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A JOINT DOE/NRC FIELD STUDY OF TRACER MIGRATION IN THE UNSATURATED ZONE

by

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ABSTRACT

The results of a joint DOE/NRC field experiment to evaluate leaching and transport of solutes in a sandy silt backfill used for shallow land burial operations at Los Alamos are presented for steady-state and unsteady-state flow conditions. The migration of iodide, bromide, and lithium through the backfill material is studied as functions of depth and time and they are compared with one another.

The bromide and iodide tracer data are used to estimate the diffusion coefficient, the tortuosity factor, and dispersivity. These values are used to calculate effective dispersion coefficients for subsequent analyses of the retardation factor and the distribution coefficient for lithium using least squares procedures.

The results of the tracer migration study are discussed relative to challenges facing the waste management community, and chemical transport modeling opportunities are presented for a modeling workshop to be held in FY86.

I. INTRODUCTION

The total volume of low-level radioactive wastes produced in the United States is conservatively projected to be about 16 million m³ by the year 2020 (US Department of Energy 1982). This increasing production rate is of major concern because new and acceptable sites will be required for the disposal of these wastes. Logistics dictates that new burial sites will need to be selected in a wide range of environments throughout the US, and actual or anticipated problems with closed shallow land burial sites must also be corrected.

The most popular current method for disposing of low-level radioactive wastes is shallow land burial (SLB). Burial trenches range in size from the 4.6-m deep, 3- by 15-m disposal pit at Oak Ridge National Laboratory to the 6.1-m deep, 30- by 300-m trench at Barnwell, South Carolina. After waste materials are placed in these trenches, current management practices range from simple backfilling of the trench to more elaborate installation of multilayered trench caps and revegetation programs.

Once the burial trench receives its final cover, several environmental processes begin to influence the configuration and integrity of the surface and subsurface of the trench cap (Fig. 1). The most serious problems encountered in shallow land burial are related to water management (Jacobs et al. 1980). As water comes into contact with the buried wastes, either from infiltration of precipitation or from trench cap erosion and subsidence, the integrity of the buried wastes is breached. Scientific planning for surface and subsurface water management at the SLB site requires a knowledge of the relationships between those factors that cause a loss of soil and water (Fig. 1), as well as a knowledge of the migration of water and contaminants in porous materials beneath the SLB trench cap.

The siting requirements described by the Nuclear Regulatory Commission (NRC) require disposal in unsaturated media above fluctuations in the water table, unless it can be conclusively demonstrated that site characteristics will result in molecular diffusion being the predominant mechanism of radionuclide migration (see 10 CFR, Part 61 in NRC 1982). Wastes buried in this unsaturated media may include spent reactor resins that have been solidified in cement and packaged in 55-gallon drums. Past burial operations did not require that the resins be solidified in cement. Another requirement

in 10 CFR, Part 61 for the burial of waste is that the capability exists for the disposal area to be modeled.

Required disposal in unsaturated media assumes that leaching and transport of contaminants is minimized under those conditions. That assumption has not been verified experimentally. In fact, under some circumstances, evidence suggests that leaching and transport may be enhanced. Biggar and Nielsen 1962 suggest that soils at a water content below saturation could be more efficiently leached and thereby reduce the amount of water required in removing (transporting) undesirable salt concentrations. Leaching by rainfall was considered to be more efficient because it occurs under unsaturated conditions. Unsaturated flow affects the manner in which pore water velocity and diffusion contribute to the mixing process in a porous media.

Fig. 1. Hydrology of shallow land burial.

Wilson and Luthin 1963 observed that rainfall leached salts from a diatomaceous earth soil more efficiently than larger quantities of water applied by ponding. Nielsen et al. 1965 observed similar results when leaching by ponding was compared to intermittent sprinkling. Miller et al. 1965 found a difference in the redistribution of chloride where water was applied by two different methods, continuous ponding and intermittent applications. They concluded that leaching was more efficient under unsaturated conditions and slow flow rates.

Brookhaven National Laboratory conducted laboratory experiments to investigate the influence of a wet-dry leaching cycle on the removal of radionuclides from solidified resin-cement composites (Arora and Dayal 1983). The composites were subjected to variable leaching cycles with deionized water. The activity leached as a function of the fractional liquid contact time (the time in each wet-dry cycle during which the waste composite was actually in contact with the influent solution) was compared to that leached for a comparable contact time for a modified International Atomic Energy Agency (IAEA) leach test (Hespe 1971), which represents a continuous saturated type leaching. Their data indicate that the wet-dry cycling results in a higher release (leaching) of radionuclides than does continuous leaching for the same contact time. The authors suggest that the waste form remains internally saturated and diffusional processes continue largely unabated during the dry periods, and the subsequent wetting of the waste form leaches the radionuclides, which concentrate at the surface during the dry cycle.

The above studies suggest that leaching and transport through unsaturated zones may be appreciable, and possibly significantly greater than that of a comparable saturated zone (on a column volume basis). Therefore, the ability to model leaching and transport of radionuclides in soils under unsaturated

conditions is important in assessing the performance of low-level waste disposal sites.

The field experiments described in this report were designed to provide data to develop a capability to predict chemical transport under unsaturated conditions in soils. The experiments were conducted to provide technical support to assist DOE and NRC in improving the understanding of estimated leaching and transport scenarios used to assess the performance of low-level waste disposal sites. The DOE National Low-Level Waste Management Program (NLLWMP) had invested several years investigating the hydraulic properties of the sandy silt backfill used for shallow land burial operations at Los Alamos and was interested in coupling chemical transport with the water migration studies. Another general purpose of the field experiment was to compare the NRC laboratory-derived parameter estimates with those derived from a joint DOE/NRC large-scale field experiment.

