.85	.99838	.30
7.19	15.77	3.00	15.56	.99836	.26
7.14	16.72	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	20.0	4.02	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.77	1.15	.14	1.15	.99894	4.02
14.08	3.02	.47	3.85	.99889	1.20
13.35	4.89	.79	6.57	.99879	.71
12.61	6.69	DEPTH/NEUTRAL			
12.59	6.74	1.12	9.29	.99869	.51
11.83	8.59	1.45	12.01	.99861	.39
11.16	10.47	1.80	14.71	.99856	.31
10.69	12.41	2.16	17.37	.99853	.25
10.56	14.03	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	30.0	4.02	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.58	1.06	.14	1.15	.99892	4.02
13.57	2.78	.47	3.85	.99882	1.21
12.54	4.50	.79	6.57	.99869	.71
12.16	5.12	DEPTH/NEUTRAL			
11.75	5.79	1.04	8.64	.99860	.54
10.73	7.51	1.38	11.35	.99853	.40
9.80	9.29	1.74	14.02	.99847	.31
9.09	11.15	2.13	16.62	.99844	.25
8.80	13.13	2.50	19.15	.99842	.21
8.80	13.15	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	20.0	6.28	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.60	.95	.12	1.15	.99883	6.28
12.92	2.83	.44	4.41	.99873	1.64
12.21	4.70	.77	7.68	.99865	.94
11.68	6.09	DEPTH/NEUTRAL			
11.67	6.12	1.02	10.17	.99860	.71
10.96	7.99	1.35	13.44	.99854	.54
10.28	9.87	1.68	16.71	.99850	.43
9.67	11.77	2.03	19.95	.99846	.35
9.20	13.72	2.38	23.16	.99844	.30
8.96	15.70	2.73	26.34	.99843	.26
8.94	16.37	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	30.0	6.28	.9966

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.44	.88	.12	1.15	.99880	6.28
12.44	2.61	.44	4.41	.99867	1.64
11.43	4.33	.77	7.69	.99858	.94
11.08	4.92	DEPTH/NEUTRAL			
10.66	5.64	1.02	10.17	.99852	.71
9.65	7.36	1.35	13.44	.99846	.53
8.68	9.12	1.69	16.69	.99842	.42
7.80	10.91	2.05	19.90	.99839	.34
7.09	12.78	2.43	23.04	.99836	.28
6.66	14.73	2.81	26.12	.99835	.24
6.59	15.84	DEPTH/MIN			

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 3 OUTFALL SITE NO C DENSITY PROFILE NO 4

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.24	500.00	.292	20.0	4.00	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.62	1.70	.21	1.15	.99987	4.00
13.94	3.58	.53	2.97	.99987	1.54
13.26	5.46	.86	4.79	.99987	.96
12.59	7.35	1.19	6.61	.99987	.69
11.94	9.24	1.52	8.43	.99987	.54
11.30	11.13	1.85	10.24	.99987	.44
10.68	13.04	2.18	12.05	.99987	.38
10.09	14.95	2.52	13.86	.99987	.33
9.53	16.86	2.85	15.67	.99987	.29
9.00	18.79	3.19	17.47	.99987	.26
8.50	20.73	3.52	19.26	.99987	.23
8.05	22.68	3.86	21.05	.99987	.21
7.64	24.64	4.20	22.84	.99987	.19
7.29	26.61	4.54	24.62	.99987	.18
6.99	28.58	4.88	26.39	.99987	.16
6.76	30.57	5.22	28.17	.99987	.15
6.60	32.56	5.55	29.94	.99987	.14
6.50	34.56	5.88	31.70	.99987	.14
6.48	35.95	DEPTH/MIN			
6.49	36.56	6.21	33.47	.99987	.13
6.56	38.56	6.54	35.24	.99987	.12
6.71	40.55	6.85	37.01	.99987	.12
6.95	42.54	7.16	38.78	.99987	.11
7.28	44.51	7.46	40.56	.99987	.11
7.71	46.46	7.75	42.35	.99987	.10
8.23	48.40	8.03	44.15	.99987	.10
8.73	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
1	15.24	500.00	.292	30.0	4.00	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.33	1.57	.21	1.15	.99987	4.00
13.34	3.30	.53	2.97	.99987	1.54
12.34	5.04	.86	4.79	.99987	.95
11.36	6.78	1.19	6.61	.99987	.69
10.38	8.52	1.52	8.42	.99987	.54
9.42	10.28	1.86	10.23	.99987	.44
8.48	12.04	2.19	12.04	.99987	.37
7.56	13.82	2.53	13.84	.99987	.32
6.66	15.60	2.86	15.64	.99987	.28
5.79	17.41	3.21	17.42	.99987	.25
4.96	19.22	3.55	19.20	.99987	.23
4.17	21.06	3.89	20.97	.99987	.21
3.42	22.91	4.24	22.73	.99987	.19

2.71	24.79	4.59	24.49	.99987	.17
2.07	26.68	4.95	26.23	.99987	.16
1.48	28.59	5.30	27.96	.99987	.15
.97	30.52	5.66	29.69	.99987	.14
.53	32.48	6.01	31.41	.99987	.13
.18	34.44	6.37	33.12	.99987	.12
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	20.0	4.02	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.77	1.15	.14	1.15	.99987	4.02
14.09	3.03	.47	3.85	.99987	1.20
13.42	4.91	.80	6.55	.99987	.70
12.75	6.80	1.13	9.24	.99987	.50
12.11	8.69	1.46	11.94	.99987	.38
11.49	10.59	1.79	14.62	.99987	.31
10.90	12.50	2.12	17.30	.99987	.26
10.34	14.42	2.46	19.97	.99987	.23
9.83	16.36	2.79	22.64	.99987	.20
9.36	18.30	3.13	25.29	.99987	.18
8.95	20.26	3.47	27.94	.99987	.16
8.60	22.23	3.81	30.58	.99987	.14
8.33	24.21	4.14	33.21	.99987	.13
8.13	26.20	4.48	35.84	.99987	.12
8.02	28.20	4.82	38.46	.99987	.11
7.99	29.60	DEPTH/MIN			
8.00	30.20	5.14	41.08	.99987	.11
8.08	32.19	5.47	43.70	.99987	.10
8.27	34.19	5.78	46.32	.99987	.09
8.56	36.16	6.08	48.95	.99987	.09
8.97	38.12	6.37	51.60	.99987	.09
9.49	40.05	6.65	54.27	.99987	.08
10.12	41.95	6.91	56.95	.99987	.08
10.85	43.81	7.16	59.67	.99987	.08
11.70	45.62	7.40	62.42	.99987	.08
12.63	47.39	7.62	65.21	.99987	.08
13.66	49.10	7.83	68.04	.99987	.08
14.25	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
2	15.19	490.00	.197	30.0	4.02	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.58	1.06	.14	1.15	.99987	4.02
13.58	2.79	.47	3.85	.99987	1.20
12.59	4.53	.80	6.55	.99987	.70
11.61	6.27	1.13	9.24	.99987	.50
10.64	8.02	1.46	11.93	.99987	.38
9.70	9.78	1.79	14.60	.99987	.31
8.78	11.56	2.13	17.27	.99987	.26
7.89	13.35	2.47	19.93	.99987	.22
7.04	15.16	2.81	22.57	.99987	.19
6.23	16.99	3.15	25.20	.99987	.17

5.47	18.84	3.50	27.81	.99987	.15
4.78	20.72	3.85	30.41	.99987	.14
4.15	22.62	4.21	32.99	.99987	.13
3.60	24.54	4.56	35.55	.99987	.12
3.15	26.49	4.92	38.10	.99987	.11
2.79	28.45	5.27	40.64	.99987	.10
2.54	30.44	5.62	43.16	.99987	.09
2.41	32.43	5.96	45.68	.99987	.09
2.40	33.37	DEPTH/MIN			
2.42	34.43	6.29	48.19	.99987	.08
2.56	36.43	6.60	50.71	.99987	.08
2.84	38.41	6.89	53.24	.99987	.08
3.27	40.36	7.16	55.78	.99987	.07
3.83	42.28	7.41	58.35	.99987	.07
4.53	44.15	7.64	60.95	.99987	.07
5.36	45.97	7.85	63.58	.99987	.07
6.30	47.74	8.05	66.26	.99987	.07
7.36	49.44	8.22	68.98	.99987	.07
7.74	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	20.0	6.28	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.60	.95	.12	1.15	.99987	6.28
12.92	2.83	.44	4.41	.99987	1.63
12.24	4.71	.77	7.68	.99987	.94
11.57	6.59	1.10	10.94	.99987	.66
10.90	8.48	1.43	14.20	.99987	.51
10.25	10.37	1.76	17.45	.99987	.41
9.61	12.26	2.09	20.70	.99987	.34
8.99	14.16	2.42	23.95	.99987	.30
8.38	16.07	2.75	27.19	.99987	.26
7.80	17.99	3.09	30.43	.99987	.23
7.24	19.91	3.42	33.66	.99987	.21
6.72	21.84	3.76	36.88	.99987	.19
6.22	23.77	4.09	40.10	.99987	.17
5.76	25.72	4.43	43.30	.99987	.16
5.34	27.68	4.77	46.51	.99987	.15
4.97	29.64	5.11	49.70	.99987	.14
4.64	31.61	5.45	52.89	.99987	.13
4.35	33.59	5.79	56.07	.99987	.12
4.13	35.58	6.12	59.24	.99987	.11
3.96	37.57	6.46	62.41	.99987	.11
3.85	39.57	6.79	65.58	.99987	.10
3.81	41.57	7.12	68.75	.99987	.10
3.81	41.81	DEPTH/MIN			
3.83	43.57	7.45	71.91	.99987	.09
3.93	45.57	7.77	75.08	.99987	.09
4.10	47.56	8.09	78.25	.99987	.09
4.35	49.54	8.39	81.43	.99987	.08
4.42	50.00	XLIMIT REACHED.			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSWW
31	13.95	200.00	.163	30.0	6.28	1.0003

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.44	.88	.12	1.15	.99987	6.28
12.45	2.61	.44	4.41	.99987	1.63
11.45	4.34	.77	7.68	.99987	.94
10.46	6.08	1.10	10.94	.99987	.66
9.47	7.82	1.43	14.19	.99987	.50
8.50	9.57	1.76	17.44	.99987	.41
7.54	11.32	2.09	20.69	.99987	.34
6.59	13.08	2.43	23.93	.99987	.30
5.66	14.85	2.76	27.16	.99987	.26
4.75	16.63	3.10	30.38	.99987	.23
3.86	18.42	3.44	33.59	.99987	.21
3.00	20.23	3.78	36.79	.99987	.19
2.16	22.05	4.12	39.97	.99987	.17
1.36	23.88	4.47	43.15	.99987	.16
.60	25.73	4.82	46.31	.99987	.15
.00	DEPTHLIM/MIN REACHED.				

A P P E N D I X E

EDB-BEREGNINGER AV UTLØPSLEDNINGENS OG DIFFUSORENS HYDRAULIKK, ALTERNATIVENE 6 og 7

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
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

MANIFOLD 6
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
D(N) = DIAMETER OF PORT N
V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
U(N) = DISCHARGEVELOCITY 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) = 3.00 M/SEC
DIA(2) = .982 M
DL(2) = 10.00 M
D(2) = .27 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 10
DIA(K1) = 2.000 M
DL(K1) = 10.00 M
D(K1) = .25 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	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.45		3.00	50.58	.46		302.80	
2	14.00	490.00	.982	10.00	.27	.40	3.03	66.29	.47	.30	107.11	30.28
3	14.00	480.00	.982	10.00	.27	.54	3.08	67.57	.48	.41	107.46	10.71
4	14.00	470.00	.982	10.00	.27	.68	3.15	69.52	.51	.52	108.46	10.75
5	14.00	460.00	.982	10.00	.27	.83	3.26	72.21	.54	.63	110.33	10.85
6	14.00	450.00	.982	10.00	.27	.97	3.41	75.73	.59	.74	113.27	11.03
7	14.00	440.00	.982	10.00	.27	1.12	3.59	80.13	.66	.85	117.44	11.33
8	14.00	430.00	.982	10.00	.27	1.28	3.81	85.46	.74	.97	122.96	11.74
9	14.00	420.00	.982	10.00	.27	1.44	4.08	91.74	.85	1.09	129.93	12.30
10	14.00	410.00	2.000	10.00	.25	.39	4.09	92.89	.85	1.22	125.05	12.99
11	14.00	400.00	2.000	10.00	.25	.43	4.10	93.18	.86	1.34	125.17	12.50
12	14.00	390.00	2.000	10.00	.25	.47	4.11	93.53	.86	1.47	125.34	12.52
13	14.00	380.00	2.000	10.00	.25	.51	4.13	93.93	.87	1.60	125.56	12.53
14	14.00	370.00	2.000	10.00	.25	.55	4.15	94.40	.88	1.72	125.84	12.56
15	14.00	360.00	2.000	10.00	.25	.59	4.17	94.93	.89	1.85	126.18	12.58
16	14.00	350.00	2.000	10.00	.25	.63	4.19	95.52	.90	1.97	126.59	12.62
17	14.00	340.00	2.000	10.00	.25	.67	4.22	96.19	.91	2.10	127.08	12.66
18	13.84	330.00	2.000	10.00	.25	.71	4.25	96.93	.92	2.23	127.65	12.71
19	13.68	320.00	2.000	10.00	.25	.75	4.28	97.76	.93	2.35	128.31	12.77
20	13.64	310.00	2.000	10.00	.25	.79	4.32	98.66	.95	2.48	129.05	12.83
21	13.60	300.00	2.000	10.00	.25	.83	4.36	99.64	.97	2.61	129.89	12.91
22	13.56	290.00	2.000	10.00	.25	.87	4.40	100.71	.99	2.74	130.82	12.99
23	13.36	280.00	2.000	10.00	.25	.91	4.45	101.87	1.01	2.87	131.87	13.08
24	13.16	270.01	2.000	10.00	.25	.96	4.50	103.12	1.03	3.00	133.02	13.19
25	12.96	260.01	2.000	10.00	.25	1.00	4.56	104.47	1.06	3.14	134.29	13.30
26	12.76	250.01	2.000	10.00	.25	1.04	4.62	105.90	1.09	3.27	135.67	13.43
27	12.56	240.01	2.000	10.00	.25	1.09	4.68	107.44	1.12	3.41	137.17	13.57
28	12.36	230.01	2.000	10.00	.25	1.13	4.75	109.07	1.15	3.54	138.79	13.72
29	12.16	220.02	2.000	10.00	.25	1.17	4.82	110.81	1.18	3.68	140.53	13.88
30	11.83	210.02	2.000	10.00	.25	1.22	4.90	112.65	1.22	3.82	142.42	14.05
31	11.49	200.03	2.000	10.00	.25	1.26	4.98	114.59	1.26	3.97	144.42	14.24

