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EMPIRICAL DATA ON LONGITUDINAL DISPERSION IN RIVERS

By Carl F. Nordin, Jr., and George V. Sabol

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SYMBOLS

Symbol	Definition
a	coefficient in equation 42, also radius of pipe in equation 28
A	area
B	channel width
C	average concentration in cross section
C_{max}	maximum concentration
$C(x;t)$	concentration distribution as a function of x, with t a parameter
$C(t;x)$	concentration distribution as a function of t, with x a parameter
D	flow depth
f	coefficient in equation 41
f_m	maximum in normalized concentration distribution
g	acceleration due to gravity, also exponent in equation 41
G	skew coefficient
H	exponent in equation 42
J	flux of a diffusing substance
K	Fickian diffusion coefficient
K_x	longitudinal dispersion coefficient
K_y	vertical diffusion coefficient
K_z	transverse diffusion coefficient
L	integral time scale
L	(in table 1) distance of sampling site from point of injection
Q	water discharge
r	hydraulic radius
S	slope of energy gradient
S_o	water-surface slope
t	time
t'	dimensionless time unit
$\bar{t}$	time centroid of $C(t;x)$
t_p	time of peak concentration
T	Lagrangian time scale
u	an instantaneous velocity
u^2	variance of Lagrangian turbulent velocity fluctuations
$\bar{U}$	mean convective velocity
U_p	velocity of peak concentration
U_*	shear velocity
V	mean velocity at a point

SYMBOLS

Symbol	Definition
$\overline{V}$	mean flow velocity, Q/A
V'	deviation from $\overline{V}$
W	weight of dispersant injected
W_o	weight of dispersant observed at sampling site
x	distance along channel in the mean flow direction
X	mixing length criterion, equation 20 or distance downstream from source
z	lateral position
β	exponent in equation 43
γ	unit weight of water
τ	a time increment
$\rho(\tau)$	correlation function
σ^2	variance of concentration distribution

CONVERSION FACTORS

1 foot (ft)	=	0.3048 meter (m)
1 inch (in)	=	2.540 centimeters (cm)
1 cubic foot per second (cfs)	=	0.0283 cubic meter per second (m^3/s)
1 mile (mi)	=	1.609 kilometers (km)
1 foot per second (ft/s)	=	0.3048 meter per second (m/s)

EMPIRICAL DATA ON LONGITUDINAL DISPERSION IN RIVERS

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ABSTRACT

Empirical data on longitudinal dispersion processes in rivers are compiled from published and unpublished sources. Fifty-one sets of data, covering flows from about 30 cubic feet per second to 241,000 cubic feet per second [0.85 to 6,820 cubic meters per second], are analyzed graphically. For a few cases, the empirical data agree very well with the one-dimensional Fickian-type diffusion theory, but for many of the data, the dispersion processes exhibit a non-Fickian behavior with the properties that the variance, σ_t^2, of the concentration distribution of a conservative dispersant increases with time, t, according to the relation $\sigma_t^2 \sim t^{2H}$, where $0.5 \leq H \leq 1$ and H averages about 0.7, and the peak concentration, C_{max}, attenuates with $t^{-\beta}$, where $\beta > 0.5$. It is conclused that the one-dimensional Fickian-type diffusion equation does not adequately describe longitudinal dispersion processes in some rivers.

INTRODUCTION

Longitudinal dispersion in rivers is the process whereby a mass of dispersant introduced into a flowing stream is stretched, diluted, and mixed in the streamwise direction. The terms "dispersion" and "mixing" will be used interchangeably in this report.

It usually is assumed that longitudinal dispersion processes can be described approximately by a one-dimensional Fickian-type diffusion equation. Under this assumption, the variance of the concentration distribution of a conservative dispersant should increase linearly with time and the peak concentration should attenuate with the square root of time.

The one-dimensional model of course is only a rough approximation, and one would expect considerable deviations from the theory which in fact occur. However, only recently has there been indirect evidence

to suggest that there should be consistent, systematic deviations from the theory. In a study of measurements of longitudinal turbulent velocity fluctuations, Nordin and others (1972) noted in the Eulerian turbulent fluctuations a type of long-term persistence which is sometimes called the Hurst phenomenon and they postulated that if the Lagrangian velocity of a migrating fluid 'particle' were to exhibit the same property of long-term persistence, the variance, σ^2 , of the particle displacement (or the variance of the concentration distribution for a large number of particles released instantaneously from a point) should increase with time according to a relation, $\sigma^2 \sim t^{2H}$, where $0.5 \leq H \leq 1$ and H usually is about 0.7.

Fischer (1973b) in a discussion of Nordin and others (1972) suggested that an ordered structure of secondary circulation cells might lead to persistence in Eulerian turbulence measurements, and if this were the major mechanism leading to persistence, it would not have appreciable effects in the Lagrangian statistics of a particle's motion, and hence would not influence longitudinal dispersion. In their reply, Nordin and others (1973) comment

> "It remains to be established whether the Hurst phenomenon is important for Lagrangian statistics of real world flow conditions. We suspect that it is important, and, if we are correct, there is perhaps a need to re-examine critically the current models of dispersion processes."

The purpose of this report is to assemble empirical data on longitudinal dispersion processes for a variety of natural channels as a first step in the critical examination of current models used to describe longitudinal dispersion. In the next section, a brief review is given of the background for the use of the one-dimensional Fickian-type diffusion equation to describe longitudinal dispersion processes. This is followed by a description of the data that were compiled. Finally, the data are analyzed graphically and some general conclusions are drawn to the effect that at least some of the data deviate systematically from the one-dimensional theory.

BACKGROUND

Mixing processes in rivers are extremely complex, and the mechanisms involved are not fully understood. In a uniform two-dimensional channel, the major mechanisms are shearing action due to velocity gradients and turbulent diffusion from random velocity fluctuations. Molecular diffusion, being several orders of magnitude smaller than turbulent mixing, generally can be ignored. In a natural river, though, the flow usually is neither uniform nor steady and the channel is

likely to be highly irregular in cross section and in plan view. If the stream bed is composed of alluvium; dunes, bars, and other irregularities of the bed generated by the flow constitute large-scale roughness elements. Mixing in such channels is influenced by a meandering thalweg, secondary flows, vortices, and other large-scale disturbances.

To describe mathematically longitudinal dispersion processes in rivers, drastic simplifications have to be made. Usually, it is assumed that the concentration distribution of a conservative dispersant can be described by a one-dimensional Fickian-type diffusion equation. In the following sections, some of the history and background for the use of this equation are traced briefly.

Fick's Law

A Fickian process is a gradient-type transport process with a constant diffusion coefficient, K, defined by the relation

$$J = -K \frac{dC}{dx} \tag{1}$$

where J is the one-dimensional flux across a reference plane perpendicular to x per unit time per unit area of a diffusing substance with concentration C. Equation 1, Fick's first law, appeared in Adolf Fick's paper "Ueber Diffusion", published in Poggendorff's Annalen in 1855 (Tyrrell, 1964). The derived equation

$$\frac{dC}{dt} = \frac{d}{dx}\left(K \frac{dC}{dx}\right) \tag{2}$$

is called Fick's second law. Fick, a physician, was interested in diffusion through membranes, and he proposed his empirical law to describe the analogy between that process and the spreading of a soluble substance in its solvent. He recognized that his law was identical in form to Fourier's law for heat conduction and Ohm's law for conduction of electricity.

Today, the term "Fickian process" usually refers to a transport process that can be described by equation 1 or 2. Sometimes, a convective term is included in equation 2. A Fickian process is characterized by a diffusion coefficient K that is independent of the concentration and of time.

Properties of the one-dimensional diffusion equation

The one-dimensional Fickian-type diffusion equation that often is used to describe longitudinal dispersion in rivers (Fischer, 1968), is

$$\frac{\partial C}{\partial t} + \overline{U}\frac{\partial C}{\partial x} = K_x \frac{\partial^2 C}{\partial x^2} \tag{3}$$

where C is the cross-sectional average concentration of the dispersant, $\overline{U}$ is the mean velocity at which the cloud of dispersant is convected in the mean flow direction, x, K_x is a constant longitudinal dispersion coefficient, and t is time.

The solution to equation 3 for the initial condition of an instantaneous source distributed uniformly over the flow cross section at $x = 0$, $t = 0$, is given by Sayre (1968)

$$C(x;t) = \frac{W}{A\gamma 2\sqrt{\pi K_x t}} \exp - \frac{(x - \overline{U}t)^2}{4K_x t} \tag{4}$$

where W is the weight of the dispersant introduced, A is the cross-sectional area of the channel, and γ is the unit weight of water. Equation 4 gives the concentration, C, as a function of position, x, for any fixed time. By continuity,

$$W = \gamma A \int_{-\infty}^{\infty} C(x;t)\, dx \tag{5}$$

so the quantity $W/\gamma A = \int_{-\infty}^{\infty} C(x;t)\, dx$ is a normalizing factor. For a fixed time, t_1, the distribution,

$$\frac{C(x;t_1)}{\int_{-\infty}^{\infty} C(x;t)dx} = f(x,t_1) = \frac{1}{2\sqrt{\pi K_x t_1}} \exp - \frac{(x - \overline{U}t_1)^2}{4K_x t_1} \tag{6}$$

is a normal probability density function with

$$\text{Mean} = \bar{x} = \bar{U}t_1 \tag{7}$$

$$\text{Variance} = \sigma_x^2 = 2\,K_x t_1 \tag{8}$$

$$\text{Maximum} = f_m(x;t) = \frac{1}{2\sqrt{\pi K_x t_1}} \tag{9}$$

The major properties of the concentration distribution are given in equations 7, 8 and 9, and are shown schematically in the definition sketch of figure 1. The weight, W, of dispersant is introduced at $t = 0$, $x = 0$, as an instantaneous source uniformly distributed over the cross section, A. The cloud of dispersant is convected downstream at some mean velocity, $\bar{U}$, so that at any time, t_1, the centroid of the cloud, which also is its mean value, is $\bar{x}_1 = \bar{U}t_1$. During the time that the cloud is being convected downstream, the dispersant also is being mixed and diluted, so that the variance of the concentration distribution increases linearly with time according to equation 8 and the peak concentration, which occurs at the mean value of the distribution, attenuates with the square root of time. If values of $\bar{x}$, σ_x^2, and f_m are determined experimentally at times t_1, t_2, $\cdots$, and plotted against time on double logarithmic coordinates, the graphs would have the appearances sketched in figure 1.

In practice, it is very difficult to measure instantaneously the concentration distribution as a function of position, x, and instead, one usually will preselect a number of sampling sites, x_1, x_2, $\cdots$, and at each of these sites, the concentration of the dispersant is determined as a function of time, as shown in the definition sketch of figure 2. By continuity,

$$W = A\bar{U}\gamma \int_0^t C(t;x)\,dt \tag{10}$$

and using the transformation

$$x = \bar{U}t \tag{11}$$

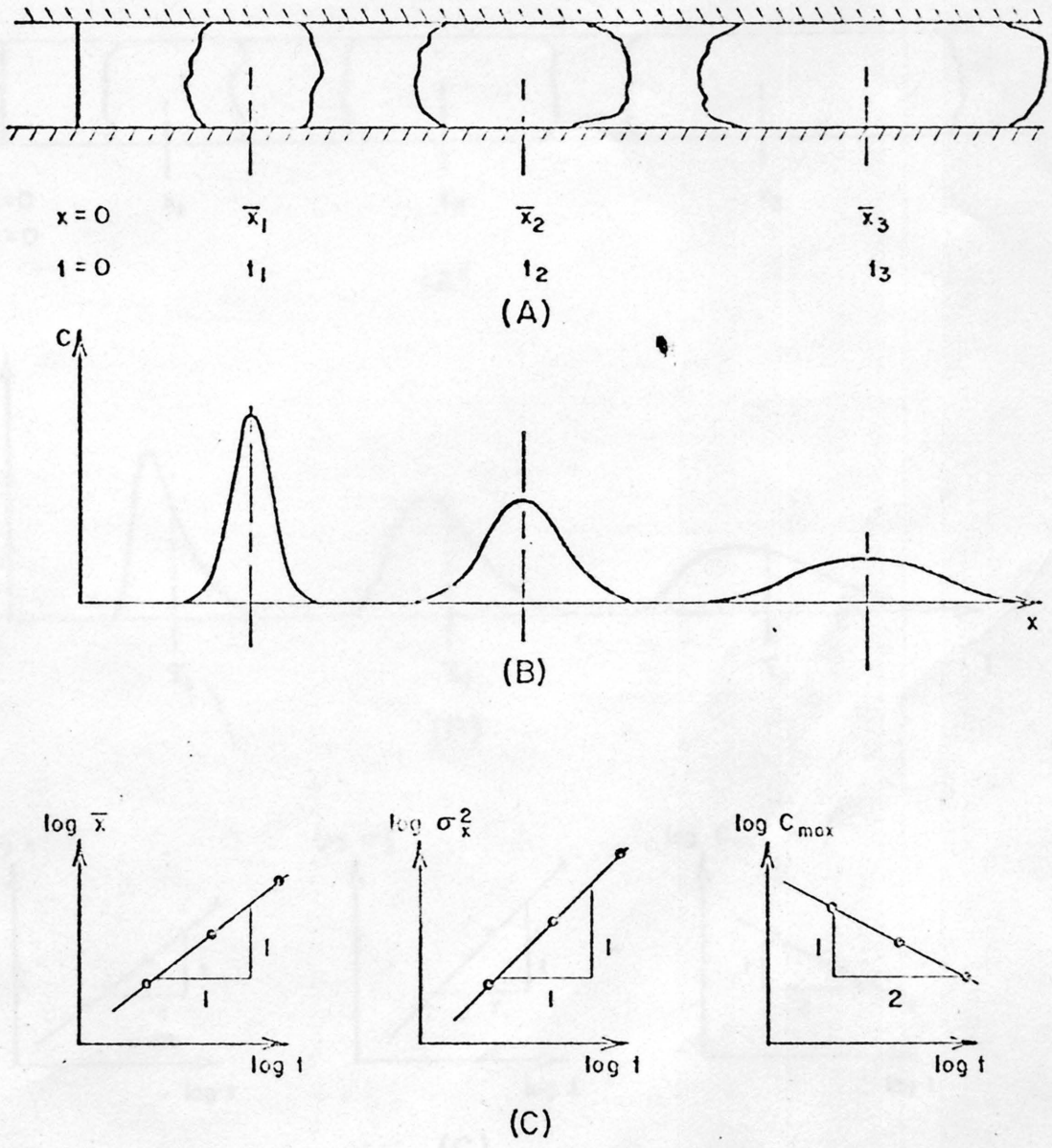


Figure 1.-Definition sketch for longitudinal dispersion as a Fickian process, with concentration distribution as a function of position for fixed times. (A) The dispersant is introduced at $t = 0$, $x = 0$, and the concentration distribution as a function of x is observed at times t_1, t_2, ... (B) Curves of concentration as a function of position, x. (C) Graphs showing the relations of $\bar{x}$, σ_x^2, and C_{max} to time.

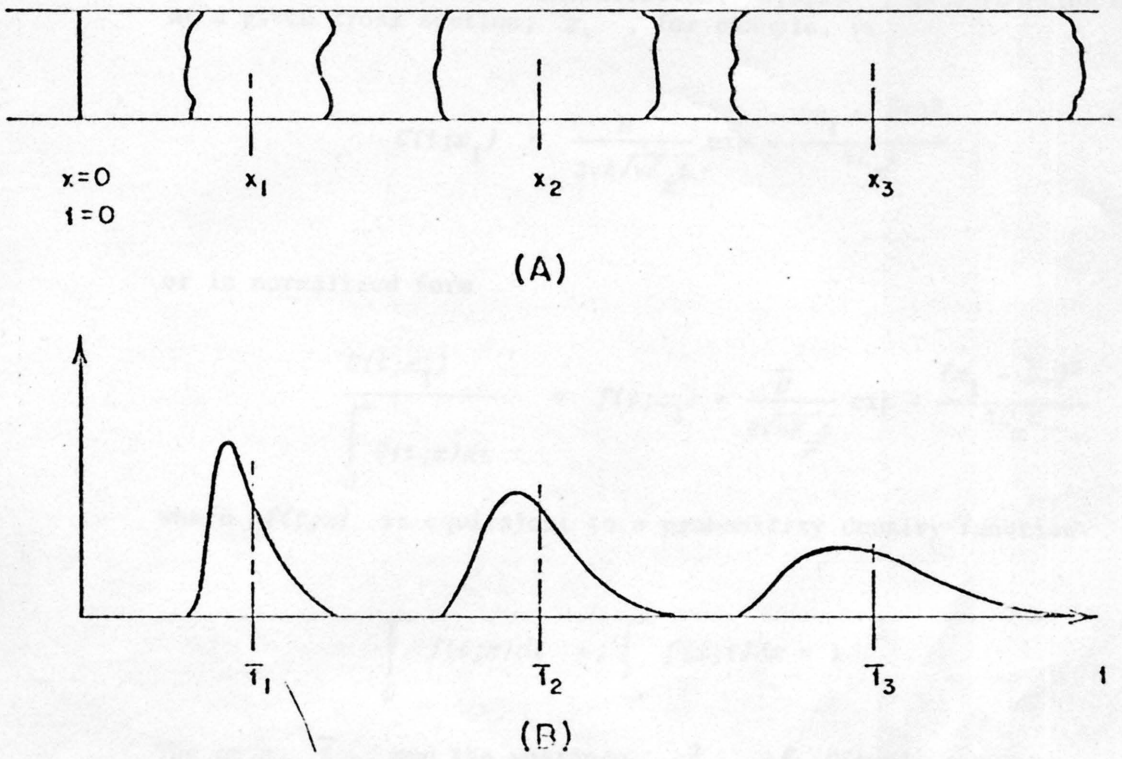


Figure 2.-Definition sketch for longitudinal dispersion as a Fickian process, with concentration distribution as a function of time for fixed positions. (A) The dispersant is introduced at $x = 0$, $t = 0$, and the concentration distribution as a function of t is observed at positions x_1, x_2, . . . (B) Curves of concentration as a function of time, t. Graphs showing $\bar{t}_i$ and $\sigma_{t_i}^2$ plotted against $\bar{t}_i$, and plotted against time to peak concentration, t_p.

the distribution of the concentration, $C(t;x)$, as a function of time at a given cross section, x_1 , for example, is

$$C(t;x_1) = \frac{W}{2\gamma A\sqrt{\pi K_x t}} \exp - \frac{(x_1 - \overline{U}t)^2}{4K_x t} \tag{12}$$

or in normalized form

$$\frac{C(t;x_1)}{\int_0^\infty C(t;x)dt} = f(t;x_1) = \frac{\overline{U}}{2\sqrt{\pi K_x t}} \exp - \frac{(x_1 - \overline{U}t)^2}{4K_x t} \tag{13}$$

where $f(t;x)$ is equivalent to a probability density function

$$\int_0^\infty f(t;x)dt = \int_{-\infty}^\infty f(x;t)dx = 1 \tag{14}$$

The mean, $\overline{t}$, and the variance, σ_t^2 , of $f(t;x)$ are

$$\overline{t} = \frac{x_1}{\overline{U}} + \frac{2K_x}{\overline{U}^2} \tag{15}$$

$$\sigma_t^2 = \frac{2K_x x_1}{\overline{U}^3} + 8\left(\frac{K_x}{\overline{U}^2}\right)^2 \tag{16}$$

The distribution $f(t;x)$ is skewed, as sketched in figure 2, so the peak concentration $f_m(t;x_1)$ does not coincide with $\overline{t}$. If the condition of equation 11 holds, the peak concentration occurs when $t_p = U_p/x_i$, so $f_m(t;x)$, the maximum concentration, attenuates with the square root of time

$$f_m(t;x) = \frac{U_p}{2\sqrt{\pi K_x t_p}} \qquad (17)$$

where U_p is the velocity at which the peak of the concentration distribution is convected along the channel. Values of $\bar{t}$, σ_t^2, and $f_m(t;x)$ plotted against x_i or t on log-log paper would have the general appearance sketched in figure 2. It generally is assumed that distance and time are interchangeable through equation 9. Thus, if the one-dimensional Fickian-type diffusion equation (eq. 3) describes approximately longitudinal dispersion processes in rivers, one would expect the cloud of dispersant to be convected along the river at a constant rate, while the variance of the concentration-distribution increased linearly with time and the peak concentration attenuated with the square root of time.

There are no reliable methods for predicting from bulk flow properties the dispersion coefficient, K_x, except for flow in a pipe (Taylor, 1954) or for flow in a two-dimensional open channel with a specified velocity distribution (Elder, 1959; Sayre, 1968). Consequently, to use equation 3 to predict longitudinal dispersion in rivers, it usually is necessary to determine experimentally values of K_x. This is done by injecting into a stream as an instantaneous line source some dispersant, usually a Rhodamine dye (Wilson, 1968), and obtaining concentration-time curves at a number of cross sections downstream. The variances of the concentration-distributions are computed and plotted against x or t. The coefficient K_x is estimated from

$$K_x = \frac{\overline{U}^3}{2}\frac{d\sigma_t^2}{dx} = \frac{\overline{U}^2}{2}\frac{d\sigma_t^2}{dt} \qquad (18)$$

Fischer (1966b) suggested that K_x could be determined from only two concentration-time curves

$$K_x = \frac{1}{2} \overline{U}^2 \left(\frac{\sigma^2_{t_2} - \sigma^2_{t_1}}{\overline{t}_2 - \overline{t}_1} \right) \tag{19}$$

where the subscripts 1 and 2 refer to concentration-time curves defined at fixed positions x_1 and x_2 downstream of the injection site and $\overline{t}_1$ and $\overline{t}_2$ are the centroids of the time-concentration curves. Fischer (1968) found the one-dimensional model to be a good approximation if

$$X > 1.8\ell^2 \, \overline{U}/r \, U_* \tag{20}$$

where X is the distance downstream of the source, ℓ is the distance from the point of maximum surface velocity to the farthest bank, r is the hydraulic radius, and U_* is the shear velocity

$$U_* = \sqrt{g \, r \, S} \tag{21}$$

and S is the slope of the energy gradient.

Taylor's Theory and its Extensions

The use of equation 3 to describe longitudinal dispersion in rivers stems from early work of G. I. Taylor (1921), where he showed that the variance of particle displacement diffusing by continuous movement in an isotropic, homogeneous turbulent field, was

$$\sigma^2_x = 2\overline{u^2} \int_0^t (t - \tau) \, \rho(\tau) d\tau \tag{22}$$

where $\overline{u^2}$ is the variance of the Lagrangian turbulent velocity fluctuations, and $\rho(\tau)$ is the correlation between the velocity $u(t)$ at

time t and the velocity $u(t+\tau)$ at time $t + \tau$. For $\tau = 0$, $\rho(\tau) = 1$, and equation 22 becomes

$$\sigma_x^2 = 2\overline{u^2}\, t^2 \tag{23}$$

For very long dispersion times, equation 22 becomes

$$\sigma_x^2 = 2\overline{u^2}\, \left[t \int_0^\infty \rho(\tau)d\tau - \int_0^\infty \tau\, \rho(\tau)d\tau\right] \tag{24}$$

It is assumed that

$$\int_0^\infty \rho(\tau)d\tau = L = \text{a constant} \tag{25}$$

and that the second term on the right side of equation 24 also is a constant, so for times large compared to L

$$\sigma_x^2 \simeq 2\overline{u^2}\, L\, t \tag{26}$$

Thus, after long times, the variance of particle displacement, or of the concentration distribution for a large number of particles released instantaneously, would increase linearly with time, just as in the Fickian model of equation 3. The constant L is called the integral time scale; it is a measure of the temporal span of dependence between $u(t)$ and $u(t+\tau)$. By analogy with equation 8, the diffusion coefficient is

$$K_x = \overline{u^2}L \tag{27}$$

so the diffusing power of the flow for this case depends only on the variance of the fluctuating velocity and the integral time scale.

Taylor's contribution was not in demonstrating the utility of equation 3; his major contribution was that he was able to demonstrate that the diffusing power of the flow related directly to simple statistical measures of the turbulent velocity fluctuations, thereby giving a physical basis to the rather ad hoc concepts of "mixing length" that had been introduced earlier by both Taylor and Prandtl. [Mixing length theories apparently date back to Boussinesq (1877). Hinze (1959) describes some of the historical background of the development of turbulence theory, and a modern viewpoint of the historical contributions is given by Monin and Yaglom (1971).]

Taylor's theory was developed for isotropic and homogeneous turbulence, an idealized situation never met in practice. In addition, the coefficient, K_x, relates to statistics of the Lagrangian velocity of a "particle," that is, to the velocity fluctuations of a migrating particle. Turbulence measurements on the other hand, almost always are made by a probe or sensor mounted in a fixed position in the flow field, that is, in an Eulerian framework. Consequently, a great amount of effort has been directed to relating Eulerian statistics to Lagrangian statistics. Lagrangian statistics of particles dispersing in water have been obtained for only a few cases (Kalinske, 1940; Hansen, 1972).

Batchelor and Townsend (1956) apparently were the first to attempt a rigorous statement of the mathematical properties of u that must hold for Taylor's theory to be applicable in turbulent shear flows. Loosely paraphrased, their argument is that a fluid particle, constrained by the flow boundary, will migrate randomly in the flow field in such a way that the velocity of the fluid particle is a stationary, ergodic random function of time. The mean displacement of a particle after long times, being the sum or integral of an infinite number of random displacements, should, on an intuitive appeal to a form of the central limit theorem, be a Gaussian function, and hence is a solution to equation 3. Lumley (1972) gives a more elegant argument using the concept of strong mixing as defined by Rosenblatt (1956). For purposes here, strong mixing can be equated with the condition of equation 25.

Batchelor (1949) extended Taylor's theory to diffusion in any homogeneous turbulent field, showing that if the concentration distribution of a dispersant was Gaussian, the mixing process could be described by equation 3, and the concentration distribution would have a variance given by equation 26, implying a constant diffusion coefficient

$$K_x = \frac{1}{2} \frac{d\sigma_x^2}{dt} = \overline{u^2}\, L \qquad (28)$$

The extension and application of Taylor's theory to longitudinal dispersion in turbulent shear flows, where the major mechanism for the mixing is the differential convection caused by velocity variations in the cross section, were given by Taylor (1954) for dispersion in a pipe and by Elder (1959) for dispersion in a uniform infinitely wide open channel. The results are identical to Taylor's 1921 model, except that the fluctuating velocity V' is taken to be $V' = \overline{V} - V$, as sketched in figure 3, where $\overline{V}$ is the mean flow velocity and V is the mean velocity at any point. Turbulent velocity fluctuations and molecular diffusion are neglected.

Fischer (1966a, 1967, 1968) extended the work of Taylor and Elder to describe longitudinal dispersion in natural streams by hypothesizing that longitudinal dispersion is predominately due to the combined mechanisms of mixing over the flow cross section and of variations of longitudinal velocity within the flow cross section, giving rise to differential convection. Fischer further hypothesized, following Taylor (1954) and Elder (1959), that after an initial period dominated by convection, a condition of equilibrium between mixing and the convective mechanisms is established so that the longitudinal dispersion proceeds according to the one-dimensional Fickian process described by equation 3. Again, as in Taylor's and Elder's work, it is implicitly assumed that a migrating particle's velocity is a stationary random function of time with the property of strong mixing.

Empirical data and mixing coefficients

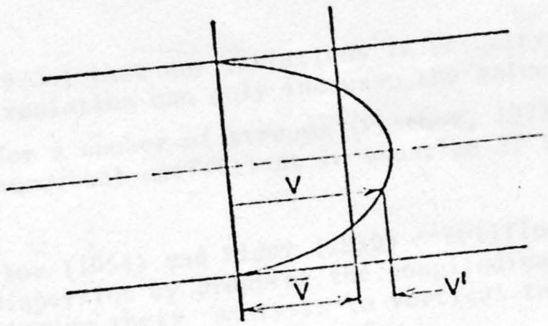
Taylor (1954) and Elder (1959) were able to compute values of K_x from known velocity profiles in the two-dimensional flows that they investigated and to verify their analysis by experiments. For turbulent flow in a round pipe with radius a, the value of K_x is

$$K_x = 10.1\, a\, U_* \tag{29}$$

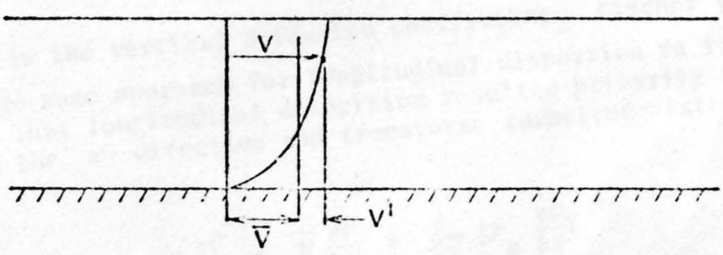
and for a logarithmic velocity profile in an infinitely wide channel with uniform depth, D, K_x is given by

$$K_x = 5.9\, D\, U_* \tag{30}$$

Fischer (1967) reported values up to 15.7 of the numerical coefficients in equation 29, determined from laboratory experiments. He also pointed



(A)



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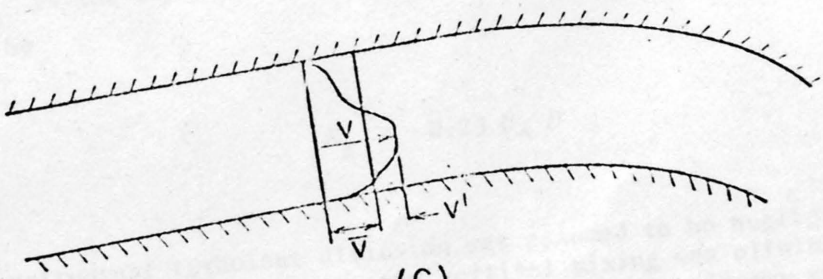


(C)

Figure 3.-Definition sketch for the application of Taylor's (1921) theory to turbulent shear flows (A) Pipe flow, (B) Infinitely wide uniform channel, (C) River.

out (Fischer, 1973a) that any variations in velocity across the channel or secondary circulation can only increase the value of K_x and he compiled data for a number of streams (Fischer, 1973a, table 2) showing values of the numerical coefficient in equation 29 ranging from about 10 to 7,500.

Both Taylor (1954) and Elder (1959) simplified the equation for longitudinal dispersion by dropping the longitudinal turbulent diffusion term and restricting their analysis to vertical turbulent diffusion and longitudinal dispersion by convection,

$$\frac{\partial C}{\partial t} + \overline{U}\frac{\partial C}{\partial x} = \frac{\partial}{\partial y}\left(K_y \frac{\partial C}{\partial y}\right) \tag{31}$$

where K_y is the vertical diffusion coefficient. Fischer (1967) followed the same approach for longitudinal dispersion in rivers, except he assumed that longitudinal dispersion resulted primarily from convection in the x direction and transverse turbulent mixing,

$$\frac{\partial C}{\partial t} + \overline{U}\frac{\partial C}{\partial x} = \frac{\partial}{\partial z}\left(K_z \frac{\partial C}{\partial z}\right) \tag{32}$$

where K_z is the transverse diffusion coefficient found from experiments to be

$$K_z = 0.23\, U_* D \tag{33}$$

Longitudinal turbulent diffusion was assumed to be negligible in relation to the convective term, and vertical mixing was eliminated under the assumptions that the width-to-depth ratio was large so complete vertical mixing would occur rapidly in relation to the time for complete transverse mixing.

Fischer (1967) obtained a longitudinal dispersion coefficient by integrating a depth-averaged form of equation 31. The application of his formula (Fischer, 1967, eq. 17) requires only the channel slope and the downstream velocity and channel depth as a function of lateral position, z, the type of information normally obtained from a water-discharge measurement.

By dimensional analysis and analogy with Taylor's integral time scale, equation 27, Fischer derived a Lagrangian time scale for natural streams

$$T = \frac{0.3\ \ell^2}{DU_*} \tag{34}$$

and a relation for predicting the dispersion coefficient

$$K_x = 0.3\ \frac{\overline{V'^2}\ \ell^2}{DU_*} \tag{35}$$

where V' is defined in figure 3C. A dimensionless time unit, t', was defined

$$t' = t/T \tag{36}$$

The mixing length criterion of equation 20 resulted from Fischer's observation that approximately six dimensionless time units were required before the dispersion process followed the one-dimensional diffusion model of equation 3. The conditions for various dimensionless times as given by Fischer (1967) are as follows:

t'	Conditions
0 - 3	Convective period; Taylor's theory definitely not applicable
3 - 6	Transition; nearly linear growth of variance, but one-dimensional diffusion equation not applicable
> 6	Taylor period; one-dimensional diffusion theory applies.

Fischer (1973a) demonstrated for a number of natural channels that values of the dispersion coefficient predicted by his method are in reasonable agreement with observed values of K_x. Observed dispersion coefficients are determined from field experiments. Values of K_x are determined from the concentration-time curves either graphically as sketched in figures 2 and 3, using the properties of equations 15

through 19, or by some curve-fitting technique that gives values of $\overline{U}$ and K_x to minimize the squares of the deviations of the computed from the observed concentration-time curves. Both of these techniques are described by Thackston and others (1967).

Fischer's computational method, the graphical method, and the curve-fitting techniques for determining K_x are based on the assumption that equation 3 is a suitable model for the mixing process and that the concentration distribution of a conservative dispersant, after a sufficiently long time, will be described by the Gaussian distribution of equation 4. Furthermore, most of the work on longitudinal dispersion in rivers to date (1974) has concentrated on the problem of predicting the dispersion coefficients and the concentration distributions, and consequently, only a few investigators have looked critically at the question of whether or not solutions to equation 3 can reproduce satisfactorily the essential features of the observed data.

One feature common to all the empirical concentration-time curves is a skewed concentration distribution. The distributions are characterized by an abrupt leading edge and a long tail stretching upstream as sketched in figure 4.

Elder (1959) attributed the tail of the distribution to storage in the viscous sublayer and accounted for the storage approximately in his calculations. Fischer (1968) arbitrarily chose a point on the tail of the distribution and drew a straight line from that point to the point of zero concentration at the downstream edge of the distribution, as sketched by the dashed line in figure 4, and then used the dashed line as the base for his integration to determine the moments of the concentration distribution. Yotsukura and others (1970) truncated the tail of the concentration distribution at 3 percent and 1 percent of the peak concentration before computing the variance.

The long tails of the concentration distributions are generally assumed to be caused by storage mechanisms in the channel, and the customary procedure is to apply some arbitrary correction such as Fischer (1968) did. But the long tails are ubiquitous features of all these distributions, and to ignore the tails is to reject from the observed data a most important aspect of the obvious disagreement between the observations and the theory. Clearly, an arbitrary baseline drawn on the distributions for a base of integration, or truncating the tails of the distributions, as in figure 4, will make the adjusted distributions more nearly Gaussian and will reduce the variance of the concentration distributions. Arbitrary adjustments of the data to make it fit the theory may be quite satisfactory for engineering expedience, but such procedures are not likely to contribute substantially to understanding the physical processes involved in longitudinal dispersion.

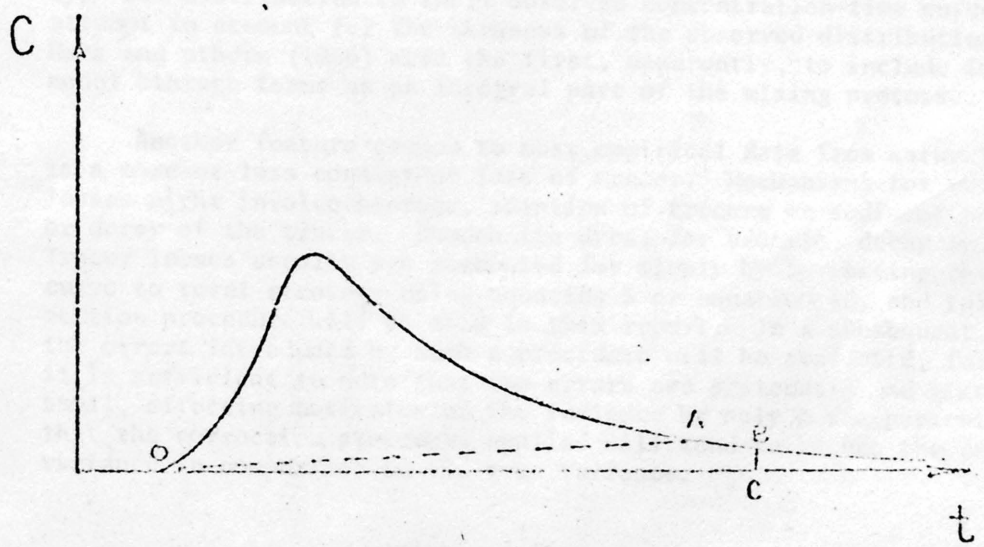


Figure 4.-Definition sketch of a concentration-time curve showing the skewed distribution and the long tail stretching upstream. Fischer (1966a) eliminated the tail by using an arbitrary baseline AO; Yotsukura and others (1970) truncated the distribution (line BC) at 3 percent and 1 percent of the peak concentration.

Probably, most investigators of longitudinal dispersion in turbulent shear flows have recognized the problems associated with the long tails of the concentration distributions, and several investigators have attempted to identify the mechanisms involved and to account for storage of tracer in the mathematical models. Taylor (1954) and Elder (1959) applied corrections for dye trapped in the viscous sublayer, and more recently Chatwin (1971) reexamined the experimental data of Taylor (1954) and Fischer (1966a) and showed that the inconsistencies between the theory and the experimental results were due in part to neglecting the effects of the viscous sublayer. Chatwin indicated that storage effects of the viscous sublayer could increase the dispersion on the order of 20 percent. Godfrey and Frederick (1970) and Sayre (1968) fit a Pearson type III distribution to their observed concentration-time curves in an attempt to account for the skewness of the observed distributions. Hays and others (1966) were the first, apparently, to include in their model storage terms as an integral part of the mixing process.

Another feature common to most empirical data from natural streams is a more-or-less consistent loss of tracer. Mechanisms for these losses might involve storage, sorption of tracers on sediment particles, or decay of the tracer. Rhodahmine dyes, for example, decay in sunlight. Tracer losses usually are accounted for simply by correcting the observed curve to total recovery using equation 5 or equation 10, and this correction procedure will be used in this report. In a subsequent report, the errors introduced by such a procedure will be evaluated, for here it is sufficient to note that the errors are systematic and generally small, effecting estimates of the variance by only a few percent, and that the correction procedure applied will tend to reduce the computed variance in comparison to the true variance.

DATA COMPILATION AND ANALYSIS

Description of Data

The basic data used in this report are concentration distributions as a function of time collected at a number of cross sections in selected reaches of rivers. These data were obtained during time of travel and dispersion studies, using fluorescent dyes or radioactive material as the dispersant. The data demonstrate empirically how a soluble material disperses in a river. The dispersion characteristics of interest are the velocity of the peak concentration, the velocity of the mean concentration, the attenuation of the peak concentration, and the rate at which the cloud of dispersant spreads, which usually is measured by the time rate of change of the variance of the concentration distribution.

The basic concentration-time data were obtained from several published reports of dispersion studies and from unpublished data of

the U.S. Geological Survey. A list of the test reaches, sources of the dispersion data, type and amount of tracer used, and type of tracer injection are given in appendix A. The locations of these test reaches are shown in figure 5.

The general criteria for the selection of field data were (1) the weight and type of dispersant were known, (2) the water discharge was known, (3) enough samples were taken to define the complete concentration-time curves, and (4) samples were collected for at least three and preferably four cross sections downstream of the injection site.

A thorough discussion of the methods for conducting dispersion studies using fluorescent tracers is given by Kilpatrick and others (1973) and Wilson (1968). These methods will not be elaborated here, however, to provide some insight into the nature of the basic data and the assumptions required for data reduction, a brief outline of a typical time of travel study is presented. For a radioactive material the procedure is similar, although different equipment is required.

A reach of channel is selected for which time of travel information is desired. At the upstream end of the reach a predetermined amount of fluorescent dye is injected into the river. The method of dye injection will depend largely upon the width of the stream. For narrow streams the dose will usually be as a single slug, while for large streams the dose will be distributed across the width. The latter is done to hasten the complete mixing of the dye in the cross section.

At a number of preselected sites downstream the water is sampled periodically or continuously, and the concentration of dye is determined by means of a calibrated fluorometer. The sampling sites should be chosen far enough downstream from the injection point so that there is a homogeneous mixture of dye at the site. Usually, the distance to the first sampling site is selected according to some criterion such as equation 20. Samples are recorded until the concentration approaches zero or until it approaches the natural level of background fluorescence. This, then, yields a set of concentration-time values for each sampling site.

Samples often are obtained at only one point in the cross section, usually near the water surface, under the assumption that there is complete vertical and lateral mixing. This assumption generally is not verified empirically.

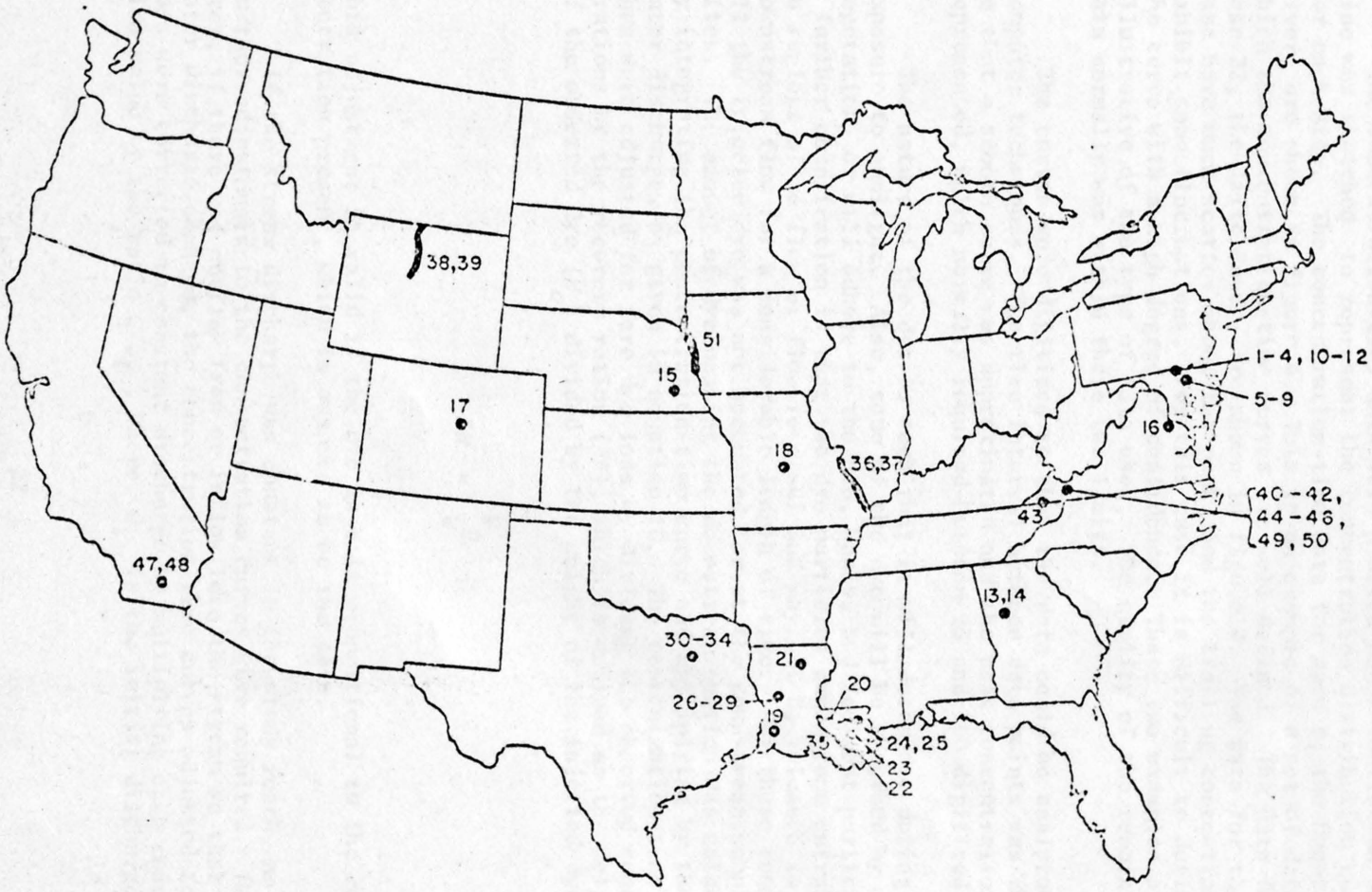


Figure 5. Locations of the test reaches by case number

Data Reduction

The concentration-time data were plotted and a continuous smooth line was sketched to represent the concentration distribution curve for each site. The concentration-time data for case 8, the Monocacy River, are shown in figure 6. This is an example of a set of data for which the concentration-time curves are well defined. The data for case 22, the Amite River, are shown in figure 7. The data for this case have much scatter about the peak, and the trailing concentrations exhibit some fluctuations. For this case it is difficult to define the curve with a high degree of confidence. These two examples are illustrative of the type of data used. The quality of the remaining data normally was within these two limits.

The curves were digitized so that the data could be analyzed by computer techniques. The time interval between data points was chosen so that a smooth curve was approximated and the peak concentration was represented, which normally required between 25 and 100 digitized points.

The nature of the dye is such that it will decompose during exposure to sunlight. Also, some of the dye will be absorbed by vegetation, or will adhere to the bed, banks, and sediment particles. A further complication is that the dye particles can become entrapped in regions of no flow or flow reversal and may not be released to the downstream flow for a considerable length of time. For these reasons, all the injected dye was not accounted for at the downstream sampling sites. The amount of dye passing the downstream section was calculated by integrating the concentration-time curve and multiplying by the water discharge, as given in equation 10. The concentration-time curves then were adjusted for zero dye loss by dividing the observed concentrations by the recovery ration (RR), which is defined as the weight of the observed dye (W_o) divided by the weight of the injected dye (W);

$$RR = \frac{W_o}{W} \tag{37}$$

This adjustment is valid if the dye loss is proportional to the concentration present, which is assumed to be the case.

If the stream discharge was constant in the study reach, no further adjustments to the concentration curves were required. However, if there was outflow from or inflow into the stream so that the water discharge changed, the concentration-time curves adjusted to zero loss were corrected to constant discharge by multiplying each concentration value by the ratio Q/Q_1, where Q_1 is the initial discharge.

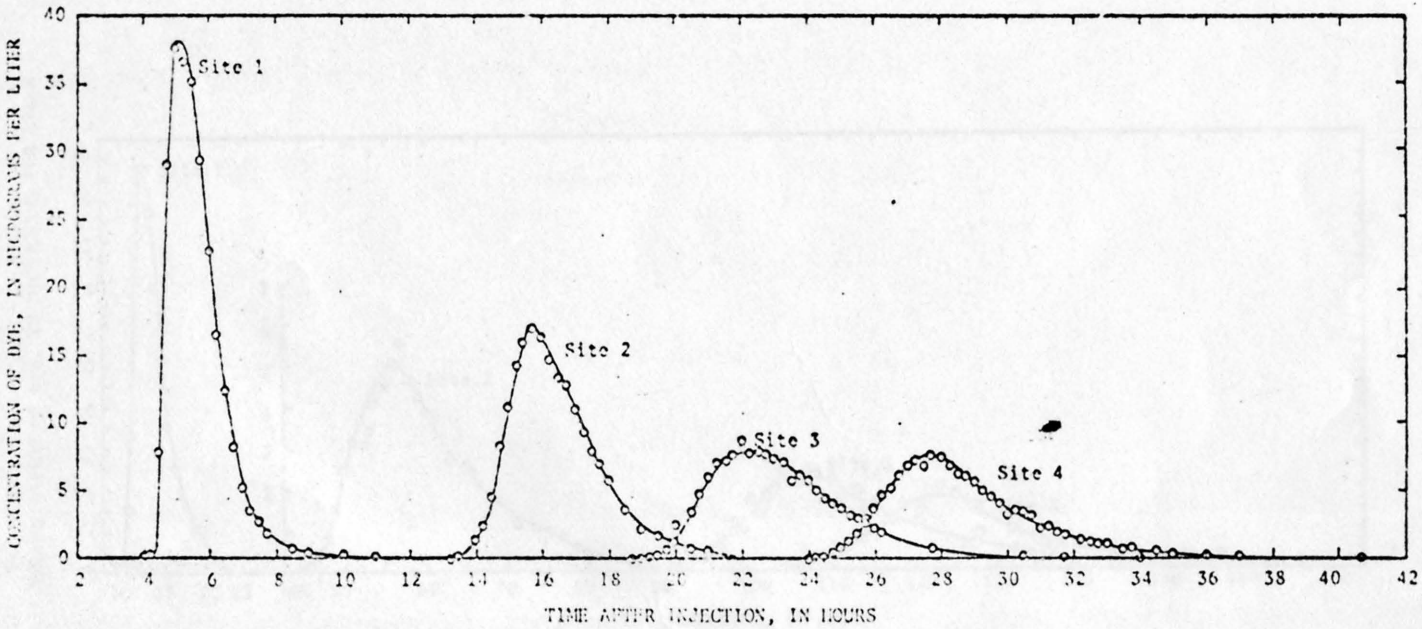


Figure 6. -Graph of concentration of dye plotted against time after injection for the Monocacy River, case 8.

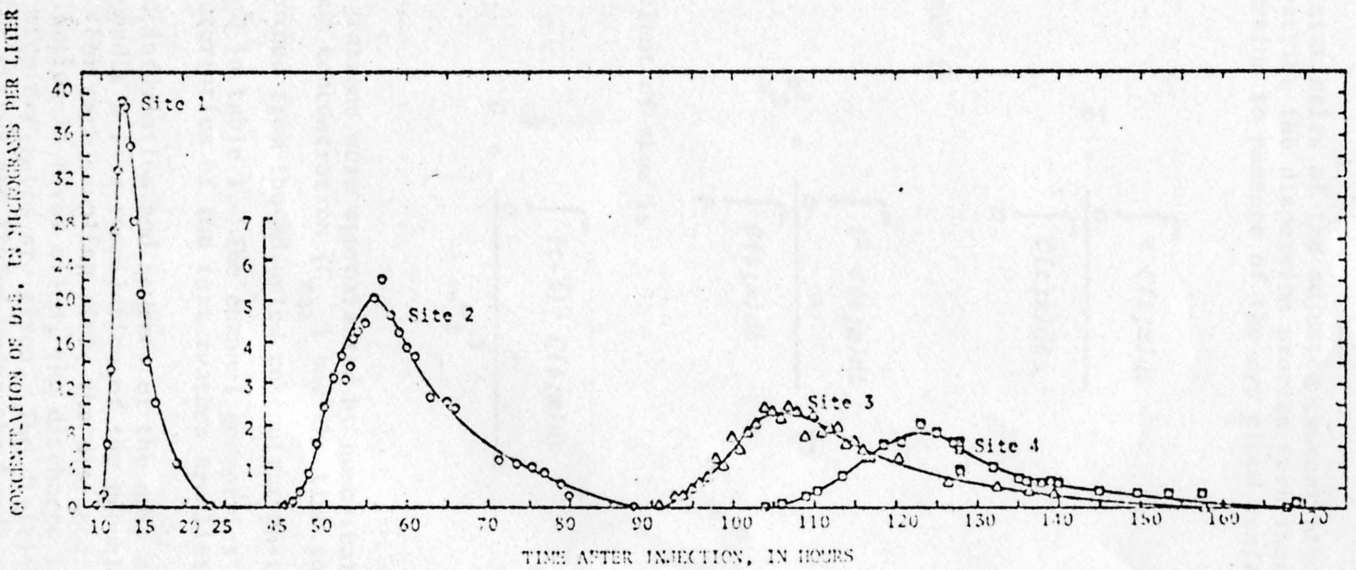


Figure 7.-Graph of concentration of dye plotted against time after injection for the Amite River, case 22.

Because the discharge at the injection site was not available for all cases, Q_1 was taken as the discharge at the first sampling site.

Several statistics of the adjusted concentration-time distributions which describe the dispersion process were then calculated. The time from injection to passage of the dye cloud centroid ($\overline{t}$) is

$$\overline{t} = \frac{\int_0^\infty t\, C(t;x)\,dt}{\int_0^\infty C(t;x)\,dt} \tag{38}$$

the time variance is

$$\sigma_t^2 = \frac{\int_0^\infty t^2\, C(t;x)\,dt}{\int_0^\infty C(t;x)\,dt} - \overline{t}^2 \tag{39}$$

and the coefficient of skew is

$$G = \frac{\int_0^\infty (t-\overline{t})^3\, C(t;x)\,dt}{\sigma_t^3} \tag{40}$$

The actual integrations were approximated by numerical integration. Also, the maximum concentration (C_{max}) and the time to its occurrence (t_p) were determined from the adjusted concentration-time curves. These values are listed in table 1. The channel geometries and several hydraulic characteristics of the test reaches are listed in table 2.

Background information and sources of the data are listed in appendix A. Appendix B is a compilation of the unpublished data used in this report. For each sampling site, the distance to the site from the point of injection in river miles, the discharge in cubic feet per second, and the recovery ratio are given. The digitized values of the concentration-time curves are listed under the headings, Time Since Injection in Hours and Observed Concentration. The values adjusted for

Table 1. Statistics of the concentration-time distributions for the dispersion tests.

Case	Test reach and required mixing length, X, in miles	Site	L Distance from point of injection in miles	Q Discharge during test in cfs	C_{max} Maximum concentration in micrograms per liter	t_p Time to C_{max} in hours	$\bar{t}$ Time to centroid in hours	σ_t^2 Time variance in $(hours)^2$	G Coefficient of skew in $(hours)^3$
1	Antietam Creek, MD	1	1.60	41.	105.71	3.2	3.56	0.59	2.80
	River mile 41.65	2	5.95	42.	39.55	13.	13.85	3.81	2.00
	to 23.25	3	13.35	58.	15.99	42.5	45.14	16.95	1.22
	X = 0.46	4	18.40	63.	10.73	67.	69.30	34.54	1.07
2	Antietam Creek, MD	1	1.60	180.	331.	1.35	1.45	.044	1.80
	River mile 41.65	2	5.95	185.	145.74	5.5	5.69	.252	2.00
	to 0.2	3	13.35	260.	76.41	15.9	16.25	1.582	3.07
	X = 1.52	4	18.40	275.	38.90	23.4	24.01	2.191	2.09
		5	26.25	300.	36.95	33.2	34.02	4.323	1.62
		6	30.55	360.	34.72	38.	38.55	3.585	1.01
		7	36.80	430.	32.07	43.3	44.37	5.005	1.10
		8	41.45	450.	28.64	47.4	48.20	6.002	1.15
3	Antietam Creek, MD	1	1.60	85.	111.8	2.7	3.08	.54	2.99
	River mile 41.65	2	5.95	86.	55.12	9.5	10.01	1.77	2.31
	to 23.25	3	13.35	120.	25.37	27.4	28.53	6.26	1.56
	X = 0.31	4	18.40	140.	21.63	40.1	41.50	7.67	1.27
4	Antietam Creek, MD	1	7.85	160.	31.81	13.8	14.73	2.47	1.27
	River mile 23.25	2	12.15	188.	23.37	21.2	22.2	5.4	1.44
	to 0.2	3	18.4	225.	18.55	29.	30.54	7.37	1.27
	X = 2.15	4	23.05	230.	10.94	34.2	35.95	8.	1.12
5	Monocacy River, MD	1	6.4	190.	12.37	12.5	13.57	2.66	2.00
	River mile 37.85	2	11.4	200.	7.17	23.	24.76	7.60	1.23
	to 16.55	3	16.65	225.	4.96	33.5	35.21	10.49	.76
	X = 6.06	4	21.3	270.	4.14	43.5	45.6	21.38	1.28
6	Monocacy River, MD	1	4.65	286.	17.97	8.5	9.94	4.03	2.22
	River mile 21.1	2	11.70	295.	7.38	29.	31.59	15.11	1.49
	to 0.1	3	17.15	330.	5.80	41.	43.37	19.53	1.01
	X = 11.75	4	21.	335.	5.33	48.	51.51	30.03	1.24

Table 1. (continued)

Case	Test Reach	Site	L	Q	C_{max}	t_p	$\bar{t}$	σ_t^2	σ
7	Monocacy River, MD	1	6.4	505.	18.5	7.1	7.91	1.11	1.58
	River mile 37.85	2	11.4	535.	11.84	13.6	14.25	1.98	1.06
	to 16.55	3	16.65	560.	9.17	19.6	20.36	2.64	.72
	X = 5.66	4	21.3	655.	7.22	25.8	26.56	5.04	1.05
8	Monocacy River, MD	1	4.65	720.	26.75	5.25	5.63	.756	1.76
	River mile 21.1	2	11.70	720.	15.56	15.5	16.44	2.06	.96
	to 0.1	3	17.25	760.	10.92	22.	23.42	5.88	1.37
	X = 9.23	4	21.	780.	10.70	27.5	29 01	7.54	1.71
9	Monocacy River, MD	1	4.65	108.	24.85	17.5	20.96	37.72	2.52
	River mile 21.1	2	11.7	113.	8.26	52.5	69.52	119.62	1.24
	to 0.1	3	17.15	122.	6.26	89.	93.19	180.86	1.08
	X = 6.61	4	21.	124.	5.48	99.	110.70	278.68	.86
10	Conococheague Creek, MD	1	2.75	241.	100.05	3.1	3.05	.106	1.41
	River mile 21.15	2	5.4	242.	47.29	6.6	6.92	.692	2.11
	to 0.1	3	8.35	243.	38.52	10.2	11.23	1.549	1.81
	X = 6.53	4	12.35	245.	27.96	15.2	16.69	3.011	1.83
		5	16.15	245.	17.21	21.1	23.09	6.428	1.95
		6	21.05	250.	10.2	33.8	35.78	12.584	1.35
11	Conococheague Creek, MD	1	2.75	91.	76.87	5.4	6.22	.903	.99
	River mile 21.15	2	5.40	100.	38.55	13.9	15.01	4.576	1.09
	to 8.8	3	8.35	102.	16.39	24.8	26.75	19.15	.70
	X = 4.42	4	12.35	102.	16.67	37.7	39.98	18.45	.72
12	Conococheague Creek, MD	1	2.75	1,040.	87.61	1.4	1.49	.033	2.61
	River mile 21.15	2	5.40	1,040.	28.1	3.15	3.38	.122	1.22
	to 0.1	3	8.35	1,050.	10.0	5.	5.44	.341	1.13
	X = 6.64	4	12.35	1,060.	15.13	7.60	8.05	.447	1.32
		5	16.15	1,070.	9.45	10.4	10.94	.925	1.33
		6	21.05	1,080.	6.96	14.8	15.57	1.806	1.19
13	Chattahoochee River, GA	1	9.95	4,810.	16.48	4.83	5.05	.315	2.13
	River mile 348.1	2	17.35	6,340.	10.6	8.08	8.89	2.911	2.20
	to 300.5	3	22.66	6,170.	9.7	10.33	10.74	.746	1.24
	X = 4.79	4	30.81	6,000.	6.71	14.8	15.34	1.765	1.35
		5	34.48	5,800.	4.65	19.83	21.04	4.111	1.19
		6	37.62	3,800.	3.67	21.5	23.05	6.595	1.17
		7	47.60	3,800.	2.72	28.82	30.18	9.755	1.17

Table 1. (continued)

Case	Test Reach	Site	L Distance from point of injection in miles	Q Discharge during test in cfs	C_{max} Maximum concentration in micrograms per liter	t_p Time to C_{max} in hours	$\bar{t}$ Time to centroid in hours	σ_t^2 Time variance in (hours)^2	G Coefficient of skew in (hours)^3
14	Chattahoochee River, GA	1	6.52	4,950.	17.87	2.6	2.81	.17	1.98
	River mile 300.47	2	18.68	4,930.	7.05	9.6	10.01	1.08	1.75
	to 235.16	3	40.62	4,930.	3.95	22.16	22.87	3.366	1.03
	X = 6.25	4	65.01	4,930.	2.2	38.33	39.21	7.233	.60
15	Salt Creek, NE	1	5.75	87.	64.16	7.75	8.15	1.6	2.70
	River mile 32.3	2	9.51	93.3	42.38	12.5	13.45	3.12	2.15
	to 0.1	3	19.46	106.	26.08	25.	27.01	8.1	1.62
	X = 7.83	4	27.69	107.	17.39	37.5	39.95	19.77	1.66
		5	32.2	144.	12.48	48.	51.53	23.73	.88
16	Difficult Run, VA From	1	.4	33.6	11.5	1.2	1.44	.137	1.84
	Leigh Mill Rd. to old	2	1.35	35.	5.81	3.8	3.99	.25	.75
	Georgetown Pike X=0.77	3	2.	40.	4.32	6.2	6.58	.481	.81
17	Bear Creek, CO From	1	.7	360.	42.99	.22	.24	.0009	1.03
	Kittridge to Morrison	2	5.7	366.	12.86	1.88	1.91	.00917	.59
	X = 0.14	3	6.8	371.	10.29	3.6	3.64	.01423	.99
18	Little Piney Creek, MO	1	.37	48.6	30.30	.85	1.03	.066	1.45
	River mile 4.9	2	2.1	49.	4.79	5.1	5.73	1.169	1.39
	to 0.35	3	3.21	55.	5.67	7.4	8.21	1.829	1.46
	X = 2.43	4	4.55	58.	2.61	12.	13.	2.914	.69
19	Bayou Anacoco, LA	1	7.1	71.1	38.4	20.	20.74	3.4	1.69
	River mile 23.6	2	14.4	90.7	20.24	43.	44.08	7.55	.60
	to 0.0	3	18.5	95.8	18.73	52.7	53.97	10.1	.84
	X = 1.28	4	23.6	95.8	17.45	68.7	70.78	19.89	.69
20	Comite River, LA	1	4.2	27.	106.	23.7	24.33	3.77	1.76
	River mile 50.5	2	16.7	32.	63.11	87.2	90.02	37.75	1.58
	to 1.5	3	29.8	36.1	57.04	109.	112.78	45.43	1.46
	X = 1.28	4	37.5	40.	49.87	122.	126.73	64.2	1.35
		5	49.	35.1	39.51	141.	147.48	88.77	1.05
21	Bayou Bartholomew, LA	1	2.	145.	109.69	5.75	6.3	.86	.93
	River mile 73.0	2	16.	170.	19.84	61.5	61.83	15.3	.35
	to 0.0	3	37.	230.	12.69	125.	124.41	45.84	.54
	X = 1.08	4	73.	286.	4.51	254.5	259.56	308.76	.48
22	Amite River, LA	1	6.3	200.	49.15	13.9	15.22	5.28	1.03
	River mile 112.3	2	24.1	260.	12.87	57.25	61.61	62.36	.8
	to 53.0	3	58.5	350.	8.96	107.3	113.07	151.83	.86
	X = 3.83	4	92.	315.	9.60	124.25	128.28	115.03	.78

Table 1. (continued)

Case	Test Reach	Site	L	Q	C_{max}	t_p	$\bar{t}$	σ_t^2	G
23	Tickfau River, LA	1	4.	72.	59.8	11.2	11.34	1.27	.99
	From Henry Holmes Farm	2	14.	79.	21.54	54.2	55.37	15.04	1.26
	above Montpelier to	3	24.	66.	16.68	87.	89.17	26.66	1.36
	Springville X = 0.56	4	31.	103.	15.95	105.	107.37	27.12	1.15
24	Tangipahoa River, LA	1	5.1	204.	105.	9.75	10.38	1.05	1.03
	River mile 73.6	2	11.2	346.	62.16	21.3	22.43	3.98	1.23
	to 15.2	3	25.8	420.	45.91	35.	36.59	6.43	1.05
	X = 1.59	4	34.4	438.	41.87	45.	46.42	8.39	1.04
		5	44.1	510.	33.99	56.8	58.78	12.9	1.16
		6	51.0	630.	33.54	66.	67.85	17.18	1.32
		7	58.4	660.	32.68	71.	78.44	12.14	.79
25	Tangipahoa River, LA	1	5.1	122.	82.1	13.75	14.99	3.46	1.11
	River mile 73.6	2	11.2	164.	56.8	30.	31.11	8.27	1.47
	to 15.2	3	25.8	245.	40.67	47.	48.67	15.37	1.23
	X = 3.35	4	34.4	286.	36.1	59.	61.22	26.74	1.71
		5	44.1	304.	36.64	73.5	75.04	19.69	1.25
		6	51.0	319.	33.94	83.	85.04	22.73	1.35
		7	58.4	383.	32.96	96.5	97.85	17.90	.83
26	Red River, LA	1	3.57	8,310.	28.88	2.5	3.01	.32	1.51
	River mile 187.5	2	47.	8,660.	5.76	33.5	34.11	5.21	.81
	to 67.5	3	82.5	8,810.	3.88	60.	61.25	14.75	1.25
	X = 34.32	4	120.	8,810.	2.77	92.5	94.21	20.90	.79
27	Red River, LA	1	5.	4,930.	17.4	3.35	4.23	1.24	1.81
	River mile 283.	2	34.	4,930.	4.	32.	34.09	15.79	1.68
	to 184.	3	64.	6,030.	3.73	52.	54.08	21.61	1.39
	X = 29.87	4	99.	6,530.	2.58	87.5	88.6	20.19	.71
28	Red River, LA	1	5.	6,620.	16.7	4.75	5.67	1.07	1.45
	River mile 283.	2	34.	6,620.	4.4	33.5	35.04	10.61	1.36
	to 184.	3	64.	8,300.	3.64	54.25	55.86	12.99	.96
	X = 14.0	4	99.	8,890.	2.69	85.25	87.49	24.89	.90

Table 1. (continued)

Case	Test Reach	Site	L Distance from point of injection in miles	Q Discharge during test in cfs	C_{max} Maximum concentration in micrograms per liter	t_p Time to C_{max} in hours	$\bar{t}$ Time to centroid in hours	σ_t^2 Time variance in $(\text{hours})^2$	G Coefficient of skew in $(\text{hours})^3$
29	Red River, LA	1	7.5	3,800.	30.7	7.	7.76	1.03	1.23
	River mile 191.5	2	51.	4,000.	7.65	45.	45.77	8.96	1.04
	to 67.5	3	86.5	4,800.	5.31	79.5	81.3	15.59	.75
	X = 83.49	4	124.	5,880.	4.49	122.	123.69	19.84	.58
30	Sabine River, LA	1	4.9	4,500.	12.72	2.5	2.81	.12	1.15
	River mile 156.5	2	10.7	4,300.	8.88	6.8	7.12	.35	1.24
	to 106.9	3	24.8	4,200.	3.13	27.2	27.74	1.64	.38
	X = 17.85	4	49.6	3,910.	2.43	38.	38.71	3.23	.58
31	Sabine River, LA	1	10.7	11,900.	16.84	5.58	5.84	.34	1.06
	River mile 156.5	2	49.6	12,700.	7.08	26.75	27.51	2.19	1.23
	to 26.2	3	84.1	14,100.	4.06	47.42	48.61	5.19	1.03
		4	102.8	14,800.	2.11	59.83	65.54	51.06	.84
		5	130.	15,300.	.39	94.	110.99	602.70	.61
32	Sabine River, TX	1	13.8	26.	21.41	61.	62.9	15.16	1.15
	River mile 515.4	2	33.7	47.	15.23	159.	163.62	54.13	1.25
	to 462	3	42.8	17.	9.01	197.	204.78	111.08	.71
	X = 0.23	4	53.4	43.	9.03	259.	262.12	61.47	.19
33	Sabine River, TX	1	10.6	36.	55.59	67.	67.59	15.78	1.01
	River mile 472.6	2	25.1	50.	41.06	119.	122.06	55.07	1.82
	to 397.4	3	45.1	90.	31.29	200.	202.72	55.16	.71
	X = 0.68	4	75.2	244.	44.83	303.	304.26	19.71	.50
34	Sabine River, TX	1	13.1	218.	10.81	47.	48.45	10.29	.67
	River mile 397.4	2	34.4	250.	7.03	104.	105.36	26.33	.72
	to 326.9	3	58.1	220.	4.53	190.	192.91	74.89	.46
	X = 1.43	4	70.5	334.	4.48	225.	226.77	68.38	.25
35	Mississippi River, LA	1	22.	151,200.	24.5	12.	12.71	1.69	1.20
	From Baton Rouge			52,800.	46.72	12.	13.32	2.26	.71
	to New Orleans			36,000.	65.1	13.5	14.56	2.14	.54
	X = 118.			240,000.					
		2	62.5	120,000.	9.83	40.75	42.28	8.93	.86
				120,000.	8.19	42.75	43.75	9.78	.70
				240,000.					
		3	91.8	240,000.	3.78	62.75	64.24	14.4	.53
		4	127.2	240,000.	2.62	90.75	93.36	30.48	.73

Table 1. (continued)

Case	Test Reach	Site	L	Q	C_{max}	t_p	$\bar{t}$	σ_t^2	G
36	Mississippi River, MO	1	34.	93,000.	4.57	14.25	14.55	.907	.71
	From St. Louis, MO	2	60.	95,000.	2.55	23.75	24.99	3.91	1.06
	to Cairo, IL	3	73.3	98,000.	1.23	35.5	35.31	12.52	.65
	$\bar{X}$ = 205.	4	183.	105,000.	1.22	75.75	78.09	18.46	.92
37	Mississippi River, MO	1	34.	241,000.	5.81	10.25	11.12	2.49	2.13
	From St. Louis, MO	2	60.	241,000.	1.87	17.75	19.59	6.33	1.49
	to Cairo, IL	3	73.3	241,000.	.80	23.	24.97	7.65	.90
	$\bar{X}$ = 104.	4	183.	241,000.	.58	51.25	57.10	16.21	.93
38	Wind/Bighorn River, WY	1	5.7	1,940.	24.57	2.75	2.92	.1376	.83
	From Boysen Dam	2	20.3	1,940.	12.75	9.375	9.65	.4703	.96
	to Greybull	3	31.3	2,000.	9.35	16.625	17.01	.7695	.65
	$\bar{X}$ = 3.36	4	46.8	2,000.	7.44	25.	25.37	1.1856	.66
		5	62.1	2,000.	6.53	32.625	32.99	1.9018	1.14
		6	88.2	2,000.	5.79	44.5	45.23	3.1805	1.26
		7	112.7	2,430.	5.05	56.	56.8	3.3509	.99
39	Wind/Bighorn River, WY	1	5.7	8,250.	10.43	1.438	1.54	.0584	1.04
	From Boysen Dam	2	20.3	8,300.	5.18	4.875	5.02	.2119	1.38
	to Greybull	3	31.3	8,300.	5.54	8.067	8.93	.3795	1.20
	$\bar{X}$ = 4.73	4	46.8	7,900.	2.45	13.5	13.86	.6254	.73
		5	62.1	7,600.	2.06	18.08	18.48	1.0424	1.05
		6	88.2	7,700.	1.05	26.	26.17	.9851	1.01
		7	112.7	9,000.	1.74	33.167	33.64	1.3705	.77

Data from U.S. Geological Survey Professional Paper 433-K

					Maximum concentration in micro curies per ft^3				
40	Copper Creek, VA	1	.12	58.	5.13	.138	.18	.00410	1.58
	Near Gate City, VA	2	.63	58.	.59	.875	1.08	.07422	1.14
	$\bar{X}$ = 0.37	3	1.07	56.	.38	1.5	1.64	.08631	.96
		4	1.49	56.	.34	2.04	2.27	.5101	.78
		5	2.08	56.	.25	3.36	3.63	.24832	.52
		6	2.77	56.	.21	4.26	4.64	1.03947	1.02

Table 1. (continued)

Case	Test Reach	Site	L Distance from point of injection in miles	Q Discharge during test in cfs	C_{max} Maximum concentration in micrograms per liter	t_p Time to C_{max} in hours	$\bar{t}$ Time to centroid in hours	σ_t^2 Time variance in (hours)^2	G Coefficient of skew in (hours)^3
41	Clinch River, VA	1	.43	381.	4.03	.467	.55	.01754	2.08
	Near Speers Ferry, VA	2	.98	348.	2.37	1.25	1.40	.06770	2.25
	X = 2.11	3	1.55	334.	1.30	1.8	2.04	.09109	1.68
		4	2.23	371.	1.16	2.65	2.90	.12497	1.43
		5	2.9	374.	.69	3.84	4.28	.34521	1.47
		6	3.66	345.	.41	5.7	6.50	1.17652	1.38
42	Copper Creek, VA	1	.44	36.	1.32	1.74	1.86	.02602	1.00
	Near Gate City, VA	2	1.34	34.	.26	3.84	4.12	.23543	.97
	X = 0.28	3	2.08	34.	.21	5.75	6.03	.35360	.67
		4	2.98	32.	.18	7.37	7.74	.67806	.89
		5	4.02	38.	.17	9 75	10.08	.99642	.43
		6	5.22	40.	.11	12.18	12.60	1.86283	1.04
43	Powell River, TN	1	.6	146.	.64	1.46	1.87	.26031	1.27
	Near Sneedville, TN	2	1.04	161.	.31	2.92	3.45	.46860	1.18
	X = 1.10	3	2.08	148.	.2	4.88	5.42	.67870	.66
		4	2.98	137.	.15	7.6	8.44	1.90550	.73
		5	3.88	140.	.11	9.91	10.60	1.90765	.62
		6	4.47	145.	----	------	------	-------	----
44	Clinch River, VA	1	.57	205.	1.34	.925	1.10	.06504	1.73
	Near Clinchport, VA	2	1.15	216.	.56	2.	2.34	.17192	1.33
	X = 3.81	3	2.08	210.	.32	3.65	4.29	.60295	1.18
		4	2.79	202.	.18	4.85	5.63	.78958	.69
		5	3.49	179.	.11	7.54	8.21	1.26186	.86
		6	4.13	208.	.1	9.34	10.19	2.21929	1.07
45	Copper Creek, VA	1	.12	249.	16.5	.07	.10	.00265	3.14
	Near Gate City, VA	2	.63	276.	3.23	.345	.45	.01543	1.73
	X = 0.57	3	1.07	280.	1.84	.645	.76	.02857	1.44
		4	1.40	269.	1.22	.895	1.01	.03786	.99
		5	2.00	286.	.83	1.425	1.57	.08232	1.15
		6	2.57	308.	.73	1.73	1.85	.08359	1.10
46	Clinch River, VA	1	.43	3,700.	7.7	.175	.19	.00293	3.31
	Near Speers Ferry, VA	2	.98	3,740.	4.51	.383	.46	.01961	3.05
	X = 3.81	3	1.55	3,690.	4.65	.642	.74	.02889	2.59
		4	2.23	3,890.	2.73	.916	1.05	.04182	2.08
		5	2.9	3,680.	1.46	1.29	1.45	.05494	1.78
		6	3.66	3,600.	1.18	1.67	1.96	.12361	1.33

Table 1. (continued)

Case	Test Reach	Site	L	Q	C_{max}	t_p	$\bar{t}$	σ_t^2	G
47	Coachella Canal, CA	1	.19	911.	24.84	.1115	.12	.00005	.88
	Near Holtville, CA	2	.57	897.	14.55	.345	.35	.00029	.63
	X = 1.81	3	1.14	885.	8.94	.715	.72	.00106	.82
		4	1.7	900.	5.73	1.05	1.08	.00336	1.57
		5	2.46	901.	----	----	----	------	----
		6	3.41	903.	2.02	2.16	2.23	.01387	1.32
48	Coachella Canal, CA	1	.19	950.	20.83	.108	.11	.00025	2.04
	Near Holtville, CA	2	.57	950.	8.06	.333	.35	.00172	2.85
	X = 1.81	3	1.14	950.	3.86	1.05	1.09	.00436	1.60
		4	1.7	950.	2.37	1.54	1.59	.00728	1.46
		5	2.46	950.	1.25	2.14	2.21	.01272	.94
		6	3.41	950.	.52	7.45	7.56	.06772	.59
49	Clinch River, VA	1	.43	3,030.	11.3	.16	.18	.00163	2.42
	Near Speers Ferry, VA	2	.98	2,820.	4.91	.433	.47	.00527	2.05
	X = 2.80	3	1.55	3,150.	3.45	.762	.86	.03170	2.21
		4	2.23	3,070.	2.43	1.14	1.29	.06004	1.81
		5	2.9	2,960.	1.56	1.39	1.59	.08220	1.60
		6	3.66	3,010.	.86	2.11	2.47	.19781	1.28
50	Copper Creek, VA	1	.12	63.	9.69	.1316	.17	.00317	1.62
	Near Gate City, VA	2	.63	63.	1.12	.9	1.16	.13319	1.52
	X = 0.46	3	1.07	65.	.8	1.65	1.78	.20944	1.63
		4	1.49	67.	.66	2.04	2.38	.29478	1.40
		5	2.08	68.	.37	3.38	3.84	.61530	1.15
		6	2.57	68.	.3	4.3	4.79	.68562	1.12

Data from U.S. Geological Survey Water Supply Paper 1899-G

					Maximum concentration in parts per billion				
51	Missouri River	1	40.8	31200.	4.90	12.783	13.5	2.5	.91
	From Sioux City, IA	2	83.5	34500.	3.44	25.45	25.8	6.2	1.63
	to Plattsmouth, NE	3	116.	33300.	2.95	34.033	35.	9.15	1.15
	X = 56.3	4	141.3	34000.	2.50	40.	41.6	13.4	1.66

Table 2. Channel geometries and several hydraulic characteristics of the test reach.