In the following sections, we will first explain the experimental approach and design of our field experiments, describe the materials and methods used in the study, and present only the tracer results pertaining to the DOE portion of the study (iodide, bromide, and lithium). The results will be discussed relative to application of several chemical transport models for future modeling. A detailed listing of tracer data is presented in the appendix for the use of modelers who will use this data base to field-validate their transport models for steady-state and unsteady-state flow conditions in the unsaturated zone.

II. EXPERIMENTAL APPROACH AND DESIGN

Traditional modeling efforts for radionuclide transport in the unsaturated zone lump the effects of several processes that relate solute

concentration to concentration in the solid phase in a distribution coefficient, K_d . This can best be illustrated in the form of a retardation factor in the one-dimensional convective - dispersive solute transport equation (van Genuchten and Alves 1982) written as

$$R \frac{\partial c}{\partial t} = D \frac{\partial^2 c}{\partial x^2} - v \frac{\partial c}{\partial x} - \mu c + \gamma, \quad (1)$$

where R is a retardation factor, c is the solute concentration in $\text{mg } \ell^{-1}$, t is time in days, D is an apparent dispersion coefficient in $\text{cm}^2 \text{ d}^{-1}$, x is distance in cm, v is the pore velocity in cm d^{-1} , μ is a first-order decay constant in d^{-1} , and γ is a zero-order production constant in $\text{mg } \ell^{-1} \text{ d}^{-1}$.

In order to apply Eq. 1 to the modeling of solute transport, the upper or inflow boundary condition needs to be specified. The source term can be used to specify the upper or inflow boundary condition to Eq. 1. For example, a single-pulse input of tracer (representing the concentration of the contaminant leached from waste material) can be represented as

$$c(0,t) = \begin{cases} C_0 & 0 < t < t_0, \\ 0 & t > t_0 \end{cases} \quad (2)$$

where t is time and C_0 is input or source term concentration. A square wave input is the sum of several pulse inputs of the form

$$c_i(0,t) = \begin{cases} C_{0i} & t_{i-1} < t < t_i, \\ 0 & t > t_i \end{cases} \quad (3)$$

where i is an index for the individual pulses. If sporadic inputs, such as infiltration following precipitation events are appropriate, then Eq. 3 could be used to approximate the source term. Notice (Eq. 1) that we can have steady-state water movement (θ and v constant), yet have leaching inputs that

vary in time and in concentration, or we can have unsteady water flow with constant or varying concentration of the leaching input.

The retardation factor, R , can be expressed as

$$R = 1 + \rho_b K_d / \theta, \quad (4)$$

where ρ_b is the bulk density in g cm^{-3} , K_d is the distribution coefficient in ml g^{-1} , and θ is the volumetric water content. The distribution coefficient K_d can, in turn, be expressed as

$$K_d = s/c, \quad (5)$$

where s is the concentration in the solid phase in ppm or mg kg^{-1} and c is the solute concentration in mg l^{-1} . The assumption in Eq. 5 is that the solid and solute concentrations are at equilibrium, which means that flow velocities are low enough so that equilibrium can be obtained.

Other complications are that the distribution coefficient is, in general, not independent of concentration and may vary with moisture content.

Moreover, for a particular constituent the value of K_d may be influenced by the presence of other dissolved species in sufficiently high concentrations. Other chemical processes that may affect solute transport and, thus, the apparent or effective retardation and K_d include precipitation and/or coprecipitation. For additional discussion of these processes and their influence on solute transport, see Arnold et al. 1982, Onishi et al. 1981, Nielsen et al. 1972, and Miller et al. 1965.

Physical processes, such as the relative amount of mobile and immobile water involved in unsaturated flow, can affect solute transport as can

nonhomogeneous flow processes and fracture flow (e.g., see Amoozegar-Fard et al. 1982 and Wierenga 1977). The dispersion coefficient, D , can be related to micro- and macro-processes through the effective dispersion coefficient as

$$D = D_0 \tau + \lambda v, \quad (6)$$

where D is the effective dispersion coefficient in $\text{cm}^2 \text{d}^{-1}$, D_0 is the diffusion coefficient in $\text{cm}^2 \text{d}^{-1}$, τ is a tortuosity factor, λ is the dispersivity in cm, and v is the pore velocity in cm d^{-1} . The dispersivity, λ , is usually assumed to be a constant but may vary with travel distance. The value of v in Eq. 6 is taken as the mean pore water velocity. In actual systems, v has a distribution about the mean value and dispersivity (and the other parameters) can differ for the longitudinal and the lateral directions (Simmons 1982). Under these conditions, appropriate modeling of solute transport can only be accomplished with two- or three-dimensional models.

Therefore, contaminant transport in the unsaturated zone is seen to be a complex process subject to the influence of many factors, including the effects of adsorptive, chemical, and flow processes. To determine parameter values and, thus, to apply the predictive equations (for example Eq. 1), it is necessary to determine the relative effects of adsorptive, chemical, and physical processes and to also determine when, and if, lumped parameters, such as K_d , R , d , μ , can be used with confidence.

Another significant problem affecting the applicability of solute transport equations and associated unsaturated flow equations is the extension of laboratory determined parameters to field conditions. It is very difficult or almost impossible to monitor flow and transport processes to determine parameter values under field conditions each time such information is needed

on flow and transport. Also, field conditions are difficult to replicate in order to derive parameter estimates. On the other hand, it may be that parameters determined under carefully controlled laboratory conditions, while replicated, may not apply under field conditions. Because laboratory methods are quick and inexpensive compared with field studies, there is a definite need for methods to bridge the gap between laboratory methods and in situ determination of unsaturated flow and transport parameters. In our field experiment, we used 3-m by 6-m caissons at the Los Alamos Experimental Engineered Test Facility (EETF), because experiments performed at this scale are more representative of large-scale field problems than those performed at the scale of small laboratory columns.