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.11 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 1.31 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 2.15 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	14.00	500.00			.45		1.00	16.86	.05		100.93	
2	14.00	490.00	.982	10.00	.27	.13	1.01	22.10	.05	.10	35.70	10.09
3	14.00	480.00	.982	10.00	.27	.18	1.03	22.52	.05	.14	35.82	3.57
4	14.00	470.00	.982	10.00	.27	.23	1.05	23.17	.06	.17	36.15	3.58
5	14.00	460.00	.982	10.00	.27	.28	1.09	24.07	.06	.21	36.78	3.62
6	14.00	450.00	.982	10.00	.27	.32	1.14	25.24	.07	.25	37.76	3.68
7	14.00	440.00	.982	10.00	.27	.37	1.20	26.71	.07	.28	39.15	3.78
8	14.00	430.00	.982	10.00	.27	.43	1.27	28.49	.08	.32	40.99	3.91
9	14.00	420.00	.982	10.00	.27	.48	1.36	30.58	.09	.36	43.31	4.10
10	14.00	410.00	2.000	10.00	.25	.13	1.36	30.96	.09	.41	41.68	4.33
11	14.00	400.00	2.000	10.00	.25	.14	1.37	31.06	.10	.45	41.72	4.17
12	14.00	390.00	2.000	10.00	.25	.16	1.37	31.18	.10	.49	41.78	4.17
13	14.00	380.00	2.000	10.00	.25	.17	1.38	31.31	.10	.53	41.85	4.18
14	14.00	370.00	2.000	10.00	.25	.18	1.38	31.47	.10	.57	41.95	4.19
15	14.00	360.00	2.000	10.00	.25	.20	1.39	31.64	.10	.62	42.06	4.19
16	14.00	350.00	2.000	10.00	.25	.21	1.40	31.84	.10	.66	42.20	4.21
17	14.00	340.00	2.000	10.00	.25	.22	1.41	32.06	.10	.70	42.36	4.22
18	13.84	330.00	2.000	10.00	.25	.24	1.42	32.33	.10	.74	42.58	4.24
19	13.68	320.00	2.000	10.00	.25	.25	1.43	32.63	.10	.78	42.83	4.26
20	13.64	310.00	2.000	10.00	.25	.26	1.44	32.93	.11	.83	43.09	4.28
21	13.60	300.00	2.000	10.00	.25	.28	1.46	33.27	.11	.87	43.37	4.31
22	13.56	290.00	2.000	10.00	.25	.29	1.47	33.63	.11	.91	43.69	4.34
23	13.36	280.00	2.000	10.00	.25	.31	1.49	34.04	.11	.96	44.08	4.37
24	13.16	270.01	2.000	10.00	.25	.32	1.51	34.48	.12	1.00	44.50	4.41
25	12.96	260.01	2.000	10.00	.25	.33	1.53	34.96	.12	1.05	44.96	4.45
26	12.76	250.01	2.000	10.00	.25	.35	1.55	35.46	.12	1.09	45.45	4.50
27	12.56	240.01	2.000	10.00	.25	.36	1.57	36.00	.13	1.14	45.98	4.54
28	12.36	230.01	2.000	10.00	.25	.38	1.59	36.56	.13	1.18	46.56	4.60
29	12.16	220.02	2.000	10.00	.25	.39	1.62	37.16	.13	1.23	47.17	4.66
30	11.83	210.02	2.000	10.00	.25	.41	1.64	37.82	.14	1.28	47.85	4.72
31	11.49	200.03	2.000	10.00	.25	.42	1.67	38.50	.14	1.32	48.57	4.78

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.37 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = .44 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = .25 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	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.45		2.00	33.72	.20		201.87	
2	14.00	490.00	.982	10.00	.27	.27	2.02	44.19	.21	.20	71.41	20.19
3	14.00	480.00	.982	10.00	.27	.36	2.05	45.05	.21	.27	71.64	7.14
4	14.00	470.00	.982	10.00	.27	.46	2.10	46.34	.23	.34	72.31	7.16
5	14.00	460.00	.982	10.00	.27	.55	2.17	48.14	.24	.42	73.55	7.23
6	14.00	450.00	.982	10.00	.27	.65	2.27	50.49	.26	.49	75.51	7.36
7	14.00	440.00	.982	10.00	.27	.75	2.39	53.42	.29	.57	78.29	7.55
8	14.00	430.00	.982	10.00	.27	.85	2.54	56.97	.33	.64	81.98	7.83
9	14.00	420.00	.982	10.00	.27	.96	2.72	61.16	.38	.73	86.62	8.20
10	14.00	410.00	2.000	10.00	.25	.26	2.73	61.93	.38	.81	83.37	8.66
11	14.00	400.00	2.000	10.00	.25	.29	2.73	62.12	.38	.90	83.45	8.34
12	14.00	390.00	2.000	10.00	.25	.31	2.74	62.35	.38	.98	83.56	8.34
13	14.00	380.00	2.000	10.00	.25	.34	2.75	62.62	.39	1.06	83.71	8.36
14	14.00	370.00	2.000	10.00	.25	.37	2.77	62.93	.39	1.15	83.89	8.37
15	14.00	360.00	2.000	10.00	.25	.39	2.78	63.28	.39	1.23	84.12	8.39
16	14.00	350.00	2.000	10.00	.25	.42	2.79	63.68	.40	1.32	84.39	8.41
17	14.00	340.00	2.000	10.00	.25	.45	2.81	64.12	.40	1.40	84.72	8.44
18	13.84	330.00	2.000	10.00	.25	.47	2.83	64.63	.41	1.48	85.11	8.47
19	13.68	320.00	2.000	10.00	.25	.50	2.86	65.19	.42	1.57	85.56	8.51
20	13.64	310.00	2.000	10.00	.25	.53	2.88	65.79	.42	1.66	86.06	8.56
21	13.60	300.00	2.000	10.00	.25	.55	2.91	66.44	.43	1.74	86.61	8.61
22	13.56	290.00	2.000	10.00	.25	.58	2.94	67.16	.44	1.83	87.24	8.66
23	13.36	280.00	2.000	10.00	.25	.61	2.97	67.94	.45	1.91	87.95	8.72
24	13.16	270.01	2.000	10.00	.25	.64	3.00	68.78	.46	2.00	88.73	8.80
25	12.96	260.01	2.000	10.00	.25	.67	3.04	69.69	.47	2.09	89.59	8.87
26	12.76	250.01	2.000	10.00	.25	.69	3.08	70.65	.48	2.18	90.52	8.96
27	12.56	240.01	2.000	10.00	.25	.72	3.12	71.68	.50	2.27	91.53	9.05
28	12.36	230.01	2.000	10.00	.25	.75	3.17	72.78	.51	2.36	92.62	9.15
29	12.16	220.02	2.000	10.00	.25	.78	3.22	73.94	.53	2.46	93.79	9.26
30	11.83	210.02	2.000	10.00	.25	.81	3.27	75.18	.54	2.55	95.06	9.38
31	11.49	200.03	2.000	10.00	.25	.84	3.32	76.49	.56	2.64	96.42	9.51

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.74 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = .87 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = .96 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	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.45		4.00	67.44	.82		403.73	
2	14.00	490.00	.982	10.00	.27	.53	4.04	88.38	.83	.40	142.81	40.37
3	14.00	480.00	.982	10.00	.27	.72	4.10	90.10	.86	.55	143.29	14.28
4	14.00	470.00	.982	10.00	.27	.91	4.20	92.69	.90	.69	144.61	14.33
5	14.00	460.00	.982	10.00	.27	1.10	4.35	96.28	.96	.83	147.11	14.46
6	14.00	450.00	.982	10.00	.27	1.30	4.54	100.98	1.05	.98	151.03	14.71
7	14.00	440.00	.982	10.00	.27	1.50	4.78	106.85	1.17	1.13	156.59	15.10
8	14.00	430.00	.982	10.00	.27	1.70	5.08	113.95	1.32	1.29	163.95	15.66
9	14.00	420.00	.982	10.00	.27	1.92	5.44	122.33	1.51	1.45	173.24	16.40
10	14.00	410.00	2.000	10.00	.25	.52	5.45	123.85	1.52	1.63	166.73	17.32
11	14.00	400.00	2.000	10.00	.25	.57	5.47	124.24	1.52	1.79	166.90	16.67
12	14.00	390.00	2.000	10.00	.25	.62	5.49	124.71	1.53	1.96	167.12	16.69
13	14.00	380.00	2.000	10.00	.25	.68	5.51	125.25	1.55	2.13	167.41	16.71
14	14.00	370.00	2.000	10.00	.25	.73	5.53	125.86	1.56	2.29	167.79	16.74
15	14.00	360.00	2.000	10.00	.25	.78	5.56	126.57	1.57	2.46	168.24	16.78
16	14.00	350.00	2.000	10.00	.25	.84	5.59	127.36	1.59	2.63	168.79	16.82
17	14.00	340.00	2.000	10.00	.25	.89	5.63	128.25	1.61	2.80	169.43	16.88
18	13.84	330.00	2.000	10.00	.25	.95	5.67	129.24	1.64	2.97	170.19	16.94
19	13.68	320.00	2.000	10.00	.25	1.00	5.71	130.34	1.66	3.14	171.07	17.02
20	13.64	310.00	2.000	10.00	.25	1.05	5.76	131.53	1.69	3.31	172.05	17.11
21	13.60	300.00	2.000	10.00	.25	1.11	5.81	132.84	1.72	3.48	173.17	17.21
22	13.56	290.00	2.000	10.00	.25	1.16	5.87	134.26	1.76	3.66	174.41	17.32
23	13.36	280.00	2.000	10.00	.25	1.22	5.93	135.81	1.79	3.83	175.80	17.44
24	13.16	270.01	2.000	10.00	.25	1.28	6.00	137.47	1.84	4.01	177.33	17.58
25	12.96	260.01	2.000	10.00	.25	1.33	6.07	139.26	1.88	4.18	179.01	17.73
26	12.76	250.01	2.000	10.00	.25	1.39	6.15	141.17	1.93	4.36	180.85	17.90
27	12.56	240.01	2.000	10.00	.25	1.45	6.24	143.21	1.98	4.54	182.84	18.08
28	12.36	230.01	2.000	10.00	.25	1.50	6.33	145.39	2.04	4.73	184.99	18.28
29	12.16	220.02	2.000	10.00	.25	1.56	6.43	147.69	2.10	4.91	187.31	18.50
30	11.83	210.02	2.000	10.00	.25	1.62	6.53	150.14	2.17	5.10	189.80	18.73
31	11.49	200.03	2.000	10.00	.25	1.68	6.64	152.72	2.24	5.29	192.47	18.98

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.48 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 1.75 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 3.81 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	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.45		8.00	134.89	3.26		807.46	
2	14.00	490.00	.982	10.00	.27	1.07	8.07	176.76	3.32	.81	285.63	80.75
3	14.00	480.00	.982	10.00	.27	1.44	8.20	180.19	3.43	1.09	286.57	28.56
4	14.00	470.00	.982	10.00	.27	1.82	8.41	185.38	3.60	1.38	289.23	28.66
5	14.00	460.00	.982	10.00	.27	2.20	8.70	192.56	3.85	1.67	294.21	28.92
6	14.00	450.00	.982	10.00	.27	2.59	9.08	201.95	4.20	1.96	302.05	29.42
7	14.00	440.00	.982	10.00	.27	2.99	9.57	213.69	4.67	2.27	313.18	30.21
8	14.00	430.00	.982	10.00	.27	3.41	10.17	227.89	5.27	2.58	327.91	31.32
9	14.00	420.00	.982	10.00	.27	3.84	10.88	244.65	6.03	2.91	346.48	32.79
10	14.00	410.00	2.000	10.00	.25	1.04	10.91	247.70	6.06	3.25	333.46	34.65
11	14.00	400.00	2.000	10.00	.25	1.14	10.94	248.49	6.10	3.59	333.79	33.35
12	14.00	390.00	2.000	10.00	.25	1.25	10.97	249.42	6.14	3.92	334.24	33.38
13	14.00	380.00	2.000	10.00	.25	1.35	11.01	250.49	6.18	4.25	334.83	33.42
14	14.00	370.00	2.000	10.00	.25	1.46	11.06	251.73	6.24	4.59	335.57	33.48
15	14.00	360.00	2.000	10.00	.25	1.57	11.12	253.14	6.30	4.92	336.48	33.56
16	14.00	350.00	2.000	10.00	.25	1.68	11.18	254.72	6.37	5.26	337.57	33.65
17	14.00	340.00	2.000	10.00	.25	1.78	11.25	256.50	6.45	5.60	338.87	33.76
18	13.84	330.00	2.000	10.00	.25	1.89	11.33	258.47	6.54	5.94	340.37	33.89
19	13.68	320.00	2.000	10.00	.25	2.00	11.42	260.65	6.64	6.28	342.11	34.04
20	13.64	310.00	2.000	10.00	.25	2.11	11.52	263.04	6.76	6.62	344.08	34.21
21	13.60	300.00	2.000	10.00	.25	2.22	11.62	265.66	6.88	6.96	346.30	34.41
22	13.56	290.00	2.000	10.00	.25	2.33	11.74	268.50	7.02	7.31	348.78	34.63
23	13.36	280.00	2.000	10.00	.25	2.44	11.86	271.57	7.17	7.66	351.55	34.88
24	13.16	270.01	2.000	10.00	.25	2.55	12.00	274.89	7.34	8.01	354.60	35.15
25	12.96	260.01	2.000	10.00	.25	2.66	12.15	278.46	7.52	8.37	357.94	35.46
26	12.76	250.01	2.000	10.00	.25	2.78	12.31	282.27	7.72	8.72	361.60	35.79
27	12.56	240.01	2.000	10.00	.25	2.89	12.47	286.35	7.93	9.08	365.56	36.16
28	12.36	230.01	2.000	10.00	.25	3.01	12.65	290.68	8.16	9.45	369.86	36.56
29	12.16	220.02	2.000	10.00	.25	3.13	12.85	295.29	8.41	9.82	374.48	36.99
30	11.83	210.02	2.000	10.00	.25	3.25	13.05	300.16	8.68	10.19	379.45	37.45
31	11.49	200.03	2.000	10.00	.25	3.37	13.27	305.31	8.97	10.57	384.76	37.94