Case	Site	B width in feet	$\overline{D}$ Mean depth in feet	$\overline{V}$ Mean velocity in fps	S_o Slope in feet per 1000 feet	U_* Shear velocity in fps	Source of Hydraulic Data and Remarks
1	1	42.0	1.0	1.01	2.7	0.295	[2] At U.S. Geological Survey gage, May 27, 1969, at 41 cfs
	2	36.0	1.7	.68	1.1	.245	[2] Route 60 Bridge, May 27, 1969, at 42 cfs
	3	42.0	1.0	1.37	1.1	.188	[2] Route 64 Bridge, May 28, 1969, at 58 cfs
	4				.8		
2	1				2.7		
	2				1.1		
	3	92.0	1.73	2.06	1.1	.248	[2] Route 64 Bridge, Mar. 24, 1970, at 328 cfs
	4				.8		
	5	77.0	2.31	1.71	1.5	.334	[2] Roxbury Road Bridge, Mar. 25, 1970, at 304 cfs
	6				1.7		
	7	79.0	3.22	1.93	1.0	.322	U.S. Geological Survey gage, from previous measurements
	8				1.0		
3	1				2.7		
	2				1.1		
	3	39.0	2.17	1.42	1.1	.277	[2] Route 64 Bridge, Aug. 19, 1970, at 120 cfs
	4				.8		
4	1	82.0	1.49	1.34	1.5	.268	[2] Roxbury Road Bridge, Aug. 18, 1970, at 163 cfs
	2				1.7		
	3	69.0	1.59	2.03	1.0	.226	U.S. Geological Survey gage, from previous measurements
	4				1.0		
5	1				.6		
	2				.6		
	3	160	1.81	.86	.5	.171	[2] Frederick Filtration Plant, Nov. 13, 1967, at 250 cfs
	4				.3		
6	1				.3		
	2				.3		
	3				.6		
	4	305.	2.34	.52	.3	.150	[2] Aquaduct, Nov. 13, 1967, at 373 cfs

Table 2. (continued)

Case	Site	B	$\overline{D}$	$\overline{Y}$	S_o	U_*	Source of Hydraulic Data and Remarks
7	1	122.	2.59	1.57	.6	.224	[2] Links Bridge, June 7, 1968, at 496 cfs
	2	164.	3.13	1.84	.6	.246	[2] Bings Ford Bridge, June 8, 1968, at 536 cfs
	3				.5		
	4	168.	2.13	2.03	.3	.143	[2] Jug Bridge, June 7, 1968, at 728 cfs
8	1	168.	2.13	2.03	.3	.143	[2] Jug Bridge, June 7, 1968, at 728 cfs
	2	195.	4.00	1.15	.3	.197	[2] Rt. 80 nr. Buckeystown, June 8, 1968, at 895 cfs
	3	158.	2.56	1.94	.6	.222	[2] Greenfield Mills Bridge, June 8, 1968, at 788 cfs
	4	320.	3.76	.61	.3	.191	[3] Aquaduct
9	1	133.	1.06	.68	.3	.044	[2] Jug Bridge, Sept. 25, 1968, at 110 cfs
	2	110.	1.90	.54	.3	.135	[2] Rt. 80 nr. Buckeystown, Sept. 28, 1968, at 112 cfs
	3	163.	0.90	.85	.6	.132	[2] Greenfield Mills Bridge, Sept. 28, 1968, at 128 cfs
	4	103.	1.77	.65	.3	.131	[2] Rt. 28, Sept. 29, 1968, at 118 cfs
10	1						
	2	115.	1.60	1..6	.5	.160	[2] Broadfording Road Bridge, May 6, 1969, at 251 cfs
	3	151	1.11	1.46	.7	.158	[2] At Mouth of Rush Run, May 6, 1969, at 243 cfs
	4	215.	1.32	.85	.7	.172	[2] Route 40 Bridge May 7, 1969, at 240 cfs
	5	142.	2.26	.71	.6	.209	[2] Kemps Mill Road Bridge, May 7, 1969, at 228 cfs
	6	135.	2.28	.82	.6	.210	[2] At Williamsport, May 7, 1969, at 252 cfs
11	1	78.	1.2	.92	.7	.164	[2] U.S. Geological Survey gage, Sept. 30, 1969, at 91 cfs
	2	117.	1.2	.67	.5	.139	[2] Broadfording Road Bridge, Sept. 30, 1969, at 100 cfs
	3	200.	1.5	.53	.7	.184	[2] At Mouth of Rush Run, Oct. 1, 1969, at 102 cfs
	4	140.	1.3	.56	.7	.171	[2] Route 40 Bridge, Oct. 1, 1969, at 102 cfs
12	1	195.	2.5	2.23	.7	.237	U.S. Geological Survey gage, from previous measurement
	2				.5		
	3				.7		
	4				.7		
	5	141.	3.7	2.08	.6	.267	[2] Kemps Mill Road Bridge, Apr. 30, 1970, at 1,090 cfs
	6				.6		
13	1				.496		[1]
	2	216.	9.4	3.07	.283	.293	[1]
	3				.606		[1]
	4	255.	7.5	3.10	.314	.383	[1]
	5				.02		[1]
	6				.442		[1]
	7	248.	6.4	2.42	.99.	.452	[1] and [2] Atlanta gage at 6,000 cfs

Case	Site	B width in feet	$\overline{D}$ Mean depth in feet	$\overline{V}$ Mean velocity in fps	S_o Slope in feet per 1000 feet	U_* Shear velocity in fps	Source of Hydraulic Data and Remarks
14	1				.204		[1]
	2	243.	7.57	2.72	.250	.247	[1]
	3	278.	7.80	2.4	.294	.272	[1]
	4	328.	8.?	1.0	.452	.346	[1]
15	1	80.	.75	1.44	.512		[1]
	2	128.	.62	1.18	.484		[1]
	3	95.	.86	1.3	.503		[1]
	4	95.	1.11	1.02	.433		[1]
	5	115.	2.16	.58	.226		[1]
16	1						
	2	38.	1.3	.71	1.954	.286	[2] Old Dominion Pike, June 21, 1968, at 34.9 cfs
	3	57.	.76	.95	.563	.119	[2] Old Georgetown Pike, June 21, 1968, at 41.3 cfs
17	1				10.8		
	2				17.7		
	3	45.	2.79	4.23	36.7	1.82	[2] Morrison, Sept. 21, 1970, at 31.7 cfs
18	1	52.	.72	1.29	1.3	.170	[2] Newburg gage, Sept. 5, 1968, at 48.6 cfs.
	2						
	3						
	4						
19	1	50.	1.06	1.34	.473	.127	[1]
	2				.568		
	3	65.	1.90	.77	.568	.136	[1]
	4				.568		
20	1	20.	1.61	.83	.630	.188	[1]
	2	38.	.89	.94	.725	.151	[1]
	3	65.	.7	1.25	.764	.131	[1]
	4	38.	.8	1.12	.395	.101	[1]
	5	43.	.85	1.54	.233	.080	[1]
21	1	75.	3.87	.5	.114	.119	[1]
	2				.067		
	3	96.	2.4	1.	.061	.069	[1]
	4	123.	6.8	.34	.081	.133	[1]
22	1	70.	1.7	1.78	.588	.179	[1]
	2				.530		
	3				.512		
	4	151.	1.74	1.34	.354	.141	[1]

Case	Site	B	$\overline{D}$	$\overline{V}$	S_o	U_*	Source of Hydraulic Data and Remarks
23	1	40.	1.42	1.29	1.6	.270	1
	2	63.	2.61	.48	.95	.284	1
	3	44.	1.76	.84	.95	.252	1
	4	136.	3.41	.22	.20	.148	1
24	1	76.	3.6	.75	.756	.296	1
	2	104.	2.5	1.34	.710	.239	1
	3	106.	2.7	1.43	.663	.240	1
	4	98.	2.6	1.74	.569	.215	1
	5	141.	4.2	.86	.379	.172	1
	6				.265		
	7				.190		
25	1	56.	1.6	1.32	.756	.197	1
	2				.710		
	3				.687		
	4	98.	1.3	1.13	.663	.170	1
	5	132.	1.5	1.44	.569	.179	1
	6	104.	2.5	1.19	.379	.166	1
	7				.265		
26	1	514.	15.8	1.02	.092	.216	1
	2				.089		
	3				.072		
	4	832.	5.3	2.	.066	.106	1
27	1	687.	4.3	1.68	.112	.124	1
	2				.151		
	3				.129		
	4	530.	13.	.94	.092	.196	1
28	1				.112	.161	
	2				.151		
	3				.129		
	4	500.	12.	1.48	.092	.188	1
29	1	455.	8.1	1.09	.092	.155	1
	2				.089		
	3				.072		
	4	850.	3.3	2.01	.066	.084	1
30	1				.179		
	2	297.	7.1	2.13	.166	.195	1
	3				.149		
	4	382.	7.4	1.89	.143	.158	1

Case	Site	B width in feet	$\bar{D}$ Mean depth in feet	$\bar{V}$ Mean velocity in fps	S_e Slope in feet per 1000 feet	U_* Shear velocity in fps	Source of Hydraulic Data and Remarks
31	1	500.	7.4	3.22	.179	.206	3
	2	506.	7.5	3.33	.149	.190	3
	3	530.	7.6	3.50	.143	.187	3
	4	540.	7.7	3.56	.099	.157	3
32	1	19.3	1.49	.73	.262	.112	1
	2	71.0	2.61	.26	.252	.146	1
	3	22.0	1.26	.69	.229	.096	1
	4	57.0	4.05	.14	.209	.165	1
33	1	57.0	4.05	.14	.209	.165	1
	2	40.0	1.67	.75	.180	.098	1
	3	44.0	1.14	1.86	.183	.082	1
	4	54.0	3.39	1.19	.160	.132	1
34	1	105.	4.70	.44	.124	.157	1
	2	70.	3.04	1.17	.134	.114	1
	3	151.	5.02	.32	.109	.135	1
	4	130.	3.13	.88	.165	.130	1
35	1	2650.	41.4	1.95	.007	.100	Channel cross-section drawing (Stewart, 1967)
	2	2200.	56.7	1.923	.007	.117	Channel cross-section drawing (Stewart, 1967)
	3	2400.	58.2	1.716	.007	.118	Channel cross-section drawing (Stewart, 1967)
	4	2400.	81.4	1.226	.007	.140	Channel cross-section drawing (Stewart, 1967)
36	1	1536.	17.5	3.24	.118	.258	2 St. Louis, March 11, 1968, at 87,100 cfs
	2				.118		
	3	1750.	16.2	3.46	.118	.248	2 Chester, March 11, 1968, at 92,000 cfs
	4	2222.	13.6	3.49	.118	.227	2 Thebes, March 12, 1968, at 96,000 cfs
37	1	1752.	30.3	4.67	.118	.339	2 St. Louis, August 6, 1968, at 248,000 cfs
	2				.118		
	3	1763.	29.2	4.96	.118	.353	2 Chester, August 6, 1968, at 256,000 cfs
	4	2264.	24.1	4.68	.118	.303	2 Thebes, August 7, 1968, at 256,000 cfs
38	1	182.	4.2	2.46	3.3	.668	1 and 3 Wind River below Boysen Reservoir
	2				2.7		1
	3	255.	2.7	3.45	1.0	.295	1 and 3 Bighorn River at Lucerne
	4				1.0		1
	5	145.	4.5	3.25	1.5	.466	1 and 3 Bighorn River at Worland
	6				1.2		1
	7				.7		1

Case	Site	B	$\overline{D}$	$\overline{V}$	S_o	U_*	Source of Hydraulic Data and Remarks
39	1	198.	8.	5.2	3.3	.922	[1] and [3] Wind River below Boysen Reservoir
	2				2.7		[1]
	3	280.	7.8	5.7	1.0	.301	[1] [3] Bighorn River at Lucerne
	4				1.0		[1]
	5				1.5		[1]
	6				1.2		[1]
	7				.7		[1]
				Data from U.S. Geological Survey Professional Paper 433-K			
40	1	47.	2.02	.62	1.16	.27	
	2	59.	1.45	.83	1.44	.26	
	3	51.	1.49	.74	1.44	.26	
	4	48.	1.51	.78	1.44	.26	
	5	58.	1.46	.66	1.295	.25	
	6	58.	1.90	.53	1.295	.28	
41	1	150.	3.56	.76	.484	.23	
	2	145.	1.81	1.32	.625	.19	
	3	138.	2.13	1.16	.625	.21	
	4	166.	3.26	.69	.484	.22	
	5	176.	3.60	.59	.441	.23	
	6	156.	6.23	.35	.361	.27	
42	1	31.	1.38	.85	4.65	.45	
	2	66.	1.38	.37	4.49	.44	
	3	66.	1.02	.5	3.07	.36	
	4	61.	1.33	.4	3.36	.38	
	5	58.	1.25	.53	3.03	.34	
	6	55.	1.39	.53	2.01	.36	
43	1	103.	3.74	.38	.441	.23	
	2	100.	1.62	.99	.441	.15	
	3	118.	2.67	.48	.362	.17	
	4	122.	3.57	.31	.289	.18	
	5	122.	2.32	.49	.325	.16	
	6	101.	2.89	.50	-----	---	

Case	Site	B width in feet	$\overline{D}$ Mean depth in feet	$\overline{V}$ Mean velocity in fps	S_o Slope in feet per 1000 feet	v_* Shear velocity in fps	Source of Hydraulic Data and Remarks
44	1	126.	1.62	1.	.625	.18	
	2	141.	2.11	.72	.362	.16	
	3	88.	1.51	1.58	.441	.15	
	4	84.	1.93	1.24	.4	.16	
	5	110.	2.55	.64	.325	.16	
	6	156.	1.74	.76	.325	.13	
45	1	46.	3.28	1.65	.961	.31	
	2	63.	2.43	1.82	1.365	.33	
	3	57.	2.61	1.88	1.3	.33	
	4	58.	2.67	1.74	1.365	.34	
	5	65.	2.68	1.64	1.3	.33	
	6	70.	2.96	1.49	1.3	.35	
46	1	204.	6.13	2.96	.9	.42	
	2	210.	5.24	3.4	.625	.32	
	3	185.	6.43	3.1	.53	.33	
	4	195.	7.61	2.61	.441	.34	
	5	204.	7.25	2.49	.4	.3	
	6	171.	9.24	2.28	.4	.34	
47	1	80.	5.18	2.2	.118	.14	
	2	78.	5.26	2.19	.116	.14	
	3	80.	4.74	2.33	.111	.13	
	4	82.	5.06	2.17	.088	.12	
	5	89.	5.06	2.		---	
	6	72.	5.42	2.32	.112	.14	
48	1						Similar to case 47
	2						
	3						
	4						
	5						
	6						
49	1	200.	5.7	2.66	1.012	.43	
	2	165.	5.31	3.22	.784	.36	
	3	160.	6.5	3.03	.576	.34	
	4	183.	7.43	2.26	.441	.32	
	5	175.	7.37	2.29	.441	.32	
	6	166.	8.92	2.03	.4	.34	

Case	Site	B	$\overline{D}$	$\overline{V}$	S_o	U_*	Source of Hydraulic Data and Remarks
50	1	44.	2.26	.64	.1.155	.29	
	2	51.	1.2	1.05	1.44	.24	
	3	57.	1.41	.79	1.37	.25	
	4	49.	1.54	.89	1.44	.26	
	5	60.	1.61	.71	1.3	.26	
	6	54.	1.6	.79	1.3	.26	

Data from U.S. Geological Survey Water Supply Paper 1899-G

51	1	610.	12.5	4.1	.195	.28	
	2	600.	10.	5.75	.194	.25	
	3	577	11.	5.38	.206	.27	
	4	585.	9.6	6.06	.202	.25	

[1] Hydraulic data obtained from unpublished file data of the time-of-travel study.

[2] Hydraulic data obtained from Discharge Measurement Notes taken at the indicated location, date, and discharge.

[3] Hydraulic data estimated from curves relating width, depth, and velocity to discharge from Discharge Measurement Notes at the indicated location.

zero dye loss are listed under the heading, Conservative Concentration, and those concentration values corrected to constant discharge are listed under the heading, Discharge Adjusted Concentration.

Cases Involving Special Considerations

In most cases the analysis was as previously described. However, there were a few cases where special considerations were made in the analysis or presentation.

For case 35, the Mississippi River, the mixing of the dye was not complete at sampling sites 1 and 2. At these sites, three sampling locations were used; one in the main channel, another between the main channel and the right bank, and the third between the main channel and the left bank. At site 1, three concentration-time curves were drawn, one curve for each of the sampling locations. At site 2, two concentration-time curves were drawn, one for the main channel and another for the right and left banks. Each of these sampling locations was treated as separate sites with the corresponding water discharges approximated from the channel cross-sections given by Stewart (1967). The statistics were calculated and graphed. The lines were then drawn approximating the average condition.

Cases 40 through 50 are from Godfrey and Frederick (1970). In their study, they obtained the statistics of interest by fitting a Pearson type III distribution to the concentration-time curves. This was not consistent with the method chosen for this report. Therefore, the concentration-time curves were redrawn from the supplementary data given by Godfrey and Frederick (1970), and the rest of the analysis was as previously outlined, with the exception that the tracer used was a radioactive material rather than a fluorescent dye.

For case 51, the Missouri River, the statistics of interest were previously published by Yotsukura and others (1970), who calculated the time to centroid and the variance according to the method in this report. However, Yotsukura and others (1970) truncated the recession limbs of the concentration-time curves when the concentration dropped to 1 or 3 percent of the maximum concentration. Values of variance and skewness listed in table 1 for the Missouri River are for curves truncated at 1 percent of the maximum concentration.

Quality of the Data

The most complete data available on dispersion in natural streams are those presented by Godfrey and Fredericks (1970), cases 40 through 50. The channel width, mean depth, mean velocity, and slope are

available for each of the cross sections, along with depth and velocity distributions and complete concentration-time data. The Missouri River data (Yotsukura and others, 1970) also include complete hydraulic data. Because these two reports contain the only published data dealing specifically with dispersion, it is to be expected that these data would be the most complete and accurate available.

All the other data contained herein were collected either for time-of-travel studies or for dilution discharge measurements. Cases 16, 17, and 18 were studies conducted as training demonstrations of dye dilution techniques for water discharge measurements (F. A. Kilpatrick, written commun., 1972) and although the study reaches for these cases are short and concentration-time curves are available for only three cross section for Difficult Run (case 16) and Bear Creek (case 17), the data are judged to be reasonably complete and accurate, so they were included.

The data for cases 1-15 and 19-39 were extracted from time-of-travel studies. The U.S. Geological Survey has conducted many time-of-travel studies, and over one-hundred sets of data were examined for possible inclusion in this report. The great majority of these studies were of no value in providing information on the dispersion characteristics of the streams, either because the concentration-time curves were not completely defined, or because the curves were defined at only two cross sections downstream of the injection site.

Complete hydraulic data generally were not available for the time-of-travel studies, but for many cases, width, depth, and velocity could be determined either from discharge measurements at the sampling sites or from curves relating width, depth, and velocity to discharge. Slopes were determined from gage heights and gage data, or in a few cases from published information on river profiles or topographic maps.

The basic hydraulic data are given in table 2.

Range of Flow Data

Flows ranged from about 30 cfs for several of the streams to 241,000 cfs for the Mississippi River (0.85 to 6,820 m^3/s). The shortest test reach, Difficult Run, case 16, was 2 miles (3.2 km) in length; the longest reach for the Mississippi River, cases 36 and 37, was 183 miles (295 km) in length. Mean flow depths were from about 0.6 feet (20 cm) to a maximum of over 80 feet (24 m) for the Mississippi. Velocities varied to over 6 ft/s (about 2 m/s).

Many of the studies were conducted over short reaches and were completed in a single day (see table 1 and appendix A), but some of the studies extended for many days. For example, on the Sabine River,

the peak of the dye cloud passed the farthest downstream sampling site 303 hours after injection of the tracer. For each case, the mixing length criterion of equation 20 was computed and is given in table 1. For the Mississippi River, cases 36, 37, and 38, and for the Clinch River, case 46, the mixing length criterion was not met. For some of the Godfrey and Frederick's data, the mixing length criterion was met for only the downstream sampling sites, and for a number of cases, the first sampling site did not meet the criterion.

Graphical Analysis

To test whether or not the field data exhibit the properties predicted by the Fickian model, each set of data was analyzed graphically. Distance to the sampling sites from the injection point was plotted against both the time to the centroid, $\bar{t}$ and the time to the peak concentration, t_p, on arithmetic coordinates. If the cloud of dispersant is convected at a constant velocity, the plotted points should be on a straight line, the slope of which is a measure of the velocity, $\bar{U}$. Because many of the data points showed a systematic deviation from a straight line, these same data were plotted on double logarithmic coordinates to determine if this systematic variation in velocity could be identified. The variances of the concentration distributions, σ_t^2, were plotted against time to the centroid, $\bar{t}$, and the peak concentrations, C_{max}, were plotted against times to the peak, t_p on logarithmic scales. On these graphs, dashed lines, positioned through or near the last data points, show the slope for the relation for a Fickian model, and solid lines are trend lines fitted by eye to the plotted points. These data are presented as a set of four graphs for each test case, and are shown in figures 8 through 58.

In part A of these figures, a solid line connecting the points shows the trend of velocities at which the peak of the concentration cloud was convected along the channel. The trend for the centroid velocities generally was similar to the peak velocities generally was similar to the peak velocities, so a second line for those points was not shown. Points for the centroid are used to determine the constant convective velocity, $\bar{U}$, where the points can be fit by a single straight line.

Two sets of points and trend lines are shown on some of the plots of part D, figures 8 through 58. The circles show peak concentration corrected for total recovery, and the square symbols show the peak concentrations adjusted for total recovery and to a constant discharge. Where the change in discharge is small, the data were adjusted only for total recovery.

SUMMARY OF RESULTS

The 51 cases compiled for this report cover the widest range of flow conditions currently available for dispersion data in natural streams. A case-by-case analysis of these data will not be undertaken, but some of the general features and trends of the data are considered in the following sections.

Convective Velocities

Table 3 summarizes for each case the properties of the convective velocities and the maximum variation of discharge, expressed as a percentage of the discharge for the first sampling site. Convective velocities were determined from parts A and B of figures 8 through 58, and only those points meeting the mixing length criterion of equation 20 were considered.

For 24 cases, or 46 percent of the observations, the convective velocities were approximately constant. For about one-half of these cases, the discharge varied less than 25 percent, but for a few cases the variation was greater than 50 percent and for case 33, the discharge increased 578 percent. For 13 cases, the velocity increased and for 8 cases, there were no systematic changes in velocity.

For all the data with constant or systematically varying velocity, the convective velocities could be expressed approximately as a function of time

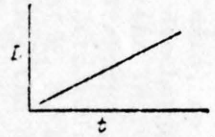
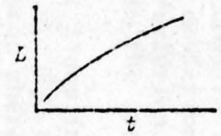
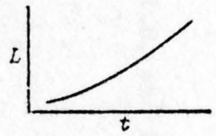
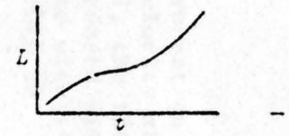
$$U(t) = \frac{dx}{dt} \tag{41}$$

where x, the position of the centroid at time t, is a power function of time

$$x = ft^g \tag{42}$$

and f and g are coefficients determined from the intercepts and slopes of the lines in parts B, figures 8 through 58. Values of f and g were not compiled for this report, but they can be read directly from part B of figures 8 through 58.

Table 3. Summary of convective velocities and percentage variation of discharge

CONSTANT VELOCITY		DECREASING VELOCITY		INCREASING VELOCITY		NO SYSTEMATIC CHANGE IN VELOCITY	
							
Case	Percentage Change in Discharge	Case	Percentage Change in Discharge	Case	Percentage Change in Discharge	Case	Percentage Change in Discharge
5	42	1	54	2	150	13	32
6	17	3	65	4	44	24	224
7	30	15	66	20	48	25	214
8	8	18	19	21	97	30	-13
9	15	27	32	22	75	36	13
10	4	28	34	23	43	37	--
11	12	29	55			43	-10
12	4	31	29			49	- 7
14	1	40	3				
16	19	41	-12				
17	3	46	5				
19	35	48	--				
26	6	50	8				
32	81						
33	578						
34	53						
35	--						
38	25						
39	9						
42	+11						
44	-13						
45	24						
47	- 3						
51	11						

Dispersion Properties

The major properties of the dispersion process considered in this report are the velocity at which the cloud of dispersant was convected along the channel, the rate at which the variance of the concentration distribution increased with time, and the rate at which the peak concentration attenuated with time. These properties are displayed graphically in figures 8 through 58.

For most of the sets of data, the variance of the concentration distribution increased with time according to the relation

$$\sigma_t^2 = \alpha t^{2H} \tag{43}$$

where $0.4 \leq H \leq 1.0$, and the peak concentration attenuated according to the relation

$$C_{max} \propto t^{-\beta} \tag{44}$$

These relations are represented by the solid lines in parts C and D of figures 8 through 58, whereas the dashed lines show the slopes of the asymptotic relations for the one-dimension Fickian-type model. Values of α, H, and β are compiled in table 4. The average value of H was 0.70 and the standard deviation was 0.15. The average value of β was 0.77, with a standard deviation of 0.22. For a few cases, there was so much scatter in the data that trend lines could not be established.

The straight lines in figures 8 through 58 were positioned by eye so the values of α, H, and β listed in table 4 are only approximate, especially for cases where the data are considerably scattered about the line. Values of α are particularly difficult to determine because small changes in the slope, $2H$, or in the position of the line through the plotted points can result in large changes of the value for α.

For all the data, no relations were found between values of α or H and the stream discharge, the size of the stream, or any of the flow parameters. For the individual streams, where studies were conducted at two or more discharges, no consistent changes with discharge in α, H, or β could be detected. In addition, the general behavior as indicated by values of α, H, and β, of the dispersing cloud did not seem to depend on whether the discharge was constant or was changing systematically along the channel.

For the time-of-travel data, the geometric properties of the channel, the slope, and the hydraulic data compiled in table 2 are neither complete nor very accurate. This perhaps is the reason why relations between α, H, and β and the hydraulic parameters could not be established. In any event, it is apparent that the value of time-of-travel studies would be greatly increased if complete hydraulic data and complete concentration-time curves for four or more cross sections downstream of the injection site were obtained for every study. Also, it seems likely that much of the data compiled here cannot be used to identify the mechanisms involved in the dispersion process or to test two or three dimensional models or the more involved routing models because the data are not sufficiently detailed. Probably, further advances in dispersion theory will require carefully designed field experiments to collect the necessary data.

Tables 3 and 4 provide information for preliminary evaluation of whether or not an open-channel dispersion test responded according to Fickian theory. The criteria for Fickian response were a constant convective velocity, concentration variance increasing linearly with time ($0.4 < H < 0.6$ was arbitrarily selected), and the maximum concentration attenuating with the square root of time ($0.4 < \beta < 0.6$). The cases that demonstrated non-Fickian behavior were grouped into two categories: uniform discharge, defined as variations of discharge of less than 20 percent, and non-uniform discharge, with changes of discharge greater than 20 percent. Each of these two categories was further subdivided according to whether the convective velocities were constant or non-constant. Table 5 lists the cases that responded according to Fickian theory, and groups the cases with non-Fickian behavior into the above four categories.

For six cases, the empirical data agree approximately with the one-dimensional model, and for two cases, numbers 17 and 38, there is excellent agreement, with H and β not significantly different from 0.5.

Cases 27 and 28 are studies conducted on a reach of the Red River in Louisiana. For both cases, the discharge and the cross-sectional area increased in the downstream direction, so the convective velocities were about constant, and when the concentration time-curves were corrected for total recovery and changing discharge, the one-dimensional theory describes approximately the observed behavior.

The data for case 16, Difficult Run in Virginia, agree approximately with the one-dimensional theory after correction for increasing discharge, but the convective velocity of the dye cloud appears to decrease downstream.

Table 4. Dispersion parameters determined by graphical analysis.

Case	Test Reach	Parameters of the relation $\sigma_t^2 = at^{2H}$		Parameter of the relation $C_{max} \propto t_p^{-\beta}$
		a	H	$-\beta$
1	Antietam Creek	0.096	0.69	0.89
2	Antietam Creek	.0255	.68	.80
3	Antietam Creek	.148	.55	.60
4	Antietam Creek	.113	.60	.66
5	Monocacy River	.028	.87	1.00
6	Monocacy River	.325	.57	.68
7	Monocacy River	.115	.55	.75
8	Monocacy River	.068	.69	.53
9	Monocacy River	1.22	.57	.86
10	Conococheague Creek	.012	1.00	.93
11	Conococheague Creek	.049	.83	.85
12	Conococheague Creek	.0125	.92	1.08
13	Chattahoochee River	.013	1.00	1.04
14	Chattahoochee River	.037	.73	.76
15	Salt Creek	.074	.74	.87
16	Difficult Run	.093	.42	.58
17	Bear Creek	.004	.51	.52
18	Little Piney Creek	.0175	.57	.80
19	Bayou Anacoco	.045	.69	.57
20	Comite River	.016	.86	.78
21	Bayou Bartholomew	.0115	.78	.68
22	Amite River	.009	.80	.65
23	Tickfaw River	.0556	.75	.58
24	Tangipahoa River	.037	.72	.60
25	Tangipahoa River	.062	.73	.43
26	Red River	.096	.59	.66
27	Red River	.262	.54	.55
28	Red River	.145	.57	.55
29	Red River	.100	.56	.70
30	Sabine River	.0885	.63	.54
31	Sabine River	-----	---	---
32	Sabine River	-----	---	---
33	Sabine River	-----	---	---
34	Sabine River	.58	.65	.53
35	Mississippi River	.0485	.69	1.38
36	Mississippi River	-----	---	---
37	Mississippi River	.46	.42	---
38	Wind/Elkhorn River	.0435	.53	.52
39	Wind/Elkhorn River	.0238	.62	.60
40	Copper Creek	-----	---	.6
41	Clinch River	.0305	.81	.92
42	Copper Creek	.0172	.89	1.24

Case	Test Reach	Parameters of the relation $\sigma_t^2 = at^{2H}$		Parameter of the relation $C_{max} \propto t_f^{-\beta}$
		a	H	
43	Powell River	.1	.61	1.00
44	Clinch River	.05	.81	1.12
45	Copper Creek	.04	.60	.97
46	Clinch River	.041	.78	---
47	Coachella Canal	.0025	.95	---
48	Coachella Canal	.046	.66	.88
49	Clinch River	.037	.92	---
50	Copper Creek	.11	.58	1.09
51	Missouri River	.06	.72	.83

Table 5. Summary of cases grouped according to dispersion response, uniformity of discharge, and convective velocity.

Fickian	Non-Fickian			
U=constant $0.4<\beta<0.6$ $0.4<\delta<0.6$	Uniform Discharge, $\frac{\Delta Q}{Q}<0.2$		Non-Uniform Discharge, $\frac{\Delta Q}{Q}>0.2$	
	Group I U=constant	Group II U=constant	Group III U=constant	Group IV U=constant
16*	6	18	5	1
17	8	30	7	2
27*	9	36	19	3
28*	10	37	32	4
38	11	40	33	13
39	12	41	34	15
	14	43	45	20
	26	46		21
	35	48		22
	42	49		23
	44	50		24
	47			25
	51			29
				31
Number of cases 6	13	11	7	14
Percentage of total 11.8	25.5	21.6	13.7	27.4

*With adjustment to constant discharge. Convective velocity not constant for cases 27 and 28.

The agreement between the one-dimensional theory and the data is excellent for Bear Creek, case 17, despite the fact that there was a two-fold increase in slope through the short reach (table 2). Increased channel roughness apparently compensated for the increased slope to maintain a constant convective velocity through the reach.

The cases listed under group I in table 5 had uniform discharges and constant convective velocities, and they appear to meet the requirements for application of the one-dimensional theory. However, the rate of change of concentration variances or the rate of attenuation of peak concentrations were greater than predicted by theory.

Specific remarks about some of these cases might be helpful in interpreting the empirical data.

Cases 6, 8, and 9: These data were collected on a 21-mile (34 km) reach of the Monacacy River upstream of its confluence with the Potomac. The discharges were about 100 cfs (2.8 m^3/s) for case 9, 300 cfs (8.9 m^3/s) for case 6, and 750 cfs (21.3 m^3/s) for case 8, and represent flows exceeded 95, 70, and 35 percent of the time. Convective velocities were low, less than 0.7 mile per hour (1 km per hour), but there was no evidence of backwater effects from the Potomac River. Cases 5 and 7, which are classed in group III of table 5, are for an upstream reach of the Monocacy River that overlaps the reach for cases 6, 8, and 9 (see table 1). Variations in discharge were 42 percent for case 5 and 30 percent for case 7. For these five cases, the first sampling site is near the critical length according to equation 20, so not much weight should be given the first data points.

Cases 10, 11, and 12: These cases for Conococheague Creek in Maryland are reported by Taylor and Solley (1971). For cases 10 and 12, the first two sampling sites, and for case 11, the first sampling site do not meet the critical mixing length criterion of equation 20. Kemps Mill Dam, located 3.8 miles (6.1 km) upstream of the confluence of Conococheague Creek and the Potomac River, influences the flow at the downstream end of the reach. Data for the downstream sampling site were not considered in estimating convective velocities for cases 10, 11, and 12.

Cases 35 and 37: These cases, for reaches of the Mississippi River, are in the convective or transition period for which the one-dimensional model is not applicable, according to Fischer (1973a).

Cases 42, 43, and 47: A complete description of these reaches is given by Godfrey and Frederick (1970). Only the last two sites in case 47 meet the mixing length criterion of equation 20.

Case 51: The first sampling site did not meet the mixing length criterion of equation 20. A detailed description of this study is given by Yotsukura and others (1970).

Group II of table 5 consists of 10 cases, or 20 percent of the total, with approximately constant discharge, but with non-constant convective velocities.

Case 18: This case shows approximate agreement with the one-dimensional model, except in the convective velocity.

Case 30: Sites 2 and 4 correspond to sites 1 and 2 for case 31. Convective velocities varied appreciably at the lower flow of case 30, but for case 31 at higher discharges, the convective velocity was approximately constant through the upstream 84 miles (135.2 km) of the reach.

Case 36: The critical mixing length of equation 20 was not met.

Cases 40, 41, 44, 46, 48, 49, and 50: A description of these reaches and complete basic data are given by Godfrey and Frederick (1970). Cases 40, 45, and 50 are for the same reach of Copper Creek, with case 40 and 50 at low discharges of about 60 cfs (2 m^3/s) and case 45 at a higher discharge of 280 cfs (7.9 m^3/s). For the higher non-uniform discharge, the convective velocity was constant, but for the lower discharges, it was not.

Groups III and IV of table 5 represent cases with non-uniform discharge, where the one-dimensional diffusion equation considered in this study is not applicable. The one-dimension equation can be applied to unsteady or non-uniform flows for certain special cases, such as estuarine flows, where the area and velocity vary systematically with position or where K_x and U are functions only of time, and numerical modeling techniques can be applied to many cases where analytic solutions are not available. A discussion of these extensions is beyond the scope of this report, but the field data for groups III and IV should provide a basis for testing some of these more complex dispersion models.

General Discussion

The logarithmic plotting in figures 8 through 58 tends to emphasize trends, but it may be misleading because it obscures the asymptotic behavior of the data and it weights unduly the data points early in the mixing process. Thus, although the variance grows in a nonlinear relation with time for many of the observations, it also is clear that for some of the data, the variance grows in an approximate linear relation with time though at least part of the reach. Case 37, for example, shows an approximate linear growth of variance with time for the last three data points and a peak concentration attenuating with $1/\sqrt{t}$ for the last two points even though the process, according to Fischer's criterion (equation 20) is in the convective period through the entire reach. Other cases

that show a roughly linear growth of variance through part of the range of data are cases 2, 3, 4, 6, 8, 15, 18, 20, and 26. For at least some of these cases, the one-dimensional diffusion equation appears to describe approximately the mixing process even though the convective velocities or the discharges are not strictly constant along the reach.

Two other general aspects of the data are of interest. First, it can be shown that all the moments of equation 12 exist, and that the skewness of the concentration-time curves behaves for long times as $1/\sqrt{t}$ or $1/\sqrt{x}$. Consequently, the theoretical concentration - time curves should approach asymptotically a Gaussian distribution. However, the data in table 1 indicate that for some cases the skewness approaches a constant value. Instead of approaching the Gaussian distribution, some of the concentration curves, for example, cases 16, 38, 39, and 51, show a marked and persistent asymmetry.

Second, there is no convincing evidence in the empirical data that the mixing length of equation 20 or the time scale of equation 36 is a sufficient criterion to classify the dispersion process so far as growth of the variance or attenuation of the peak concentration is concerned. Actually, the mixing length criterion is somewhat arbitrary, and there are possibilities for wide deviations from equation 20. If the full channel width rather than half-width is used in equation 20, the mixing length is increased by a factor of 4 and if $K_z/DU_* \neq 0.23$, the mixing length is changed accordingly. Values of K_z/DU_* have been observed to range from about 0.1 to 1.2 (Fischer, 1973), with the higher values associated with meandering natural channels. Obviously, more information on transverse mixing would be of considerable value in interpreting the data in tables 1 and 2, because the non-linear trends in the increase of variance may simply reflect the convective period of the process for many of the observations. Unfortunately, the most reliable data, cases 40 through 51, all show systematic deviations from the one-dimensional theory, but if the mixing length extends downstream by a factor of 4 or more over the values given in table 1, all of these data would be in the convective period. On the other hand, from a practical point of view, if the convective influence extends downstream much farther than the length given by equation 20, the one-dimensional model is not likely to be of much value because the dispersant would be completely out of the reach of interest before the theory applies. Obviously, there is a need for some careful field studies to determine the extent of the convective period and the limitations of the one-dimensional theory.

SUMMARY AND CONCLUSIONS

Longitudinal dispersion processes in rivers often are described by a one-dimensional Fickian-type diffusion equation (eq. 3). Theoretically, the cloud of dispersant should be convected along the channel at a constant velocity, the peak concentration of the dispersant should attenuate with the square root of time, and the variance of the concentration distribution, which is a normal distribution with respect to position along the channel at any given time, should increase linearly with time.

Fifty-one sets of field data from dispersion and from time-of-travel studies were compiled and were analyzed graphically (figs. 8 through 58) by plotting the distance from the injection site against the time to centroid and time to peak concentration, the peak concentration against the time to peak, and the variance of the concentration distribution against the time to centroid. The complete basic data are compiled in the tables and in the appendix.

Of the 51 cases considered, 27 cases had almost constant discharge and 24 cases had variations in discharge greater than 20 percent. For 17 cases, the discharges varied less than 20 percent and convective velocities were approximately constant. Of these 17 cases, 15 appear to meet the general requirements for which the one-dimensional theory should apply. For two cases, numbers 35 and 37 for the Mississippi River, the lengths of the reaches are shorter than the mixing length criterion of equation 20.

Two cases, case 17 for Bear Creek and case 38 for the Wind/Bighorn River, agree very well with the one-dimensional theory, and case 39 for the Wind/Bighorn River agrees approximately with the theory. A number of other cases with non-uniform discharge or non-constant convective velocities agree approximately with the theory.

For many of the cases, the variance of the concentration grows more rapidly and the peak concentration attenuates more rapidly than predicted by the one-dimensional model. In addition, the empirical data suggest that for some of the cases, the concentration distributions are not Gaussian with respect to position along the channel, and that they do not tend to become Gaussian with increasing time.

The analysis leads to the following conclusions:

1. Two sets of data exhibit clearly the properties of a one-dimensional Fickian-type process. A number of other cases agree approximately with the theory.

2. For about half of the studies, the convective velocity of the tracer cloud was constant. For many cases, the convective velocity, $U(t)$, could be described as a simple power function of time, $U(t) = ft^{n}$.

3. For many cases, the peak concentration of the dispersant attenuated according to the relation $C_{max} \propto t^{-\beta}$, where $\beta \geq 0.5$, and averaged 0.77, and the variance of the concentration distribution increased with time according to the relation $\sigma_t^2 = at^{2H}$, $0.4 \leq H \leq 1$, where H averaged 0.70.

4. Systematic deviations from the theory suggest that either (a) the one dimensional theory is not suitable for describing longitudinal dispersion in many rivers, or (b) the convective period extends much longer than is generally supposed. In either event, it would seem important to conduct some careful field experiments to determine the limitations of the one-dimensional theory.

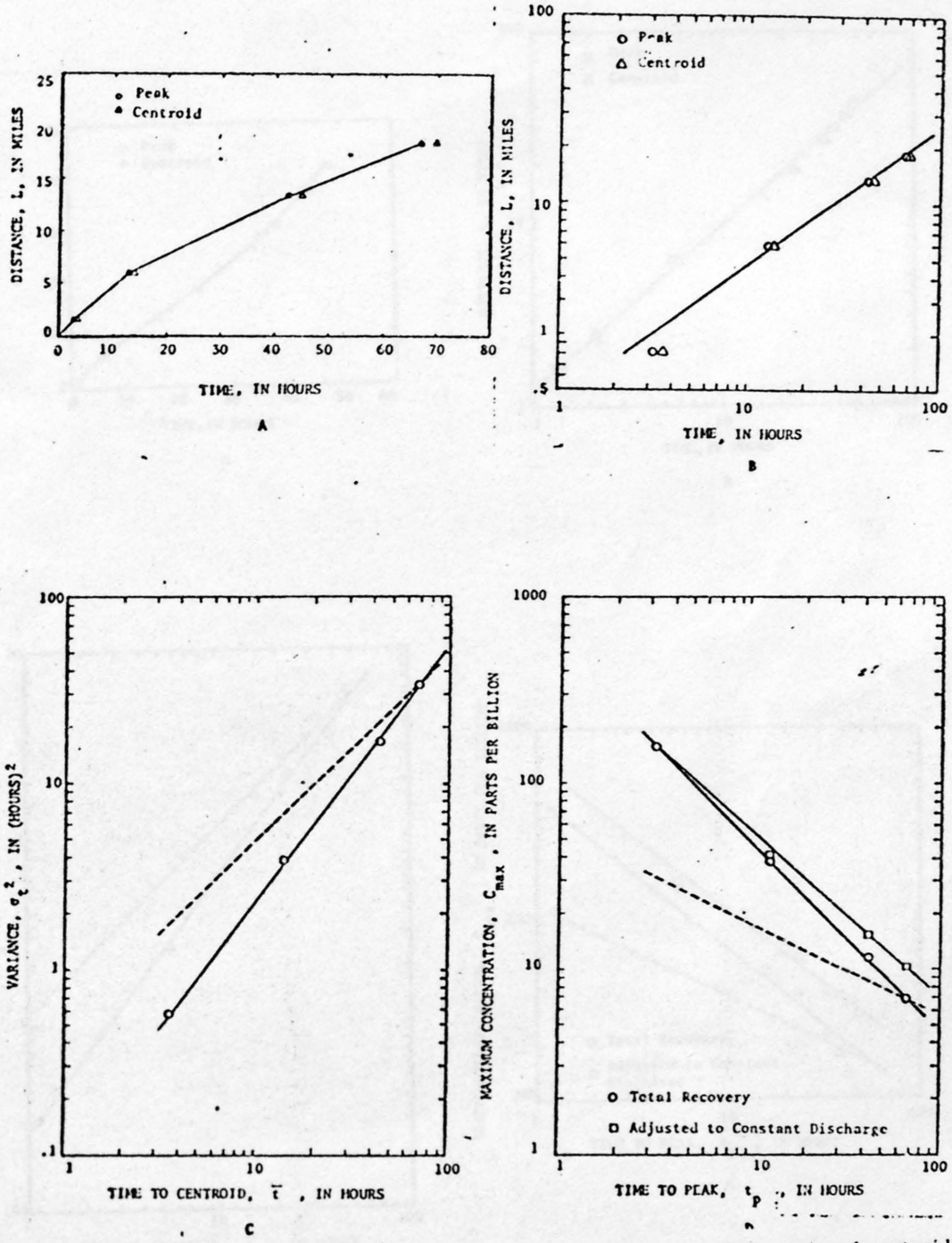
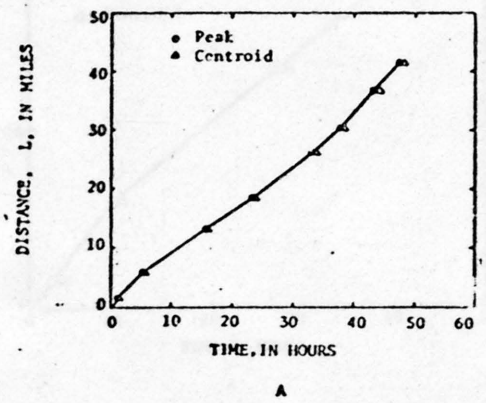


Figure 8.-Dispersion data for case 1, Antietam Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.



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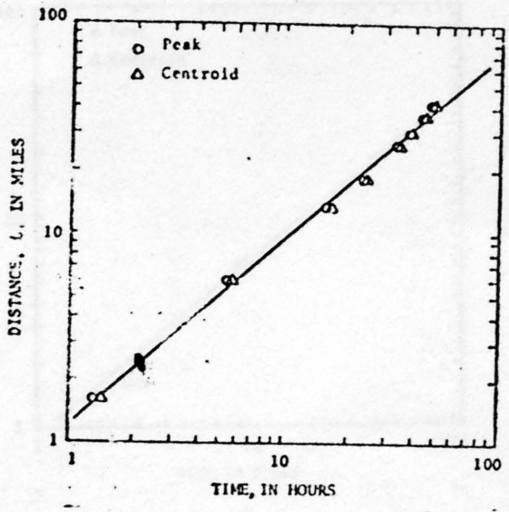

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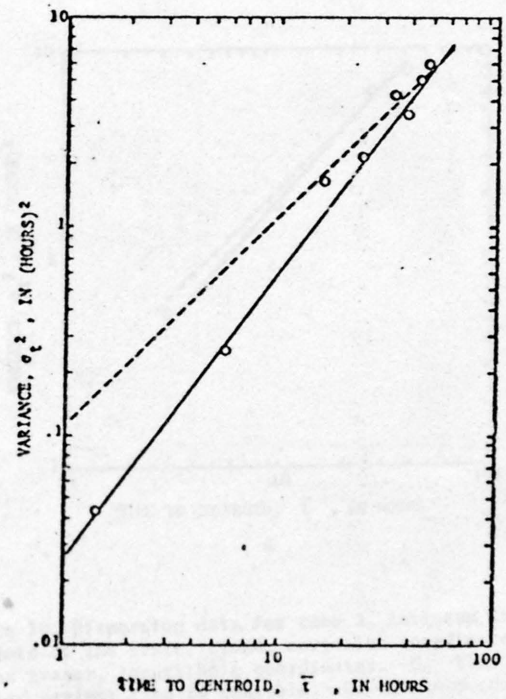

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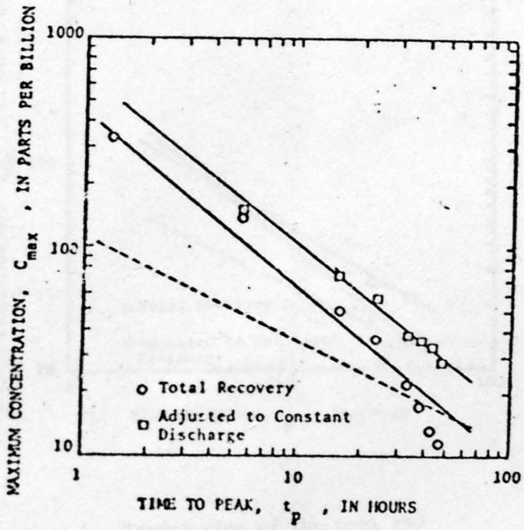


D

Figure 9.-Dispersion data for case 2, Antietam Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

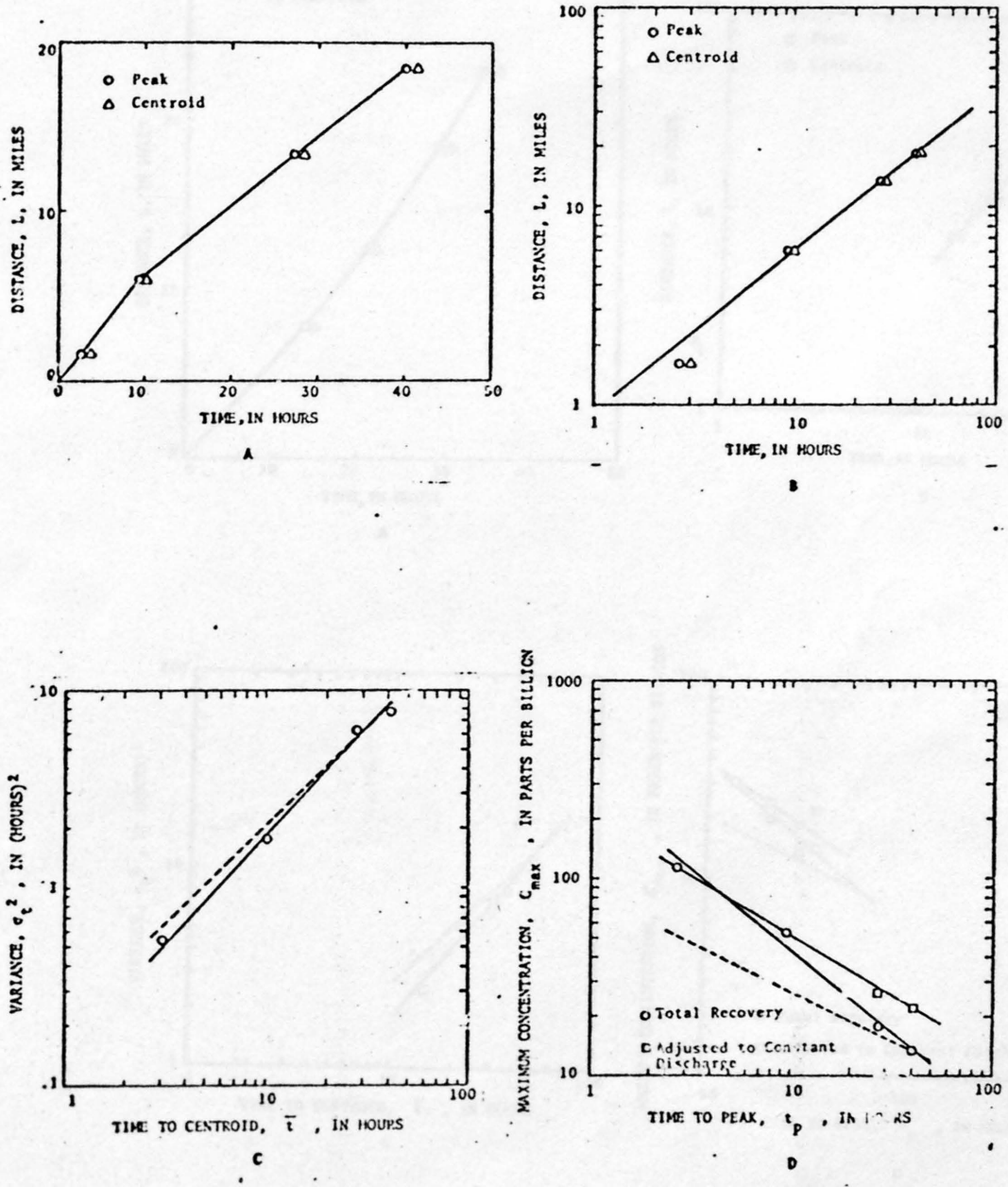


Figure 10.-Dispersion data for case 3, Antietam Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

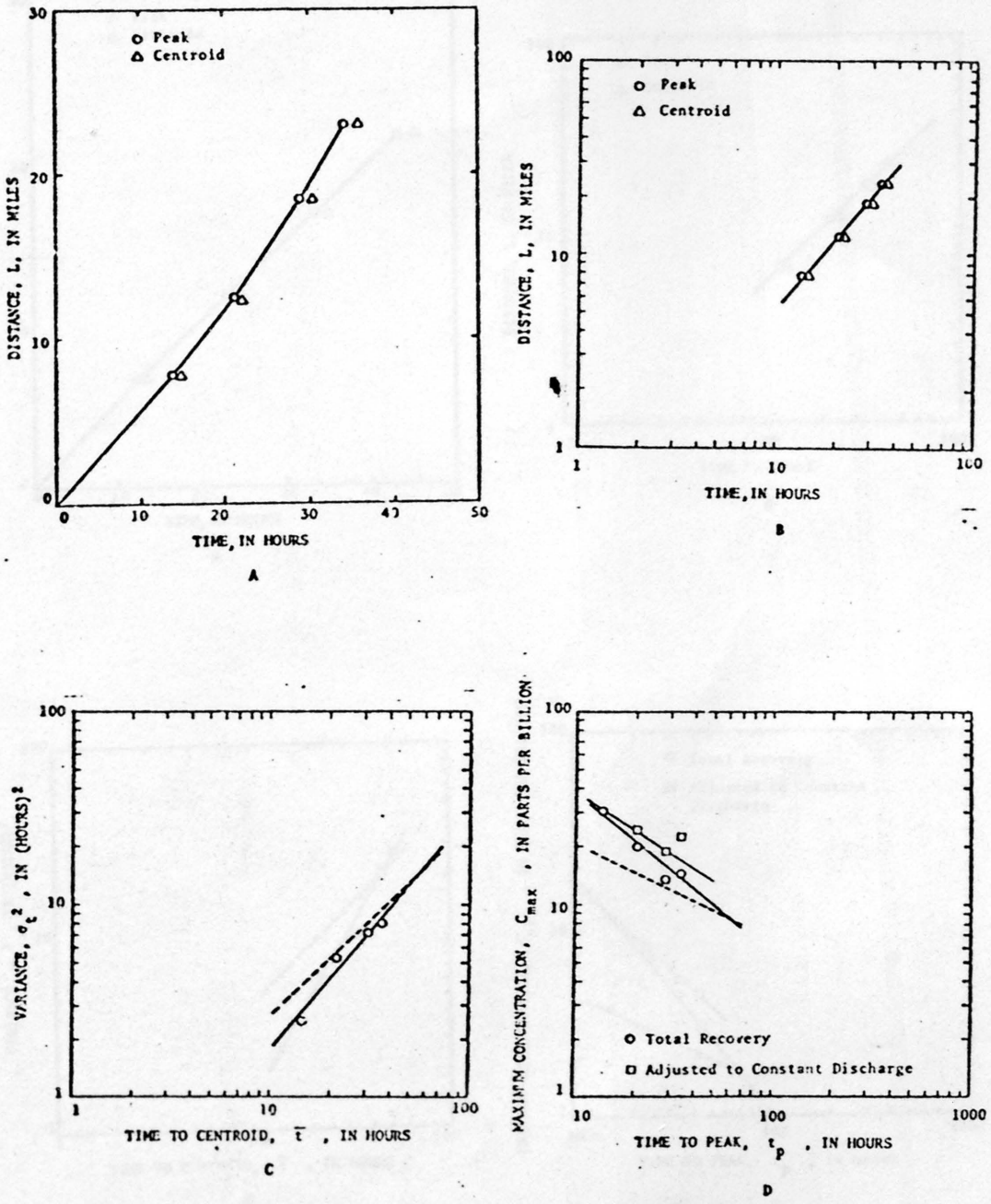


Figure 11.-Dispersion data for case 4, Antietam Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

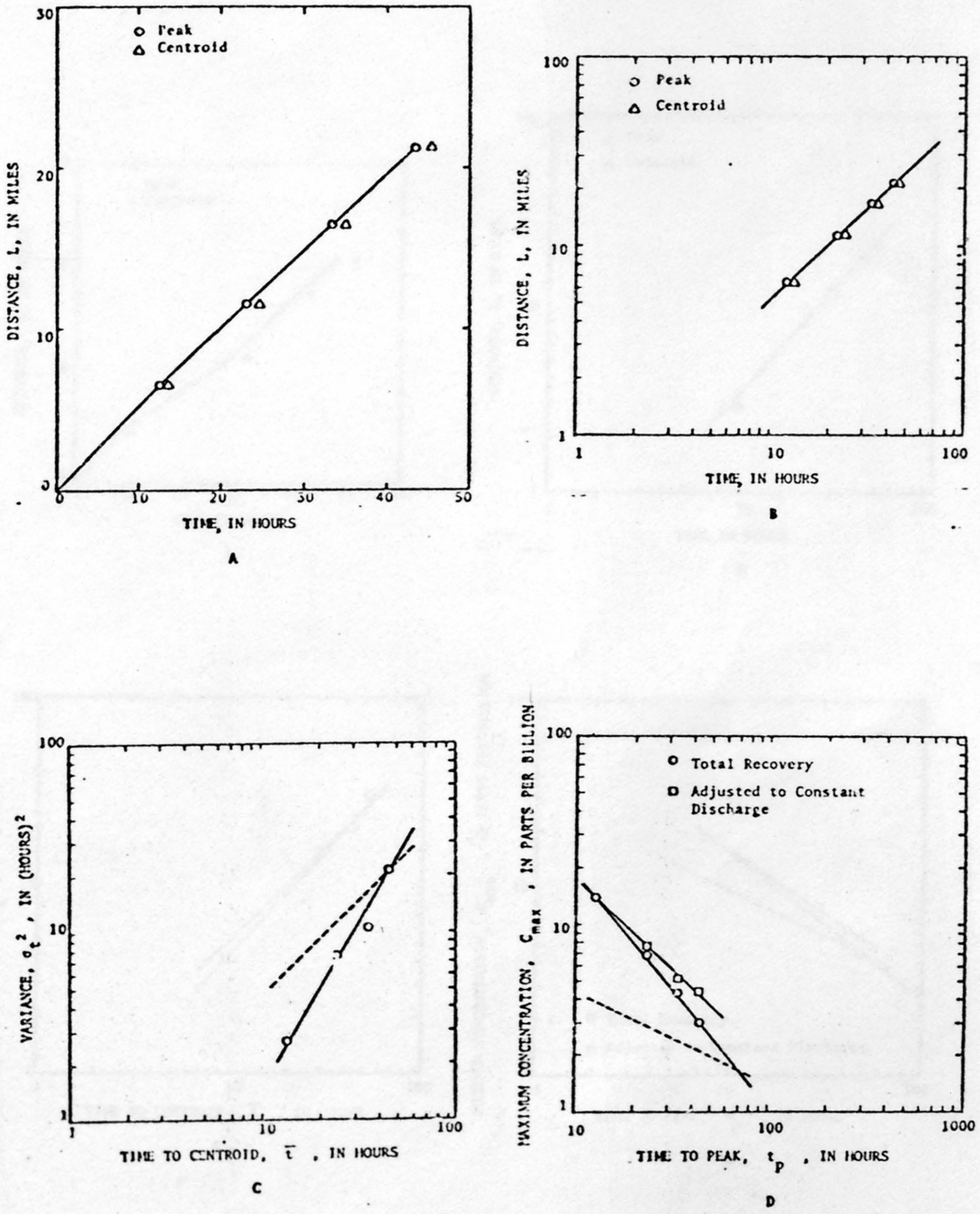


Figure 12.-Dispersion data for case 5, Monocacy River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

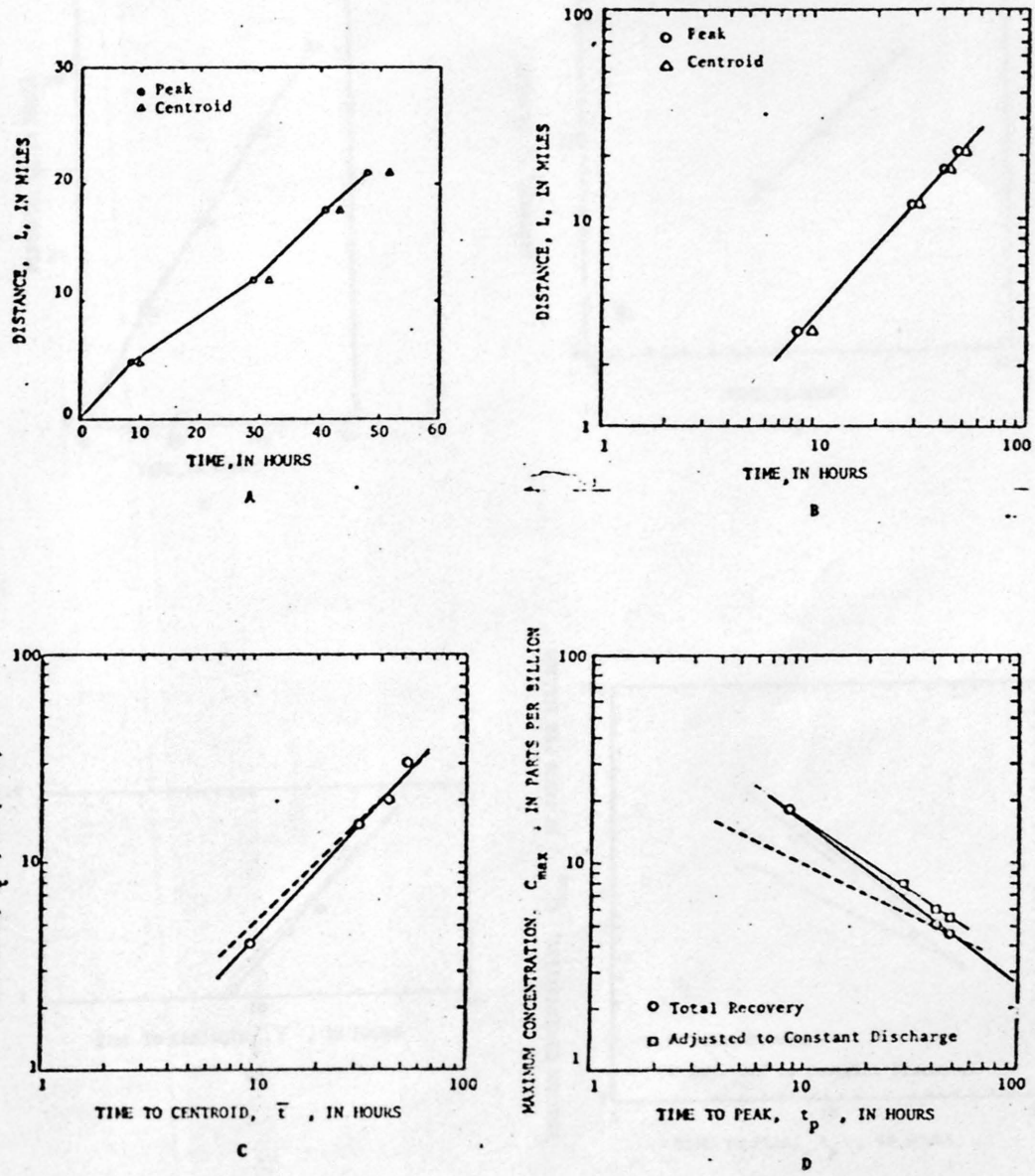
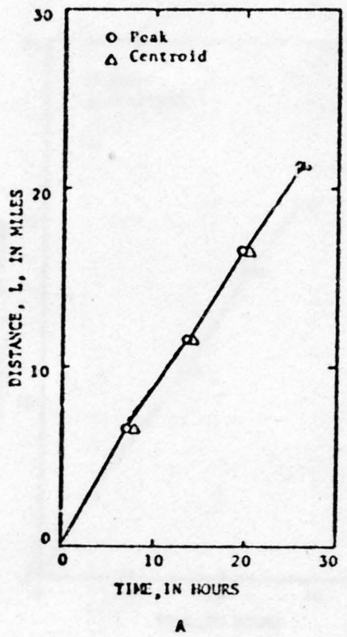
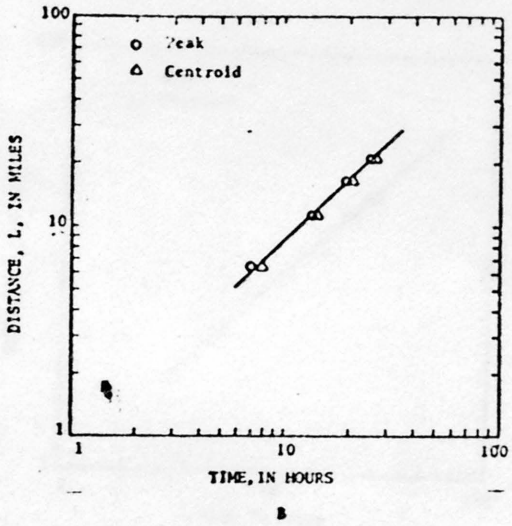
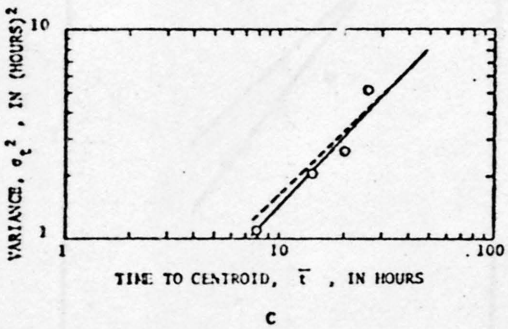


Figure 13.-Dispersion data for case 6, Monocacy River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







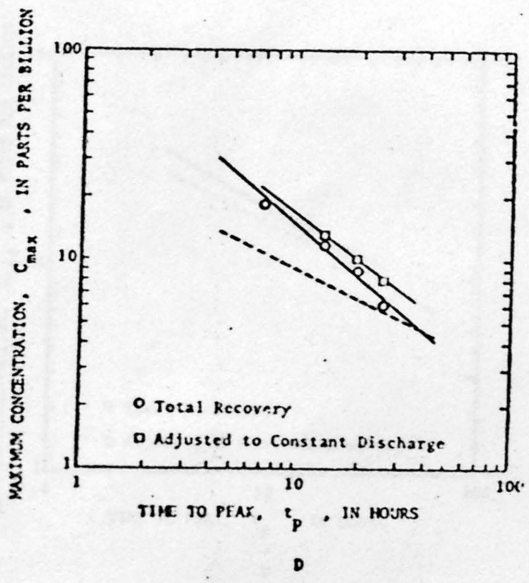


Figure 14.-Dispersion data for case 7, Monocacy River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

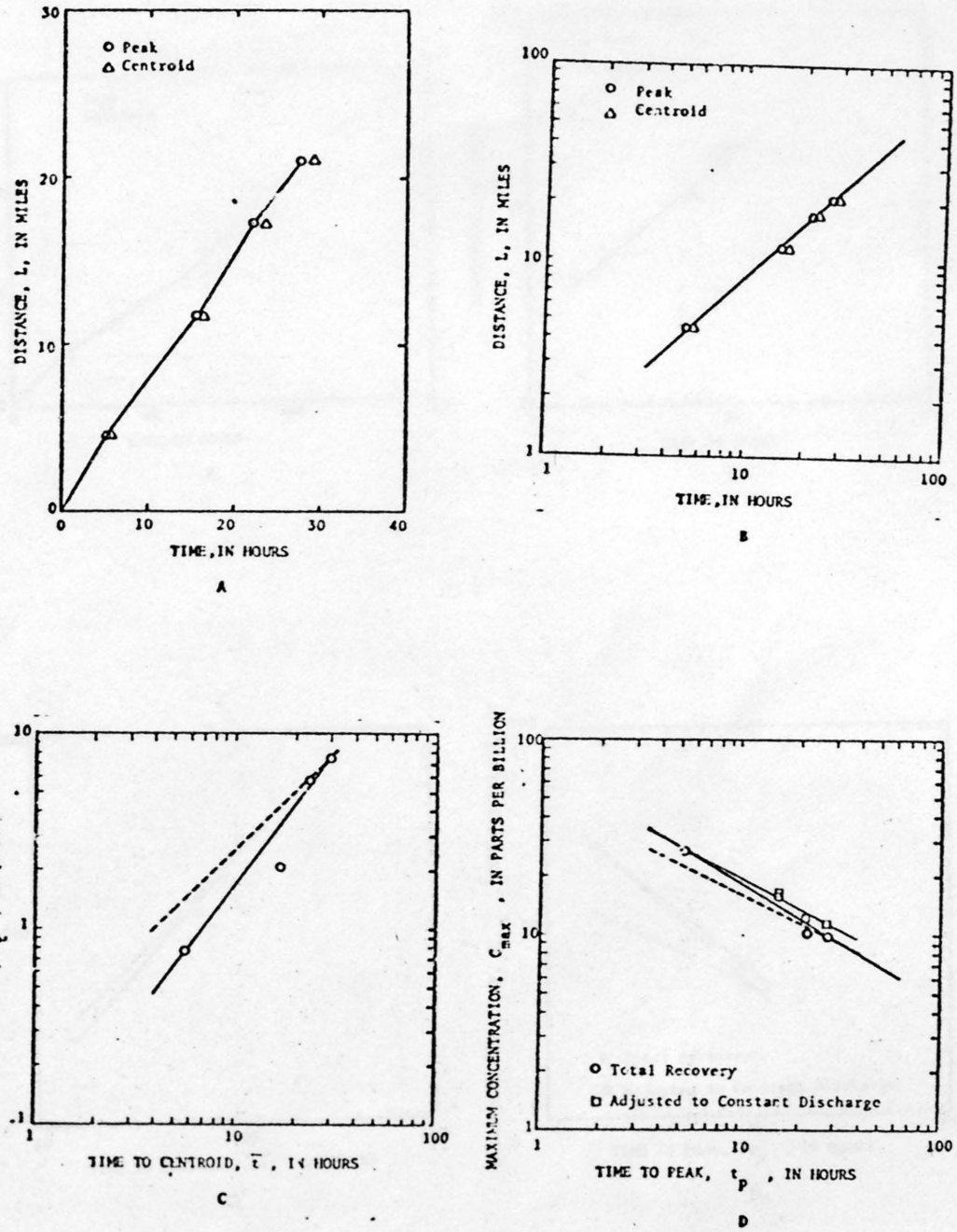


Figure 15.-Dispersion data for case 8, Monocacy River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

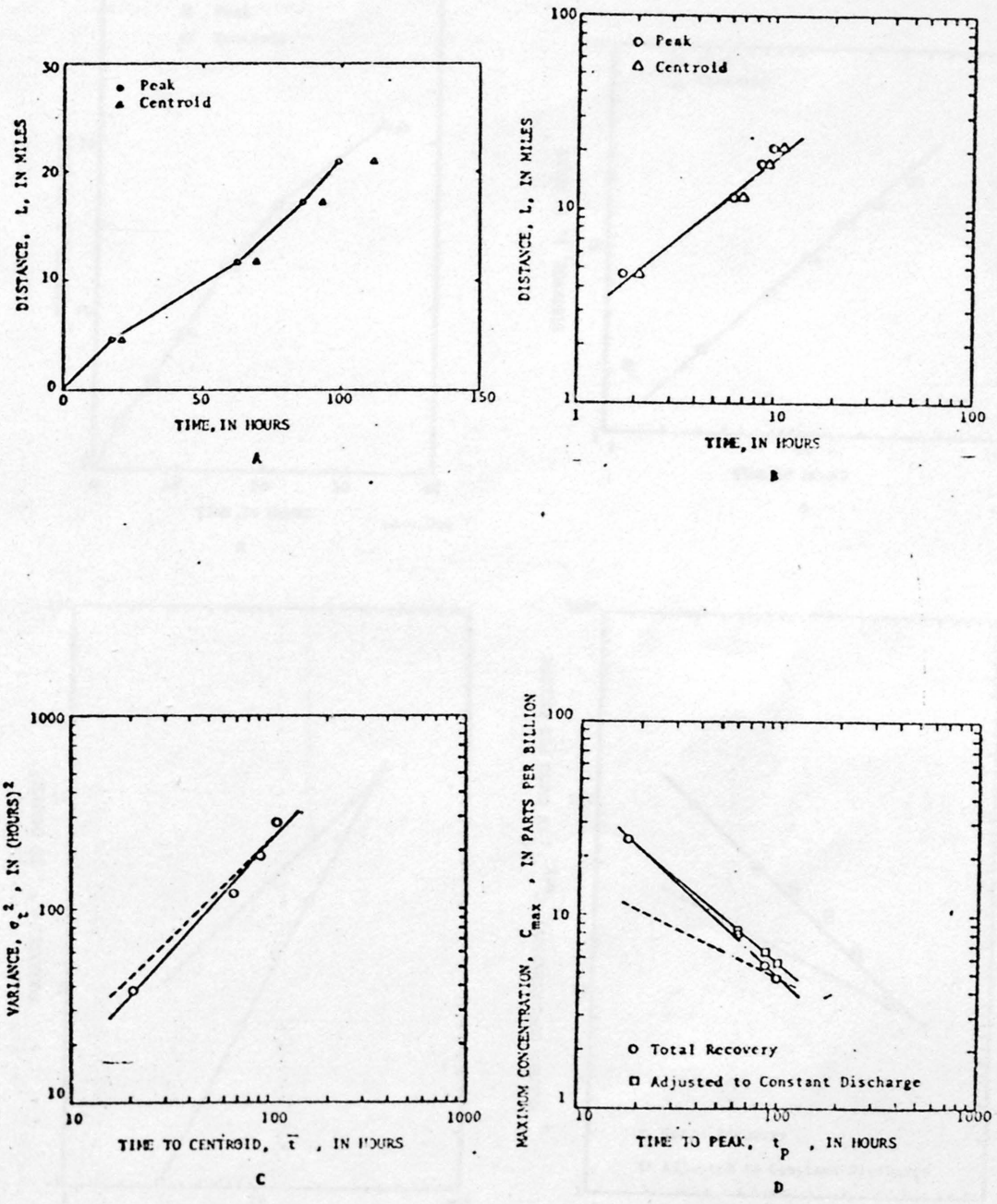


Figure 16.-Dispersion data for case 9, Monocacy River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

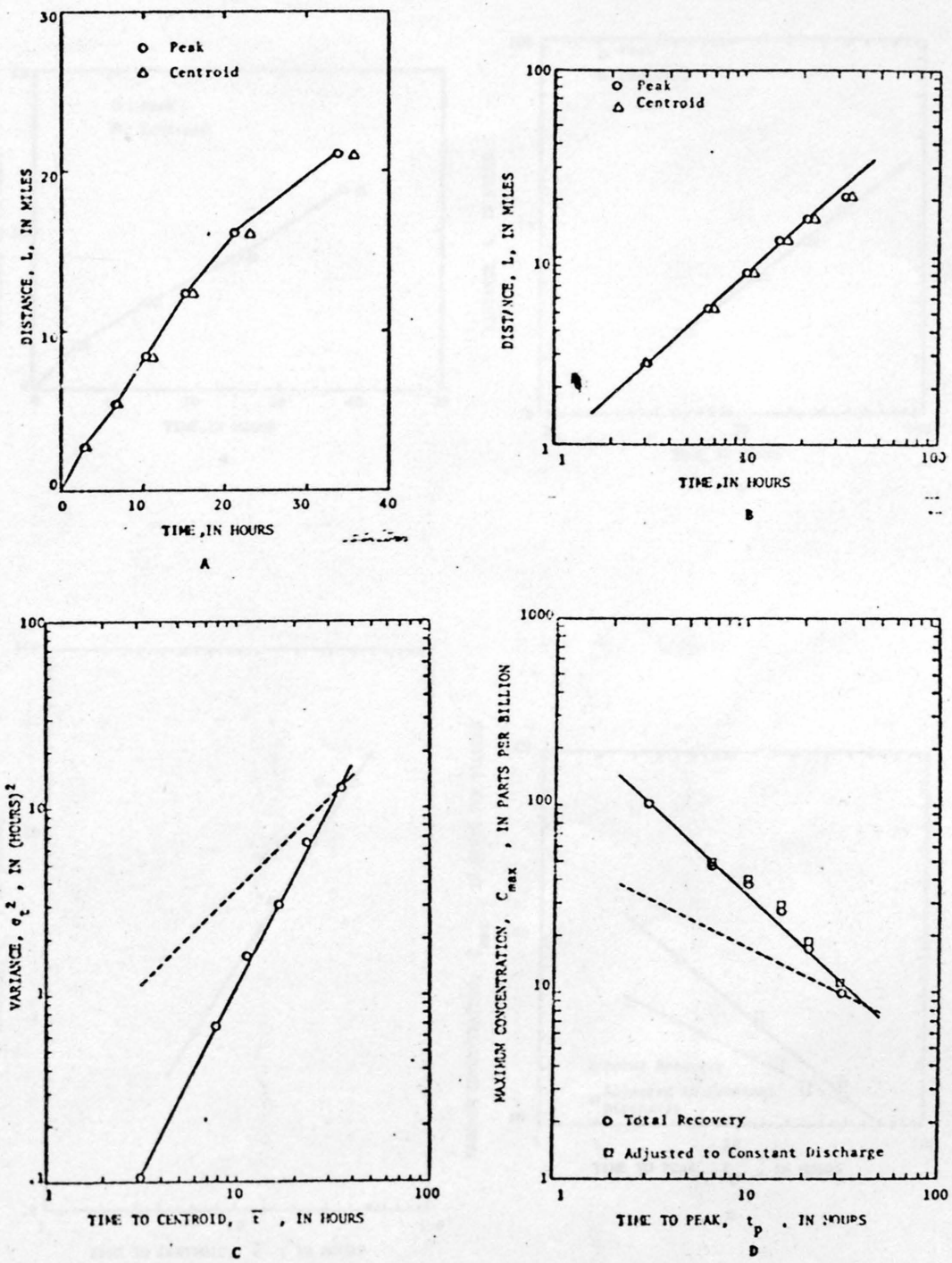


Figure 17.-Dispersion data for case 10, Conococheague Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

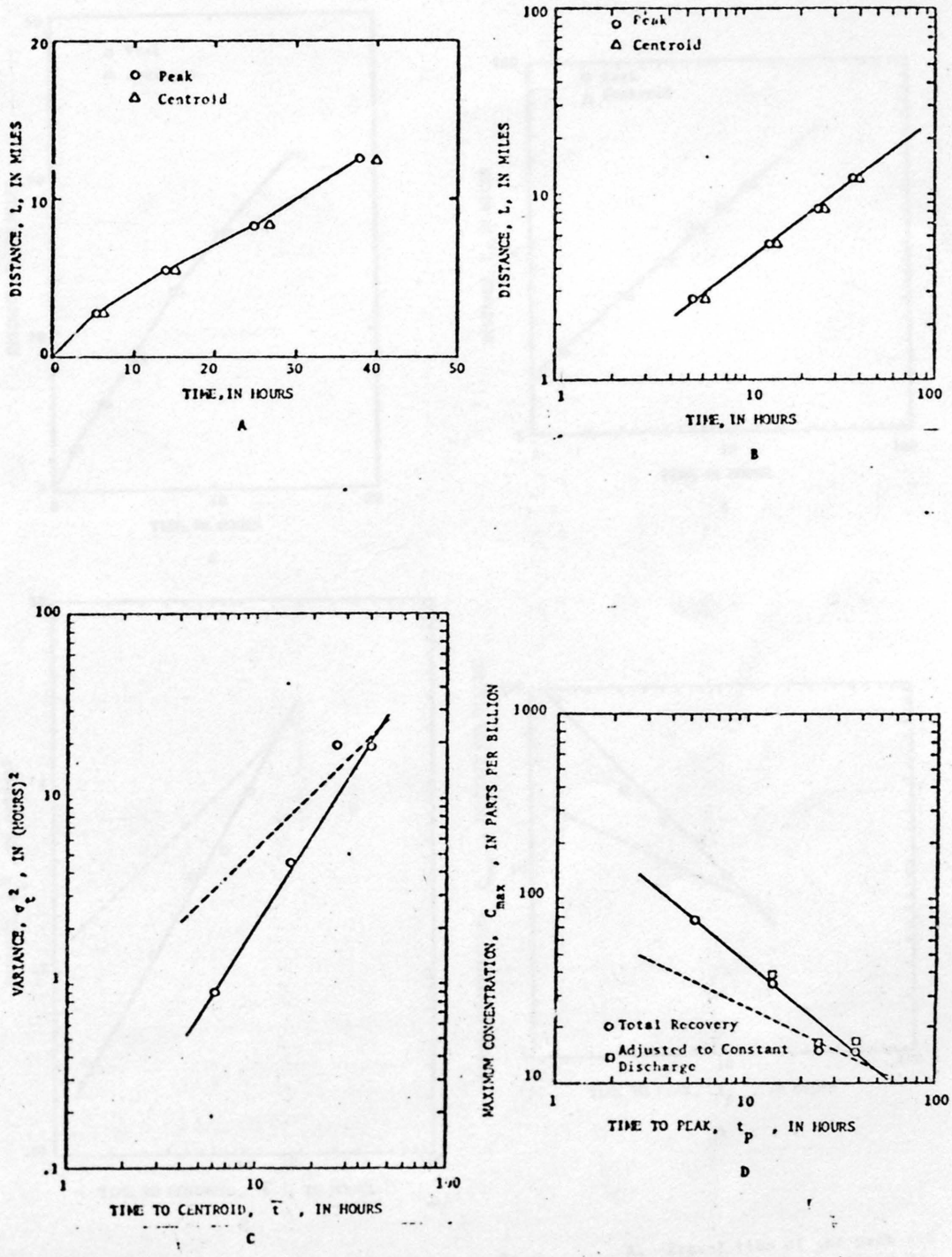


Figure 18.-Dispersion data for case 11, Conococheague Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