In the caisson experiments, we gathered two types of tracer migration data to be used for chemical transport models. In the simplest case, measurements of water and tracer inflow and outflow rates allow mass balance calculations and determination of when steady-state water content and flow conditions are reached. The other type of data is derived from soil solution samples from the tuff in the caisson at various depths to determine tracer movement and dispersion rates as functions of time and depth. Volumetric water content was also determined as a function of horizontal distance from the edge of the caisson using neutron moisture gauge techniques at six sampling ports located at incremental depth intervals of 75 cm. The sampling ports also allow for soil samples to be collected at the end of the experiment as a function of depth to be assayed for tracers, which are tightly adsorbed to the backfill matrix and exhibit minimal mobility. Although the removal of samples from the sampling ports with this approach will disturb steady-state conditions, the perturbations will be minimal because of the scale of the caisson experiments and should not affect the conditions of the experiment.

In the experimental design of our caisson studies, nonsorbing tracers (iodide and bromide) were used to determine dispersion coefficients for solute transport through soil, and sorbing tracers (cesium, strontium, and lithium) were used to determine retardation factors for a range of ion adsorption affinities. Flow conditions included a 6-day tracer pulse followed by a steady-state flow rate of about 4 cm d^{-1} ($200 \text{ cm}^3 \text{ min}^{-1}$) and a 6-day tracer pulse followed by unsteady-state flow; two steady-state and two unsteady-state pulses were performed in FY85. In the subsequent 70-day period following the single tracer input when only calcium chloride solution was added (no tracer), soil solution samples were collected daily at incremental depths and analyzed for tracer concentrations. In addition, inflow and outflow samples were collected and analyzed for tracer concentrations and outflow rates were measured. Neutron moisture data were also collected biweekly as functions of depth and horizontal distance within the caisson.

Since one of the purposes of our caisson experiment is to ultimately compare the NRC laboratory-derived parameter estimates with those derived from the caisson, this experimental design will provide unique data for evaluating the applicability of lumped coefficients in modeling solute transport under controlled conditions in the laboratory as well as in the large caissons. Thus, in our first pulse experiment, the caisson received a single-pulse input of bromide and iodide (conservative and nonadsorbing tracers) as well as lithium, strontium, and cesium under unsteady-state flow conditions. The bromide and iodide tracer data were used to determine values of D_0 , τ , and γ , where D_0 is the diffusion coefficient in $\text{cm}^2 \text{ d}^{-1}$, τ is a tortuosity factor, and γ is the dispersivity in cm. These values were used to estimate effective dispersion coefficients for subsequent analysis of the retardation factor (R)

and the distribution coefficient (K_d) for lithium and strontium using least-squares procedures (van Genuchten and Alves 1982).

This experimental design allowed us to gather information on a field-scale study to address two other issues: replication of parameter estimates and application of parameter estimates in predicting steady-state and unsteady-state solute transport. The results from these series of pulse inputs will allow better estimates of the sampling variability of D_0 , τ , and γ , thus, testing how well replicated tracer inputs result in the reproduction of data-based parameter estimates. In addition, because two types of flow conditions were studied, experimental data could address how rapidly (with respect to depth and time) does the unsteady response to a pulse input approach steady-state conditions. If the unsteady response to a pulse rapidly approaches steady-state conditions, then steady-state models may be applicable to predicting transport in unsteady conditions. The complexities of applying unsteady-state models is horrendous. In addition, do we obtain similar data-based parameter estimates under steady-state and unsteady flow conditions? Again, the issue has practical importance in determining when the application of a steady-state model is appropriate and in interpretation of parameter estimates from unsteady flow and transport data.

III. MATERIALS AND METHODS

The caisson (Caisson B) used in this field experiment is located in an experiment cluster (DePoorter 1981) at the EETF (the development of this site was sponsored by the DOE NLLWMP). The experiment cluster consists of six corrugated metal pipes (3 m in diameter and 6 m deep) placed around a central instrument and access caisson of the same size (Fig. 2). In five of the six interstitial positions, there are pipes 46 cm in diameter and 6 m long.

Access ports are situated at 75-cm depth intervals between the central caisson and each of the eleven surrounding caissons (the access ports are shown in detail in Fig. 3) and allow the study of chemical transport as a function of depth in the caisson. The inside of each caisson was coated with Teflon paint in an effort to minimize tracer adsorption on the surface of the caisson walls.

Caisson B was filled with crushed Bandelier Tuff, which consists mostly of silicic glass and has a grain-size distribution similar to that of a silty sand. At the bottom of the caisson, the drain was covered with a coarse screen. Approximately 0.25 m of gravel (approximately 2- to 3-cm diameter) was placed over the screen, and above this was placed approximately 0.25 m of coarse sand. The rest of the caisson was filled with crushed Bandelier Tuff, which was obtained locally.

Fig. 2. Experimental cluster at the EETF.