OUTFALL PIPELINE

TOTAL DISCHARGE = 10.96 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 3.49 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 15.21 M

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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	QL(N) L/M,SEC
1	14.00	500.00			.45		7.00	118.02	2.50		706.53	
2	14.00	490.00	.982	10.00	.27	.93	7.06	154.67	2.54	.71	249.92	70.65
3	14.00	480.00	.982	10.00	.27	1.26	7.18	157.67	2.63	.96	250.75	24.99
4	14.00	470.00	.982	10.00	.27	1.59	7.36	162.20	2.76	1.21	253.07	25.07
5	14.00	460.00	.982	10.00	.27	1.93	7.61	168.49	2.95	1.46	257.44	25.31
6	14.00	450.00	.982	10.00	.27	2.27	7.95	176.71	3.22	1.72	264.30	25.74
7	14.00	440.00	.982	10.00	.27	2.62	8.37	186.98	3.57	1.98	274.03	26.43
8	14.00	430.00	.982	10.00	.27	2.98	8.90	199.41	4.03	2.26	286.92	27.40
9	14.00	420.00	.982	10.00	.27	3.36	9.52	214.07	4.62	2.54	303.17	28.69
10	14.00	410.00	2.000	10.00	.25	.91	9.54	216.74	4.64	2.85	291.78	30.32
11	14.00	400.00	2.000	10.00	.25	1.00	9.57	217.43	4.67	3.14	292.07	29.18
12	14.00	390.00	2.000	10.00	.25	1.09	9.60	218.24	4.70	3.43	292.46	29.21
13	14.00	380.00	2.000	10.00	.25	1.19	9.64	219.18	4.73	3.72	292.98	29.25
14	14.00	370.00	2.000	10.00	.25	1.28	9.68	220.26	4.77	4.02	293.62	29.30
15	14.00	360.00	2.000	10.00	.25	1.37	9.73	221.49	4.82	4.31	294.42	29.36
16	14.00	350.00	2.000	10.00	.25	1.47	9.78	222.88	4.88	4.60	295.38	29.44
17	14.00	340.00	2.000	10.00	.25	1.56	9.84	224.44	4.94	4.90	296.51	29.54
18	13.84	330.00	2.000	10.00	.25	1.65	9.91	226.16	5.01	5.20	297.83	29.65
19	13.68	320.00	2.000	10.00	.25	1.75	9.99	228.07	5.09	5.49	299.35	29.78
20	13.64	310.00	2.000	10.00	.25	1.84	10.08	230.17	5.17	5.79	301.07	29.93
21	13.60	300.00	2.000	10.00	.25	1.94	10.17	232.45	5.27	6.09	303.01	30.11
22	13.56	290.00	2.000	10.00	.25	2.04	10.27	234.94	5.38	6.40	305.19	30.30
23	13.36	280.00	2.000	10.00	.25	2.13	10.38	237.63	5.49	6.70	307.61	30.52
24	13.16	270.01	2.000	10.00	.25	2.23	10.50	240.53	5.62	7.01	310.28	30.76
25	12.96	260.01	2.000	10.00	.25	2.33	10.63	243.65	5.76	7.32	313.21	31.03
26	12.76	250.01	2.000	10.00	.25	2.43	10.77	247.00	5.91	7.63	316.41	31.32
27	12.56	240.01	2.000	10.00	.25	2.53	10.92	250.56	6.07	7.95	319.88	31.64
28	12.36	230.01	2.000	10.00	.25	2.63	11.07	254.36	6.25	8.27	323.64	31.99
29	12.16	220.02	2.000	10.00	.25	2.74	11.24	258.38	6.44	8.59	327.68	32.36
30	11.83	210.02	2.000	10.00	.25	2.84	11.42	262.65	6.65	8.92	332.03	32.77
31	11.49	200.03	2.000	10.00	.25	2.95	11.61	267.16	6.87	9.25	336.68	33.20

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.59 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 3.05 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 11.65 M

FLOW CHARACTERISTICS FOR U(T) = 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	QL(N) L/M,SEC
1	14.00	500.00			.45		6.00	101.16	1.83		605.60	
2	14.00	490.00	.982	10.00	.27	.80	6.05	132.57	1.87	.61	214.22	60.56
3	14.00	480.00	.982	10.00	.27	1.08	6.15	135.15	1.93	.82	214.93	21.42
4	14.00	470.00	.982	10.00	.27	1.37	6.30	139.03	2.03	1.03	216.92	21.49
5	14.00	460.00	.982	10.00	.27	1.65	6.52	144.42	2.17	1.25	220.66	21.69
6	14.00	450.00	.982	10.00	.27	1.94	6.81	151.46	2.36	1.47	226.54	22.07
7	14.00	440.00	.982	10.00	.27	2.24	7.18	160.27	2.63	1.70	234.88	22.65
8	14.00	430.00	.982	10.00	.27	2.55	7.63	170.92	2.96	1.93	245.93	23.49
9	14.00	420.00	.982	10.00	.27	2.88	8.16	183.49	3.39	2.18	259.86	24.59
10	14.00	410.00	2.000	10.00	.25	.78	8.18	185.78	3.41	2.44	250.10	25.99
11	14.00	400.00	2.000	10.00	.25	.86	8.20	186.37	3.43	2.69	250.34	25.01
12	14.00	390.00	2.000	10.00	.25	.94	8.23	187.06	3.45	2.94	250.68	25.03
13	14.00	380.00	2.000	10.00	.25	1.02	8.26	187.87	3.48	3.19	251.12	25.07
14	14.00	370.00	2.000	10.00	.25	1.10	8.30	188.80	3.51	3.44	251.68	25.11
15	14.00	360.00	2.000	10.00	.25	1.18	8.34	189.85	3.54	3.69	252.36	25.17
16	14.00	350.00	2.000	10.00	.25	1.26	8.38	191.04	3.58	3.95	253.18	25.24
17	14.00	340.00	2.000	10.00	.25	1.34	8.44	192.37	3.63	4.20	254.15	25.32
18	13.84	330.00	2.000	10.00	.25	1.42	8.50	193.86	3.68	4.45	255.28	25.42
19	13.68	320.00	2.000	10.00	.25	1.50	8.56	195.49	3.74	4.71	256.59	25.53
20	13.64	310.00	2.000	10.00	.25	1.58	8.64	197.29	3.80	4.97	258.06	25.66
21	13.60	300.00	2.000	10.00	.25	1.66	8.72	199.25	3.87	5.22	259.73	25.81
22	13.56	290.00	2.000	10.00	.25	1.75	8.80	201.38	3.95	5.48	261.59	25.97
23	13.36	280.00	2.000	10.00	.25	1.83	8.90	203.69	4.04	5.74	263.67	26.16
24	13.16	270.01	2.000	10.00	.25	1.91	9.00	206.18	4.13	6.01	265.96	26.37
25	12.96	260.01	2.000	10.00	.25	2.00	9.11	208.85	4.23	6.27	268.47	26.60
26	12.76	250.01	2.000	10.00	.25	2.08	9.23	211.72	4.34	6.54	271.22	26.85
27	12.56	240.01	2.000	10.00	.25	2.17	9.36	214.78	4.46	6.81	274.19	27.12
28	12.36	230.01	2.000	10.00	.25	2.26	9.49	218.03	4.59	7.09	277.42	27.42
29	12.16	220.02	2.000	10.00	.25	2.35	9.64	221.48	4.73	7.37	280.89	27.74
30	11.83	210.02	2.000	10.00	.25	2.44	9.79	225.14	4.88	7.65	284.62	28.09
31	11.49	200.03	2.000	10.00	.25	2.53	9.95	229.01	5.05	7.93	288.61	28.46

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.22 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 2.62 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 8.56 M

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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
					.45		5.00	84.30	1.27		504.66	
1	14.00	500.00			.27	.67	5.05	110.48	1.30	.50	178.52	50.47
2	14.00	490.00	.982	10.00	.27	.90	5.13	112.62	1.34	.68	179.11	17.85
3	14.00	480.00	.982	10.00	.27	1.14	5.25	115.86	1.41	.86	180.77	17.91
4	14.00	470.00	.982	10.00	.27	1.38	5.43	120.35	1.51	1.04	183.88	18.08
5	14.00	460.00	.982	10.00	.27	1.62	5.68	126.22	1.64	1.23	188.78	18.39
6	14.00	450.00	.982	10.00	.27	1.87	5.98	133.56	1.82	1.42	195.74	18.88
7	14.00	440.00	.982	10.00	.27	2.13	6.36	142.43	2.06	1.61	204.94	19.57
8	14.00	430.00	.982	10.00	.27	2.40	6.80	152.91	2.36	1.82	216.55	20.49
9	14.00	420.00	.982	10.00	.25	.65	6.82	154.81	2.37	2.03	208.41	21.65
10	14.00	410.00	2.000	10.00	.25	.71	6.83	155.31	2.38	2.24	208.62	20.84
11	14.00	400.00	2.000	10.00	.25	.78	6.86	155.88	2.40	2.45	208.90	20.86
12	14.00	390.00	2.000	10.00	.25	.85	6.88	156.56	2.41	2.66	209.27	20.89
13	14.00	380.00	2.000	10.00	.25	.91	6.91	157.33	2.44	2.87	209.73	20.93
14	14.00	370.00	2.000	10.00	.25	.98	6.95	158.21	2.46	3.08	210.30	20.97
15	14.00	360.00	2.000	10.00	.25	1.05	6.99	159.20	2.49	3.29	210.98	21.03
16	14.00	350.00	2.000	10.00	.25	1.11	7.03	160.31	2.52	3.50	211.79	21.10
17	14.00	340.00	2.000	10.00	.25	1.18	7.08	161.55	2.56	3.71	212.74	21.18
18	13.84	330.00	2.000	10.00	.25	1.25	7.14	162.91	2.60	3.92	213.83	21.27
19	13.68	320.00	2.000	10.00	.25	1.32	7.20	164.41	2.64	4.14	215.06	21.38
20	13.64	310.00	2.000	10.00	.25	1.39	7.26	166.04	2.69	4.35	216.45	21.51
21	13.60	300.00	2.000	10.00	.25	1.46	7.34	167.82	2.74	4.57	218.00	21.64
22	13.56	290.00	2.000	10.00	.25	1.52	7.42	169.75	2.80	4.79	219.73	21.80
23	13.36	280.00	2.000	10.00	.25	1.59	7.50	171.82	2.87	5.01	221.65	21.97
24	13.16	270.01	2.000	10.00	.25	1.67	7.59	174.05	2.94	5.23	223.74	22.16
25	12.96	260.01	2.000	10.00	.25	1.74	7.69	176.44	3.02	5.45	226.03	22.37
26	12.76	250.01	2.000	10.00	.25	1.81	7.80	178.99	3.10	5.68	228.51	22.60
27	12.56	240.01	2.000	10.00	.25	1.88	7.91	181.71	3.19	5.91	231.20	22.85
28	12.36	230.01	2.000	10.00	.25	1.95	8.03	184.59	3.29	6.14	234.09	23.12
29	12.16	220.02	2.000	10.00	.25	2.03	8.16	187.64	3.39	6.37	237.21	23.41
30	11.83	210.02	2.000	10.00	.25	2.10	8.29	190.86	3.51	6.61	240.53	23.72
31	11.49	200.03	2.000	10.00								

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.85 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 2.18 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 5.95 M

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
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

MANIFOLD 7
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
D(N) = DIAMETER OF PORT N
V(N) = VELOCITY IN MANIFOLD BETWEEN PORT N AND N-1
U(N) = DISCHARGEVELOCITY 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 = .30 M/SEC
DIST(1) = 500.00 M
U(1) = 3.00 M/SEC
DIA(2) = .982 M
DL(2) = 10.00 M
D(2) = .28 M
DL(3) = 10.00 M
DENS = .001
VPIPE = 1.20 M/SEC
FRM = .100
FRP = .100
PORT NO K1 = 10
DIA(K1) = 2.000 M
DL(K1) = 10.00 M
D(K1) = .25 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	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.39		3.00	54.35	.46		227.10	
2	14.00	490.00	.982	10.00	.28	.30	3.02	64.72	.46	.23	115.55	22.71
3	14.00	480.00	.982	10.00	.28	.45	3.05	65.65	.47	.34	115.56	11.56
4	14.00	470.00	.982	10.00	.28	.61	3.11	67.20	.49	.46	116.10	11.56
5	14.00	460.00	.982	10.00	.28	.76	3.20	69.51	.52	.57	117.48	11.61
6	14.00	450.00	.982	10.00	.28	.91	3.33	72.68	.57	.69	119.99	11.75
7	14.00	440.00	.982	10.00	.28	1.07	3.50	76.76	.63	.81	123.85	12.00
8	14.00	430.00	.982	10.00	.28	1.24	3.72	81.83	.71	.94	129.24	12.39
9	14.00	420.00	.982	10.00	.28	1.41	3.98	87.91	.81	1.06	136.29	12.92
10	14.00	410.00	2.000	10.00	.25	.38	3.99	90.64	.81	1.20	122.00	13.63
11	14.00	400.00	2.000	10.00	.25	.42	4.00	90.93	.82	1.32	122.12	12.20
12	14.00	390.00	2.000	10.00	.25	.46	4.01	91.28	.82	1.45	122.29	12.21
13	14.00	380.00	2.000	10.00	.25	.50	4.03	91.68	.83	1.57	122.51	12.23
14	14.00	370.00	2.000	10.00	.25	.54	4.05	92.13	.84	1.69	122.79	12.25
15	14.00	360.00	2.000	10.00	.25	.58	4.07	92.65	.84	1.81	123.13	12.28
16	14.00	350.00	2.000	10.00	.25	.62	4.09	93.24	.85	1.94	123.53	12.31
17	14.00	340.00	2.000	10.00	.25	.66	4.12	93.90	.86	2.06	124.01	12.35
18	13.84	330.00	2.000	10.00	.25	.70	4.15	94.63	.88	2.18	124.58	12.40
19	13.68	320.00	2.000	10.00	.25	.74	4.18	95.45	.89	2.31	125.24	12.46
20	13.64	310.00	2.000	10.00	.25	.77	4.22	96.33	.91	2.43	125.97	12.52
21	13.60	300.00	2.000	10.00	.25	.82	4.26	97.29	.92	2.56	126.79	12.60
22	13.56	290.00	2.000	10.00	.25	.86	4.30	98.34	.94	2.69	127.71	12.68
23	13.36	280.00	2.000	10.00	.25	.90	4.35	99.49	.96	2.81	128.74	12.77
24	13.16	270.01	2.000	10.00	.25	.94	4.40	100.72	.99	2.94	129.88	12.87
25	12.96	260.01	2.000	10.00	.25	.98	4.45	102.04	1.01	3.07	131.13	12.99
26	12.76	250.01	2.000	10.00	.25	1.02	4.51	103.45	1.04	3.20	132.49	13.11
27	12.56	240.01	2.000	10.00	.25	1.06	4.57	104.96	1.07	3.34	133.96	13.25
28	12.36	230.01	2.000	10.00	.25	1.11	4.64	106.56	1.10	3.47	135.55	13.40
29	12.16	220.02	2.000	10.00	.25	1.15	4.71	108.26	1.13	3.61	137.26	13.56
30	11.83	210.02	2.000	10.00	.25	1.19	4.79	110.07	1.17	3.74	139.11	13.73
31	11.49	200.03	2.000	10.00	.25	1.24	4.87	111.97	1.21	3.88	141.08	13.91