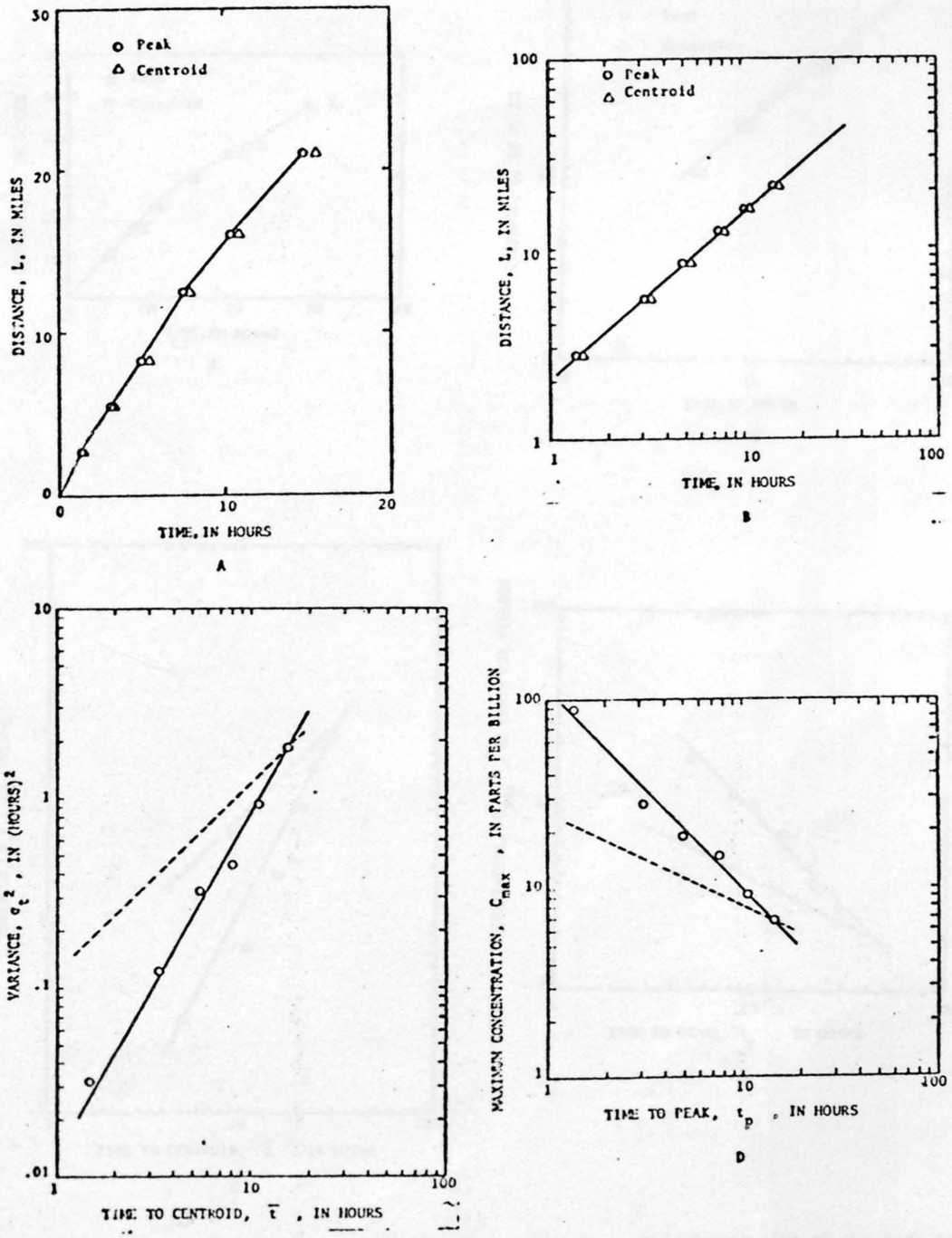
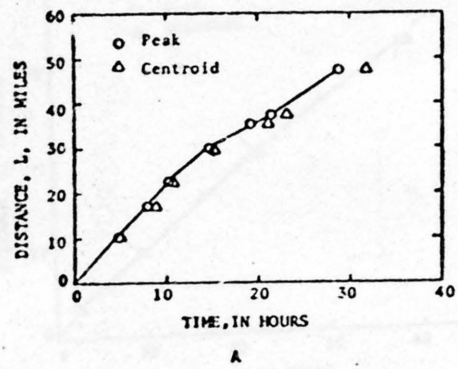
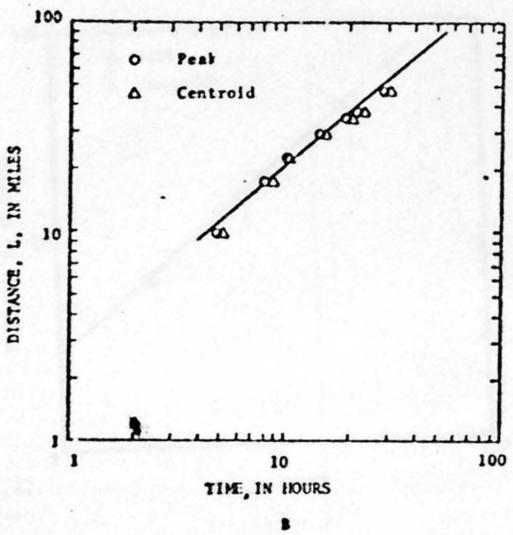
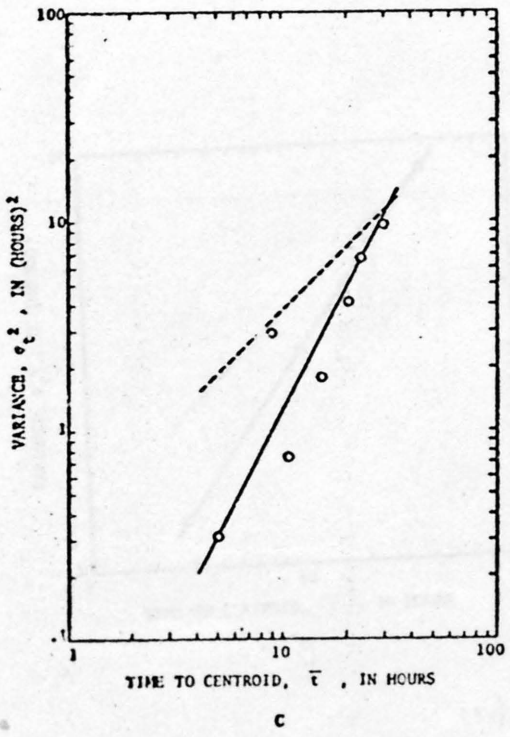


Figure 19.-Dispersion data for case 12, Conococheague Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







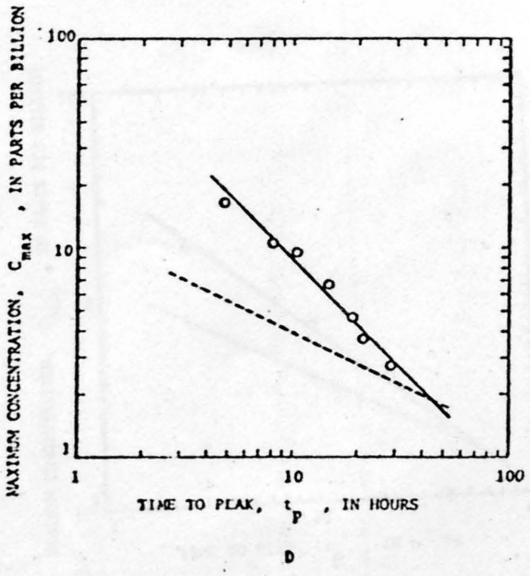


Figure 20.-Dispersion data for case 13, Chattahoochee River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

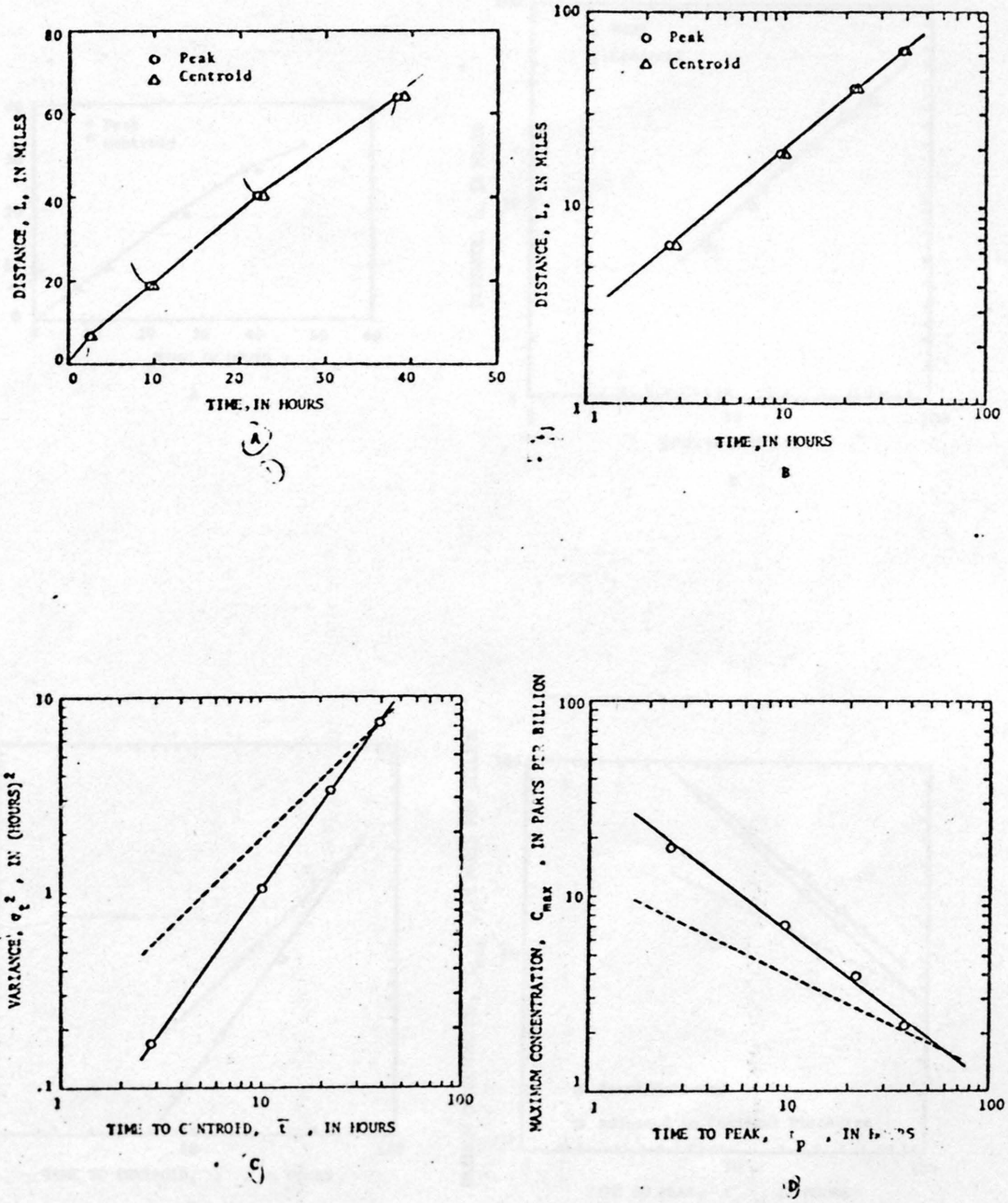
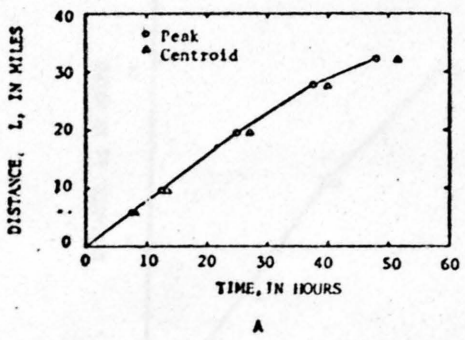
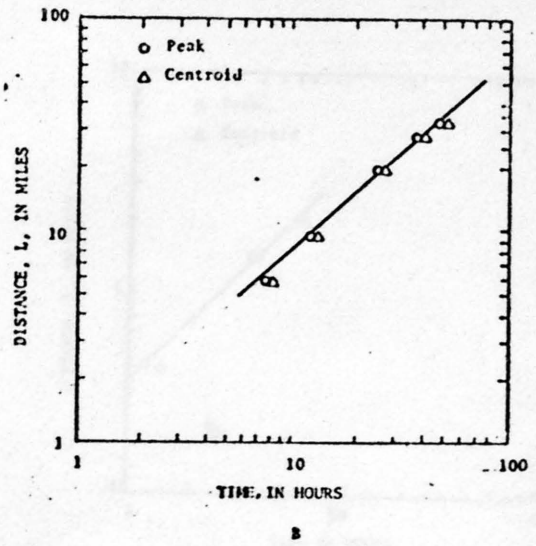
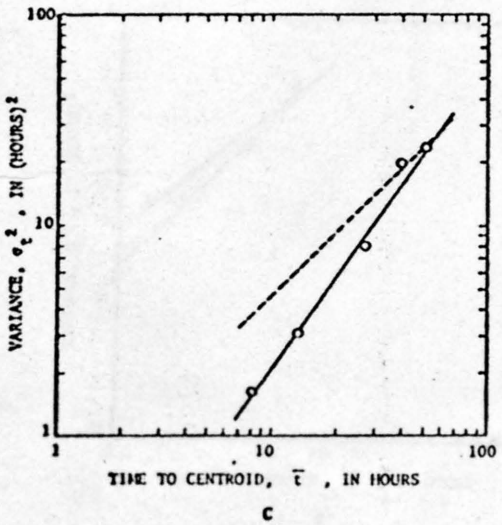


Figure 21.-Dispersion data for case 14, Chattahoochee River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







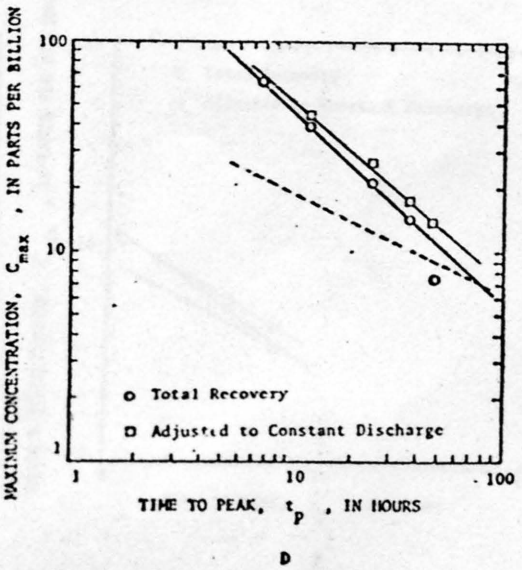


Figure 22.-Dispersion data for case 15, Salt Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

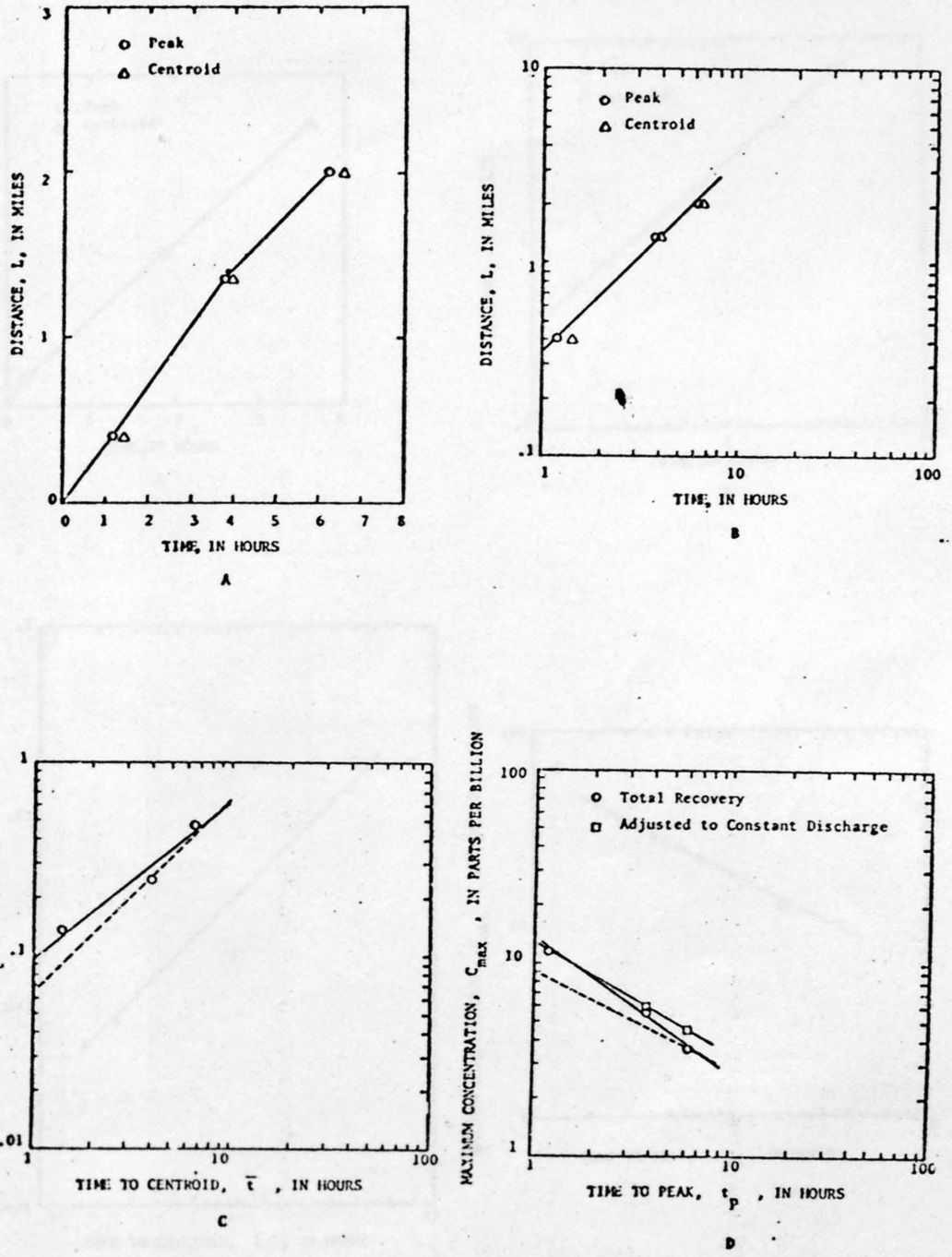


Figure 23.-Dispersion data for case 16, Difficult Run. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

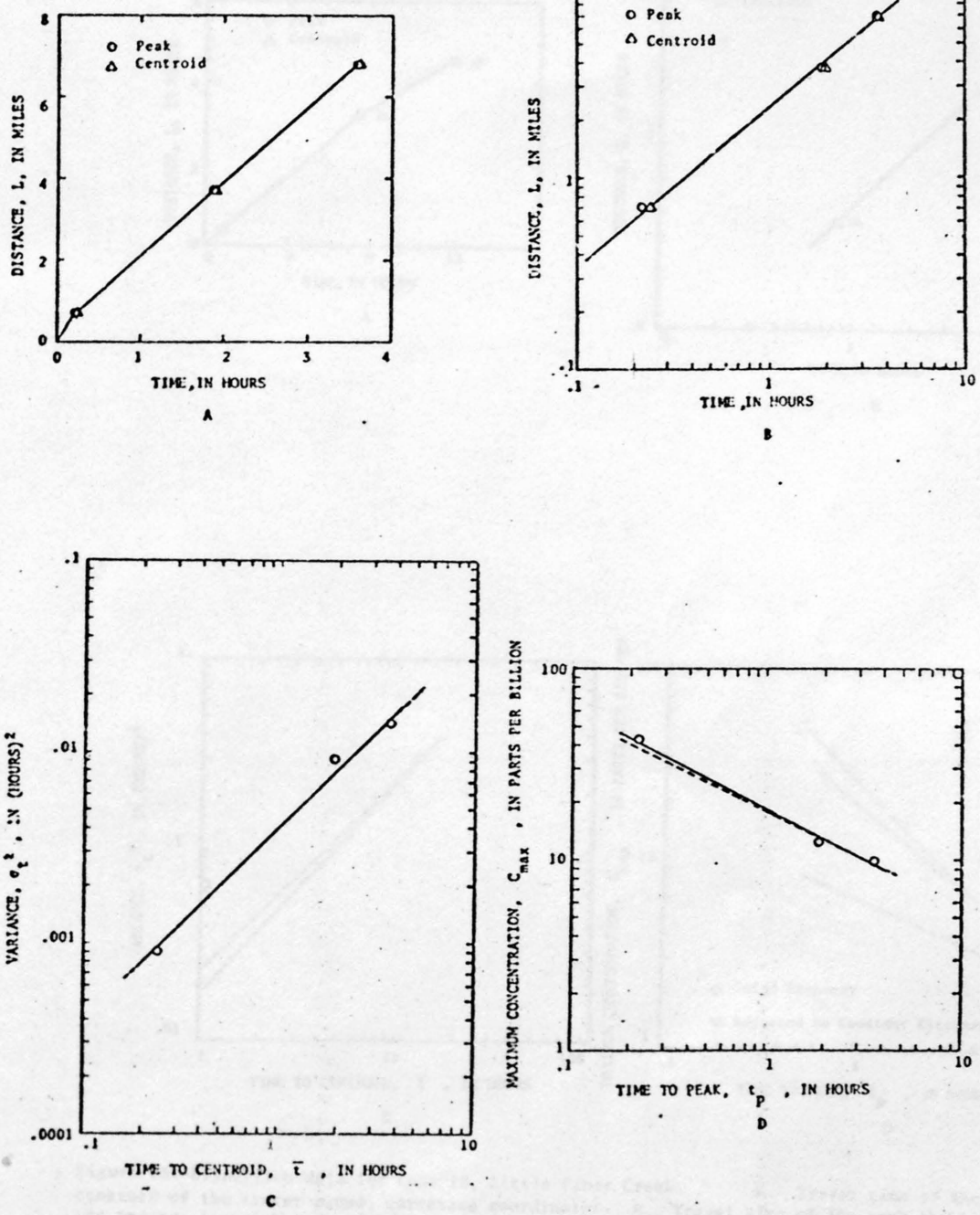
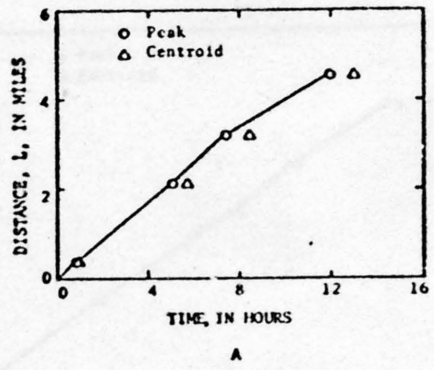
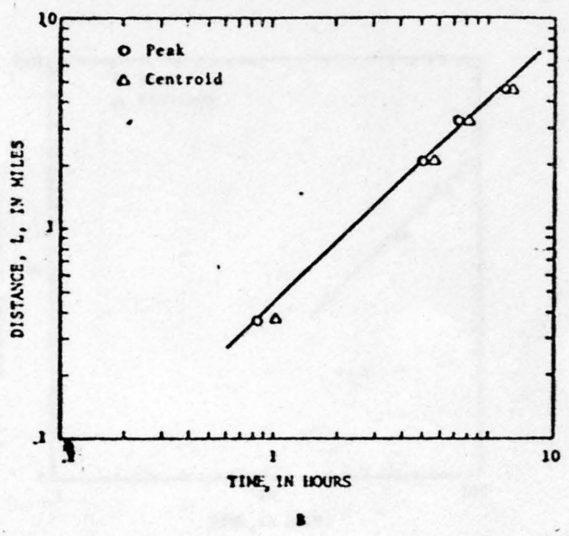
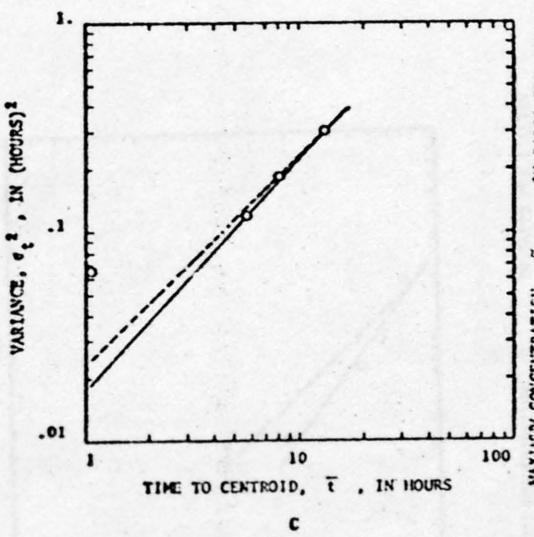


Figure 24.-Dispersion data for case 17, Bear Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







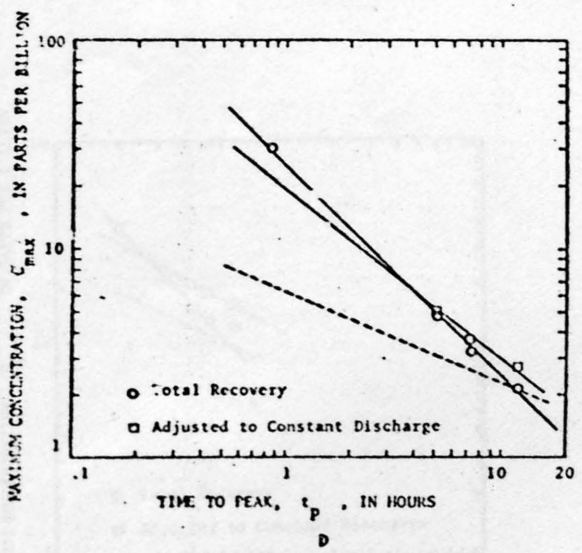


Figure 25.-Dispersion data for case 18, Little Piney Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

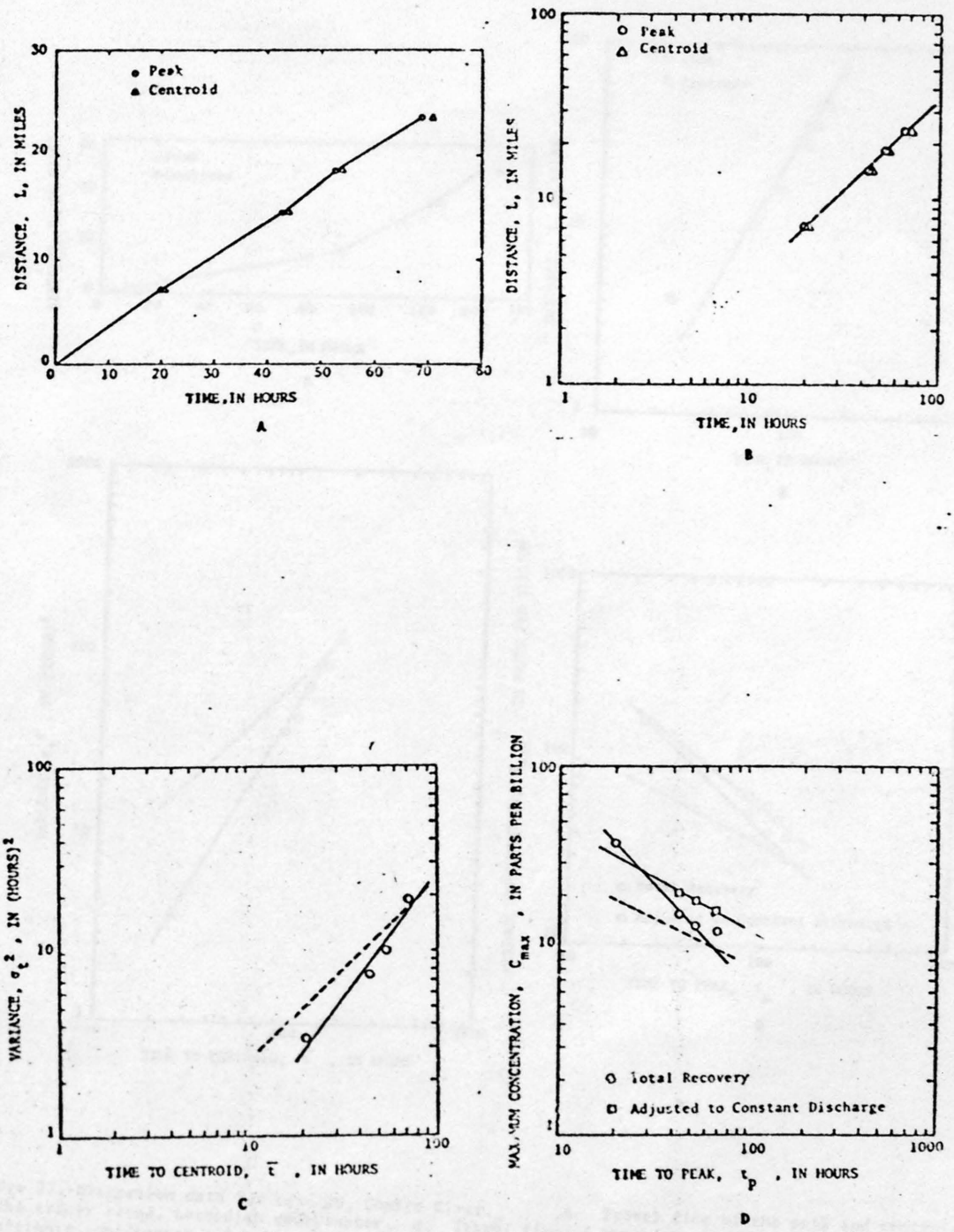


Figure 26.-Dispersion data for case 19, Bayou Anacoco. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

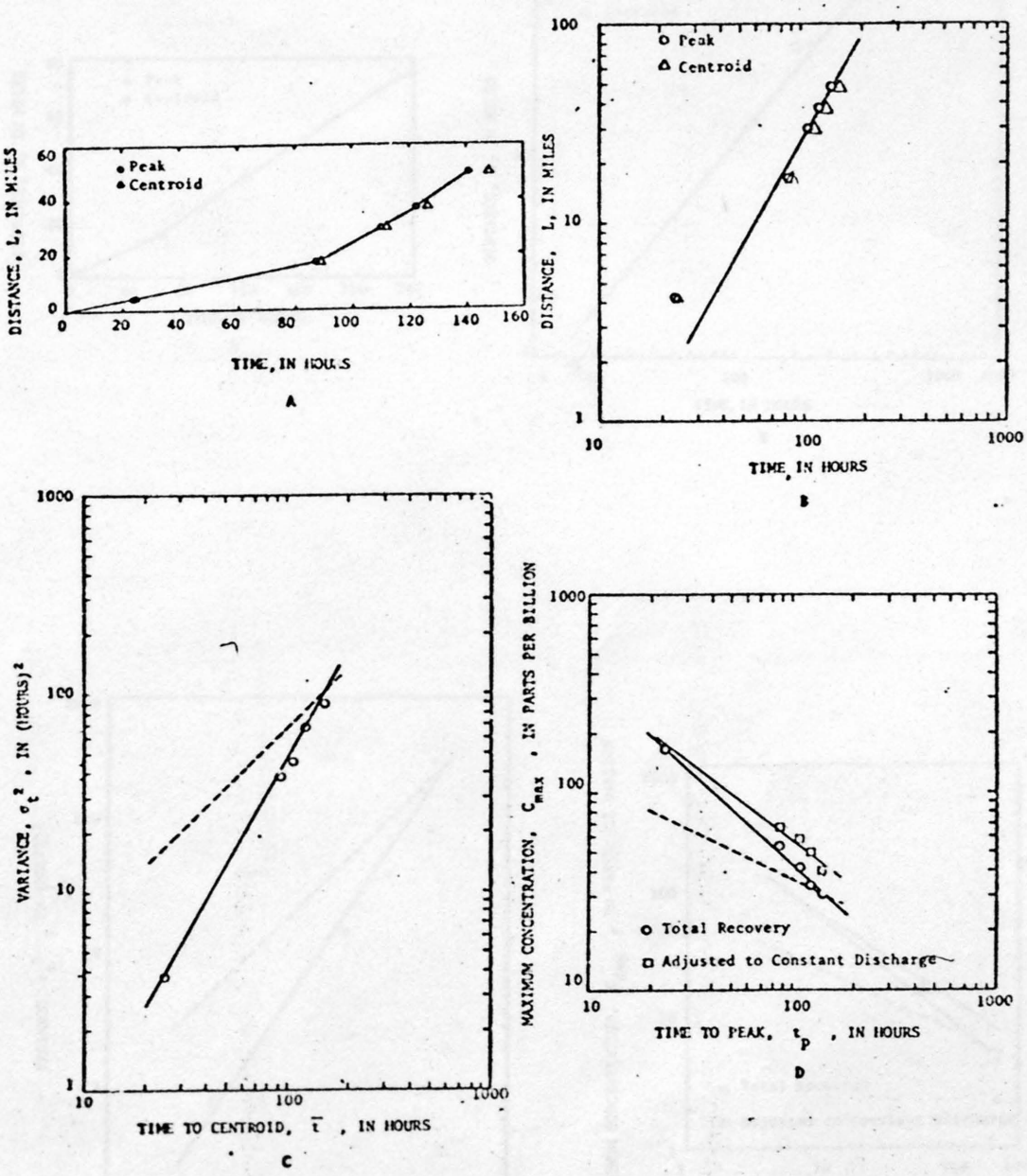


Figure 27.-Dispersion data for case 20, Comite River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

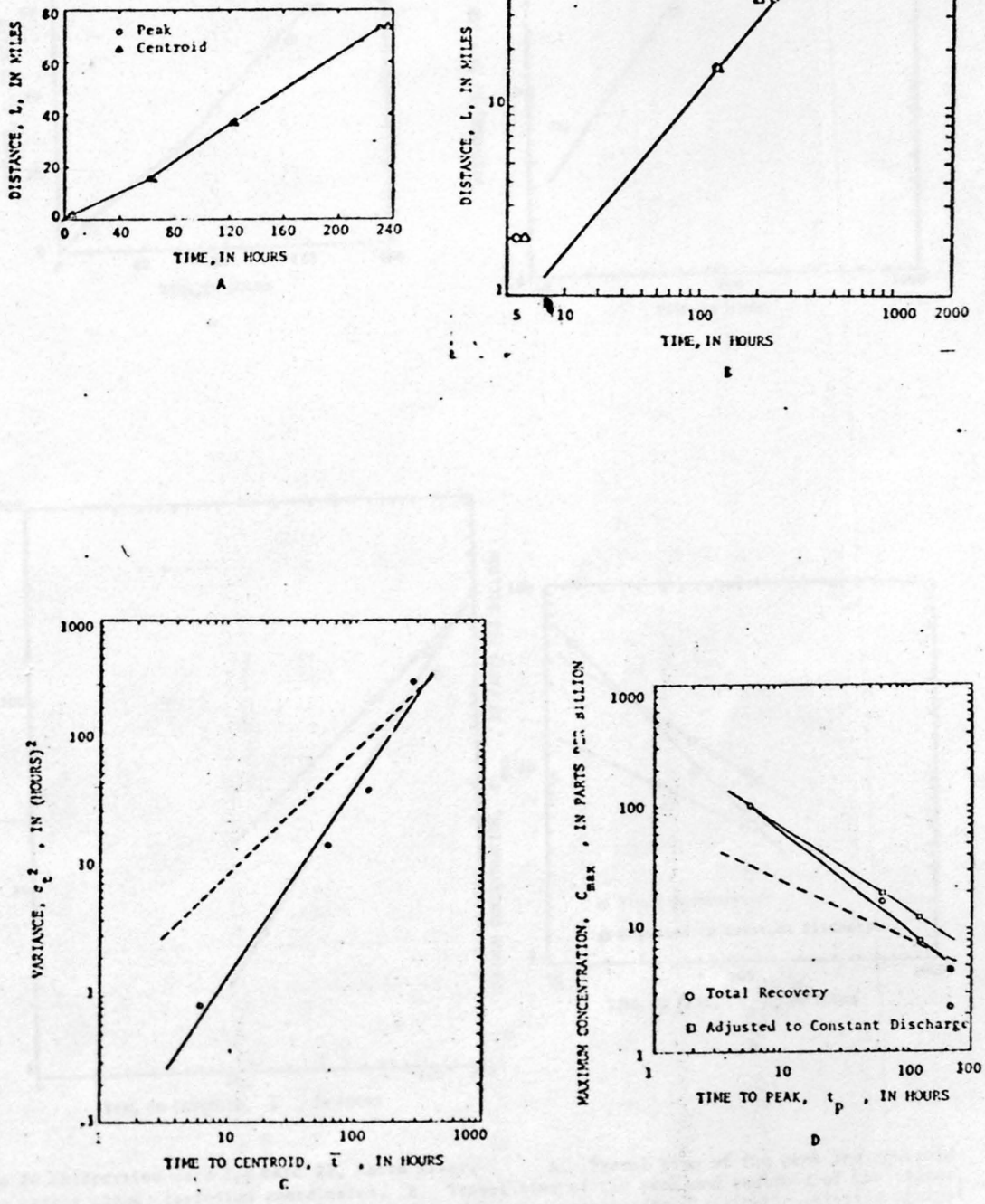


Figure 28.-Dispersion data for case 21, Bayou Bartholomew. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak.
The dashed line indicates the slope for the relation for a Fickian process.

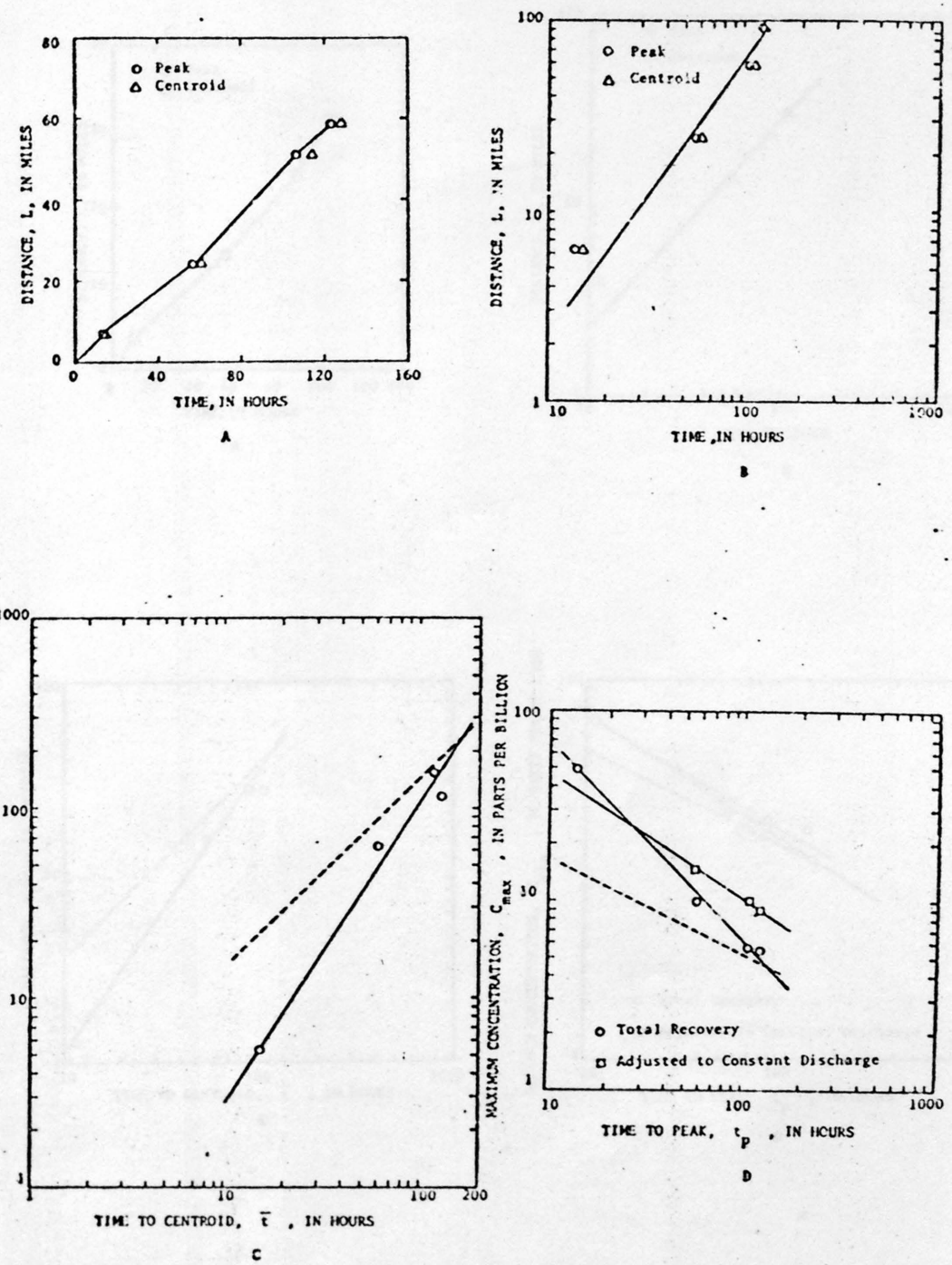
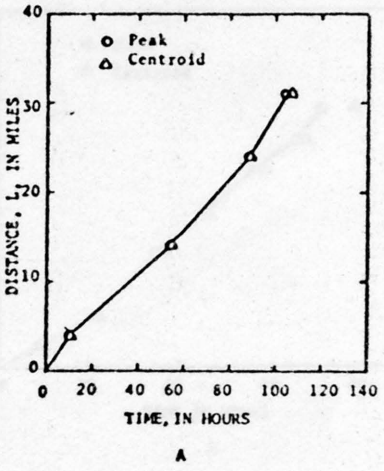
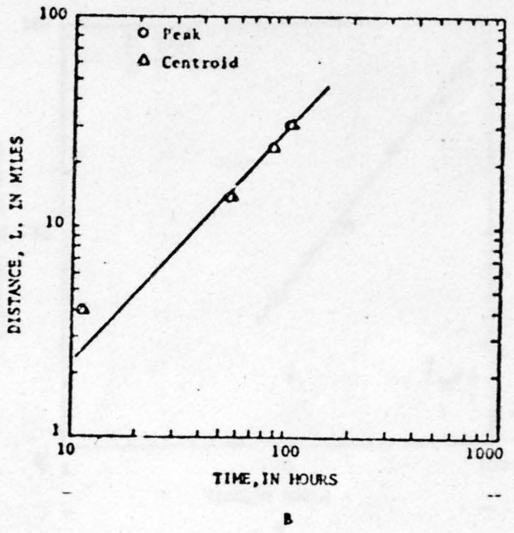
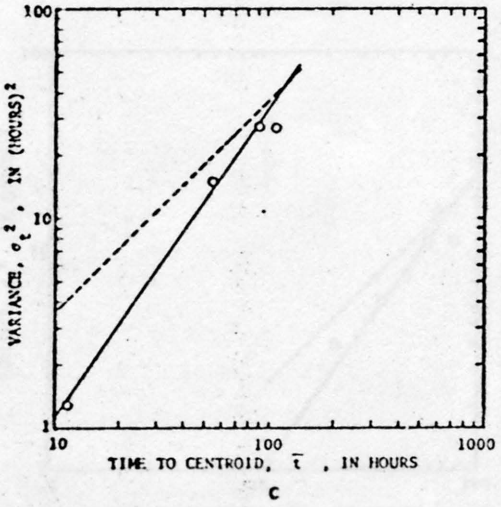


Figure 29.-Dispersion data for case 22, Amite River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







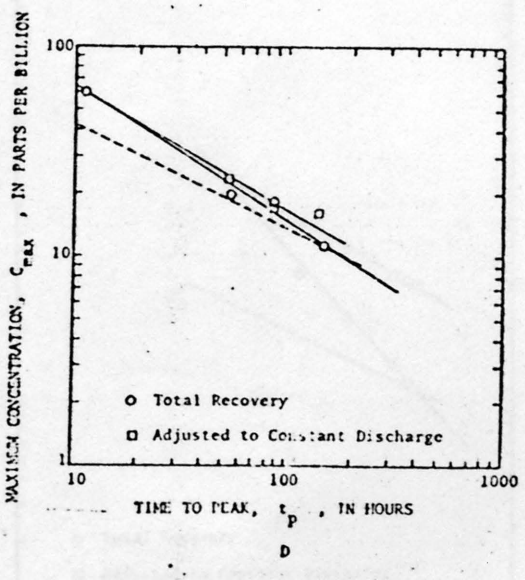


Figure 30.-Dispersion data for case 23, Tickfau River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

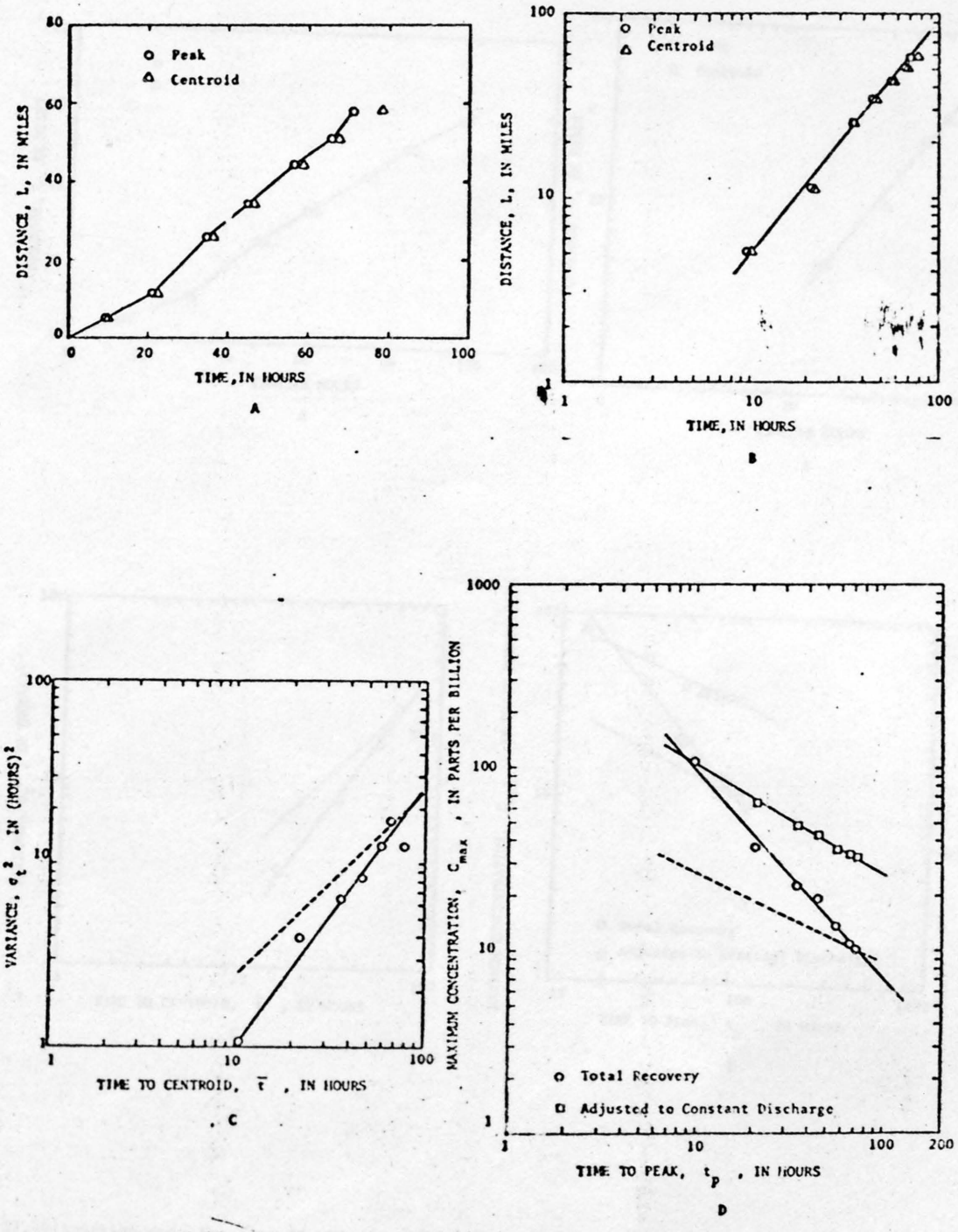


Figure 31.-Dispersion data for case 24, Tangipahoa River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

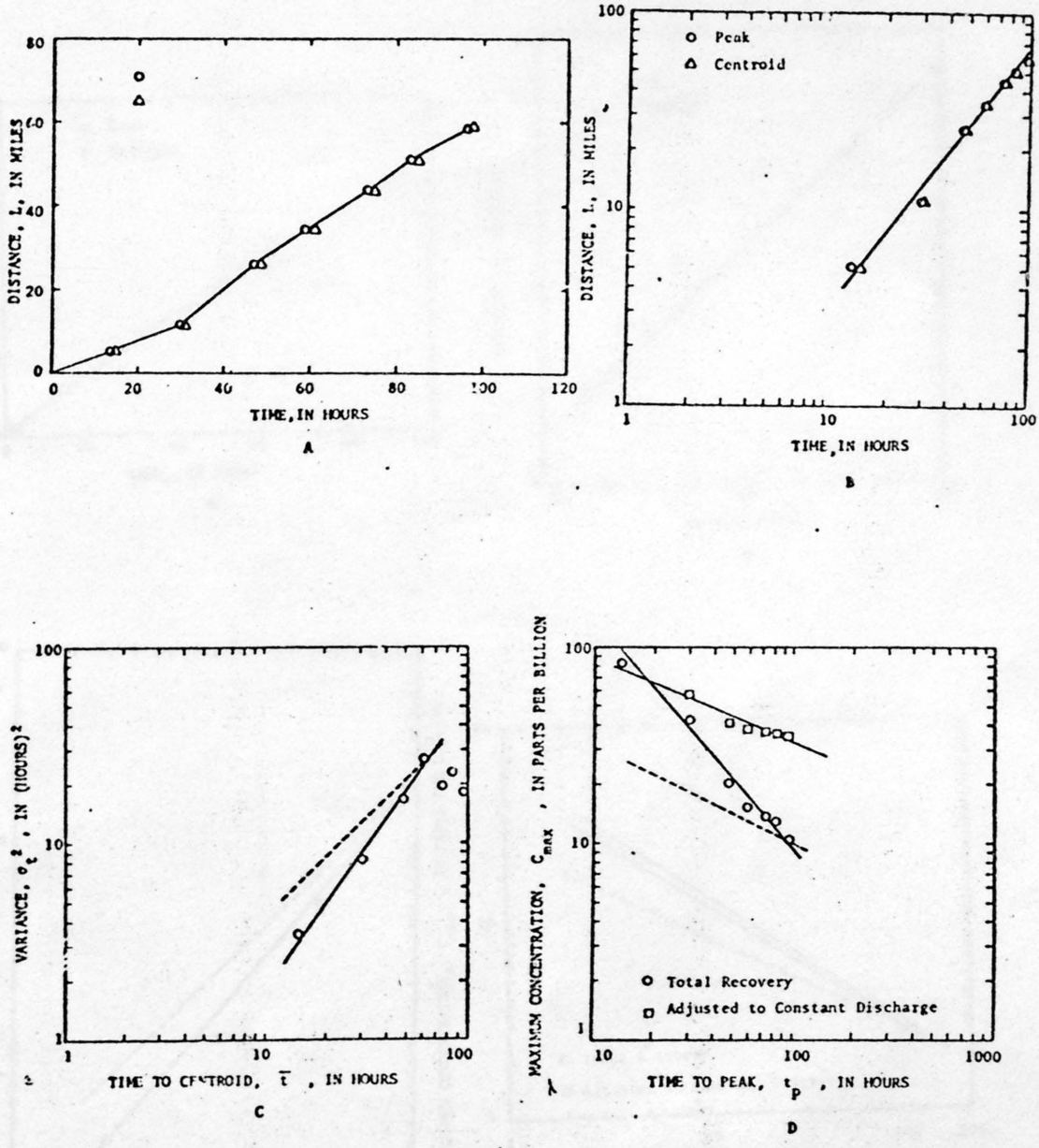
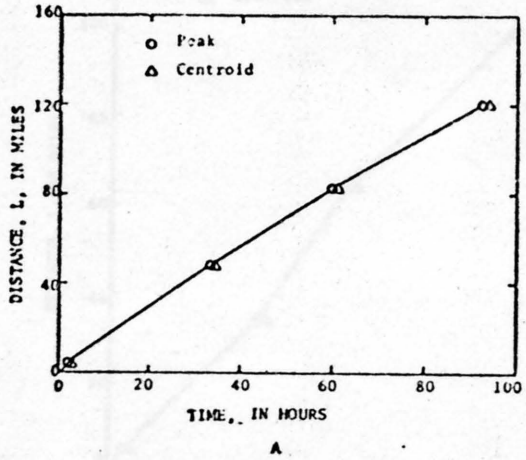
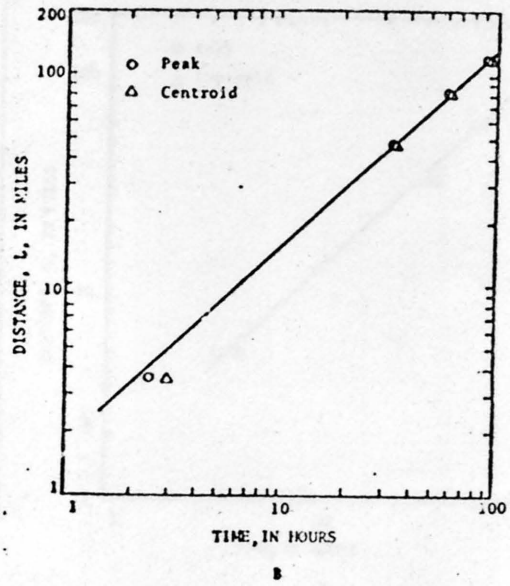
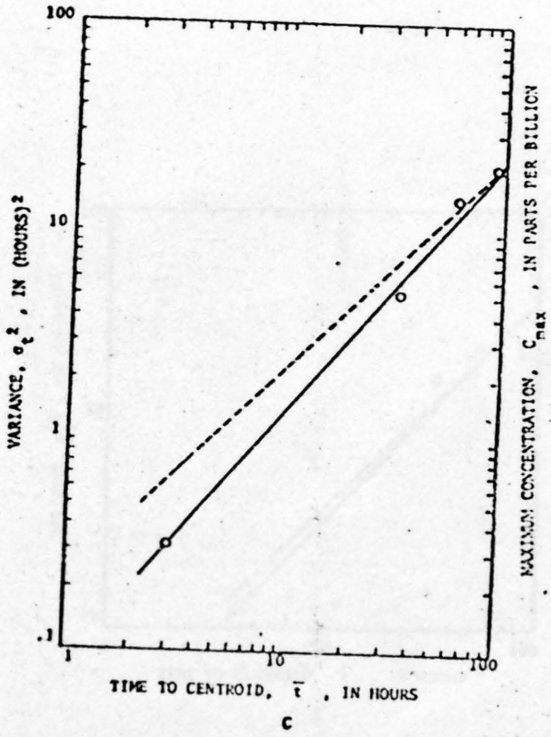


Figure 32.-Dispersion data for case 25, Tangipahoa River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak.
The dashed line indicates the slope for the relation for a Fickian process.







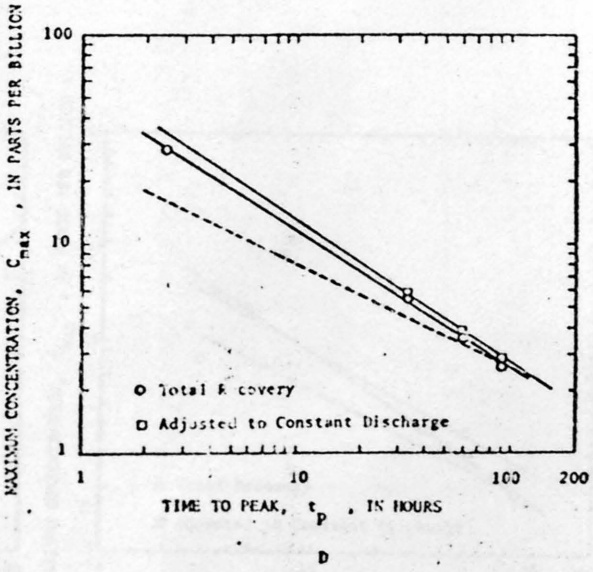


Figure 33.-Dispersion data for case 26, Red River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

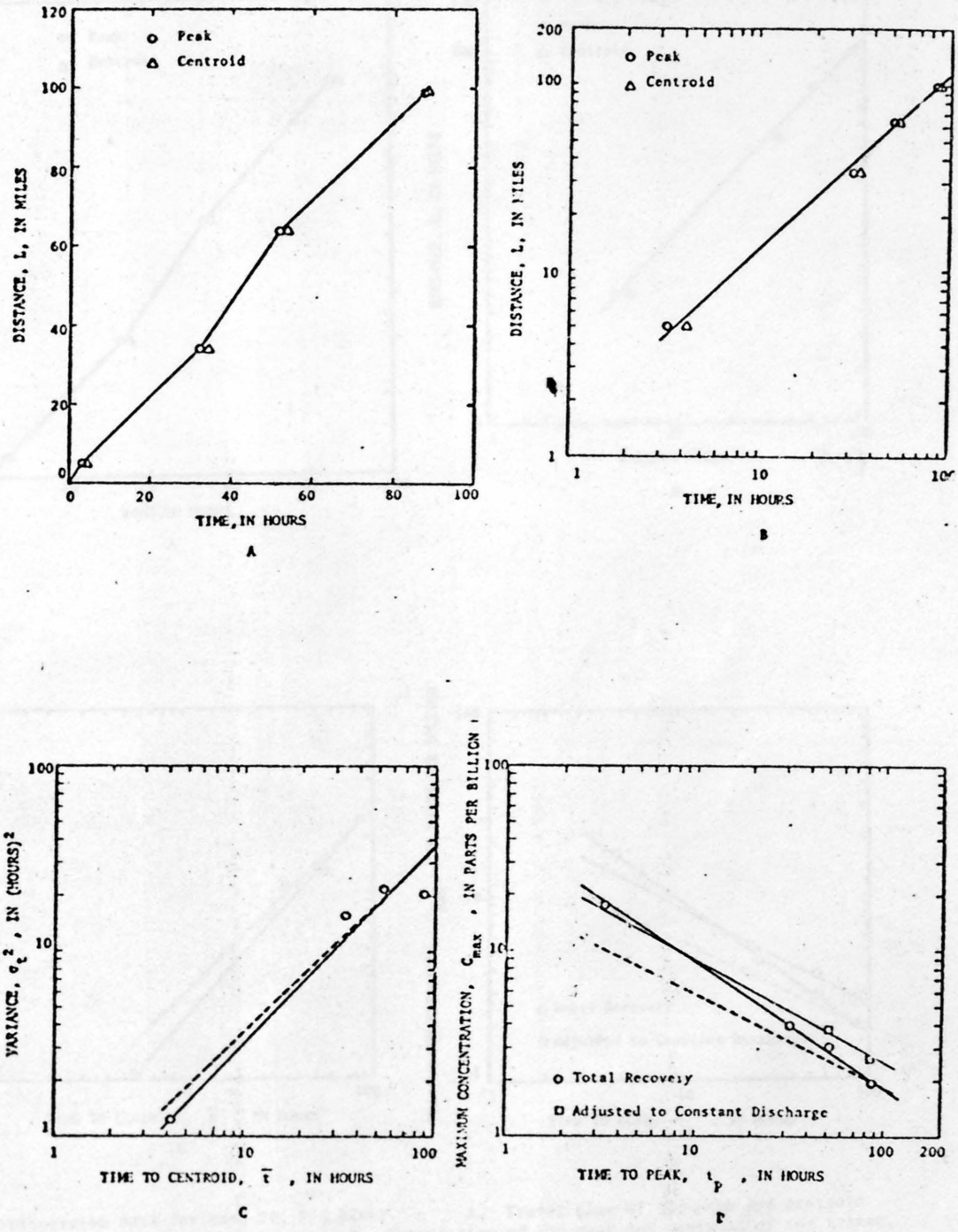


Figure 34.-Disperaion data for case 27, Red River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration disbribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

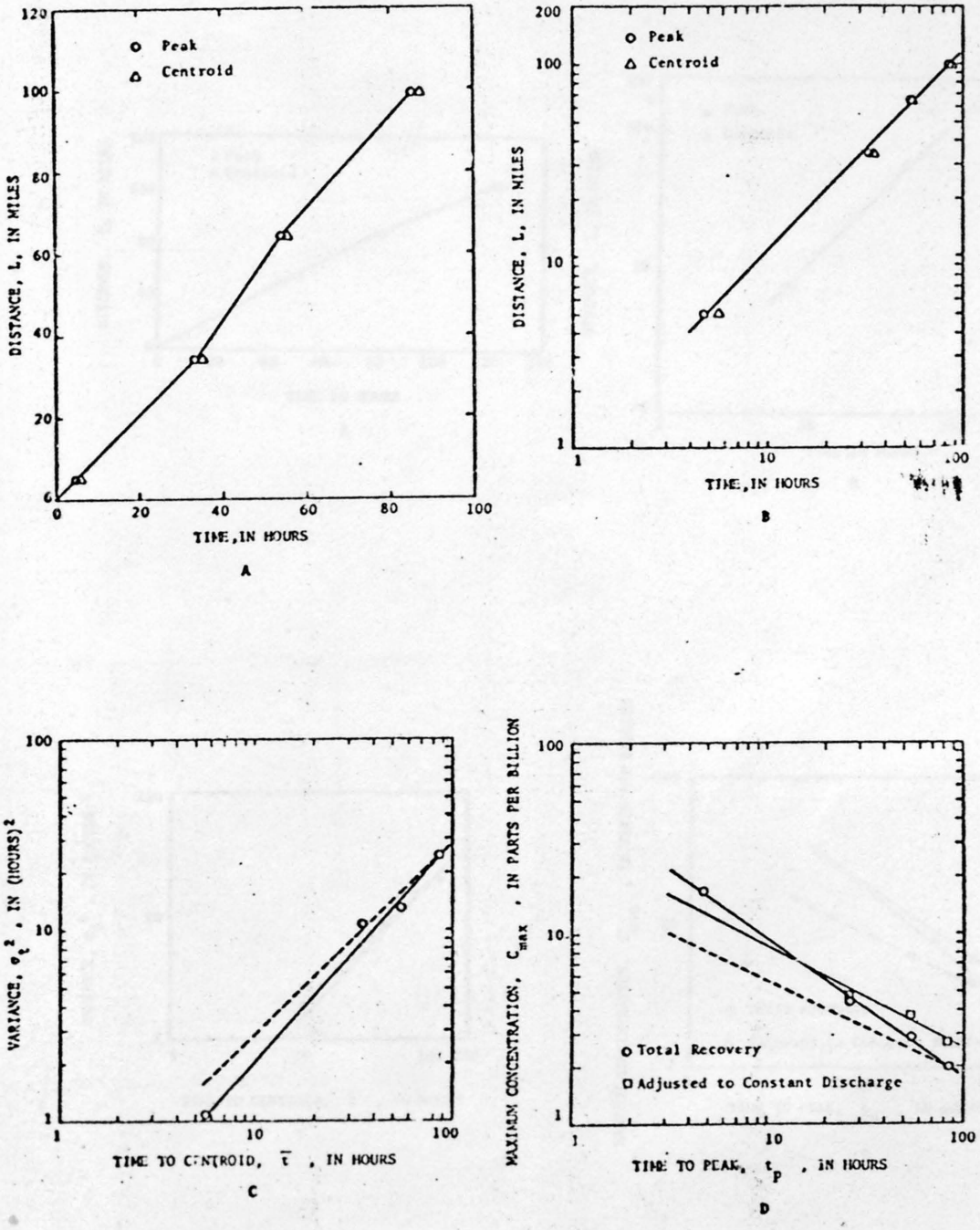
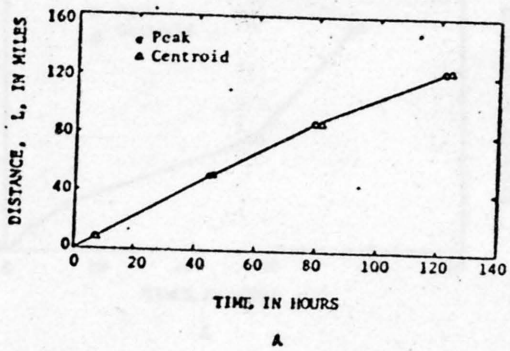
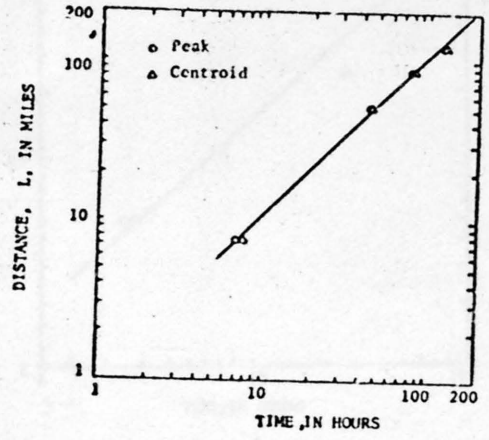


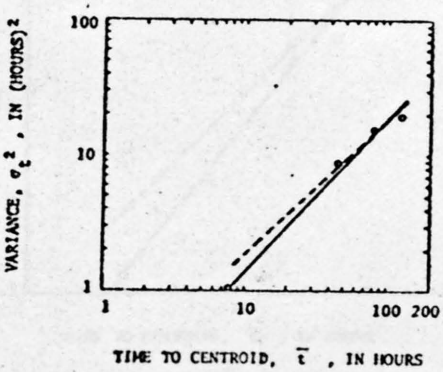
Figure 35.-Dispersion data for case 28, Red River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.



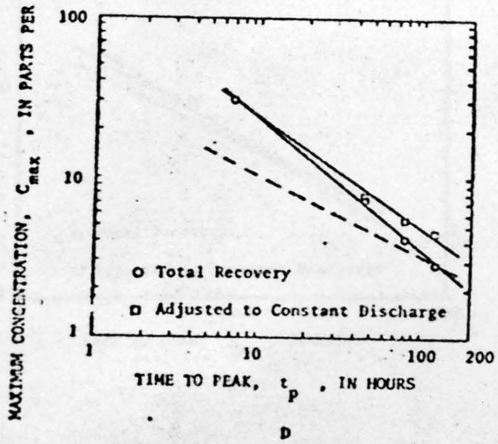
A



B



C



D

Figure 36.-Dispersion data for case 29, Red River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

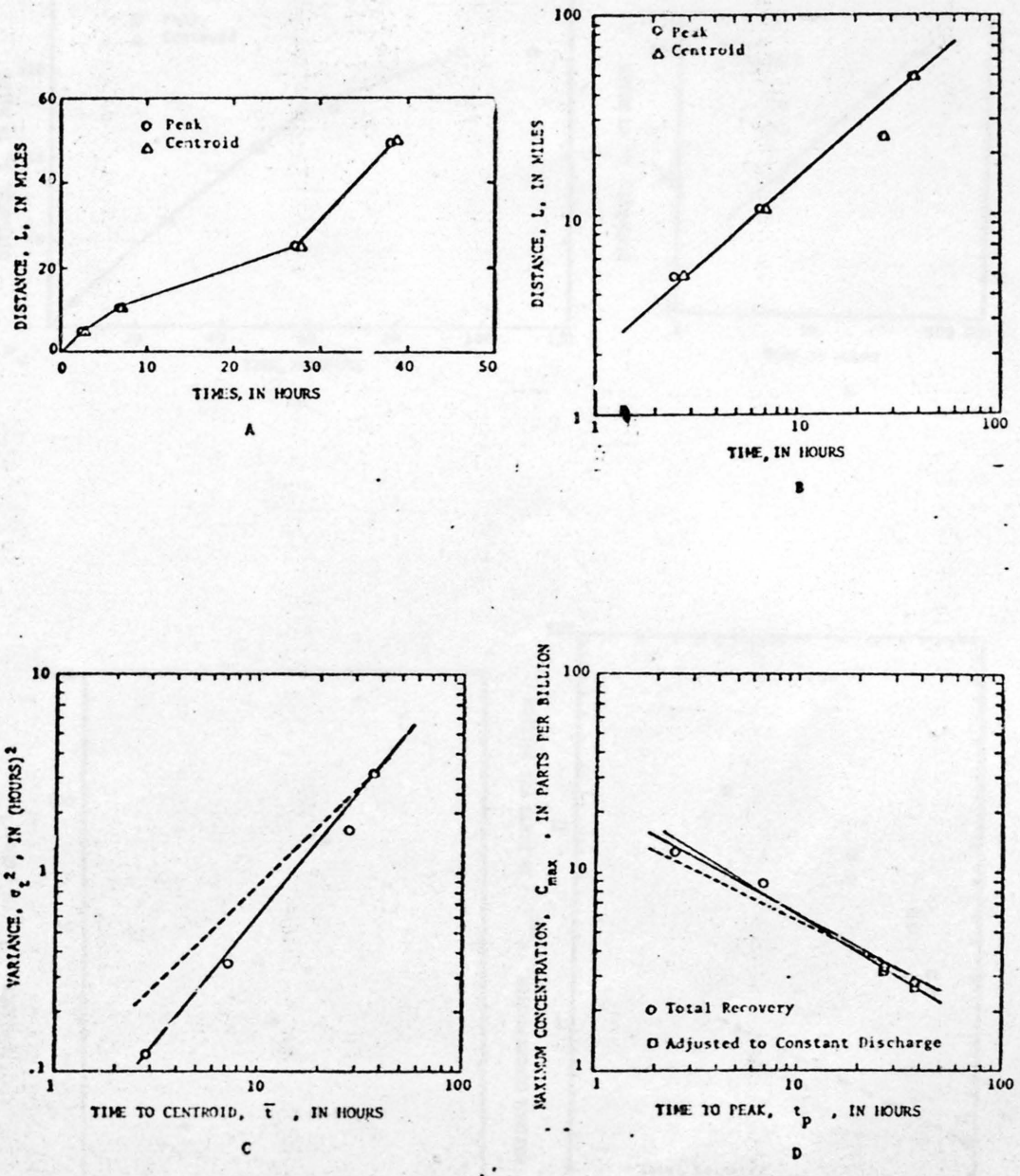


Figure 37.-Dispersion data for case 30, Sabine River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

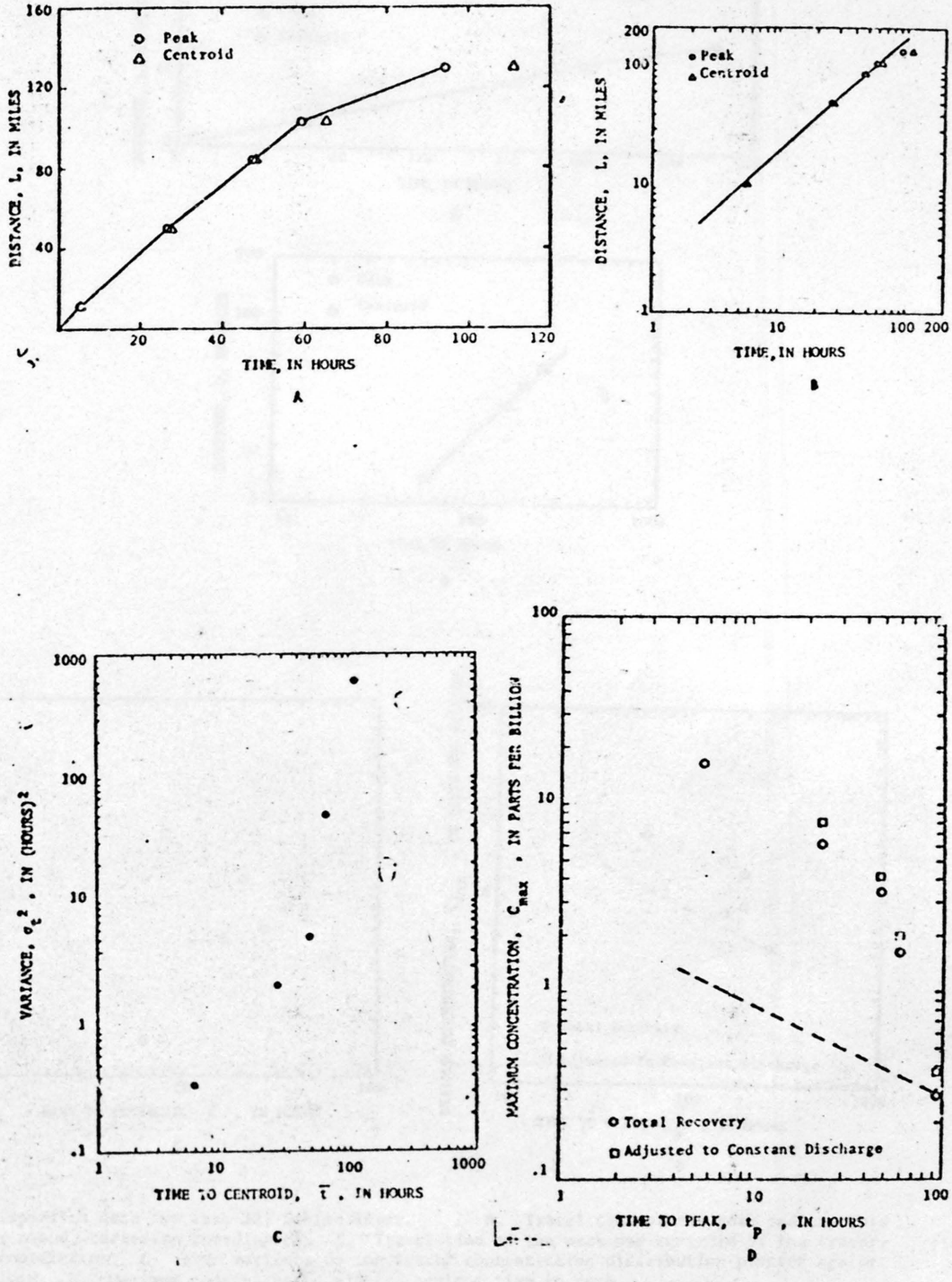
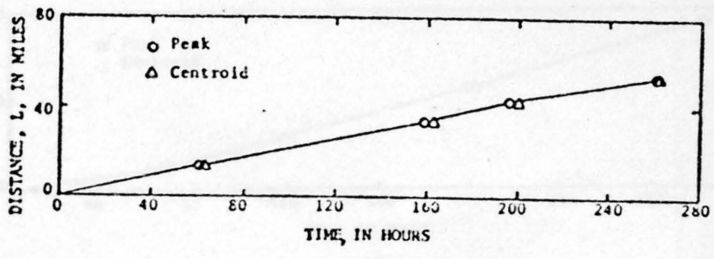
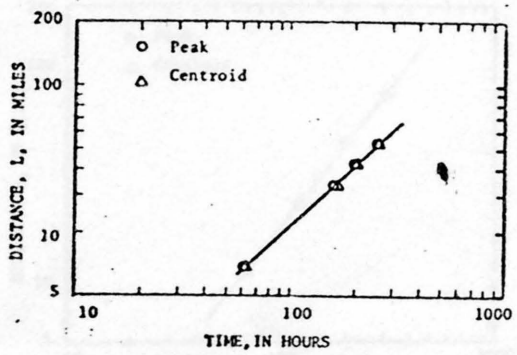


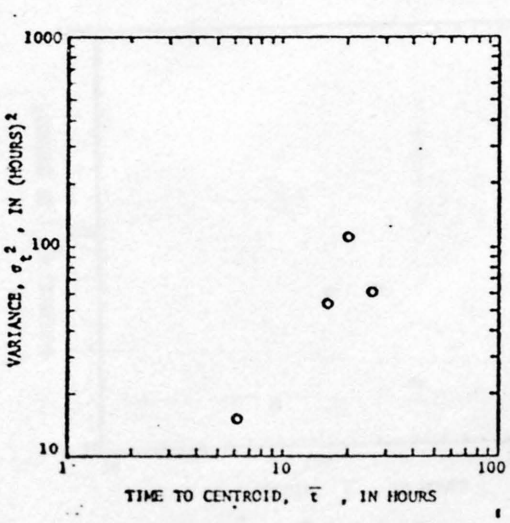
Figure 38.-Dispersion data for case 31, Sabine River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.