After crushing, the tuff was screened at a cement batch plant. All material passing through a 0.0125 m screen was mixed with known amounts of water to give optimum water content for compaction ensuring column uniformity and minimal subsidence. Water content as well as wet and dry densities were determined at several caisson depths during the filling operation by a Portaprobe Model MC-2 Percent-Test Nuclear Meter. The tuff was compacted by use of tampers (Mikasa Model MTR-80G) after each 0.2-m-thick layer was added. Dry densities varied with depth from 92.8 (at the 1.56-m depth) to 99.3% (at the 0.25-m depth) of what is considered optimum dry density for crushed tuff. Thus, maximum compaction was not obtained at the 1.56-m depth where the initial moisture content was too high for optimal compaction. Average void ratios, which were calculated from the dry density data, were 0.60, 0.67, 0.71, 0.67, 0.62, 0.64, and 0.64 for caisson depths of 0.25, 1.14, 1.56, 2.72, 3.59, 4.14, and 4.92 m, respectively.

Fig. 3. Access port details in empty caisson.

The geohydrology of crushed Bandelier Tuff has been extensively characterized (Abeelee et al. 1981). Conductivities ranging from $9.2 \times 10^{-7} \text{ m s}^{-1}$ at saturation to $9.9 \times 10^{-11} \text{ m s}^{-1}$ at 25% of saturation have been measured (Abeelee et al. 1981).

One of the disadvantages of performing field research under unsaturated flow conditions at the scale used in our caisson experiments was that the technology needed to do the experiment did not exist. Thus, we had to develop (1) an effective water-solute distribution system at the surface of the caisson, (2) a system for blending and storing the calcium chloride and tracer solutions, and (3) nonreactive devices to sample groundwater. Over two years' worth of efforts on those subjects are summarized in detail by Cokal et al. 1985.

The water-solute distribution system makes use of an assembly of four fluidic wafer switches (trade name, SCANIVALVES), each of which is fitted with 24 outlet ports fed sequentially from a single peristaltic pump, which is fitted with an electronic flow metering system (SIGNET Micro Flo-Sensor). The pump speed is adjusted as required to provide the necessary flow rate (about $200 \text{ cm}^3 \text{ min}^{-1}$). The four ganged 24-position wafer switches are capable of delivering solution to 96 distinct points upon the surface of the caisson, with four randomly chosen points simultaneously receiving solution flow at any given instant. The SCANIVALVES are advanced sequentially by a stepping motor drive, which, in turn, receives its power impulse from a battery-powered relaxation oscillator. The oscillator is set to deliver impulses at 12-second intervals. Thus, the entire set of outlets receives solution every 288 seconds, or approximately every five minutes.

Tests of delivery uniformity were conducted over a 2 1/2 month period between June and September 1984. In these tests, solution was collected from

each of the 96 outlets for one delivery period, each working day. The delivered volume was found to have day-to-day reproducibility (1 sigma probability level) within 5% of the mean delivered volume for the particular head tested.

A continuous application of 0.005 F calcium chloride solution (200 mg L^{-1} as Ca) containing target concentrations of tracers of 0.001 M, was required for our experiments. It was necessary to provide for continuous blending and storage of this solution as a separate unit operation. Thus, the assembled blending/storage system (Fig. 4) contains the following components:

1. Water storage tank, 5000 L capacity (1200 gallons), with flow meter and flow adjustment valve.
2. Concentrate storage tank, 200 L.
3. Blended matrix solution storage tank, 1600 L, with filter at outflow points.
4. Concentrate metering pumps (two) and blending chamber.
5. Interval sampler, timer controlled, for collection of a composite sample of the matrix solution delivered to the caisson distribution system.

The concentrated tracer solutions were made daily by adding 543 g KI, 217 g LiBr, and 1384 g CaCl_2 to 25 L of distilled water. After this concentrated solution was thoroughly mixed, it was diluted in the concentrate storage tank at a 1:100 ratio.

The materials of construction of the system were selected to preclude contamination of the matrix solution by corrosive products. The water and concentrate storage tanks are made of polyethylene, the matrix storage tank is made of an epoxy/fiberglass composite, and all plumbing fittings are either Teflon, PVC, or stainless steel and fittings are sealed with Teflon sealing

Fig. 4. Field caisson configuration.

tape. Since no brass or iron fittings are used, no corrodible materials contact the solution at any point. This entire system is insulated and equipped with heating tape to allow experiments to be performed throughout the subzero conditions experienced during the winter months.

The initial and current operations of this system did not fully implement the blending feedback control system. At present, the blending is operated by a 24-hour timer switch instead of the ion electrode and meter system initially

installed. The timer allows operations of the concentrate feed pump and a solenoid valve in the water feed line. The blended matrix solution is sampled manually at the point of introduction to the matrix storage tank. It has been found that this rudimentary control is actually sufficient for the present purpose because minor concentration fluctuations in the blended solution are attenuated by the presence of about 1000-1600 L of matrix solution in the storage tank. The inflow is sampled on a daily basis while the blending system is in operation, and the calcium analysis result is used to adjust the water or concentrate feed rates as necessary to maintain the desired calcium concentration in the matrix solution. The composite sample representing the actual matrix solution delivered to the caisson distribution system is also analyzed to provide information on the constancy of the delivered eluent.

During our tracer transport studies, it was also necessary to obtain a representative sample of the soil solution as a function of time and sampling depth. Ceramic cup samplers normally used by soil scientists and groundwater hydrologists were found to substantially adsorb cationic tracers (Cokal et al. 1985) and, thus, were replaced with Teflon porous cups. The Teflon porous cups were satisfactory from the adsorption standpoint, however, horizontal emplacement of these devices in the caisson system proved to be unexpectedly difficult. The difficulty arose from the fact that porous cup samplers function by maintaining a continuous moisture film between the porous cup and the surrounding soil (or tuff) backfill material. Teflon, being hydrophobic, and probably depending for its non-adsorptive properties upon this fact, does not readily support the continuous moisture film between the porous cup and backfill material, making collection of soil solution samples below saturation impossible. Further consideration of this point led to the conclusion that the porous Teflon cups (when emplaced according to the manufacturer's

recommended procedure) were actually functioning as inert supports for the silica flour backfill material. The silica flour was probably the actual porous matrix through which the sample was collected.