OUTFALL PIPELINE

TOTAL DISCHARGE = 4.02 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 = 2.06 M

PLUM 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	14.00	500.00			.39		1.00	18.12	.05		75.70	
2	14.00	490.00	.982	10.00	.28	.10	1.01	21.57	.05	.08	38.52	7.57
3	14.00	480.00	.982	10.00	.28	.15	1.02	21.88	.05	.11	38.52	3.85
4	14.00	470.00	.982	10.00	.28	.20	1.04	22.40	.05	.15	38.70	3.85
5	14.00	460.00	.982	10.00	.28	.25	1.07	23.17	.06	.19	39.16	3.87
6	14.00	450.00	.982	10.00	.28	.30	1.11	24.23	.06	.23	40.00	3.92
7	14.00	440.00	.982	10.00	.28	.36	1.17	25.59	.07	.27	41.28	4.00
8	14.00	430.00	.982	10.00	.28	.41	1.24	27.28	.08	.31	43.08	4.13
9	14.00	420.00	.982	10.00	.28	.47	1.33	29.30	.09	.35	45.43	4.31
10	14.00	410.00	2.000	10.00	.25	.13	1.33	30.21	.09	.40	40.67	4.54
11	14.00	400.00	2.000	10.00	.25	.14	1.33	30.31	.09	.44	40.71	4.07
12	14.00	390.00	2.000	10.00	.25	.15	1.34	30.43	.09	.48	40.76	4.07
13	14.00	380.00	2.000	10.00	.25	.17	1.34	30.56	.09	.52	40.84	4.08
14	14.00	370.00	2.000	10.00	.25	.18	1.35	30.71	.09	.56	40.93	4.08
15	14.00	360.00	2.000	10.00	.25	.19	1.36	30.88	.09	.60	41.04	4.09
16	14.00	350.00	2.000	10.00	.25	.21	1.36	31.08	.09	.65	41.18	4.10
17	14.00	340.00	2.000	10.00	.25	.22	1.37	31.30	.10	.69	41.34	4.12
18	13.84	330.00	2.000	10.00	.25	.23	1.38	31.57	.10	.73	41.56	4.13
19	13.68	320.00	2.000	10.00	.25	.25	1.40	31.86	.10	.77	41.81	4.16
20	13.64	310.00	2.000	10.00	.25	.26	1.41	32.16	.10	.81	42.06	4.18
21	13.60	300.00	2.000	10.00	.25	.27	1.42	32.49	.10	.85	42.34	4.21
22	13.56	290.00	2.000	10.00	.25	.29	1.44	32.84	.11	.90	42.66	4.23
23	13.36	280.00	2.000	10.00	.25	.30	1.45	33.25	.11	.94	43.04	4.27
24	13.16	270.01	2.000	10.00	.25	.31	1.47	33.69	.11	.98	43.45	4.30
25	12.96	260.01	2.000	10.00	.25	.33	1.49	34.15	.11	1.02	43.91	4.35
26	12.76	250.01	2.000	10.00	.25	.34	1.51	34.65	.12	1.07	44.39	4.39
27	12.56	240.01	2.000	10.00	.25	.35	1.53	35.17	.12	1.11	44.92	4.44
28	12.36	230.01	2.000	10.00	.25	.37	1.56	35.73	.12	1.16	45.48	4.49
29	12.16	220.02	2.000	10.00	.25	.38	1.58	36.32	.13	1.20	46.09	4.55
30	11.83	210.02	2.000	10.00	.25	.40	1.61	36.96	.13	1.25	46.76	4.61
31	11.49	200.03	2.000	10.00	.25	.41	1.64	37.63	.14	1.30	47.47	4.68

OUTFALL PIPELINE

TOTAL DISCHARGE = 1.34 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = .43 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = .24 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			.39		2.00	36.24	.20		151.40	
2	14.00	490.00	.982	10.00	.28	.20	2.01	43.15	.21	.15	77.04	15.14
3	14.00	480.00	.982	10.00	.28	.30	2.03	43.77	.21	.23	77.04	7.70
4	14.00	470.00	.982	10.00	.28	.40	2.07	44.80	.22	.31	77.40	7.70
5	14.00	460.00	.982	10.00	.28	.51	2.14	46.34	.23	.38	78.32	7.74
6	14.00	450.00	.982	10.00	.28	.61	2.22	48.45	.25	.46	79.99	7.83
7	14.00	440.00	.982	10.00	.28	.71	2.34	51.18	.28	.54	82.57	8.00
8	14.00	430.00	.982	10.00	.28	.82	2.48	54.55	.31	.62	86.16	8.26
9	14.00	420.00	.982	10.00	.28	.94	2.65	58.61	.36	.71	90.86	8.62
10	14.00	410.00	2.000	10.00	.25	.26	2.66	60.43	.36	.80	81.33	9.09
11	14.00	400.00	2.000	10.00	.25	.28	2.67	60.62	.36	.88	81.42	8.13
12	14.00	390.00	2.000	10.00	.25	.31	2.68	60.85	.37	.96	81.53	8.14
13	14.00	380.00	2.000	10.00	.25	.33	2.69	61.12	.37	1.05	81.67	8.15
14	14.00	370.00	2.000	10.00	.25	.36	2.70	61.42	.37	1.13	81.86	8.17
15	14.00	360.00	2.000	10.00	.25	.38	2.71	61.77	.38	1.21	82.09	8.19
16	14.00	350.00	2.000	10.00	.25	.41	2.73	62.16	.38	1.29	82.36	8.21
17	14.00	340.00	2.000	10.00	.25	.44	2.75	62.60	.38	1.37	82.68	8.24
18	13.84	330.00	2.000	10.00	.25	.46	2.77	63.10	.39	1.46	83.07	8.27
19	13.68	320.00	2.000	10.00	.25	.49	2.79	63.64	.40	1.54	83.51	8.31
20	13.64	310.00	2.000	10.00	.25	.52	2.81	64.24	.40	1.62	84.00	8.35
21	13.60	300.00	2.000	10.00	.25	.54	2.84	64.88	.41	1.71	84.55	8.40
22	13.56	290.00	2.000	10.00	.25	.57	2.87	65.58	.42	1.79	85.17	8.46
23	13.36	280.00	2.000	10.00	.25	.60	2.90	66.35	.43	1.88	85.87	8.52
24	13.16	270.01	2.000	10.00	.25	.62	2.93	67.18	.44	1.96	86.64	8.59
25	12.96	260.01	2.000	10.00	.25	.65	2.97	68.07	.45	2.05	87.48	8.66
26	12.76	250.01	2.000	10.00	.25	.68	3.01	69.02	.46	2.14	88.40	8.75
27	12.56	240.01	2.000	10.00	.25	.71	3.05	70.03	.47	2.22	89.39	8.84
28	12.36	230.01	2.000	10.00	.25	.74	3.10	71.11	.49	2.31	90.46	8.94
29	12.16	220.02	2.000	10.00	.25	.77	3.14	72.25	.50	2.40	91.61	9.05
30	11.83	210.02	2.000	10.00	.25	.79	3.19	73.46	.52	2.50	92.86	9.16
31	11.49	200.03	2.000	10.00	.25	.82	3.25	74.74	.54	2.59	94.19	9.29

OUTFALL PIPELINE

TOTAL DISCHARGE = 2.68 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = .85 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = .92 M

FLOW CHARACTERISTICS FOR U(I) = 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			.39		4.00	72.47	.82		302.80	
2	14.00	490.00	.982	10.00	.28	.40	4.02	86.30	.82	.30	154.07	30.28
3	14.00	480.00	.982	10.00	.28	.60	4.07	87.53	.84	.46	154.07	15.41
4	14.00	470.00	.982	10.00	.28	.81	4.15	89.61	.88	.61	154.79	15.41
5	14.00	460.00	.982	10.00	.28	1.01	4.27	92.69	.93	.77	156.64	15.48
6	14.00	450.00	.982	10.00	.28	1.22	4.44	96.90	1.01	.92	159.99	15.66
7	14.00	440.00	.982	10.00	.28	1.43	4.67	102.35	1.11	1.08	165.14	16.00
8	14.00	430.00	.982	10.00	.28	1.65	4.96	109.10	1.25	1.25	172.32	16.51
9	14.00	420.00	.982	10.00	.28	1.88	5.31	117.22	1.44	1.42	181.72	17.23
10	14.00	410.00	2.000	10.00	.25	.51	5.32	120.85	1.44	1.60	162.67	18.17
11	14.00	400.00	2.000	10.00	.25	.56	5.34	121.24	1.45	1.76	162.83	16.27
12	14.00	390.00	2.000	10.00	.25	.61	5.35	121.70	1.46	1.93	163.06	16.28
13	14.00	380.00	2.000	10.00	.25	.67	5.37	122.23	1.47	2.09	163.35	16.31
14	14.00	370.00	2.000	10.00	.25	.72	5.40	122.85	1.49	2.25	163.72	16.33
15	14.00	360.00	2.000	10.00	.25	.77	5.43	123.54	1.50	2.42	164.17	16.37
16	14.00	350.00	2.000	10.00	.25	.82	5.46	124.32	1.52	2.58	164.71	16.42
17	14.00	340.00	2.000	10.00	.25	.87	5.49	125.20	1.54	2.75	165.35	16.47
18	13.84	330.00	2.000	10.00	.25	.93	5.53	126.17	1.56	2.91	166.10	16.54
19	13.68	320.00	2.000	10.00	.25	.98	5.57	127.25	1.58	3.08	166.97	16.61
20	13.64	310.00	2.000	10.00	.25	1.03	5.62	128.43	1.61	3.24	167.94	16.70
21	13.60	300.00	2.000	10.00	.25	1.09	5.67	129.71	1.64	3.41	169.04	16.79
22	13.56	290.00	2.000	10.00	.25	1.14	5.73	131.11	1.67	3.58	170.26	16.90
23	13.36	280.00	2.000	10.00	.25	1.19	5.79	132.63	1.71	3.75	171.63	17.03
24	13.16	270.01	2.000	10.00	.25	1.25	5.86	134.26	1.75	3.92	173.14	17.16
25	12.96	260.01	2.000	10.00	.25	1.30	5.93	136.02	1.79	4.10	174.79	17.31
26	12.76	250.01	2.000	10.00	.25	1.36	6.01	137.90	1.84	4.27	176.60	17.48
27	12.56	240.01	2.000	10.00	.25	1.42	6.09	139.90	1.89	4.45	178.55	17.66
28	12.36	230.01	2.000	10.00	.25	1.47	6.18	142.03	1.95	4.63	180.67	17.86
29	12.16	220.02	2.000	10.00	.25	1.53	6.28	144.29	2.01	4.81	182.95	18.07
30	11.83	210.02	2.000	10.00	.25	1.59	6.38	146.69	2.07	4.99	185.40	18.29
31	11.49	200.03	2.000	10.00	.25	1.65	6.48	149.23	2.14	5.18	188.02	18.54

OUTFALL PIPELINE

TOTAL DISCHARGE = 5.36 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 1.71 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 3.65 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	SQ(N) CUM/SEC	Q(N) L/SEC	QL(N) L/M,SEC
1	14.00	500.00			.39		5.00	90.59	1.27		378.50	
2	14.00	490.00	.982	10.00	.28	.50	5.03	107.87	1.29	.38	192.59	37.85
3	14.00	480.00	.982	10.00	.28	.75	5.08	109.41	1.32	.57	192.59	19.26
4	14.00	470.00	.982	10.00	.28	1.01	5.18	112.01	1.37	.76	193.49	19.26
5	14.00	460.00	.982	10.00	.28	1.26	5.34	115.86	1.45	.96	195.80	19.35
6	14.00	450.00	.982	10.00	.28	1.52	5.56	121.13	1.57	1.15	199.99	19.58
7	14.00	440.00	.982	10.00	.28	1.79	5.84	127.94	1.74	1.35	206.42	20.00
8	14.00	430.00	.982	10.00	.28	2.06	6.20	136.38	1.96	1.56	215.40	20.64
9	14.00	420.00	.982	10.00	.28	2.34	6.64	146.52	2.24	1.77	227.15	21.54
10	14.00	410.00	2.000	10.00	.25	.64	6.65	151.07	2.25	2.00	203.33	22.71
11	14.00	400.00	2.000	10.00	.25	.70	6.67	151.55	2.27	2.21	203.54	20.33
12	14.00	390.00	2.000	10.00	.25	.77	6.69	152.13	2.28	2.41	203.82	20.35
13	14.00	380.00	2.000	10.00	.25	.83	6.72	152.79	2.30	2.61	204.19	20.38
14	14.00	370.00	2.000	10.00	.25	.90	6.75	153.56	2.32	2.82	204.65	20.42
15	14.00	360.00	2.000	10.00	.25	.96	6.78	154.42	2.34	3.02	205.21	20.46
16	14.00	350.00	2.000	10.00	.25	1.03	6.82	155.40	2.37	3.23	205.89	20.52
17	14.00	340.00	2.000	10.00	.25	1.09	6.86	156.49	2.40	3.43	206.69	20.59
18	13.84	330.00	2.000	10.00	.25	1.16	6.91	157.71	2.44	3.64	207.63	20.67
19	13.68	320.00	2.000	10.00	.25	1.23	6.97	159.06	2.47	3.85	208.70	20.76
20	13.64	310.00	2.000	10.00	.25	1.29	7.03	160.53	2.52	4.06	209.92	20.87
21	13.60	300.00	2.000	10.00	.25	1.36	7.09	162.14	2.56	4.27	211.29	20.99
22	13.56	290.00	2.000	10.00	.25	1.43	7.16	163.88	2.62	4.48	212.82	21.13
23	13.36	280.00	2.000	10.00	.25	1.49	7.24	165.77	2.67	4.69	214.52	21.28
24	13.16	270.01	2.000	10.00	.25	1.56	7.33	167.81	2.73	4.90	216.40	21.45
25	12.96	260.01	2.000	10.00	.25	1.63	7.42	170.01	2.80	5.12	218.47	21.64
26	12.76	250.01	2.000	10.00	.25	1.70	7.51	172.35	2.88	5.34	220.72	21.85
27	12.56	240.01	2.000	10.00	.25	1.77	7.62	174.85	2.96	5.56	223.16	22.07
28	12.36	230.01	2.000	10.00	.25	1.84	7.73	177.51	3.04	5.78	225.80	22.32
29	12.16	220.02	2.000	10.00	.25	1.91	7.85	180.34	3.14	6.01	228.64	22.58
30	11.83	210.02	2.000	10.00	.25	1.99	7.97	183.33	3.24	6.24	231.70	22.86
31	11.49	200.03	2.000	10.00	.25	2.06	8.10	186.49	3.35	6.47	234.96	23.17