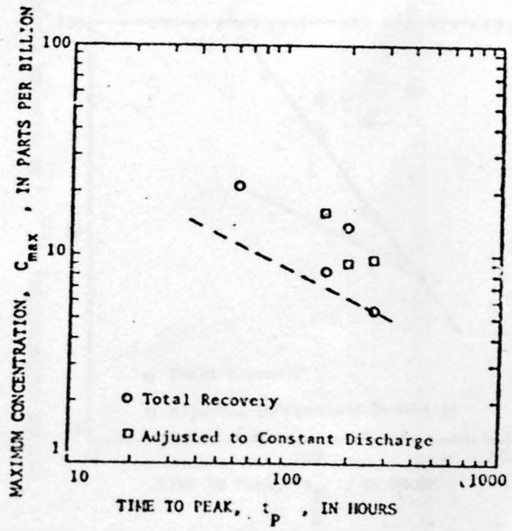
A



B

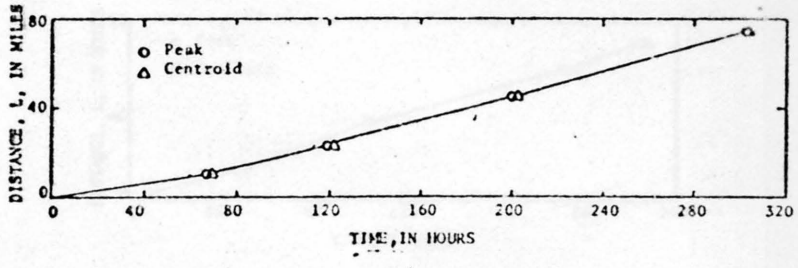


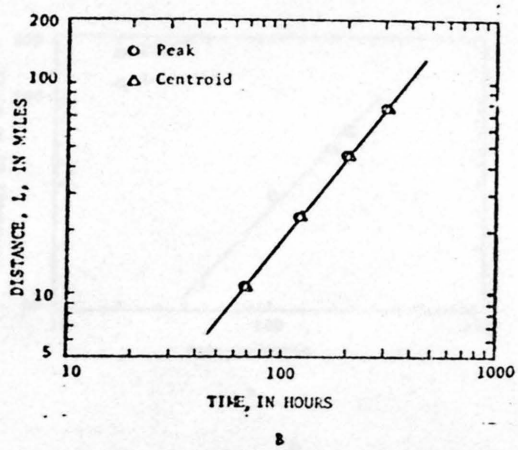
C

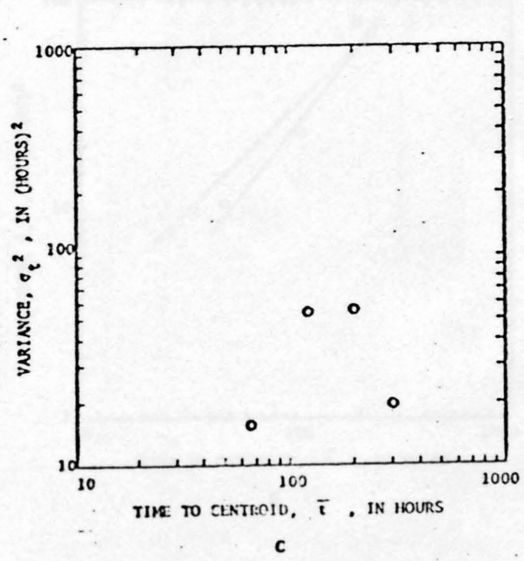


D

Figure 39.-Dispersion data for case 32, Sabine River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







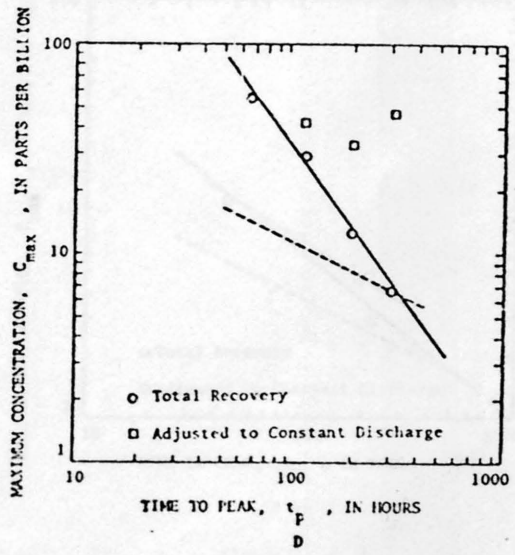
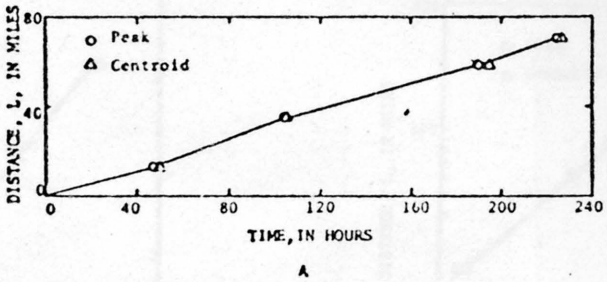
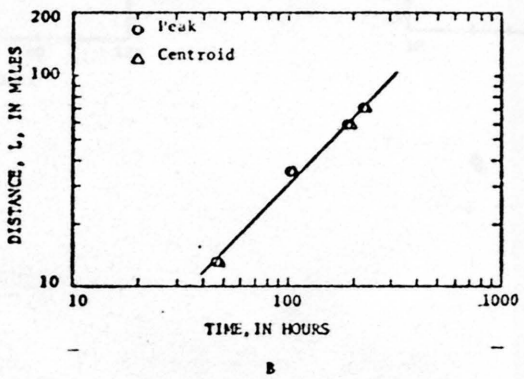


Figure 40.-Dispersion data for case 33, Sabine River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coorinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.





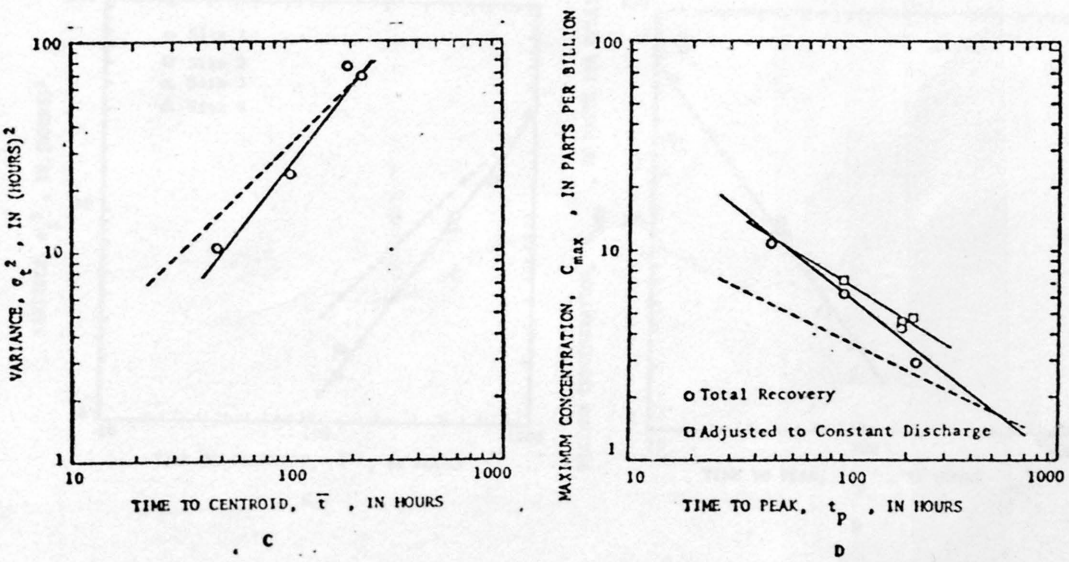
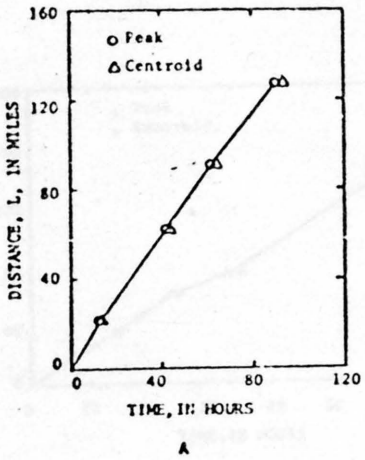
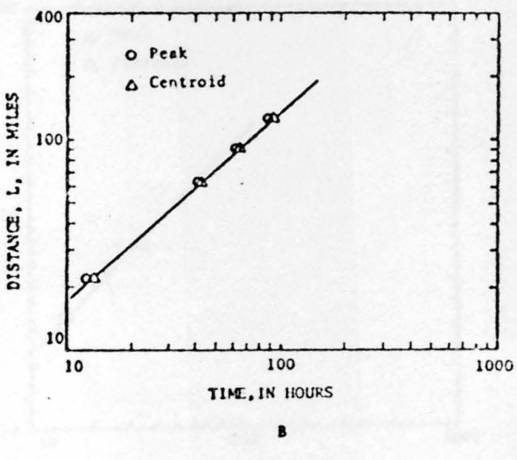
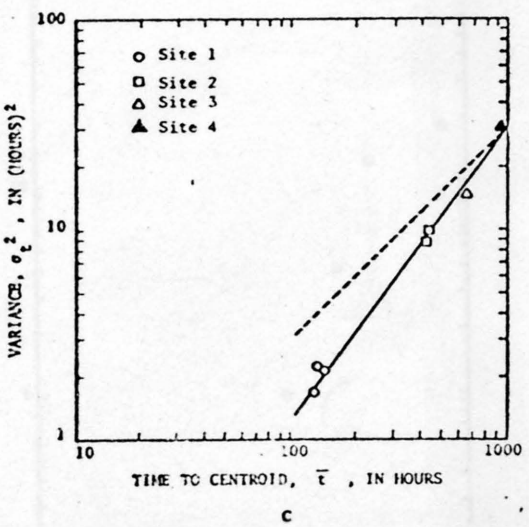


Figure 41.-Dispersion data for case 34, Sabine River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







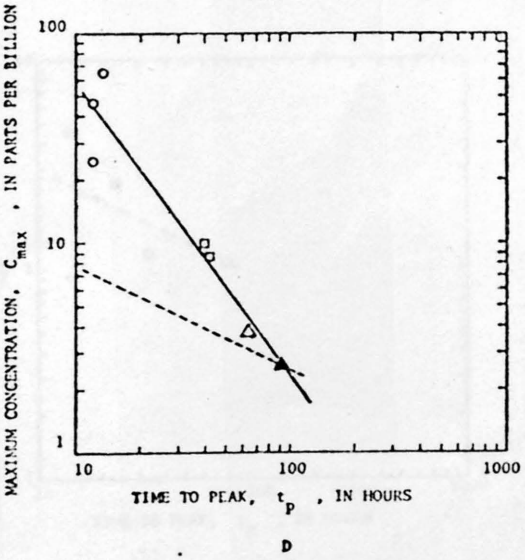


Figure 42.-Dispersion data for case 35, Mississippi River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plottted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

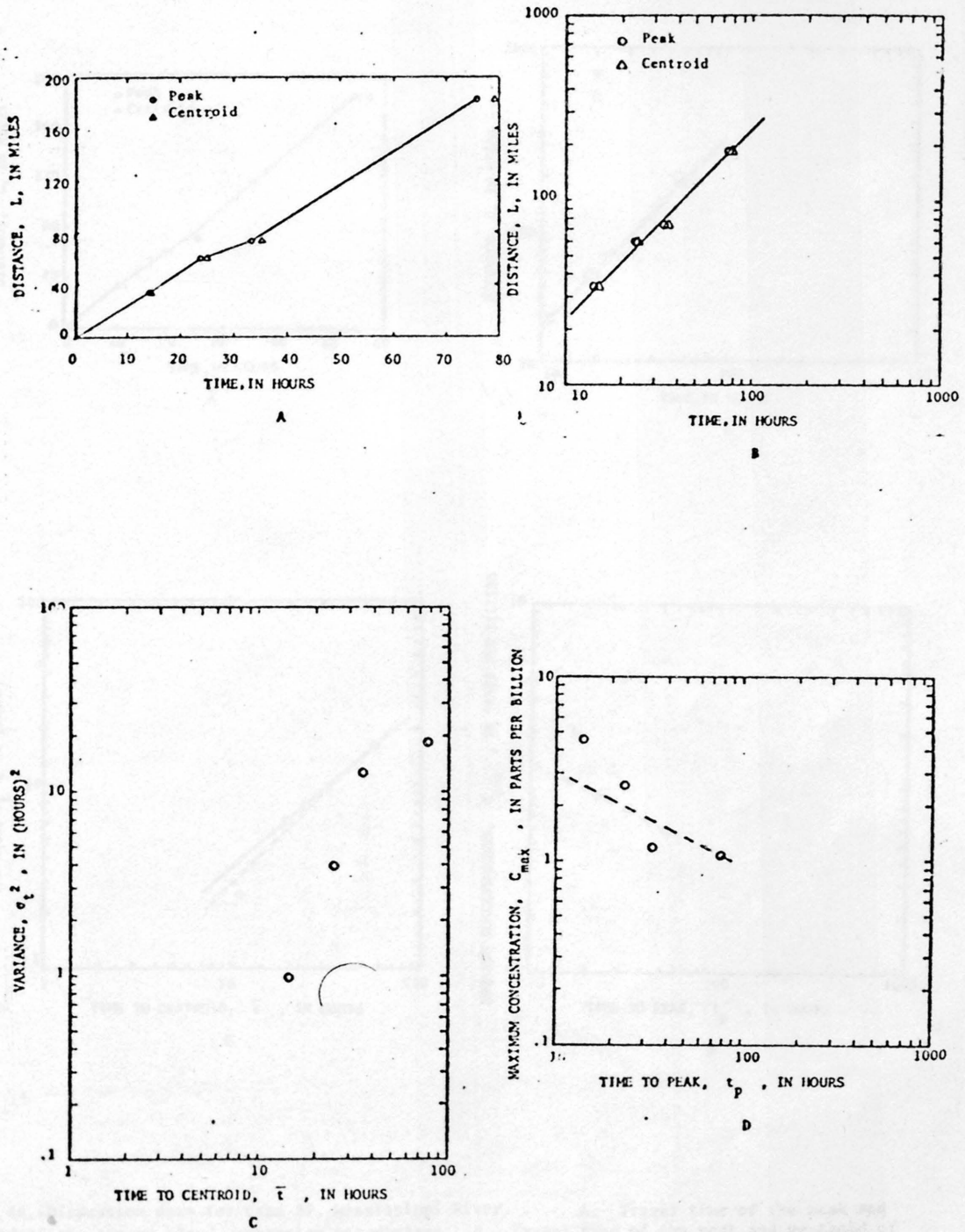


Figure 43.-Dispersion data for case 36, Mississippi River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

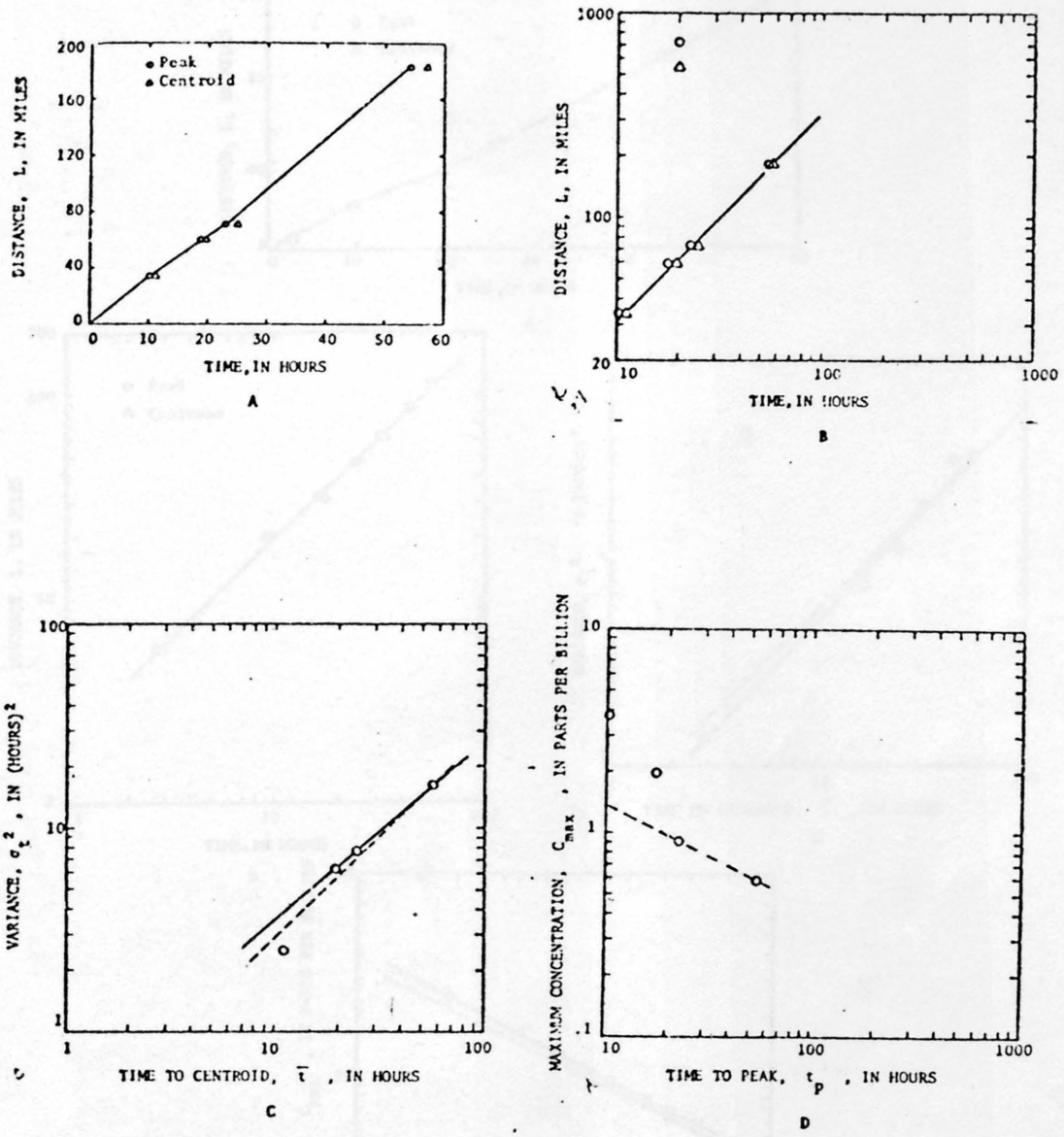
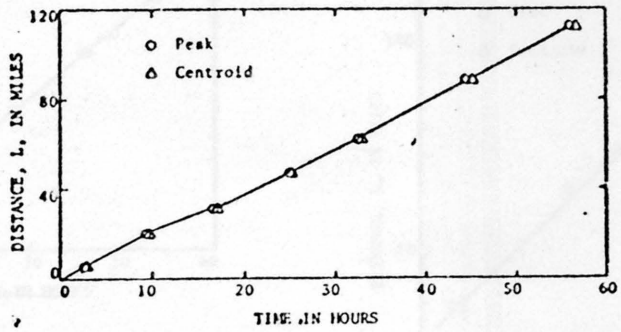
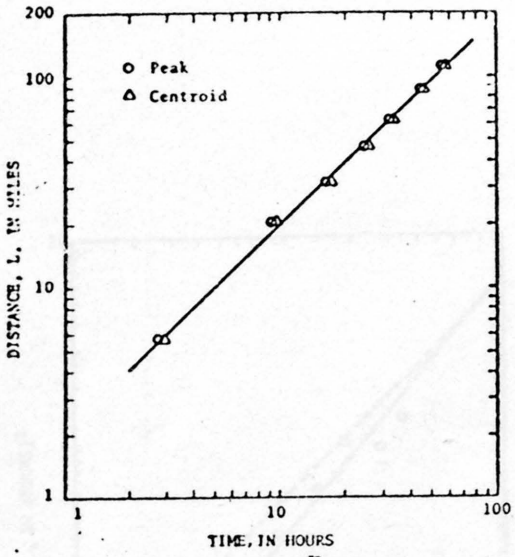
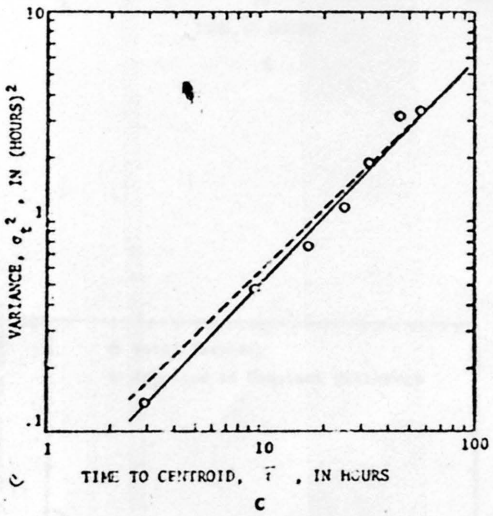


Figure 44.-Dispersion data for case 37, Mississippi River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







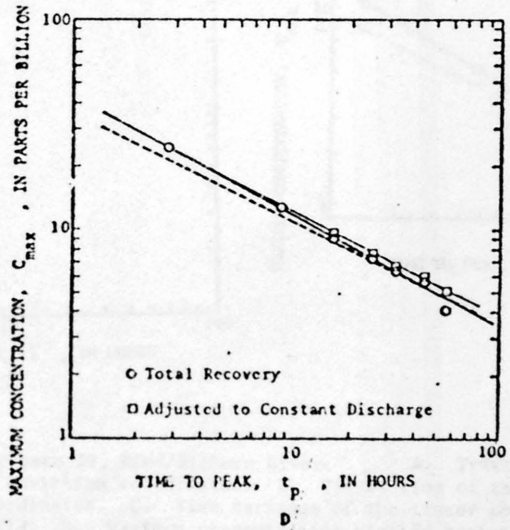


Figure 45.-Dispersion data for case 38, Wind/Bighorn River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

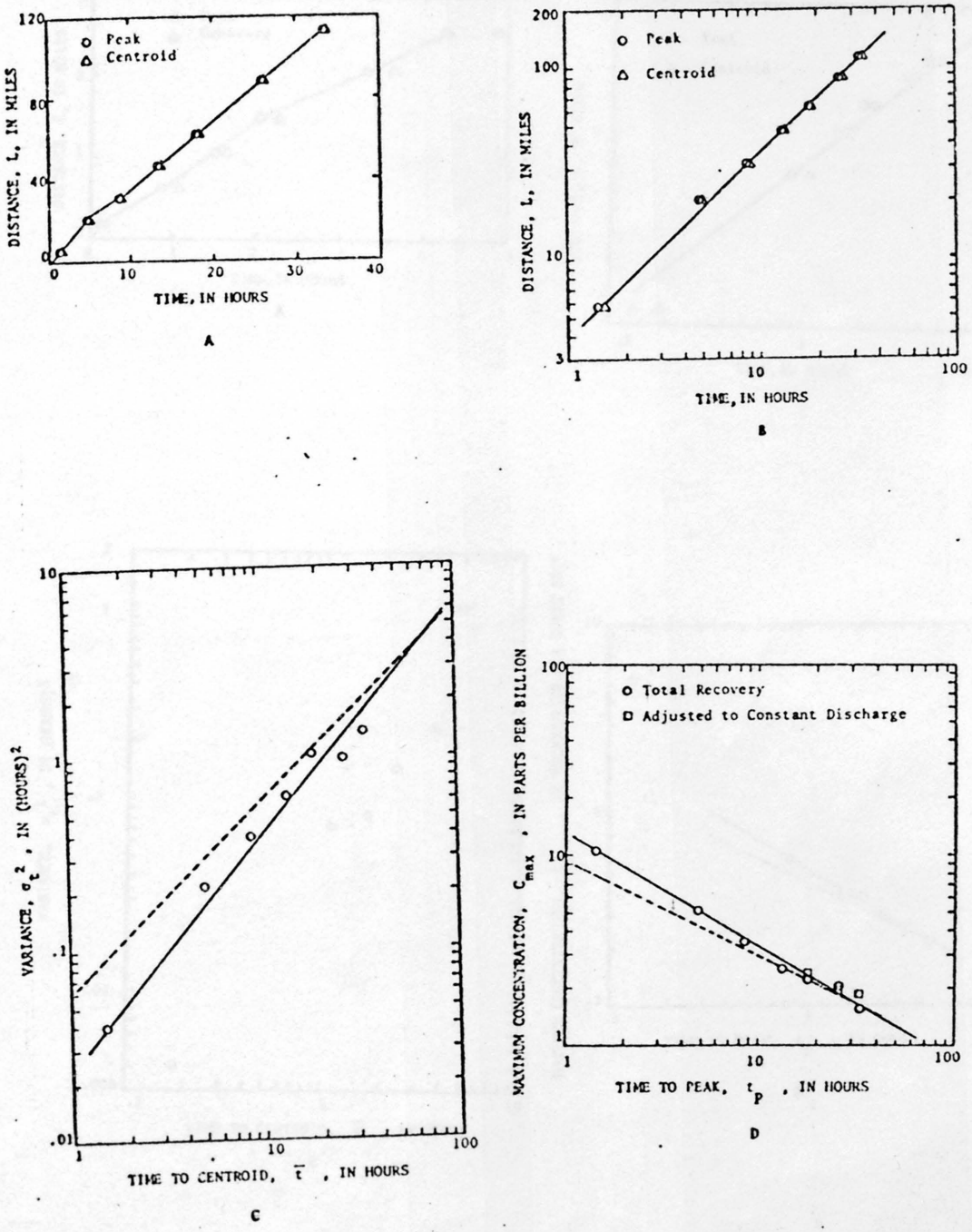


Figure 46.—Dispersion data for case 39, Wind/Bighorn River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

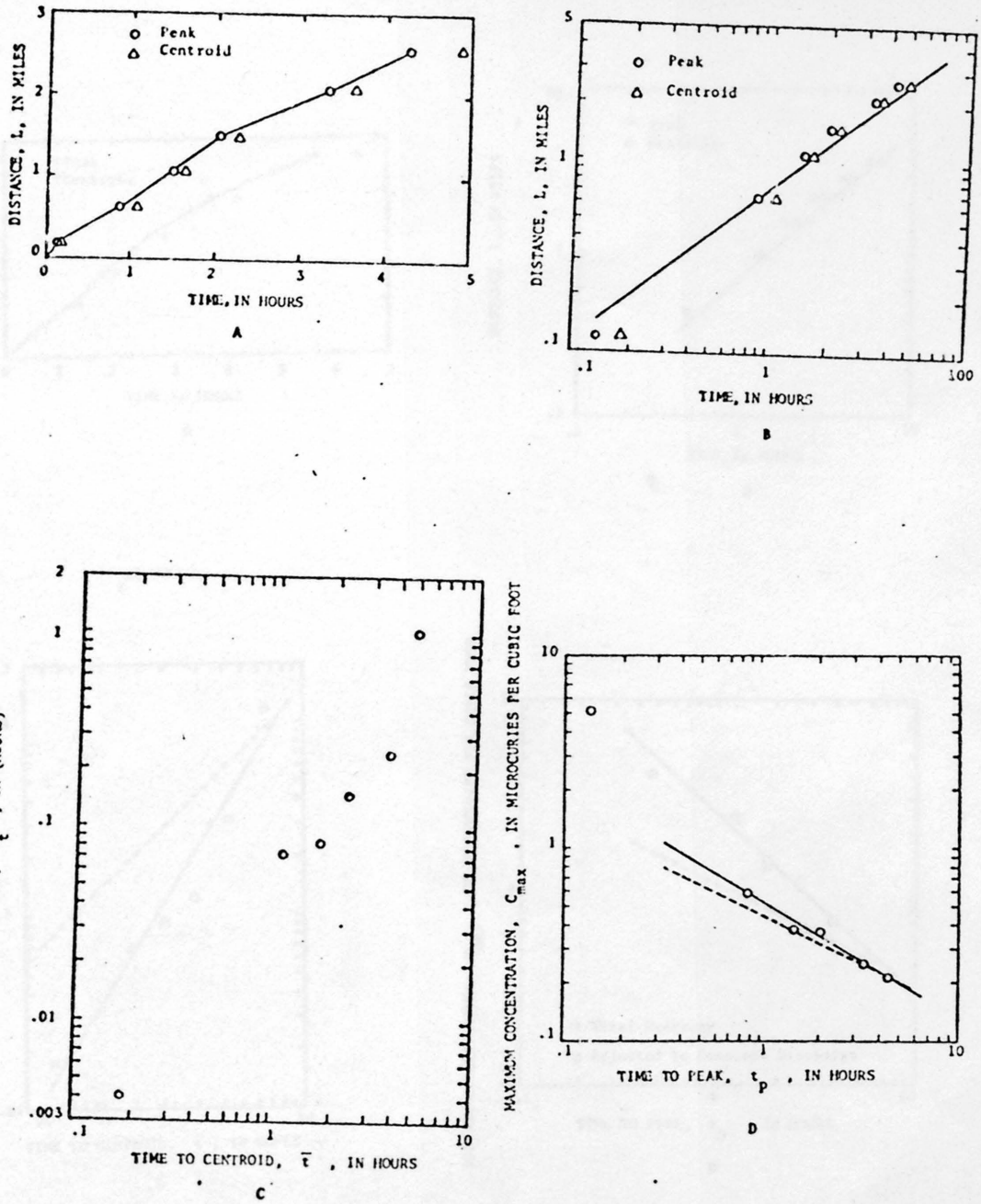


Figure 47.-Dispersion data for case 40, Copper Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slop for the relation for a Fickian process.

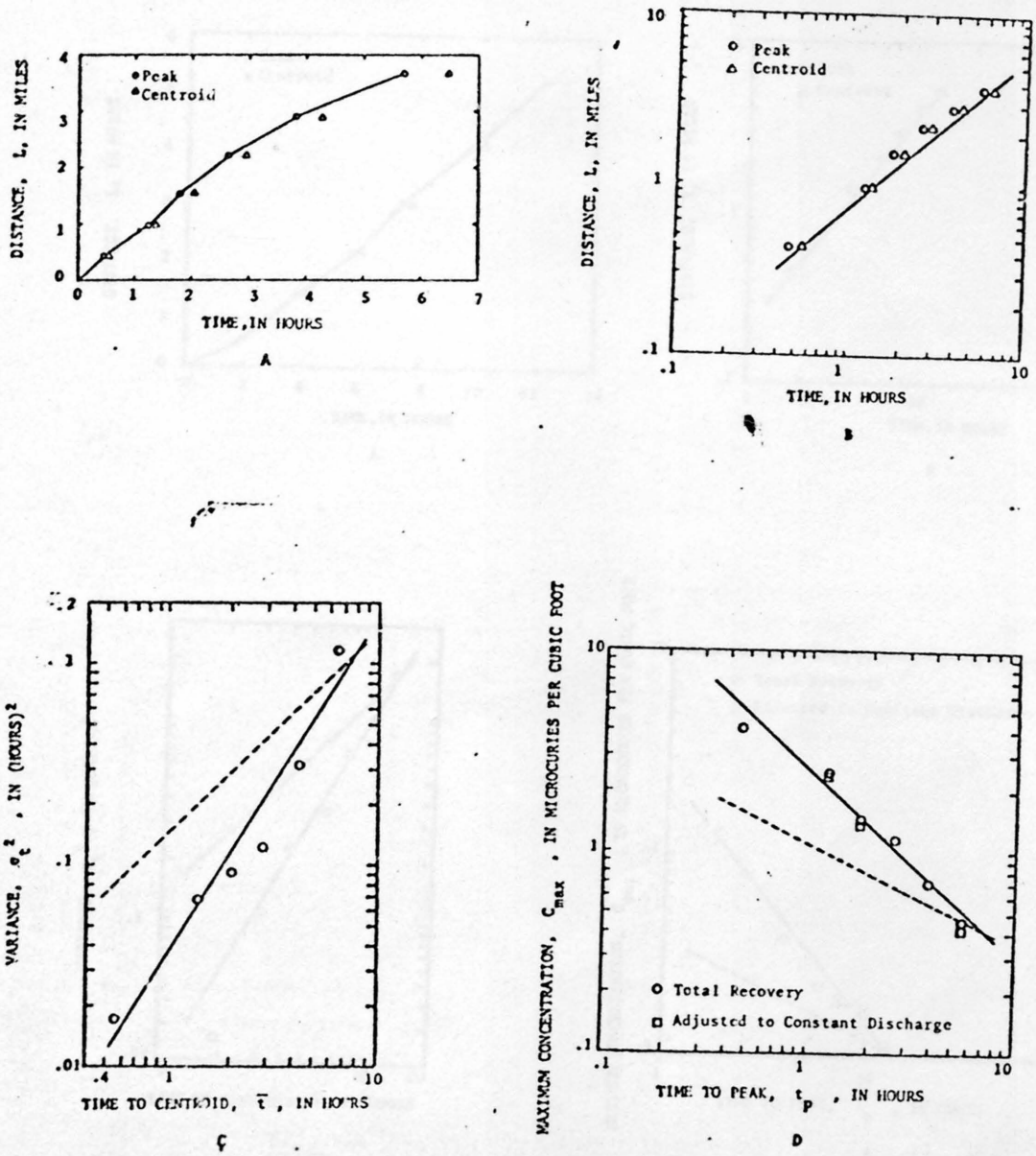


Figure 48.-Dispersion data for case 41, Clinch River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

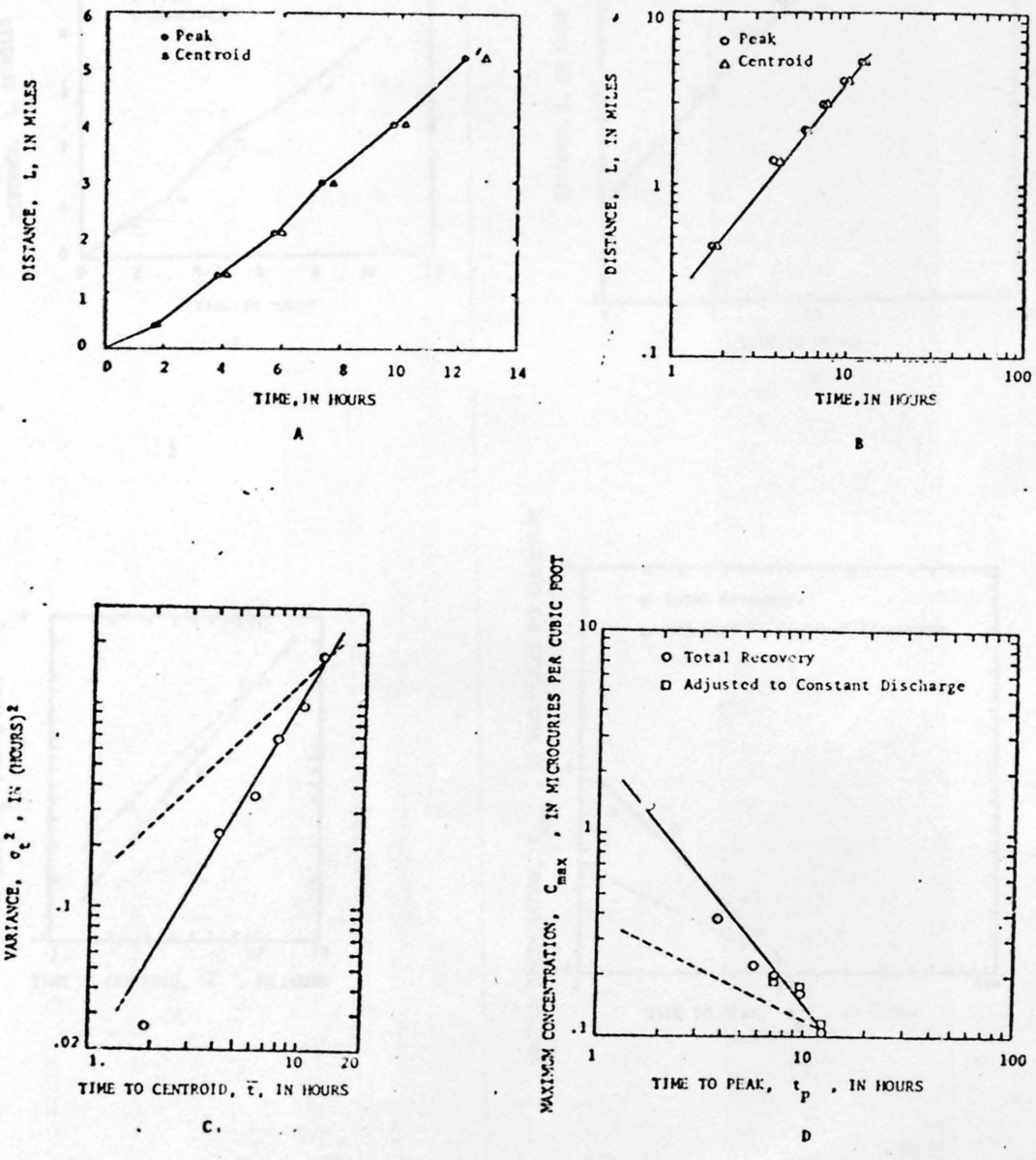
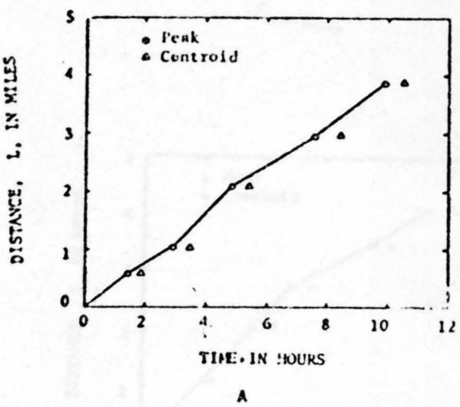
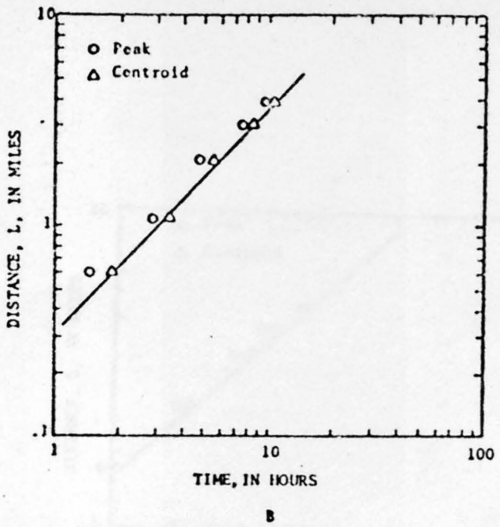
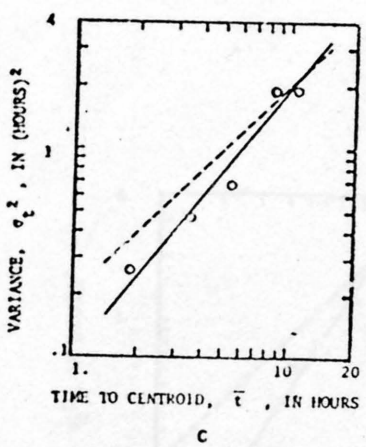


Figure 49.-Dispersion data for case 42, Copper Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.







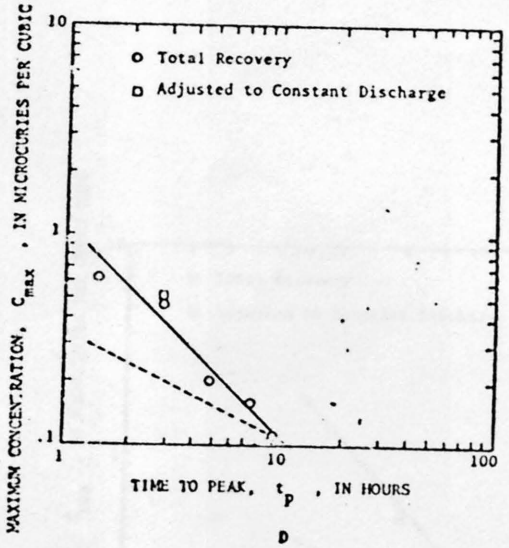


Figure 50.-Dispersion data for case 43, Powell River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

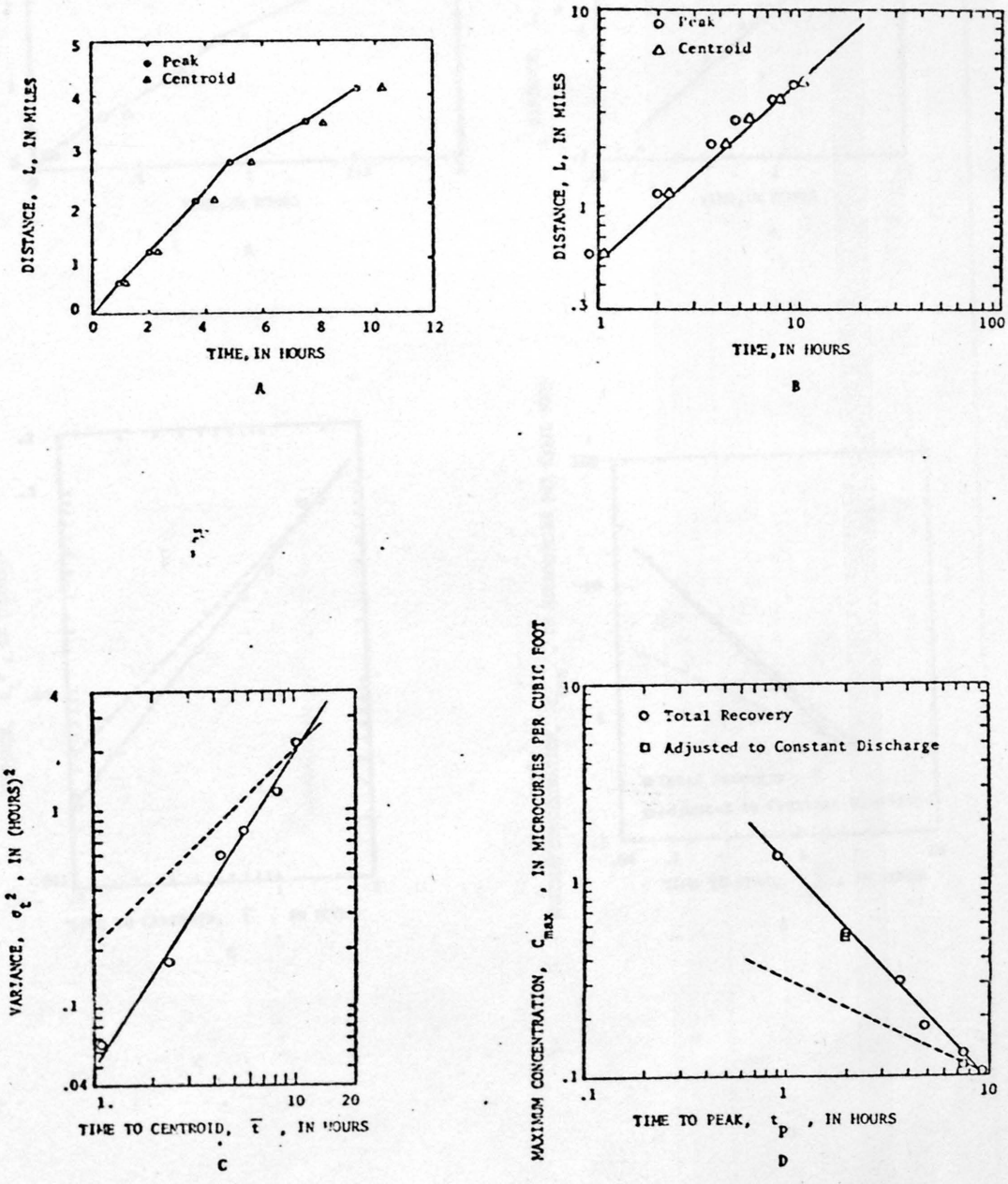
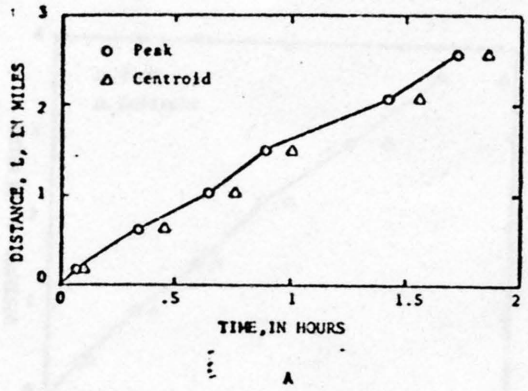
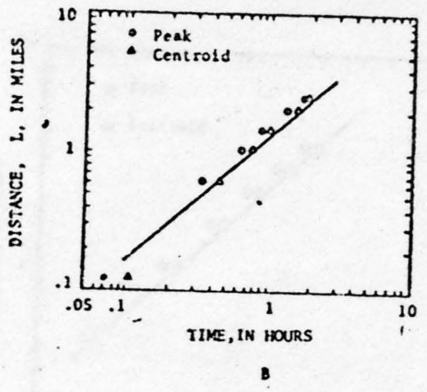
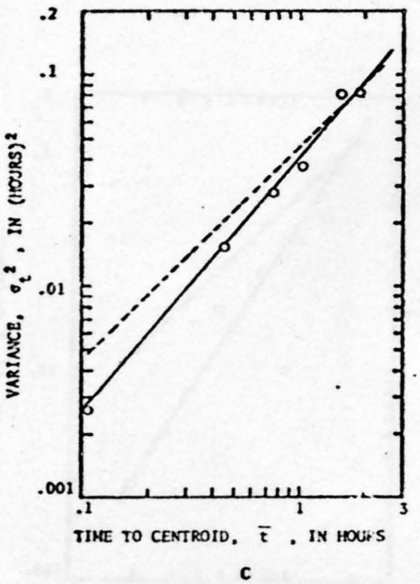


Figure 51.-Dispersion data for case 44, Clinch River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slop for the relation for a Fickian process.







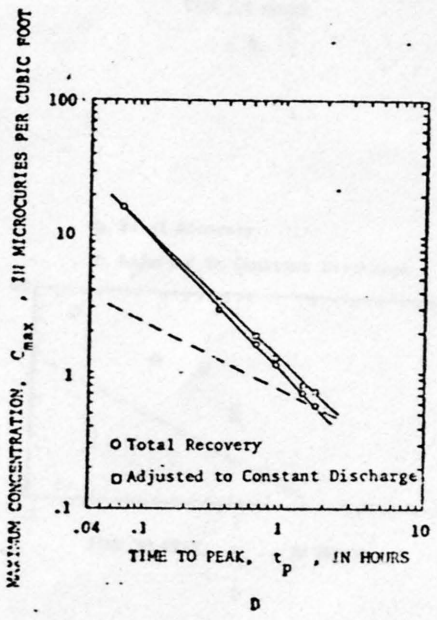


Figure 52.-Dispersion data for case 45, Copper Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

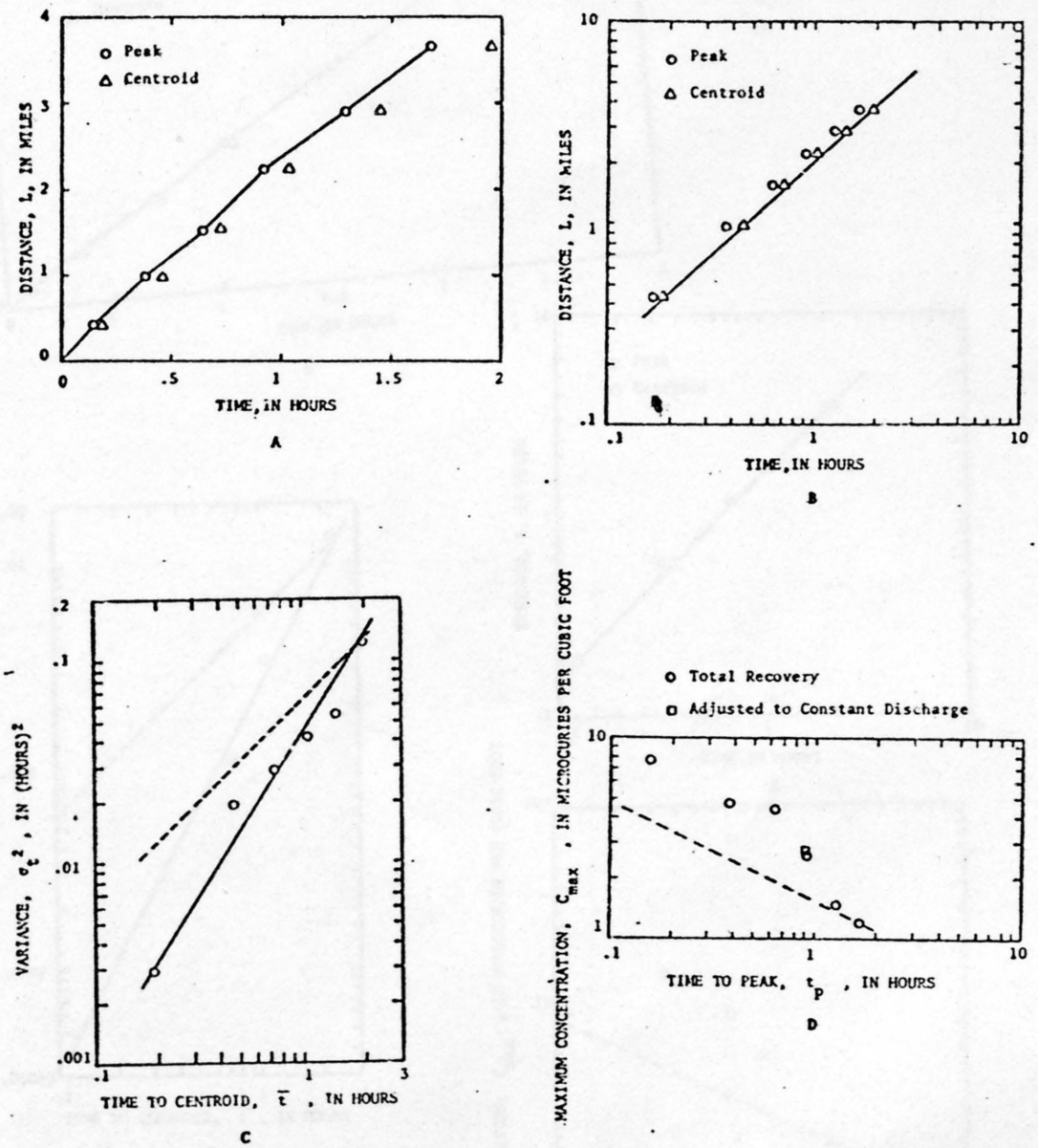


Figure 53.-Dispersion data for case 46, Clinch River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

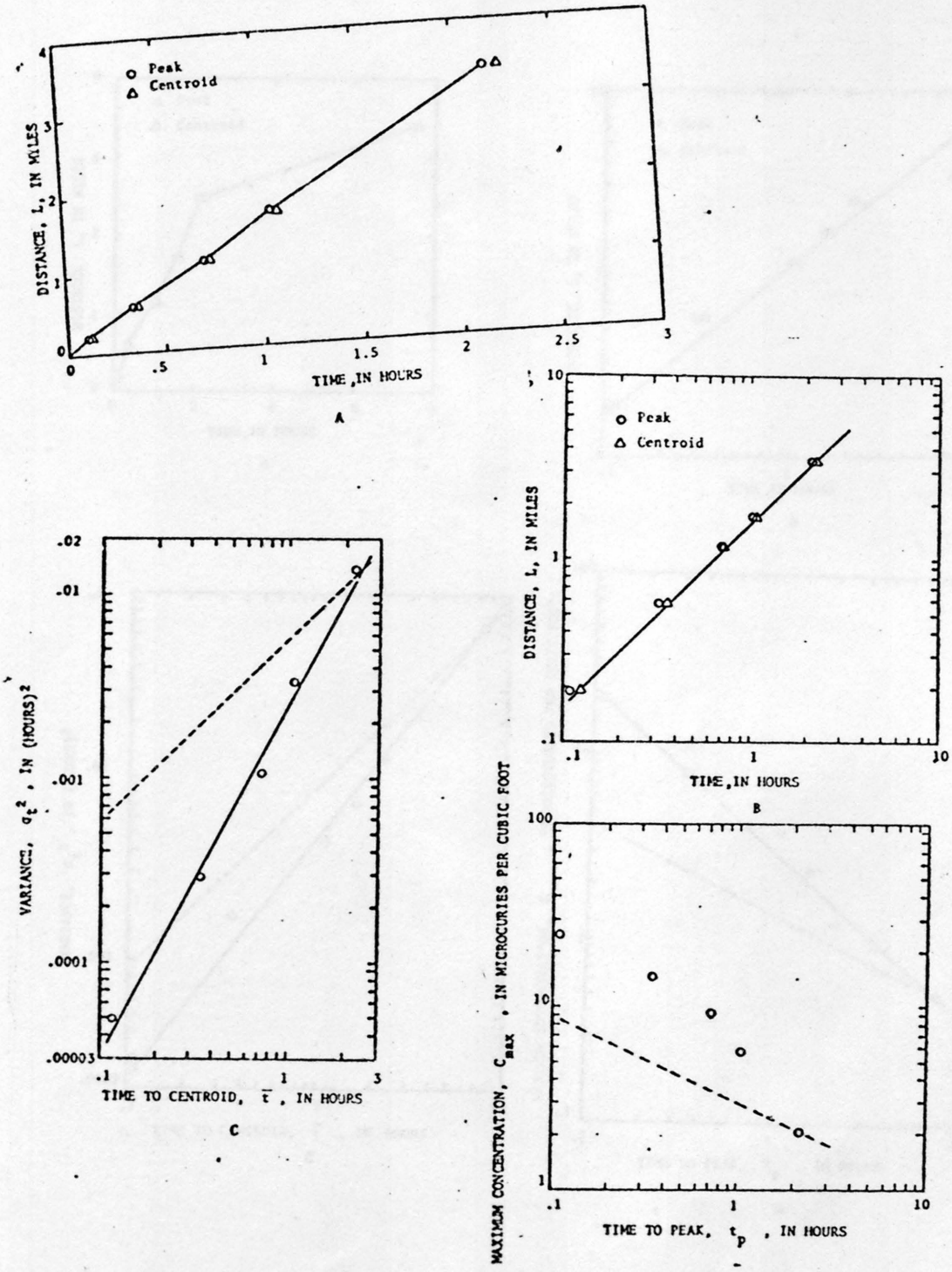


Figure 54.-Dispersion data for case 47, Coachella Canal. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

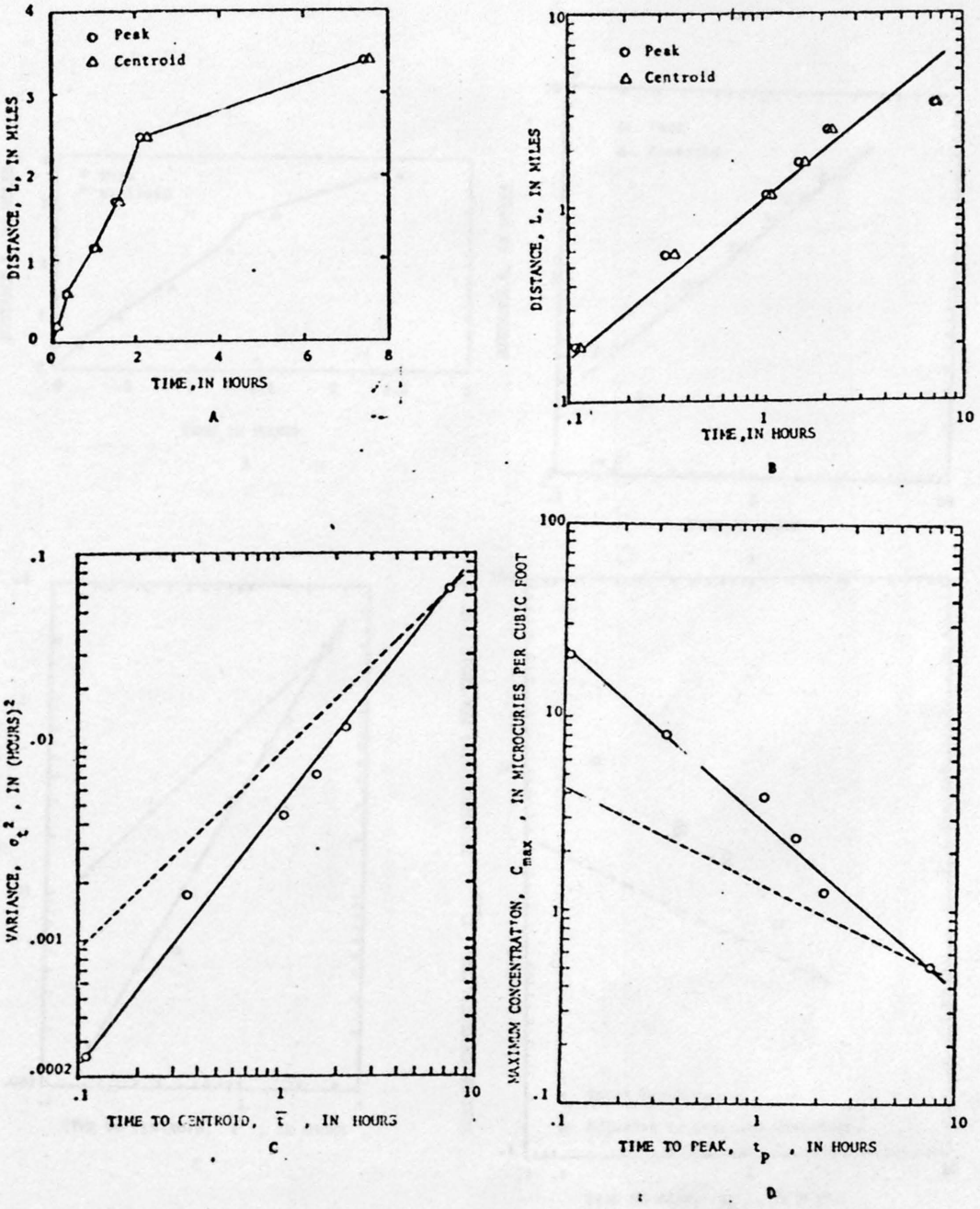


Figure 55.-Dispersion data for case 48, Coachella Canal. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

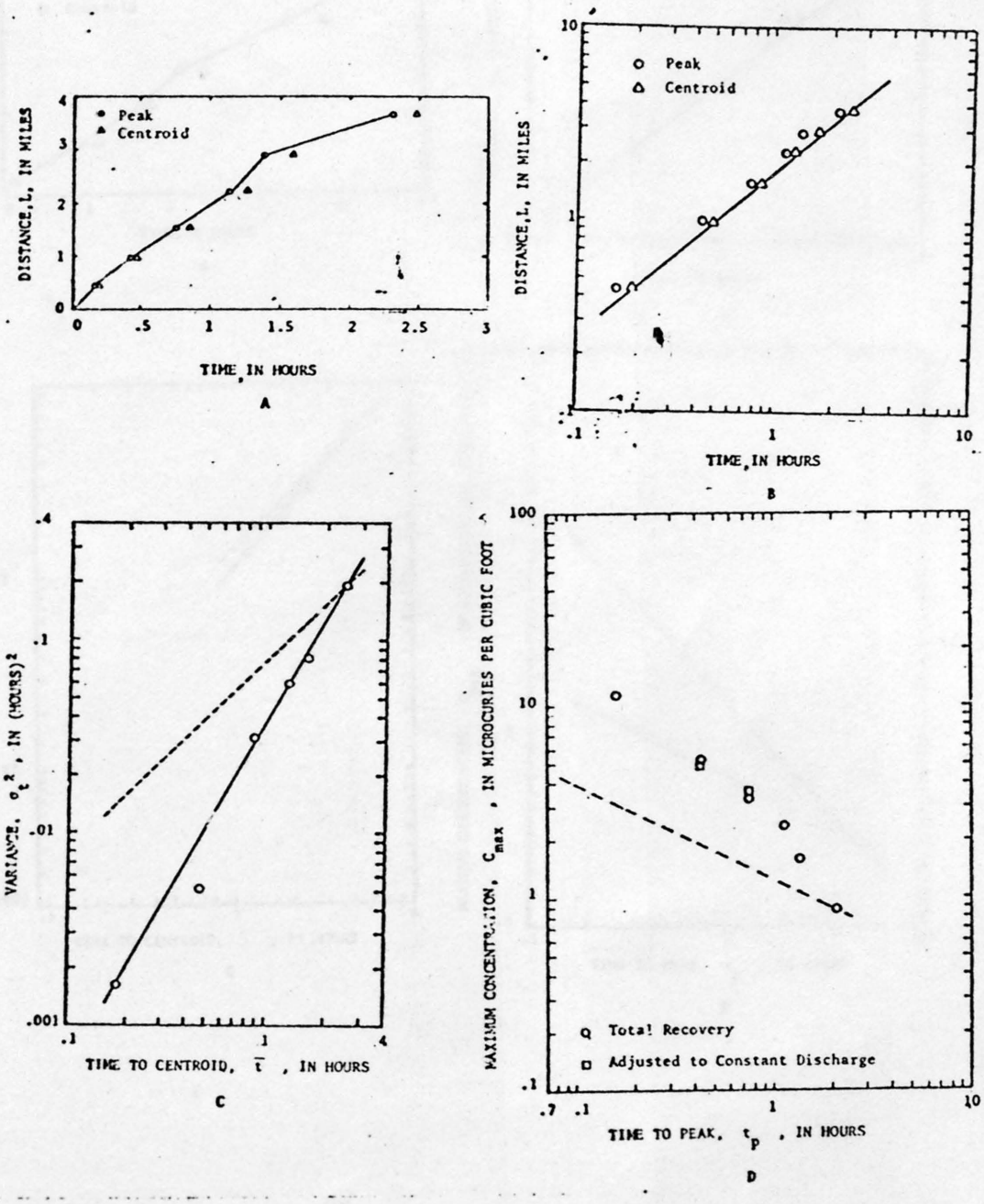


Figure 56.-Dispersion data for case 49, Clinch River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

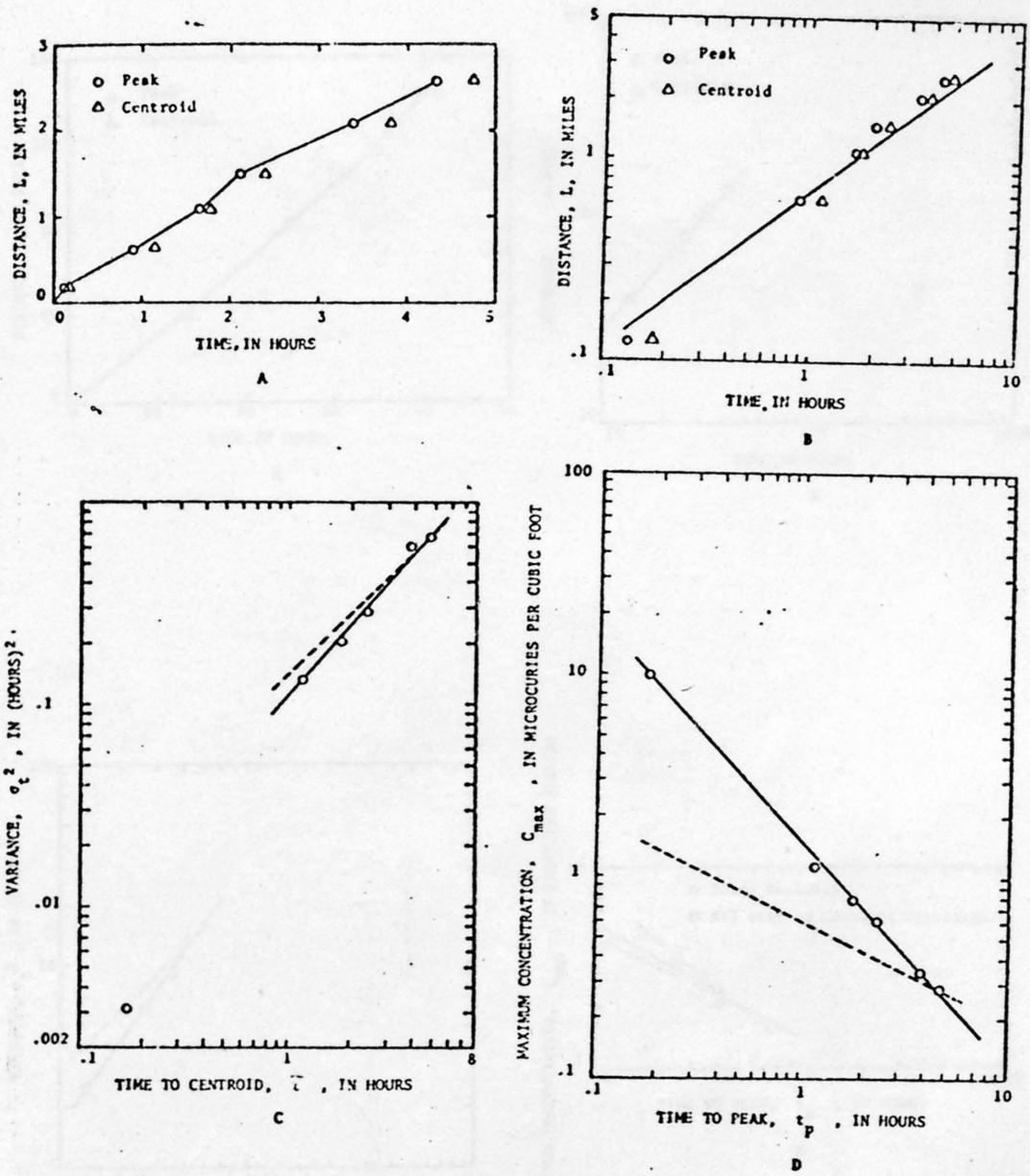
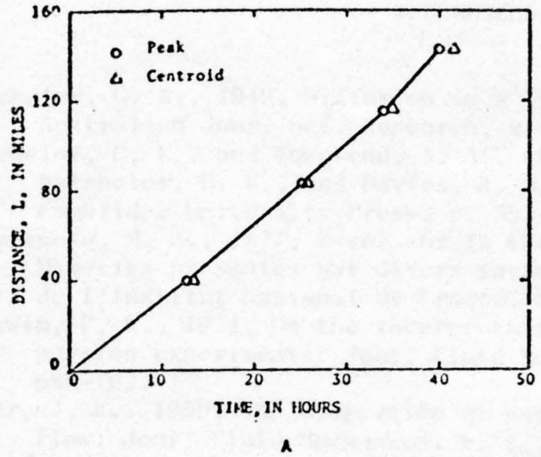
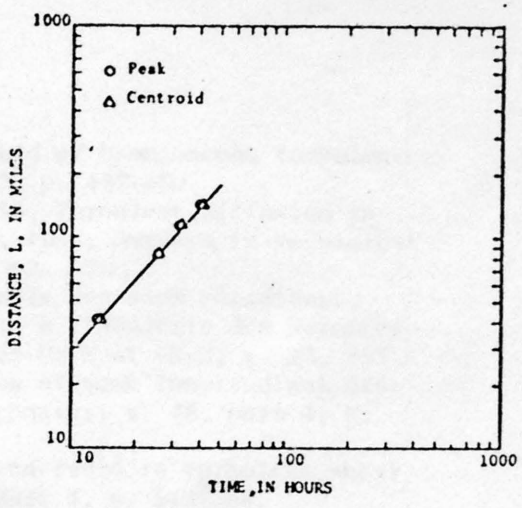
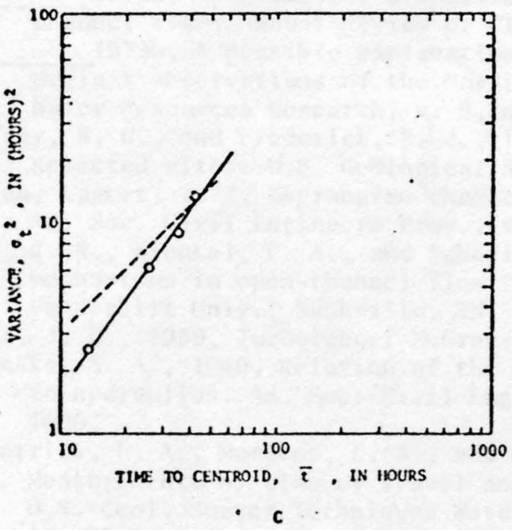


Figure 57.-Dispersion data for case 50, Copper Creek. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak.
The dashed line indicates the slope for the relation for a Fickian process.







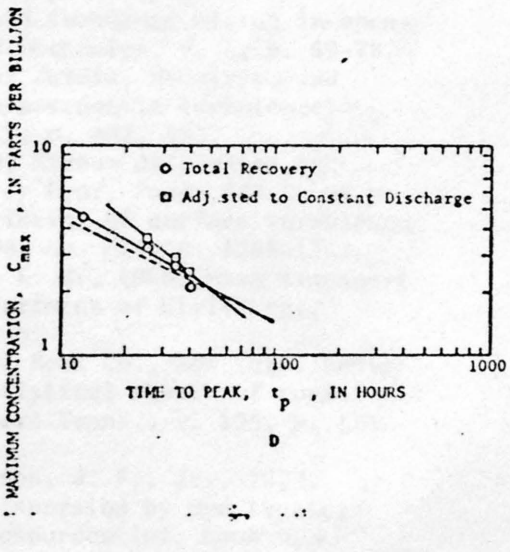


Figure 58.-Dispersion data for case 51, Missouri River. A. Travel time of the peak and centroid of the tracer cloud, cartesian coordinates. B. Travel time of the peak and centroid of the tracer, logarithmic coordinates. C. Time variance of the tracer concentration distribution plotted against time to centroid. D. Maximum concentration plotted against time to peak. The dashed line indicates the slope for the relation for a Fickian process.

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APPENDIXES

A. General dispersion test information on test reach, source of data, and dispersant used.

B. Concentration-time data for cases 1 through 39.

dix A ...neral; ...ersi... ...t in... ...ion ... ...t re... ...ource... ...ata, ...spersant used.
Type of tracer: B, Rhodamine B; BA, Rhodamine BA; WT, Rhodamine WT; Au 198, gold 198.
Type of injection: 1, slug at center; 2, slug at bank; 3, slugs at multiple points;
4, line source across width.

Case	Test Reach	Date of Study	Source of Dispersion Data	Length of Reach in Miles	Range of Discharge in cfs	Type of Tracer	Amount of Pure Tracer in Pounds	Type of Injection
1	Antietam Creek	May 27, 1969	Taylor and Solley, 1971	18.40	41-63	BA	1.022	1
2	Antietam Creek	March 24, 1970	Taylor and Solley, 1971	41.45	180-450	BA	5.45	1
3	Antietam Creek Dose A	August 18, 1970	Taylor and Solley, 1971	18.40	85-140	BA	2.044	1
4	Antietam Creek Dose B	August 18, 1970	Taylor and Solley, 1971	23.05	160-230	BA	3.406	1
5	Monocacy River Subreach C	November 14, 1967	Taylor, 1970	21.3	190-270	WT	1.574	1
6	Monocacy River Subreach D	November 14, 1967	Taylor, 1970	21.0	286-335	BA	3.406	1
7	Monocacy River Subreach C	June 7, 1968	Taylor, 1970	21.3	535-655	WT	4.198	1
8	Monocacy River Subreach D	June 7, 1968	Taylor, 1970	21.0	720-780	BA	8.175	1
9	Monocacy River	September 25, 1968	Taylor, 1970	21.0	108-124	BA	4.087	1
10	Conococheague Creek	May 6, 1969	Taylor and Solley, 1971	21.05	241-250	BA	3.406	1
11	Conococheague Creek	September 30, 1969	Taylor and Solley, 1971	12.35	91-102	WT	3.148	1
12	Conococheague Creek	April 30, 1970	Taylor and Solley, 1971	21.05	1040-1080	BA	4.087	1
13	Chattahoochee River	April 20, 1970	Unpublished file data	47.21	4810	WT	17.21	1
14	Chattahoochee River	May 4, 1971	Unpublished file data	63.94	4950	WT	13.695	1
15	Salt Creek	September 6, 1973	Unpublished file data	32.2	87-[illegible]	WT	2.004	1
16	Difficult Run	June 21, 1968	Unpublished file data	2.0	33.6-40.	WT	.052	-
17	Bear Creek	May 22, 1969	Unpublished file data	6.8	360-371	WT	.222	-
18	Little Piney Creek	September 6, 1968	Unpublished file data	4.55	48.6-58.	WT	.105	-
19	Bayou Anacoco	June 15, 1969	Unpublished file data	23.6	71.1-95.8	WT	2.099	-
20	Comite River	November 4, 1968	Unpublished file data	49.0	27-40	WT	3.673	1
21	Bayou Bartholomew	June 25, 1971	Unpublished file data	73.0	145-286	WT	6.205	-
22	Amite River	October 21, 1968	Unpublished file data	92.0	200-350	WT	9.445	1
23	Tickfau River	October 8, 1968	Unpublished file data	31.0	66-103	WT	2.623	2
24	Tangipahoa River	April 24, 1969	Unpublished file data	58.4	204-660	WT	10.494	-
25	Tangipahoa River	September 15, 1969	Unpublished file data	58.4	122-383	WT	8.395	-
26	Red River	April 7, 1971	Unpublished file data	120.	8130-8810	WT	51.65	1
27	Red River	April 14, 1971	Unpublished file data	99.0	4930-6530	WT	30.117	1
28	Red River	March 13, 1972	Unpublished file data	99.0	6620-8890	WT	40.087	1
29	Red River	June 12, 1972	Unpublished file data	124.0	5800-5880	WT	40.087	2
30	Sabine River	September 9, 1969	Unpublished file data	49.6	3910-[illegible]500	WT	10.179	1
31	Sabine River	February 4, 1972	Unpublished file data	130.0	11000-15300	WT	50.161	2
32	Sabine River	April 16, 1972	Mills, 1972	53.4	17-47	WT	5.	1
33	Sabine River	April 16, 1972	Mills, 1972	75.2	36-244	WT	20.	1
34	Sabine River	April 16, 1972	Mills, 1972	70.5	218-334	WT	20.	1
35	Mississippi River	September 15, 1965	Stewart, 1967	127.2	240,000	B	1460.	3
36	Mississippi River	March 11, 1968	Unpublished file data	183.0	93,000	WT	200.	4
37	Mississippi River	August 7, 1968	Unpublished file data	183.0	241,000	WT	240.	4
38	Wind/Bighorn River	March 21, 1971	Lowham and Wilson, 1971	112.7	1940-2430	WT	8.6	1
39	Wind/Bighorn River	June 29, 1971	Lowham and Wilson, 1971	112.7	8230-9000	WT	8.15	1

Appendix A. (continued)

Case	Test Reach	Date of Study	Source of Dispersion Data	Length of Reach in Miles	Range of Discharge in cfs	Type of Tracer	Amount of Pure Tracer in microcuries per ft^3	Type of Injection
40	Copper Creek	June 9, 1959	Godfrey and Frederick, 1970	2.57	54.3	Au 198	.067	4
41	Clinch River	June 16, 1959	Godfrey and Frederick, 1970	3.66	325.	Au 198	.744	4
42	Copper Creek	June 18, 1959	Godfrey and Frederick, 1970	5.22	35.	Au 198	.064	4
43	Powell River	June 23, 1959	Godfrey and Frederick, 1970	4.47	140.	Au 198	.260	4
44	Clinch River	June 25, 1959	Godfrey and Frederick, 1970	4.13	240	Au 198	.377	4
45	Copper Creek	January 14, 1960	Godfrey and Frederick, 1970	2.57	300.	Au 198	.450	4
46	Clinch River	February 9, 1960	Godfrey and Frederick, 1970	3.66	3000.	Au 198	3.77	4
47	Coachella Canal	May 11, 1960	Godfrey and Frederick, 1970	3.41	900.	Au 198	1.58	4
48	Coachella Canal	May 12, 1960	Godfrey and Frederick, 1970	3.41	950.	Au 198	1.21	4
49	Clinch River	July 12, 1960	Godfrey and Frederick, 1970	3.66	1800.	Au 198	2.45	4
50	Copper Creek	July 14, 1960	Godfrey and Frederick, 1970	2.57	48.	Au 198	.112	4
							Amount of Pure Tracer in Pounds	
51	Missouri River	November 13, 1967	Yotsukura and others, 1970	141.3	31200.-34000.	WT	120.	4

Appendix B. Concentration-time data for cases 1 through 39.