The problems encountered in reliably deploying the Teflon porous cup samplers led to a reexamination of the sampler installations. Because previous workers (Jackson et al. 1976) had reported on the successful use of porous hollow fiber bundles in soil column sampling work, a procedure was developed to prepare and emplace similar hollow fiber bundles in the backfill in the caissons. Hydrophilic fluoropolymer fibers of 20-cm length, with a porosity equivalent to about 100,000 molecular weight, were bundled and then cemented into a Nylon SWAGELOK fitting. The assembled fiber bundle was finally fitted with a suitable length of 1/4" polyethylene tubing and emplaced in the caisson borehole within a plug of slurried, -100 mesh tuff or tuff/silica flour mixture. The required water samples were then collected by drawing a suitable vacuum (about 22 cm) on the system. This system included a polyethylene centrifuge tube used for receiving the soil solution sample and for transport of the sample to the laboratory for analysis.

Samples of soil solution were collected using the hollow fiber samplers at several sampling depths in the caisson. One set of samples was collected at each of six access ports (at depths of 43, 119, 194, 271, 347, and 421 cm^{*}) with the idea of characterizing the relatively fast transport of the non-sorbing tracers such as iodide and bromide. A second set of samples was collected starting in February 1985 using a series of vertically-emplaced samplers located at depths of 43, 58, 73, 88, 103, and 118 cm. The latter set of samplers was to be used (1) to detect the migration of the slow-moving absorbing tracers (cesium and strontium), and (2) to determine differences in

* Corresponds to soil sampling depths of 36, 113, 188, 264, 339, and 415 cm respectively.

modeling chemical transport of tracers using a data set from a smaller depth increment system than the first set of samples which were collected throughout the entire depth of the caisson.

Several techniques were used to assay the soil solution samples for iodide, bromide, and lithium. Iodide assays were performed with an ion selective electrode. Bromide assays were usually performed using ion chromatography, except for the samples from the second unsteady-state pulse, which were assayed using neutron activation techniques. Lithium assays were performed by flame atomic adsorption spectrophotometry procedures.

Volumetric water content was determined using a Campbell Pacific Neutron Moisture Gauge (Model 503DR). Measurements were made within aluminum access tubes located at each of the six access ports throughout the caisson at distances of 0 to 130 cm from the caisson wall in 10-cm increments. Volumetric water content was also determined in a vertical access tube for depths ranging from 20 to 560 cm in increments of 20 cm.

IV. RESULTS AND DISCUSSION

Although the major emphasis is placed on presenting the tracer data in the succeeding sections, a tremendous amount of soil water data was also collected (see Appendix A). Volumetric water content at all sampling depths (43 to 421 cm) remained essentially constant throughout the first unsteady-state pulse experiment and the two following unsteady-state pulse experiments at values that normally ranged from 27 to 29%. Because our crushed tuff had a volumetric water content of 33% at saturation, this means that these pulse experiments were performed at 82 to 88% of saturation. The second unsteady-state pulse started out and remained in this moisture regime for 21 days, at which time no solution was added to the caisson; eleven days

after the solution flow was terminated, the tuff throughout the caisson was at approximately 50% saturation.

In addition to the volumetric water content data collected during these experiments, some soil moisture tension data were also collected in 1985 using well-established methods (Abeele 1984). Tension data are presented in Tables 1 and 2 for measurements collected at the 43-cm and 347-cm depths, respectively. Soil water tension values at both depths in the caisson generally ranged from 2 to 8 inches of water during the steady-state flow experiments, except for the drainage portion of the second unsteady-state pulse experiment between April 29 and July 11, 1985. During this time, the tension increased to values close to 30 inches of water at the 43-cm depth (Table 1) and about 18 inches of water at the 347-cm depth (Table 2), as would be expected.

The outflow data collected in Caisson B are presented in Table 3 for measurements made between July 1984 and October 1985. (Note that tracer concentrations in these samples are also presented in Appendix B.) Outflow rates ranging from 110 to 250 $\text{cm}^3 \text{min}^{-1}$ were observed during most of the steady-state flow experiments, values closer to our target flow rate of 200 $\text{cm}^3 \text{min}^{-1}$. During the portion of the second unsteady-state pulse when no solution was added to the caisson, outflow rates dropped to a minimum of 3 $\text{cm}^3 \text{min}^{-1}$ (Table 3).

Because our field experiments were conducted throughout the winter of 1984 and the summers of 1984 and 1985, we felt that soil temperatures inside and outside of the caisson should be monitored. Thus, temperature profiles were determined (DePoorter 1981) at various depths (Table 4) and horizontal locations (Table 5) within the caisson, and compared with similar temperature measurements collected outside of the caisson (Table 6). The data collected

show that our winterizing efforts resulted in soil temperatures in the caisson of only a few degrees in the months of January and February 1985, with temperatures of 18 to 20°C being more common in the summer of 1985 (Tables 4 and 5). Horizontal temperature gradients were generally minimal (Table 5), and temperature profiles outside of the caisson varied seasonally with similar vertical profiles collected within the caisson (compare Tables 4 and 6).

In the following sections, the tracer data from Caisson B are discussed in terms of the data collected from the samplers located at the caisson access ports and the vertical samplers located in the upper 118 cm of the caisson. This data base is presented in detail in Appendix B for future use by chemical transport modelers. In addition, our preliminary parameter estimates for the tracer dispersion coefficients and retardation factors are presented.