OUTFALL PIPELINE

TOTAL DISCHARGE = 6.70 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 2.14 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 5.69 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	QL(N) L/M,SEC
1	14.00	500.00			.39		6.00	108.71	1.83		454.20	
2	14.00	490.00	.982	10.00	.28	.60	6.03	129.45	1.85	.45	231.11	45.42
3	14.00	480.00	.982	10.00	.28	.91	6.10	131.30	1.90	.69	231.11	23.11
4	14.00	470.00	.982	10.00	.28	1.21	6.22	134.41	1.97	.92	232.19	23.11
5	14.00	460.00	.982	10.00	.28	1.52	6.41	139.03	2.09	1.15	234.97	23.22
6	14.00	450.00	.982	10.00	.28	1.83	6.67	145.35	2.27	1.38	239.98	23.50
7	14.00	440.00	.982	10.00	.28	2.14	7.01	153.53	2.50	1.62	247.71	24.00
8	14.00	430.00	.982	10.00	.28	2.47	7.44	163.66	2.82	1.87	258.49	24.77
9	14.00	420.00	.982	10.00	.28	2.81	7.96	175.82	3.23	2.13	272.58	25.85
10	14.00	410.00	2.000	10.00	.25	.77	7.98	181.28	3.25	2.40	244.00	27.26
11	14.00	400.00	2.000	10.00	.25	.84	8.00	181.87	3.26	2.65	244.25	24.40
12	14.00	390.00	2.000	10.00	.25	.92	8.03	182.55	3.29	2.89	244.58	24.42
13	14.00	380.00	2.000	10.00	.25	1.00	8.06	183.35	3.31	3.14	245.02	24.46
14	14.00	370.00	2.000	10.00	.25	1.08	8.10	184.27	3.34	3.38	245.58	24.50
15	14.00	360.00	2.000	10.00	.25	1.15	8.14	185.31	3.38	3.63	246.26	24.56
16	14.00	350.00	2.000	10.00	.25	1.23	8.18	186.48	3.41	3.87	247.07	24.63
17	14.00	340.00	2.000	10.00	.25	1.31	8.24	187.79	3.46	4.12	248.03	24.71
18	13.84	330.00	2.000	10.00	.25	1.39	8.30	189.25	3.51	4.37	249.15	24.80
19	13.68	320.00	2.000	10.00	.25	1.47	8.36	190.87	3.56	4.62	250.44	24.91
20	13.64	310.00	2.000	10.00	.25	1.55	8.43	192.63	3.62	4.87	251.89	25.04
21	13.60	300.00	2.000	10.00	.25	1.63	8.51	194.56	3.69	5.12	253.54	25.19
22	13.56	290.00	2.000	10.00	.25	1.71	8.60	196.65	3.77	5.37	255.37	25.35
23	13.36	280.00	2.000	10.00	.25	1.79	8.69	198.92	3.85	5.63	257.42	25.54
24	13.16	270.01	2.000	10.00	.25	1.87	8.79	201.37	3.94	5.88	259.67	25.74
25	12.96	260.01	2.000	10.00	.25	1.96	8.90	204.00	4.04	6.14	262.14	25.97
26	12.76	250.01	2.000	10.00	.25	2.04	9.01	206.81	4.14	6.41	264.84	26.21
27	12.56	240.01	2.000	10.00	.25	2.12	9.14	209.81	4.26	6.67	267.77	26.48
28	12.36	230.01	2.000	10.00	.25	2.21	9.27	213.00	4.38	6.94	270.93	26.78
29	12.16	220.02	2.000	10.00	.25	2.30	9.41	216.39	4.52	7.21	274.34	27.09
30	11.83	210.02	2.000	10.00	.25	2.38	9.56	219.98	4.66	7.48	278.00	27.43
31	11.49	200.03	2.000	10.00	.25	2.47	9.72	223.77	4.82	7.76	281.92	27.80

OUTFALL PIPELINE

TOTAL DISCHARGE = 8.04 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 = 8.19 M

FLOW CHARACTERISTICS FOR Q(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			.39		7.00	126.83	2.50		529.90	
2	14.00	490.00	.982	10.00	.28	.70	7.04	151.02	2.52	.53	269.63	52.99
3	14.00	480.00	.982	10.00	.28	1.06	7.12	153.18	2.58	.80	269.63	26.96
4	14.00	470.00	.982	10.00	.28	1.41	7.26	156.81	2.68	1.07	270.89	26.96
5	14.00	460.00	.982	10.00	.28	1.77	7.47	162.20	2.85	1.34	274.13	27.09
6	14.00	450.00	.982	10.00	.28	2.13	7.78	169.58	3.08	1.61	279.98	27.41
7	14.00	440.00	.982	10.00	.28	2.50	8.18	179.12	3.41	1.89	288.99	28.00
8	14.00	430.00	.982	10.00	.28	2.88	8.68	190.93	3.84	2.18	301.57	28.90
9	14.00	420.00	.982	10.00	.28	3.28	9.29	205.13	4.40	2.48	318.01	30.16
10	14.00	410.00	2.000	10.00	.25	.89	9.31	211.49	4.42	2.80	284.66	31.80
11	14.00	400.00	2.000	10.00	.25	.98	9.34	212.18	4.44	3.09	284.95	28.47
12	14.00	390.00	2.000	10.00	.25	1.07	9.37	212.98	4.47	3.37	285.35	28.50
13	14.00	380.00	2.000	10.00	.25	1.16	9.40	213.91	4.51	3.66	285.86	28.53
14	14.00	370.00	2.000	10.00	.25	1.26	9.45	214.98	4.55	3.94	286.51	28.59
15	14.00	360.00	2.000	10.00	.25	1.35	9.49	216.19	4.59	4.23	287.30	28.65
16	14.00	350.00	2.000	10.00	.25	1.44	9.55	217.56	4.65	4.52	288.25	28.73
17	14.00	340.00	2.000	10.00	.25	1.53	9.61	219.09	4.71	4.81	289.37	28.82
18	13.84	330.00	2.000	10.00	.25	1.62	9.68	220.80	4.77	5.09	290.67	28.94
19	13.68	320.00	2.000	10.00	.25	1.72	9.75	222.67	4.85	5.39	292.17	29.07
20	13.64	310.00	2.000	10.00	.25	1.81	9.84	224.73	4.93	5.68	293.87	29.22
21	13.60	300.00	2.000	10.00	.25	1.90	9.93	226.98	5.02	5.97	295.79	29.39
22	13.56	290.00	2.000	10.00	.25	2.00	10.03	229.42	5.13	6.27	297.93	29.58
23	13.36	280.00	2.000	10.00	.25	2.09	10.14	232.07	5.24	6.57	300.31	29.79
24	13.16	270.01	2.000	10.00	.25	2.19	10.25	234.92	5.36	6.87	302.94	30.03
25	12.96	260.01	2.000	10.00	.25	2.28	10.38	237.99	5.49	7.17	305.82	30.29
26	12.76	250.01	2.000	10.00	.25	2.38	10.52	241.27	5.64	7.47	308.97	30.58
27	12.56	240.01	2.000	10.00	.25	2.48	10.66	244.76	5.79	7.78	312.38	30.90
28	12.36	230.01	2.000	10.00	.25	2.58	10.82	248.49	5.96	8.10	316.07	31.24
29	12.16	220.02	2.000	10.00	.25	2.68	10.98	252.44	6.15	8.41	320.05	31.61
30	11.83	210.02	2.000	10.00	.25	2.78	11.16	256.62	6.34	8.73	324.32	32.00
31	11.49	200.03	2.000	10.00	.25	2.88	11.34	261.04	6.56	9.06	328.88	32.43

OUTFALL PIPELINE

TOTAL DISCHARGE = 9.39 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 2.99 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 11.14 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			.39		8.00	144.94	3.26		605.60	
2	14.00	490.00	.982	10.00	.28	.80	8.04	172.60	3.30	.61	308.15	60.56
3	14.00	480.00	.982	10.00	.28	1.21	8.13	175.06	3.37	.91	308.15	30.81
4	14.00	470.00	.982	10.00	.28	1.61	8.29	179.21	3.51	1.22	309.59	30.81
5	14.00	460.00	.982	10.00	.28	2.02	8.54	185.37	3.72	1.53	313.29	30.96
6	14.00	450.00	.982	10.00	.28	2.44	8.89	193.80	4.03	1.84	319.98	31.33
7	14.00	440.00	.982	10.00	.28	2.86	9.35	204.70	4.45	2.16	330.28	32.00
8	14.00	430.00	.982	10.00	.28	3.30	9.92	218.21	5.01	2.50	344.65	33.03
9	14.00	420.00	.982	10.00	.28	3.75	10.62	234.43	5.75	2.84	363.44	34.46
10	14.00	410.00	2.000	10.00	.25	1.02	10.64	241.71	5.77	3.20	325.33	36.34
11	14.00	400.00	2.000	10.00	.25	1.12	10.67	242.49	5.80	3.53	325.66	32.53
12	14.00	390.00	2.000	10.00	.25	1.23	10.71	243.40	5.84	3.85	326.11	32.57
13	14.00	380.00	2.000	10.00	.25	1.33	10.75	244.47	5.89	4.18	326.70	32.61
14	14.00	370.00	2.000	10.00	.25	1.44	10.80	245.69	5.94	4.51	327.44	32.67
15	14.00	360.00	2.000	10.00	.25	1.54	10.85	247.08	6.00	4.83	328.34	32.74
16	14.00	350.00	2.000	10.00	.25	1.64	10.91	248.64	6.07	5.16	329.42	32.83
17	14.00	340.00	2.000	10.00	.25	1.75	10.98	250.39	6.15	5.49	330.70	32.94
18	13.84	330.00	2.000	10.00	.25	1.85	11.06	252.34	6.24	5.82	332.19	33.07
19	13.68	320.00	2.000	10.00	.25	1.96	11.15	254.48	6.33	6.16	333.91	33.22
20	13.64	310.00	2.000	10.00	.25	2.07	11.24	256.84	6.44	6.49	335.85	33.39
21	13.60	300.00	2.000	10.00	.25	2.17	11.35	259.40	6.56	6.82	338.04	33.59
22	13.56	290.00	2.000	10.00	.25	2.28	11.46	262.20	6.70	7.16	340.49	33.80
23	13.36	280.00	2.000	10.00	.25	2.39	11.59	265.22	6.84	7.50	343.21	34.05
24	13.16	270.01	2.000	10.00	.25	2.50	11.72	268.48	7.00	7.85	346.21	34.32
25	12.96	260.01	2.000	10.00	.25	2.61	11.86	271.98	7.17	8.19	349.50	34.62
26	12.76	250.01	2.000	10.00	.25	2.72	12.02	275.72	7.36	8.54	353.10	34.95
27	12.56	240.01	2.000	10.00	.25	2.83	12.18	279.72	7.57	8.90	357.00	35.31
28	12.36	230.01	2.000	10.00	.25	2.95	12.36	283.98	7.79	9.25	361.21	35.70
29	12.16	220.02	2.000	10.00	.25	3.06	12.55	288.49	8.03	9.61	365.75	36.12
30	11.83	210.02	2.000	10.00	.25	3.18	12.75	293.27	8.29	9.98	370.63	36.58
31	11.49	200.03	2.000	10.00	.25	3.30	12.96	298.32	8.56	10.35	375.85	37.06

OUTFALL PIPELINE

TOTAL DISCHARGE = 10.73 CUM/SEC
DIAMETER OF OUTFALL PIPELINE = 2.000 M
VELOCITY IN OUTFALL PIPELINE = 3.42 M/SEC
TOTAL LENGTH OF MANIFOLD = 300.00 M
TOTAL LENGTH OF OUTFALL PIPELINE = 200.64 M
TOTAL HEAD AT SHORE = 14.54 M

A P P E N D I X F

EDB-BEREGNINGER AV AVLØPSSTRÅLENES FORTYNNING FRA DIFFUSOR, ALTERNATIV 7

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 7 OUTFALL SITE NO 8 DENSITY PROFILE NO 1

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
1	15.57	500.00	.310	20.0	3.00	.99880

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.91	1.81	.22	1.15	.99973	3.00
14.57	2.75	.38	2.01	.99973	1.72
14.22	3.68	.55	2.87	.99973	1.20
13.87	4.62	.71	3.73	.99973	.93
13.51	5.55	.87	4.59	.99973	.76
13.14	6.48	1.03	5.45	.99973	.64
12.77	7.41	1.20	6.31	.99973	.55
12.38	8.33	1.36	7.18	.99973	.49
11.98	9.25	1.52	8.05	.99973	.44
11.57	10.16	1.68	8.92	.99973	.40
11.14	11.06	1.83	9.80	.99973	.37
10.70	11.96	1.99	10.67	.99973	.34
10.24	12.85	2.14	11.56	.99973	.32
9.77	13.73	2.30	12.44	.99973	.30
9.28	14.60	2.45	13.34	.99973	.28
8.77	15.46	2.59	14.23	.99973	.27
8.24	16.31	2.74	15.13	.99973	.25
7.70	17.15	2.89	16.04	.99973	.24
7.14	17.98	3.03	16.96	.99973	.23
6.55	18.79	3.17	17.88	.99973	.22
5.96	19.59	3.30	18.81	.99973	.22
5.34	20.38	3.44	19.75	.99973	.21
4.71	21.15	3.57	20.69	.99973	.20
4.06	21.91	3.70	21.65	.99973	.20
3.39	22.66	3.83	22.61	.99973	.19
2.71	23.39	3.96	23.59	.99973	.19
2.01	24.11	4.08	24.57	.99973	.19
1.30	24.81	4.20	25.56	.99973	.18
.57	25.50	4.32	26.56	.99973	.18
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
1	15.57	500.00	.310	30.0	3.00	.99880