ANTIETAM CREEK
MAY 27, 1969
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	1.60	MILES
RIVER DISCHARGE	41.00	CFS
RECOVERY RATIO OF TRACER	.871	
TIME TO CENTROID	3.56	HOURS
TIME VARIANCE	.58909	HRS.SQ.
COEFFICIENT OF SKEW	2.79391	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.000	0.00	0.00	0.00
2.200	.48	.55	.55
2.400	2.12	2.43	2.43
2.600	5.40	6.20	6.20
2.800	33.94	38.95	38.95
3.000	75.40	86.53	86.53
3.200	92.12	105.71	105.71
3.400	79.56	91.30	91.30
3.600	59.02	67.73	67.73
3.800	43.72	50.17	50.17
4.000	26.16	30.02	30.02
4.200	17.20	19.74	19.74
4.400	12.00	13.77	13.77
4.600	7.12	8.17	8.17
4.800	5.18	5.94	5.94
5.000	3.86	4.43	4.43
5.200	3.38	3.88	3.88
5.400	2.34	2.69	2.69
5.600	1.94	2.23	2.23
5.800	1.58	1.81	1.81
6.000	1.36	1.56	1.56
6.200	1.28	1.47	1.47
6.400	1.14	1.31	1.31
6.600	.98	1.12	1.12
6.800	.96	1.10	1.10
7.000	.78	.90	.90
7.200	.68	.78	.78
7.400	.60	.69	.69
7.600	.56	.64	.64
7.800	.54	.62	.62
8.000	.44	.50	.50
8.200	.46	.53	.53
8.400	.34	.39	.39
8.600	.32	.37	.37
8.800	.22	.25	.25
9.000	.10	.11	.11
9.200	.08	.09	.09
9.400	.02	.02	.02
9.600	0.00	0.00	0.00
9.800	.02	.02	.02
10.000	0.00	0.00	0.00

ANTIETAM CREEK
MAY 27, 1969
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	5.95	MILES
RIVER DISCHARGE	42.00	CFS
RECOVERY RATIO OF TRACER	.755	
TIME TO CENTROID	13.85	HOURS
TIME VARIANCE	3.81437	HRS.SQ.
COEFFICIENT OF SKEW	1.98861	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
10.000	0.00	0.00	0.00
10.500	.22	.29	.30
11.000	.80	1.06	1.09
11.500	5.30	7.02	7.19
12.000	14.34	18.99	19.45
12.500	27.02	35.78	36.65
13.000	29.16	38.61	39.55
13.500	23.84	31.57	32.34
14.000	17.40	23.04	23.60
14.500	12.68	16.79	17.20
15.000	7.98	10.57	10.82
15.500	5.74	7.60	7.79
16.000	3.66	4.85	4.96
16.500	2.70	3.58	3.66
17.000	2.30	3.05	3.12
17.500	1.60	2.12	2.17
18.000	1.42	1.88	1.93
18.500	1.12	1.48	1.52
19.000	.88	1.17	1.19
19.500	.94	1.24	1.28
20.000	.86	1.14	1.17
20.500	.84	1.11	1.14
21.000	.82	1.09	1.11
21.500	.68	.90	.92
22.000	.44	.58	.60
22.500	.38	.50	.52
23.000	.26	.34	.35
23.500	.20	.26	.27
24.000	0.00	0.00	0.00

ANTIETAM CREEK
MAY 27, 1969
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	13.35	MILES
RIVER DISCHARGE	58.00	CFS
RECOVERY RATIO OF TRACER	.433	
TIME TO CENTROID	45.14	HOURS
TIME VARIANCE	16.94706	HRS.SQ.
COEFFICIENT OF SKEW	1.22123	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
36.000	0.00	0.00	0.00
37.000	.10	.24	.33
38.000	.19	.43	.61
39.000	.63	1.46	2.06
40.000	1.63	3.76	5.32
41.000	2.56	5.92	8.37
42.000	3.62	8.37	11.84
43.000	4.88	11.28	15.95
44.000	4.40	10.16	14.38
45.000	3.65	8.42	11.91
46.000	2.87	6.62	9.36
47.000	2.21	5.09	7.21
48.000	1.56	3.61	5.10
49.000	1.20	2.78	3.93
50.000	.90	2.09	2.95
51.000	.69	1.59	2.25
52.000	.56	1.30	1.84
53.000	.48	1.11	1.57
54.000	.39	.91	1.29
55.000	.35	.80	1.13
56.000	.30	.69	.97
57.000	.24	.56	.80
58.000	.20	.45	.64
59.000	.16	.38	.54
60.000	.09	.20	.28
61.000	.06	.14	.20
62.000	.03	.07	.10
63.000	.01	.01	.02
64.000	0.00	0.00	0.00

ANTIETAM CREEK
MAY 27, 1969
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	18.40	MILES
RIVER DISCHARGE	63.00	CFS
RECOVERY RATIO OF TRACER	.318	
TIME TO CENTROID	69.30	HOURS
TIME VARIANCE	34.53669	HRS.SQ.
COEFFICIENT OF SKEW	1.06876	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
57.000	0.00	0.00	0.00
58.000	.09	.28	.43
59.000	.14	.43	.67
60.000	.25	.78	1.20
61.000	.44	1.39	2.13
62.000	.73	2.31	3.54
63.000	1.12	3.53	5.42
64.000	1.43	4.49	6.90
65.000	1.76	5.53	8.49
66.000	2.12	6.66	10.23
67.000	2.22	6.99	10.73
68.000	2.12	6.67	10.25
69.000	1.86	5.84	8.98
70.000	1.41	4.43	6.81
71.000	1.14	3.59	5.52
72.000	.94	2.96	4.56
73.000	.77	2.43	3.74
74.000	.62	1.93	2.97
75.000	.53	1.67	2.57
76.000	.47	1.47	2.25
77.000	.42	1.31	2.01
78.000	.35	1.09	1.68
79.000	.32	1.01	1.54
80.000	.27	.85	1.30
81.000	.23	.73	1.12
82.000	.23	.72	1.10
83.000	.21	.65	.99
84.000	.16	.50	.77
85.000	.16	.52	.79
86.000	.14	.43	.67
87.000	.12	.36	.56
88.000	.09	.28	.42
89.000	.07	.23	.35
90.000	.05	.14	.22
91.000	0.00	0.00	0.00

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	1.60	MILES
RIVER DISCHARGE	180.00	CFS
RECOVERY RATIO OF TRACER	1.057	
TIME TO CENTROID	1.45	HOURS
TIME VARIANCE	.04406	HRS.SQ.
COEFFICIENT OF SKEW	1.80277	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
1.000	0.00	0.00	0.00
1.100	32.10	30.36	30.36
1.200	149.30	141.20	141.20
1.300	274.40	259.51	259.51
1.400	344.20	325.52	325.52
1.500	279.30	264.15	264.15
1.600	179.90	170.14	170.14
1.700	75.30	71.21	71.21
1.800	33.60	31.78	31.78
1.900	19.50	18.44	18.44
2.000	11.90	11.25	11.25
2.100	7.80	7.38	7.38
2.200	5.20	4.92	4.92
2.300	3.20	3.03	3.03
2.400	2.20	2.08	2.08
2.500	1.70	1.61	1.61
2.600	1.70	1.61	1.61
2.700	1.60	1.51	1.51
2.800	1.40	1.32	1.32
2.900	.80	.76	.76
3.000	0.00	0.00	0.00

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	5.95	MILES
RIVER DISCHARGE	185.00	CFS
RECOVERY RATIO OF TRACER	1.074	
TIME TO CENTROID	5.69	HOURS
TIME VARIANCE	.25242	HRS.SQ.
COEFFICIENT OF SKEW	2.00605	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.500	0.00	0.00	0.00
4.700	2.70	2.51	2.58
4.900	15.80	14.71	15.12
5.100	51.40	47.86	49.19
5.300	125.30	116.67	119.91
5.500	150.20	139.85	143.74
5.700	139.50	129.89	133.50
5.900	89.70	83.52	85.84
6.100	57.00	53.07	54.55
6.300	29.50	27.47	28.23
6.500	13.80	12.85	13.21
6.700	8.40	7.82	8.04
6.900	4.50	4.19	4.31
7.100	2.90	2.70	2.78
7.300	2.10	1.96	2.01
7.500	2.10	1.96	2.01
7.700	2.20	2.05	2.11
7.900	2.00	1.86	1.91
8.100	1.50	1.40	1.44
8.300	1.40	1.30	1.34
8.500	1.10	1.02	1.05
8.700	.70	.65	.67
8.900	.40	.37	.38
9.100	0.00	0.00	0.00

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	13.35	MILES
RIVER DISCHARGE	260.00	CFS
RECOVERY RATIO OF TRACER	.926	
TIME TO CENTROID	16.23	HOURS
TIME VARIANCE	1.58220	HRS.SQ.
COEFFICIENT OF SKEW	3.07238	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
13.600	0.00	0.00	0.00
14.000	.22	.24	.34
14.400	2.11	2.28	3.29
14.800	9.97	10.77	15.55
15.200	25.93	28.00	40.45
15.600	45.68	49.55	71.57
16.000	48.98	52.90	76.41
16.400	35.36	38.19	55.16
16.800	16.65	17.98	25.97
17.200	10.00	10.80	15.60
17.600	6.45	6.97	10.06
18.000	3.26	3.52	5.09
18.400	2.29	2.47	3.57
18.800	1.58	1.71	2.46
19.200	1.22	1.32	1.90
19.600	1.00	1.08	1.56
20.000	.71	.77	1.11
20.400	.59	.64	.92
20.800	.51	.55	.80
21.200	.44	.48	.69
21.600	.43	.46	.67
22.000	.37	.40	.58
22.400	.37	.40	.58
22.800	.37	.40	.58
23.200	.27	.29	.42
23.600	.23	.25	.36
24.000	.16	.17	.25
24.400	.18	.19	.28
24.800	.09	.10	.14
25.200	.13	.14	.20
25.600	.11	.12	.17
26.000	.09	.10	.14
26.400	.04	.04	.06
26.800	0.00	0.00	0.00

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	18.40	MILES
RIVER DISCHARGE	275.00	CFS.
RECOVERY RATIO OF TRACER	.664	
TIME TO CENTROID	24.01	HOURS
TIME VARIANCE	2.16060	HRS.SQ.
COEFFICIENT OF SKEW	1.99803	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
20.600	0.00	0.00	0.00
21.000	.14	.21	.32
21.400	.74	1.11	1.70
21.800	2.00	3.01	4.60
22.200	6.53	9.84	15.03
22.600	11.68	17.60	26.89
23.000	20.21	30.45	46.52
23.400	24.48	36.88	56.35
23.800	22.05	33.22	50.76
24.200	16.90	25.46	38.90
24.600	12.50	18.83	28.77
25.000	8.83	13.30	20.33
25.400	5.96	8.98	13.72
25.800	3.58	5.39	8.24
26.200	2.28	3.44	5.25
26.600	1.74	2.62	4.01
27.000	1.27	1.91	2.92
27.400	.97	1.46	2.23
27.800	.77	1.16	1.77
28.200	.60	.90	1.38
28.600	.52	.78	1.20
29.000	.45	.68	1.04
29.400	.43	.65	.99
29.800	.38	.57	.87
30.200	.30	.45	.69
30.600	.21	.32	.48
31.000	.20	.30	.46
31.400	.16	.24	.37
31.800	.15	.23	.35
32.200	.15	.23	.35
32.600	.08	.12	.18
33.000	.08	.12	.18
33.400	.04	.06	.09
33.800	0.00	0.00	0.00

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 5

DISTANCE FROM POINT OF INJECTION	26.25	MILES
RIVER DISCHARGE	300.00	CFS
RECOVERY RATIO OF TRACER	.610	
TIME TO CENTROID	34.02	HOURS
TIME VARIANCE	4.32306	HRS.SQ.
COEFFICIENT OF SKEW	1.61842	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
29.600	0.00	0.00	0.00
30.000	.08	.13	.22
30.400	.34	.56	.93
30.800	.96	1.57	2.62
31.200	2.01	3.29	5.49
31.600	5.41	8.86	14.77
32.000	9.25	15.16	25.26
32.400	11.26	18.45	30.75
32.800	12.80	20.97	34.96
33.200	13.53	22.17	36.95
33.600	12.44	20.38	33.97
34.000	10.79	17.68	29.47
34.400	9.48	15.53	25.89
34.800	7.56	12.39	20.65
35.200	5.84	9.57	15.95
35.600	4.09	6.70	11.17
36.000	3.16	5.18	8.63
36.400	2.41	3.95	6.58
36.800	1.87	3.06	5.11
37.200	1.45	2.38	3.96
37.600	1.32	2.16	3.60
38.000	1.23	2.02	3.36
38.400	.87	1.43	2.38
38.800	.73	1.20	1.99
39.200	.57	.93	1.56
39.600	.55	.90	1.50
40.000	.52	.85	1.42
40.400	.50	.82	1.37
40.800	.45	.74	1.23
41.200	.44	.72	1.20
41.600	.34	.56	.93
42.000	.28	.46	.76
42.400	.22	.36	.60
42.800	.20	.33	.55
43.200	.15	.25	.41
43.600	.12	.20	.33
44.000	.10	.16	.27
44.400	.05	.08	.14
44.800	.01	.02	.03

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 6

DISTANCE FROM POINT OF INJECTION	30.55 MILES
RIVER DISCHARGE	360.00 CFS
RECOVERY RATIO OF TRACER	.490
TIME TO CENTROID	38.55 HOURS
TIME VARIANCE	3.58452 HRS.SQ.
COEFFICIENT OF SKEW	1.01147

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
33.800	0.00	0.00	0.00
34.200	.10	.20	.41
34.600	.22	.45	.90
35.000	.38	.78	1.55
35.400	.98	2.00	4.00
35.800	2.02	4.12	8.24
36.200	3.42	6.98	13.95
36.600	5.30	10.81	21.63
37.000	7.17	14.63	29.26
37.400	8.12	16.57	33.13
37.800	8.45	17.24	34.48
38.200	8.51	17.36	34.72
38.600	7.70	15.71	31.42
39.000	6.07	12.38	24.77
39.400	4.87	9.94	19.87
39.800	3.89	7.94	15.87
40.200	3.26	6.65	13.30
40.600	2.52	5.14	10.28
41.000	1.86	3.79	7.59
41.400	1.57	3.20	6.41
41.800	1.29	2.63	5.26
42.200	1.04	2.12	4.24
42.600	.84	1.71	3.43
43.000	.73	1.49	2.98
43.400	.64	1.31	2.61
43.800	.43	.88	1.75
44.200	.35	.71	1.43
44.600	.27	.55	1.10
45.000	.17	.35	.69
45.400	.12	.24	.49
45.800	.12	.24	.49
46.200	.07	.14	.29
46.600	.04	.08	.16
47.000	.03	.06	.12
47.400	.03	.06	.12
47.800	0.00	0.00	0.00

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 7

DISTANCE FROM POINT OF INJECTION	36.80	MILES
RIVER DISCHARGE	430.00	CFS
RECOVERY RATIO OF TRACER	.467	
TIME TO CENTROID	44.37	HOURS
TIME VARIANCE	5.00479	HRS.SQ.
COEFFICIENT OF SKEW	1.10117	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
40.000	0.00	0.00	0.00
40.400	.35	.75	1.79
40.800	.83	1.78	4.25
41.200	1.45	3.10	7.42
41.600	2.62	5.61	13.40
42.000	3.37	7.22	17.24
42.400	4.55	9.74	23.27
42.800	5.66	12.12	28.95
43.200	6.27	13.43	32.07
43.600	5.97	12.78	30.54
44.000	5.44	11.65	27.83
44.400	4.97	10.64	25.42
44.800	4.33	9.27	22.15
45.200	3.59	7.69	18.36
45.600	2.80	6.00	14.32
46.000	2.27	4.86	11.61
46.400	1.88	4.03	9.62
46.800	1.51	3.23	7.72
47.200	1.24	2.66	6.34
47.600	1.09	2.33	5.58
48.000	.97	2.08	4.96
48.400	.81	1.73	4.14
48.800	.67	1.43	3.43
49.200	.55	1.18	2.81
49.600	.50	1.07	2.56
50.000	.47	1.01	2.40
50.400	.43	.92	2.20
50.800	.34	.73	1.74
51.200	.25	.54	1.28
51.600	.25	.54	1.28
52.000	.16	.34	.82
52.400	.14	.30	.72
52.800	.07	.15	.36
53.200	.04	.09	.20
53.600	.02	.04	.10
54.000	.01	.02	.05

ANTIETAM CREEK
MARCH 24, 1970
SAMPLING SITE NUMBER 8

DISTANCE FROM POINT OF INJECTION	41.45	MILES
RIVER DISCHARGE	450.00	CFS
RECOVERY RATIO OF TRACER	.442	
TIME TO CENTROID	48.20	HOURS
TIME VARIANCE	6.00173	HRS.SQ.
COEFFICIENT OF SKEW	1.15104	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
43.000	0.00	0.00	0.00
43.400	.08	.18	.45
43.800	.23	.52	1.30
44.200	.66	1.49	3.74
44.600	1.02	2.31	5.77
45.000	1.55	3.51	8.77
45.400	2.39	5.41	13.53
45.800	3.28	7.42	18.56
46.200	4.06	9.19	22.98
46.600	4.63	10.48	26.20
47.000	4.94	11.18	27.96
47.400	5.06	11.45	28.64
47.800	4.89	11.07	27.67
48.200	4.37	9.89	24.73
48.600	3.68	8.33	20.83
49.000	2.97	6.72	16.81
49.400	2.55	5.77	14.43
49.800	2.21	5.00	12.51
50.200	1.81	4.10	10.24
50.600	1.39	3.15	7.87
51.000	1.16	2.63	6.56
51.400	.97	2.20	5.49
51.800	.86	1.95	4.87
52.200	.67	1.52	3.79
52.600	.58	1.31	3.28
53.000	.55	1.25	3.11
53.400	.49	1.11	2.77
53.800	.41	.93	2.32
54.200	.36	.81	2.04
54.600	.28	.63	1.58
55.000	.28	.63	1.58
55.400	.21	.48	1.19
55.800	.19	.43	1.08
56.200	.19	.43	1.08
56.600	.19	.43	1.08
57.000	.17	.38	.96
57.400	.11	.25	.62
57.800	.09	.20	.51
58.200	.01	.02	.06

ANTIETAM CREEK
AUGUST 18, 1970 DOSE A
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	1.60	MILES
RIVER DISCHARGE	85.00	CFS
RECOVERY RATIO OF TRACER	1.017	
TIME TO CENTROID	3.08	HOURS
TIME VARIANCE	.53795	HRS.SQ.
COEFFICIENT OF SKEW	2.98943	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.000	0.00	0.00	0.00
2.200	9.94	9.78	9.78
2.400	50.18	49.35	49.35
2.600	92.62	91.08	91.08
2.800	108.80	106.99	106.99
3.000	93.80	92.24	92.24
3.200	67.56	66.44	66.44
3.400	39.26	38.61	38.61
3.600	21.84	21.48	21.48
3.800	15.48	15.22	15.22
4.000	11.62	11.43	11.43
4.200	5.92	5.82	5.82
4.400	3.92	3.85	3.85
4.600	3.12	3.07	3.07
4.800	2.42	2.38	2.38
5.000	2.14	2.10	2.10
5.200	1.98	1.95	1.95
5.400	1.84	1.81	1.81
5.600	1.60	1.57	1.57
5.800	1.52	1.49	1.49
6.000	1.44	1.42	1.42
6.200	1.16	1.14	1.14
6.400	1.02	1.00	1.00
6.600	.86	.85	.85
6.800	.68	.67	.67
7.000	.58	.57	.57
7.200	.56	.55	.55
7.400	.50	.49	.49
7.600	.52	.51	.51
7.800	.44	.43	.43
8.000	.40	.39	.39
8.200	.16	.16	.16
8.400	.14	.14	.14
8.600	.10	.10	.10
8.800	.06	.06	.06
9.000	0.00	0.00	0.00

ANTIETAM CREEK
AUGUST 18, 1970 DOSE A
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	5.95 MILES
RIVER DISCHARGE	86.00 CFS
RECOVERY RATIO OF TRACER	.928
TIME TO CENTROID	10.01 HOURS
TIME VARIANCE	1.76917 HRS.SQ.
COEFFICIENT OF SKEW	2.30870

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
7.600	0.00	0.00	0.00
7.800	.32	.34	.35
8.000	.94	1.01	1.02
8.200	3.12	3.36	3.40
8.400	8.80	9.48	9.59
8.600	16.98	18.29	18.50
8.800	27.70	29.84	30.19
9.000	38.70	41.68	42.17
9.200	46.06	49.61	50.20
9.400	48.20	51.92	52.53
9.600	48.84	52.61	53.22
9.800	47.84	51.53	52.14
10.000	41.76	44.98	45.51
10.200	32.64	35.16	35.57
10.400	24.24	26.11	26.42
10.600	18.70	20.14	20.38
10.800	14.24	15.34	15.52
11.000	10.78	11.61	11.75
11.200	8.08	8.70	8.81
11.400	6.60	7.11	7.19
11.600	5.52	5.95	6.02
11.800	4.54	4.89	4.95
12.000	4.00	4.31	4.36
12.200	3.24	3.49	3.53
12.400	2.86	3.08	3.12
12.600	2.50	2.69	2.72
12.800	2.32	2.50	2.53
13.000	2.06	2.22	2.24
13.200	1.78	1.92	1.94
13.400	1.60	1.72	1.74
13.600	1.40	1.51	1.53
13.800	1.32	1.42	1.44
14.000	1.32	1.42	1.44
14.200	1.04	1.12	1.13
14.400	1.00	1.08	1.09
14.600	.98	1.06	1.07
14.800	.92	.99	1.00
15.000	.92	.99	1.00
15.200	.80	.86	.87
15.400	.76	.82	.83
15.600	.76	.82	.83

ANTIETAM CREEK

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
15.800	.72	.78	.78
16.000	.72	.78	.78
16.200	.64	.69	.70
16.400	.52	.56	.57
16.600	.52	.56	.57
16.800	.44	.47	.48
17.000	.32	.34	.35
17.200	.32	.34	.35
17.400	.30	.32	.33
17.600	.24	.26	.26
17.800	.12	.13	.13
18.000	.02	.02	.02

ANTIETAM CREEK
AUGUST 18, 1970 DOSE A
SAMPLING SITE NUMBER 3
DISTANCE FROM POINT OF INJECTION 13.35 MILES
RIVER DISCHARGE 120.00 CFS

RECOVERY RATIO OF TRACER .628
TIME TO CENTROID 28.53 HOURS
TIME VARIANCE 6.25982 HRS.SQ.
COEFFICIENT OF SKEW 1.55974

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
23.000	0.00	0.00	0.00
23.500	.04	.06	.08
24.000	.14	.22	.31
24.500	.61	.97	1.38
25.000	1.84	2.92	4.13
25.500	3.40	5.42	7.65
26.000	5.94	9.45	13.34
26.500	8.66	13.80	19.48
27.000	10.78	17.17	24.24
27.500	11.28	17.97	25.37
28.000	10.13	16.13	22.77
28.500	8.50	13.54	19.11
29.000	7.10	11.31	15.97
29.500	5.71	9.10	12.84
30.000	4.56	7.26	10.24
30.500	3.25	5.17	7.30
31.000	2.44	3.89	5.49
31.500	1.84	2.94	4.15
32.000	1.41	2.25	3.17
32.500	1.11	1.77	2.50
33.000	.96	1.54	2.17
33.500	.84	1.34	1.90
34.000	.72	1.15	1.63
34.500	.61	.97	1.37
35.000	.54	.85	1.21
35.500	.46	.74	1.04
36.000	.41	.66	.93
36.500	.38	.61	.85
37.000	.35	.55	.78
37.500	.29	.46	.65
38.000	.25	.40	.57
38.500	.20	.32	.46
39.000	.16	.26	.37
39.500	.14	.22	.31
40.000	.09	.15	.21
40.500	.04	.07	.10
41.000	0.00	0.00	0.00

ANTIETAM CREEK
AUGUST 18, 1970 DOSE A
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	18.40	MILES
RIVER DISCHARGE	140.00	CFS
RECOVERY RATIO OF TRACER	.501	
TIME TO CENTROID	41.50	HOURS
TIME VARIANCE	7.66952	HRS.SQ.
COEFFICIENT OF SKEW	1.26607	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
36.500	0.00	0.00	0.00
37.000	.32	.65	1.06
37.500	1.14	2.28	3.76
38.000	2.10	4.18	6.88
38.500	3.80	7.59	12.49
39.000	5.30	10.57	17.41
39.500	6.14	12.24	20.15
40.000	6.58	13.13	21.63
40.500	6.45	12.86	21.18
41.000	5.12	10.22	16.83
41.500	4.31	8.60	14.16
42.000	3.71	7.40	12.19
42.500	3.27	6.52	10.75
43.000	2.80	5.59	9.21
43.500	2.41	4.81	7.92
44.000	2.06	4.11	6.77
44.500	1.74	3.47	5.72
45.000	1.42	2.83	4.66
45.500	1.21	2.41	3.97
46.000	.99	1.97	3.25
46.500	.77	1.54	2.54
47.000	.62	1.24	2.05
47.500	.51	1.01	1.67
48.000	.43	.86	1.42
48.500	.35	.70	1.16
49.000	.27	.53	.88
49.500	.23	.46	.76
50.000	.22	.43	.71
50.500	.18	.36	.59
51.000	.18	.35	.58
51.500	.14	.29	.47
52.000	.13	.26	.43
52.500	.10	.19	.32
53.000	.08	.17	.28
53.500	.07	.14	.22
54.000	0.00	0.00	0.00

ANTIETAM CREEK
AUGUST 18, 1970 DOSE B
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	7.85	MILES
RIVER DISCHARGE	160.00	CFS
RECOVERY RATIO OF TRACER	.692	
TIME TO CENTROID	14.73	HOURS
TIME VARIANCE	2.46865	HRS.SQ.
COEFFICIENT OF SKEW	1.26930	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
11.400	0.00	0.00	0.00
11.600	.03	.04	.04
11.800	.17	.25	.25
12.000	.43	.62	.62
12.200	1.78	2.57	2.57
12.400	3.47	5.02	5.02
12.600	6.13	8.86	8.86
12.800	9.02	13.04	13.04
13.000	11.73	16.95	16.95
13.200	15.09	21.81	21.81
13.400	19.38	28.01	28.01
13.600	21.55	31.15	31.15
13.800	22.01	31.81	31.81
14.000	21.86	31.59	31.59
14.200	21.53	31.12	31.12
14.400	21.15	30.57	30.57
14.600	18.91	27.33	27.33
14.800	16.83	24.32	24.32
15.000	14.87	21.49	21.49
15.200	12.86	18.59	18.59
15.400	11.30	16.33	16.33
15.600	9.81	14.18	14.18
15.800	8.39	12.13	12.13
16.000	7.39	10.68	10.68
16.200	6.31	9.12	9.12
16.400	5.39	7.79	7.79
16.600	4.45	6.43	6.43
16.800	4.13	5.97	5.97
17.000	3.67	5.30	5.30
17.200	3.29	4.75	4.75
17.400	2.98	4.31	4.31
17.600	2.67	3.86	3.86
17.800	2.39	3.45	3.45
18.000	2.08	3.01	3.01
18.200	1.89	2.73	2.73
18.400	1.67	2.41	2.41
18.600	1.61	2.33	2.33
18.800	1.30	1.88	1.88
19.000	1.16	1.68	1.68
19.200	1.09	1.58	1.58
19.400	.97	1.40	1.40

ANTIETAM CREEK

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
19.600	.87	1.26	1.26
19.800	.84	1.21	1.21
20.000	.69	1.00	1.00
20.200	.55	.79	.79
20.400	.48	.69	.69
20.600	.45	.65	.65
20.800	.36	.52	.52
21.000	.29	.42	.42
21.200	.22	.32	.32
21.400	.20	.29	.29
21.600	.11	.16	.16
21.800	.05	.07	.07
22.000	0.00	0.00	0.00

ANTIETAM CREEK
AUGUST 18, 1970 DOSE B
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	12.15	MILES
RIVER DISCHARGE	188.00	CFS
RECOVERY RATIO OF TRACER	.661	
TIME TO CENTROID	22.20	HOURS
TIME VARIANCE	5.39563	HRS.SQ.
COEFFICIENT OF SKEW	1.43744	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
18.000	0.00	0.00	0.00
18.500	.19	.29	.34
19.000	1.86	2.81	3.31
19.500	6.37	9.63	11.32
20.000	9.46	14.31	16.81
20.500	12.18	18.42	21.65
21.000	13.15	19.89	23.37
21.500	12.47	18.86	22.16
22.000	10.97	16.59	19.50
22.500	8.52	12.89	15.14
23.000	6.42	9.71	11.41
23.500	4.86	7.35	8.64
24.000	3.98	6.02	7.07
24.500	2.98	4.51	5.30
25.000	2.33	3.52	4.14
25.500	1.85	2.80	3.29
26.000	1.54	2.33	2.74
26.500	1.21	1.83	2.15
27.000	1.04	1.57	1.85
27.500	.99	1.50	1.76
28.000	.83	1.26	1.48
28.500	.72	1.09	1.28
29.000	.65	.98	1.16
29.500	.55	.83	.98
30.000	.48	.73	.85
30.500	.46	.70	.82
31.000	.38	.57	.68
31.500	.21	.32	.37
32.000	0.00	0.00	0.00

ANTIETAM CREEK
AUGUST 18, 1970 DOSE B
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	18.40	MILES
RIVER DISCHARGE	225.00	CFS
RECOVERY RATIO OF TRACER	.626	
TIME TO CENTROID	30.54	HOURS
TIME VARIANCE	7.36513	HRS.SQ.
COEFFICIENT OF SKEW	1.27218	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
25.000	0.00	0.00	0.00
25.500	.06	.10	.13
26.000	.36	.57	.81
25.500	1.49	2.38	3.35
27.000	2.83	4.52	6.36
27.500	4.19	6.69	9.41
28.000	5.82	9.30	13.07
28.500	7.45	11.90	16.73
29.000	8.26	13.19	18.55
29.500	7.85	12.54	17.63
30.000	7.39	11.80	16.60
30.500	7.11	11.36	15.97
31.000	6.46	10.32	14.51
31.500	4.70	7.51	10.56
32.000	3.54	5.65	7.95
32.500	2.86	4.57	6.42
33.000	2.29	3.66	5.14
33.500	1.95	3.11	4.38
34.000	1.63	2.60	3.66
34.500	1.35	2.16	3.03
35.000	1.13	1.80	2.54
35.500	.95	1.52	2.13
36.000	.78	1.25	1.75
36.500	.62	.99	1.39
37.000	.52	.83	1.17
37.500	.52	.83	1.17
38.000	.49	.78	1.10
38.500	.34	.54	.76
39.000	.30	.48	.67
39.500	.28	.45	.63
40.000	.28	.45	.63
40.500	.24	.38	.54
41.000	.21	.34	.47
41.500	.14	.22	.31
42.000	0.00	0.00	0.00

ANTIETAM CREEK
AUGUST 18, 1970 DOSE B
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	23.05	MILES
RIVER DISCHARGE	230.00	CFS
RECOVERY RATIO OF TRACER	.560	
TIME TO CENTROID	35.95	HOURS
TIME VARIANCE	8.00403	HRS.SQ.
COEFFICIENT OF SKEW	1.12474	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
30.500	0.00	0.00	0.00
31.000	.19	.34	.49
31.500	.54	.96	1.39
32.000	1.16	2.07	2.98
32.500	2.65	4.73	6.80
33.000	4.49	8.02	11.52
33.500	6.75	12.05	17.33
34.000	7.77	13.87	19.94
34.500	7.41	13.23	19.02
35.000	6.37	11.37	16.35
35.500	5.44	9.71	13.96
36.000	4.67	8.34	11.99
36.500	4.01	7.16	10.29
37.000	3.37	6.02	8.65
37.500	2.94	5.25	7.55
38.000	2.49	4.45	6.39
38.500	2.17	3.87	5.57
39.000	1.76	3.14	4.52
39.500	1.54	2.75	3.95
40.000	1.30	2.32	3.34
40.500	1.10	1.96	2.82
41.000	.95	1.70	2.44
41.500	.79	1.41	2.03
42.000	.67	1.20	1.72
42.500	.61	1.09	1.57
43.000	.58	1.04	1.49
43.500	.53	.95	1.36
44.000	.53	.95	1.36
44.500	.44	.79	1.13
45.000	.37	.66	.95
45.500	.24	.43	.62
46.000	.01	.02	.03

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH C
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	6.40	MILES
RIVER DISCHARGE	190.00	CFS
RECOVERY RATIO OF TRACER	.916	
TIME TO CENTROID	13.57	HOURS
TIME VARIANCE	2.65759	HRS.SQ.
COEFFICIENT OF SKEW	2.00232	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
10.000	0.00	0.00	0.00
10.500	0.00	0.00	0.00
11.000	0.00	0.00	0.00
11.500	2.39	2.61	2.61
12.000	10.11	11.04	11.04
12.500	11.33	12.37	12.37
13.000	10.51	11.47	11.47
13.500	9.12	9.96	9.96
14.000	6.90	7.53	7.53
14.500	5.34	5.83	5.83
15.000	3.82	4.17	4.17
15.500	2.60	2.84	2.84
16.000	1.82	1.99	1.99
16.500	.98	1.07	1.07
17.000	.57	.62	.62
17.500	.42	.46	.46
18.000	.32	.35	.35
18.500	.22	.24	.24
19.000	.19	.21	.21
19.500	.17	.19	.19
20.000	.15	.17	.17
20.500	.14	.15	.15
21.000	.10	.11	.11
21.500	.08	.09	.09
22.000	.07	.07	.07
22.500	.06	.07	.07
23.000	.06	.06	.06
23.500	.05	.05	.05
24.000	.04	.04	.04
24.500	.02	.02	.02
25.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH C
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	11.40	MILES
RIVER DISCHARGE	200.00	CFS
RECOVERY RATIO OF TRACER	1.058	
TIME TO CENTROID	24.76	HOURS
TIME VARIANCE	7.60141	HRS.SQ.
COEFFICIENT OF SKEW	1.23954	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
20.000	0.00	0.00	0.00
20.500	.30	.28	.30
21.000	1.76	1.66	1.75
21.500	3.78	3.57	3.76
22.000	5.37	5.07	5.34
22.500	6.68	6.31	6.64
23.000	7.21	6.82	7.17
23.500	6.92	6.54	6.89
24.000	6.45	6.09	6.41
24.500	5.85	5.53	5.82
25.000	5.13	4.85	5.10
25.500	4.36	4.12	4.33
26.000	3.79	3.58	3.77
26.500	2.89	2.73	2.88
27.000	2.24	2.11	2.22
27.500	1.75	1.66	1.74
28.000	1.33	1.25	1.32
28.500	1.16	1.10	1.15
29.000	1.03	.98	1.03
29.500	.89	.84	.89
30.000	.82	.77	.82
30.500	.75	.71	.74
31.000	.71	.67	.70
31.500	.65	.61	.64
32.000	.55	.52	.55
32.500	.50	.47	.49
33.000	.36	.34	.36
33.500	.31	.29	.31
34.000	.24	.23	.24
34.500	.18	.17	.18
35.000	.13	.12	.13
35.500	.07	.07	.07
36.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH C
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	16.65	MILES
RIVER DISCHARGE	225.00	CFS
RECOVERY RATIO OF TRACER	1.142	
TIME TO CENTROID	35.21	HOURS
TIME VARIANCE	10.48670	HRS.SQ.
COEFFICIENT OF SKEW	.76498	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
28.000	0.00	0.00	0.00
29.000	.20	.17	.20
30.000	.96	.84	1.00
31.000	2.38	2.08	2.46
32.000	3.74	3.27	3.87
33.000	4.75	4.16	4.92
34.000	4.78	4.19	4.96
35.000	4.43	3.88	4.60
36.000	3.79	3.32	3.93
37.000	2.98	2.61	3.09
38.000	2.15	1.88	2.23
39.000	1.54	1.35	1.60
40.000	1.17	1.03	1.22
41.000	.86	.75	.89
42.000	.66	.58	.69
43.000	.46	.40	.48
44.000	.38	.33	.39
45.000	.24	.21	.24
46.000	.10	.08	.10
47.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH C
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	21.30	MILES
RIVER DISCHARGE	270.00	CFS
RECOVERY RATIO OF TRACER	1.215	
TIME TO CENTROID	45.60	HOURS
TIME VARIANCE	21.37517	HRS.SQ.
COEFFICIENT OF SKEW	1.28944	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
37.000	0.00	0.00	0.00
38.000	.34	.28	.40
39.000	.80	.66	.94
40.000	1.46	1.20	1.71
41.000	2.22	1.82	2.59
42.000	3.17	2.61	3.71
43.000	3.49	2.87	4.08
44.000	3.54	2.91	4.14
45.000	3.40	2.80	3.98
46.000	2.85	2.35	3.34
47.000	2.24	1.84	2.62
48.000	1.70	1.40	1.99
49.000	1.32	1.09	1.55
50.000	1.02	.84	1.19
51.000	.76	.63	.89
52.000	.59	.49	.69
53.000	.49	.40	.57
54.000	.37	.30	.43
55.000	.29	.24	.34
56.000	.27	.22	.31
57.000	.21	.17	.25
58.000	.21	.17	.25
59.000	.17	.14	.20
60.000	.16	.13	.19
61.000	.16	.13	.18
62.000	.11	.09	.13
63.000	.10	.08	.12
64.000	.06	.05	.07
65.000	.02	.02	.02
66.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH D
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	4.65	MILES
RIVER DISCHARGE	286.00	CFS
RECOVERY RATIO OF TRACER	1.231	
TIME TO CENTROID	9.94	HOURS
TIME VARIANCE	4.02819	HRS.SQ.
COEFFICIENT OF SKEW	2.21835	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
7.000	0.00	0.00	0.00
7.500	1.58	1.28	1.28
8.000	14.90	12.11	12.11
8.500	22.11	17.97	17.97
9.000	21.68	17.78	17.78
9.500	17.89	14.54	14.54
10.000	13.33	10.83	10.83
10.500	8.79	7.14	7.14
11.000	6.46	5.25	5.25
11.500	4.98	4.05	4.05
12.000	4.02	3.27	3.27
12.500	3.15	2.56	2.56
13.000	2.56	2.08	2.08
13.500	2.10	1.71	1.71
14.000	1.60	1.30	1.30
14.500	1.21	.98	.98
15.000	.87	.71	.71
15.500	.64	.52	.52
16.000	.42	.34	.34
16.500	.29	.23	.23
17.000	.25	.20	.20
17.500	.20	.16	.16
18.000	.18	.14	.14
18.500	.15	.12	.12
19.000	.12	.10	.10
19.500	.13	.10	.10
20.000	.12	.10	.10
20.500	.10	.08	.08
21.000	.08	.07	.07
21.500	.09	.07	.07
22.000	.08	.06	.06
22.500	.06	.05	.05
23.000	.06	.05	.05
23.500	.05	.04	.04
24.000	.02	.02	.02
24.500	.01	.01	.01
25.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH D
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	11.70	MILES
RIVER DISCHARGE	295.00	CFS
RECOVERY RATIO OF TRACER	1.004	
TIME TO CENTROID	31.59	HOURS
TIME VARIANCE	15.11439	HRS.SQ.
COEFFICIENT OF SKEW	1.49191	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
25.000	0.00	0.00	0.00
26.000	.51	.51	.53
27.000	3.55	3.54	3.65
28.000	6.26	6.24	6.44
29.000	7.37	7.35	7.58
30.000	6.93	6.90	7.12
31.000	6.10	6.08	6.27
32.000	4.92	4.90	5.06
33.000	3.74	3.72	3.84
34.000	2.92	2.91	3.00
35.000	2.22	2.22	2.29
36.000	1.65	1.65	1.70
37.000	1.35	1.35	1.39
38.000	.99	.99	1.02
39.000	.64	.63	.65
40.000	.51	.51	.52
41.000	.38	.38	.39
42.000	.34	.33	.35
43.000	.28	.28	.29
44.000	.20	.20	.21
45.000	.18	.18	.18
46.000	.16	.16	.16
47.000	.16	.16	.16
48.000	.10	.10	.10
49.000	.08	.08	.08
50.000	.04	.04	.04
51.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH D
SAMPLING SITE NUMBER 3
DISTANCE FROM POINT OF INJECTION 17.15 MILES
RIVER DISCHARGE 330.00 CFS

RECOVERY RATIO OF TRACER .972
TIME TO CENTROID 43.32 HOURS
TIME VARIANCE 19.53341 HRS.SQ.
COEFFICIENT OF SKEW 1.00624

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
35.000	0.00	0.00	0.00
36.000	.60	.62	.72
37.000	1.50	1.54	1.78
38.000	2.50	2.57	2.96
39.000	3.52	3.63	4.18
40.000	4.60	4.73	5.46
41.000	4.88	5.03	5.80
42.000	4.71	4.85	5.59
43.000	4.33	4.46	5.14
44.000	3.74	3.85	4.44
45.000	2.96	3.05	3.52
46.000	2.36	2.42	2.80
47.000	1.90	1.95	2.25
48.000	1.51	1.56	1.80
49.000	1.15	1.19	1.37
50.000	.94	.97	1.12
51.000	.76	.79	.91
52.000	.64	.65	.76
53.000	.53	.55	.63
54.000	.45	.47	.54
55.000	.28	.28	.33
56.000	.22	.22	.26
57.000	.19	.20	.23
58.000	.16	.16	.19
59.000	.11	.12	.13
60.000	.07	.07	.09
61.000	.03	.03	.03
62.000	0.00	0.00	0.00

MONOCACY RIVER
NOVEMBER 14, 1967 SUBREACH D
SAMPLING SITE NUMBER 4
DISTANCE FROM POINT OF INJECTION 21.00 MILES
RIVER DISCHARGE 335.00 CFS

RECOVERY RATIO OF TRACER .930
TIME TO CENTROID 51.51 HOURS
TIME VARIANCE 30.02967 HRS.SQ.
COEFFICIENT OF SKEW 1.24022

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
42.000	0.00	0.00	0.00
43.000	.26	.28	.33
44.000	1.16	1.25	1.46
45.000	1.97	2.12	2.48
46.000	2.83	3.04	3.56
47.000	3.82	4.11	4.81
48.000	4.24	4.55	5.33
49.000	3.96	4.26	4.99
50.000	3.64	3.91	4.58
51.000	3.25	3.50	4.10
52.000	2.82	3.03	3.55
53.000	2.39	2.57	3.01
54.000	1.96	2.11	2.47
55.000	1.66	1.78	2.09
56.000	1.39	1.50	1.75
57.000	1.18	1.27	1.49
58.000	.97	1.04	1.22
59.000	.80	.86	1.01
60.000	.67	.72	.84
61.000	.57	.61	.72
62.000	.47	.50	.59
63.000	.36	.39	.46
64.000	.30	.32	.38
65.000	.23	.25	.29
66.000	.19	.21	.24
67.000	.20	.22	.25
68.000	.18	.20	.23
69.000	.17	.18	.21
70.000	.14	.15	.17
71.000	.10	.11	.13
72.000	.10	.10	.12
73.000	.08	.09	.11
74.000	.03	.03	.04
75.000	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH C
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	6.40 MILES
RIVER DISCHARGE	550.00 CFS
RECOVERY RATIO OF TRACER	1.146
TIME TO CENTROID	7.91 HOURS
TIME VARIANCE	1.10861 HRS.SQ.
COEFFICIENT OF SKEW	1.58197

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
6.000	.00	.00	.00
6.200	.00	.00	.00
6.400	1.22	1.06	1.06
6.600	6.70	5.85	5.85
6.800	13.98	12.20	12.20
7.000	19.93	17.39	17.39
7.200	21.10	18.41	18.41
7.400	19.96	17.42	17.42
7.600	17.96	15.67	15.67
7.800	16.27	14.20	14.20
8.000	14.50	12.65	12.65
8.200	11.58	10.10	10.10
8.400	9.32	8.13	8.13
8.600	7.75	6.76	6.76
8.800	6.20	5.41	5.41
9.000	5.04	4.40	4.40
9.200	4.24	3.70	3.70
9.400	3.48	3.04	3.04
9.600	2.98	2.60	2.60
9.800	2.32	2.02	2.02
10.000	1.78	1.55	1.55
10.200	1.38	1.21	1.21
10.400	1.12	.98	.98
10.600	.92	.80	.80
10.800	.79	.69	.69
11.000	.66	.58	.58
11.200	.54	.47	.47
11.400	.47	.41	.41
11.600	.42	.36	.36
11.800	.40	.35	.35
12.000	.36	.31	.31
12.200	.32	.28	.28
12.400	.27	.23	.23
12.600	.22	.20	.20
12.800	.19	.16	.16
13.000	.16	.14	.14
13.200	.10	.08	.08
13.400	.05	.05	.05
13.600	.01	.01	.01
13.800	.00	.00	.00
14.000	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH C
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	11.40	MILES
RIVER DISCHARGE	535.00	CFS
RECOVERY RATIO OF TRACER	1.122	
TIME TO CENTROID	14.25	HOURS
TIME VARIANCE	1.98283	HRS.SQ.
COEFFICIENT OF SKEW	1.05569	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
11.600	0.00	0.00	0.00
11.800	.24	.21	.20
12.000	.90	.80	.78
12.200	2.48	2.21	2.15
12.400	6.96	6.20	6.03
12.600	9.06	8.07	7.85
12.800	10.45	9.31	9.06
13.000	11.57	10.32	10.04
13.200	12.61	11.24	10.93
13.400	13.30	11.86	11.53
13.600	13.31	11.87	11.54
13.800	12.90	11.50	11.19
14.000	11.86	10.57	10.28
14.200	10.93	9.75	9.48
14.400	9.85	8.78	8.54
14.600	8.64	7.88	7.67
14.800	7.98	7.12	6.92
15.000	7.13	6.36	6.18
15.200	6.31	5.62	5.47
15.400	5.56	4.96	4.82
15.600	4.85	4.33	4.21
15.800	4.20	3.75	3.65
16.000	3.65	3.26	3.17
16.200	3.02	2.69	2.62
16.400	2.63	2.34	2.28
16.600	2.32	2.06	2.01
16.800	1.99	1.78	1.73
17.000	1.76	1.57	1.53
17.200	1.56	1.39	1.36
17.400	1.32	1.18	1.15
17.600	1.16	1.03	1.00
17.800	1.01	.90	.88
18.000	.86	.76	.74
18.200	.60	.54	.52
18.400	.53	.47	.46
18.600	.43	.38	.37
18.800	.39	.35	.34
19.000	.32	.29	.28
19.200	.24	.22	.21
19.400	.21	.19	.18
19.600	.18	.16	.16
19.800	.12	.10	.10
20.000	.09	.08	.08
20.200	.08	.07	.07
20.400	.06	.05	.05
20.600	.05	.04	.04
20.800	.02	.02	.02
21.000	0.0	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH C
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	16.65 MILES
RIVER DISCHARGE	560.00 CFS
RECOVERY RATIO OF TRACER	1.034
TIME TO CENTROID	20.36 HOURS
TIME VARIANCE	2.64277 HRS.SQ.
COEFFICIENT OF SKEW	.72080

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
16.800	0.00	0.00	0.00
17.000	.08	.07	.07
17.200	.46	.44	.45
17.400	.90	.87	.89
17.600	1.28	1.23	1.26
17.800	2.25	2.18	2.22
18.000	3.35	3.24	3.30
18.200	4.50	4.36	4.43
18.400	5.65	5.46	5.56
18.600	6.44	6.23	6.34
18.800	7.33	7.09	7.22
19.000	7.84	7.58	7.72
19.200	8.57	8.29	8.44
19.400	9.01	8.71	8.87
19.600	9.31	9.01	9.17
19.800	9.30	8.99	9.16
20.000	9.10	8.80	8.96
20.200	8.53	8.25	8.40
20.400	8.05	7.78	7.92
20.600	7.55	7.30	7.44
20.800	7.04	6.80	6.93
21.000	6.52	6.31	6.42
21.200	5.97	5.78	5.88
21.400	5.48	5.30	5.40
21.600	4.83	4.67	4.76
21.800	4.30	4.15	4.23
22.000	3.77	3.65	3.71
22.200	3.31	3.20	3.26
22.400	3.01	2.91	2.96
22.600	2.61	2.53	2.57
22.800	2.31	2.24	2.28
23.000	2.05	1.98	2.02
23.200	1.81	1.75	1.78
23.400	1.67	1.61	1.64
23.600	1.41	1.37	1.39
23.800	1.24	1.20	1.22
24.000	1.11	1.07	1.09
24.200	.94	.91	.92
24.400	.79	.77	.78
24.600	.67	.65	.66
24.800	.45	.43	.44

MONOCACY RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
25.000	.38	.36	.37
25.200	.28	.27	.28
25.400	.22	.21	.21
25.600	.19	.19	.19
25.800	.22	.21	.21
26.000	.19	.18	.19
26.200	.17	.17	.17
26.400	.10	.09	.09
26.600	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH C
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	21.30	MILES
RIVER DISCHARGE	655.00	CFS
RECOVERY RATIO OF TRACER	1.252	
TIME TO CENTROID	26.56	HOURS
TIME VARIANCE	5.04221	HRS.SQ.
COEFFICIENT OF SKEW	1.05352	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
22.000	0.00	0.00	0.00
22.200	.28	.22	.26
22.400	.52	.41	.49
22.600	.66	.53	.63
22.800	.91	.73	.87
23.000	1.15	.92	1.10
23.200	1.46	1.16	1.39
23.400	1.79	1.43	1.71
23.600	2.59	2.07	2.46
23.800	3.46	2.76	3.29
24.000	4.45	3.55	4.23
24.200	5.14	4.11	4.89
24.400	5.92	4.73	5.64
24.600	6.38	5.09	6.07
24.800	6.90	5.51	6.56
25.000	7.26	5.80	6.91
25.200	7.50	5.99	7.13
25.400	7.56	6.04	7.19
25.600	7.58	6.05	7.21
25.800	7.58	6.06	7.22
26.000	7.52	6.01	7.16
26.200	7.40	5.92	7.05
26.400	7.21	5.76	6.86
26.600	6.86	5.48	6.53
26.800	6.46	5.16	6.15
27.000	5.84	4.67	5.56
27.200	5.32	4.25	5.07
27.400	4.79	3.83	4.56
27.600	4.38	3.50	4.17
27.800	4.04	3.23	3.84
28.000	3.70	2.96	3.52
28.200	3.36	2.68	3.19
28.400	2.98	2.38	2.84
28.600	2.72	2.17	2.59
28.800	2.45	1.96	2.33
29.000	2.24	1.79	2.13
29.200	2.01	1.61	1.91
29.400	1.83	1.46	1.74
29.600	1.66	1.33	1.58
29.800	1.49	1.19	1.42
30.000	1.37	1.10	1.31

MONOCACY RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
30.200	1.24	.99	1.18
30.400	1.14	.91	1.08
30.600	1.03	.82	.98
30.800	.93	.74	.89
31.000	.86	.69	.82
31.200	.79	.63	.75
31.400	.70	.56	.67
31.600	.65	.52	.62
31.800	.62	.50	.59
32.000	.59	.47	.56
32.200	.54	.43	.52
32.400	.52	.42	.49
32.600	.49	.39	.47
32.800	.44	.35	.41
33.000	.40	.32	.38
33.200	.36	.29	.34
33.400	.34	.27	.32
33.600	.32	.25	.30
33.800	.28	.23	.27
34.000	.26	.20	.24
34.200	.23	.18	.22
34.400	.21	.17	.20
34.600	.20	.16	.19
34.800	.18	.14	.17
35.000	.15	.12	.14
35.200	.12	.10	.12
35.400	.09	.07	.09
35.600	.07	.06	.07
35.800	.05	.04	.05
36.000	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH D
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	4.55	MILES
RIVER DISCHARGE	720.00	CFS
RECOVERY RATIO OF TRACER	1.567	
TIME TO CENTROID	5.63	HOURS
TIME VARIANCE	.75580	HRS.SQ.
COEFFICIENT OF SKEW	1.76523	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
3.500	0.00	0.00	0.00
4.000	.14	.09	.09
4.500	16.58	10.58	10.58
5.000	41.74	26.63	26.63
5.500	40.17	25.63	25.63
6.000	32.12	20.50	20.50
6.500	14.94	9.53	9.53
7.000	5.96	3.80	3.80
7.500	3.06	1.95	1.95
8.000	1.45	.93	.93
8.500	.75	.48	.48
9.000	.45	.29	.29
9.500	.31	.20	.20
10.000	.22	.14	.14
10.500	.21	.13	.13
11.000	.16	.10	.10
11.500	.10	.06	.06
12.000	.05	.03	.03
12.500	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH D
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	11.70	MILES
RIVER DISCHARGE	720.00	CFS
RECOVERY RATIO OF TRACER	1.225	
TIME TO CENTROID	16.44	HOURS
TIME VARIANCE	2.06032	HRS.SQ.
COEFFICIENT OF SKEW	.95738	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
13.000	.01	.01	.01
13.500	.34	.28	.28
14.000	1.44	1.18	1.18
14.500	8.82	7.20	7.20
15.000	14.95	12.21	12.21
15.500	19.06	15.56	15.56
16.000	18.92	15.45	15.45
16.500	16.42	13.41	13.41
17.000	13.33	10.88	10.88
17.500	10.25	8.37	8.37
18.000	7.37	6.02	6.02
18.500	4.70	3.84	3.84
19.000	2.76	2.25	2.25
19.500	1.68	1.37	1.37
20.000	1.26	1.03	1.03
20.500	.94	.77	.77
21.000	.69	.56	.56
21.500	.42	.34	.34
22.000	.28	.23	.23
22.500	.13	.11	.11
23.000	.03	.02	.02
23.500	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH D
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	17.25	MILES
RIVER DISCHARGE	780.00	CFS
RECOVERY RATIO OF TRACER	1.056	
TIME TO CENTROID	23.42	HOURS
TIME VARIANCE	5.87640	HRS.SQ.
COEFFICIENT OF SKEW	1.36728	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
18.000	0.00	0.00	0.00
18.500	0.00	0.00	0.00
19.000	.14	.13	.14
19.500	.68	.64	.70
20.000	1.98	1.88	2.03
20.500	4.98	4.72	5.11
21.000	7.52	7.12	7.72
21.500	9.54	9.04	9.79
22.000	10.64	10.08	10.92
22.500	10.08	9.55	10.34
23.000	9.32	8.83	9.56
23.500	8.35	7.91	8.57
24.000	7.06	6.69	7.24
24.500	5.89	5.58	6.04
25.000	4.80	4.55	4.93
25.500	3.63	3.44	3.72
26.000	2.94	2.78	3.02
26.500	2.30	2.18	2.36
27.000	1.87	1.77	1.92
27.500	1.28	1.21	1.31
28.000	.93	.88	.95
28.500	.71	.67	.73
29.000	.62	.59	.64
29.500	.51	.48	.52
30.000	.46	.44	.47
30.500	.46	.44	.47
31.000	.36	.34	.37
31.500	.31	.29	.32
32.000	.28	.27	.29
32.500	.25	.24	.26
33.000	.20	.19	.21
33.500	.18	.17	.18
34.000	.15	.14	.15
34.500	.09	.09	.09
35.000	0.00	0.00	0.00

MONOCACY RIVER
JUNE 7, 1968 SUBREACH D
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	21.00	MILES
RIVER DISCHARGE	780.00	CFS
RECOVERY RATIO OF TRACER	.964	
TIME TO CENTROID	29.01	HOURS
TIME VARIANCE	7.54379	HRS.SQ.
COEFFICIENT OF SKEW	1.70993	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
23.500	0.00	0.00	0.00
24.000	.02	.02	.02
24.500	.18	.19	.20
25.000	.90	.93	1.01
25.500	1.90	1.97	2.14
26.000	4.72	4.90	5.31
26.500	6.91	7.17	7.77
27.000	8.89	9.22	9.99
27.500	9.52	9.88	10.70
28.000	9.39	9.74	10.56
28.500	8.68	9.01	9.76
29.000	7.13	7.40	8.02
29.500	5.96	6.18	6.70
30.000	4.96	5.15	5.58
30.500	4.02	4.17	4.52
31.000	3.37	3.50	3.79
31.500	2.67	2.77	3.00
32.000	1.98	2.05	2.23
32.500	1.28	1.33	1.44
33.000	1.04	1.08	1.17
33.500	.76	.79	.85
34.000	.69	.72	.78
34.500	.59	.61	.66
35.000	.54	.56	.61
35.500	.53	.55	.60
36.000	.44	.46	.49
36.500	.38	.39	.43
37.000	.36	.37	.40
37.500	.32	.33	.36
38.000	.29	.30	.33
38.500	.27	.28	.30
39.000	.24	.25	.27
39.500	.24	.25	.27
40.000	.20	.21	.22
40.500	.17	.18	.19
41.000	.13	.13	.15
41.500	.12	.12	.13
42.000	.08	.08	.09
42.500	.05	.05	.06
43.000	0.00	0.00	0.00

MONOCACY RIVER
SEPTEMBER 25, 1968
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	4.65 MILES
RIVER DISCHARGE	108.00 CFS
RECOVERY RATIO OF TRACER	.797
TIME TO CENTROID	20.96 HOURS
TIME VARIANCE	37.72284 HRS.SQ.
COEFFICIENT OF SKEW	2.52450

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
13.000	0.00	0.00	0.00
14.000	.24	.31	.31
15.000	4.60	5.76	5.76
16.000	13.38	16.79	16.79
17.000	19.76	24.78	24.78
18.000	19.18	24.06	24.06
19.000	15.84	19.87	19.87
20.000	12.43	15.59	15.59
21.000	10.36	13.00	13.00
22.000	7.70	9.65	9.65
23.000	5.76	7.22	7.22
24.000	4.00	5.02	5.02
25.000	2.87	3.60	3.60
26.000	2.29	2.87	2.87
27.000	1.89	2.37	2.37
28.000	1.60	2.01	2.01
29.000	1.36	1.70	1.70
30.000	1.16	1.46	1.46
31.000	1.03	1.29	1.29
32.000	.92	1.15	1.15
33.000	.82	1.03	1.03
34.000	.72	.91	.91
35.000	.63	.79	.79
36.000	.62	.78	.78
37.000	.58	.73	.73
38.000	.51	.64	.64
39.000	.47	.59	.59
40.000	.43	.54	.54
41.000	.38	.48	.48
42.000	.33	.42	.42
43.000	.30	.38	.38
44.000	.30	.37	.37
45.000	.24	.30	.30
46.000	.21	.26	.26
47.000	.19	.24	.24
48.000	.18	.23	.23
49.000	.16	.20	.20
50.000	.16	.20	.20
51.000	.14	.18	.18
52.000	.14	.18	.18
53.000	.10	.13	.13
54.000	.08	.10	.10
55.000	.07	.09	.09
56.000	.06	.08	.08
57.000	.05	.06	.06
58.000	.03	.04	.04
59.000	.03	.04	.04
60.000	.02	.03	.03
61.000	0.00	0.00	0.00

MONOCACY RIVER
SEPTEMBER 25, 1968
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	11.70 MILES
RIVER DISCHARGE	113.00 CFS
RECOVERY RATIO OF TRACER	.571
TIME TO CENTROID	69.52 HOURS
TIME VARIANCE	119.61754 HRS.SQ.
COEFFICIENT OF SKEW	1.24045

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
52.000	0.00	0.00	0.00
54.000	.65	1.14	1.20
56.000	2.29	4.02	4.20
58.000	2.98	5.23	5.47
60.000	3.79	6.64	6.95
62.000	4.44	7.78	8.14
64.000	4.51	7.90	8.26
66.000	4.27	7.48	7.83
68.000	3.93	6.88	7.20
70.000	3.49	6.11	6.39
72.000	2.96	5.18	5.42
74.000	2.34	4.11	4.30
76.000	1.71	3.00	3.14
78.000	1.26	2.20	2.30
80.000	.96	1.67	1.75
82.000	.83	1.45	1.52
84.000	.75	1.31	1.37
86.000	.68	1.18	1.24
88.000	.59	1.04	1.09
90.000	.54	.95	.99
92.000	.52	.91	.95
94.000	.48	.84	.88
96.000	.46	.80	.84
98.000	.40	.69	.73
100.000	.32	.55	.58
102.000	.28	.48	.51
104.000	.22	.39	.40
106.000	.18	.31	.32
108.000	.10	.17	.18
110.000	.05	.09	.10
112.000	0.00	0.00	0.00

MONOCACY RIVER
SEPTEMBER 25, 1968
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	17.15 MILES
RIVER DISCHARGE	122.00 CFS
RECOVERY RATIO OF TRACER	.479
TIME TO CENTROID	93.19 HOURS
TIME VARIANCE	189.86072 HRS.SQ.
COEFFICIENT OF SKEW	1.07948

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
68.000	0.00	0.00	0.00
70.000	.05	.10	.11
72.000	.31	.64	.73
74.000	.76	1.58	1.78
76.000	1.25	2.60	2.94
78.000	1.72	3.60	4.06
80.000	2.06	4.29	4.85
82.000	2.38	4.96	5.60
84.000	2.57	5.37	6.06
86.000	2.66	5.54	6.26
88.000	2.59	5.40	6.10
90.000	2.47	5.16	5.83
92.000	2.27	4.73	5.34
94.000	2.04	4.26	4.81
96.000	1.78	3.71	4.19
98.000	1.54	3.21	3.63
100.000	1.30	2.70	3.05
102.000	1.09	2.27	2.56
104.000	.88	1.84	2.07
106.000	.74	1.54	1.74
108.000	.59	1.24	1.40
110.000	.54	1.13	1.28
112.000	.50	1.04	1.18
114.000	.45	.94	1.07
116.000	.42	.88	1.00
118.000	.38	.80	.90
120.000	.37	.78	.88
122.000	.32	.68	.76
124.000	.30	.62	.70
126.000	.25	.52	.58
128.000	.24	.49	.56
130.000	.19	.40	.45
132.000	.21	.43	.49
134.000	.19	.40	.45
136.000	.17	.35	.40
138.000	.11	.23	.26
140.000	.06	.13	.15
142.000	0.00	0.00	0.00

MONOCACY RIVER
SEPTEMBER 25, 1968
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	21.00	MILES
RIVER DISCHARGE	124.00	CFS
RECOVERY RATIO OF TRACER	.440	
TIME TO CENTROID	110.70	HOURS
TIME VARIANCE	278.67764	HRS.SQ.
COEFFICIENT OF SKEW	.85524	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
83.000	0.00	0.00	0.00
85.000	.19	.43	.49
87.000	.47	1.07	1.23
89.000	.84	1.91	2.19
91.000	1.14	2.60	2.98
93.000	1.52	3.46	3.97
95.000	1.89	4.30	4.93
97.000	2.08	4.71	5.41
99.000	2.10	4.78	5.48
101.000	2.03	4.61	5.30
103.000	1.86	4.23	4.86
105.000	1.75	3.98	4.57
107.000	1.56	3.53	4.06
109.000	1.44	3.26	3.74
111.000	1.27	2.88	3.31
113.000	1.14	2.60	2.98
115.000	1.01	2.30	2.64
117.000	.90	2.05	2.35
119.000	.82	1.87	2.15
121.000	.75	1.70	1.95
123.000	.72	1.63	1.87
125.000	.66	1.51	1.73
127.000	.62	1.40	1.61
129.000	.57	1.30	1.49
131.000	.56	1.27	1.46
133.000	.50	1.14	1.31
135.000	.47	1.07	1.23
137.000	.46	1.04	1.19
139.000	.43	.98	1.13
141.000	.41	.94	1.07
143.000	.38	.86	.99
145.000	.34	.78	.90
147.000	.31	.70	.80
149.000	.28	.63	.72
151.000	.21	.48	.55
153.000	.21	.48	.55
155.000	.17	.38	.44
157.000	.16	.37	.43
159.000	.07	.15	.18
161.000	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
MAY 6, 1969
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	2.75 MILES
RIVER DISCHARGE	241.00 CFS
RECOVERY RATIO OF TRACER	1.544
TIME TO CENTROID	3.05 HOURS
TIME VARIANCE	.10552 HRS.SQ.
COEFFICIENT OF SKEW	1.40757

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.400	0.00	0.00	0.00
2.500	19.76	12.80	12.80
2.600	55.40	35.89	35.89
2.700	81.96	53.10	53.10
2.800	99.76	64.63	64.63
2.900	134.84	87.35	87.35
3.000	147.68	95.67	95.67
3.100	154.44	100.05	100.05
3.200	98.80	64.01	64.01
3.300	65.40	42.37	42.37
3.400	27.84	18.04	18.04
3.500	19.12	12.39	12.39
3.600	16.04	10.39	10.39
3.700	12.24	7.93	7.93
3.800	9.68	6.27	6.27
3.900	7.20	4.66	4.66
4.000	5.52	3.58	3.58
4.100	4.32	2.80	2.80
4.200	3.68	2.38	2.38
4.300	2.32	1.50	1.50
4.400	1.48	.96	.96
4.500	1.16	.75	.75
4.600	.72	.47	.47
4.700	.56	.36	.36
4.800	.36	.23	.23
4.900	.44	.29	.29
5.000	.28	.18	.18
5.100	.16	.10	.10
5.200	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
MAY 6, 1969
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	5.40	MILES
RIVER DISCHARGE	242.00	CFS
RECOVERY RATIO OF TRACER	1.407	
TIME TO CENTROID	6.92	HOURS
TIME VARIANCE	.69242	HRS.SQ.
COEFFICIENT OF SKEW	2.11444	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
5.800	0.00	0.00	0.00
6.000	26.36	18.73	18.81
6.200	62.92	44.7?	44.89
6.400	66.12	46.98	47.18
6.600	66.28	47.10	47.29
6.800	56.32	40.02	40.19
7.000	38.32	27.23	27.34
7.200	29.44	20.92	21.01
7.400	21.64	15.38	15.44
7.600	15.32	10.89	10.93
7.800	11.28	8.02	8.05
8.000	9.04	6.42	6.45
8.200	8.12	5.77	5.79
8.400	6.44	4.58	4.60
8.600	4.96	3.52	3.54
8.800	4.16	2.96	2.97
9.000	3.16	2.25	2.25
9.200	2.36	1.68	1.68
9.400	1.68	1.19	1.20
9.600	.80	.57	.57
9.800	.60	.43	.43
10.000	.60	.43	.43
10.200	.60	.43	.43
10.400	.60	.43	.43
10.600	.68	.48	.49
10.800	.56	.40	.40
11.000	.52	.37	.37
11.200	.56	.40	.40
11.400	.56	.40	.40
11.600	.32	.23	.23
11.800	.40	.28	.29
12.000	.16	.11	.11
12.200	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
MAY 6, 1969
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	8.35	MILES
RIVER DISCHARGE	243.00	CFS
RECOVERY RATIO OF TRACER	1.072	
TIME TO CENTROID	11.23	HOURS
TIME VARIANCE	1.54933	HRS.SQ.
COEFFICIENT OF SKEW	1.80857	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
9.600	0.00	0.00	0.00
9.800	6.33	5.90	5.95
10.000	21.38	19.94	20.11
10.200	40.96	38.20	38.52
10.400	40.27	37.56	37.87
10.600	35.37	32.99	33.26
10.800	30.76	28.69	28.93
11.000	26.21	24.45	24.65
11.200	21.83	20.36	20.53
11.400	16.86	15.73	15.86
11.600	14.25	13.29	13.40
11.800	11.61	10.83	10.92
12.000	9.77	9.11	9.19
12.200	7.96	7.42	7.49
12.400	6.58	6.14	6.19
12.600	5.77	5.38	5.43
12.800	5.01	4.67	4.71
13.000	4.52	4.22	4.25
13.200	3.76	3.51	3.54
13.400	3.36	3.13	3.16
13.600	2.92	2.72	2.75
13.800	2.70	2.52	2.54
14.000	2.25	2.10	2.12
14.200	1.89	1.76	1.78
14.400	1.69	1.58	1.59
14.600	1.56	1.46	1.47
14.800	1.38	1.29	1.30
15.000	1.13	1.05	1.06
15.200	1.05	.98	.99
15.400	.93	.87	.87
15.600	.81	.76	.76
15.800	.69	.64	.65
16.000	.61	.57	.57
16.200	.48	.45	.45
16.400	.42	.39	.39
16.600	.32	.30	.30
16.800	.29	.27	.27
17.000	.24	.22	.23
17.200	.18	.17	.17
17.400	.16	.15	.15
17.600	.14	.13	.13
17.800	.09	.08	.08
18.000	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
MAY 6, 1969
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	12.35	MILES
RIVER DISCHARGE	245.00	CFS
RECOVERY RATIO OF TRACER	.881	
TIME TO CENTROID	16.69	HOURS
TIME VARIANCE	3.01078	HRS.SQ.
COEFFICIENT OF SKEW	1.82986	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
14.400	0.00	0.00	0.00
14.800	5.20	5.91	6.00
15.200	24.22	27.51	27.96
15.600	22.26	25.28	25.70
16.000	18.41	20.91	21.25
16.400	14.36	16.31	16.58
16.800	11.10	12.61	12.81
17.200	8.37	9.51	9.66
17.600	6.46	7.34	7.46
18.000	5.06	5.75	5.84
18.400	4.16	4.72	4.80
18.800	3.16	3.59	3.65
19.200	2.64	3.00	3.05
19.600	1.96	2.23	2.26
20.000	1.68	1.91	1.94
20.400	1.34	1.52	1.55
20.800	1.16	1.32	1.34
21.200	.95	1.08	1.10
21.600	.82	.93	.95
22.000	.53	.60	.61
22.400	.45	.51	.52
22.800	.44	.50	.51
23.200	.36	.41	.42
23.600	.28	.32	.32
24.000	.23	.26	.27
24.400	.21	.24	.24
24.800	.17	.19	.20
25.200	.17	.19	.20
25.600	.09	.10	.10
26.000	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
MAY 6, 1969
SAMPLING SITE NUMBER 5

DISTANCE FROM POINT OF INJECTION	16.15 MILES
RIVER DISCHARGE	245.00 CFS
RECOVERY RATIO OF TRACER	.796
TIME TO CENTROID	23.09 HOURS
TIME VARIANCE	6.42778 HRS.SQ.
COEFFICIENT OF SKEW	1.95456

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
19.600	0.00	0.00	0.00
20.100	2.06	2.59	2.63
20.600	7.59	9.53	9.69
21.100	13.48	16.93	17.21
21.600	13.44	16.88	17.16
22.100	12.11	15.21	15.46
22.600	10.09	12.67	12.88
23.100	8.29	10.41	10.58
23.600	6.24	7.84	7.97
24.100	4.98	6.25	6.36
24.600	3.79	4.76	4.84
25.100	3.10	3.89	3.96
25.600	2.38	2.99	3.04
26.100	1.93	2.42	2.46
26.600	1.41	1.77	1.80
27.100	1.11	1.39	1.42
27.600	.88	1.11	1.12
28.100	.75	.94	.96
28.600	.63	.79	.80
29.100	.54	.68	.69
29.600	.45	.57	.57
30.100	.44	.55	.56
30.600	.39	.49	.50
31.100	.32	.40	.41
31.600	.30	.38	.38
32.100	.35	.44	.45
32.600	.34	.43	.43
33.100	.32	.40	.41
33.600	.29	.36	.37
34.100	.24	.30	.31
34.600	.21	.26	.27
35.100	.10	.13	.13
35.600	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
MAY 6, 1969
SAMPLING SITE NUMBER 6

DISTANCE FROM POINT OF INJECTION	21.05 MILES
RIVER DISCHARGE	250.00 CFS
RECOVERY RATIO OF TRACER	.566
TIME TO CENTROID	35.78 HOURS
TIME VARIANCE	12.58369 HRS.SQ.
COEFFICIENT OF SKEW	1.34740

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
29.800	.01	.02	.02
30.300	.17	.30	.31
30.800	.64	1.13	1.17
31.300	1.94	3.43	3.55
31.800	2.88	5.09	5.27
32.300	4.01	7.08	7.34
32.800	4.88	8.62	8.94
33.300	5.40	9.53	9.89
33.800	5.57	9.83	10.20
34.300	5.21	9.20	9.54
34.800	4.88	8.62	8.94
35.300	4.55	8.03	8.33
35.800	4.02	7.10	7.36
36.300	3.45	6.09	6.32
36.800	3.00	5.30	5.49
37.300	2.48	4.38	4.54
37.800	2.15	3.80	3.94
38.300	1.80	3.18	3.30
38.800	1.48	2.61	2.71
39.300	1.23	2.17	2.25
39.800	1.03	1.82	1.89
40.300	.87	1.54	1.59
40.800	.66	1.17	1.21
41.300	.67	1.18	1.23
41.800	.64	1.13	1.17
42.300	.60	1.06	1.10
42.800	.55	.97	1.01
43.300	.52	.92	.95
43.800	.42	.74	.77
44.300	.45	.79	.82
44.800	.38	.67	.70
45.300	.38	.67	.70
45.800	.30	.53	.55
46.300	.26	.46	.48
46.800	.27	.48	.49
47.300	.25	.44	.46
47.800	.25	.44	.46
48.300	.25	.44	.46
48.800	.20	.35	.37
49.300	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
SEPTEMBER 30, 1969
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	2.75	MILES
RIVER DISCHARGE	91.00	CFS
RECOVERY RATIO OF TRACER	1.119	
TIME TO CENTROID	6.22	HOURS
TIME VARIANCE	.90346	HRS.SQ.
COEFFICIENT OF SKEW	.98835	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.600	0.00	0.00	0.00
4.800	9.96	8.90	8.90
5.000	44.74	39.97	39.97
5.200	85.74	76.60	76.60
5.400	86.04	76.87	76.87
5.600	83.88	74.94	74.94
5.800	77.38	69.13	69.13
6.000	69.90	62.45	62.45
6.200	64.44	57.57	57.57
6.400	57.88	51.71	51.71
6.600	51.06	45.62	45.62
6.800	44.08	39.38	39.38
7.000	38.60	34.48	34.48
7.200	30.50	27.25	27.25
7.400	25.36	22.66	22.66
7.600	20.72	18.51	18.51
7.800	17.82	15.92	15.92
8.000	13.72	12.26	12.26
8.200	10.96	9.79	9.79
8.400	8.36	7.47	7.47
8.600	6.16	5.50	5.50
8.800	4.02	3.59	3.59
9.000	2.80	2.50	2.50
9.200	2.26	2.02	2.02
9.400	1.60	1.43	1.43
9.600	1.34	1.20	1.20
9.800	.94	.84	.84
10.000	.66	.59	.59
10.200	.44	.39	.39
10.400	.26	.23	.23
10.600	.18	.16	.16
10.800	.10	.09	.09
11.000	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
SEPTEMBER 30, 1969
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	5.40	MILES
RIVER DISCHARGE	100.00	CFS
RECOVERY RATIO OF TRACER	.992	
TIME TO CENTROID	15.01	HOURS
TIME VARIANCE	4.57576	HRS.SQ.
COEFFICIENT OF SKEW	1.08701	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
11.200	0.00	0.00	0.00
11.600	2.36	2.38	2.62
12.000	7.74	7.80	8.58
12.400	16.08	16.22	17.82
12.800	25.30	25.51	28.04
13.200	30.86	31.12	34.20
13.600	34.10	34.39	37.79
14.000	32.88	33.16	36.44
14.400	29.98	30.23	33.22
14.800	26.64	26.86	29.52
15.200	23.52	23.72	26.06
15.600	19.10	19.26	21.17
16.000	16.04	16.17	17.77
16.400	13.88	14.00	15.38
16.800	11.42	11.52	12.65
17.200	9.78	9.86	10.84
17.600	8.16	8.23	9.04
18.000	7.10	7.16	7.87
18.400	6.10	6.15	6.76
18.800	5.08	5.12	5.63
19.200	4.38	4.42	4.85
19.600	3.52	3.55	3.90
20.000	3.02	3.05	3.35
20.400	2.50	2.52	2.77
20.800	2.06	2.08	2.28
21.200	1.70	1.71	1.88
21.600	1.26	1.27	1.40
22.000	.94	.95	1.04
22.400	.82	.83	.91
22.800	.64	.65	.71
23.200	.48	.48	.53
23.600	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
SEPTEMBER 30, 1969
SAMPLING SITE NUMBER 3
DISTANCE FROM POINT OF INJECTION 8.35 MILES
RIVER DISCHARGE 102.00 CFS

RECOVERY RATIO OF TRACER 1.031
TIME TO CENTROID 26.75 HOURS
TIME VARIANCE 19.15008 HRS.SQ.
COEFFICIENT OF SKEW .69865

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
18.800	0.00	0.00	0.00
19.300	.96	.93	1.04
19.800	2.62	2.54	2.85
20.300	4.46	4.32	4.85
20.800	7.02	6.81	7.63
21.300	9.18	8.90	9.98
21.800	11.08	10.74	12.04
22.300	13.00	12.61	14.13
22.800	13.46	13.05	14.63
23.300	13.80	13.38	15.00
23.800	14.08	13.65	15.30
24.300	14.64	14.20	15.91
24.800	15.08	14.62	16.39
25.300	13.82	13.40	15.02
25.800	12.80	12.41	13.91
26.300	12.02	11.65	13.06
26.800	11.14	10.80	12.11
27.300	10.36	10.05	11.26
27.800	9.72	9.42	10.56
28.300	8.80	8.53	9.56
28.800	7.92	7.68	8.61
29.300	7.58	7.35	8.24
29.800	6.88	6.67	7.48
30.300	6.46	6.26	7.02
30.800	5.86	5.68	6.37
31.300	5.68	5.51	6.17
31.800	5.34	5.18	5.80
32.300	4.94	4.79	5.37
32.800	4.38	4.25	4.76
33.300	4.06	3.94	4.41
33.800	3.78	3.67	4.11
34.300	3.44	3.34	3.74
34.800	3.02	2.93	3.28
35.300	2.78	2.70	3.02
35.800	2.46	2.39	2.67
36.300	2.24	2.17	2.43
36.800	2.08	2.02	2.26
37.300	1.90	1.84	2.06
37.800	1.66	1.61	1.80
38.300	1.28	1.24	1.39
38.800	.96	.93	1.04
39.300	.66	.64	.72
39.800	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
SEPTEMBER 30, 1969
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	12.35	MILES
RIVER DISCHARGE	102.00	CFS
RECOVERY RATIO OF TRACER	.928	
TIME TO CENTROID	39.98	HOURS
TIME VARIANCE	18.45431	HRS.SQ.
COEFFICIENT OF SKEW	.72431	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
31.200	0.00	0.00	0.00
31.700	.22	.24	.27
32.200	.66	.71	.80
32.700	1.42	1.53	1.72
33.200	2.40	2.59	2.90
33.700	4.42	4.76	5.34
34.200	5.54	5.97	6.69
34.700	8.10	8.73	9.79
35.200	9.54	10.28	11.52
35.700	11.30	12.18	13.65
36.200	12.42	13.39	15.00
36.700	13.10	14.12	15.83
37.200	13.74	14.81	16.60
37.700	13.80	14.87	16.67
38.200	13.36	14.40	16.14
38.700	12.84	13.84	15.51
39.200	11.92	12.85	14.40
39.700	11.00	11.86	13.29
40.200	10.14	10.93	12.25
40.700	9.26	9.98	11.19
41.200	8.46	9.12	10.22
41.700	7.94	8.56	9.59
42.200	7.46	8.04	9.01
42.700	7.00	7.54	8.46
43.200	6.50	7.01	7.85
43.700	5.92	6.38	7.15
44.200	5.22	5.63	6.31
44.700	4.88	5.26	5.90
45.200	4.56	4.91	5.51
45.700	4.10	4.42	4.95
46.200	3.74	4.03	4.52
46.700	3.38	3.64	4.08
47.200	2.92	3.15	3.53
47.700	2.58	2.78	3.12
48.200	2.24	2.41	2.71
48.700	2.02	2.18	2.44
49.200	1.88	2.03	2.27
49.700	1.84	1.98	2.22
50.200	1.52	1.64	1.84
50.700	1.50	1.62	1.81
51.200	1.46	1.57	1.76
51.700	1.20	1.29	1.45
52.200	.86	.93	1.04
52.700	.60	.65	.72
53.200	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
APRIL 30, 1970
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	2.75	MILES
RIVER DISCHARGE	1040.00	CFS
RECOVERY RATIO OF TRACER	.959	
TIME TO CENTROID	1.49	HOURS
TIME VARIANCE	.03343	HRS.SQ.
COEFFICIENT OF SKEW	2.61390	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
1.250	0.00	0.00	0.00
1.300	9.88	10.31	10.31
1.350	68.74	71.71	71.71
1.400	83.98	87.61	87.61
1.450	56.94	59.40	59.40
1.500	29.92	31.21	31.21
1.550	19.90	20.76	20.76
1.600	15.62	16.29	16.29
1.650	12.04	12.56	12.56
1.700	9.12	9.51	9.51
1.750	6.24	6.51	6.51
1.800	4.92	5.13	5.13
1.850	3.72	3.88	3.88
1.900	2.80	2.92	2.92
1.950	2.10	2.19	2.19
2.000	1.62	1.69	1.69
2.050	1.26	1.31	1.31
2.100	1.06	1.11	1.11
2.150	.90	.94	.94
2.200	.82	.86	.86
2.250	.66	.69	.69
2.300	.56	.58	.58
2.350	.48	.50	.50
2.400	.36	.38	.38
2.450	.34	.35	.35
2.500	.38	.40	.40
2.550	.30	.31	.31
2.600	.28	.29	.29
2.650	.26	.27	.27
2.700	.22	.23	.23
2.750	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
APRIL 30, 1970
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	5.40	MILES
RIVER DISCHARGE	1040.00	CFS
RECOVERY RATIO OF TRACER	.906	
TIME TO CENTROID	3.38	HOURS
TIME VARIANCE	.12191	HRS.SQ.
COEFFICIENT OF SKEW	1.22495	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.800	0.00	0.00	0.00
2.900	4.66	5.15	5.15
3.000	16.28	17.98	17.98
3.100	24.96	27.56	27.56
3.200	24.78	27.37	27.37
3.300	19.30	21.31	21.31
3.400	15.72	17.36	17.36
3.500	12.64	13.96	13.96
3.600	9.94	10.98	10.98
3.700	7.62	8.42	8.42
3.800	5.80	6.41	6.41
3.900	4.32	4.77	4.77
4.000	3.40	3.75	3.75
4.100	2.60	2.87	2.87
4.200	1.96	2.16	2.16
4.300	1.36	1.50	1.50
4.400	1.08	1.19	1.19
4.500	.68	.75	.75
4.600	.58	.64	.64
4.700	.44	.49	.49
4.800	.20	.22	.22
4.900	.10	.11	.11
5.000	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
APRIL 30, 1970
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	8.35	MILES
RIVER DISCHARGE	1050.00	CFS
RECOVERY RATIO OF TRACER	.942	
TIME TO CENTROID	5.44	HOURS
TIME VARIANCE	.34114	HRS.SQ.
COEFFICIENT OF SKEW	1.12984	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.600	0.00	0.00	0.00
4.700	4.96	5.27	5.32
4.800	10.28	10.92	11.02
4.900	15.72	16.69	16.85
5.000	17.72	18.82	19.00
5.100	15.76	16.74	16.90
5.200	13.60	14.44	14.58
5.300	11.86	12.59	12.72
5.400	10.08	10.70	10.81
5.500	8.90	9.45	9.54
5.600	7.80	8.28	8.36
5.700	6.54	6.95	7.01
5.800	5.72	6.07	6.13
5.900	4.78	5.08	5.12
6.000	4.32	4.59	4.63
6.100	3.66	3.89	3.92
6.200	3.00	3.19	3.22
6.300	2.68	2.85	2.87
6.400	2.38	2.53	2.55
6.500	2.22	2.36	2.38
6.600	1.96	2.08	2.10
6.700	1.78	1.89	1.91
6.800	1.72	1.83	1.84
6.900	1.56	1.66	1.67
7.000	1.36	1.44	1.46
7.100	1.02	1.08	1.09
7.200	.88	.93	.94
7.300	.66	.70	.71
7.400	.26	.28	.28
7.500	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
APRIL 30, 1970
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	12.35 MILES
RIVER DISCHARGE	1060.00 CFS
RECOVERY RATIO OF TRACER	.862
TIME TO CENTROID	8.05 HOURS
TIME VARIANCE	.44679 HRS.SQ.
COEFFICIENT OF SKEW	1.32355