TABLE 1
MOISTURE TENSION DATA FOR CAISSON B
(43-cm depth)

Date	Tension (in-H ₂ O)	Date	Tension (in-H ₂ O)	Date	Tension (in-H ₂ O)
3/30/85	2.0	6/11/85	26.0	7/29/85	4.0
3/31/85	4.0	6/17/85	28.0	7/31/85	4.0
4/ 2/85	4.0	6/19/85	30.0	8/ 2/85	4.0
4/ 3/85	4.0	6/20/85	29.5	8/ 7/85	4.0
4/ 5/85	6.0	6/21/85	29.0	8/ 9/85	4.0
4/ 8/85	5.5	6/22/85	31.0	8/14/85	4.0
4/10/85	6.0	6/23/85	31.0	8/16/85	4.5
4/12/85	6.0	6/24/85	30.0	8/18/85	4.0
4/14/85	5.5	6/25/85	31.0	8/23/85	4.0
4/16/85	5.0	6/27/85	30.0	8/26/85	4.0
4/18/85	4.0	6/29/85	30.0	8/28/85	4.0
4/20/85	4.5	6/30/85	29.0	8/30/85	4.0
4/22/85	4.0	7/ 2/85	30.0	9/ 3/85	4.0
4/24/85	4.0	7/ 4/85	32.0	9/ 5/85	4.0
4/25/85	4.5	7/ 5/85	29.5	9/16/85	3.0
4/26/85	4.0	7/ 6/85	29.0	9/18/85	4.0
4/28/85	3.0	7/ 7/85	29.0	9/20/85	3.0
4/29/85	4.0	7/ 9/85	30.0	9/25/85	2.0
4/30/85	6.0	7/11/85	30.0	10/ 2/85	2.0
5/ 1/85	8.0	7/13/85	10.0	10/ 9/85	2.0
5/ 2/85	10.0	7/14/85	8.0		
5/ 6/85	12.0	7/15/85	6.0		
5/ 8/85	13.0	7/16/85	4.0		
5/10/85	12.0	7/17/85	5.0		
5/13/85	15.0	7/18/85	5.5		
5/15/85	18.0	7/19/85	4.0		
5/23/85	20.0	7/21/85	4.5		
5/28/85	20.0	7/23/85	5.0		
5/30/85	22.0	7/25/85	4.0		
6/ 4/85	24.0	7/27/85	4.5		

TABLE 2
MOISTURE TENSION DATA FOR CAISSON B
(347-cm depth)

Date	Tension (in-H ₂ O)	Date	Tension (in-H ₂ O)	Date	Tension (in-H ₂ O)
3/30/85	2.5	6/11/85	18.0	7/29/85	3.0
3/31/85	18.0	6/17/85	18.0	7/31/85	3.0
4/ 2/85	4.0	6/19/85	19.0	8/ 2/85	3.0
4/ 3/85	3.0	6/20/85	18.5	8/ 7/85	3.5
4/ 5/85	3.0	6/21/85	19.0	8/ 9/85	3.0
4/ 8/85	3.0	6/22/85	19.0	8/14/85	3.0
4/10/85	2.5	6/23/85	12.5	8/16/85	3.0
4/12/85	3.0	6/24/85	13.0	8/19/85	3.0
4/14/85	2.5	6/25/85	14.0	8/23/85	3.0
4/16/85	3.5	6/27/85	14.0	8/26/85	3.0
4/18/85	3.0	6/29/85	14.0	8/28/85	3.0
4/20/85	2.5	6/30/85	14.0	8/30/85	3.0
4/22/85	3.0	7/ 2/85	13.5	9/ 3/85	3.0
4/24/85	3.0	7/ 4/85	15.0	9/ 5/85	3.0
4/25/85	3.5	7/ 5/85	18.0	9/16/85	3.0
4/26/85	3.0	7/ 6/85	19.0	9/18/85	3.0
4/28/85	3.0	7/ 7/85	18.0	9/20/85	3.0
4/29/85	3.0	7/ 9/85	17.0	9/25/85	3.0
4/30/85	4.0	7/11/85	16.5	10/ 2/85	3.0
5/ 1/85	4.0	7/13/85	17.0	10/ 9/85	3.0
5/ 2/85	4.0	7/14/85	17.0		
5/ 6/85	5.0	7/15/85	17.0		
5/ 8/85	7.0	7/16/85	17.0		
5/10/85	8.0	7/17/85	17.0		
5/13/85	10.0	7/18/85	17.5		
5/15/85	10.0	7/19/85	17.0		
5/23/85	14.0	7/21/85	6.5		
5/28/85	13.0	7/23/85	4.0		
5/30/85	15.2	7/25/85	3.0		
6/ 4/85	16.0	7/27/85	3.5		

TABLE 3
CAISSON B OUTFLOW RATE (1984-1985)

Date	Days elapsed	Outflow (ml/min)	Date	Days elapsed	Outflow (ml/min)
7/ 1/84	-81	175	8/25	-26	191
8/ 1	-50	205	8/26	-25	182
8/ 2	-49	210	8/27	-24	176
8/ 3	-48	210	8/29	-22	174
8/ 4	-47	198	8/30	-21	170
8/ 5	-46	174	8/31	-20	177
8/ 6	-45	168	9/ 1	-19	176
8/ 7	-44	174	9/ 2	-18	230
8/ 8	-43	197	9/ 3	-17	210
8/ 9	-42	219	9/ 4	-16	168
8/10	-41	220	9/ 5	-15	160
8/11	-40	192	9/ 6	-14	146
8/12	-39	175	9/ 7	-13	145
8/13	-38	170	9/11	-9	156
8/14	-37	169	9/12	-8	155
8/15	-36	163	9/13	-7	152
8/16	-35	165	9/14	-6	146
8/17	-34	174	9/17	-3	172
8/18	-33	178	9/19	-1	172
8/19	-32	176	9/20	0	171
8/20	-31	172	9/21	1	173
8/21	-30	172	9/24	4	140
8/22	-29	182	9/25	5	135
8/23	-28	202	9/26	6	126
8/24	-27	200	9/27	7	110

Caisson-B Outflow Rate (Cont.)