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.61	1.66	.22	1.15	.99973	3.00
14.11	2.53	.38	2.01	.99973	1.72
13.60	3.39	.55	2.87	.99973	1.21
13.10	4.25	.71	3.73	.99973	.93
12.58	5.11	.87	4.59	.99973	.76
12.06	5.97	1.03	5.45	.99973	.64
11.53	6.81	1.19	6.32	.99973	.56
10.99	7.66	1.35	7.19	.99973	.49
10.45	8.49	1.51	8.06	.99973	.44

9.89	9.32	1.67	8.94	.99973	.40
9.32	10.15	1.82	9.82	.99973	.37
8.74	10.96	1.98	10.71	.99973	.34
8.14	11.76	2.13	11.60	.99973	.32
7.53	12.56	2.28	12.50	.99973	.30
6.91	13.34	2.43	13.40	.99973	.29
6.28	14.11	2.57	14.31	.99973	.27
5.63	14.88	2.72	15.22	.99973	.26
4.97	15.63	2.86	16.14	.99973	.25
4.29	16.36	3.00	17.07	.99973	.24
3.60	17.09	3.13	18.01	.99973	.23
2.90	17.80	3.27	18.96	.99973	.22
2.19	18.50	3.40	19.91	.99973	.22
1.46	19.18	3.53	20.88	.99973	.21
.72	19.86	3.66	21.85	.99973	.20
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
2	15.53	490.00	.221	20.0	3.02	.99880

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.06	1.29	.16	1.15	.99973	3.02
14.72	2.23	.32	2.35	.99973	1.48
14.37	3.16	.48	3.56	.99973	.98
14.02	4.10	.65	4.76	.99973	.73
13.65	5.03	.81	5.97	.99973	.59
13.28	5.96	.97	7.18	.99973	.49
12.90	6.88	1.13	8.40	.99973	.42
12.50	7.80	1.29	9.62	.99973	.37
12.08	8.71	1.45	10.84	.99973	.33
11.65	9.61	1.61	12.07	.99973	.30
11.20	10.51	1.76	13.31	.99973	.28
10.74	11.39	1.92	14.55	.99973	.25
10.25	12.26	2.07	15.80	.99973	.24
9.74	13.12	2.22	17.06	.99973	.22
9.21	13.97	2.36	18.32	.99973	.21
8.66	14.80	2.50	19.60	.99973	.20
8.08	15.62	2.65	20.89	.99973	.19
7.49	16.43	2.78	22.19	.99973	.18
6.88	17.22	2.92	23.50	.99973	.18
6.24	17.99	3.05	24.83	.99973	.17
5.59	18.75	3.18	26.17	.99973	.17
4.92	19.49	3.31	27.53	.99973	.16
4.22	20.21	3.43	28.90	.99973	.16
3.52	20.92	3.55	30.29	.99973	.15
2.79	21.61	3.67	31.70	.99973	.15
2.05	22.28	3.79	33.12	.99973	.15
1.30	22.93	3.91	34.57	.99973	.15
.53	23.57	4.02	36.03	.99973	.14
.00	DEPTHLIM/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUW
2	15.53	490.00	.221	30.0	3.02	.99880

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)

14.84	1.19	.16	1.15	.99973	3.02
14.34	2.05	.32	2.35	.99973	1.48
13.84	2.92	.48	3.56	.99973	.98
13.33	3.78	.65	4.77	.99973	.73
12.81	4.63	.81	5.98	.99973	.59
12.29	5.48	.97	7.19	.99973	.49
11.75	6.33	1.13	8.41	.99973	.42
11.20	7.16	1.29	9.64	.99973	.37
10.64	7.99	1.44	10.87	.99973	.34
10.07	8.81	1.60	12.11	.99973	.30
9.48	9.62	1.75	13.35	.99973	.28
8.88	10.42	1.90	14.61	.99973	.26
8.26	11.20	2.05	15.87	.99973	.24
7.63	11.98	2.20	17.14	.99973	.23
6.97	12.74	2.34	18.43	.99973	.22
6.31	13.43	2.48	19.73	.99973	.21
5.63	14.21	2.62	21.04	.99973	.20
4.93	14.93	2.75	22.36	.99973	.19
4.21	15.63	2.89	23.70	.99973	.18
3.49	16.31	3.02	25.06	.99973	.18
2.74	16.98	3.15	26.43	.99973	.17
1.99	17.64	3.27	27.81	.99973	.17
1.22	18.27	3.40	29.21	.99973	.16
.43	18.90	3.52	30.63	.99973	.16
.00	DEPTHLIMIT/MIN REACHED.				

DISCHARGE N	DEPTH(N)	DIST(1)	DEFF(N)	THETA(N)	U(N)	DENSUW
31	13.87	200.00	.170	20.0	4.87	.99880

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.51	.90	.12	1.15	.99973	4.87
13.17	1.93	.28	2.71	.99973	2.06
12.82	2.87	.45	4.27	.99973	1.31
12.47	3.81	.61	5.84	.99973	.96
12.12	4.74	.78	7.40	.99973	.76
11.77	5.68	.94	8.97	.99973	.63
11.40	6.61	1.10	10.54	.99973	.54
11.03	7.54	1.26	12.11	.99973	.47
10.66	8.47	1.42	13.68	.99973	.42
10.27	9.39	1.59	15.26	.99973	.37
9.87	10.31	1.75	16.84	.99973	.34
9.47	11.22	1.90	18.43	.99973	.31
9.05	12.13	2.06	20.02	.99973	.29
8.62	13.03	2.22	21.61	.99973	.27
8.18	13.93	2.38	23.21	.99973	.25
7.72	14.82	2.53	24.82	.99973	.24
7.25	15.70	2.68	26.43	.99973	.23
6.77	16.53	2.83	28.05	.99973	.21
6.27	17.44	2.98	29.67	.99973	.20
5.76	18.30	3.13	31.31	.99973	.20
5.23	19.15	3.23	32.95	.99973	.19
4.69	19.99	3.42	34.60	.99973	.18
4.13	20.82	3.57	36.26	.99973	.18
3.56	21.64	3.71	37.94	.99973	.17
2.98	22.45	3.85	39.62	.99973	.16
2.37	23.25	3.98	41.31	.99973	.16
1.76	24.04	4.12	43.02	.99973	.16
1.13	24.82	4.25	44.74	.99973	.15
.48	25.58	4.38	46.47	.99973	.15

.00 DEPTHLIM/MIN REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(1)	U(N)	DENSNW
31	13.87	200.00	.170	30.0	4.87	.99880

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.34	.91	.12	1.15	.99973	4.87
12.84	1.78	.28	2.71	.99973	2.06
12.34	2.64	.45	4.27	.99973	1.31
11.83	3.51	.61	5.84	.99973	.96
11.33	4.37	.77	7.41	.99973	.76
10.81	5.23	.94	8.97	.99973	.63
10.30	6.08	1.10	10.55	.99973	.54
9.77	6.94	1.26	12.12	.99973	.47
9.24	7.78	1.42	13.70	.99973	.42
8.71	8.63	1.58	15.28	.99973	.38
8.16	9.47	1.74	16.87	.99973	.34
7.61	10.30	1.90	18.47	.99973	.32
7.05	11.13	2.05	20.06	.99973	.29
6.47	11.95	2.21	21.67	.99973	.27
5.89	12.76	2.36	23.28	.99973	.26
5.30	13.56	2.51	24.90	.99973	.24
4.69	14.36	2.66	26.53	.99973	.23
4.08	15.15	2.81	28.17	.99973	.22
3.45	15.93	2.96	29.82	.99973	.21
2.82	16.70	3.11	31.47	.99973	.20
2.17	17.46	3.25	33.14	.99973	.19
1.51	18.21	3.39	34.82	.99973	.19
.84	18.95	3.53	36.51	.99973	.18
.15	19.69	3.67	38.21	.99973	.17

.00 DEPTHLIM/MIN REACHED.

INITIAL JET MIXING (ALL DATA IN M, SEC AND DEG)

MANIFOLD NO 7 OUTFALL SITE NO 8 DENSITY PROFILE NO 2

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSAW
1	15.57	500.00	.310	20.0	3.00	.99842

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.91	1.81	.22	1.15	.99983	3.00
14.57	2.75	.38	2.01	.99983	1.72
14.22	3.68	.55	2.87	.99982	1.21
13.86	4.62	.71	3.73	.99981	.93
13.50	5.55	.87	4.59	.99977	.76
13.12	6.47	1.03	5.45	.99974	.64
12.74	7.40	1.20	6.32	.99972	.56
12.35	8.32	1.36	7.19	.99970	.49
11.99	9.15	DEPTH/NEUTRAL			
11.95	9.24	1.52	8.05	.99968	.44
11.56	10.16	1.69	8.92	.99965	.39
11.18	11.08	1.86	9.79	.99963	.36
10.80	12.01	2.03	10.65	.99961	.33
10.45	12.94	2.20	11.51	.99959	.30
10.14	13.89	2.38	12.37	.99958	.27
9.87	14.86	2.57	13.21	.99956	.25
9.67	15.84	2.75	14.05	.99956	.23
9.54	16.83	2.93	14.89	.99955	.22
9.50	17.73	DEPTH/MIN			

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSAW
1	15.57	500.00	.310	30.0	3.00	.99842

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.61	1.66	.22	1.15	.99983	3.00
14.11	2.53	.38	2.01	.99982	1.72
13.60	3.39	.55	2.87	.99978	1.21
13.09	4.25	.71	3.73	.99974	.93
12.57	5.11	.87	4.59	.99971	.76
12.05	5.96	1.03	5.46	.99968	.64
11.52	6.81	1.20	6.33	.99965	.56
11.14	7.41	DEPTH/NEUTRAL			
10.99	7.65	1.36	7.19	.99962	.49
10.46	8.50	1.53	8.06	.99959	.44
9.93	9.35	1.69	8.93	.99957	.39
9.42	10.21	1.87	9.79	.99955	.35
8.93	11.03	2.05	10.64	.99953	.32
8.47	11.97	2.23	11.49	.99952	.29
8.04	12.83	2.42	12.33	.99950	.26
7.67	13.81	2.62	13.16	.99949	.24
7.36	14.76	2.82	13.98	.99948	.22
7.18	15.74	3.02	14.79	.99943	.20
7.09	16.73	3.20	15.59	.99947	.19
7.09	16.91	DEPTH/MIN			

DISCHARGE	DEPTH(M)	DIST(J)	DEPT(J)	THETA(J)	U(N)	DENSITY
2	15.53	450.00	.221	20.0	5.02	.99842

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ANGLES	VEL(J)
15.30	1.22	.14	1.15	.99986	5.02
14.72	2.23	.32	2.35	.99974	1.48
14.37	3.16	.43	3.53	.99963	.98
14.01	4.19	.65	4.77	.99942	.73
13.64	5.23	.81	5.98	.99929	.59
13.25	6.28	.97	7.19	.99915	.49
12.85	6.87	1.13	8.41	.99902	.42
12.45	7.43	1.29	9.63	.99890	.37
12.34	8.04	DEPTH/NEUTRAL			
12.05	8.70	1.45	10.85	.99868	.33
11.65	9.61	1.65	12.32	.99846	.29
11.20	10.54	1.80	13.28	.99834	.26
10.91	11.47	1.93	14.49	.99822	.24
10.67	12.42	2.16	15.69	.99810	.22
10.37	13.39	2.35	16.87	.99799	.20
10.25	14.33	2.53	18.05	.99788	.19
10.20	15.29	DEPTH/MID			

DISCHARGE	DEPTH(M)	DIST(J)	DEPT(J)	THETA( )	U(N)	DENSITY
2	15.53	450.00	.221	34.0	5.02	.99842

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ANGLES	VEL(J)
14.84	1.10	.15	1.15	.99983	5.02
14.34	2.06	.32	2.35	.99982	1.48
13.84	2.91	.43	3.56	.99980	.98
13.52	3.77	.65	4.77	.99976	.74
12.80	4.62	.81	5.98	.99972	.59
12.27	5.47	.97	7.20	.99969	.49
11.80	6.13	DEPTH/NEUTRAL			
11.74	6.33	1.15	8.42	.99967	.42
11.21	7.12	1.30	9.63	.99963	.37
10.69	8.02	1.47	10.84	.99961	.32
10.19	8.90	1.65	12.05	.99958	.28
9.75	9.77	1.84	13.24	.99956	.25
9.32	10.69	2.03	14.41	.99955	.22
8.99	11.63	2.23	15.57	.99954	.20
8.76	12.60	2.43	16.70	.99953	.18
8.63	13.60	2.61	17.82	.99952	.17
8.63	12.61	DEPTH/MID			

DISCHARGE	DEPTH(M)	DIST(J)	DEPT(J)	THETA(J)	U(N)	DENSITY
31	15.53	260.00	.170	20.0	4.87	.99842

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ANGLES	VEL(J)
15.51	.07	.12	1.15	.99976	4.87
15.17	1.03	.23	2.71	.99975	2.34
14.82	2.07	.45	4.27	.99972	1.51

12.47	3.81	.61	5.34	.99979	.96
12.12	4.74	.78	7.40	.99964	.74
11.78	5.68	.94	9.97	.99947	.63
11.49	6.61	1.10	12.54	.99935	.55
11.32	6.33	DEPTH/NEUTRAL			
11.04	7.56	1.27	17.11	.99962	.46
10.69	8.48	1.43	18.67	.99961	.41
10.34	9.42	1.60	20.24	.99959	.37
10.00	10.36	1.77	21.80	.99957	.33
9.69	11.31	1.94	23.35	.99956	.30
9.42	12.27	2.12	24.90	.99955	.27
9.13	13.24	2.29	26.45	.99954	.25
9.00	14.22	2.47	27.96	.99954	.23
8.80	15.27	2.65	29.45	.99953	.22
8.84	16.22	2.81	29.90	.99953	.20
8.84	16.22	DEPTH/MID			