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
6.900	0.00	0.00	0.00
7.000	.12	.14	.15
7.100	.79	.92	.94
7.200	3.93	4.56	4.65
7.300	8.43	9.78	9.97
7.400	10.29	11.94	12.17
7.500	11.77	13.65	13.92
7.600	12.80	14.85	15.13
7.700	12.43	14.42	14.70
7.800	10.92	12.67	12.91
7.900	9.67	11.22	11.44
8.000	8.68	10.08	10.27
8.100	7.60	8.81	8.98
8.200	6.78	7.87	8.02
8.300	5.88	6.83	6.96
8.400	5.14	5.96	6.08
8.500	4.55	5.28	5.38
8.600	4.08	4.73	4.82
8.700	3.54	4.10	4.18
8.800	3.01	3.49	3.56
8.900	2.52	2.92	2.98
9.000	2.17	2.52	2.57
9.100	1.85	2.14	2.19
9.200	1.60	1.85	1.89
9.300	1.30	1.51	1.54
9.400	1.18	1.36	1.39
9.500	1.03	1.20	1.22
9.600	.92	1.07	1.09
9.700	.78	.91	.93
9.800	.69	.80	.81
9.900	.59	.69	.70
10.000	.50	.58	.60
10.100	.45	.52	.53
10.200	.39	.45	.46
10.300	.33	.38	.39
10.400	.27	.32	.32
10.500	.24	.28	.28
10.600	.20	.24	.24
10.700	.18	.21	.21
10.800	.15	.17	.18
10.900	.08	.10	.10
11.000	.06	.07	.07
11.100	.04	.04	.04
11.200	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
APRIL 30, 1970
SAMPLING SITE NUMBER 5

DISTANCE FROM POINT OF INJECTION	16.15	MILES
RIVER DISCHARGE	1070.00	CFS
RECOVERY RATIO OF TRACER	.821	
TIME TO CENTROID	10.94	HOURS
TIME VARIANCE	.92505	HRS.SQ.
COEFFICIENT OF SKEW	1.33345	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
9.400	0.00	0.00	0.00
9.600	1.43	1.74	1.79
9.800	4.13	5.03	5.18
10.000	6.64	8.09	8.32
10.200	7.31	8.91	9.17
10.400	7.54	9.18	9.45
10.600	7.29	8.88	9.14
10.800	6.35	7.74	7.96
11.000	5.38	6.55	6.74
11.200	4.51	5.50	5.66
11.400	3.75	4.57	4.70
11.600	3.08	3.75	3.86
11.800	2.49	3.03	3.12
12.000	1.95	2.37	2.44
12.200	1.63	1.99	2.05
12.400	1.30	1.59	1.63
12.600	.99	1.20	1.24
12.800	.76	.92	.95
13.000	.55	.67	.69
13.200	.47	.57	.59
13.400	.40	.48	.50
13.600	.34	.41	.43
13.800	.32	.39	.40
14.000	.29	.35	.36
14.200	.24	.29	.30
14.400	.24	.29	.30
14.600	.20	.24	.25
14.800	.14	.18	.18
15.000	.08	.10	.11
15.200	0.00	0.00	0.00

CONOCOCHEAGUE CREEK
APRIL 30, 1970
SAMPLING SITE NUMBER 6

DISTANCE FROM POINT OF INJECTION	21.05 MILES
RIVER DISCHARGE	1080.00 CFS
RECOVERY RATIO OF TRACER	.776
TIME TO CENTROID	15.57 HOURS
TIME VARIANCE	1.80625 HRS.SQ.
COEFFICIENT OF SKEW	1.19489

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
13.300	0.00	0.00	0.00
13.500	.50	.65	.67
13.700	1.26	1.62	1.68
13.900	2.23	2.87	2.98
14.100	3.28	4.22	4.38
14.300	4.16	5.36	5.56
14.500	4.78	6.16	6.40
14.700	5.14	6.63	6.88
14.900	5.15	6.64	6.89
15.100	4.80	6.18	6.42
15.300	4.30	5.54	5.75
15.500	3.84	4.95	5.14
15.700	3.48	4.48	4.65
15.900	3.05	3.93	4.08
16.100	2.68	3.45	3.58
16.300	2.37	3.06	3.17
16.500	2.04	2.63	2.74
16.700	1.82	2.35	2.44
16.900	1.56	2.01	2.08
17.100	1.32	1.71	1.77
17.300	1.12	1.44	1.50
17.500	.98	1.26	1.31
17.700	.82	1.06	1.10
17.900	.68	.88	.92
18.100	.59	.76	.79
18.300	.46	.59	.62
18.500	.39	.51	.52
18.700	.35	.45	.47
18.900	.33	.42	.44
19.100	.32	.42	.43
19.300	.28	.37	.38
19.500	.25	.32	.33
19.700	.22	.29	.30
19.900	.20	.26	.27
20.100	.17	.22	.23
20.300	.16	.21	.21
20.500	.13	.16	.17
20.700	.09	.11	.12
20.900	.08	.10	.10
21.100	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 1 AT GWINNETT CO. PUMPING STAT.
DISTANCE FROM POINT OF INJECTION 9.95 MILES
RIVER DISCHARGE 4810.00 CFS

RECOVERY RATIO OF TRACER .698
TIME TO CENTROID 5.05 HOURS
TIME VARIANCE .31470 HRS.SQ.
COEFFICIENT OF SKEW 2.13058

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.000	0.00	0.00	0.00
4.200	.97	1.39	1.39
4.400	3.98	5.70	5.70
4.600	9.21	13.20	13.20
4.800	11.46	16.43	16.43
5.000	10.23	14.66	14.66
5.200	7.23	10.36	10.36
5.400	4.64	6.64	6.64
5.600	2.86	4.09	4.09
5.800	1.75	2.50	2.50
6.000	.88	1.26	1.26
6.200	.54	.77	.77
6.400	.37	.52	.52
6.600	.28	.40	.40
6.800	.22	.32	.32
7.000	.18	.25	.25
7.200	.16	.23	.23
7.400	.14	.20	.20
7.600	.13	.18	.18
7.800	.11	.16	.16
8.000	.08	.12	.12
8.200	.07	.10	.10
8.400	.05	.07	.07
8.600	.03	.05	.05
8.800	.01	.01	.01
9.000	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 2 AT NORCROSS GAGE

DISTANCE FROM POINT OF INJECTION	17.33	MILES
RIVER DISCHARGE	6340.00	CFS
RECOVERY RATIO OF TRACER	1.054	
TIME TO CENTROID	8.89	HOURS
TIME VARIANCE	2.91400	HRS.SQ.
COEFFICIENT OF SKEW	2.20230	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
7.000	0.00	0.00	0.00
7.333	1.41	1.34	1.76
7.667	5.67	5.38	7.09
8.000	8.41	7.98	10.52
8.333	7.48	7.10	9.36
8.667	4.89	4.64	6.12
9.000	2.64	2.50	3.30
9.333	1.25	1.19	1.57
9.667	.67	.64	.84
10.000	.45	.43	.57
10.333	.40	.38	.50
10.667	.39	.37	.48
11.000	.38	.36	.48
11.333	.38	.36	.47
11.667	.36	.34	.45
12.000	.35	.34	.44
12.333	.35	.33	.44
12.667	.34	.32	.43
13.000	.35	.33	.44
13.333	.35	.33	.43
13.667	.33	.32	.42
14.000	.30	.29	.38
14.333	.26	.24	.32
14.667	.22	.21	.27
15.000	.19	.18	.23
15.333	.15	.14	.19
15.667	.11	.11	.14
16.000	.08	.08	.10
16.333	.04	.04	.05
16.667	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 3 AT DEKALB CO. INTAKES
DISTANCE FROM POINT OF INJECTION 22.66 MILES
RIVER DISCHARGE 6170.00 CFS

RECOVERY RATIO OF TRACER .966
TIME TO CENTROID 10.74 HOURS
TIME VARIANCE .74618 HRS.SQ.
COEFFICIENT OF SKEW 1.24470

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
9.000	0.00	0.00	0.00
9.200	.17	.18	.23
9.400	.84	.87	1.11
9.600	2.31	2.39	3.07
9.800	4.02	4.16	5.34
10.000	6.16	6.37	8.18
10.200	7.15	7.40	9.49
10.400	7.29	7.55	9.69
10.600	6.56	6.79	8.71
10.800	5.68	5.88	7.54
11.000	4.68	4.84	6.21
11.200	3.53	3.65	4.69
11.400	2.50	2.59	3.32
11.600	1.69	1.75	2.25
11.800	1.36	1.41	1.80
12.000	1.12	1.16	1.49
12.200	.89	.92	1.19
12.400	.77	.79	1.02
12.600	.66	.68	.87
12.800	.57	.59	.76
13.000	.51	.53	.67
13.200	.45	.46	.59
13.400	.36	.37	.48
13.600	.29	.30	.38
13.800	.21	.22	.28
14.000	.14	.14	.18
14.200	.07	.07	.09
14.400	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 4 AT ROSWELL ROAD

DISTANCE FROM POINT OF INJECTION	30.81	MILES
RIVER DISCHARGE	6000.00	CFS
RECOVERY RATIO OF TRACER	1.072	
TIME TO CENTROID	15.34	HOURS
TIME VARIANCE	1.76511	HRS.SQ.
COEFFICIENT OF SKEW	1.35182	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
13.000	0.00	0.00	0.00
13.200	.41	.38	.47
13.400	.84	.78	.98
13.600	1.60	1.49	1.86
13.800	2.62	2.44	3.05
14.000	3.73	3.48	4.34
14.200	4.56	4.25	5.30
14.400	5.30	4.94	6.17
14.600	5.67	5.29	6.60
14.800	5.77	5.38	6.71
15.000	5.43	5.06	6.31
15.200	4.72	4.40	5.49
15.400	4.11	3.83	4.78
15.600	3.57	3.33	4.15
15.800	3.02	2.82	3.51
16.000	2.58	2.40	3.00
16.200	2.17	2.02	2.52
16.400	1.81	1.69	2.10
16.600	1.50	1.40	1.74
16.800	1.27	1.19	1.48
17.000	1.06	.99	1.23
17.200	.89	.83	1.03
17.400	.75	.70	.88
17.600	.63	.59	.73
17.800	.57	.53	.66
18.000	.47	.44	.55
18.200	.43	.40	.50
18.400	.37	.35	.43
18.600	.35	.33	.41
18.800	.34	.32	.39
19.000	.31	.29	.36
19.200	.28	.26	.32
19.400	.27	.25	.31
19.600	.25	.23	.29
19.800	.22	.20	.25
20.000	.19	.17	.22
20.200	.15	.14	.18
20.400	.12	.11	.14
20.600	.09	.09	.11
20.800	.06	.05	.07
21.000	.02	.02	.03
21.200	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 5 AT MORGAN FALLS DAM

DISTANCE FROM POINT OF INJECTION	35.48	MILES
RIVER DISCHARGE	3800.00	CFS
RECOVERY RATIO OF TRACER	.742	
TIME TO CENTROID	21.04	HOURS
TIME VARIANCE	4.11062	HRS.SQ.
COEFFICIENT OF SKEW	1.19147	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
17.667	0.00	0.00	0.00
18.000	.46	.62	.49
18.333	1.17	1.57	1.24
18.667	1.90	2.56	2.02
19.000	2.67	3.60	2.84
19.333	3.48	4.69	3.71
19.667	4.26	5.74	4.54
20.000	4.31	5.80	4.59
20.333	3.95	5.33	4.21
20.667	3.45	4.65	3.67
21.000	2.86	3.86	3.05
21.333	2.44	3.28	2.60
21.667	2.06	2.77	2.19
22.000	1.72	2.32	1.84
22.333	1.46	1.96	1.55
22.667	1.24	1.67	1.32
23.000	1.05	1.42	1.12
23.333	.89	1.19	.94
23.667	.75	1.01	.80
24.000	.62	.83	.66
24.333	.55	.74	.58
24.667	.50	.67	.53
25.000	.48	.64	.51
25.333	.46	.62	.49
25.667	.43	.58	.46
26.000	.37	.49	.39
26.333	.32	.43	.34
26.667	.28	.37	.30
27.000	.24	.33	.26
27.333	.19	.26	.21
27.667	.15	.21	.16
28.000	.11	.15	.12
28.333	.06	.08	.06
28.667	.02	.02	.02
29.000	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 6 AT COBB CO. INTAKES

DISTANCE FROM POINT OF INJECTION	37.62	MILES
RIVER DISCHARGE	3800.00	CFS
RECOVERY RATIO OF TRACER	.836	
TIME TO CENTROID	23.05	HOURS
TIME VARIANCE	6.59509	HRS.SQ.
COEFFICIENT OF SKEW	1.17120	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
19.000	0.00	0.00	0.00
19.500	.76	.91	.72
20.000	1.59	1.91	1.51
20.500	2.71	3.24	2.56
21.000	3.67	4.39	3.47
21.500	3.88	4.64	3.67
22.000	3.61	4.32	3.41
22.500	3.04	3.64	2.88
23.000	2.48	2.96	2.34
23.500	1.94	2.32	1.84
24.000	1.55	1.86	1.47
24.500	1.27	1.52	1.20
25.000	1.12	1.34	1.06
25.500	.97	1.16	.92
26.000	.85	1.02	.81
26.500	.76	.91	.72
27.000	.63	.75	.60
27.500	.55	.65	.52
28.000	.43	.52	.41
28.500	.37	.44	.35
29.000	.34	.41	.32
29.500	.30	.36	.28
30.000	.27	.32	.25
30.500	.22	.27	.21
31.000	.18	.21	.17
31.500	.12	.14	.11
32.000	.07	.09	.07
32.500	.02	.02	.02
33.000	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
APRIL 20, 1971
SAMPLING SITE NUMBER 7 AT ATLANTA WATER WORKS
DISTANCE FROM POINT OF INJECTION 47.60 MILES
RIVER DISCHARGE 3800.00 CFS

RECOVERY RATIO OF TRACER .929
TIME TO CENTROID 30.18 HOURS
TIME VARIANCE 9.75535 HRS.SQ.
COEFFICIENT OF SKEW 1.17748

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
24.667	0.00	0.00	0.00
25.000	.13	.14	.11
25.333	.21	.22	.17
25.667	.43	.46	.36
26.000	.90	.96	.76
26.333	1.37	1.47	1.17
26.667	1.81	1.95	1.54
27.000	2.24	2.42	1.91
27.333	2.67	2.87	2.27
27.667	3.01	3.24	2.56
28.000	3.11	3.34	2.64
28.333	3.14	3.38	2.67
28.667	3.16	3.41	2.69
29.000	3.16	3.40	2.69
29.333	3.09	3.32	2.62
29.667	2.93	3.15	2.49
30.000	2.72	2.92	2.31
30.333	2.47	2.66	2.10
30.667	2.20	2.37	1.87
31.000	1.94	2.09	1.65
31.333	1.70	1.83	1.44
31.667	1.47	1.58	1.25
32.000	1.25	1.34	1.06
32.333	1.07	1.15	.91
32.667	.90	.96	.76
33.000	.76	.82	.65
33.333	.66	.71	.56
33.667	.58	.62	.49
34.000	.52	.56	.45
34.333	.50	.53	.42
34.667	.46	.50	.39
35.000	.44	.47	.37
35.333	.42	.45	.36
35.667	.40	.43	.34
36.000	.38	.41	.32
36.333	.37	.40	.31
36.667	.36	.39	.30
37.000	.36	.38	.30
37.333	.35	.38	.30
37.667	.34	.37	.29
38.000	.35	.38	.30

CHATTAHOOCHEE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
38.333	.35	.38	.30
38.667	.35	.37	.29
39.000	.35	.38	.30
39.333	.31	.34	.27
39.667	.23	.25	.20
40.000	.16	.17	.14
40.333	.09	.10	.08
40.667	.03	.03	.03
41.000	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
MAY 4, 1971
SAMPLING SITE NUMBER 1 AT STATE ROUTE 139

DISTANCE FROM POINT OF INJECTION	6.52	MILES
RIVER DISCHARGE	4950.00	CFS
RECOVERY RATIO OF TRACER	.883	
TIME TO CENTROID	2.81	HOURS
TIME VARIANCE	.16961	HRS.SQ.
COEFFICIENT OF SKEW	1.97589	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.200	0.00	0.00	0.00
2.300	3.89	4.41	4.41
2.400	9.68	10.97	10.97
2.500	15.38	17.43	17.43
2.600	15.78	17.87	17.87
2.700	14.41	16.32	16.32
2.800	11.55	13.09	13.09
2.900	9.08	10.29	10.29
3.000	6.95	7.87	7.87
3.100	5.33	6.04	6.04
3.200	4.22	4.79	4.79
3.300	3.12	3.54	3.54
3.400	2.28	2.59	2.59
3.500	1.53	1.74	1.74
3.600	1.06	1.20	1.20
3.700	.79	.90	.90
3.800	.54	.62	.62
3.900	.38	.43	.43
4.000	.33	.37	.37
4.100	.30	.34	.34
4.200	.29	.33	.33
4.300	.29	.33	.33
4.400	.27	.31	.31
4.500	.25	.28	.28
4.600	.22	.24	.24
4.700	.20	.23	.23
4.800	.18	.21	.21
4.900	.15	.17	.17
5.000	.12	.13	.13
5.100	.08	.09	.09
5.200	.03	.03	.03
5.300	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
MAY 4, 1971
SAMPLING SITE NUMBER 2 AT STATE ROUTE 92

DISTANCE FROM POINT OF INJECTION	18.68	MILES
RIVER DISCHARGE	4950.00	CFS
RECOVERY RATIO OF TRACER	.998	
TIME TO CENTROID	10.01	HOURS
TIME VARIANCE	1.07990	HRS.SQ.
COEFFICIENT OF SKEW	1.75281	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
8.100	0.00	0.00	0.00
8.300	.28	.28	.28
8.500	.69	.69	.69
8.700	1.59	1.60	1.60
8.900	3.29	3.30	3.30
9.100	4.98	4.99	4.99
9.300	6.23	6.25	6.25
9.500	7.01	7.03	7.03
9.700	6.97	6.99	6.99
9.900	6.21	6.22	6.22
10.100	5.30	5.32	5.32
10.300	4.27	4.28	4.28
10.500	3.23	3.24	3.24
10.700	2.35	2.36	2.36
10.900	1.65	1.65	1.65
11.100	1.25	1.25	1.25
11.300	.94	.94	.94
11.500	.74	.74	.74
11.700	.56	.56	.56
11.900	.46	.47	.47
12.100	.40	.40	.40
12.300	.35	.35	.35
12.500	.30	.30	.30
12.700	.27	.27	.27
12.900	.27	.27	.27
13.100	.27	.27	.27
13.300	.25	.25	.25
13.500	.25	.25	.25
13.700	.23	.23	.23
13.900	.22	.22	.22
14.100	.21	.21	.21
14.300	.18	.18	.18
14.500	.13	.13	.13
14.700	.09	.09	.09
14.900	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
MAY 4, 1971
SAMPLING SITE NUMBER 3 AT STATE ROUTE 16

DISTANCE FROM POINT OF INJECTION	40.62	MILES
RIVER DISCHARGE	4950.00	CFS
RECOVERY RATIO OF TRACER	.977	
TIME TO CENTROID	22.87	HOURS
TIME VARIANCE	3.36552	HRS.SQ.
COEFFICIENT OF SKEW	1.03024	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
18.500	0.00	0.00	0.00
18.700	.11	.11	.11
18.900	.17	.17	.17
19.100	.20	.20	.20
19.300	.24	.25	.25
19.500	.29	.30	.30
19.700	.34	.35	.35
19.900	.33	.34	.34
20.100	.42	.43	.43
20.300	.58	.59	.59
20.500	.79	.81	.81
20.700	1.07	1.09	1.09
20.900	1.47	1.50	1.50
21.100	2.00	2.05	2.05
21.300	2.48	2.54	2.54
21.500	2.95	3.02	3.02
21.700	3.25	3.33	3.33
21.900	3.57	3.66	3.66
22.100	3.79	3.88	3.88
22.300	3.78	3.87	3.87
22.500	3.56	3.64	3.64
22.700	3.29	3.36	3.36
22.900	2.94	3.01	3.01
23.100	2.62	2.69	2.69
23.300	2.34	2.40	2.40
23.500	2.09	2.14	2.14
23.700	1.85	1.89	1.89
23.900	1.59	1.63	1.63
24.100	1.38	1.41	1.41
24.300	1.20	1.23	1.23
24.500	1.01	1.03	1.03
24.700	.84	.86	.86
24.900	.72	.74	.74
25.100	.59	.60	.60
25.300	.51	.52	.52
25.500	.45	.47	.47
25.700	.41	.42	.42
25.900	.37	.38	.38
26.100	.36	.37	.37
26.300	.36	.37	.37
26.500	.36	.36	.36

CHATTAHOOCHEE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
26.700	.37	.38	.38
26.900	.38	.38	.38
27.100	.38	.38	.38
27.300	.34	.35	.35
27.500	.30	.31	.31
27.700	.29	.30	.30
27.900	.27	.27	.27
28.100	.24	.24	.24
28.300	.21	.21	.21
28.500	.19	.19	.19
28.700	.16	.16	.16
28.900	.15	.15	.15
29.100	.12	.13	.13
29.300	.08	.08	.08
29.500	.06	.06	.06
29.700	0.00	0.00	0.00

CHATTAHOOCHEE RIVER
MAY 4, 1971
SAMPLING SITE NUMBER 4 AT U.S. 27, FRANKLIN, GA.

DISTANCE FROM POINT OF INJECTION	65.01	MILES
RIVER DISCHARGE	4950.00	CFS
RECOVERY RATIO OF TRACER	.981	
TIME TO CENTROID	39.21	HOURS
TIME VARIANCE	7.23272	HRS.SQ.
COEFFICIENT OF SKEW	.60304	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
33.333	0.00	0.00	0.00
33.667	.11	.11	.11
34.000	.22	.23	.23
34.333	.31	.31	.31
34.667	.38	.39	.39
35.000	.43	.44	.44
35.333	.54	.55	.55
35.667	.66	.68	.68
36.000	.92	.93	.93
36.333	1.34	1.36	1.36
36.667	1.76	1.79	1.79
37.000	1.87	1.90	1.90
37.333	1.91	1.94	1.94
37.667	1.93	1.97	1.97
38.000	2.02	2.06	2.06
38.333	2.16	2.20	2.20
38.667	2.05	2.09	2.09
39.000	1.87	1.90	1.90
39.333	1.63	1.66	1.66
39.667	1.49	1.51	1.51
40.000	1.34	1.37	1.37
40.333	1.23	1.26	1.26
40.667	1.13	1.15	1.15
41.000	1.02	1.04	1.04
41.333	.89	.91	.91
41.667	.85	.86	.86
42.000	.75	.76	.76
42.333	.68	.69	.69
42.667	.59	.61	.61
43.000	.57	.58	.58
43.333	.56	.57	.57
43.667	.45	.46	.46
44.000	.41	.41	.41
44.333	.37	.38	.38
44.667	.34	.34	.34
45.000	.34	.35	.35
45.333	.30	.31	.31
45.667	.26	.26	.26
46.000	.22	.23	.23
46.333	.16	.16	.16
46.667	.13	.13	.13
47.000	.06	.06	.06
47.333	0.00	0.00	0.00

SALT CREEK RIVER
SEPTEMBER 6, 1972
SAMPLING SITE NUMBER 1 AT HWY 77 NEAR LINCOLN, NE.

DISTANCE FROM POINT OF INJECTION	5.75	MILES
RIVER DISCHARGE	87.00	CFS
RECOVERY RATIO OF TRACER	.821	
TIME TO CENTROID	8.15	HOURS
TIME VARIANCE	1.59542	HRS.SQ.
COEFFICIENT OF SKEW	2.69925	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
6.500	0.00	0.00	0.00
6.750	1.06	1.29	1.29
7.000	32.47	39.54	39.54
7.250	41.30	50.30	50.30
7.500	50.93	62.01	62.01
7.750	52.69	64.16	64.16
8.000	44.75	54.49	54.49
8.250	28.90	35.19	35.19
8.500	19.98	24.33	24.33
8.750	13.50	16.43	16.43
9.000	9.49	11.55	11.55
9.250	6.84	8.33	8.33
9.500	5.41	6.59	6.59
9.750	4.14	5.04	5.04
10.000	3.26	3.96	3.96
10.250	2.59	3.16	3.16
10.500	2.23	2.72	2.72
10.750	1.92	2.34	2.34
11.000	1.64	2.00	2.00
11.250	1.61	1.96	1.96
11.500	1.42	1.72	1.72
11.750	1.23	1.50	1.50
12.000	1.06	1.29	1.29
12.250	.97	1.18	1.18
12.500	.90	1.10	1.10
12.750	.82	1.00	1.00
13.000	.78	.95	.95
13.250	.70	.85	.85
13.500	.64	.78	.78
13.750	.59	.72	.72
14.000	.54	.65	.65
14.250	.49	.59	.59
14.500	.44	.54	.54
14.750	.39	.48	.48
15.000	.34	.42	.42
15.250	.28	.34	.34
15.500	.21	.25	.25
15.750	.19	.23	.23
16.000	.14	.17	.17
16.250	.06	.08	.08
16.500	0.00	0.00	0.00

SALT CREEK RIVER
SEPTEMBER 6, 1972
SAMPLING SITE NUMBER 2 BELOW STEVENS CREEK, WAVERLY
DISTANCE FROM POINT OF INJECTION 9.51 MILES
RIVER DISCHARGE 93.30 CFS

RECOVERY RATIO OF TRACER .836
TIME TO CENTROID 13.45 HOURS
TIME VARIANCE 3.11658 HRS.SQ.
COEFFICIENT OF SKEW 2.15062

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
10.500	0.00	0.00	0.00
11.000	.90	1.08	1.16
11.500	6.97	8.33	8.93
12.000	23.75	28.40	30.45
12.500	33.06	39.52	42.38
13.000	32.67	39.06	41.89
13.500	19.80	23.67	25.39
14.000	12.90	15.43	16.54
14.500	7.52	8.99	9.64
15.000	4.34	5.18	5.56
15.500	3.37	4.03	4.32
16.000	2.50	2.98	3.20
16.500	2.11	2.53	2.71
17.000	1.77	2.11	2.27
17.500	1.48	1.77	1.90
18.000	1.37	1.64	1.75
18.500	1.14	1.36	1.46
19.000	1.01	1.21	1.29
19.500	.79	.95	1.02
20.000	.66	.79	.85
20.500	.56	.67	.72
21.000	.46	.55	.58
21.500	.38	.46	.49
22.000	.28	.33	.36
22.500	.16	.19	.21
23.000	.03	.04	.04
23.500	0.00	0.00	0.00

SALT CREEK RIVER
SEPTEMBER 6, 1972
SAMPLING SITE NUMBER 3 NEAR GREENWOOD

DISTANCE FROM POINT OF INJECTION	19.46	MILES
RIVER DISCHARGE	106.00	CFS
RECOVERY RATIO OF TRACER	.654	
TIME TO CENTROID	27.01	HOURS
TIME VARIANCE	8.09703	HRS.SQ.
COEFFICIENT OF SKEW	1.61893	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
22.500	0.00	0.00	0.00
23.000	.58	.88	1.07
23.500	2.15	3.29	4.01
24.000	5.02	7.67	9.34
24.500	10.14	15.50	18.88
25.000	14.00	21.41	26.08
25.500	13.86	21.20	25.83
26.000	11.30	17.27	21.04
26.500	9.19	14.05	17.12
27.000	7.58	11.60	14.13
27.500	6.30	9.64	11.74
28.000	4.90	7.50	9.14
28.500	3.83	5.86	7.14
29.000	3.14	4.79	5.84
29.500	2.60	3.98	4.84
30.000	2.32	3.55	4.32
30.500	1.85	2.83	3.44
31.000	1.48	2.26	2.76
31.500	1.18	1.81	2.21
32.000	1.04	1.59	1.94
32.500	.94	1.44	1.76
33.000	.90	1.37	1.67
33.500	.88	1.35	1.64
34.000	.77	1.17	1.43
34.500	.74	1.13	1.37
35.000	.60	.92	1.12
35.500	.58	.89	1.09
36.000	.54	.83	1.01
36.500	.46	.70	.85
37.000	.39	.60	.73
37.500	.29	.44	.54
38.000	.24	.37	.45
38.500	.18	.28	.34
39.000	.13	.20	.24
39.500	0.00	0.00	0.00

SALT CREEK RIVER
SEPTEMBER 6, 1972
SAMPLING SITE NUMBER 4 AT HWY 63 AT ASHLAND
DISTANCE FROM POINT OF INJECTION 27.69 MILES
RIVER DISCHARGE 107.00 CFS

RECOVERY RATIO OF TRACER .573
TIME TO CENTROID 39.95 HOURS
TIME VARIANCE 19.76762 HRS.SQ.
COEFFICIENT OF SKEW 1.65989

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
34.000	0.00	0.00	0.00
34.500	1.11	1.94	2.39
35.000	2.16	3.77	4.64
35.500	3.43	5.99	7.37
36.000	5.50	9.60	11.80
36.500	7.50	13.10	16.12
37.000	7.99	13.96	17.17
37.500	8.10	14.14	17.39
38.000	7.84	13.69	16.84
38.500	7.10	12.39	15.24
39.000	5.82	10.16	12.49
39.500	4.69	8.19	10.07
40.000	4.04	7.06	8.68
40.500	3.50	6.12	7.53
41.000	2.98	5.21	6.41
41.500	2.14	3.74	4.61
42.000	1.87	3.27	4.02
42.500	1.75	3.06	3.76
43.000	1.58	2.75	3.39
43.500	1.49	2.60	3.20
44.000	1.20	2.10	2.58
44.500	1.11	1.94	2.39
45.000	.98	1.72	2.11
45.500	.98	1.70	2.10
46.000	.92	1.61	1.98
46.500	.80	1.40	1.72
47.000	.67	1.17	1.44
47.500	.66	1.15	1.41
48.000	.66	1.15	1.41
48.500	.64	1.12	1.37
49.000	.58	1.02	1.25
49.500	.54	.95	1.17
50.000	.50	.88	1.08
50.500	.48	.84	1.03
51.000	.44	.77	.95
51.500	.42	.73	.89
52.000	.42	.74	.91
52.500	.40	.70	.86
53.000	.38	.66	.81
53.500	.34	.60	.74
54.000	.30	.53	.65

SALT CREEK RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
54.500	.24	.42	.52
55.000	.24	.42	.52
55.500	.22	.38	.46
56.000	.22	.39	.48
56.500	.17	.29	.36
57.000	.16	.28	.34
57.500	.13	.22	.27
58.000	.07	.13	.15
58.500	.02	.04	.05
59.000	0.00	0.00	0.00

SALT CREEK RIVER
SEPTEMBER 6, 1972
SAMPLING SITE NUMBER 5 AT MOUTH

DISTANCE FROM POINT OF INJECTION	32.20 MILES
RIVER DISCHARGE	144.00 CFS
RECOVERY RATIO OF TRACER	.508
TIME TO CENTROID	51.53 HOURS
TIME VARIANCE	23.73166 HRS.SQ.
COEFFICIENT OF SKEW	.87524

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
43.000	0.00	0.00	0.00
43.500	.22	.44	.73
44.000	.40	.79	1.30
44.500	.50	.98	1.61
45.000	.93	1.83	3.02
45.500	1.33	2.61	4.32
46.000	1.88	3.70	6.12
46.500	2.57	5.05	8.36
47.000	3.18	6.26	10.37
47.500	3.69	7.25	12.01
48.000	3.83	7.54	12.48
48.500	3.80	7.47	12.37
49.000	3.56	7.00	11.59
49.500	3.42	6.72	11.12
50.000	3.07	6.04	10.00
50.500	2.58	5.07	8.39
51.000	2.29	4.50	7.45
51.500	1.96	3.86	6.38
52.000	1.84	3.62	5.99
52.500	1.70	3.34	5.52
53.000	1.60	3.15	5.21
53.500	1.48	2.91	4.82
54.000	1.38	2.71	4.48
54.500	1.24	2.44	4.04
55.000	1.10	2.17	3.59
55.500	.97	1.90	3.15
56.000	.84	1.65	2.73
56.500	.90	1.76	2.92
57.000	.87	1.72	2.84
57.500	.87	1.72	2.84
58.000	.88	1.73	2.87
58.500	.78	1.54	2.55
59.000	.79	1.56	2.58
59.500	.78	1.53	2.53
60.000	.73	1.43	2.37
60.500	.75	1.48	2.45
61.000	.74	1.45	2.40
61.500	.68	1.34	2.21
62.000	.60	1.18	1.95
62.500	.58	1.13	1.88
63.000	.46	.90	1.48
63.500	.39	.77	1.28
64.000	.35	.69	1.15
64.500	.23	.46	.76
65.000	.16	.31	.52
65.500	.09	.17	.29
66.000	.03	.06	.10
66.500	0.00	0.00	0.00

DIFFICULT RUN
JUNE 21, 1968
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	.40	MILES
RIVER DISCHARGE	33.60	CFS
RECOVERY RATIO OF TRACER	1.027	
TIME TO CENTROID	1.44	HOURS
TIME VARIANCE	.13700	HRS.SQ.
COEFFICIENT OF SKEW	1.83968	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
.800	0.00	0.00	0.00
.900	.92	.90	.90
1.000	3.82	3.72	3.72
1.100	8.80	8.57	8.57
1.200	11.81	11.50	11.50
1.300	10.21	9.95	9.95
1.400	8.47	8.25	8.25
1.500	6.99	6.81	6.81
1.600	5.53	5.38	5.38
1.700	4.02	3.92	3.92
1.800	2.90	2.82	2.82
1.900	2.10	2.05	2.05
2.000	1.52	1.48	1.48
2.100	1.01	.98	.98
2.200	.71	.69	.69
2.300	.54	.53	.53
2.400	.41	.40	.40
2.500	.33	.32	.32
2.600	.24	.23	.23
2.700	.19	.18	.18
2.800	.17	.17	.17
2.900	.15	.15	.15
3.000	.12	.12	.12
3.100	.09	.09	.09
3.200	.08	.08	.08
3.300	.06	.06	.06
3.400	.06	.06	.06
3.500	.05	.05	.05
3.600	.04	.04	.04
3.700	.02	.02	.02
3.800	.02	.02	.02
3.900	.00	.00	.00
4.000	0.00	0.00	0.00

DIFFICULT RUN
JUNE 21, 1968
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	1.35	MILES
RIVER DISCHARGE	35.00	CFS
RECOVERY RATIO OF TRACER	.972	
TIME TO CENTROID	3.99	HOURS
TIME VARIANCE	.24964	HRS.SQ.
COEFFICIENT OF SKEW	.74689	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
3.000	0.00	0.00	0.00
3.100	.51	.53	.55
3.200	1.73	1.78	1.85
3.300	2.88	2.97	3.09
3.400	3.67	3.77	3.93
3.500	4.29	4.41	4.60
3.600	4.76	4.90	5.11
3.700	5.15	5.30	5.52
3.800	5.42	5.58	5.81
3.900	5.38	5.54	5.77
4.000	5.02	5.17	5.38
4.100	4.60	4.74	4.93
4.200	4.09	4.21	4.39
4.300	3.53	3.63	3.79
4.400	2.87	2.96	3.08
4.500	2.31	2.38	2.48
4.600	1.92	1.97	2.05
4.700	1.57	1.62	1.69
4.800	1.24	1.28	1.33
4.900	1.00	1.02	1.07
5.000	.77	.80	.83
5.100	.59	.61	.63
5.200	.40	.42	.43
5.300	.32	.33	.34
5.400	.23	.23	.24
5.500	.18	.19	.19
5.600	.12	.13	.13
5.700	.09	.09	.09
5.800	.07	.07	.08
5.900	.05	.06	.06
6.000	.04	.04	.04
6.100	.03	.03	.03
6.200	.01	.01	.01
6.300	.00	.00	.00

DIFFICULT RUN
JUNE 21, 1968
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	2.00	MILES
RIVER DISCHARGE	40.00	CFS
RECOVERY RATIO OF TRACER	1.065	
TIME TO CENTROID	6.58	HOURS
TIME VARIANCE	.48057	HRS.SQ.
COEFFICIENT OF SKEW	.81494	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
5.400	0.00	0.00	0.00
5.500	.29	.27	.33
5.600	2.21	2.07	2.47
5.700	2.82	2.65	3.15
5.800	3.16	2.97	3.53
5.900	3.42	3.21	3.83
6.000	3.63	3.41	4.06
6.100	3.81	3.57	4.25
6.200	3.87	3.63	4.32
6.300	3.79	3.56	4.23
6.400	3.66	3.44	4.09
6.500	3.49	3.27	3.90
6.600	3.24	3.04	3.62
6.700	2.99	2.81	3.34
6.800	2.72	2.56	3.04
6.900	2.46	2.31	2.74
7.000	2.23	2.10	2.49
7.100	2.01	1.88	2.24
7.200	1.80	1.69	2.01
7.300	1.60	1.50	1.79
7.400	1.40	1.32	1.57
7.500	1.22	1.14	1.36
7.600	1.07	1.01	1.20
7.700	.92	.87	1.03
7.800	.79	.74	.89
7.900	.67	.63	.75
8.000	.58	.54	.65
8.100	.49	.46	.54
8.200	.41	.38	.46
8.300	.33	.31	.37
8.400	.27	.26	.31
8.500	.20	.19	.22
8.600	.18	.17	.21
8.700	.15	.14	.17
8.800	.11	.11	.13
8.900	.09	.08	.10
9.000	.06	.06	.07
9.100	.04	.04	.05
9.200	.02	.02	.02
9.300	0.00	0.00	0.00

BEAR CREEK
MAY 22, 1969
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	.70	MILES
RIVER DISCHARGE	360.00	CFS
RECOVERY RATIO OF TRACER	.958	
TIME TO CENTROID	.24	HOURS
TIME VARIANCE	.00090	HRS.SQ.
COEFFICIENT OF SKEW	1.04942	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
.183	0.00	0.00	0.00
.192	6.82	7.12	7.12
.200	17.32	18.08	18.08
.208	28.40	29.65	29.65
.217	39.36	41.09	41.09
.225	41.18	42.99	42.99
.233	37.11	38.74	38.74
.242	32.40	33.82	33.82
.250	27.66	28.87	28.87
.258	22.69	23.69	23.69
.267	18.07	18.86	18.86
.275	13.38	13.97	13.97
.283	9.18	9.58	9.58
.292	6.16	6.43	6.43
.300	4.15	4.34	4.34
.308	3.08	3.21	3.21
.317	2.36	2.46	2.46
.325	1.76	1.84	1.84
.333	1.32	1.38	1.38
.342	1.00	1.05	1.05
.350	.83	.86	.86
.358	.63	.65	.65
.367	.46	.48	.48
.375	.18	.18	.18
.383	0.00	0.00	0.00

BEAR CREEK
MAY 22, 1969
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	3.70	MILES
RIVER DISCHARGE	366.00	CFS
RECOVERY RATIO OF TRACER	.690	
TIME TO CENTROID	1.91	HOURS
TIME VARIANCE	.00917	HRS.SQ.
COEFFICIENT OF SKEW	.58822	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
1.700	0.00	0.00	0.00
1.717	.87	1.26	1.28
1.733	1.50	2.18	2.21
1.750	2.37	3.44	3.49
1.767	3.07	4.44	4.52
1.783	3.80	5.51	5.60
1.800	4.54	6.57	6.68
1.817	5.32	7.70	7.83
1.833	6.04	8.75	8.90
1.850	7.03	10.19	10.36
1.867	7.82	11.33	11.52
1.883	8.73	12.65	12.86
1.900	8.52	12.34	12.55
1.917	8.13	11.77	11.97
1.933	7.07	10.24	10.41
1.950	6.32	9.15	9.31
1.967	5.59	8.10	8.23
1.983	4.78	6.92	7.04
2.000	4.22	6.11	6.22
2.017	3.45	4.99	5.08
2.033	3.01	4.36	4.44
2.050	2.40	3.47	3.53
2.067	1.75	2.54	2.58
2.083	1.15	1.66	1.69
2.100	.91	1.32	1.34
2.117	.70	1.01	1.03
2.133	.55	.79	.81
2.150	.46	.67	.68
2.167	.39	.56	.57
2.183	.32	.47	.48
2.200	.25	.37	.38
2.217	.20	.29	.30
2.233	.17	.25	.25
2.250	.12	.17	.17
2.267	.08	.12	.13
2.283	.08	.11	.11
2.300	.06	.09	.09
2.317	.04	.06	.06
2.333	.00	.00	.00

BEAR CREEK
MAY 22, 1969
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	6.80	MILES
RIVER DISCHARGE	371.00	CFS
RECOVERY RATIO OF TRACER	.649	
TIME TO CENTROID	3.64	HOURS
TIME VARIANCE	.01423	HRS.SQ.
COEFFICIENT OF SKEW	.99493	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
3.367	0.00	0.00	0.00
3.383	.10	.16	.16
3.400	.24	.36	.37
3.417	.41	.64	.66
3.433	.65	1.01	1.04
3.450	1.05	1.62	1.67
3.467	1.84	2.83	2.92
3.483	3.03	4.68	4.82
3.500	3.57	5.49	5.66
3.517	4.42	6.80	7.01
3.533	5.02	7.73	7.97
3.550	5.48	8.45	8.71
3.567	6.04	9.30	9.59
3.583	6.32	9.73	10.03
3.600	6.48	9.98	10.29
3.617	6.37	9.82	10.12
3.633	6.18	9.52	9.81
3.650	5.91	9.10	9.38
3.667	5.59	8.61	8.87
3.683	5.23	8.05	8.30
3.700	4.76	7.34	7.56
3.717	4.20	6.46	6.66
3.733	3.57	5.50	5.67
3.750	2.82	4.35	4.48
3.767	2.42	3.73	3.85
3.783	1.81	2.79	2.88
3.800	1.51	2.33	2.40
3.817	1.28	1.97	2.03
3.833	1.08	1.66	1.71
3.850	.93	1.43	1.47
3.867	.82	1.26	1.30
3.883	.70	1.07	1.11
3.900	.60	.93	.96
3.917	.49	.75	.77
3.933	.41	.64	.66
3.950	.34	.52	.54
3.967	.31	.48	.49
3.983	.24	.37	.39
4.000	.21	.33	.34
4.017	.19	.29	.30
4.033	.17	.27	.28

REAR CREEK

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
4.050	.16	.24	.25
4.067	.16	.24	.25
4.083	.11	.17	.18
4.100	.09	.14	.15
4.117	.08	.13	.13
4.133	.08	.13	.13
4.150	.06	.10	.10
4.167	.06	.10	.10
4.183	.06	.09	.09
4.200	.04	.05	.06
4.217	.02	.03	.03
4.233	0.00	0.00	0.00

LITTLE PINEY CREEK
SEPTEMBER 6, 1968
SAMPLING SITE NUMBER 1

DISTANCE FROM POINT OF INJECTION	.37	MILES
RIVER DISCHARGE	48.60	CFS
RECOVERY RATIO OF TRACER	.972	
TIME TO CENTROID	1.03	HOURS
TIME VARIANCE	.06564	HRS.SQ.
COEFFICIENT OF SKEW	1.44702	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
.600	0.00	0.00	0.00
.700	2.97	3.05	3.05
.800	17.49	17.99	17.99
.900	29.42	30.27	30.27
1.000	13.96	14.36	14.36
1.100	8.04	8.27	8.27
1.200	5.52	5.68	5.68
1.300	4.28	4.40	4.40
1.400	3.40	3.50	3.50
1.500	2.69	2.76	2.76
1.600	2.01	2.07	2.07
1.700	1.57	1.62	1.62
1.800	1.07	1.11	1.11
1.900	.72	.75	.75
2.000	.27	.28	.28
2.100	0.00	0.00	0.00

LITTLE PINEY CREEK
SEPTEMBER 6, 1968
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	2.10	MILES
RIVER DISCHARGE	49.00	CFS
RECOVERY RATIO OF TRACER	.948	
TIME TO CENTROID	5.73	HOURS
TIME VARIANCE	1.16855	HRS.SQ.
COEFFICIENT OF SKEW	1.38769	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
3.600	0.00	0.00	0.00
3.800	.06	.06	.06
4.000	.25	.26	.27
4.200	.78	.82	.83
4.400	1.57	1.65	1.67
4.600	2.91	3.07	3.09
4.800	3.85	4.06	4.09
5.000	4.38	4.62	4.66
5.200	4.45	4.70	4.74
5.400	4.34	4.59	4.62
5.600	3.85	4.06	4.09
5.800	3.32	3.50	3.53
6.000	2.84	3.00	3.02
6.200	2.38	2.51	2.53
6.400	1.94	2.05	2.07
6.600	1.55	1.63	1.64
6.800	1.18	1.25	1.26
7.000	.93	.98	.99
7.200	.76	.80	.81
7.400	.61	.64	.64
7.600	.48	.50	.51
7.800	.41	.44	.44
8.000	.36	.38	.38
8.200	.31	.33	.33
8.400	.29	.30	.31
8.600	.25	.26	.27
8.800	.21	.22	.23
9.000	.18	.20	.20
9.200	.17	.17	.18
9.400	.14	.15	.15
9.600	.12	.13	.13
9.800	.11	.12	.12
10.000	.08	.08	.08
10.200	.06	.07	.07
10.400	.04	.04	.04
10.600	.03	.03	.03
10.800	0.00	0.00	0.00

LITTLE PINEY CREEK
SEPTEMBER 6, 1968
SAMPLING SITE NUMBER 3

DISTANCE FROM POINT OF INJECTION	3.21	MILES
RIVER DISCHARGE	55.00	CFS
RECOVERY RATIO OF TRACER	.988	
TIME TO CENTROID	8.21	HOURS
TIME VARIANCE	1.82877	HRS.SQ.
COEFFICIENT OF SKEW	1.46396	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
6.000	0.00	0.00	0.00
6.200	.26	.26	.30
6.400	1.03	1.04	1.17
6.600	1.74	1.76	2.00
6.800	2.24	2.26	2.56
7.000	2.70	2.73	3.09
7.200	3.12	3.16	3.57
7.400	3.21	3.25	3.67
7.600	3.19	3.23	3.66
7.800	3.13	3.16	3.58
8.000	2.96	2.99	3.39
8.200	2.69	2.72	3.08
8.400	2.39	2.42	2.74
8.600	2.04	2.06	2.34
8.800	1.68	1.70	1.92
9.000	1.42	1.44	1.63
9.200	1.21	1.22	1.38
9.400	1.02	1.03	1.17
9.600	.87	.88	1.00
9.800	.74	.75	.85
10.000	.63	.63	.72
10.200	.53	.53	.60
10.400	.45	.45	.51
10.600	.38	.38	.43
10.800	.32	.32	.37
11.000	.27	.27	.31
11.200	.24	.24	.27
11.400	.21	.21	.23
11.600	.17	.17	.20
11.800	.15	.15	.17
12.000	.13	.13	.15
12.200	.12	.12	.14
12.400	.11	.11	.12
12.600	.09	.09	.11
12.800	.08	.08	.10
13.000	.07	.07	.08
13.200	.07	.07	.08
13.400	.06	.06	.07
13.600	.05	.05	.06
13.800	.05	.05	.05
14.000	.04	.05	.05
14.200	.04	.04	.04
14.400	.04	.04	.04
14.600	.03	.03	.03
14.800	.02	.02	.02
15.000	0.00	0.00	0.00

LITTLE PINEY CREEK
SEPTEMBER 6. 1968
SAMPLING SITE NUMBER 4

DISTANCE FROM POINT OF INJECTION	4.55	MILES
RIVER DISCHARGE	58.00	CFS
RECOVERY RATIO OF TRACER	1.000	
TIME TO CENTROID	13.00	HOURS
TIME VARIANCE	2.91444	HRS.SQ.
COEFFICIENT OF SKEW	.69412	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
9.000	0.00	0.00	0.00
9.200	.02	.02	.03
9.400	.06	.06	.07
9.600	.10	.10	.12
9.800	.16	.16	.19
10.000	.25	.25	.29
10.200	.34	.34	.41
10.400	.45	.45	.54
10.600	.59	.59	.70
10.800	.87	.87	1.04
11.000	1.15	1.15	1.38
11.200	1.54	1.54	1.84
11.400	2.01	2.01	2.40
11.600	2.12	2.12	2.53
11.800	2.16	2.16	2.58
12.000	2.18	2.18	2.61
12.200	2.15	2.15	2.56
12.400	2.06	2.06	2.46
12.600	1.95	1.95	2.33
12.800	1.84	1.84	2.19
13.000	1.72	1.72	2.05
13.200	1.60	1.60	1.91
13.400	1.48	1.48	1.76
13.600	1.38	1.38	1.65
13.800	1.28	1.28	1.53
14.000	1.18	1.18	1.41
14.200	1.09	1.09	1.30
14.400	.99	.99	1.18
14.600	.89	.89	1.07
14.800	.80	.80	.96
15.000	.72	.72	.86
15.200	.65	.65	.77
15.400	.59	.59	.71
15.600	.53	.53	.63
15.800	.48	.48	.57
16.000	.43	.43	.51
16.200	.38	.38	.45
16.400	.34	.34	.41
16.600	.31	.31	.37
16.800	.27	.27	.32
17.000	.24	.24	.28

LITTLE PINEY CREEK

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
17.200	.21	.21	.25
17.400	.18	.18	.21
17.600	.16	.16	.19
17.800	.14	.14	.16
18.000	.10	.10	.11
18.200	.07	.07	.08
18.400	.04	.04	.05
18.600	.02	.02	.02
18.800	.01	.01	.01
19.000	0.00	0.00	0.00

BAYOU ANACOCO
JUNE 15, 1969
SAMPLING SITE NUMBER 1 AT PARISH ROAD, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	7.10	MILES
RIVER DISCHARGE	71.10	CFS
RECOVERY RATIO OF TRACER	.896	
TIME TO CENTROID	20.74	HOURS
TIME VARIANCE	3.40292	HRS.SQ.
COEFFICIENT OF SKEW	1.68762	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
16.750	0.00	0.00	0.00
17.250	.57	.63	.63
17.750	2.59	2.89	2.89
18.250	7.53	8.41	8.41
18.750	18.13	20.25	20.25
19.250	26.73	29.85	29.85
19.750	33.25	37.13	37.13
20.250	34.34	38.34	38.34
20.750	30.03	33.53	33.53
21.250	24.11	26.92	26.92
21.750	16.67	18.62	18.62
22.250	11.61	12.97	12.97
22.750	8.16	9.11	9.11
23.250	5.56	6.20	6.20
23.750	3.75	4.19	4.19
24.250	2.56	2.85	2.85
24.750	1.83	2.04	2.04
25.250	1.43	1.60	1.60
25.750	1.20	1.34	1.34
26.250	1.01	1.13	1.13
26.750	.87	.97	.97
27.250	.70	.78	.78
27.750	.60	.67	.67
28.250	.53	.59	.59
28.750	.44	.49	.49
29.250	.35	.39	.39
29.750	.28	.31	.31
30.250	.23	.26	.26
30.750	.18	.20	.20
31.250	.12	.14	.14
31.750	0.00	0.00	0.00

BAYOU ANACOCO
JUNE 15, 1969
SAMPLING SITE NUMBER 2

DISTANCE FROM POINT OF INJECTION	14.40	MILES
RIVER DISCHARGE	90.70	CFS
RECOVERY RATIO OF TRACER	.815	
TIME TO CENTROID	44.08	HOURS
TIME VARIANCE	7.54892	HRS.SQ.
COEFFICIENT OF SKEW	.60039	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
37.500	0.00	0.00	0.00
38.000	.28	.34	.44
38.500	.79	.97	1.23
39.000	1.46	1.79	2.29
39.500	2.51	3.08	3.93
40.000	4.15	5.09	6.50
40.500	6.27	7.69	9.81
41.000	8.29	10.17	12.98
41.500	10.38	12.74	16.25
42.000	11.65	14.30	18.25
42.500	12.52	15.37	19.61
43.000	12.93	15.87	20.24
43.500	12.83	15.75	20.09
44.000	12.36	15.17	19.35
44.500	11.48	14.09	17.98
45.000	10.23	12.56	16.03
45.500	8.98	11.03	14.07
46.000	7.52	9.23	11.78
46.500	6.10	7.49	9.56
47.000	4.98	6.11	7.79
47.500	4.17	5.12	6.53
48.000	3.54	4.35	5.55
48.500	3.03	3.71	4.74
49.000	2.56	3.14	4.01
49.500	2.14	2.62	3.34
50.000	1.79	2.19	2.80
50.500	1.47	1.81	2.31
51.000	1.17	1.43	1.83
51.500	.92	1.12	1.43
52.000	.65	.80	1.02
52.500	.45	.56	.71
53.000	.24	.29	.37
53.500	.00	.00	.00

BAYOU ANACOCO
JUNE 15, 1969
SAMPLING SITE NUMBER 3 AT STATE HIWAY 111
DISTANCE FROM POINT OF INJECTION 18.50 MILES
RIVER DISCHARGE 95.80 CFS

RECOVERY RATIO OF TRACER .713
TIME TO CENTROID 53.97 HOURS
TIME VARIANCE 10.10029 HRS.SQ.
COEFFICIENT OF SKEW .84162

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
47.500	0.00	0.00	0.00
48.000	.73	1.02	1.38
48.500	1.50	2.11	2.84
49.000	2.40	3.37	4.54
49.500	3.49	4.90	6.60
50.000	4.73	6.64	8.94
50.500	6.24	8.75	11.79
51.000	7.52	10.54	14.21
51.500	8.65	12.14	16.35
52.000	9.49	13.31	17.94
52.500	9.85	13.82	18.62
53.000	9.88	13.85	18.66
53.500	9.55	13.39	18.05
54.000	8.97	12.58	16.94
54.500	8.28	11.61	15.64
55.000	7.52	10.54	14.20
55.500	6.62	9.28	12.51
56.000	5.74	8.05	10.84
56.500	4.59	6.44	8.68
57.000	3.70	5.19	7.00
57.500	3.03	4.25	5.73
58.000	2.56	3.58	4.83
58.500	2.16	3.03	4.09
59.000	1.89	2.65	3.57
59.500	1.63	2.29	3.08
60.000	1.43	2.01	2.71
60.500	1.24	1.73	2.34
61.000	1.08	1.52	2.05
61.500	.93	1.31	1.76
62.000	.80	1.13	1.52
62.500	.68	.96	1.29
63.000	.58	.82	1.10
63.500	.48	.67	.90
64.000	.40	.56	.75
64.500	.30	.43	.57
65.000	.23	.32	.43
65.500	.13	.18	.24
66.000	.07	.10	.13
66.500	.00	.00	.00

BAYOU ANACOCO
JUNE 15, 1969
SAMPLING SITE NUMBER 4 AT MOUTH
DISTANCE FROM POINT OF INJECTION 23.60 MILES
RIVER DISCHARGE 95.80 CFS

RECOVERY RATIO OF TRACER .607
TIME TO CENTROID 70.78 HOURS
TIME VARIANCE 10.89493 HRS.SQ.
COEFFICIENT OF SKEW .68688

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
62.500	0.00	0.00	0.00
63.000	.08	.13	.18
63.500	.20	.34	.45
64.000	.31	.52	.70
64.500	.43	.70	.95
65.000	.66	1.08	1.46
65.500	1.51	2.48	3.35
66.000	2.56	4.23	5.69
66.500	3.68	6.06	8.17
67.000	5.26	8.67	11.68
67.500	6.23	10.26	13.83
68.000	7.07	11.65	15.69
68.500	7.63	12.58	16.95
69.000	7.83	12.91	17.40
69.500	7.78	12.83	17.28
70.000	7.51	12.38	16.68
70.500	7.02	11.57	15.59
71.000	6.57	10.83	14.59
71.500	6.02	9.93	13.37
72.000	5.49	9.05	12.19
72.500	4.98	8.21	11.06
73.000	4.49	7.40	9.98
73.500	3.92	6.46	8.70
74.000	3.40	5.61	7.56
74.500	2.95	4.86	6.55
75.000	2.53	4.18	5.63
75.500	2.17	3.58	4.82
76.000	1.82	3.00	4.04
76.500	1.53	2.52	3.39
77.000	1.23	2.02	2.72
77.500	1.04	1.72	2.32
78.000	.89	1.47	1.97
78.500	.76	1.25	1.69
79.000	.68	1.11	1.50
79.500	.59	.97	1.30
80.000	.48	.79	1.06
80.500	.39	.65	.88
81.000	.30	.49	.66
81.500	.21	.34	.46
82.000	.14	.23	.31
82.500	0.00	0.00	0.00

COMITE RIVER
NOVEMBER 4, 1968
SAMPLING SITE NUMBER 1 AT HIWAY 10 NEAR CLINTON, LA.
DISTANCE FROM POINT OF INJECTION 4.20 MILES
RIVER DISCHARGE 27.00 CFS

RECOVERY RATIO OF TRACER 1.228
TIME TO CENTROID 24.33 HOURS
TIME VARIANCE 3.77056 HRS.SQ.
COEFFICIENT OF SKEW 1.76186

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
20.000	0.00	0.00	0.00
20.500	2.00	1.63	1.63
21.000	9.08	7.40	7.40
21.500	36.16	29.46	29.46
22.000	68.76	56.01	56.01
22.500	143.76	117.10	117.10
23.000	178.28	145.22	145.22
23.500	203.76	165.98	165.98
24.000	203.12	165.46	165.46
24.500	171.80	139.94	139.94
25.000	129.44	105.44	105.44
25.500	96.32	78.46	78.46
26.000	69.08	56.27	56.27
26.500	47.76	38.90	38.90
27.000	33.04	26.91	26.91
27.500	22.52	18.34	18.34
28.000	14.48	11.80	11.80
28.500	9.48	7.72	7.72
29.000	6.96	5.67	5.67
29.500	5.84	4.76	4.76
30.000	5.40	4.40	4.40
30.500	4.84	3.94	3.94
31.000	4.32	3.52	3.52
31.500	3.96	3.23	3.23
32.000	3.32	2.70	2.70
32.500	2.88	2.35	2.35
33.000	2.68	2.18	2.18
33.500	2.32	1.89	1.89
34.000	1.96	1.60	1.60
34.500	1.48	1.21	1.21
35.000	1.08	.88	.88
35.500	.92	.75	.75
36.000	0.00	0.00	0.00

COMITE RIVER
NOVEMBER 4, 1968
SAMPLING SITE NUMBER 2 AT OLIVE BRANCH

DISTANCE FROM POINT OF INJECTION	16.70	MILES
RIVER DISCHARGE	32.00	CFS
RECOVERY RATIO OF TRACER	.603	
TIME TO CENTROID	90.02	HOURS
TIME VARIANCE	37.75338	HRS.SQ.
COEFFICIENT OF SKEW	1.57979	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
80.000	0.00	0.00	0.00
81.000	1.96	3.25	3.85
82.000	5.27	8.75	10.36
83.000	11.41	18.93	22.43
84.000	18.84	31.26	37.05
85.000	25.29	41.97	49.74
86.000	29.75	49.38	58.52
87.000	32.01	53.13	62.97
88.000	30.41	50.47	59.82
89.000	27.01	44.81	53.11
90.000	23.17	38.45	45.57
91.000	18.93	31.41	37.23
92.000	14.10	23.40	27.73
93.000	11.03	18.30	21.69
94.000	8.72	14.47	17.15
95.000	6.91	11.47	13.59
96.000	5.40	8.96	10.62
97.000	4.21	6.99	8.28
98.000	3.28	5.45	6.46
99.000	2.87	4.75	5.63
100.000	2.67	4.43	5.25
101.000	2.58	4.28	5.07
102.000	2.52	4.17	4.95
103.000	2.49	4.13	4.90
104.000	2.38	3.94	4.67
105.000	2.31	3.83	4.54
106.000	2.10	3.48	4.13
107.000	1.93	3.20	3.80
108.000	1.71	2.84	3.36
109.000	1.54	2.55	3.02
110.000	1.31	2.17	2.58
111.000	1.13	1.88	2.22
112.000	.93	1.54	1.83
113.000	.74	1.22	1.45
114.000	.52	.87	1.03
115.000	.32	.53	.63
116.000	.15	.25	.30
117.000	0.00	0.00	0.00

COMITE RIVER
NOVEMBER 4, 1968
SAMPLING SITE NUMBER 3 AT FRED, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	29.80	MILES
RIVER DISCHARGE	36.10	CFS
RECOVERY RATIO OF TRACER	.436	
TIME TO CENTROID	112.78	HOURS
TIME VARIANCE	45.43473	HRS.SQ.
COEFFICIENT OF SKEW	1.45209	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
102.000	0.00	0.00	0.00
103.000	1.76	4.05	5.41
104.000	3.81	8.74	11.69
105.000	6.27	14.39	19.24
106.000	9.87	22.66	30.30
107.000	14.24	32.70	43.72
108.000	17.27	39.64	53.00
109.000	18.58	42.66	57.04
110.000	18.07	41.49	55.47
111.000	16.54	37.98	50.78
112.000	14.72	33.80	45.19
113.000	12.52	28.73	38.42
114.000	9.99	22.93	30.66
115.000	7.52	17.25	23.07
116.000	6.02	13.82	18.48
117.000	4.87	11.18	14.95
118.000	4.06	9.33	12.47
119.000	3.42	7.86	10.51
120.000	2.92	6.69	8.95
121.000	2.60	5.98	7.99
122.000	2.39	5.49	7.34
123.000	2.15	4.94	6.61
124.000	2.00	4.60	6.15
125.000	1.86	4.26	5.70
126.000	1.74	3.99	5.33
127.000	1.61	3.69	4.94
128.000	1.51	3.47	4.64
129.000	1.38	3.16	4.22
130.000	1.26	2.89	3.87
131.000	1.16	2.66	3.56
132.000	1.02	2.33	3.12
133.000	.92	2.12	2.84
134.000	.82	1.87	2.50
135.000	.70	1.62	2.16
136.000	.57	1.31	1.76
137.000	.46	1.06	1.41
138.000	.34	.78	1.04
139.000	.24	.55	.74
140.000	.10	.23	.31
141.000	0.00	0.00	0.00

COMITE RIVER
NOVEMBER 4, 1968
SAMPLING SITE NUMBER 4 AT COMITE DRIVE
DISTANCE FROM POINT OF INJECTION 37.50 MILES
RIVER DISCHARGE 40.00 CFS

RECOVERY RATIO OF TRACER .413
TIME TO CENTROID 126.73 HOURS
TIME VARIANCE 64.19869 HRS.SQ.
COEFFICIENT OF SKEW 1.35055

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
114.000	0.00	0.00	0.00
115.000	.95	2.31	3.42
116.000	2.10	5.08	7.53
117.000	3.53	8.55	12.67
118.000	5.61	13.60	20.14
119.000	8.59	20.81	30.83
120.000	11.38	27.58	40.66
121.000	13.42	32.53	48.20
122.000	13.89	33.66	49.87
123.000	13.39	32.44	48.07
124.000	12.46	30.21	44.75
125.000	11.27	27.30	40.45
126.000	9.66	23.41	34.68
127.000	7.81	18.93	28.04
128.000	6.30	15.28	22.63
129.000	5.19	12.58	18.63
130.000	4.41	10.69	15.84
131.000	3.76	9.12	13.51
132.000	3.27	7.93	11.75
133.000	2.90	7.04	10.43
134.000	2.58	6.26	9.28
135.000	2.34	5.68	8.42
136.000	2.17	5.26	7.80
137.000	2.04	4.94	7.32
138.000	1.91	4.63	6.86
139.000	1.81	4.38	6.49
140.000	1.70	4.12	6.11
141.000	1.59	3.85	5.70
142.000	1.47	3.55	5.26
143.000	1.38	3.33	4.94
144.000	1.29	3.13	4.63
145.000	1.19	2.88	4.27
146.000	1.11	2.68	3.97
147.000	1.02	2.48	3.67
148.000	.92	2.24	3.32
149.000	.84	2.03	3.01
150.000	.75	1.82	2.69
151.000	.65	1.58	2.34
152.000	.58	1.41	2.08
153.000	.47	1.14	1.69
154.000	.38	.92	1.36
155.000	.26	.63	.94
156.000	.19	.47	.70
157.000	.11	.28	.41
158.000	0.00	0.00	0.00

COMITE RIVER
NOVEMBER 4, 1968
SAMPLING SITE NUMBER 5 AT RR BRIDGE ABOVE MOUTH
DISTANCE FROM POINT OF INJECTION 49.00 MILES
RIVER DISCHARGE 35.10 CFS

RECOVERY RATIO OF TRACER .239
TIME TO CENTROID 147.48 HOURS
TIME VARIANCE 88.77162 HRS.SQ.
COEFFICIENT OF SKEW 1.05123

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
132.000	0.00	0.00	0.00
133.000	.47	1.97	2.56
134.000	1.02	4.29	5.57
135.000	1.71	7.16	9.30
136.000	2.55	10.67	13.87
137.000	3.47	14.54	18.90
138.000	4.67	19.57	25.44
139.000	6.13	25.66	33.36
140.000	7.14	29.91	38.88
141.000	7.26	30.40	39.51
142.000	7.18	30.05	39.07
143.000	6.88	28.80	37.43
144.000	6.09	25.52	33.17
145.000	5.25	21.97	28.56
146.000	4.61	19.29	25.08
147.000	4.07	17.06	22.18
148.000	3.60	15.06	19.57
149.000	3.19	13.36	17.37
150.000	2.91	12.18	15.84
151.000	2.68	11.24	14.61
152.000	2.50	10.47	13.61
153.000	2.33	9.77	12.70
154.000	2.19	9.18	11.93
155.000	2.04	8.52	11.08
156.000	1.91	7.98	10.37
157.000	1.78	7.46	9.70
158.000	1.66	6.96	9.05
159.000	1.56	6.52	8.48
160.000	1.45	6.05	7.87
161.000	1.36	5.68	7.39
162.000	1.26	5.29	6.87
163.000	1.17	4.89	6.36
164.000	1.09	4.54	5.91
165.000	1.01	4.23	5.50
166.000	.93	3.87	5.03
167.000	.84	3.54	4.60
168.000	.79	3.29	4.28
169.000	.71	2.98	3.88
170.000	.64	2.70	3.51
171.000	.58	2.42	3.14
172.000	.52	2.16	2.81

COMITE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
173.000	.46	1.93	2.50
174.000	.40	1.67	2.17
175.000	.34	1.41	1.83
176.000	.28	1.16	1.51
177.000	.23	.95	1.24
178.000	.18	.75	.97
179.000	.12	.49	.64
180.000	.06	.25	.33
181.000	0.00	0.00	0.00

BAYOU BARTHOLOMEW
JUNE 25, 1971
SAMPLING SITE NUMBER 1 AT JONES, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	2.00	MILES
RIVER DISCHARGE	145.00	CFS
RECOVERY RATIO OF TRACER	.811	
TIME TO CENTROID	6.30	HOURS
TIME VARIANCE	.86491	HRS.SQ.
COEFFICIENT OF SKEW	.92866	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.500	0.00	0.00	0.00
4.750	5.48	6.76	6.76
5.000	27.56	33.97	33.97
5.250	51.58	63.58	63.58
5.500	69.56	85.75	85.75
5.750	81.68	100.69	100.69
6.000	79.18	97.61	97.61
6.250	64.86	79.95	79.95
6.500	52.40	64.60	64.60
6.750	41.86	51.60	51.60
7.000	33.30	41.05	41.05
7.250	26.82	33.06	33.06
7.500	21.16	26.08	26.08
7.750	16.90	20.83	20.83
8.000	13.16	16.22	16.22
8.250	10.32	12.72	12.72
8.500	7.70	9.49	9.49
8.750	5.66	6.98	6.98
9.000	4.06	5.00	5.00
9.250	2.76	3.40	3.40
9.500	1.52	1.87	1.87
9.750	.56	.69	.69
10.000	0.00	0.00	0.00

BAYOU BARTHOLOMEW
JUNE 25, 1971
SAMPLING SITE NUMBER 2 AT GREEN GROVE

DISTANCE FROM POINT OF INJECTION	16.00	MILES
RIVER DISCHARGE	170.00	CFS
RECOVERY RATIO OF TRACER	.842	
TIME TO CENTROID	61.83	HOURS
TIME VARIANCE	15.30085	HRS.SQ.
COEFFICIENT OF SKEW	.34615	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
52.000	0.00	0.00	0.00
53.000	.75	.89	1.05
54.000	1.66	1.98	2.32
55.000	3.02	3.59	4.21
56.000	5.23	6.22	7.29
57.000	7.58	9.01	10.57
58.000	9.81	11.66	13.67
59.000	11.54	13.71	16.08
60.000	13.14	15.61	18.31
61.000	14.21	16.88	19.79
62.000	14.19	16.86	19.77
63.000	12.94	15.38	18.03
64.000	10.68	12.69	14.87
65.000	8.55	10.16	11.91
66.000	6.71	7.98	9.35
67.000	5.03	5.97	7.00
68.000	3.80	4.52	5.30
69.000	2.77	3.29	3.86
70.000	1.92	2.28	2.67
71.000	1.42	1.69	1.98
72.000	.93	1.10	1.29
73.000	.60	.71	.84
74.000	.23	.28	.32
75.000	0.00	0.00	0.00

BAYOU BARTHOLOMEW
JUNE 25, 1971
SAMPLING SITE NUMBER 3 AT BEEKMAN, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 37.00 MILES
RIVER DISCHARGE 230.00 CFS

RECOVERY RATIO OF TRACER .844
TIME TO CENTROID 124.41 HOURS
TIME VARIANCE 45.83683 HRS.SQ.
COEFFICIENT OF SKEW .53885

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
107.500	0.00	0.00	0.00
108.500	.06	.07	.11
109.500	.24	.29	.46
110.500	.47	.56	.89
111.500	.77	.92	1.45
112.500	1.13	1.34	2.13
113.500	1.66	1.97	3.12
114.500	2.26	2.68	4.25
115.500	2.85	3.37	5.35
116.500	3.49	4.13	6.56
117.500	4.03	4.78	7.57
118.500	4.68	5.55	8.80
119.500	5.26	6.23	9.89
120.500	5.87	6.95	11.02
121.500	6.33	7.50	11.90
122.500	6.68	7.91	12.55
123.500	6.72	7.96	12.62
124.500	6.27	7.43	11.78
125.500	5.79	6.86	10.88
126.500	5.20	6.16	9.77
127.500	4.68	5.54	8.79
128.500	4.09	4.84	7.68
129.500	3.57	4.23	6.70
130.500	3.09	3.66	5.81
131.500	2.67	3.16	5.02
132.500	2.28	2.70	4.28
133.500	1.94	2.30	3.64
134.500	1.63	1.93	3.06
135.500	1.38	1.64	2.60
136.500	1.17	1.39	2.20
137.500	1.00	1.18	1.87
138.500	.85	1.01	1.60
139.500	.70	.83	1.32
140.500	.60	.71	1.12
141.500	.50	.60	.95
142.500	.42	.49	.78
143.500	.35	.41	.66
144.500	.29	.34	.54
145.500	.20	.24	.38
146.500	.14	.16	.26
147.500	.07	.09	.14
148.500	0.00	0.00	0.00

BAYOU BARTHOLOMEW
JUNE 25, 1971
SAMPLING SITE NUMBER 4 AT MOUTH

DISTANCE FROM POINT OF INJECTION	73.00	MILES
RIVER DISCHARGE	286.00	CFS
RECOVERY RATIO OF TRACER	1.404	
TIME TO CENTROID	239.56	HOURS
TIME VARIANCE	308.76155	HRS.SQ.
COEFFICIENT OF SKEW	.48528	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
198.500	0.00	0.00	0.00
200.500	.08	.05	.11
202.500	.16	.12	.23
204.500	.27	.19	.38
206.500	.39	.28	.56
208.500	.55	.39	.77
210.500	.73	.52	1.03
212.500	.95	.68	1.33
214.500	1.22	.87	1.71
216.500	1.51	1.07	2.12
218.500	1.89	1.35	2.66
220.500	2.27	1.62	3.19
222.500	2.52	1.80	3.55
224.500	2.75	1.96	3.87
226.500	2.92	2.08	4.11
228.500	3.01	2.15	4.24
230.500	3.11	2.22	4.37
232.500	3.17	2.26	4.45
234.500	3.21	2.29	4.51
236.500	3.14	2.24	4.42
238.500	3.03	2.16	4.26
240.500	2.89	2.06	4.07
242.500	2.72	1.94	3.82
244.500	2.55	1.82	3.58
246.500	2.36	1.68	3.31
248.500	2.20	1.57	3.09
250.500	2.03	1.45	2.85
252.500	1.87	1.33	2.63
254.500	1.71	1.22	2.41
256.500	1.55	1.11	2.19
258.500	1.42	1.01	1.99
260.500	1.29	.92	1.82
262.500	1.15	.82	1.62
264.500	1.05	.74	1.47
266.500	.93	.66	1.30
268.500	.83	.59	1.16
270.500	.73	.52	1.03
272.500	.65	.46	.91
274.500	.56	.40	.79
276.500	.48	.35	.68
278.500	.41	.29	.58

BAYOU BARTHOLOMEW

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
280.500	.34	.25	.48
282.500	.30	.21	.42
284.500	.24	.17	.33
286.500	.19	.14	.27
288.500	.16	.11	.22
290.500	.12	.09	.17
292.500	.09	.06	.13
294.500	.05	.03	.07
296.500	.02	.01	.02
298.500	0.00	0.00	0.00

AMITE RIVER
OCTOBER 21, 1968
SAMPLING SITE NUMBER 1 AT DARLINGTON, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	6.30	MILES
RIVER DISCHARGE	200.00	CFS
RECOVERY RATIO OF TRACER	.816	
TIME TO CENTROID	15.22	HOURS
TIME VARIANCE	5.27712	HRS.SQ.
COEFFICIENT OF SKEW	1.03012	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
11.050	0.00	0.00	0.00
11.550	4.03	4.94	4.94
12.050	10.69	13.11	13.11
12.550	19.83	24.31	24.31
13.050	30.36	37.22	37.22
13.550	37.99	46.57	46.57
14.050	40.07	49.12	49.12
14.550	36.33	44.54	44.54
15.050	31.13	38.16	38.16
15.550	25.30	31.02	31.02
16.050	19.42	23.81	23.81
16.550	15.22	18.66	18.66
17.050	12.73	15.61	15.61
17.550	11.03	13.52	13.52
18.050	9.51	11.66	11.66
18.550	8.16	10.00	10.00
19.050	6.85	8.40	8.40
19.550	5.66	6.94	6.94
20.050	4.66	5.71	5.71
20.550	3.87	4.74	4.74
21.050	3.10	3.80	3.80
21.550	2.50	3.06	3.06
22.050	1.87	2.29	2.29
22.550	1.36	1.67	1.67
23.050	.79	.97	.97
23.550	.49	.60	.60
24.050	0.00	0.00	0.00

AMITE RIVER
OCTOBER 21, 1968
SAMPLING SITE NUMBER 2 AT GRANGEVILLE, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 24.10 MILES
RIVER DISCHARGE 260.00 CFS