Date	Days elapsed	Outflow (ml/min)	Date	Days elapsed	Outflow (ml/min)
9/28	8	100	11/ 8	49	152
10/ 1	11	80	11/12	53	170
10/ 2	12	70	11/14	55	172
10/ 3	13	70	11/15	56	170
10/ 4	14	70	11/19	60	184
10/ 5	15	70	11/21	62	176
10/ 9	19	135	11/23	64	166
10/10	20	118	11/26	67	192
10/11	21	100	11/28	69	196
10/12	22	92	11/29	70	194
10/15	25	80	12/ 3	74	178
10/17	27	120	12/ 5	76	190
10/18	28	132	12/ 7	78	200
10/19	29	144	12/ 8	79	195
10/22	32	176	12/ 9	80	200
10/23	33	164	12/10	81	196
10/24	34	156	12/11	82	195
10/25	35	150	12/12	83	186
10/26	36	152	12/13	84	184
10/29	39	114	12/14	85	184
10/30	40	120	12/17	88	186
10/31	41	158	12/18	89	186
11/ 2	43	134	12/19	90	196
11/ 5	46	170	12/20	91	224
11/ 7	48	152	12/21	92	210

Caisson-B Outflow Rate (Cont.)

Date	Days elapsed	Outflow (ml/min)	Date	Days elapsed	Outflow (ml/min)
12/22	93	204	2/ 1	134	210
12/24	95	204	2/ 6	139	210
12/26	97	210	2/ 8	141	84
12/27	98	208	2/ 9	142	88
12/28	99	198	2/10	143	140
12/29	100	200	2/11	144	194
12/31	102	174	2/12	145	195
1/ 2/85	104	216	2/13	146	188
1/ 3	105	208	2/14	147	196
1/ 4	106	198	2/15	148	200
1/ 5	107	192	2/16	149	200
1/ 7	109	205	2/18	151	172
1/ 8	110	200	2/19	152	186
1/ 9	111	180	2/20	153	186
1/10	112	186	2/21	154	188
1/11	113	212	2/22	155	196
1/12	114	214	2/23	156	204
1/14	116	192	2/25	158	215
1/16	118	190	2/26	159	208
1/18	120	202	2/27	160	200
1/21	123	210	2/28	161	205
1/23	125	190	3/ 1	162	208
1/25	127	204	3/ 2	163	200
1/28	130	190	3/ 4	165	206
1/30	132	170	3/ 5	166	214

Caisson-B Outflow Rate (Cont.)

Date	Days elapsed	Outflow (ml/min)	Date	Days elapsed	Outflow (ml/min)
3/ 6	167	216	5/ 6	227	110
3/ 7	158	210	5/ 7	228	80
3/ 8	169	200	5/ 8	229	76
3/11	172	200	5/10	231	70
3/13	173	224	5/13	234	36
3/15	175	214	5/15	236	36
3/18	178	212	5/17	238	34
3/22	182	250	5/20	241	28
3/25	185	250	5/21	242	25
4/17	208	210	5/22	243	22
4/18	209	200	5/23	244	20
4/19	210	186	5/24	245	22
4/20	211	215	5/28	249	20
4/21	212	240	5/30	251	17.5
4/22	213	236	6/ 4	256	14
4/23	214	240	6/12	264	8.0
4/24	215	230	6/17	269	7.5
4/25	216	192	6/19	271	7.0
4/26	217	219	6/20	272	7.5
4/28	219	214	6/21	273	7.5
4/29	220	224	6/22	274	7.5
4/30	221	230	6/23	275	8.0
5/ 1	222	206	6/25	277	6.0
5/ 2	223	180	6/26	278	6.0
5/ 3	224	140	6/28	280	4.0

Caisson-B Outflow Rate (Cont.)

Date	Days elapsed	Outflow (ml/min)	Date	Days elapsed	Outflow (ml/min)
6/29	281	5.6	7/29	311	200
6/30	282	6.4	7/31	313	197
7/ 1	283	5.0	8/ 1	314	208
7/ 2	284	5.0	8/ 4	317	174
7/ 3	285	4.0	8/ 5	318	206
7/ 6	288	6.0	8/ 7	320	210
7/ 7	289	4.0	8/ 9	322	204
7/ 8	290	4.0	8/12	325	184
7/ 9	291	4.0	8/14	327	160
7/10	292	4.0	8/16	329	198
7/11	293	4.1	8/19	332	204
7/12	294	4.0	8/21	334	216
7/13	295	4.0	8/23	336	218
7/14	296	4.0	8/26	339	214
7/15	297	3.5	8/28	341	214
7/16	298	3.0	8/30	343	206
7/17	299	3.0	9/ 4	348	200
7/18	300	3.5	9/11	355	210
7/20	302	4.0	9/16	360	196
7/21	303	12	9/18	362	206
7/22	304	30	9/20	364	214
7/23	305	85	9/30	374	200
7/24	306	158	10/ 2	376	184
7/26	308	180	10/ 3	377	184
7/28	310	196	10/ 4	378	200

TABLE 4
VERTICAL TEMPERATURE PROFILES
INSIDE CAISSON B

(Thermistors located 30 cm from edge of caisson walls.)