DISCHARGE (I	DEPTH(N)	DIST(I)	DEPE(I)	THETA(I)	U(N)	DENSMU
31	13.87	200.00	.170	30.0	4.87	.99842

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ABDENS	VEL(J)
13.34	.91	.12	1.15	.99976	4.87
12.84	1.78	.23	2.71	.99972	2.06
12.34	2.64	.45	4.27	.99970	1.31
11.83	3.51	.61	5.84	.99967	.96
11.32	4.37	.77	7.41	.99964	.76
10.81	5.23	.94	8.97	.99961	.63
10.76	5.32	DEPTH/NEUTRAL			
10.30	6.09	1.10	10.54	.99958	.53
9.80	6.95	1.27	12.11	.99956	.46
9.30	7.82	1.44	13.67	.99955	.41
8.81	8.69	1.61	15.23	.99953	.36
8.34	9.57	1.78	16.78	.99951	.32
7.89	10.47	1.96	18.31	.99950	.29
7.46	11.38	2.15	19.84	.99949	.26
7.13	12.31	2.34	21.34	.99947	.24
6.84	13.27	2.53	22.83	.99946	.22
6.63	14.25	2.72	24.30	.99945	.20
6.53	15.24	2.90	25.75	.99945	.19
6.53	15.52	DEPTH/MID			

INITIAL JET ANGLE (ALL DATA IN THE SEC AND DEG)

MANIFOLD NO 7 OUTFALL SIDE NO 9 DENSITY PROFILE NO 3

DISCHARGE NO	DEPTH(N)	DIST(D)	DEPE(D)	THETA(D)	U(N)	DENSUM
1	15.52	500.00	.310	20.0	3.00	.99657

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.91	1.81	.22	1.15	.99896	3.00
14.57	2.74	.39	2.01	.99893	1.72
14.21	3.63	.55	2.87	.99890	1.21
13.85	4.61	.71	3.73	.99886	.93
13.47	5.54	.87	4.59	.99881	.76
13.07	6.45	1.03	5.46	.99875	.65
12.67	7.37	1.19	6.33	.99870	.56
12.31	8.13	DEPTH/NEUTRAL			
12.26	8.23	1.35	7.20	.99865	.49
11.85	9.19	1.52	8.07	.99861	.46
11.45	10.11	1.69	8.94	.99858	.39
11.07	11.06	1.86	9.81	.99855	.35
10.73	11.97	2.04	10.67	.99853	.32
10.42	12.93	2.23	11.52	.99851	.29
10.16	13.99	2.41	12.37	.99849	.27
10.02	14.83	2.52	13.20	.99848	.25
9.96	15.81	2.77	14.04	.99848	.23
9.96	15.94	DEPTH/MIN			

DISCHARGE NO	DEPTH(N)	DIST(D)	DEPE(D)	THETA(D)	U(N)	DENSUM
1	15.57	500.00	.310	30.0	3.00	.99657

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.61	1.66	.22	1.15	.99894	3.00
14.11	2.53	.38	2.01	.99890	1.72
13.60	3.39	.55	2.87	.99883	1.21
13.03	4.24	.71	3.73	.99875	.94
12.55	5.09	.87	4.60	.99869	.77
12.01	5.94	1.03	5.47	.99862	.65
11.57	6.63	DEPTH/NEUTRAL			
11.47	6.73	1.19	6.34	.99858	.56
10.93	7.63	1.36	7.21	.99854	.49
10.40	8.47	1.53	8.08	.99851	.43
9.85	9.37	1.70	8.94	.99847	.39
9.38	10.19	1.88	9.80	.99845	.35
8.92	11.08	2.07	10.65	.99843	.31
8.51	11.99	2.27	11.43	.99841	.28
8.17	12.93	2.47	12.31	.99840	.25
7.91	13.89	2.67	13.12	.99839	.23
7.77	14.78	2.85	13.92	.99838	.21
7.75	15.41	DEPTH/MIN			

DISCHARGE	N	DEPTH(M)	DIST(M)	DEFF(M)	THETA(°)	U(M)	DENSOU
	2	15.53	490.00	.221	30.0	3.02	.99657

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
15.06	1.22	.16	1.15	.99898	3.02
14.72	2.23	.32	2.35	.99895	1.48
14.36	3.16	.48	3.56	.99892	.98
13.99	4.09	.64	4.77	.99888	.74
13.60	5.01	.81	5.99	.99883	.59
13.20	5.93	.97	7.21	.99877	.49
12.85	6.72	DEPTH/NEUTRAL			
12.80	6.84	1.13	8.43	.99872	.42
12.39	7.75	1.30	9.65	.99867	.37
12.00	8.68	1.47	10.86	.99862	.32
11.64	9.61	1.65	12.07	.99860	.29
11.33	10.56	1.83	13.27	.99857	.25
11.11	11.53	2.01	14.45	.99856	.23
10.99	12.53	2.19	15.62	.99855	.21
10.97	12.96	DEPTH/MIN			

DISCHARGE	N	DEPTH(M)	DIST(M)	DEFF(M)	THETA(°)	U(M)	DENSOU
	2	15.53	490.00	.221	30.0	3.02	.99657

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.84	1.12	.16	1.15	.99896	3.02
14.34	2.09	.32	2.35	.99891	1.48
13.83	2.91	.48	3.56	.99886	.98
13.31	3.76	.64	4.77	.99878	.74
12.77	4.61	.81	5.99	.99871	.59
12.24	5.45	.97	7.21	.99865	.49
12.22	5.43	DEPTH/NEUTRAL			
11.70	6.29	1.13	8.44	.99860	.42
11.17	7.14	1.31	9.65	.99856	.36
10.66	8.09	1.48	10.86	.99852	.32
10.19	8.80	1.67	12.05	.99849	.28
9.79	9.80	1.87	13.22	.99847	.24
9.49	10.76	2.07	14.37	.99846	.22
9.32	11.74	2.26	15.50	.99845	.19
9.31	12.19	DEPTH/MIN			

DISCHARGE	N	DEPTH(M)	DIST(M)	DEFF(M)	THETA(°)	U(M)	DENSOU
	31	13.87	200.00	.170	20.0	4.87	.99657

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.51	.90	.12	1.15	.99851	4.87
13.17	1.93	.28	2.71	.99876	2.06
12.82	2.87	.45	4.27	.99872	1.31
12.46	3.83	.61	5.84	.99868	.96
12.11	4.74	.77	7.41	.99864	.76
11.74	5.67	.94	8.94	.99860	.63
11.49	6.32	DEPTH/NEUTRAL			
11.38	6.69	1.10	11.55	.99858	.53
11.01	7.53	1.27	12.12	.99855	.46
10.65	8.47	1.43	13.69	.99852	.41

10.31	9.43	1.69	10.25	.99850	.37
9.99	10.35	1.77	10.81	.99848	.33
9.76	11.31	1.95	11.35	.99847	.30
9.45	12.23	2.13	19.89	.99845	.27
9.26	13.26	2.31	21.43	.99845	.25
9.14	14.25	2.49	22.94	.99844	.23
9.11	15.16	DEPTH/MID			

DISCHARGE Q	DEPTH(N)	DIST(D)	DEFF(D)	THETA(D)	U(N)	DENSUN
31	13.67	200.00	.170	30.0	4.47	.99657

DEPTH(J)	DIST(J)	WIDTH(J)	U(LOT(J)	MIBDENS	VEL(J)
13.54	.21	.12	1.15	.99879	4.87
13.34	1.73	.28	2.71	.99872	2.06
12.56	2.64	.45	4.23	.99866	1.31
11.83	3.50	.61	5.84	.99861	.96
11.32	4.36	.77	7.41	.99857	.76
10.80	5.23	.94	8.98	.99853	.63
10.72	5.36	DEPTH/NEUTRAL			
10.23	6.03	1.10	12.55	.99850	.53
9.77	6.94	1.27	13.12	.99847	.46
9.27	7.81	1.44	13.62	.99845	.41
8.78	8.67	1.61	15.24	.99842	.36
8.31	9.56	1.79	16.79	.99841	.32
7.86	10.46	1.97	18.32	.99839	.29
7.50	11.38	2.16	19.85	.99837	.26
7.19	12.33	2.36	21.35	.99836	.24
6.96	13.31	2.55	22.80	.99835	.22
6.85	14.30	2.73	24.20	.99835	.20
6.84	14.67	DEPTH/MID			

INITIAL JET MIXING (ALL DATA IN M SEC AND DEG)

MANIFOLD NO 7 OUTFALL SITE NO 3 DENSITY PROFILE NO 4

DISCHARGE #	DEPTH(0)	DIST(J)	DEFF(0)	THETA(0)	U(0)	DENSW
1	15.52	500.00	.310	20.0	3.00	1.00030

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBIENS	VEL(J)
14.91	1.61	.22	1.15	.99987	3.59
14.57	2.75	.38	2.01	.99987	1.72
14.23	3.89	.53	2.86	.99987	1.20
13.89	4.03	.71	3.72	.99987	.92
13.56	5.17	.88	4.58	.99987	.75
13.23	6.31	1.04	5.43	.99987	.63
12.90	7.46	1.21	6.29	.99987	.54
12.58	8.41	1.37	7.15	.99987	.48
12.27	9.36	1.54	8.00	.99987	.43
11.96	10.51	1.70	8.85	.99987	.38
11.67	11.26	1.87	9.70	.99987	.35
11.38	12.22	2.04	10.55	.99987	.32
11.10	13.18	2.20	11.40	.99987	.29
10.83	14.14	2.37	12.25	.99987	.27
10.57	15.11	2.54	13.10	.99987	.26
10.32	16.09	2.71	13.94	.99987	.24
10.09	17.05	2.88	14.79	.99987	.22
9.86	18.03	3.05	15.63	.99987	.21
9.67	19.01	3.22	16.47	.99987	.20
9.49	19.99	3.38	17.31	.99987	.19
9.32	20.98	3.55	18.15	.99987	.18
9.17	21.97	3.72	18.98	.99987	.17
9.05	22.96	3.89	19.82	.99987	.16
8.94	23.95	4.06	20.65	.99987	.16
8.85	24.95	4.23	21.49	.99987	.15
8.79	25.95	4.40	22.32	.99987	.15
8.75	26.94	4.56	23.15	.99987	.14
8.74	27.95	DEPTH/MIN			
8.74	27.94	4.73	23.99	.99987	.13
8.75	28.94	4.89	24.82	.99987	.13
8.79	29.94	5.05	25.65	.99987	.13
8.86	30.94	5.21	26.48	.99987	.12
8.96	31.94	5.37	27.32	.99987	.12
9.09	32.93	5.52	28.15	.99987	.12
9.24	33.92	5.67	28.99	.99987	.11
9.43	34.90	5.82	29.83	.99987	.11
9.64	35.88	5.96	30.67	.99987	.11
9.89	36.85	6.10	31.52	.99987	.11
10.16	37.81	6.24	32.37	.99987	.10
10.46	38.76	6.37	33.22	.99987	.10
10.80	39.70	6.50	34.07	.99987	.10
11.16	40.63	6.63	34.94	.99987	.10
11.55	41.55	6.75	35.80	.99987	.10
11.97	42.45	6.87	36.68	.99987	.10
12.41	43.36	6.98	37.56	.99987	.10
12.88	44.24	7.09	38.44	.99987	.10
13.38	45.11	7.20	39.33	.99987	.10
13.90	45.97	7.30	40.23	.99987	.09

14.46	46.61	7.43	41.14	.99987	.09
15.02	47.03	7.53	42.06	.99987	.09
15.58	47.45	7.63	42.98	.99987	.09
16.17	47.86	7.69	43.91	.99987	.09
16.81	48.25	7.79	44.85	.99987	.09
17.46	48.70	7.88	45.80	.99987	.09
18.10	51.55	7.97	46.76	.99987	.09
18.78	52.29	8.06	47.73	.99987	.09
19.46	53.07	8.14	48.70	.99987	.09
20.00	DEPTH(I)/MAX (BACHE).				

DISCHARGE N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(1)	U(N)	DENSUW
1	15.5;	500.00	.310	30.0	3.00	1.00030

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
14.61	1.06	.22	1.15	.99987	5.00
14.11	2.53	.33	2.01	.99987	1.71
13.61	3.40	.55	2.80	.99987	1.20
13.12	4.27	.71	3.72	.99987	.92
12.62	5.14	.88	4.58	.99987	.75
12.13	6.01	1.04	5.43	.99987	.63
11.65	6.83	1.21	6.29	.99987	.54
11.17	7.76	1.37	7.14	.99987	.48
10.69	8.64	1.54	7.99	.99987	.42
10.22	9.52	1.71	8.84	.99987	.38
9.76	10.41	1.88	9.69	.99987	.35
9.30	11.30	2.04	10.54	.99987	.32
8.86	12.19	2.21	11.38	.99987	.29
8.42	13.09	2.38	12.22	.99987	.27
7.99	14.00	2.55	13.06	.99987	.25
7.56	14.91	2.73	13.90	.99987	.23
7.13	15.82	2.90	14.74	.99987	.22
6.70	16.74	3.07	15.57	.99987	.21
6.41	17.67	3.25	16.40	.99987	.20
6.06	18.61	3.42	17.22	.99987	.18
5.71	19.55	3.60	18.05	.99987	.18
5.39	20.49	3.77	18.87	.99987	.17
5.09	21.44	3.95	19.69	.99987	.16
4.80	22.40	4.13	20.50	.99987	.15
4.54	23.37	4.31	21.32	.99987	.14
4.31	24.34	4.49	22.13	.99987	.14
4.10	25.32	4.66	22.93	.99987	.13
3.92	26.30	4.84	23.74	.99987	.13
3.76	27.29	5.01	24.54	.99987	.12
3.64	28.28	5.19	25.35	.99987	.12
3.55	29.26	5.36	26.15	.99987	.11
3.49	30.25	5.53	26.95	.99987	.11
3.46	31.23	5.70	27.75	.99987	.11
3.46	31.46	DEPTH/MIN			
3.47	32.28	5.86	28.54	.99987	.10
3.52	33.27	6.02	29.34	.99987	.10
3.61	34.27	6.17	30.14	.99987	.10
3.73	35.26	6.32	30.95	.99987	.10
3.89	36.25	6.46	31.75	.99987	.10
4.09	37.23	6.60	32.56	.99987	.09
4.33	38.20	6.74	33.37	.99987	.09
4.60	39.16	6.86	34.19	.99987	.09
4.91	40.11	6.98	35.00	.99987	.09
5.25	41.05	7.10	35.82	.99987	.09