RECOVERY RATIO OF TRACER .514
TIME TO CENTROID 61.61 HOURS
TIME VARIANCE 62.35526 HRS.SQ.
COEFFICIENT OF SKEW .80082

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
46.250	0.00	0.00	0.00
47.250	.14	.28	.36
48.250	.42	.81	1.06
49.250	.86	1.68	2.18
50.250	1.53	2.98	3.88
51.250	2.38	4.62	6.01
52.250	3.07	5.97	7.76
53.250	3.65	7.10	9.23
54.250	4.16	8.09	10.52
55.250	4.57	8.89	11.56
56.250	4.93	9.59	12.47
57.250	5.09	9.90	12.87
58.250	4.96	9.64	12.54
59.250	4.65	9.05	11.77
60.250	4.30	8.37	10.89
61.250	3.96	7.71	10.02
62.250	3.62	7.04	9.16
63.250	3.25	6.32	8.21
64.250	2.94	5.72	7.43
65.250	2.67	5.20	6.76
66.250	2.43	4.74	6.16
67.250	2.22	4.31	5.61
68.250	2.03	3.95	5.13
69.250	1.85	3.60	4.68
70.250	1.67	3.25	4.23
71.250	1.53	2.97	3.87
72.250	1.38	2.68	3.49
73.250	1.25	2.43	3.17
74.250	1.13	2.19	2.85
75.250	1.01	1.97	2.56
76.250	.90	1.75	2.28
77.250	.81	1.58	2.05
78.250	.70	1.36	1.77
79.250	.61	1.19	1.55
80.250	.53	1.03	1.34
81.250	.45	.88	1.14
82.250	.38	.74	.96
83.250	.32	.62	.81
84.250	.27	.52	.67
85.250	.20	.39	.50
86.250	.14	.28	.36
87.250	.10	.18	.24
88.250	.06	.11	.15
89.250	0.00	0.00	0.00

AMITE RIVER
OCTOBER 21, 1968
SAMPLING SITE NUMBER 3 AT MAGNOLIA, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 92.00 MILES
RIVER DISCHARGE 315.00 CFS

RECOVERY RATIO OF TRACER .417
TIME TO CENTROID 115.07 HOURS
TIME VARIANCE 151.83828 HRS.SQ.
COEFFICIENT OF SKEW .85906

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
92.250	0.00	0.00	0.00
93.250	.10	.24	.38
94.250	.20	.48	.76
95.250	.32	.76	1.20
96.250	.44	1.05	1.66
97.250	.58	1.38	2.17
98.250	.73	1.75	2.75
99.250	.91	2.18	3.43
100.250	1.11	2.65	4.17
101.250	1.31	3.14	4.94
102.250	1.55	3.71	5.84
103.250	1.79	4.29	6.75
104.250	2.03	4.87	7.66
105.250	2.24	5.37	8.46
106.250	2.36	5.65	8.90
107.250	2.37	5.69	8.96
108.250	2.32	5.56	8.76
109.250	2.23	5.34	8.41
110.250	2.14	5.12	8.06
111.250	2.05	4.90	7.72
112.250	1.95	4.67	7.36
113.250	1.84	4.40	6.94
114.250	1.73	4.15	6.53
115.250	1.63	3.90	6.14
116.250	1.51	3.62	5.71
117.250	1.40	3.36	5.29
118.250	1.31	3.14	4.94
119.250	1.21	2.91	4.58
120.250	1.12	2.69	4.24
121.250	1.06	2.54	4.00
122.250	.99	2.37	3.72
123.250	.93	2.23	3.52
124.250	.87	2.08	3.28
125.250	.82	1.97	3.11
126.250	.78	1.88	2.96
127.250	.74	1.77	2.79
128.250	.70	1.68	2.64
129.250	.66	1.58	2.49
130.250	.62	1.48	2.33
131.250	.58	1.40	2.21
132.250	.55	1.33	2.09

AMITE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CUMULATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
133.250	.52	1.26	1.98
134.250	.49	1.18	1.85
135.250	.46	1.10	1.74
136.250	.43	1.04	1.63
137.250	.41	.97	1.53
138.250	.38	.92	1.45
139.250	.36	.85	1.34
140.250	.33	.79	1.25
141.250	.31	.74	1.17
142.250	.29	.69	1.08
143.250	.27	.64	1.01
144.250	.25	.59	.93
145.250	.22	.53	.84
146.250	.20	.49	.77
147.250	.19	.45	.71
148.250	.16	.39	.62
149.250	.14	.34	.54
150.250	.12	.30	.47
151.250	.11	.25	.40
152.250	.09	.22	.34
153.250	.07	.17	.27
154.250	.06	.13	.21
155.250	.04	.09	.14
156.250	.02	.05	.08
157.250	.00	.00	.00

AMITE RIVER
OCTOBER 21, 1968
SAMPLING SITE NUMBER 4 AT DENHAM SPRINGS, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 58.50 MILES
RIVER DISCHARGE 350.00 CFS

RECOVERY RATIO OF TRACER .341
TIME TO CENTROID 128.28 HOURS
TIME VARIANCE 115.03169 HRS.SQ.
COEFFICIENT OF SKEW .78418

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
105.250	0.00	0.00	0.00
106.250	.07	.20	.35
107.250	.11	.34	.59
108.250	.17	.50	.87
109.250	.23	.67	1.17
110.250	.29	.86	1.51
111.250	.37	1.09	1.90
112.250	.45	1.32	2.32
113.250	.55	1.62	2.83
114.250	.68	2.00	3.50
115.250	.82	2.42	4.23
116.250	.98	2.88	5.05
117.250	1.12	3.29	5.75
118.250	1.27	3.71	6.50
119.250	1.40	4.11	7.19
120.250	1.53	4.48	7.84
121.250	1.64	4.82	8.44
122.250	1.76	5.17	9.04
123.250	1.84	5.41	9.47
124.250	1.87	5.49	9.60
125.250	1.86	5.46	9.55
126.250	1.79	5.24	9.17
127.250	1.69	4.97	8.69
128.250	1.59	4.66	8.15
129.250	1.49	4.36	7.63
130.250	1.37	4.02	7.03
131.250	1.25	3.66	6.40
132.250	1.14	3.34	5.85
133.250	1.04	3.06	5.36
134.250	.96	2.82	4.94
135.250	.88	2.58	4.52
136.250	.80	2.34	4.10
137.250	.74	2.17	3.79
138.250	.67	1.98	3.46
139.250	.62	1.82	3.18
140.250	.57	1.67	2.92
141.250	.52	1.53	2.68
142.250	.48	1.41	2.47
143.250	.43	1.28	2.23
144.250	.40	1.17	2.05
145.250	.36	1.07	1.87

AMITE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
146.250	.34	.99	1.73
147.250	.31	.90	1.58
148.250	.28	.82	1.44
149.250	.26	.75	1.32
150.250	.23	.68	1.19
151.250	.21	.62	1.08
152.250	.19	.56	.99
153.250	.18	.52	.91
154.250	.16	.46	.81
155.250	.14	.42	.74
156.250	.13	.38	.66
157.250	.11	.33	.58
158.250	.10	.30	.52
159.250	.09	.27	.47
160.250	.08	.23	.41
161.250	.07	.21	.37
162.250	.06	.17	.30
163.250	.05	.15	.25
164.250	.04	.12	.20
165.250	.03	.10	.17
166.250	.02	.06	.11
167.250	.02	.05	.08
168.250	.01	.03	.05
169.250	.00	.00	.00

TICKFAU RIVER
OCTOBER 8, 1968
SAMPLING SITE NUMBER 1 AT MONTPELLIER AT HIWAY 16

DISTANCE FROM POINT OF INJECTION	4.00	MILES
RIVER DISCHARGE	72.00	CFS
RECOVERY RATIO OF TRACER	.829	
TIME TO CENTROID	11.34	HOURS
TIME VARIANCE	1.27321	HRS.SQ.
COEFFICIENT OF SKEW	.99368	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
8.750	0.00	0.00	0.00
9.250	4.15	5.01	5.01
9.750	20.27	24.45	24.45
10.250	38.00	45.84	45.84
10.750	51.92	62.63	62.63
11.250	49.50	59.71	59.71
11.750	40.17	48.46	48.46
12.250	28.88	34.84	34.84
12.750	16.70	20.14	20.14
13.250	9.07	10.94	10.94
13.750	4.23	5.10	5.10
14.250	2.18	2.63	2.63
14.750	1.38	1.66	1.66
15.250	.89	1.07	1.07
15.750	.65	.78	.78
16.250	.41	.49	.49
16.750	.31	.37	.37
17.250	.14	.17	.17
17.750	.08	.10	.10
18.250	0.00	0.00	0.00

TICKFAU RIVER
OCTOBER 8, 1968
SAMPLING SITE NUMBER 2 AT CAMP ABOVE STARNS BRIDGE
DISTANCE FROM POINT OF INJECTION 14.00 MILES
RIVER DISCHARGE 79.00 CFS

RECOVERY RATIO OF TRACER .764
TIME TO CENTROID 55.37 HOURS
TIME VARIANCE 15.03647 HRS.SQ.
COEFFICIENT OF SKEW 1.25515

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
47.250	0.00	0.00	0.00
48.250	.52	.69	.75
49.250	2.18	2.86	3.14
50.250	4.64	6.08	6.67
51.250	8.20	10.74	11.78
52.250	12.42	16.25	17.83
53.250	14.56	19.06	20.91
54.250	15.00	19.63	21.54
55.250	13.52	17.69	19.41
56.250	10.96	14.34	15.73
57.250	8.36	10.95	12.01
58.250	6.14	8.03	8.81
59.250	4.04	5.28	5.80
60.250	2.45	3.21	3.52
61.250	1.81	2.37	2.60
62.250	1.52	1.99	2.19
63.250	1.32	1.73	1.90
64.250	1.19	1.55	1.71
65.250	.99	1.30	1.42
66.250	.86	1.13	1.23
67.250	.71	.93	1.02
68.250	.58	.76	.83
69.250	.43	.57	.62
70.250	.34	.44	.49
71.250	.20	.26	.29
72.250	.00	.01	.01

TICKFAU RIVER
OCTOBER 8, 1968
SAMPLING SITE NUMBER 3 AT HOLDEN

DISTANCE FROM POINT OF INJECTION	24.00	MILES
RIVER DISCHARGE	66.00	CFS
RECOVERY RATIO OF TRACER	.560	
TIME TO CENTROID	89.17	HOURS
TIME VARIANCE	26.65783	HRS.SQ.
COEFFICIENT OF SKEW	1.36484	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
78.250	0.00	0.00	0.00
79.250	.14	.25	.23
80.250	.43	.76	.70
81.250	1.04	1.86	1.70
82.250	2.31	4.11	3.77
83.250	4.94	8.81	8.08
84.250	7.50	13.38	12.26
85.250	8.94	15.95	14.62
86.250	9.77	17.43	15.98
87.250	10.16	18.13	16.61
88.250	9.99	17.83	16.34
89.250	9.01	16.08	14.74
90.250	7.65	13.64	12.51
91.250	6.01	10.72	9.82
92.250	4.43	7.90	7.24
93.250	2.83	5.05	4.63
94.250	2.02	3.61	3.31
95.250	1.63	2.90	2.66
96.250	1.45	2.59	2.37
97.250	1.30	2.31	2.12
98.250	1.16	2.08	1.90
99.250	1.03	1.84	1.69
100.250	.92	1.64	1.50
101.250	.82	1.46	1.34
102.250	.72	1.29	1.18
103.250	.62	1.10	1.01
104.250	.53	.97	.89
105.250	.47	.83	.76
106.250	.39	.70	.64
107.250	.31	.56	.51
108.250	.25	.44	.41
109.250	.20	.35	.32
110.250	.13	.22	.21
111.250	.08	.14	.13
112.250	0.00	0.00	0.00

TICKFAU RIVER
OCTOBER 8, 1968
SAMPLING SITE NUMBER 4 AT SPRINGVILLE
DISTANCE FROM POINT OF INJECTION 31.00 MILES
RIVER DISCHARGE 103.00 CFS

RECOVERY RATIO OF TRACER .781
TIME TO CENTROID 107.37 HOURS
TIME VARIANCE 27.11711 HRS.SQ.
COEFFICIENT OF SKEW 1.14977

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
97.250	0.00	0.00	0.00
98.250	.59	.76	1.08
99.250	1.49	1.91	2.74
100.250	2.59	3.31	4.74
101.250	3.98	5.10	7.30
102.250	5.68	7.27	10.40
103.250	7.40	9.47	13.55
104.250	8.44	10.81	15.46
105.250	8.67	11.10	15.88
106.250	8.07	10.33	14.78
107.250	7.28	9.32	13.33
108.250	6.41	8.20	11.73
109.250	5.51	7.05	10.09
110.250	4.58	5.86	8.38
111.250	3.59	4.59	6.57
112.250	2.71	3.46	4.96
113.250	2.00	2.55	3.65
114.250	1.61	2.06	2.94
115.250	1.28	1.64	2.35
116.250	1.12	1.43	2.05
117.250	.94	1.20	1.72
118.250	.83	1.06	1.52
119.250	.72	.92	1.32
120.250	.63	.81	1.16
121.250	.51	.65	.93
122.250	.47	.60	.86
123.250	.40	.51	.73
124.250	.31	.40	.57
125.250	.25	.32	.45
126.250	.20	.26	.37
127.250	.15	.19	.27
128.250	.11	.14	.21
129.250	.06	.07	.11
130.250	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 1 AT KENTWOOD, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	5.10	MILES
RIVER DISCHARGE	204.00	CFS
RECOVERY RATIO OF TRACER	1.185	
TIME TO CENTROID	10.38	HOURS
TIME VARIANCE	1.05141	HRS.SQ.
COEFFICIENT OF SKEW	1.03395	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
7.833	0.00	0.00	0.00
8.167	2.50	2.11	2.11
8.500	8.96	7.56	7.56
8.833	25.74	21.72	21.72
9.167	56.06	47.31	47.31
9.500	107.30	90.56	90.56
9.833	124.12	104.75	104.75
10.167	120.42	101.63	101.63
10.500	105.20	88.79	88.79
10.833	82.28	69.44	69.44
11.167	56.66	47.82	47.82
11.500	39.82	33.61	33.61
11.833	26.70	22.53	22.53
12.167	18.54	15.65	15.65
12.500	13.18	11.12	11.12
12.833	8.72	7.36	7.36
13.167	5.02	4.24	4.24
13.500	3.70	3.12	3.12
13.833	3.22	2.72	2.72
14.167	2.58	2.18	2.18
14.500	1.74	1.47	1.47
14.833	1.08	.91	.91
15.167	.44	.37	.37
15.500	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 2 AT TANGIPAHOA, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	11.20	MILES
RIVER DISCHARGE	346.00	CFS
RECOVERY RATIO OF TRACER	1.170	
TIME TO CENTROID	22.43	HOURS
TIME VARIANCE	3.97883	HRS.SQ.
COEFFICIENT OF SKEW	1.22536	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
18.500	0.00	0.00	0.00
18.833	1.37	1.17	1.99
19.167	3.88	3.32	5.63
19.500	8.51	7.28	12.34
19.833	13.66	11.68	19.81
20.167	19.77	16.90	28.67
20.500	27.75	23.73	40.24
20.833	34.36	29.38	49.83
21.167	39.66	33.91	57.51
21.500	42.83	36.62	62.11
21.833	40.90	34.97	59.31
22.167	37.76	32.29	54.76
22.500	34.10	29.16	49.45
22.833	29.79	25.47	43.20
23.167	24.14	20.64	35.01
23.500	18.75	16.03	27.19
23.833	15.59	13.33	22.61
24.167	13.00	11.12	18.85
24.500	10.66	9.11	15.46
24.833	8.84	7.56	12.82
25.167	7.00	5.99	10.15
25.500	5.84	4.99	8.47
25.833	4.96	4.24	7.19
26.167	4.10	3.51	5.95
26.500	3.63	3.10	5.26
26.833	3.34	2.86	4.84
27.167	2.94	2.51	4.26
27.500	2.79	2.39	4.05
27.833	2.60	2.22	3.77
28.167	2.48	2.12	3.60
28.500	2.10	1.80	3.05
28.833	1.81	1.55	2.62
29.167	1.55	1.33	2.25
29.500	1.24	1.06	1.80
29.833	.92	.79	1.33
30.167	.67	.57	.97
30.500	.43	.37	.62
30.833	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 3 AT AMITE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	25.80	MILES
RIVER DISCHARGE	420.00	CFS
RECOVERY RATIO OF TRACER	1.045	
TIME TO CENTROID	36.59	HOURS
TIME VARIANCE	6.42561	HRS.SQ.
COEFFICIENT OF SKEW	1.04762	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
31.917	0.00	0.00	0.00
32.417	2.21	2.11	4.35
32.917	5.52	5.28	10.87
33.417	10.43	9.98	20.54
33.917	15.11	14.46	29.76
34.417	19.04	18.22	37.50
34.917	22.18	21.22	43.69
35.417	23.12	22.12	45.54
35.917	22.39	21.42	44.10
36.417	20.46	19.57	40.30
36.917	17.66	16.90	34.78
37.417	14.49	13.86	28.54
37.917	10.96	10.49	21.59
38.417	8.48	8.11	16.70
38.917	6.57	6.29	12.94
39.417	5.40	5.17	10.64
39.917	4.42	4.23	8.71
40.417	3.94	3.77	7.76
40.917	3.49	3.34	6.87
41.417	3.23	3.09	6.36
41.917	2.84	2.72	5.59
42.417	2.55	2.44	5.02
42.917	2.19	2.10	4.31
43.417	1.88	1.80	3.70
43.917	1.52	1.45	2.99
44.417	1.13	1.08	2.23
44.917	.83	.79	1.63
45.417	.48	.46	.95
45.917	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 4 AT INDEPENDENCE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	34.40	MILES
RIVER DISCHARGE	438.00	CFS
RECOVERY RATIO OF TRACER	.945	
TIME TO CENTROID	46.52	HOURS
TIME VARIANCE	8.39391	HRS.SQ.
COEFFICIENT OF SKEW	1.04156	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
40.667	0.00	0.00	0.00
41.167	.77	.81	1.74
41.667	1.86	1.97	4.23
42.167	3.58	3.79	8.14
42.667	5.80	6.14	13.18
43.167	8.48	8.97	19.26
43.667	11.67	12.34	26.50
44.167	14.50	15.33	32.92
44.667	17.08	18.07	38.79
45.167	18.36	19.42	41.70
45.667	17.74	18.76	40.28
46.167	16.38	17.32	37.19
46.667	14.24	15.06	32.33
47.167	11.55	12.22	26.23
47.667	9.95	10.53	22.60
48.167	7.85	8.30	17.82
48.667	6.37	6.74	14.46
49.167	5.20	5.50	11.81
49.667	4.57	4.84	10.38
50.167	4.04	4.27	9.17
50.667	3.50	3.71	7.96
51.167	3.07	3.25	6.98
51.667	2.67	2.83	6.07
52.167	2.34	2.48	5.31
52.667	2.02	2.14	4.59
53.167	1.74	1.84	3.94
53.667	1.46	1.55	3.32
54.167	1.21	1.28	2.75
54.667	.95	1.01	2.16
55.167	.69	.73	1.57
55.667	.56	.59	1.27
56.167	.44	.47	1.01
56.667	.38	.40	.86
57.167	.25	.27	.57
57.667	.21	.22	.47
58.167	.17	.18	.39
58.667	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 5 AT NATALBANY, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 44.10 MILES
RIVER DISCHARGE 510.00 CFS

RECOVERY RATIO OF TRACER 1.047
TIME TO CENTROID 58.78 HOURS
TIME VARIANCE 12.89797 HRS.SQ.
COEFFICIENT OF SKEW 1.16366

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
50.167	0.00	0.00	0.00
51.167	.16	.16	.39
52.167	.54	.52	1.30
53.167	1.60	1.53	3.83
54.167	4.12	3.93	9.83
55.167	9.07	8.67	21.66
56.167	13.03	12.45	31.12
57.167	14.24	13.60	33.99
58.167	12.79	12.22	30.55
59.167	10.22	9.76	24.40
60.167	8.00	7.64	19.09
61.167	5.88	5.62	14.04
62.167	4.08	3.89	9.73
63.167	2.84	2.71	6.78
64.167	2.09	2.00	5.00
65.167	1.61	1.54	3.85
66.167	1.31	1.25	3.12
67.167	1.14	1.09	2.73
68.167	.96	.92	2.30
69.167	.78	.75	1.87
70.167	.60	.57	1.43
71.167	.44	.42	1.05
72.167	.27	.26	.64
73.167	.11	.11	.27
74.167	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 6 AT ROBERT, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	51.00	MILES
RIVER DISCHARGE	630.00	CFS
RECOVERY RATIO OF TRACER	.891	
TIME TO CENTROID	67.85	HOURS
TIME VARIANCE	17.17720	HRS.SQ.
COEFFICIENT OF SKEW	1.31538	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
60.167	0.00	0.00	0.00
61.167	.73	.82	2.52
62.167	1.91	2.15	6.63
63.167	3.75	4.21	13.00
64.167	6.47	7.27	22.44
65.167	8.72	9.79	30.22
66.167	9.65	10.84	33.47
67.167	8.47	9.51	29.38
68.167	6.44	7.24	22.35
69.167	4.04	4.54	14.01
70.167	2.98	3.35	10.35
71.167	2.48	2.78	8.60
72.167	1.99	2.24	6.91
73.167	1.72	1.93	5.95
74.167	1.41	1.58	4.90
75.167	1.15	1.29	3.99
76.167	.96	1.08	3.34
77.167	.77	.86	2.66
78.167	.58	.65	2.00
79.167	.50	.57	1.75
80.167	.36	.40	1.25
81.167	.30	.34	1.05
82.167	.22	.25	.78
83.167	.18	.21	.64
84.167	.15	.17	.51
85.167	.08	.09	.29
86.167	0.00	0.00	0.00

TANGIPAHOA RIVER
APRIL 24, 1969
SAMPLING SITE NUMBER 7 AT PONCHATOULA, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 58.40 MILES
RIVER DISCHARGE 660.00 CFS

RECOVERY RATIO OF TRACER .869
TIME TO CENTROID 78.44 HOURS
TIME VARIANCE 12.14111 HRS.SQ.
COEFFICIENT OF SKEW .79381

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
71.167	0.00	0.00	0.00
72.167	.79	.91	2.93
73.167	2.25	2.59	8.38
74.167	3.96	4.56	14.76
75.167	6.08	6.99	22.62
76.167	7.75	8.92	28.86
77.167	8.76	10.08	32.61
78.167	7.46	8.58	27.77
79.167	5.96	6.85	22.17
80.167	4.48	5.15	16.68
81.167	3.50	4.03	13.04
82.167	2.73	3.14	10.16
83.167	2.18	2.50	8.10
84.167	1.68	1.93	6.25
85.167	1.26	1.45	4.68
86.167	.93	1.07	3.47
87.167	.76	.87	2.83
88.167	.52	.60	1.95
89.167	.31	.36	1.16
90.167	.15	.17	.57
91.167	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 1 AT KENTWOOD, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	5.10	MILES
RIVER DISCHARGE	122.00	CFS
RECOVERY RATIO OF TRACER	1.023	
TIME TO CENTROID	14.99	HOURS
TIME VARIANCE	3.45603	HRS.SQ.
COEFFICIENT OF SKEW	1.11494	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
11.367	0.00	0.00	0.00
11.867	5.26	5.14	5.14
12.367	17.96	17.56	17.56
12.867	51.88	50.72	50.72
13.367	83.66	81.79	81.79
13.867	83.92	82.05	82.05
14.367	74.14	72.48	72.48
14.867	62.36	60.97	60.97
15.367	51.82	50.66	50.66
15.867	44.52	43.53	43.53
16.367	37.10	36.27	36.27
16.867	31.12	30.43	30.43
17.367	24.68	24.13	24.13
17.867	18.70	18.28	18.28
18.367	12.56	12.28	12.28
18.867	8.44	8.25	8.25
19.367	5.82	5.69	5.69
19.867	3.92	3.83	3.83
20.367	2.30	2.25	2.25
20.867	1.36	1.33	1.33
21.367	1.18	1.15	1.15
21.867	1.00	.98	.98
22.367	.70	.68	.68
22.867	.64	.63	.63
23.367	.66	.65	.65
23.867	.56	.55	.55
24.367	.38	.37	.37
24.867	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 2 AT TANGIPAHOA, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	11.20	MILES
RIVER DISCHARGE	164.00	CFS
RECOVERY RATIO OF TRACER	.973	
TIME TO CENTROID	31.11	HOURS
TIME VARIANCE	8.26598	HRS.SQ.
COEFFICIENT OF SKEW	1.46617	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
24.867	0.00	0.00	0.00
25.867	.84	.86	1.16
26.867	6.91	7.10	9.54
27.867	20.13	20.66	27.80
28.867	34.85	35.80	48.12
29.867	41.06	42.18	56.70
30.867	35.13	36.09	48.51
31.867	26.78	27.51	36.98
32.867	19.08	19.60	26.35
33.867	12.50	12.84	17.26
34.867	7.72	7.93	10.66
35.867	5.18	5.32	7.15
36.867	3.48	3.57	4.81
37.867	2.30	2.36	3.18
38.867	1.59	1.63	2.20
39.867	1.14	1.17	1.57
40.867	.94	.97	1.30
41.867	.68	.70	.94
42.867	.49	.50	.68
43.867	.38	.39	.52
44.867	.30	.31	.41
45.867	.22	.23	.30
46.867	.13	.13	.18
47.867	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 3 AT AMITE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	25.80	MILES
RIVER DISCHARGE	245.00	CFS
RECOVERY RATIO OF TRACER	.802	
TIME TO CENTROID	48.69	HOURS
TIME VARIANCE	15.36892	HRS.SQ.
COEFFICIENT OF SKEW	1.23077	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
40.867	0.00	0.00	0.00
41.867	.75	.94	1.88
42.867	2.82	3.52	7.06
43.867	6.72	8.38	16.83
44.867	11.59	14.45	29.02
45.867	14.78	18.43	37.01
46.867	16.13	20.11	40.39
47.867	14.64	18.25	36.66
48.867	12.82	15.98	32.10
49.867	10.45	13.03	26.17
50.867	7.85	9.79	19.66
51.867	5.84	7.28	14.62
52.867	4.24	5.29	10.62
53.867	3.09	3.85	7.74
54.867	2.46	3.07	6.16
55.867	1.74	2.17	4.36
56.867	1.42	1.77	3.56
57.867	1.16	1.45	2.90
58.867	.95	1.18	2.38
59.867	.88	1.10	2.20
60.867	.66	.82	1.65
61.867	.40	.50	1.00
62.867	.31	.39	.78
63.867	.32	.40	.80
64.867	.22	.27	.55
65.867	.10	.12	.25
66.867	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 4 AT INDEPENDENCE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	34.40	MILES
RIVER DISCHARGE	286.00	CFS
RECOVERY RATIO OF TRACER	.860	
TIME TO CENTROID	61.22	HOURS
TIME VARIANCE	26.74458	HRS.SQ.
COEFFICIENT OF SKEW	1.71487	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
52.867	0.00	0.00	0.00
53.867	1.63	1.89	4.44
54.867	3.94	4.58	10.74
55.867	6.70	7.79	18.26
56.867	10.03	11.65	27.32
57.867	12.57	14.61	34.24
58.867	13.20	15.34	35.97
59.867	12.06	14.02	32.87
60.867	10.67	12.40	29.07
61.867	8.62	10.02	23.49
62.867	6.52	7.57	17.75
63.867	5.11	5.94	13.92
64.867	4.04	4.70	11.02
65.867	3.22	3.74	8.76
66.867	2.52	2.93	6.88
67.867	1.93	2.25	5.26
68.867	1.50	1.75	4.10
69.867	1.24	1.44	3.37
70.867	1.03	1.20	2.81
71.867	.87	1.01	2.36
72.867	.72	.84	1.96
73.867	.58	.67	1.57
74.867	.51	.60	1.39
75.867	.47	.55	1.29
76.867	.41	.48	1.12
77.867	.37	.43	1.01
78.867	.37	.43	1.00
79.867	.37	.43	1.01
80.867	.34	.40	.94
81.867	.20	.23	.54
82.867	.21	.24	.57
83.867	.16	.18	.42
84.867	.12	.14	.34
85.867	.10	.11	.26
86.867	.07	.08	.20
87.867	.02	.02	.05
88.867	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 5 AT NATALBANY, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	44.10	MILES
RIVER DISCHARGE	304.00	CFS
RECOVERY RATIO OF TRACER	.741	
TIME TO CENTROID	75.04	HOURS
TIME VARIANCE	19.68704	HRS.SQ.
COEFFICIENT OF SKEW	1.24977	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
65.867	0.00	0.00	0.00
66.867	.36	.49	1.22
67.867	1.15	1.55	3.86
68.867	2.61	3.52	8.78
69.867	5.02	6.77	16.88
70.867	7.72	10.41	25.95
71.867	9.54	12.87	32.07
72.867	10.23	13.81	34.41
73.867	10.08	13.61	33.91
74.867	9.21	12.43	30.98
75.867	7.77	10.49	26.14
76.867	6.35	8.57	21.35
77.867	4.89	6.60	16.45
78.867	3.71	5.01	12.48
79.867	2.78	3.76	9.36
80.867	2.00	2.70	6.74
81.867	1.50	2.02	5.04
82.867	1.14	1.53	3.82
83.867	.91	1.23	3.07
84.867	.79	1.06	2.65
85.867	.68	.92	2.30
86.867	.55	.74	1.86
87.867	.44	.59	1.48
88.867	.42	.57	1.41
89.867	.38	.52	1.29
90.867	.33	.44	1.10
91.867	.17	.23	.58
92.867	.15	.20	.50
93.867	.11	.15	.36
94.867	.08	.11	.28
95.867	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 6 AT ROBERT, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	51.00	MILES
RIVER DISCHARGE	319.00	CFS
RECOVERY RATIO OF TRACER	.660	
TIME TO CENTROID	85.04	HOURS
TIME VARIANCE	22.73062	HRS.SQ.
COEFFICIENT OF SKEW	1.34887	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
76.867	0.00	0.00	0.00
77.867	1.55	2.35	6.15
78.867	3.14	4.75	12.42
79.867	4.86	7.35	19.23
80.867	6.75	10.22	26.72
81.867	7.93	12.01	31.41
82.867	8.57	12.98	33.94
83.867	8.08	12.24	31.99
84.867	6.92	10.48	27.42
85.867	5.93	8.98	23.47
86.867	5.00	7.57	19.80
87.867	4.12	6.23	16.30
88.867	3.22	4.88	12.77
89.867	2.42	3.66	9.57
90.867	1.78	2.70	7.06
91.867	1.30	1.96	5.13
92.867	1.02	1.55	4.05
93.867	.80	1.22	3.18
94.867	.70	1.06	2.77
95.867	.59	.89	2.33
96.867	.49	.75	1.95
97.867	.36	.55	1.44
98.867	.32	.48	1.25
99.867	.27	.41	1.06
100.867	.30	.45	1.17
101.867	.28	.43	1.12
102.867	.26	.39	1.01
103.867	.20	.30	.79
104.867	.12	.19	.49
105.867	.08	.13	.33
106.867	0.00	0.00	0.00

TANGIPAHOA RIVER
SEPTEMBER 15, 1969
SAMPLING SITE NUMBER 7 AT PONCHATULA, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	58.40	MILES
RIVER DISCHARGE	383.00	CFS
RECOVERY RATIO OF TRACER	.696	
TIME TO CENTROID	97.85	HOURS
TIME VARIANCE	17.89958	HRS.SQ.
COEFFICIENT OF SKEW	.83244	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
88.867	0.00	0.00	0.00
89.867	.58	.83	2.62
90.867	1.47	2.11	6.64
91.867	2.63	3.77	11.85
92.867	3.75	5.39	16.92
93.867	5.31	7.62	23.93
94.867	6.42	9.22	28.93
95.867	7.21	10.36	32.52
96.867	7.29	10.47	32.88
97.867	6.76	9.72	30.50
98.867	5.70	8.19	25.72
99.867	4.76	6.83	21.44
100.867	3.86	5.54	17.39
101.867	3.00	4.31	13.53
102.867	2.30	3.31	10.39
103.867	1.73	2.48	7.79
104.867	1.33	1.91	5.99
105.867	.96	1.37	4.31
106.867	.69	.99	3.10
107.867	.52	.75	2.36
108.867	.42	.60	1.88
109.867	.36	.52	1.62
110.867	.34	.49	1.53
111.867	.28	.41	1.28
112.867	.19	.28	.87
113.867	.08	.11	.34
114.867	0.00	0.00	0.00

RED RIVER
APRIL 7, 1971
SAMPLING SITE NUMBER 1 AT GRAND ECORE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	3.57	MILES
RIVER DISCHARGE	8130.00	CFS
RECOVERY RATIO OF TRACER	.741	
TIME TO CENTROID	3.01	HOURS
TIME VARIANCE	.31740	HRS.SQ.
COEFFICIENT OF SKEW	1.50699	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.250	0.00	0.00	0.00
2.375	13.46	18.15	18.15
2.500	21.41	28.88	28.88
2.625	20.96	28.27	28.27
2.750	19.59	26.42	26.42
2.875	17.28	23.31	23.31
3.000	14.77	19.92	19.92
3.125	12.44	16.77	16.77
3.250	10.18	13.72	13.72
3.375	7.82	10.55	10.55
3.500	5.78	7.80	7.80
3.625	4.68	6.31	6.31
3.750	3.77	5.08	5.08
3.875	3.12	4.20	4.20
4.000	2.46	3.32	3.32
4.125	2.00	2.70	2.70
4.250	1.52	2.06	2.06
4.375	1.28	1.72	1.72
4.500	1.03	1.39	1.39
4.625	.82	1.11	1.11
4.750	.69	.93	.93
4.875	.62	.83	.83
5.000	.55	.74	.74
5.125	.46	.61	.61
5.250	.38	.51	.51
5.375	.29	.39	.39
5.500	.21	.28	.28
5.625	.13	.17	.17
5.750	0.00	0.00	0.00

RED RIVER
APRIL 7, 1971
SAMPLING SITE NUMBER 2 AT COLFAX, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	47.00	MILES
RIVER DISCHARGE	8660.00	CFS
RECOVERY RATIO OF TRACER	.740	
TIME TO CENTROID	34.11	HOURS
TIME VARIANCE	5.20927	HRS.SQ.
COEFFICIENT OF SKEW	.80885	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
28.750	0.00	0.00	0.00
29.250	.13	.18	.19
29.750	.31	.41	.44
30.250	.55	.74	.79
30.750	1.05	1.42	1.51
31.250	1.75	2.36	2.51
31.750	2.56	3.46	3.69
32.250	3.33	4.50	4.79
32.750	3.76	5.09	5.42
33.250	4.00	5.41	5.76
33.750	3.96	5.35	5.70
34.250	3.57	4.83	5.14
34.750	2.91	3.93	4.19
35.250	2.37	3.21	3.42
35.750	1.91	2.59	2.76
36.250	1.55	2.09	2.23
36.750	1.23	1.67	1.78
37.250	.97	1.31	1.39
37.750	.76	1.02	1.09
38.250	.59	.79	.85
38.750	.48	.64	.69
39.250	.39	.52	.56
39.750	.31	.42	.44
40.250	.25	.34	.36
40.750	.20	.27	.28
41.250	.17	.22	.24
41.750	.13	.18	.19
42.250	.08	.11	.12
42.750	0.00	0.00	0.00

RED RIVER
APRIL 7, 1971
SAMPLING SITE NUMBER 3 AT ALEXANDRIA, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 82.50 MILES
RIVER DISCHARGE 8810.00 CFS

RECOVERY RATIO OF TRACER .695
TIME TO CENTROID 61.25 HOURS
TIME VARIANCE 14.74508 HRS.SQ.
COEFFICIENT OF SKEW 1.25227

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
53.750	0.00	0.00	0.00
54.750	.19	.27	.30
55.750	.56	.81	.88
56.750	1.16	1.67	1.81
57.750	1.76	2.54	2.75
58.750	2.21	3.19	3.45
59.750	2.49	3.58	3.88
60.750	2.26	3.25	3.52
61.750	1.87	2.69	2.92
62.750	1.47	2.12	2.30
63.750	1.11	1.59	1.72
64.750	.75	1.08	1.17
65.750	.51	.73	.79
66.750	.38	.55	.59
67.750	.30	.43	.47
68.750	.25	.35	.38
69.750	.20	.29	.32
70.750	.16	.23	.25
71.750	.13	.19	.20
72.750	.10	.15	.16
73.750	.08	.12	.13
74.750	.06	.09	.10
75.750	.05	.08	.08
76.750	.04	.06	.06
77.750	.03	.04	.04
78.750	0.00	0.00	0.00

RED RIVER
APRIL 7, 1971
SAMPLING SITE NUMBER 4 AT ST. HWY. 115, MONCLA, LA.
DISTANCE FROM POINT OF INJECTION 120.00 MILES
RIVER DISCHARGE 8810.00 CFS

RECOVERY RATIO OF TRACER .587
TIME TO CENTROID 94.21 HOURS
TIME VARIANCE 20.90321 HRS.SQ.
COEFFICIENT OF SKEW .78550

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
84.750	0.00	0.00	0.00
85.750	.14	.23	.25
86.750	.31	.52	.57
87.750	.57	.97	1.05
88.750	.84	1.43	1.55
89.750	1.08	1.83	1.98
90.750	1.31	2.23	2.42
91.750	1.46	2.49	2.70
92.750	1.50	2.56	2.77
93.750	1.44	2.45	2.66
94.750	1.27	2.16	2.34
95.750	1.10	1.87	2.03
96.750	.93	1.59	1.73
97.750	.75	1.28	1.39
98.750	.58	.99	1.07
99.750	.44	.76	.82
100.750	.34	.58	.63
101.750	.28	.47	.51
102.750	.23	.40	.43
103.750	.19	.32	.35
104.750	.15	.26	.28
105.750	.13	.21	.23
106.750	.09	.16	.17
107.750	.06	.11	.12
108.750	.06	.10	.10
109.750	.03	.06	.06
110.750	.02	.04	.04
111.750	.00	.00	.00

RED RIVER
APRIL 14, 1971
SAMPLING SITE NUMBER 1 AT SHREVEPORT, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	5.00	MILES
RIVER DISCHARGE	4930.00	CFS
RECOVERY RATIO OF TRACER	1.203	
TIME TO CENTROID	4.23	HOURS
TIME VARIANCE	1.23953	HRS.SQ.
COEFFICIENT OF SKEW	1.81229	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.917	0.00	0.00	0.00
3.167	20.37	16.93	16.93
3.417	20.79	17.28	17.28
3.667	17.39	14.46	14.46
3.917	14.41	11.98	11.98
4.167	11.54	9.59	9.59
4.417	9.50	7.90	7.90
4.667	7.82	6.51	6.51
4.917	6.31	5.25	5.25
5.167	4.93	4.10	4.10
5.417	3.80	3.16	3.16
5.667	2.80	2.32	2.32
5.917	1.98	1.65	1.65
6.167	1.45	1.20	1.20
6.417	1.25	1.04	1.04
6.667	1.03	.86	.86
6.917	.91	.76	.76
7.167	.76	.64	.64
7.417	.68	.56	.56
7.667	.56	.47	.47
7.917	.55	.46	.46
8.167	.45	.37	.37
8.417	.36	.30	.30
8.667	.32	.26	.26
8.917	.29	.25	.25
9.167	.22	.19	.19
9.417	.19	.16	.16
9.667	.14	.12	.12
9.917	0.00	0.00	0.00

RED RIVER
APRIL 14, 1971
SAMPLING SITE NUMBER 2 AT LACHUTE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	34.00	MILES
RIVER DISCHARGE	4930.00	CFS
RECOVERY RATIO OF TRACER	.805	
TIME TO CENTROID	34.09	HOURS
TIME VARIANCE	15.79528	HRS.SQ.
COEFFICIENT OF SKEW	1.68504	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
27.417	0.00	0.00	0.00
28.417	.40	.50	.50
29.417	1.27	1.58	1.58
30.417	2.21	2.74	2.74
31.417	3.03	3.77	3.77
32.417	3.16	3.93	3.93
33.417	2.79	3.47	3.47
34.417	2.27	2.82	2.82
35.417	1.77	2.19	2.19
36.417	1.32	1.64	1.64
37.417	.90	1.12	1.12
38.417	.61	.75	.75
39.417	.45	.56	.56
40.417	.36	.44	.44
41.417	.26	.32	.32
42.417	.19	.24	.24
43.417	.16	.19	.19
44.417	.13	.16	.16
45.417	.11	.14	.14
46.417	.10	.13	.13
47.417	.09	.12	.12
48.417	.08	.10	.10
49.417	.06	.08	.08
50.417	.06	.08	.08
51.417	.05	.06	.06
52.417	.03	.04	.04
53.417	.03	.03	.03
54.417	0.00	0.00	0.00

RED RIVER
APRIL 14, 1971
SAMPLING SITE NUMBER 3 AT COUSHATTA, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	64.00	MILES
RIVER DISCHARGE	6030.00	CFS
RECOVERY RATIO OF TRACER	.854	
TIME TO CENTROID	54.08	HOURS
TIME VARIANCE	21.61306	HRS.SQ.
COEFFICIENT OF SKEW	1.39435	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
46.917	0.00	0.00	0.00
47.917	.64	.75	.91
48.917	1.21	1.42	1.74
49.917	1.76	2.06	2.52
50.917	2.27	2.66	3.25
51.917	2.57	3.01	3.68
52.917	2.32	2.71	3.32
53.917	1.69	1.98	2.42
54.917	1.27	1.49	1.82
55.917	.99	1.16	1.42
56.917	.77	.90	1.10
57.917	.60	.70	.86
58.917	.49	.57	.70
59.917	.41	.48	.59
60.917	.36	.42	.51
61.917	.30	.35	.43
62.917	.25	.30	.36
63.917	.21	.25	.30
64.917	.18	.21	.26
65.917	.15	.18	.22
66.917	.13	.15	.19
67.917	.11	.13	.16
68.917	.10	.12	.14
69.917	.07	.09	.11
70.917	.06	.07	.08
71.917	.04	.05	.06
72.917	.03	.03	.04
73.917	0.00	0.00	0.00

RED RIVER
APRIL 14, 1971
SAMPLING SITE NUMBER 4 AT GRAND ECORE, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 99.00 MILES
RIVER DISCHARGE 6530.00 CFS

RECOVERY RATIO OF TRACER .772
TIME TO CENTROID 88.60 HOURS
TIME VARIANCE 20.18525 HRS.SQ.
COEFFICIENT OF SKEW .70962

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
78.917	0.00	0.00	0.00
79.917	.13	.16	.22
80.917	.29	.38	.50
81.917	.50	.64	.85
82.917	.76	.99	1.31
83.917	1.03	1.34	1.78
84.917	1.29	1.67	2.21
85.917	1.42	1.84	2.44
86.917	1.49	1.93	2.56
87.917	1.50	1.94	2.57
88.917	1.42	1.84	2.43
89.917	1.27	1.64	2.17
90.917	1.05	1.35	1.79
91.917	.84	1.09	1.44
92.917	.68	.88	1.16
93.917	.52	.68	.90
94.917	.41	.53	.70
95.917	.32	.41	.54
96.917	.24	.31	.41
97.917	.18	.24	.31
98.917	.13	.16	.21
99.917	.10	.13	.18
100.917	.09	.12	.16
101.917	.08	.10	.13
102.917	.06	.08	.10
103.917	.04	.05	.07
104.917	.02	.03	.03
105.917	0.00	0.00	0.00

RED RIVER
MARCH 13, 1972
SAMPLING SITE NUMBER 1 AT SHREVEPORT, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 5.00 MILES
RIVER DISCHARGE 6620.00 CFS

RECOVERY RATIO OF TRACER 1.342
TIME TO CENTROID 5.67 HOURS
TIME VARIANCE 1.07378 HRS.SQ.
COEFFICIENT OF SKEW 1.44980

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.084	0.00	0.00	0.00
4.334	2.50	1.86	1.86
4.584	15.56	11.60	11.60
4.834	22.30	16.61	16.61
5.084	19.59	14.60	14.60
5.334	16.51	12.31	12.31
5.584	13.85	10.32	10.32
5.834	11.32	8.43	8.43
6.084	9.10	6.78	6.78
6.334	7.07	5.27	5.27
6.584	5.67	4.23	4.23
6.834	4.58	3.41	3.41
7.084	3.67	2.73	2.73
7.334	2.97	2.22	2.22
7.584	2.31	1.72	1.72
7.834	1.83	1.36	1.36
8.084	1.38	1.03	1.03
8.334	1.10	.82	.82
8.584	.85	.63	.63
8.834	.64	.48	.48
9.084	.48	.35	.35
9.334	.37	.27	.27
9.584	.30	.23	.23
9.834	.25	.19	.19
10.084	.20	.15	.15
10.334	.13	.10	.10
10.584	.10	.07	.07
10.834	.06	.04	.04
11.084	0.00	0.00	0.00

RED RIVER
MARCH 13, 1972
SAMPLING SITE NUMBER 2 AT LACHUTE, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	34.00	MILES
RIVER DISCHARGE	6620.00	CFS
RECOVERY RATIO OF TRACER	1.040	
TIME TO CENTROID	35.04	HOURS
TIME VARIANCE	10.61478	HRS.SQ.
COEFFICIENT OF SKEW	1.35594	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
28.584	0.00	0.00	0.00
29.084	.07	.07	.07
29.584	.32	.31	.31
30.084	.64	.61	.61
30.584	1.07	1.03	1.03
31.084	1.75	1.68	1.68
31.584	2.73	2.62	2.62
32.084	3.57	3.43	3.43
32.584	4.04	3.88	3.88
33.084	4.40	4.23	4.23
33.584	4.54	4.36	4.36
34.084	4.41	4.24	4.24
34.584	4.05	3.89	3.89
35.084	3.67	3.53	3.53
35.584	3.25	3.13	3.13
36.084	2.81	2.70	2.70
36.584	2.38	2.29	2.29
37.084	1.98	1.90	1.90
37.584	1.59	1.53	1.53
38.084	1.34	1.29	1.29
38.584	1.11	1.06	1.06
39.084	.94	.91	.91
39.584	.79	.76	.76
40.084	.67	.64	.64
40.584	.56	.54	.54
41.084	.48	.46	.46
41.584	.41	.40	.40
42.084	.36	.35	.35
42.584	.31	.30	.30
43.084	.27	.26	.26
43.584	.22	.21	.21
44.084	.19	.19	.19
44.584	.17	.17	.17
45.084	.15	.15	.15
45.584	.13	.12	.12
46.084	.12	.11	.11
46.584	.10	.10	.10
47.084	.09	.09	.09
47.584	.08	.08	.08
48.084	.07	.07	.07
48.584	.06	.06	.06

RED RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
49.084	.05	.05	.05
49.584	.04	.04	.04
50.084	.03	.02	.02
50.584	.02	.02	.02
51.084	.01	.01	.01
51.584	0.00	0.00	0.00

RED RIVER
MARCH 13, 1972
SAMPLING SITE NUMBER 3 AT COUSHATTA, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 64.00 MILES
RIVER DISCHARGE 8300.00 CFS

RECOVERY RATIO OF TRACER .924
TIME TO CENTROID 55.86 HOURS
TIME VARIANCE 12.99058 HRS.SQ.
COEFFICIENT OF SKEW .96361

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
48.917	0.00	0.00	0.00
49.417	.20	.22	.27
49.917	.46	.49	.62
50.417	.76	.82	1.03
50.917	1.07	1.16	1.45
51.417	1.31	1.42	1.77
51.917	1.54	1.66	2.08
52.417	1.79	1.93	2.42
52.917	2.07	2.24	2.80
53.417	2.32	2.51	3.15
53.917	2.57	2.78	3.49
54.417	2.63	2.84	3.56
54.917	2.52	2.73	3.42
55.417	2.36	2.55	3.20
55.917	2.21	2.39	2.99
56.417	2.02	2.18	2.74
56.917	1.85	2.00	2.51
57.417	1.70	1.83	2.30
57.917	1.52	1.64	2.06
58.417	1.34	1.45	1.82
58.917	1.19	1.28	1.61
59.417	1.01	1.10	1.37
59.917	.82	.88	1.11
60.417	.69	.74	.93
60.917	.58	.63	.79
61.417	.50	.54	.67
61.917	.42	.45	.57
62.417	.36	.39	.48
62.917	.30	.32	.40
63.417	.25	.27	.34
63.917	.23	.24	.31
64.417	.18	.20	.25
64.917	.16	.18	.22
65.417	.14	.15	.19
65.917	.11	.12	.15
66.417	.10	.11	.13
66.917	.09	.09	.12
67.417	.07	.07	.09
67.917	.07	.07	.09
68.417	.06	.06	.08
68.917	.0	.06	.07

RED RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
69.417	.05	.05	.07
69.917	.04	.04	.05
70.417	.04	.04	.05
70.917	.02	.02	.03
71.417	.02	.02	.03
71.917	0.00	0.00	0.00

RED RIVER
MARCH 13, 1972
SAMPLING SITE NUMBER 4 AT GRAND ECORE, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 99.00 MILES
RIVER DISCHARGE 8890.00 CFS

RECOVERY RATIO OF TRACER .847
TIME TO CENTROID 87.49 HOURS
TIME VARIANCE 24.89523 HRS.SQ.
COEFFICIENT OF SKEW .89954

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
77.917	0.00	0.00	0.00
78.917	.21	.24	.33
79.917	.42	.49	.66
80.917	.68	.80	1.07
81.917	.94	1.11	1.49
82.917	1.21	1.42	1.91
83.917	1.47	1.74	2.34
84.917	1.66	1.96	2.63
85.917	1.65	1.94	2.61
86.917	1.48	1.75	2.35
87.917	1.30	1.53	2.05
88.917	1.12	1.32	1.78
89.917	.94	1.11	1.49
90.917	.75	.89	1.20
91.917	.60	.71	.95
92.917	.49	.58	.78
93.917	.40	.47	.63
94.917	.32	.38	.51
95.917	.26	.31	.42
96.917	.22	.26	.36
97.917	.20	.23	.31
98.917	.17	.20	.27
99.917	.15	.18	.24
100.917	.12	.15	.20
101.917	.10	.12	.16
102.917	.08	.09	.12
103.917	.05	.06	.08
104.917	.03	.03	.04
105.917	0.00	0.00	0.00

RED RIVER
JUNE 12, 1972
SAMPLING SITE NUMBER 1 AT GRAND ECORE, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 7.50 MILES
RIVER DISCHARGE 3800.00 CFS

RECOVERY RATIO OF TRACER .868
TIME TO CENTROID 7.76 HOURS
TIME VARIANCE 1.02555 HRS.SQ.
COEFFICIENT OF SKEW 1.23278

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
6.250	0.00	0.00	0.00
6.375	1.32	1.52	1.52
6.500	5.73	6.60	6.60
6.625	12.66	14.58	14.58
6.750	20.44	23.55	23.55
6.875	25.85	29.78	29.76
7.000	26.65	30.70	30.70
7.125	25.27	29.11	29.11
7.250	22.89	26.37	26.37
7.375	20.51	23.63	23.63
7.500	17.94	20.67	20.67
7.625	15.74	18.13	18.13
7.750	13.89	16.00	16.00
7.875	12.35	14.23	14.23
8.000	10.77	12.40	12.40
8.125	9.53	10.98	10.98
8.250	8.33	9.59	9.59
8.375	7.50	8.64	8.64
8.500	6.74	7.76	7.76
8.625	6.11	7.04	7.04
8.750	5.61	6.46	6.46
8.875	5.18	5.96	5.96
9.000	4.76	5.48	5.48
9.125	4.40	5.07	5.07
9.250	4.06	4.68	4.68
9.375	3.69	4.25	4.25
9.500	3.40	3.92	3.92
9.625	3.07	3.54	3.54
9.750	2.83	3.26	3.26
9.875	2.65	3.05	3.05
10.000	2.42	2.78	2.78
10.125	2.17	2.50	2.50
10.250	1.97	2.27	2.27
10.375	1.78	2.05	2.05
10.500	1.64	1.89	1.89
10.625	1.40	1.61	1.61
10.750	1.23	1.42	1.42
10.875	1.03	1.19	1.19
11.000	.86	1.00	1.00
11.125	.74	.85	.85
11.250	.55	.64	.64
11.375	.33	.38	.38
11.500	.16	.18	.18
11.625	0.00	0.00	0.00

RED RIVER
JUNE 12, 1972
SAMPLING SITE NUMBER 2 AT COLFAX, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	51.00	MILES
RIVER DISCHARGE	4000.00	CFS
RECOVERY RATIO OF TRACER	.758	
TIME TO CENTROID	45.77	HOURS
TIME VARIANCE	8.95570	HRS.SQ.
COEFFICIENT OF SKEW	1.03594	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
40.000	0.00	0.00	0.00
40.500	.59	.78	.82
41.000	1.11	1.46	1.54
41.500	1.72	2.27	2.39
42.000	2.35	3.10	3.26
42.500	3.10	4.09	4.30
43.000	3.84	5.06	5.33
43.500	4.67	6.16	6.49
44.000	5.15	6.79	7.15
44.500	5.39	7.11	7.48
45.000	5.51	7.27	7.65
45.500	5.24	6.91	7.28
46.000	4.56	6.01	6.33
46.500	4.03	5.32	5.60
47.000	3.48	4.59	4.84
47.500	2.89	3.81	4.01
48.000	2.40	3.16	3.33
48.500	1.97	2.60	2.73
49.000	1.62	2.14	2.25
49.500	1.37	1.81	1.90
50.000	1.14	1.51	1.59
50.500	.96	1.27	1.34
51.000	.79	1.04	1.10
51.500	.66	.87	.91
52.000	.54	.71	.75
52.500	.45	.59	.62
53.000	.38	.50	.53
53.500	.30	.40	.42
54.000	.27	.35	.37
54.500	.23	.31	.32
55.000	.20	.26	.28
55.500	.16	.22	.23
56.000	.16	.21	.22
56.500	.13	.17	.18
57.000	.10	.13	.14
57.500	.09	.11	.12
58.000	.06	.08	.08
58.500	.05	.06	.07
59.000	0.00	0.00	0.00

RED RIVER
JUNE 12, 1972
SAMPLING SITE NUMBER 3 AT ALEXANDER, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 86.50 MILES
RIVER DISCHARGE 4800.00 CFS

RECOVERY RATIO OF TRACER .621
TIME TO CENTROID 81.30 HOURS
TIME VARIANCE 15.58843 HRS.SQ.
COEFFICIENT OF SKEW .74985

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
72.500	0.00	0.00	0.0
73.167	.06	.10	.12
73.833	.18	.29	.36
74.500	.36	.58	.74
75.167	.61	.98	1.24
75.833	.99	1.60	2.02
76.500	1.41	2.27	2.87
77.167	1.85	2.98	3.77
77.833	2.23	3.60	4.54
78.500	2.45	3.96	5.00
79.167	2.58	4.16	5.26
79.833	2.58	4.16	5.25
80.500	2.46	3.96	5.00
81.167	2.28	3.67	4.64
81.833	2.09	3.36	4.25
82.500	1.89	3.04	3.84
83.167	1.69	2.72	3.43
83.833	1.50	2.41	3.05
84.500	1.30	2.09	2.65
85.167	1.10	1.77	2.24
85.833	.91	1.47	1.86
86.500	.76	1.22	1.55
87.167	.64	1.04	1.31
87.833	.54	.87	1.11
88.500	.45	.72	.91
89.166	.36	.58	.74
89.833	.30	.48	.61
90.500	.24	.39	.49
91.166	.19	.31	.39
91.833	.15	.24	.31
92.500	.13	.20	.26
93.166	.09	.15	.19
93.833	.08	.12	.15
94.500	.06	.10	.13
95.166	.05	.08	.10
95.833	.03	.05	.06
96.500	.01	.02	.02
97.166	0.00	0.00	0.00

RED RIVER
JUNE 12, 1972
SAMPLING SITE NUMBER 4 AT ST. HWY. 115 AT MONCLA, LA.
DISTANCE FROM POINT OF INJECTION 124.00 MILES
RIVER DISCHARGE 5880.00 CFS

RECOVERY RATIO OF TRACER .616
TIME TO CENTROID 123.69 HOURS
TIME VARIANCE 19.84332 HRS.SQ.
COEFFICIENT OF SKEW .58207

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
114.500	0.00	0.00	0.00
115.167	.17	.28	.43
115.833	.35	.57	.89
116.500	.52	.84	1.30
117.167	.69	1.13	1.74
117.833	.87	1.41	2.18
118.500	1.05	1.71	2.65
119.167	1.24	2.02	3.12
119.833	1.41	2.28	3.53
120.500	1.59	2.58	3.99
121.167	1.71	2.77	4.29
121.833	1.77	2.87	4.44
122.500	1.76	2.86	4.43
123.167	1.71	2.78	4.30
123.833	1.63	2.65	4.10
124.500	1.53	2.49	3.85
125.167	1.40	2.28	3.52
125.833	1.28	2.07	3.20
126.500	1.13	1.84	2.85
127.167	.99	1.60	2.48
127.833	.83	1.35	2.09
128.500	.71	1.15	1.78
129.167	.60	.98	1.51
129.833	.52	.85	1.32
130.500	.45	.73	1.13
131.166	.39	.63	.97
131.833	.34	.55	.85
132.500	.29	.47	.73
133.166	.25	.40	.62
133.833	.21	.35	.54
134.500	.17	.28	.44
135.166	.14	.23	.36
135.833	.12	.19	.29
136.500	.09	.14	.22
137.166	.06	.10	.16
137.833	.04	.06	.10
138.500	.02	.03	.05
139.166	0.00	0.00	0.00

SABINE RIVER
SEPTEMBER 9, 1969
SAMPLING SITE NUMBER 1 AT 4.9 MILES BELOW TOLEDO BEND
DISTANCE FROM POINT OF INJECTION 4.90 MILES
RIVER DISCHARGE 4500.00 CFS

RECOVERY RATIO OF TRACER .821
TIME TO CENTROID 2.81 HOURS
TIME VARIANCE .12207 HRS.SQ.
COEFFICIENT OF SKEW 1.15066

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.083	0.00	0.00	0.00
2.333	4.29	5.23	5.23
2.583	10.44	12.72	12.72
2.833	9.23	11.25	11.25
3.083	5.65	6.88	6.88
3.333	1.86	2.26	2.26
3.583	.87	1.06	1.06
3.833	.40	.48	.48
4.083	.20	.24	.24
4.333	.09	.10	.10
4.583	.04	.05	.05
4.833	0.00	0.00	0.00

SABINE RIVER
SEPTEMBER 9, 1969
SAMPLING SITE NUMBER 2 AT BURKEVILLE, TEXAS

DISTANCE FROM POINT OF INJECTION	10.70	MILES
RIVER DISCHARGE	4500.00	CFS
RECOVERY RATIO OF TRACER	.744	
TIME TO CENTROID	7.12	HOURS
TIME VARIANCE	.35323	HRS.SQ.
COEFFICIENT OF SKEW	1.24430	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
5.333	0.00	0.00	0.00
5.583	.06	.08	.08
5.833	.13	.17	.17
6.083	.67	.90	.90
6.333	1.53	2.05	2.05
6.583	4.39	5.90	5.90
6.833	6.22	8.37	8.37
7.083	6.07	8.16	8.16
7.333	4.24	5.70	5.70
7.583	2.75	3.70	3.70
7.833	1.67	2.25	2.25
8.083	.94	1.26	1.26
8.333	.41	.55	.55
8.583	.24	.33	.33
8.833	.16	.22	.22
9.083	.14	.19	.19
9.333	.11	.15	.15
9.583	.09	.12	.12
9.833	.07	.10	.10
10.083	.06	.08	.08
10.333	.00	.00	.00

SABINE RIVER
SEPTEMBER 9, 1969
SAMPLING SITE NUMBER 3 AT MOUTH OF ANACOCO RIVER

DISTANCE FROM POINT OF INJECTION	24.80	MILES
RIVER DISCHARGE	4200.00	CFS
RECOVERY RATIO OF TRACER	.391	
TIME TO CENTROID	27.74	HOURS
TIME VARIANCE	1.64611	HRS.SQ.
COEFFICIENT OF SKEW	.37579	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
24.333	0.00	0.00	0.00
24.833	.01	.03	.03
25.333	.21	.55	.51
25.833	.53	1.35	1.26
26.333	.86	2.20	2.05
26.833	1.24	3.17	2.96
27.333	1.30	3.32	3.09
27.833	1.17	3.01	2.81
28.333	.98	2.51	2.34
28.833	.79	2.01	1.88
29.333	.59	1.50	1.40
29.833	.38	.98	.92
30.333	.19	.49	.46
30.833	.12	.32	.30
31.333	.06	.15	.14
31.833	0.00	0.00	0.00

SABINE RIVER
SEPTEMBER 9, 1969
SAMPLING SITE NUMBER 4 AT RON WEIR, TEXAS
DISTANCE FROM POINT OF INJECTION 49.60 MILES
RIVER DISCHARGE 3910.00 CFS

RECOVERY RATIO OF TRACER .402
TIME TO CENTROID 38.71 HOURS
TIME VARIANCE 3.23452 HRS.SQ.
COEFFICIENT OF SKEW .57838

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
34.333	0.00	0.00	0.00
34.833	.04	.11	.10
35.333	.15	.36	.32
35.833	.30	.75	.65
36.333	.49	1.23	1.07
36.833	.70	1.73	1.50
37.333	.88	2.20	1.91
37.833	1.07	2.67	2.32
38.333	1.11	2.76	2.40
38.833	1.05	2.61	2.27
39.333	.93	2.31	2.01
39.833	.73	1.81	1.57
40.333	.55	1.37	1.19
40.833	.39	.97	.85
41.333	.27	.67	.58
41.833	.19	.47	.41
42.333	.15	.38	.33
42.833	.11	.27	.23
43.333	.08	.20	.17
43.833	.06	.14	.12
44.333	.04	.10	.09
44.833	.02	.06	.05
45.333	0.00	0.00	0.00

SABINE RIVER
FEBRUARY 4, 1972
SAMPLING SITE NUMBER 1 AT BURKEVILLE, TEXAS
DISTANCE FROM POINT OF INJECTION 10.70 MILES
RIVER DISCHARGE 11000.00 CFS

RECOVERY RATIO OF TRACER .848
TIME TO CENTROID 5.84 HOURS
TIME VARIANCE .34252 HRS.SQ.
COEFFICIENT OF SKEW 1.06373

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.833	0.00	0.00	0.00
4.917	2.35	2.77	2.77
5.000	4.48	5.28	5.28
5.083	6.67	7.87	7.87
5.167	8.81	10.39	10.39
5.250	10.84	12.78	12.78
5.333	12.59	14.84	14.84
5.417	13.37	15.76	15.76
5.500	13.72	16.18	16.18
5.583	13.86	16.34	16.34
5.667	13.68	16.13	16.13
5.750	12.98	15.31	15.31
5.833	11.84	13.96	13.96
5.917	10.68	12.60	12.60
6.000	9.47	11.17	11.17
6.083	8.24	9.71	9.71
6.167	7.40	8.72	8.72
6.250	6.42	7.57	7.57
6.333	5.57	6.57	6.57
6.417	4.92	5.81	5.81
6.500	4.24	5.00	5.00
6.583	3.67	4.33	4.33
6.667	3.08	3.63	3.63
6.750	2.60	3.07	3.07
6.833	2.22	2.62	2.62
6.917	1.88	2.22	2.22
7.000	1.65	1.94	1.94
7.083	1.40	1.65	1.65
7.167	1.26	1.49	1.49
7.250	1.12	1.32	1.32
7.333	.97	1.14	1.14
7.417	.84	.99	.99
7.500	.73	.86	.86
7.583	.66	.78	.78
7.667	.54	.63	.63
7.750	.41	.49	.49
7.833	.34	.40	.40
7.917	.29	.34	.34
8.000	.25	.29	.29
8.083	.20	.24	.24
8.167	.16	.19	.19
8.250	.13	.15	.15
8.333	.07	.08	.08
8.417	0.00	0.00	0.00

SABINE RIVER
FEBRUARY 4, 1972
SAMPLING SITE NUMBER 2 AT RON WEIR, TEXAS

DISTANCE FROM POINT OF INJECTION	49.60	MILES
RIVER DISCHARGE	12700.00	CFS
RECOVERY RATIO OF TRACER	.687	
TIME TO CENTROID	27.51	HOURS
TIME VARIANCE	2.18793	HRS.SQ.
COEFFICIENT OF SKEW	1.22546	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
24.583	0.00	0.00	0.00
24.917	.09	.13	.15
25.250	.39	.57	.66
25.583	1.61	2.34	2.70
25.917	2.72	3.96	4.58
26.250	3.50	5.09	5.88
26.583	4.22	6.14	7.08
26.917	4.19	6.10	7.04
27.250	3.82	5.57	6.43
27.583	3.27	4.76	5.49
27.917	2.70	3.93	4.54
28.250	2.09	3.05	3.52
28.583	1.63	2.37	2.73
28.917	1.23	1.79	2.07
29.250	.96	1.40	1.61
29.583	.75	1.09	1.25
29.917	.60	.87	1.00
30.250	.47	.68	.79
30.583	.40	.59	.68
30.917	.34	.50	.58
31.250	.29	.43	.49
31.583	.25	.36	.42
31.917	.21	.31	.36
32.250	.17	.24	.28
32.583	.14	.20	.23
32.917	.10	.15	.17
33.250	.06	.09	.11
33.583	.03	.05	.06
33.917	0.00	0.00	0.00

SABINE RIVER
FEBRUARY 4, 1972
SAMPLING SITE NUMBER 3 AT DUETTS EDDY

DISTANCE FROM POINT OF INJECTION	84.10	MILES
RIVER DISCHARGE	14100.00	CFS
RECOVERY RATIO OF TRACER	.501	
TIME TO CENTROID	48.51	HOURS
TIME VARIANCE	5.18664	HRS.SQ.
COEFFICIENT OF SKEW	1.02992	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
43.917	0.00	0.00	0.00
44.417	.09	.18	.24
44.917	.31	.62	.79
45.417	.56	1.12	1.43
45.917	.98	1.96	2.51
46.417	1.31	2.61	3.35
46.917	1.58	3.15	4.04
47.417	1.72	3.43	4.39
47.917	1.63	3.26	4.18
48.417	1.43	2.86	3.67
48.917	1.23	2.46	3.16
49.417	1.02	2.04	2.61
49.917	.84	1.67	2.14
50.417	.67	1.34	1.72
50.917	.54	1.07	1.37
51.417	.43	.87	1.11
51.917	.35	.69	.89
52.417	.28	.55	.71
52.917	.22	.43	.56
53.417	.16	.33	.42
53.917	.13	.25	.32
54.417	.09	.19	.24
54.917	.07	.14	.18
55.417	.06	.11	.15
55.917	.05	.09	.12
56.417	.04	.08	.10
56.917	.03	.07	.09
57.417	.02	.04	.06
57.917	.02	.03	.04
58.417	.01	.01	.02
58.917	0.00	0.00	0.00

SABINE RIVER
FEBRUARY 4, 1972
SAMPLING SITE NUMBER 4 AT RULIFF, TEXAS

DISTANCE FROM POINT OF INJECTION	102.80	MILES
RIVER DISCHARGE	14800.00	CFS
RECOVERY RATIO OF TRACER	.584	
TIME TO CENTROID	65.54	HOURS
TIME VARIANCE	51.05644	HRS.SQ.
COEFFICIENT OF SKEW	.83511	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
54.917	0.00	0.00	0.00
55.917	.12	.21	.29
56.917	.28	.47	.64
57.917	.57	.97	1.30
58.917	.81	1.39	1.87
59.917	.92	1.57	2.11
60.917	.79	1.35	1.81
61.917	.64	1.09	1.47
62.917	.50	.86	1.15
63.917	.38	.65	.88
64.917	.32	.54	.73
65.917	.28	.48	.64
66.917	.25	.43	.57
67.917	.24	.41	.55
68.917	.23	.39	.53
69.917	.23	.40	.54
70.917	.24	.41	.55
71.917	.24	.42	.56
72.917	.24	.41	.55
73.917	.23	.39	.52
74.917	.21	.35	.47
75.917	.17	.30	.40
76.917	.16	.28	.37
77.917	.16	.27	.37
78.917	.14	.24	.33
79.917	.12	.21	.28
80.917	.10	.18	.24
81.917	.08	.14	.19
82.917	.07	.12	.16
83.917	.05	.08	.11
84.917	.03	.05	.07
85.917	.02	.03	.04
86.917	0.00	0.00	0.00

SABINE RIVER
FEBRUARY 4, 1972
SAMPLING SITE NUMBER 5 AT ORANGE, TEXAS
DISTANCE FROM POINT OF INJECTION 130.30 MILES
RIVER DISCHARGE 15300.00 CFS

RECOVERY RATIO OF TRACER .995
TIME TO CENTROID 110.99 HOURS
TIME VARIANCE 602.69992 HRS.SQ.
COEFFICIENT OF SKEW .60619

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
70.917	0.00	0.00	0.00
72.917	.05	.05	.07
74.917	.10	.10	.15
76.917	.15	.16	.22
78.917	.20	.20	.28
80.917	.21	.21	.29
82.917	.21	.21	.29
84.917	.22	.22	.30
86.917	.22	.23	.31
88.917	.24	.24	.34
90.917	.27	.27	.38
92.917	.28	.28	.39
94.917	.28	.28	.39
96.917	.25	.25	.34
98.917	.24	.24	.33
100.917	.23	.23	.31
102.917	.22	.22	.31
104.917	.22	.22	.30
106.917	.21	.21	.30
108.917	.20	.20	.28
110.917	.19	.19	.26
112.917	.18	.18	.25
114.917	.18	.18	.25
116.917	.17	.17	.24
118.917	.16	.16	.23
120.917	.15	.15	.21
122.917	.15	.15	.20
124.917	.14	.14	.20
126.917	.14	.14	.19
128.917	.13	.13	.18
130.917	.13	.13	.18
132.917	.12	.12	.17
134.917	.12	.12	.16
136.917	.11	.11	.16
138.917	.11	.11	.15
140.917	.10	.10	.14
142.917	.10	.10	.13
144.917	.09	.09	.13
146.917	.09	.09	.12
148.917	.08	.08	.11
150.917	.08	.08	.11

S. SINE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
152.917	.07	.07	.10
154.917	.07	.07	.09
156.917	.06	.06	.09
158.917	.06	.06	.08
160.917	.05	.05	.07
162.917	.05	.05	.07
164.917	.04	.04	.06
166.917	.04	.04	.05
168.917	.03	.03	.05
170.917	.03	.03	.04
172.917	.02	.02	.03
174.917	.02	.02	.02
176.917	.01	.01	.02
178.917	.01	.01	.01
180.917	.00	.00	.00
182.917	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 1 AT FARM ROAD 47, WILLS POINT
DISTANCE FROM POINT OF INJECTION 13.80 MILES
RIVER DISCHARGE 26.00 CFS

RECOVERY RATIO OF TRACER .658
TIME TO CENTROID 62.90 HOURS
TIME VARIANCE 15.15803 HRS.SQ.
COEFFICIENT OF SKEW 1.15228

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
54.000	0.00	0.00	0.00
55.000	.16	.25	.25
56.000	.71	1.08	1.08
57.000	2.94	4.47	4.47
58.000	5.59	8.49	8.49
59.000	9.62	14.62	14.62
60.000	13.14	19.97	19.97
61.000	14.09	21.41	21.41
62.000	13.69	20.80	20.80
63.000	12.34	18.75	18.75
64.000	10.05	15.27	15.27
65.000	7.91	12.01	12.01
66.000	5.89	8.95	8.95
67.000	4.11	6.24	6.24
68.000	2.77	4.21	4.21
69.000	2.06	3.12	3.12
70.000	1.68	2.55	2.55
71.000	1.38	2.09	2.09
72.000	1.08	1.64	1.64
73.000	.91	1.39	1.39
74.000	.71	1.08	1.08
75.000	.58	.88	.88
76.000	.44	.66	.66
77.000	.32	.49	.49
78.000	.23	.35	.35
79.000	.15	.22	.22
80.000	.10	.15	.15
81.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 2 AT ST. HWY. 19, EMORY, TEXAS

DISTANCE FROM POINT OF INJECTION	33.70 MILES
RIVER DISCHARGE	47.00 CFS
RECOVERY RATIO OF TRACER	.354
TIME TO CENTROID	163.62 HOURS
TIME VARIANCE	54.12834 HRS.SQ.
COEFFICIENT OF SKEW	1.24903

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
148.000	0.00	0.00	0.00
149.000	.08	.23	.42
150.000	.08	.22	.40
151.000	.06	.18	.32
152.000	.05	.14	.25
153.000	.17	.48	.87
154.000	.44	1.25	2.25
155.000	.86	2.44	4.41
156.000	1.36	3.85	6.96
157.000	2.01	5.68	10.28
158.000	2.69	7.60	13.74
159.000	2.98	8.42	15.23
160.000	2.95	8.33	15.06
161.000	2.77	7.84	14.16
162.000	2.51	7.08	12.80
163.000	2.13	6.03	10.90
164.000	1.72	4.85	8.77
165.000	1.41	3.97	7.18
166.000	1.18	3.33	6.02
167.000	1.00	2.84	5.13
168.000	.83	2.34	4.23
169.000	.69	1.96	3.54
170.000	.53	1.49	2.70
171.000	.42	1.18	2.13
172.000	.32	.90	1.63
173.000	.27	.77	1.39
174.000	.25	.70	1.26
175.000	.26	.74	1.34
176.000	.28	.79	1.44
177.000	.30	.85	1.54
178.000	.33	.95	1.71
179.000	.33	.93	1.68
180.000	.38	1.07	1.93
181.000	.38	1.08	1.96
182.000	.39	1.10	1.98
183.000	.36	1.03	1.86
184.000	.32	.90	1.63
185.000	.26	.74	1.34
186.000	.14	.40	.72
187.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30.1972
SAMPLING SITE NUMBER 3 AT FARM ROAD 17. GRAND SALINE
DISTANCE FROM POINT OF INJECTION 42.80 MILES
RIVER DISCHARGE 17.00 CFS

RECOVERY RATIO OF TRACER .177
TIME TO CENTROID 204.78 HOURS
TIME VARIANCE 111.08397 HRS.SQ.
COEFFICIENT OF SKEW .71359

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
186.000	0.00	0.00	0.00
187.000	.14	.79	.52
188.000	.29	1.64	1.07
189.000	.41	2.30	1.50
190.000	.65	3.67	2.40
191.000	.88	4.99	3.26
192.000	1.15	6.49	4.25
193.000	1.43	8.08	5.28
194.000	1.76	9.92	6.49
195.000	2.07	11.70	7.65
196.000	2.32	13.12	8.58
197.000	2.44	13.78	9.01
198.000	2.42	13.67	8.94
199.000	2.32	13.12	8.58
200.000	2.17	12.25	8.01
201.000	2.00	11.32	7.40
202.000	1.85	10.44	6.83
203.000	1.63	9.23	6.04
204.000	1.42	8.00	5.23
205.000	1.17	6.60	4.32
206.000	1.01	5.73	3.74
207.000	.92	5.18	3.39
208.000	.91	5.15	3.37
209.000	.92	5.21	3.40
210.000	.94	5.29	3.46
211.000	.96	5.42	3.55
212.000	.94	5.32	3.48
213.000	.92	5.21	3.40
214.000	.87	4.90	3.21
215.000	.84	4.74	3.10
216.000	.80	4.49	2.94
217.000	.77	4.36	2.85
218.000	.74	4.16	2.72
219.000	.69	3.92	2.56
220.000	.63	3.56	2.33
221.000	.62	3.51	2.29
222.000	.60	3.37	2.20
223.000	.56	3.18	2.08
224.000	.49	2.79	1.83
225.000	.45	2.55	1.67
226.000	.41	2.33	1.52

SABINE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
227.000	.35	1.97	1.29
228.000	.33	1.86	1.22
229.000	.28	1.59	1.04
230.000	.24	1.34	.88
231.000	.21	1.21	.79
232.000	.17	.96	.63
233.000	.15	.82	.54
234.000	.09	.49	.32
235.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 4 AT U.S. HW , RD. WEST MINEOLA
DISTANCE FROM POINT OF INJECTION 53.40 MILES
RIVER DISCHARGE 43.00 CFS

RECOVERY RATIO OF TRACER .175
TIME TO CENTROID 262.12 HOURS
TIME VARIANCE 61.47321 HRS.SQ.
COEFFICIENT OF SKEW .19426

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
241.000	0.00	0.00	0.00
242.000	.08	.47	.78
243.000	.10	.58	.96
244.000	.11	.61	1.01
245.000	.10	.55	.92
246.000	.09	.50	.83
247.000	.07	.39	.64
248.000	.06	.33	.55
249.000	.12	.69	1.15
250.000	.19	1.08	1.79
251.000	.28	1.61	2.66
252.000	.40	2.27	3.76
253.000	.52	2.97	4.91
254.000	.63	3.60	5.96
255.000	.73	4.19	6.92
256.000	.85	4.85	8.02
257.000	.89	5.10	8.44
258.000	.93	5.32	8.80
259.000	.96	5.46	9.03
260.000	.95	5.41	8.94
261.000	.97	5.55	9.17
262.000	.93	5.30	8.76
263.000	.89	5.10	8.44
264.000	.85	4.88	8.07
265.000	.81	4.66	7.70
266.000	.73	4.19	6.92
267.000	.65	3.74	6.19
268.000	.57	3.27	5.41
269.000	.49	2.80	4.63
270.000	.41	2.33	3.85
271.000	.36	2.08	3.44
272.000	.35	2.00	3.30
273.000	.31	1.75	2.89
274.000	.30	1.72	2.84
275.000	.30	1.69	2.80
276.000	.25	1.44	2.38
277.000	.23	1.33	2.20
278.000	.19	1.08	1.79
279.000	.14	.78	1.28
280.000	.12	.67	1.10
281.000	.10	.55	.92

SABINE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
282.000	.06	.33	.55
283.000	.02	.14	.23
284.000	.02	.11	.18
285.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30.1972
SAMPLING SITE NUMBER 1 AT U.S. HWY. 69. MINEOLA

DISTANCE FROM POINT OF INJECTION	10.60	MILES
RIVER DISCHARGE	36.00	CFS
RECOVERY RATIO OF TRACER	.636	
TIME TO CENTROID	67.59	HOURS
TIME VARIANCE	15.77538	HRS.SQ.
COEFFICIENT OF SKEW	1.01453	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
57.000	0.00	0.00	0.00
58.000	.16	.25	.25
59.000	.48	.76	.76
60.000	1.66	2.61	2.61
61.000	4.88	7.68	7.68
62.000	12.30	19.35	19.35
63.000	20.68	32.53	32.53
64.000	28.18	44.34	44.34
65.000	32.46	51.06	51.06
66.000	34.94	54.96	54.96
67.000	35.34	55.59	55.59
68.000	33.00	51.91	51.91
69.000	27.65	43.49	43.49
70.000	22.33	35.14	35.14
71.000	16.80	26.42	26.42
72.000	12.21	19.21	19.21
73.000	7.93	12.47	12.47
74.000	5.63	8.86	8.86
75.000	3.85	6.06	6.06
76.000	2.82	4.44	4.44
77.000	2.20	3.47	3.47
78.000	1.87	2.94	2.94
79.000	1.61	2.53	2.53
80.000	1.32	2.08	2.08
81.000	1.11	1.74	1.74
82.000	.95	1.50	1.50
83.000	.77	1.22	1.22
84.000	.49	.77	.77
85.000	.24	.37	.37
86.000	0.0	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 2 AT FARM ROAD 1804, HOARD

DISTANCE FROM POINT OF INJECTION	23.10	MILES
RIVER DISCHARGE	50.00	CFS
RECOVERY RATIO OF TRACER	.585	
TIME TO CENTROID	122.06	HOURS
TIME VARIANCE	55.07168	HRS.SQ.
COEFFICIENT OF SKEW	1.81744	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
107.000	0.00	0.00	0.00
108.000	.08	.13	.18
109.000	.25	.42	.59
110.000	.55	.95	1.31
111.000	1.63	2.79	3.87
112.000	2.56	4.37	6.07
113.000	4.18	7.15	9.93
114.000	6.72	11.49	15.96
115.000	10.36	17.72	24.61
116.000	12.57	21.49	29.85
117.000	14.68	25.10	34.86
118.000	16.16	27.62	38.36
119.000	17.30	29.57	41.06
120.000	16.89	28.87	40.10
121.000	15.52	26.52	36.84
122.000	13.80	23.59	32.76
123.000	11.96	20.45	28.41
124.000	10.35	17.69	24.56
125.000	8.69	14.85	20.62
126.000	6.97	11.92	16.56
127.000	5.50	9.39	13.05
128.000	4.21	7.20	10.00
129.000	3.33	5.70	7.91
130.000	2.74	4.68	6.51
131.000	2.31	3.95	5.49
132.000	1.99	3.40	4.72
133.000	1.69	2.89	4.02
134.000	1.51	2.59	3.59
135.000	1.29	2.21	3.07
136.000	1.17	2.00	2.78
137.000	1.01	1.72	2.40
138.000	.88	1.51	2.10
139.000	.83	1.43	1.98
140.000	.74	1.27	1.76
141.000	.68	1.17	1.62
142.000	.65	1.12	1.55
143.000	.59	1.00	1.39
144.000	.53	.91	1.27
145.000	.53	.90	1.26
146.000	.48	.83	1.15
147.000	.43	.73	1.01

SABINE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
148.000	.41	.70	.98
149.000	.40	.68	.94
150.000	.39	.67	.93
151.000	.38	.66	.91
152.000	.38	.66	.91
153.000	.38	.66	.91
154.000	.38	.66	.91
155.000	.31	.53	.74
156.000	.23	.39	.54
157.000	.18	.31	.43
158.000	.11	.19	.26
159.000	.06	.11	.15
160.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 3 AT FARM ROAD 14, HAWKINS

DISTANCE FROM POINT OF INJECTION	45.10	MILES
RIVER DISCHARGE	90.00	CFS
RECOVERY RATIO OF TRACER	.373	
TIME TO CENTROID	202.72	HOURS
TIME VARIANCE	55.16452	HRS.SQ.
COEFFICIENT OF SKEW	.71462	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
185.000	0.00	0.00	0.00
186.000	.07	.18	.45
187.000	.08	.21	.52
188.000	.15	.39	.97
189.000	.32	.87	2.18
190.000	.63	1.68	4.19
191.000	1.04	2.78	6.95
192.000	1.46	3.93	9.81
193.000	1.92	5.13	12.84
194.000	2.42	6.47	16.18
195.000	3.00	8.03	20.08
196.000	3.50	9.37	23.43
197.000	3.98	10.66	26.65
198.000	4.37	11.72	29.31
199.000	4.58	12.27	30.68
200.000	4.67	12.52	31.29
201.000	4.55	12.19	30.48
202.000	4.36	11.67	29.18
203.000	4.05	10.87	27.17
204.000	3.66	9.80	24.50
205.000	3.19	8.55	21.38
206.000	2.80	7.51	18.78
207.000	2.35	6.30	15.76
208.000	1.98	5.30	13.26
209.000	1.72	4.60	11.50
210.000	1.52	4.07	10.17
211.000	1.36	3.64	9.10
212.000	1.28	3.42	8.55
213.000	1.16	3.12	7.80
214.000	1.06	2.83	7.08
215.000	.98	2.63	6.56
216.000	.93	2.48	6.21
217.000	.82	2.20	5.49
218.000	.74	1.99	4.97
219.000	.65	1.73	4.32
220.000	.57	1.52	3.80
221.000	.52	1.40	3.51
222.000	.42	1.12	2.79
223.000	.32	.86	2.14
224.000	.25	.68	1.69
225.000	.18	.49	1.23
226.000	.11	.30	.75
227.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 4 AT U.S. HWY. 271, GLADEWATER
DISTANCE FROM POINT OF INJECTION 75.20 MILES
RIVER DISCHARGE 244.00 CFS

RECOVERY RATIO OF TRACER .158
TIME TO CENTROID 304.26 HOURS
TIME VARIANCE 19.70966 HRS.SQ.
COEFFICIENT OF SKEW .49916

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
294.000	0.00	0.00	0.00
295.000	.11	.67	4.57
296.000	.14	.89	6.02
297.000	.23	1.47	9.96
298.000	.40	2.54	17.23
299.000	.68	4.32	29.26
300.000	.83	5.27	35.70
301.000	.93	5.88	39.85
302.000	1.00	6.31	42.75
303.000	1.05	6.61	44.83
304.000	1.01	6.37	43.17
305.000	.97	6.12	41.51
306.000	.91	5.76	39.02
307.000	.79	4.99	33.83
308.000	.65	4.10	27.81
309.000	.51	3.22	21.79
310.000	.31	1.96	13.28
311.000	.20	1.26	8.51
312.000	.16	1.04	7.06
313.000	.16	1.01	6.85
314.000	.16	1.01	6.85
315.000	.14	.89	6.02
316.000	.11	.67	4.57
317.000	.08	.49	3.32
318.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 1 AT ST. HWY. 42, WHITE OAK

DISTANCE FROM POINT OF INJECTION	13.10	MILES
RIVER DISCHARGE	218.00	CFS
RECOVERY RATIO OF TRACER	.772	
TIME TO CENTROID	48.45	HOURS
TIME VARIANCE	10.28546	HRS.SQ.
COEFFICIENT OF SKEW	.66938	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
40.000	0.00	0.00	0.00
41.000	.24	.31	.31
42.000	.65	.84	.84
43.000	1.47	1.90	1.90
44.000	2.78	3.60	3.60
45.000	5.45	7.06	7.06
46.000	7.48	9.69	9.69
47.000	8.35	10.81	10.81
48.000	8.28	10.73	10.73
49.000	7.37	9.54	9.54
50.000	6.13	7.94	7.94
51.000	4.64	6.01	6.01
52.000	3.39	4.39	4.39
53.000	2.42	3.14	3.14
54.000	1.64	2.12	2.12
55.000	1.06	1.37	1.37
56.000	.60	.78	.78
57.000	.34	.45	.45
58.000	.23	.30	.30
59.000	.13	.17	.17
60.000	.13	.16	.16
61.000	.08	.11	.11
62.000	.06	.08	.08
63.000	.03	.04	.04
64.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 2 AT ST. HWY. 43, TATUM

DISTANCE FROM POINT OF INJECTION	34.40	MILES
RIVER DISCHARGE	250.00	CFS
RECOVERY RATIO OF TRACER	.644	
TIME TO CENTROID	105.36	HOURS
TIME VARIANCE	26.32868	HRS.SQ.
COEFFICIENT OF SKEW	.71529	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
93.000	0.00	0.00	0.00
94.000	.07	.11	.13
95.000	.18	.28	.32
96.000	.46	.72	.82
97.000	.94	1.46	1.68
98.000	1.37	2.13	2.45
99.000	1.94	3.01	3.45
100.000	2.48	3.86	4.42
101.000	3.03	4.71	5.40
102.000	3.51	5.45	6.25
103.000	3.89	6.05	6.94
104.000	3.94	6.13	7.03
105.000	3.86	5.99	6.87
106.000	3.49	5.43	6.22
107.000	3.15	4.89	5.61
108.000	2.65	4.12	4.73
109.000	2.25	3.49	4.00
110.000	1.92	2.98	3.42
111.000	1.45	2.25	2.58
112.000	1.08	1.68	1.93
113.000	.80	1.24	1.43
114.000	.65	1.01	1.16
115.000	.54	.84	.96
116.000	.44	.69	.79
117.000	.38	.60	.68
118.000	.32	.50	.58
119.000	.27	.41	.48
120.000	.23	.35	.41
121.000	.17	.27	.31
122.000	.15	.23	.26
123.000	.09	.14	.16
124.000	.05	.08	.09
125.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 3 AT U.S. HWY. 59, MARSHALL
DISTANCE FROM POINT OF INJECTION 58.10 MILES
RIVER DISCHARGE 220.00 CFS

RECOVERY RATIO OF TRACER .473
TIME TO CENTROID 194.91 HOURS
TIME VARIANCE 74.89349 HRS.SQ.
COEFFICIENT OF SKEW .45910

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
175.000	0.00	0.00	0.00
176.000	.09	.18	.19
177.000	.16	.34	.34
178.000	.16	.35	.35
179.000	.16	.35	.35
180.000	.29	.62	.62
181.000	.44	.92	.93
182.000	.65	1.36	1.38
183.000	.79	1.67	1.69
184.000	.94	1.99	2.01
185.000	1.12	2.36	2.38
186.000	1.30	2.76	2.78
187.000	1.49	3.15	3.18
188.000	1.70	3.59	3.62
189.000	1.90	4.01	4.05
190.000	2.03	4.29	4.33
191.000	1.98	4.18	4.22
192.000	1.92	4.06	4.10
193.000	1.85	3.91	3.94
194.000	1.75	3.70	3.74
195.000	1.60	3.38	3.41
196.000	1.49	3.16	3.19
197.000	1.38	2.91	2.94
198.000	1.25	2.65	2.67
199.000	1.15	2.43	2.45
200.000	1.05	2.21	2.23
201.000	.97	2.06	2.08
202.000	.90	1.90	1.91
203.000	.86	1.81	1.83
204.000	.81	1.71	1.73
205.000	.76	1.61	1.62
206.000	.70	1.48	1.49
207.000	.65	1.38	1.40
208.000	.58	1.23	1.24
209.000	.55	1.16	1.17
210.000	.52	1.11	1.12
211.000	.47	.99	1.00
212.000	.41	.87	.88
213.000	.37	.79	.80
214.000	.33	.71	.71
215.000	.26	.55	.56
216.000	.20	.42	.42
217.000	.15	.31	.31
218.000	.08	.17	.18
219.000	0.00	0.00	0.00

SABINE RIVER
APRIL 16-30,1972
SAMPLING SITE NUMBER 4 AT U.S. HWY. 79, CARTHAGE
DISTANCE FROM POINT OF INJECTION 70.50 MILES
RIVER DISCHARGE 334.00 CFS

RECOVERY RATIO OF TRACER .574
TIME TO CENTROID 226.77 HOURS
TIME VARIANCE 68.38120 HRS.SQ.
COEFFICIENT OF SKEW .24979

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
202.000	0.00	0.00	0.00
203.000	.10	.17	.26
204.000	.08	.14	.22
205.000	.09	.15	.23
206.000	.08	.14	.21
207.000	.07	.13	.19
208.000	.08	.14	.21
209.000	.07	.12	.18
210.000	.07	.13	.19
211.000	.11	.19	.28
212.000	.19	.34	.52
213.000	.25	.44	.67
214.000	.33	.58	.89
215.000	.45	.79	1.20
216.000	.57	1.00	1.53
217.000	.77	1.34	2.06
218.000	.90	1.56	2.39
219.000	1.04	1.81	2.77
220.000	1.24	2.16	3.31
221.000	1.32	2.31	3.53
222.000	1.46	2.54	3.90
223.000	1.58	2.75	4.22
224.000	1.65	2.87	4.40
225.000	1.68	2.92	4.48
226.000	1.64	2.86	4.39
227.000	1.62	2.83	4.34
228.000	1.55	2.70	4.14
229.000	1.46	2.54	3.90
230.000	1.32	2.30	3.52
231.000	1.19	2.08	3.18
232.000	1.01	1.77	2.71
233.000	.86	1.50	2.30
234.000	.70	1.23	1.88
235.000	.61	1.06	1.62
236.000	.51	.90	1.37
237.000	.47	.82	1.26
238.000	.43	.75	1.15
239.000	.39	.68	1.05
240.000	.36	.63	.97
241.000	.35	.62	.94
242.000	.34	.59	.91

SABINE RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
243.000	.32	.55	.84
244.000	.29	.50	.76
245.000	.27	.46	.71
246.000	.21	.37	.57
247.000	.17	.30	.47
248.000	.12	.21	.32
249.000	.09	.15	.23
250.000	.05	.08	.13
251.000	.00	.01	.01

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 1 AT PLAQUEMINE, LA. CENTER

DISTANCE FROM POINT OF INJECTION	22.00	MILES
RIVER DISCHARGE	151200.00	CFS
RECOVERY RATIO OF TRACER	.362	
TIME TO CENTROID	12.71	HOURS
TIME VARIANCE	1.69495	HRS.SQ.
COEFFICIENT OF SKEW	1.20076	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
10.500	0.00	0.00	0.00
10.750	.90	2.50	2.50
11.000	2.10	5.81	5.81
11.250	3.56	9.84	9.84
11.500	5.41	14.96	14.96
11.750	7.50	20.75	20.75
12.000	8.86	24.50	24.50
12.250	7.71	21.32	21.32
12.500	5.61	15.51	15.51
12.750	4.57	12.64	12.64
13.000	3.76	10.41	10.41
13.250	3.17	8.76	8.76
13.500	2.68	7.42	7.42
13.750	2.23	6.16	6.16
14.000	1.90	5.26	5.26
14.250	1.60	4.43	4.43
14.500	1.38	3.82	3.82
14.750	1.22	3.36	3.36
15.000	1.05	2.91	2.91
15.250	.92	2.56	2.56
15.500	.78	2.17	2.17
15.750	.66	1.84	1.84
16.000	.56	1.54	1.54
16.250	.47	1.31	1.31
16.500	.39	1.08	1.08
16.750	.32	.88	.88
17.000	.25	.69	.69
17.250	.18	.49	.49
17.500	.10	.29	.29
17.750	.04	.12	.12
18.000	.00	.01	.01

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 2 AT PLAQUEMINE, LA. RIGHT BANK
DISTANCE FROM POINT OF INJECTION 22.00 MILES
RIVER DISCHARGE 52800.00 CFS

RECOVERY RATIO OF TRACER .151
TIME TO CENTROID 13.32 HOURS
TIME VARIANCE 2.26203 HRS.SQ.
COEFFICIENT OF SKEW .71316

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
10.500	.00	.01	.00
10.750	.61	4.06	1.42
11.000	1.42	9.42	3.29
11.250	2.23	14.77	5.16
11.500	3.53	23.35	8.15
11.750	5.70	37.67	13.16
12.000	7.06	46.72	16.31
12.250	6.65	43.95	15.35
12.500	6.06	40.09	14.00
12.750	5.61	37.09	12.95
13.000	5.16	34.11	11.91
13.250	4.74	31.36	10.95
13.500	4.38	28.94	10.11
13.750	3.96	26.19	9.15
14.000	3.64	24.06	8.40
14.250	3.28	21.71	7.58
14.500	2.97	19.62	6.85
14.750	2.67	17.63	6.16
15.000	2.37	15.70	5.48
15.250	2.15	14.21	4.96
15.500	1.85	12.25	4.28
15.750	1.59	10.49	3.66
16.000	1.37	9.05	3.16
16.250	1.15	7.59	2.65
16.500	.94	6.22	2.17
16.750	.79	5.21	1.82
17.000	.63	4.19	1.46
17.250	.49	3.25	1.14
17.500	.34	2.26	.79
17.750	.22	1.48	.52
18.000	.12	.78	.27
18.250	.02	.13	.05
18.500	0.00	0.00	0.00

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 3 AT PLAQUEMINE, LA. LEFT BANK
DISTANCE FROM POINT OF INJECTION 22.00 MILES
RIVER DISCHARGE 36000.00 CFS

RECOVERY RATIO OF TRACER .100
TIME TO CENTROID 14.56 HOURS
TIME VARIANCE 2.13994 HRS.SQ.
COEFFICIENT OF SKEW .54803

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
10.500	0.00	0.00	0.00
10.750	.09	.88	.21
11.000	.14	1.44	.34
11.250	.18	1.85	.44
11.500	.24	2.39	.57
11.750	.29	2.89	.69
12.000	.40	4.01	.96
12.250	.83	8.33	1.98
12.500	1.93	19.33	4.60
12.750	3.14	31.49	7.50
13.000	4.73	47.48	11.31
13.250	6.35	63.76	15.18
13.500	6.49	65.10	15.50
13.750	6.15	61.69	14.69
14.000	5.75	57.70	13.74
14.250	5.25	52.72	12.55
14.500	4.82	48.37	11.52
14.750	4.40	44.11	10.50
15.000	4.03	40.42	9.62
15.250	3.69	37.01	8.81
15.500	3.31	33.21	7.91
15.750	2.99	29.98	7.14
16.000	2.72	27.25	6.49
16.250	2.37	23.76	5.66
16.500	2.11	21.15	5.04
16.750	1.82	18.28	4.35
17.000	1.58	15.81	3.77
17.250	1.33	13.37	3.18
17.500	1.10	11.00	2.62
17.750	.89	8.91	2.12
18.000	.67	6.74	1.61
18.250	.51	5.10	1.21
18.500	.35	3.49	.83
18.750	.19	1.93	.46
19.000	.09	.90	.22
19.250	.00	.04	.01
19.500	0.00	0.00	0.00

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 4 AT SUNSHINE BRIDGE, CENTER
DISTANCE FROM POINT OF INJECTION 62.50 MILES
RIVER DISCHARGE 120000.00 CFS

RECOVERY RATIO OF TRACER .268
TIME TO CENTROID 42.28 HOURS
TIME VARIANCE 8.93013 HRS.SQ.
COEFFICIENT OF SKEW .85936

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
36.000	0.00	.00	0.00
36.250	.07	.25	.20
36.500	.11	.40	.32
36.750	.17	.62	.49
37.000	.21	.78	.62
37.250	.31	1.15	.91
37.500	.42	1.58	1.25
37.750	.57	2.13	1.69
38.000	.76	2.82	2.24
38.250	.92	3.44	2.73
38.500	1.12	4.16	3.30
38.750	1.35	5.05	4.00
39.000	1.59	5.93	4.71
39.250	1.85	6.89	5.47
39.500	2.13	7.92	6.29
39.750	2.32	8.64	6.86
40.000	2.45	9.14	7.25
40.250	2.55	9.50	7.54
40.500	2.62	9.76	7.75
40.750	2.64	9.83	7.80
41.000	2.61	9.73	7.72
41.250	2.54	9.45	7.50
41.500	2.44	9.08	7.21
41.750	2.32	8.66	6.87
42.000	2.18	8.11	6.44
42.250	2.08	7.77	6.16
42.500	1.97	7.33	5.82
42.750	1.87	6.97	5.53
43.000	1.77	6.59	5.23
43.250	1.66	6.19	4.92
43.500	1.57	5.86	4.65
43.750	1.48	5.51	4.37
44.000	1.37	5.10	4.05
44.250	1.28	4.75	3.77
44.500	1.20	4.46	3.54
44.750	1.11	4.14	3.28
45.000	1.03	3.84	3.05
45.250	.94	3.52	2.79
45.500	.89	3.30	2.62
45.750	.81	3.01	2.39
46.000	.75	2.79	2.22

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
46.250	.69	2.58	2.05
46.500	.64	2.38	1.89
46.750	.58	2.15	1.70
47.000	.53	1.98	1.57
47.250	.49	1.81	1.44
47.500	.45	1.68	1.33
47.750	.40	1.50	1.19
48.000	.37	1.38	1.09
48.250	.32	1.20	.95
48.500	.30	1.13	.90
48.750	.27	.99	.79
49.000	.25	.94	.75
49.250	.22	.83	.66
49.500	.20	.76	.60
49.750	.19	.72	.57
50.000	.18	.69	.54
50.250	.17	.65	.51
50.500	.15	.56	.44
50.750	.14	.52	.41
51.000	.13	.48	.38
51.250	.12	.45	.35
51.500	.10	.37	.30
51.750	.09	.35	.28
52.000	.09	.34	.27
52.250	.07	.28	.22
52.500	.05	.20	.16
52.750	.05	.19	.15
53.000	.04	.13	.11
53.250	.02	.09	.07
53.500	.02	.07	.06
53.750	.00	.01	.01
54.000	0.00	0.00	0.00

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 5 AT SUNSHINE BRIDGE, BOTH BANKS
DISTANCE FROM POINT OF INJECTION 62.50 MILES
RIVER DISCHARGE 120000.00 CFS

RECOVERY RATIO OF TRACER .268
TIME TO CENTROID 43.75 HOURS
TIME VARIANCE 9.78260 HRS.SQ.
COEFFICIENT OF SKEW .69927

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATIO IN PPB
37.500	0.00	0.00	0.00
37.750	.08	.30	.24
38.000	.20	.75	.59
38.250	.30	1.12	.89
38.500	.40	1.51	1.20
38.750	.56	2.10	1.67
39.000	.71	2.64	2.09
39.250	.88	3.28	2.60
39.500	1.08	4.04	3.21
39.750	1.25	4.68	3.71
40.000	1.40	5.23	4.15
40.250	1.55	5.81	4.61
40.500	1.70	6.35	5.04
40.750	1.81	6.76	5.36
41.000	1.90	7.10	5.64
41.250	1.99	7.44	5.90
41.500	2.07	7.73	6.14
41.750	2.14	7.99	6.34
42.000	2.16	8.08	6.41
42.250	2.18	8.16	6.47
42.500	2.19	8.18	6.49
42.750	2.19	8.19	6.50
43.000	2.18	8.16	6.48
43.250	2.16	8.06	6.40
43.500	2.12	7.94	6.30
43.750	2.06	7.70	6.11
44.000	1.98	7.42	5.89
44.250	1.90	7.10	5.63
44.500	1.81	6.78	5.38
44.750	1.72	6.44	5.11
45.000	1.61	6.03	4.79
45.250	1.52	5.67	4.50
45.500	1.42	5.29	4.20
45.750	1.30	4.85	3.86
46.000	1.22	4.55	3.61
46.250	1.13	4.24	3.36
46.500	1.04	3.89	3.09
46.750	.96	3.57	2.84
47.000	.89	3.33	2.64
47.250	.82	3.07	2.43
47.500	.76	2.83	2.24

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
47.750	.70	2.61	2.07
48.000	.65	2.44	1.94
48.250	.60	2.26	1.79
48.500	.56	2.08	1.65
48.750	.50	1.88	1.50
49.000	.47	1.74	1.38
49.250	.43	1.60	1.27
49.500	.39	1.47	1.16
49.750	.36	1.35	1.07
50.000	.33	1.22	.97
50.250	.31	1.17	.93
50.500	.28	1.06	.84
50.750	.26	.98	.78
51.000	.25	.93	.74
51.250	.23	.86	.68
51.500	.21	.79	.63
51.750	.20	.74	.59
52.000	.18	.67	.53
52.250	.17	.62	.49
52.500	.15	.58	.46
52.750	.13	.49	.39
53.000	.12	.44	.35
53.250	.10	.37	.30
53.500	.09	.32	.26
53.750	.06	.24	.19
54.000	.05	.18	.14
54.250	.03	.10	.08
54.500	.00	.01	.01
54.750	0.00	0.00	0.00

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 6 AT RESERVE, LOUISIANNA
DISTANCE FROM POINT OF INJECTION 91.80 MILES
RIVER DISCHARGE 240000.00 CFS

RECOVERY RATIO OF TRACER .471
TIME TO CENTROID 64.24 HOURS
TIME VARIANCE 14.39604 HRS.SQ.
COEFFICIENT OF SKEW .52921

TIME SINCE INJECTION IN HOURS	ORSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
55.000	0.00	0.00	0.00
55.250	.03	.06	.09
55.500	.04	.09	.15
55.750	.05	.11	.18
56.000	.10	.20	.32
56.250	.12	.25	.39
56.500	.14	.30	.47
56.750	.17	.37	.58
57.000	.22	.46	.74
57.250	.25	.54	.86
57.500	.29	.62	.99
57.750	.34	.72	1.14
58.000	.38	.82	1.30
58.250	.41	.88	1.40
58.500	.47	1.00	1.59
58.750	.52	1.11	1.77
59.000	.58	1.23	1.96
59.250	.63	1.35	2.14
59.500	.71	1.52	2.41
59.750	.77	1.64	2.60
60.000	.84	1.78	2.82
60.250	.93	1.98	3.14
60.500	1.01	2.14	3.40
60.750	1.10	2.33	3.70
61.000	1.19	2.54	4.03
61.250	1.29	2.73	4.34
61.500	1.40	2.97	4.71
61.750	1.51	3.20	5.08
62.000	1.64	3.49	5.54
62.250	1.72	3.65	5.80
62.500	1.77	3.77	5.98
62.750	1.78	3.78	6.00
63.000	1.77	3.76	5.96
63.250	1.74	3.71	5.88
63.500	1.70	3.62	5.75
63.750	1.65	3.51	5.57
64.000	1.60	3.39	5.38
64.250	1.54	3.26	5.18
64.500	1.47	3.12	4.96
64.750	1.42	3.02	4.79
65.000	1.36	2.89	4.59

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
65.250	1.30	2.76	4.38
65.500	1.25	2.65	4.21
65.750	1.18	2.52	3.99
66.000	1.13	2.41	3.82
66.250	1.08	2.29	3.64
66.500	1.02	2.17	3.45
66.750	.97	2.06	3.27
67.000	.91	1.93	3.06
67.250	.86	1.84	2.91
67.500	.81	1.72	2.73
67.750	.76	1.61	2.55
68.000	.71	1.52	2.41
68.250	.66	1.41	2.23
68.500	.61	1.30	2.07
68.750	.58	1.22	1.94
69.000	.52	1.11	1.77
69.250	.49	1.04	1.65
69.500	.46	.98	1.56
69.750	.43	.91	1.44
70.000	.39	.84	1.33
70.250	.38	.80	1.27
70.500	.34	.73	1.15
70.750	.32	.69	1.09
71.000	.30	.65	1.03
71.250	.28	.60	.95
71.500	.25	.53	.84
71.750	.23	.49	.78
72.000	.22	.46	.74
72.250	.21	.44	.69
72.500	.19	.41	.65
72.750	.19	.41	.65
73.000	.19	.41	.65
73.250	.17	.37	.59
73.500	.17	.36	.57
73.750	.15	.33	.52
74.000	.14	.29	.46
74.250	.13	.27	.43
74.500	.12	.25	.39
74.750	.11	.23	.36
75.000	.09	.19	.30
75.250	.08	.17	.26
75.500	.07	.15	.24
75.750	.06	.13	.20
76.000	.05	.11	.17
76.250	.03	.07	.11
76.500	.03	.06	.09
76.750	.02	.04	.06
77.000	0.00	0.00	0.00

MISSISSIPPI RIVER
SEPTEMBER 15, 1965
SAMPLING SITE NUMBER 7 AT NEW ORLEANS, LOUISIANNA

DISTANCE FROM POINT OF INJECTION	127.20	MILES
RIVER DISCHARGE	240000.00	CFS
RECOVERY RATIO OF TRACER	.505	
TIME TO CENTROID	93.36	HOURS
TIME VARIANCE	30.47882	HRS.SQ.
COEFFICIENT OF SKEW	.72694	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
81.750	0.00	0.00	0.00
82.000	.03	.07	.11
82.250	.05	.10	.16
82.500	.07	.13	.21
82.750	.09	.17	.27
83.000	.10	.19	.30
83.250	.12	.23	.37
83.500	.15	.30	.47
83.750	.17	.33	.53
84.000	.19	.38	.60
84.250	.21	.41	.65
84.500	.23	.45	.71
84.750	.26	.52	.83
85.000	.30	.60	.95
85.250	.34	.67	1.07
85.500	.38	.75	1.19
85.750	.41	.82	1.30
86.000	.46	.91	1.45
86.250	.52	1.02	1.62
86.500	.57	1.13	1.80
86.750	.64	1.26	2.00
87.000	.69	1.37	2.18
87.250	.77	1.52	2.41
87.500	.84	1.65	2.63
87.750	.93	1.83	2.91
88.000	1.00	1.98	3.15
88.250	1.07	2.11	3.35
88.500	1.12	2.22	3.52
88.750	1.17	2.32	3.69
89.000	1.21	2.39	3.79
89.250	1.23	2.44	3.87
89.500	1.26	2.49	3.95
89.750	1.28	2.53	4.01
90.000	1.29	2.56	4.06
90.250	1.31	2.60	4.13
90.500	1.32	2.60	4.13
90.750	1.32	2.62	4.15
91.000	1.32	2.61	4.15
91.250	1.32	2.60	4.13
91.500	1.31	2.59	4.11
91.750	1.30	2.58	4.09

MISSISSIPPI RIVER

TIME SINCE INJECTION	ORSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
92.000	1.29	2.56	4.06
92.250	1.28	2.52	4.01
92.500	1.26	2.49	3.95
92.750	1.22	2.42	3.84
93.000	1.19	2.36	3.74
93.250	1.15	2.28	3.62
93.500	1.10	2.18	3.47
93.750	1.06	2.09	3.32
94.000	1.02	2.01	3.20
94.250	.95	1.87	2.97
94.500	.88	1.75	2.78
94.750	.84	1.66	2.63
95.000	.80	1.59	2.52
95.250	.76	1.50	2.38
95.500	.73	1.44	2.28
95.750	.70	1.38	2.20
96.000	.68	1.35	2.14
96.250	.67	1.32	2.09
96.500	.63	1.25	1.98
96.750	.61	1.21	1.93
97.000	.58	1.14	1.82
97.250	.57	1.12	1.78
97.500	.55	1.08	1.71
97.750	.53	1.06	1.68
98.000	.52	1.02	1.62
98.250	.50	.99	1.56
98.500	.48	.95	1.51
98.750	.46	.91	1.44
99.000	.45	.89	1.41
99.250	.43	.85	1.36
99.500	.42	.83	1.32
99.750	.40	.78	1.24
100.000	.39	.77	1.22
100.250	.38	.75	1.19
100.500	.37	.73	1.16
100.750	.35	.70	1.11
101.000	.34	.68	1.07
101.250	.33	.66	1.05
101.500	.33	.64	1.02
101.750	.33	.64	1.02
102.000	.30	.60	.95
102.250	.29	.58	.92
102.500	.29	.58	.92
102.750	.27	.53	.85
103.000	.25	.50	.80
103.250	.25	.49	.79
103.500	.25	.49	.77
103.750	.24	.48	.76
104.000	.23	.45	.72
104.250	.22	.44	.70
104.500	.21	.41	.65
104.750	.20	.39	.62

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
104.750	.20	.39	.62
105.000	.20	.39	.62
105.250	.19	.37	.59
105.500	.18	.35	.55
105.750	.17	.34	.53
106.000	.17	.34	.55
106.250	.17	.33	.52
106.500	.16	.32	.51
106.750	.16	.31	.49
107.000	.15	.29	.46
107.250	.13	.26	.41
107.500	.12	.23	.36
107.750	.12	.24	.38
108.000	.12	.24	.38
108.250	.11	.21	.33
108.500	.10	.19	.31
108.750	.09	.19	.30
109.000	.08	.17	.26
109.250	.07	.14	.23
109.500	.07	.13	.21
109.750	.06	.11	.18
110.000	.04	.09	.14
110.250	.03	.05	.08
110.500	.02	.05	.08
110.750	0.00	0.00	0.00

MISSISSIPPI RIVER
MARCH 11, 1968
SAMPLING SITE NUMBER 1 AT CRYSTAL CITY, MISSOURI
DISTANCE FROM POINT OF INJECTION 34.00 MILES
RIVER DISCHARGE 93000.00 CFS

RECOVERY RATIO OF TRACER 1.134
TIME TO CENTROID 14.55 HOURS
TIME VARIANCE .96710 HRS.SQ.
COEFFICIENT OF SKEW .70934

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
12.500	.00	.00	.00
12.750	.48	.42	.42
13.000	1.13	.99	.99
13.250	2.23	1.96	1.96
13.500	3.13	2.76	2.76
13.750	4.45	3.93	3.93
14.000	5.18	4.57	4.57
14.250	5.15	4.54	4.54
14.500	4.46	3.94	3.94
14.750	3.56	3.14	3.14
15.000	2.86	2.52	2.52
15.250	2.33	2.06	2.06
15.500	1.91	1.69	1.69
15.750	1.58	1.39	1.39
16.000	1.28	1.13	1.13
16.250	1.11	.98	.98
16.500	.87	.77	.77
16.750	.65	.57	.57
17.000	.47	.42	.42
17.250	.32	.29	.29
17.500	.19	.17	.17
17.750	.05	.04	.04
18.000	.00	.00	.00

MISSISSIPPI RIVER
MARCH 11, 1968
SAMPLING SITE NUMBER 2 AT ST. GENEVIEVE, MISSOURI
DISTANCE FROM POINT OF INJECTION 60.00 MILES
RIVER DISCHARGE 93000.00 CFS

RECOVERY RATIO OF TRACER 1.024
TIME TO CENTROID 24.99 HOURS
TIME VARIANCE 3.91022 HRS.SQ.
COEFFICIENT OF SKEW 1.06143

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
21.750	.01	.01	.01
22.000	.26	.26	.26
22.250	.71	.69	.69
22.500	1.20	1.18	1.18
22.750	1.62	1.58	1.58
23.000	2.06	2.01	2.01
23.250	2.41	2.35	2.35
23.500	2.53	2.47	2.47
23.750	2.61	2.55	2.55
24.000	2.55	2.49	2.49
24.250	2.33	2.27	2.27
24.500	2.15	2.09	2.09
24.750	1.92	1.88	1.88
25.000	1.76	1.72	1.72
25.250	1.61	1.57	1.57
25.500	1.47	1.43	1.43
25.750	1.36	1.32	1.32
26.000	1.22	1.19	1.19
26.250	1.11	1.08	1.08
26.500	.99	.97	.97
26.750	.90	.88	.88
27.000	.79	.77	.77
27.250	.71	.69	.69
27.500	.64	.62	.62
27.750	.53	.52	.52
28.000	.49	.47	.47
28.250	.42	.41	.41
28.500	.38	.38	.38
28.750	.34	.33	.33
29.000	.29	.28	.28
29.250	.26	.26	.26
29.500	.24	.23	.23
29.750	.21	.21	.21
30.000	.19	.19	.19
30.250	.17	.17	.17
30.500	.15	.14	.14
30.750	.13	.13	.13
31.000	.11	.11	.11
31.250	.10	.10	.10
31.500	.08	.08	.08
31.750	.08	.08	.08
32.000	.06	.06	.06
32.250	.05	.05	.05
32.500	0.00	0.00	0.00

MISSISSIPPI RIVER
MARCH 11, 1968
SAMPLING SITE NUMBER 3 AT CHESTER, ILLINOIS
DISTANCE FROM POINT OF INJECTION 73.30 MILES
RIVER DISCHARGE 98000.00 CFS

RECOVERY RATIO OF TRACER 1.118
TIME TO CENTROID 35.31 HOURS
TIME VARIANCE 12.52014 HRS.SQ.
COEFFICIENT OF SKEW .65312

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
28.750	0.00	0.00	0.00
29.000	.11	.10	.11
29.250	.21	.19	.20
29.500	.27	.24	.25
29.750	.36	.32	.34
30.000	.45	.40	.43
30.250	.53	.48	.50
30.500	.62	.55	.58
30.750	.69	.62	.65
31.000	.75	.67	.70
31.250	.83	.74	.78
31.500	.89	.79	.83
31.750	.96	.86	.90
32.000	1.01	.91	.96
32.250	1.08	.97	1.02
32.500	1.14	1.02	1.08
32.750	1.19	1.07	1.12
33.000	1.23	1.10	1.16
33.250	1.29	1.15	1.22
33.500	1.31	1.17	1.23
33.750	1.30	1.16	1.22
34.000	1.28	1.15	1.21
34.250	1.24	1.11	1.17
34.500	1.20	1.07	1.13
34.750	1.14	1.02	1.08
35.000	1.08	.97	1.02
35.250	1.05	.94	.99
35.500	1.00	.90	.95
35.750	.97	.86	.91
36.000	.93	.83	.88
36.250	.89	.80	.84
36.500	.86	.77	.81
36.750	.80	.72	.76
37.000	.79	.70	.74
37.250	.74	.67	.70
37.500	.71	.63	.67
37.750	.66	.59	.62
38.000	.61	.54	.57
38.250	.59	.53	.56
38.500	.55	.49	.52
38.750	.52	.46	.49

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
39.000	.49	.43	.46
39.250	.45	.41	.43
39.500	.44	.39	.41
39.750	.42	.38	.40
40.000	.40	.36	.38
40.250	.38	.34	.36
40.500	.35	.31	.33
40.750	.33	.30	.32
41.000	.32	.28	.30
41.250	.30	.27	.28
41.500	.29	.26	.28
41.750	.28	.25	.26
42.000	.24	.22	.23
42.250	.23	.21	.22
42.500	.21	.19	.20
42.750	.20	.18	.19
43.000	.19	.17	.18
43.250	.18	.16	.17
43.500	.16	.15	.15
43.750	.15	.13	.14
44.000	.14	.12	.13
44.250	.13	.12	.12
44.500	.11	.10	.10
44.750	.09	.08	.08
45.000	.08	.07	.07
45.250	.07	.06	.07
45.500	.07	.06	.06
45.750	.04	.04	.04
46.000	.03	.03	.03
46.250	.02	.02	.02
46.500	0.00	0.00	0.00
46.750	0.00	0.00	0.00

MISSISSIPPI RIVER
MARCH 11, 1968
SAMPLING SITE NUMBER 4 AT CAIRO, ILLINOIS
DISTANCE FROM POINT OF INJECTION 183.00 MILES
RIVER DISCHARGE 105000.00 CFS

RECOVERY RATIO OF TRACER .635
TIME TO CENTROID 78.09 HOURS
TIME VARIANCE 18.45565 HRS.SQ.
COEFFICIENT OF SKEW .91961

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
70.500	0.00	0.00	0.00
70.750	.03	.05	.06
71.000	.06	.09	.10
71.250	.09	.14	.15
71.500	.11	.18	.20
71.750	.13	.21	.24
72.000	.17	.27	.30
72.250	.20	.32	.36
72.500	.23	.37	.41
72.750	.28	.44	.49
73.000	.31	.49	.55
73.250	.35	.56	.63
73.500	.39	.62	.69
73.750	.43	.68	.77
74.000	.48	.76	.86
74.250	.53	.83	.94
74.500	.58	.92	1.03
74.750	.61	.96	1.09
75.000	.64	1.01	1.13
75.250	.66	1.04	1.18
75.500	.67	1.05	1.19
75.750	.68	1.08	1.22
76.000	.68	1.07	1.21
76.250	.68	1.07	1.20
76.500	.68	1.07	1.21
76.750	.66	1.04	1.18
77.000	.62	.98	1.11
77.250	.60	.94	1.06
77.500	.57	.89	1.01
77.750	.52	.82	.93
78.000	.49	.77	.87
78.250	.45	.71	.81
78.500	.44	.69	.78
78.750	.40	.63	.71
79.000	.38	.60	.67
79.250	.33	.52	.58
79.500	.31	.49	.55
79.750	.29	.46	.51
80.000	.28	.44	.49
80.250	.26	.41	.46
80.500	.24	.38	.42

MISSISSIPPI RIVER

TIME SINCE INJECTION	OPSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
80.750	.22	.35	.40
81.000	.22	.35	.39
81.250	.21	.32	.37
81.500	.20	.32	.36
81.750	.19	.31	.35
82.000	.19	.30	.34
82.250	.17	.26	.30
82.500	.17	.26	.30
82.750	.17	.26	.29
83.000	.17	.26	.29
83.250	.16	.25	.28
83.500	.14	.23	.25
83.750	.14	.23	.25
84.000	.14	.23	.25
84.250	.12	.19	.22
84.500	.12	.19	.22
84.750	.12	.19	.22
85.000	.12	.19	.22
85.250	.12	.19	.21
85.500	.12	.19	.21
85.750	.11	.18	.20
86.000	.11	.18	.20
86.250	.11	.17	.20
86.500	.11	.17	.19
86.750	.11	.17	.19
87.000	.11	.17	.19
87.250	.11	.17	.19
87.500	.11	.17	.19
87.750	.10	.16	.18
88.000	.10	.15	.17
88.250	.09	.14	.16
88.500	.09	.14	.16
88.750	.09	.14	.15
89.000	.09	.14	.15
89.250	.08	.12	.14
89.500	.07	.12	.13
89.750	.07	.11	.12
90.000	.06	.10	.11
90.250	.04	.07	.07
90.500	.03	.05	.05
90.750	.02	.02	.03
91.000	.01	.01	.01
91.250	0.00	0.00	0.00

MISSISSIPPI RIVER
AUGUST 7, 1968
SAMPLING SITE NUMBER 1 AT CRYSTAL CITY, MISSOURI
DISTANCE FROM POINT OF INJECTION 34.00 MILES
RIVER DISCHARGE 241000.00 CFS

RECOVERY RATIO OF TRACER .972
TIME TO CENTROID 11.12 HOURS
TIME VARIANCE 2.48959 HRS.SQ.
COEFFICIENT OF SKEW 2.12883

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
9.500	0.00	0.00	0.00
9.750	.63	.65	.65
10.000	2.89	2.98	2.98
10.250	3.70	3.81	3.81
10.500	2.56	2.63	2.63
10.750	1.55	1.60	1.60
11.000	1.03	1.06	1.06
11.250	.73	.75	.75
11.500	.53	.54	.54
11.750	.38	.40	.40
12.000	.32	.33	.33
12.250	.28	.29	.29
12.500	.25	.26	.26
12.750	.23	.23	.23
13.000	.21	.22	.22
13.250	.19	.20	.20
13.500	.17	.18	.18
13.750	.16	.16	.16
14.000	.15	.15	.15
14.250	.14	.14	.14
14.500	.13	.13	.13
14.750	.12	.12	.12
15.000	.11	.11	.11
15.250	.10	.11	.11
15.500	.09	.10	.10
15.750	.08	.09	.09
16.000	.07	.07	.07
16.250	.07	.07	.07
16.500	.06	.06	.06
16.750	.06	.06	.06
17.000	.05	.05	.05
17.250	.04	.04	.04
17.500	.04	.04	.04
17.750	.03	.03	.03
18.000	.03	.03	.03
18.250	.02	.02	.02
18.500	0.00	0.00	0.00

MISSISSIPPI RIVER
AUGUST 7, 1968
SAMPLING SITE NUMBER 2 AT ST. GENEVIEVE, MISSOURI
DISTANCE FROM POINT OF INJECTION 60.00 MILES
RIVER DISCHARGE 241000.00 CFS

RECOVERY RATIO OF TRACER .843
TIME TO CENTROID 19.59 HOURS
TIME VARIANCE 6.32526 HRS.SQ.
COEFFICIENT OF SKEW 1.49039

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
16.750	0.00	0.00	0.00
17.000	.23	.28	.28
17.250	.76	.91	.91
17.500	1.39	1.65	1.65
17.750	1.66	1.97	1.97
18.000	1.59	1.88	1.88
18.250	1.15	1.37	1.37
18.500	.90	1.07	1.07
18.750	.72	.85	.85
19.000	.59	.70	.70
19.250	.50	.60	.60
19.500	.43	.51	.51
19.750	.38	.45	.45
20.000	.34	.40	.40
20.250	.30	.36	.36
20.500	.28	.33	.33
20.750	.26	.31	.31
21.000	.24	.28	.28
21.250	.22	.26	.26
21.500	.21	.25	.25
21.750	.20	.23	.23
22.000	.18	.22	.22
22.250	.17	.21	.21
22.500	.17	.20	.20
22.750	.16	.19	.19
23.000	.15	.18	.18
23.250	.14	.17	.17
23.500	.13	.16	.16
23.750	.12	.14	.14
24.000	.12	.14	.14
24.250	.12	.14	.14
24.500	.11	.13	.13
24.750	.10	.12	.12
25.000	.10	.12	.12
25.250	.09	.11	.11
25.500	.08	.09	.09
25.750	.07	.09	.09
26.000	.07	.08	.08
26.250	.06	.07	.07
26.500	.06	.07	.07
26.750	.05	.06	.06

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
27.000	.05	.06	.06
27.250	.04	.05	.05
27.500	.04	.05	.05
27.750	.04	.05	.05
28.000	.04	.04	.04
28.250	.03	.04	.04
28.500	.03	.03	.03
28.750	.02	.02	.02
29.000	0.00	0.00	0.00

MISSISSIPPI RIVER
AUGUST 7, 1968
SAMPLING SITE NUMBER 3 AT CHESTER, ILLINOIS

DISTANCE FROM POINT OF INJECTION	73.00	MILES
RIVER DISCHARGE	241000.00	CFS
RECOVERY RATIO OF TRACER	1.113	
TIME TO CENTROID	24.97	HOURS
TIME VARIANCE	7.64683	HRS.SQ.
COEFFICIENT OF SKEW	.90101	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
19.750	0.00	0.00	0.00
20.000	.03	.03	.03
20.250	.07	.06	.06
20.500	.10	.09	.09
20.750	.16	.14	.14
21.000	.20	.18	.18
21.250	.27	.24	.24
21.500	.35	.31	.31
21.750	.47	.42	.42
22.000	.56	.51	.51
22.250	.73	.66	.66
22.500	.82	.74	.74
22.750	.98	.88	.88
23.000	1.00	.90	.90
23.250	.98	.88	.88
23.500	.93	.84	.84
23.750	.86	.77	.77
24.000	.80	.72	.72
24.250	.74	.67	.67
24.500	.70	.63	.63
24.750	.66	.59	.59
25.000	.61	.55	.55
25.250	.56	.51	.51
25.500	.53	.48	.48
25.750	.49	.44	.44
26.000	.46	.42	.42
26.250	.43	.39	.39
26.500	.41	.37	.37
26.750	.38	.35	.35
27.000	.37	.33	.33
27.250	.34	.30	.30
27.500	.32	.29	.29
27.750	.30	.27	.27
28.000	.28	.25	.25
28.250	.26	.23	.23
28.500	.24	.21	.21
28.750	.23	.21	.21
29.000	.21	.19	.19
29.250	.19	.17	.17
29.500	.18	.16	.16
29.750	.16	.14	.14

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
30.000	.15	.14	.14
30.250	.14	.12	.12
30.500	.13	.12	.12
30.750	.12	.11	.11
31.000	.11	.10	.10
31.250	.09	.08	.08
31.500	.09	.08	.08
31.750	.08	.07	.07
32.000	.08	.07	.07
32.250	.07	.06	.06
32.500	.06	.05	.05
32.750	.05	.05	.05
33.000	.04	.04	.04
33.250	.04	.04	.04
33.500	.03	.03	.03
33.750	.03	.03	.03
34.000	.03	.02	.02
34.250	.02	.02	.02
34.500	0.00	0.00	0.00

MISSISSIPPI RIVER
AUGUST 7, 1968
SAMPLING SITE NUMBER 4 AT CAIRO, ILLINOIS

DISTANCE FROM POINT OF INJECTION	183.00	MILES
RIVER DISCHARGE	241000.00	CFS
RECOVERY RATIO OF TRACER	.589	
TIME TO CENTROID	57.10	HOURS
TIME VARIANCE	16.21327	HRS.SQ.
COEFFICIENT OF SKEW	.92713	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
50.500	0.00	0.00	0.00
50.750	.01	.02	.02
51.000	.02	.04	.04
51.250	.06	.10	.10
51.500	.10	.16	.16
51.750	.13	.23	.23
52.000	.15	.26	.26
52.250	.19	.33	.33
52.500	.22	.38	.38
52.750	.26	.43	.43
53.000	.27	.46	.46
53.250	.30	.50	.50
53.500	.32	.54	.54
53.750	.32	.55	.55
54.000	.33	.56	.56
54.250	.34	.58	.58
54.500	.34	.57	.57
54.750	.33	.56	.56
55.000	.32	.55	.55
55.250	.32	.54	.54
55.500	.31	.52	.52
55.750	.30	.51	.51
56.000	.29	.49	.49
56.250	.27	.47	.47
56.500	.26	.45	.45
56.750	.25	.42	.42
57.000	.24	.41	.41
57.250	.23	.39	.39
57.500	.22	.38	.38
57.750	.21	.35	.35
58.000	.19	.33	.33
58.250	.18	.31	.31
58.500	.17	.30	.30
58.750	.16	.27	.27
59.000	.15	.26	.26
59.250	.14	.24	.24
59.500	.13	.22	.22
59.750	.12	.21	.21
60.000	.11	.19	.19
60.250	.11	.18	.18
60.500	.11	.18	.18

MISSISSIPPI RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
60.750	.10	.17	.17
61.000	.09	.16	.16
61.250	.09	.16	.16
61.500	.09	.15	.15
61.750	.08	.14	.14
62.000	.08	.13	.13
62.250	.07	.12	.12
62.500	.07	.11	.11
62.750	.07	.11	.11
63.000	.06	.11	.11
63.250	.06	.11	.11
63.500	.06	.11	.11
63.750	.06	.11	.11
64.000	.06	.11	.11
64.250	.06	.10	.10
64.500	.06	.10	.10
64.750	.06	.10	.10
65.000	.06	.10	.10
65.250	.06	.10	.10
65.500	.05	.09	.09
65.750	.05	.09	.09
66.000	.05	.09	.09
66.250	.05	.09	.09
66.500	.05	.08	.08
66.750	.05	.08	.08
67.000	.04	.07	.07
67.250	.04	.07	.07
67.500	.04	.07	.07
67.750	.03	.06	.06
68.000	.03	.04	.04
68.250	.03	.04	.04
68.500	.02	.04	.04
68.750	.02	.03	.03
69.000	.01	.02	.02
69.250	.01	.01	.01
69.500	0.00	0.00	0.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 1 IN THE WIND RIVER CANYON
DISTANCE FROM POINT OF INJECTION 5.70 MILES
RIVER DISCHARGE 1940.00 CFS

RECOVERY RATIO OF TRACER 1.071
TIME TO CENTROID 2.92 HOURS
TIME VARIANCE .13762 HRS.SQ.
COEFFICIENT OF SKEW .82778

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
2.125	0.00	0.00	0.00
2.188	.67	.63	.63
2.250	2.75	2.57	2.57
2.313	5.13	4.79	4.79
2.375	8.60	8.03	8.03
2.438	11.81	11.03	11.03
2.500	15.07	14.08	14.08
2.563	17.88	16.70	16.70
2.625	21.74	20.30	20.30
2.688	25.07	23.41	23.41
2.750	26.31	24.57	24.57
2.813	25.97	24.25	24.25
2.875	23.86	22.28	22.28
2.938	21.45	20.03	20.03
3.000	19.20	17.93	17.93
3.063	16.98	15.85	15.85
3.125	15.01	14.02	14.02
3.188	13.25	12.37	12.37
3.250	11.41	10.65	10.65
3.313	9.54	8.91	8.91
3.375	7.58	7.07	7.07
3.438	6.42	6.00	6.00
3.500	5.50	5.14	5.14
3.563	4.63	4.33	4.33
3.625	3.90	3.65	3.65
3.688	3.18	2.97	2.97
3.750	2.52	2.35	2.35
3.813	1.97	1.84	1.84
3.875	1.52	1.42	1.42
3.938	1.19	1.11	1.11
4.000	.91	.85	.85
4.063	.72	.67	.67
4.125	.66	.61	.61
4.188	.49	.46	.46
4.250	.43	.40	.40
4.313	.31	.29	.29
4.375	.22	.21	.21
4.438	.20	.19	.19
4.500	.12	.11	.11
4.563	0.00	0.00	0.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 2 AT THERMOPOLIS, WYOMING
DISTANCE FROM POINT OF INJECTION 20.30 MILES
RIVER DISCHARGE 1940.00 CFS

RECOVERY RATIO OF TRACER .932
TIME TO CENTROID 9.65 HOURS
TIME VARIANCE .47026 HRS.SQ.
COEFFICIENT OF SKEW .95632

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
8.250	0.00	0.00	0.00
8.375	.96	1.03	1.03
8.500	2.21	2.37	2.37
8.625	3.78	4.05	4.05
8.750	5.23	5.61	5.61
8.875	7.17	7.70	7.70
9.000	8.64	9.27	9.27
9.125	10.17	10.92	10.92
9.250	11.47	12.32	12.32
9.375	11.88	12.75	12.75
9.500	11.71	12.57	12.57
9.625	11.23	12.06	12.06
9.750	10.32	11.08	11.08
9.875	9.21	9.69	9.89
10.000	8.15	8.75	8.75
10.125	6.90	7.41	7.41
10.250	5.45	5.85	5.85
10.375	4.21	4.52	4.52
10.500	3.25	3.49	3.49
10.625	2.52	2.71	2.71
10.750	2.03	2.18	2.18
10.875	1.69	1.81	1.81
11.000	1.41	1.51	1.51
11.125	1.16	1.25	1.25
11.250	1.00	1.07	1.07
11.375	.77	.82	.82
11.500	.60	.65	.65
11.625	.49	.53	.53
11.750	.38	.41	.41
11.875	.30	.32	.32
12.000	.25	.26	.26
12.125	.20	.22	.22
12.250	.15	.16	.16
12.375	.13	.14	.14
12.500	.11	.12	.12
12.625	.07	.07	.07
12.750	.06	.06	.06
12.875	.05	.06	.06
13.000	.04	.04	.04
13.125	.02	.02	.02
13.250	0.00	0.00	0.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 3 AT LUCERNE, WYOMING
DISTANCE FROM POINT OF INJECTION 31.30 MILES
RIVER DISCHARGE 2000.00 CFS

RECOVERY RATIO OF TRACER .911
TIME TO CENTROID 17.01 HOURS
TIME VARIANCE .76948 HRS.SQ.
COEFFICIENT OF SKEW .65308

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
15.000	0.00	0.00	0.00
15.125	.23	.25	.26
15.250	.61	.67	.70
15.375	1.01	1.11	1.15
15.500	1.60	1.76	1.81
15.625	2.30	2.52	2.60
15.750	2.96	3.25	3.35
15.875	4.01	4.41	4.54
16.000	5.01	5.50	5.67
16.125	5.79	6.36	6.55
16.250	6.80	7.47	7.70
16.375	7.59	8.33	8.59
16.500	8.13	8.92	9.20
16.625	8.26	9.07	9.35
16.750	8.21	9.01	9.29
16.875	8.06	8.85	9.12
17.000	7.82	8.59	8.85
17.125	7.43	8.16	8.41
17.250	7.01	7.69	7.93
17.375	6.42	7.05	7.27
17.500	5.70	6.26	6.46
17.625	5.09	5.59	5.77
17.750	4.44	4.88	5.03
17.875	3.95	4.34	4.47
18.000	3.32	3.64	3.75
18.125	2.75	3.02	3.12
18.250	2.28	2.50	2.58
18.375	1.95	2.14	2.21
18.500	1.60	1.75	1.81
18.625	1.37	1.50	1.55
18.750	1.13	1.25	1.28
18.875	.97	1.07	1.10
19.000	.81	.89	.91
19.125	.65	.72	.74
19.250	.54	.60	.62
19.375	.46	.51	.52
19.500	.37	.40	.42
19.625	.28	.31	.32
19.750	.23	.25	.26
19.875	.16	.18	.19
20.000	.13	.14	.14

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
20.125	.10	.11	.12
20.250	.10	.11	.12
20.375	.09	.09	.10
20.500	.07	.08	.08
20.625	.04	.04	.04
20.750	0.00	0.00	0.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 4 AT WINCHESTER, WYOMING
DISTANCE FROM POINT OF INJECTION 46.80 MILES
RIVER DISCHARGE 2000.00 CFS

RECOVERY RATIO OF TRACER .840
TIME TO CENTROID 25.37 HOURS
TIME VARIANCE 1.18355 HRS.SQ.
COEFFICIENT OF SKEW .66044

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
22.750	0.00	0.00	0.00
22.875	.08	.10	.10
23.000	.19	.23	.24
23.125	.34	.41	.42
23.250	.52	.62	.64
23.375	.74	.88	.91
23.500	1.03	1.23	1.27
23.625	1.48	1.76	1.81
23.750	2.04	2.42	2.50
23.875	2.58	3.07	3.16
24.000	3.17	3.77	3.89
24.125	3.78	4.50	4.64
24.250	4.42	5.26	5.42
24.375	4.96	5.90	6.09
24.500	5.39	6.41	6.61
24.625	5.69	6.77	6.98
24.750	5.89	7.01	7.23
24.875	6.00	7.14	7.36
25.000	6.06	7.21	7.44
25.125	6.05	7.20	7.42
25.250	5.98	7.11	7.33
25.375	5.77	6.87	7.08
25.500	5.52	6.57	6.78
25.625	5.29	6.29	6.49
25.750	5.00	5.94	6.13
25.875	4.69	5.58	5.76
26.000	4.38	5.22	5.38
26.125	4.02	4.78	4.93
26.250	3.64	4.33	4.46
26.375	3.26	3.88	4.00
26.500	2.85	3.39	3.49
26.625	2.35	2.80	2.88
26.750	1.96	2.34	2.41
26.875	1.64	1.96	2.02
27.000	1.38	1.64	1.69
27.125	1.19	1.42	1.46
27.250	1.00	1.19	1.23
27.375	.88	1.05	1.08
27.500	.78	.92	.95
27.625	.71	.84	.87
27.750	.62	.74	.77

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
27.875	.58	.69	.71
28.000	.55	.66	.68
28.125	.52	.61	.63
28.250	.45	.54	.56
28.375	.38	.46	.47
28.500	.29	.35	.36
28.625	.25	.30	.30
28.750	.20	.23	.24
28.875	.15	.18	.19
29.000	.12	.14	.15
29.125	.09	.10	.11
29.250	.06	.07	.08
29.375	.05	.06	.06
29.500	.05	.06	.06
29.625	.04	.05	.05
29.750	.04	.05	.05
29.875	.03	.04	.04
30.000	0.00	0.00	0.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 5 AT WORLAND, WYOMING

DISTANCE FROM POINT OF INJECTION	62.10	MILES
RIVER DISCHARGE	2000.00	CFS
RECOVERY RATIO OF TRACER	.808	
TIME TO CENTROID	32.99	HOURS
TIME VARIANCE	1.90178	HRS.SQ.
COEFFICIENT OF SKEW	1.13675	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
30.000	0.00	0.00	0.00
30.250	.20	.25	.26
30.500	.54	.67	.69
30.750	.92	1.14	1.18
31.000	1.41	1.74	1.80
31.250	2.11	2.62	2.70
31.500	3.15	3.90	4.02
31.750	3.89	4.81	4.96
32.000	4.38	5.43	5.59
32.250	4.87	6.03	6.22
32.500	5.11	6.33	6.53
32.750	5.12	6.33	6.53
33.000	4.85	6.00	6.19
33.250	4.39	5.43	5.60
33.500	3.91	4.85	5.00
33.750	3.40	4.21	4.34
34.000	2.83	3.51	3.61
34.250	2.20	2.72	2.80
34.500	1.67	2.07	2.13
34.750	1.27	1.57	1.62
35.000	.95	1.17	1.21
35.250	.69	.85	.88
35.500	.57	.70	.72
35.750	.45	.56	.58
36.000	.37	.46	.47
36.250	.30	.37	.38
36.500	.26	.32	.33
36.750	.22	.27	.28
37.000	.17	.21	.22
37.250	.15	.19	.19
37.500	.13	.16	.17
37.750	.11	.14	.14
38.000	.10	.13	.13
38.250	.09	.12	.12
38.500	.08	.09	.10
38.750	.06	.08	.08
39.000	.06	.08	.08
39.250	.06	.07	.07
39.500	.04	.05	.05
39.750	.03	.04	.04
40.000	.02	.02	.02
40.250	0.00	0.00	0.00

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
51.750	.10	.13	.13
52.000	.09	.11	.11
52.250	.07	.09	.09
52.500	.06	.08	.09
52.750	.04	.05	.05
53.000	.03	.04	.04
53.250	.02	.03	.03
53.500	.02	.03	.03
53.750	0.00	0.00	0.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 6 AT MANDERSON, WYOMING

DISTANCE FROM POINT OF INJECTION	88.20	MILES
RIVER DISCHARGE	2000.00	CFS
RECOVERY RATIO OF TRACER	.773	
TIME TO CENTROID	45.23	HOURS
TIME VARIANCE	3.18049	HRS.SQ.
COEFFICIENT OF SKEW	1.26909	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
41.500	0.00	0.00	0.00
41.750	.07	.09	.09
42.000	.18	.24	.24
42.250	.35	.45	.47
42.500	.65	.84	.86
42.750	1.10	1.43	1.47
43.000	1.59	2.06	2.13
43.250	2.19	2.84	2.93
43.500	2.76	3.57	3.68
43.750	3.23	4.17	4.30
44.000	3.77	4.88	5.03
44.250	4.22	5.45	5.62
44.500	4.34	5.62	5.79
44.750	4.28	5.54	5.71
45.000	4.07	5.27	5.43
45.250	3.77	4.88	5.03
45.500	3.16	4.09	4.22
45.750	2.79	3.61	3.72
46.000	2.38	3.07	3.17
46.250	2.04	2.64	2.72
46.500	1.69	2.18	2.25
46.750	1.42	1.84	1.90
47.000	1.17	1.52	1.57
47.250	.94	1.21	1.25
47.500	.80	1.04	1.07
47.750	.70	.90	.93
48.000	.61	.79	.81
48.250	.52	.68	.70
48.500	.47	.60	.62
48.750	.41	.53	.55
49.000	.36	.47	.48
49.250	.32	.42	.43
49.500	.29	.37	.38
49.750	.26	.33	.34
50.000	.23	.30	.31
50.250	.21	.27	.28
50.500	.18	.24	.25
50.750	.16	.21	.22
51.000	.15	.19	.20
51.250	.13	.17	.17
51.500	.11	.14	.14

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARG ADJUSTED CONCENTRAT
63.250	.08	.11	.13
63.500	.07	.09	.11
63.750	.05	.07	.09
64.000	.04	.05	.06
64.250	.00	.00	.00

WIND/BIGHORN RIVER
MARCH 21, 1971
SAMPLING SITE NUMBER 7 AT GREYBULL, WYOMING

DISTANCE FROM POINT OF INJECTION	112.70 MILES
RIVER DISCHARGE	2430.00 CFS
RECOVERY RATIO OF TRACER	.752
TIME TO CENTROID	56.80 HOURS
TIME VARIANCE	3.35092 HRS.SQ.
COEFFICIENT OF SKEW	.98785

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
53.000	0.00	0.00	0.00
53.250	.09	.12	.15
53.500	.27	.35	.44
53.750	.45	.60	.75
54.000	.71	.94	1.18
54.250	.97	1.29	1.62
54.500	1.32	1.76	2.20
54.750	1.70	2.26	2.83
55.000	2.11	2.80	3.51
55.250	2.43	3.23	4.05
55.500	2.71	3.60	4.51
55.750	2.94	3.92	4.91
56.000	3.03	4.04	5.05
56.250	3.03	4.03	5.05
56.500	2.95	3.93	4.92
56.750	2.79	3.72	4.66
57.000	2.62	3.48	4.36
57.250	2.31	3.07	3.85
57.500	2.03	2.71	3.39
57.750	1.74	2.32	2.91
58.000	1.52	2.02	2.53
58.250	1.32	1.76	2.20
58.500	1.13	1.51	1.89
58.750	.95	1.27	1.59
59.000	.81	1.08	1.35
59.250	.69	.92	1.15
59.500	.59	.78	.98
59.750	.48	.64	.80
60.000	.41	.54	.68
60.250	.34	.45	.57
60.500	.30	.39	.49
60.750	.27	.36	.45
61.000	.25	.34	.42
61.250	.23	.30	.38
61.500	.22	.29	.36
61.750	.20	.26	.33
62.000	.18	.24	.30
62.250	.15	.20	.25
62.500	.14	.18	.23
62.750	.12	.15	.19
63.000	.10	.13	.17

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 1 IN THE WIND RIVER CANYON

DISTANCE FROM POINT OF INJECTION	5.70	MILES
RIVER DISCHARGE	8230.00	CFS
RECOVERY RATIO OF TRACER	1.120	
TIME TO CENTROID	1.54	HOURS
TIME VARIANCE	.03936	HRS.SQ.
COEFFICIENT OF SKEW	1.04437	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
1.125	0.00	0.00	0.00
1.188	.58	.51	.51
1.250	3.10	2.76	2.76
1.313	6.74	6.01	6.01
1.375	11.47	10.24	10.24
1.438	11.73	10.48	10.48
1.500	10.87	9.70	9.70
1.563	9.14	8.16	8.16
1.625	7.15	6.39	6.39
1.688	4.78	4.27	4.27
1.750	3.40	3.03	3.03
1.813	2.68	2.39	2.39
1.875	1.95	1.74	1.74
1.938	1.47	1.32	1.32
2.000	1.04	.93	.93
2.063	.75	.67	.67
2.125	.53	.47	.47
2.188	.35	.32	.32
2.250	.22	.19	.19
2.313	.13	.11	.11
2.375	.06	.05	.05
2.438	.00	.00	.00

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 2 AT THERMOPOLIS, WYOMING
DISTANCE FROM POINT OF INJECTION 20.30 MILES
RIVER DISCHARGE 8300.00 CFS

RECOVERY RATIO OF TRACER 1.122
TIME TO CENTROID 5.02 HOURS
TIME VARIANCE .21193 HRS.SQ.
COEFFICIENT OF SKEW 1.37672

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
4.188	0.00	0.00	0.00
4.250	.29	.26	.26
4.313	.71	.63	.63
4.375	1.19	1.06	1.07
4.438	1.81	1.61	1.63
4.500	2.73	2.44	2.46
4.563	3.58	3.19	3.22
4.625	4.39	3.91	3.94
4.688	5.03	4.48	4.52
4.750	5.36	4.78	4.82
4.813	5.64	5.03	5.07
4.875	5.77	5.14	5.18
4.938	5.64	5.03	5.07
5.000	5.11	4.56	4.60
5.063	4.33	3.86	3.89
5.125	3.69	3.29	3.32
5.188	3.19	2.85	2.87
5.250	2.71	2.42	2.44
5.313	2.31	2.06	2.08
5.375	1.92	1.71	1.73
5.438	1.60	1.43	1.44
5.500	1.25	1.11	1.12
5.563	1.05	.93	.94
5.625	.91	.81	.82
5.688	.82	.73	.74
5.750	.75	.67	.67
5.813	.70	.63	.63
5.875	.62	.55	.56
5.938	.56	.50	.51
6.000	.49	.44	.44
6.063	.43	.38	.38
6.125	.37	.33	.34
6.188	.35	.31	.31
6.250	.31	.27	.28
6.313	.29	.26	.26
6.375	.26	.23	.23
6.438	.21	.19	.19
6.500	.20	.18	.18
6.563	.18	.16	.16
6.625	.17	.15	.15
6.688	.15	.14	.14

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
6.750	.12	.11	.11
6.813	.10	.09	.09
6.875	.09	.08	.08
6.938	.07	.07	.07
7.000	.06	.06	.06
7.063	.04	.04	.04
7.125	.02	.02	.02
7.188	0.00	0.00	0.00
7.250	0.00	0.00	0.00

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 3 AT LUCERNE, WYOMING

DISTANCE FROM POINT OF INJECTION	31.30	MILES
RIVER DISCHARGE	8300.00	CFS
RECOVERY RATIO OF TRACER	.827	
TIME TO CENTROID	8.93	HOURS
TIME VARIANCE	.37953	HRS.SQ.
COEFFICIENT OF SKEW	1.19668	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
7.667	0.00	0.00	0.00
7.750	.04	.05	.05
7.833	.13	.16	.16
7.917	.27	.32	.33
8.000	.49	.59	.60
8.083	.86	1.04	1.04
8.167	1.22	1.47	1.48
8.250	1.74	2.11	2.12
8.333	2.16	2.61	2.63
8.417	2.54	3.07	3.10
8.500	2.78	3.36	3.39
8.583	2.89	3.49	3.52
8.667	2.91	3.51	3.54
8.750	2.77	3.34	3.37
8.833	2.59	3.14	3.16
8.917	2.40	2.90	2.93
9.000	2.22	2.68	2.70
9.083	1.98	2.39	2.41
9.167	1.77	2.14	2.15
9.250	1.56	1.89	1.91
9.333	1.37	1.65	1.66
9.417	1.19	1.44	1.45
9.500	1.02	1.23	1.24
9.583	.84	1.01	1.02
9.667	.71	.86	.87
9.750	.61	.74	.75
9.833	.52	.62	.63
9.917	.45	.55	.55
10.000	.40	.48	.48
10.083	.35	.42	.42
10.167	.29	.35	.36
10.250	.26	.31	.31
10.333	.22	.27	.27
10.417	.18	.22	.23
10.500	.18	.21	.21
10.583	.16	.20	.20
10.667	.14	.17	.17
10.750	.11	.14	.14
10.833	.10	.12	.12
10.917	.09	.11	.11
11.000	.07	.09	.09

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
11.083	.06	.07	.07
11.167	.05	.06	.06
11.250	.04	.05	.05
11.333	.04	.05	.05
11.417	.03	.04	.04
11.500	.03	.03	.03
11.583	.03	.03	.03
11.667	.02	.02	.02
11.750	.02	.02	.02
11.833	.02	.02	.02
11.916	.01	.02	.02
12.000	0.00	0.00	0.00

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 4 AT WINCHESTER, WYOMING
DISTANCE FROM POINT OF INJECTION 46.80 MILES
RIVER DISCHARGE 7900.00 CFS

RECOVERY RATIO OF TRACER .795
TIME TO CENTROID 13.86 HOURS
TIME VARIANCE .62537 HRS.SQ.
COEFFICIENT OF SKEW .72958

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
12.000	.00	.00	.00
12.083	.02	.02	.02
12.167	.05	.06	.06
12.250	.07	.09	.09
12.333	.14	.17	.17
12.417	.22	.27	.26
12.500	.30	.38	.36
12.583	.42	.53	.51
12.667	.54	.68	.65
12.750	.73	.92	.88
12.833	.89	1.12	1.08
12.917	1.12	1.41	1.35
13.000	1.34	1.69	1.62
13.083	1.55	1.94	1.87
13.167	1.70	2.14	2.05
13.250	1.83	2.30	2.21
13.333	1.95	2.45	2.36
13.417	2.02	2.54	2.44
13.500	2.03	2.55	2.45
13.583	1.99	2.51	2.40
13.667	1.90	2.39	2.30
13.750	1.82	2.30	2.20
13.833	1.75	2.20	2.11
13.917	1.65	2.08	2.00
14.000	1.58	1.99	1.91
14.083	1.51	1.89	1.82
14.167	1.42	1.79	1.72
14.250	1.32	1.66	1.60
14.333	1.23	1.54	1.48
14.417	1.16	1.45	1.40
14.500	1.05	1.32	1.27
14.583	.98	1.23	1.18
14.667	.89	1.12	1.08
14.750	.79	.99	.95
14.833	.70	.87	.84
14.917	.64	.80	.77
15.000	.56	.71	.68
15.083	.48	.60	.58
15.167	.41	.52	.50
15.250	.37	.46	.45
15.333	.32	.41	.39

WIND/BIGHORN RIVER

TIME SINCE INJECTION	OBSERVED CONCENTRATION	CONSERVATIVE CONCENTRATION	DISCHARGE ADJUSTED CONCENTRATION
15.417	.27	.34	.33
15.500	.24	.30	.28
15.583	.20	.25	.24
15.667	.17	.22	.21
15.750	.15	.19	.18
15.833	.12	.15	.15
15.917	.10	.13	.12
16.000	.09	.11	.11
16.083	.08	.10	.09
16.167	.06	.08	.07
16.250	.06	.08	.07
16.333	.05	.06	.06
16.416	.04	.05	.05
16.500	.04	.06	.05
16.583	.04	.05	.05
16.666	.04	.06	.05
16.750	.04	.05	.05
16.833	.04	.05	.05
16.916	.03	.04	.04
17.000	.02	.02	.02
17.083	0.00	0.00	0.00

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 5 AT WORLAND, WYOMING

DISTANCE FROM POINT OF INJECTION	62.10	MILES
RIVER DISCHARGE	7600.00	CFS
RECOVERY RATIO OF TRACER	.682	
TIME TO CENTROID	18.48	HOURS
TIME VARIANCE	1.04242	HRS.SQ.
COEFFICIENT OF SKEW	1.04757	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
16.500	0.00	0.00	0.00
16.667	.05	.08	.07
16.833	.24	.35	.33
17.000	.46	.67	.62
17.167	.67	.98	.91
17.333	.90	1.32	1.22
17.500	1.15	1.68	1.55
17.667	1.33	1.94	1.79
17.833	1.45	2.13	1.97
18.000	1.52	2.23	2.06
18.167	1.52	2.23	2.06
18.333	1.41	2.07	1.91
18.500	1.26	1.85	1.71
18.667	1.11	1.63	1.51
18.833	.97	1.42	1.31
19.000	.84	1.24	1.14
19.167	.72	1.06	.98
19.333	.63	.92	.85
19.500	.51	.75	.69
19.667	.44	.64	.59
19.833	.37	.54	.50
20.000	.30	.45	.41
20.167	.26	.37	.35
20.333	.20	.30	.27
20.500	.16	.23	.21
20.667	.14	.21	.19
20.833	.12	.17	.16
21.000	.11	.16	.15
21.167	.10	.14	.13
21.333	.08	.12	.11
21.500	.07	.10	.09
21.667	.05	.08	.07
21.833	.05	.07	.06
22.000	.04	.06	.05
22.167	.04	.05	.05
22.333	.03	.04	.04
22.500	.02	.03	.03
22.667	.01	.02	.02
22.833	.01	.01	.01
23.000	.00	.00	.00

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 6 AT MANDERSON, WYOMING
DISTANCE FROM POINT OF INJECTION 88.20 MILES
RIVER DISCHARGE 7700.00 CFS

RECOVERY RATIO OF TRACER .569
TIME TO CENTROID 26.17 HOURS
TIME VARIANCE .98507 HRS.SQ.
COEFFICIENT OF SKEW 1.01238

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
24.167	0.00	0.00	0.00
24.333	.08	.13	.12
24.500	.18	.33	.30
24.667	.37	.64	.60
24.833	.55	.97	.91
25.000	.70	1.23	1.15
25.167	.84	1.47	1.38
25.333	.95	1.67	1.57
25.500	1.05	1.84	1.72
25.667	1.12	1.97	1.84
25.833	1.17	2.06	1.93
26.000	1.19	2.09	1.95
26.167	1.16	2.03	1.90
26.333	1.08	1.89	1.77
26.500	.97	1.71	1.60
26.667	.84	1.47	1.38
26.833	.70	1.23	1.15
27.000	.56	.99	.92
27.167	.45	.79	.74
27.333	.36	.64	.60
27.500	.30	.53	.49
27.667	.25	.43	.40
27.833	.20	.35	.33
28.000	.16	.27	.26
28.167	.12	.21	.19
28.333	.10	.17	.16
28.500	.08	.14	.13
28.667	.07	.12	.11
28.833	.06	.11	.10
29.000	.05	.09	.08
29.167	.03	.06	.05
29.333	.03	.04	.04
29.500	.02	.04	.04
29.667	.02	.04	.03
29.833	.02	.04	.04
30.000	.03	.05	.05
30.167	.02	.04	.03
30.333	.02	.03	.03
30.500	.02	.03	.03
30.667	.01	.02	.02
30.833	0.00	0.00	0.00

WIND/BIGHORN RIVER
JUNE 29, 1971
SAMPLING SITE NUMBER 7 AT GREYBULL, WYOMING

DISTANCE FROM POINT OF INJECTION	112.70	MILES
RIVER DISCHARGE	9000.00	CFS
RECOVERY RATIO OF TRACER	.518	
TIME TO CENTROID	33.64	HOURS
TIME VARIANCE	1.37053	HRS.SQ.
COEFFICIENT OF SKEW	.77292	

TIME SINCE INJECTION IN HOURS	OBSERVED CONCENTRATION IN PPB	CONSERVATIVE CONCENTRATION IN PPB	DISCHARGE ADJUSTED CONCENTRATION IN PPB
31.333	0.00	0.00	0.00
31.500	.07	.13	.14
31.667	.13	.25	.27
31.833	.21	.40	.44
32.000	.29	.57	.62
32.167	.39	.76	.83
32.333	.50	.96	1.05
32.500	.60	1.16	1.26
32.667	.70	1.34	1.47
32.833	.77	1.48	1.62
33.000	.82	1.58	1.73
33.167	.82	1.59	1.74
33.333	.78	1.51	1.65
33.500	.73	1.42	1.55
33.667	.69	1.33	1.45
33.833	.61	1.18	1.29
34.000	.55	1.05	1.15
34.167	.48	.93	1.02
34.333	43	83	.91
34.500	.38	.74	.81
34.667	.33	.65	.71
34.833	.30	.57	.63
35.000	.27	.51	.56
35.167	.23	.45	.49
35.333	.20	.38	.42
35.500	.18	.34	.37
35.667	.16	.31	.34
35.833	.14	.26	.29
36.000	.12	.22	.24
36.167	.10	.20	.21
36.333	.09	.17	.19
36.500	.08	.15	.16
36.667	.06	.12	.13
36.833	.05	.10	.11
37.000	.04	.08	.09
37.167	.03	.07	.07
37.333	.03	.05	.05
37.500	.02	.04	.05
37.667	.01	.03	.03
37.833	0.00	00	0.00