6.66	41.27	7.21	36.65	.99987	.09
6.80	42.63	7.31	37.49	.99987	.09
6.93	43.73	7.41	38.34	.99987	.09
7.03	44.66	7.51	39.19	.99987	.09
7.49	45.52	7.60	40.05	.99987	.09
8.02	46.37	7.69	40.92	.99987	.09
8.53	47.20	7.77	41.80	.99987	.09
9.13	48.01	7.86	42.66	.99987	.09
9.77	48.80	7.94	43.58	.99987	.09
10.40	49.58	8.01	44.49	.99987	.09
11.04	50.34	8.09	45.40	.99987	.09
11.71	51.09	8.17	46.33	.99987	.09
12.40	51.82	8.24	47.26	.99987	.09
13.10	52.53	8.31	48.21	.99987	.09
13.81	53.23	8.39	49.16	.99987	.09
14.54	53.91	8.46	50.13	.99987	.09
15.29	54.58	8.53	51.11	.99987	.09
16.04	55.23	8.60	52.10	.99987	.09
16.81	55.87	8.68	53.09	.99987	.09
17.59	56.50	8.75	54.10	.99987	.09
18.38	57.11	8.82	55.12	.99987	.09
19.18	57.72	8.89	56.15	.99987	.09
19.99	58.30	8.97	57.19	.99987	.09

20.00 DEPTHLIM/MAX REACHED.

DISCHARGE N	DEPTH(N)	DIST(N)	DEPT(0)	THETA(0)	U(N)	DENSMN
2	15.53	490.00	.221	20.0	3.02	1.00030

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ADBDENS	VEL(J)
15.06	1.29	.16	1.15	.99987	3.02
14.72	2.23	.32	2.35	.99987	1.47
14.38	3.17	.48	3.55	.99987	.97
14.04	4.11	.65	4.76	.99987	.73
13.71	5.05	.81	5.96	.99987	.58
13.38	6.00	.98	7.16	.99987	.48
13.06	6.95	1.14	8.36	.99987	.41
12.75	7.89	1.31	9.56	.99987	.36
12.44	8.85	1.48	10.75	.99987	.32
12.15	9.80	1.64	11.95	.99987	.28
11.86	10.76	1.81	13.14	.99987	.26
11.59	11.72	1.98	14.33	.99987	.24
11.33	12.69	2.14	15.52	.99987	.22
11.09	13.66	2.31	16.70	.99987	.20
10.86	14.63	2.48	17.89	.99987	.19
10.64	15.61	2.65	19.07	.99987	.17
10.45	16.59	2.82	20.25	.99987	.16
10.28	17.57	2.99	21.42	.99987	.15
10.13	18.56	3.15	22.60	.99987	.15
10.00	19.56	3.33	23.77	.99987	.14
9.90	20.55	3.50	24.94	.99987	.13
9.82	21.55	3.66	26.11	.99987	.12
9.76	22.55	3.83	27.27	.99987	.12
9.70	23.55	4.00	28.44	.99987	.11
9.70	23.64	DEPTH/MIN			
9.77	24.55	4.16	29.61	.99987	.11
9.83	25.54	4.32	30.78	.99987	.11
9.89	26.54	4.48	31.95	.99987	.10
10.00	27.54	4.63	33.12	.99987	.10
10.14	28.52	4.79	34.29	.99987	.10

10.32	29.51	4.93	35.47	.99987	.09
10.54	30.43	5.08	36.55	.99987	.09
10.79	31.45	5.22	37.83	.99987	.09
11.06	32.41	5.35	39.03	.99987	.09
11.40	33.36	5.43	40.25	.99987	.09
11.75	34.29	5.61	41.43	.99987	.08
12.14	35.22	5.73	42.65	.99987	.08
12.56	36.12	5.85	43.87	.99987	.08
13.01	37.02	5.96	45.11	.99987	.08
13.49	37.89	6.07	46.36	.99987	.08
13.99	38.73	6.18	47.61	.99987	.08
14.55	39.60	6.28	48.83	.99987	.08
15.09	40.43	6.38	50.17	.99987	.08
15.63	41.24	6.48	51.46	.99987	.08
16.29	42.03	6.57	52.77	.99987	.08
16.92	42.81	6.66	54.10	.99987	.08
17.57	43.57	6.75	55.44	.99987	.08
18.24	44.31	6.84	56.79	.99987	.08
18.92	45.04	6.93	58.16	.99987	.08
19.63	45.75	7.01	59.55	.99987	.08

20.00 DEPTH(I)/MAX REACHED.

DISCHARGE	N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUM
	2	15.53	490.00	.221	30.0	3.02	1.00030

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ABSORBS	VEL(J)
14.84	1.19	.16	1.15	.99987	3.02
14.35	2.05	.32	2.35	.99987	1.47
13.85	2.92	.48	3.55	.99987	.97
13.35	3.79	.65	4.75	.99987	.73
12.80	4.66	.81	5.96	.99987	.58
12.37	5.53	.98	7.16	.99987	.48
11.89	6.41	1.15	8.35	.99987	.41
11.42	7.29	1.31	9.55	.99987	.36
10.95	8.17	1.48	10.74	.99987	.32
10.49	9.06	1.65	11.93	.99987	.28
10.04	9.95	1.82	13.12	.99987	.26
9.60	10.85	1.99	14.30	.99987	.23
9.17	11.75	2.16	15.48	.99987	.21
8.75	12.66	2.33	16.66	.99987	.20
8.35	13.58	2.50	17.82	.99987	.18
7.97	14.50	2.68	18.99	.99987	.17
7.60	15.43	2.85	20.16	.99987	.16
7.26	16.37	3.03	21.31	.99987	.15
6.93	17.32	3.20	22.46	.99987	.14
6.63	18.27	3.38	23.61	.99987	.13
6.35	19.23	3.56	24.75	.99987	.13
6.10	20.20	3.74	25.89	.99987	.12
5.88	21.18	3.91	27.02	.99987	.11
5.69	22.16	4.09	28.15	.99987	.11
5.54	23.15	4.27	29.26	.99987	.10
5.42	24.14	4.44	30.41	.99987	.10
5.33	25.13	4.61	31.53	.99987	.10
5.29	26.13	4.78	32.65	.99987	.09
5.28	26.67	DEPTH(MIN)			
5.29	27.13	4.94	33.77	.99987	.09
5.33	28.13	5.10	34.89	.99987	.09
5.42	29.13	5.26	36.01	.99987	.08
5.55	30.12	5.40	37.14	.99987	.08

5.72	31.10	5.56	38.27	.99987	.08
5.94	32.03	5.68	39.40	.99987	.08
6.20	33.05	5.81	41.54	.99987	.08
6.51	34.09	5.93	41.69	.99987	.08
6.80	34.93	6.05	42.85	.99987	.08
7.25	35.85	6.15	44.02	.99987	.07
7.68	36.76	6.26	45.20	.99987	.07
8.14	37.64	6.35	46.39	.99987	.07
8.64	38.51	6.45	47.59	.99987	.07
9.17	39.34	6.54	48.81	.99987	.07
9.73	40.13	6.62	50.04	.99987	.07
10.32	40.92	6.70	51.29	.99987	.07
10.94	41.73	6.78	52.55	.99987	.07
11.58	42.55	6.86	53.83	.99987	.07
12.24	43.29	6.93	56.13	.99987	.07
12.93	44.02	7.01	56.44	.99987	.07
13.63	44.73	7.09	57.77	.99987	.07
14.35	45.43	7.15	59.11	.99987	.07
15.09	46.10	7.23	60.46	.99987	.07
15.84	46.76	7.30	61.86	.99987	.07
16.61	47.40	7.37	63.26	.99987	.07
17.39	48.03	7.44	64.67	.99987	.08
18.18	48.64	7.52	66.11	.99987	.08
18.98	49.24	7.59	67.56	.99987	.08
19.80	49.82	7.66	69.03	.99987	.08

20.00 DEPTH(1) I/B,X REACHED.

DISCHARGE N	DEPTH(0)	DIST(0)	DEFF(0)	THETA(J)	U(N)	DENSUM
31	13.87	200.00	.170	20.0	4.87	1.06630

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	AMBDENS	VEL(J)
13.51	.90	.12	1.15	.99987	4.87
13.17	1.93	.23	2.71	.99987	2.06
12.83	2.87	.45	4.27	.99987	1.31
12.49	3.81	.61	5.83	.99987	.96
12.15	4.75	.78	7.40	.99987	.75
11.81	5.79	.94	8.96	.99987	.62
11.48	6.64	1.11	10.52	.99987	.53
11.15	7.58	1.27	12.07	.99987	.46
10.83	8.53	1.44	13.63	.99987	.41
10.51	9.48	1.60	15.19	.99987	.36
10.19	10.43	1.77	16.74	.99987	.33
9.88	11.38	1.93	18.30	.99987	.30
9.58	12.33	2.10	19.85	.99987	.28
9.28	13.29	2.27	21.40	.99987	.26
8.99	14.24	2.43	22.95	.99987	.24
8.71	15.20	2.60	24.49	.99987	.22
8.44	16.16	2.77	26.04	.99987	.21
8.18	17.13	2.93	27.58	.99987	.20
7.92	18.10	3.10	29.12	.99987	.19
7.68	19.07	3.27	30.66	.99987	.18
7.45	20.04	3.44	32.19	.99987	.17
7.23	21.01	3.61	33.73	.99987	.16
7.02	21.99	3.78	35.26	.99987	.15
6.83	22.97	3.95	36.79	.99987	.15
6.65	23.95	4.12	38.31	.99987	.14
6.49	24.94	4.29	39.83	.99987	.13
6.34	25.93	4.46	41.35	.99987	.13
6.21	26.92	4.63	42.86	.99987	.12

6.09	27.92	4.79	44.49	.99987	.12
6.00	28.91	4.96	45.92	.99987	.11
5.92	29.91	5.13	47.46	.99987	.11
5.86	30.91	5.30	48.95	.99987	.11
5.82	31.91	5.46	50.47	.99987	.10
5.80	32.91	5.63	51.98	.99987	.10
5.80	33.22	DEPTH/MIN			
5.81	33.91	5.79	53.50	.99987	.10
5.83	34.91	5.95	55.01	.99987	.10
5.88	35.91	6.11	56.53	.99987	.09
5.95	36.90	6.27	58.05	.99987	.09
6.05	37.90	6.43	59.56	.99987	.09
6.17	38.89	6.58	61.08	.99987	.09
6.31	39.88	6.74	62.61	.99987	.08
6.46	40.87	6.89	64.13	.99987	.08
6.63	41.86	7.03	65.66	.99987	.08
6.89	42.82	7.18	67.20	.99987	.08
7.14	43.79	7.32	68.73	.99987	.08
7.41	44.76	7.45	70.23	.99987	.08
7.70	45.71	7.59	71.83	.99987	.08
8.02	46.66	7.72	73.34	.99987	.08
8.36	47.60	7.85	74.94	.99987	.07
8.72	48.53	7.97	76.51	.99987	.07
9.11	49.45	8.09	78.09	.99987	.07
9.52	50.36	8.21	79.68	.99987	.07
9.96	51.27	8.33	81.27	.99987	.07
10.41	52.16	8.44	82.88	.99987	.07
10.89	53.04	8.55	84.49	.99987	.07
11.39	53.90	8.66	86.12	.99987	.07
11.90	54.76	8.76	87.76	.99987	.07
12.44	55.60	8.86	89.41	.99987	.07
12.99	56.44	8.97	91.07	.99987	.07
13.56	57.26	9.06	92.74	.99987	.07
14.15	58.07	9.16	94.42	.99987	.07
14.75	58.86	9.25	96.12	.99987	.07
15.37	59.65	9.35	97.85	.99987	.07
16.01	60.42	9.44	99.55	.99987	.07
16.66	61.18	9.53	101.29	.99987	.07
17.32	61.93	9.62	103.04	.99987	.07
18.00	62.67	9.70	104.80	.99987	.07
18.68	63.39	9.79	106.58	.99987	.07
19.38	64.11	9.88	108.37	.99987	.07
20.09	DEPTH/MIN/MAX REACHED.				

DISCHARGE_N	DEPTH(N)	DIST(N)	DEFF(N)	THETA(N)	U(N)	DENSUM
31	13.87	200.00	.170	30.0	4.87	1.00030

DEPTH(J)	DIST(J)	WIDTH(J)	DILUT(J)	ABSDENS	VEL(J)
13.34	.91	.12	1.15	.99987	4.87
12.84	1.78	.25	2.71	.99987	2.06
12.34	2.65	.45	4.27	.99987	1.31
11.85	3.51	.61	5.83	.99987	.96
11.35	4.38	.78	7.39	.99987	.75
10.85	5.25	.94	8.95	.99987	.62
10.36	6.12	1.11	10.51	.99987	.53
9.87	7.00	1.27	12.07	.99987	.46
9.39	7.87	1.44	13.62	.99987	.41
8.91	8.75	1.60	15.18	.99987	.36
8.43	9.62	1.77	16.73	.99987	.33

7.96	10.51	1.94	13.23	.99987	.30
7.49	11.39	2.10	14.82	.99987	.28
7.03	12.23	2.27	21.37	.99987	.25
6.58	13.17	2.44	22.91	.99987	.24
6.13	14.06	2.61	24.44	.99987	.22
5.69	14.96	2.78	25.98	.99987	.21
5.26	15.85	2.95	27.51	.99987	.19
4.84	16.77	3.12	29.04	.99987	.18
4.42	17.68	3.29	30.56	.99987	.17
4.02	18.60	3.47	32.08	.99987	.16
3.63	19.52	3.64	33.60	.99987	.16
3.25	20.44	3.81	35.11	.99987	.15
2.89	21.37	3.99	36.62	.99987	.14
2.53	22.31	4.16	38.12	.99987	.14
2.19	23.25	4.34	39.62	.99987	.13
1.87	24.20	4.52	41.11	.99987	.12
1.56	25.15	4.69	42.60	.99987	.12
1.27	26.10	4.87	44.09	.99987	.11
1.00	27.07	5.05	45.57	.99987	.11
.75	28.03	5.23	47.05	.99987	.11
.52	29.01	5.40	48.52	.99987	.10
.31	29.98	5.58	50.00	.99987	.10
.12	30.97	5.76	51.46	.99987	.10

.00 DEPTBLEI/RIN REACHED.