Date	Time	Temperature (°C)					
		Air (12)	Surface (1)	0.43m (2)	1.19m (3)	1.94m (4)	2.71m (5)
11/15/84	1445	7.0	7.0	8.3	9.3	10.3	11.0
11/16/84	0715	5.0	5.3	8.1	9.0	10.0	10.6
11/16/84	0900	8.8	6.2	8.5	9.0	10.0	11.5
11/17/84	0700	6.0	6.7	8.0	9.0	10.0	10.5
11/17/84	1900	6.8	7.0	8.0	8.8	9.8	10.3
11/18/84	0745	6.0	6.2	7.7	8.2	9.2	10.0
11/18/84	2022	6.7	7.0	7.2	8.0	9.0	7.4
11/19/84	0900	5.0	5.2	7.0	7.8	8.7	9.2
11/20/84	0700	3.5	4.0	7.2	8.0	8.8	9.5
11/21/84	0900	6.3	6.0	7.5	8.1	9.0	9.8
11/22/84	0645	5.0	5.3	7.6	8.3	9.1	9.9
11/23/84	0650	6.0	5.0	8.0	8.7	9.5	10.1
11/24/84	0730	6.5	6.9	8.3	9.0	9.9	10.3
11/26/84	0800	1.0	0.6	7.0	8.2	9.1	10.0
11/27/84	1400	5.3	5.0	6.0	7.8	8.8	9.5
11/28/84	0900	3.5	6.1	6.0	7.1	8.2	9.0
11/29/84	0830	8.8	5.0	6.0	7.1	8.2	9.0
11/30/84	0845	4.2	4.4	6.0	6.8	8.0	8.9
12/ 3/84	0800	5.0	5.5	5.9	6.0	7.2	8.0
12/ 4/84	0800	4.8	6.0	5.9	5.9	6.7	7.4
12/ 5/84	0800	5.2	5.7	5.2	5.3	5.6	7.0
12/ 6/84	1130	7.0	6.2	5.8	5.7	6.3	7.1
12/ 7/84	0900	7.9	6.0	6.0	5.7	6.1	7.0
12/ 8/84	0900	7.5	5.9	5.9	5.8	6.0	6.9
12/ 9/84	1030	7.5	6.9	6.5	6.6	6.4	7.2
12/10/84	0900	5.7	5.0	6.5	6.3	7.0	7.3
12/11/84	0900	5.8	6.0	6.7	6.8	7.0	7.6
12/12/84	0830	4.8	5.0	6.2	6.7	7.0	7.5
12/13/84	0945	4.3	4.9	6.0	6.2	6.8	7.3
12/17/84	0930	5.5	2.2	4.0	4.6	5.5	6.0

Vertical Temperature Profiles Inside Caisson B (Cont.)

Date	Time	Temperature (°C) ¹					
		Air (12)	Surface (1)	0.43m (2)	1.19m (3)	1.94m (4)	2.71m (5)
12/19/84	0900	3.0	3.0	4.0	4.6	5.5	6.0
12/21/84	0900	0.7	1.0	4.0	4.2	5.2	6.0
12/26/84	0900	3.0	2.5	3.1	3.9	5.0	5.5
12/28/84	0900	3.8	2.1	3.9	4.2	5.1	5.6
12/31/84	1000	3.9	3.7	4.9	5.0	5.6	6.0
1/ 3/85	0900	0.0	0.0	3.2	3.0	4.0	5.6
1/ 5/85	0900	1.6	1.3	2.9	3.6	4.6	5.1
1/ 7/85	1000	2.0	2.0	3.3	3.9	4.8	5.3
1/ 9/85	0930	2.6	2.8	3.6	4.1	4.9	5.3
1/11/85	1100	2.9	2.5	3.7	4.2	5.0	5.6
1/14/85	0900	2.8	3.0	3.2	3.9	4.8	5.2
1/16/85	0830	3.5	4.1	4.0	4.0	4.8	5.2
1/18/85	0830	3.7	4.4	4.1	4.0	4.6	5.1
1/21/85	0840	4.1	5.0	5.1	5.0	5.1	5.8
1/23/85	0845	5.8	6.0	5.0	4.9	5.0	5.3
1/25/85	0900	7.0	5.7	5.4	5.0	5.0	5.4
1/28/85	0950	9.8	6.8	6.0	5.5	5.5	6.0
1/30/85	0835	4.1	5.0	5.0	4.3	4.4	5.0
2/ 1/85	0900	0.0	0.1	3.3	3.5	4.0	4.4
2/ 8/85	0900	1.1	1.6	1.8	1.8	2.2	3.0
2/11/85	0900	0.9	1.0	3.0	2.9	3.1	3.9
2/14/85	0830	2.6	3.0	4.6	4.0	4.2	4.7
2/18/85	0900	6.0	6.0	5.8	5.0	5.0	5.1
2/20/85	0845	5.5	5.6	6.0	5.3	5.2	5.5
2/22/85	0845	6.1	6.3	6.1	6.0	5.6	6.8
2/25/85	0845	4.0	4.0	5.0	4.7	4.8	5.0
2/27/85	0835	4.9	5.0	5.2	4.9	4.9	5.0
3/ 8/85	0830	5.5	5.8	5.6	5.3	5.2	5.2
3/12/85		4.5	5.0	5.1	4.8	4.7	5.0
3/19/85		5.6	5.5	5.6	5.0	4.9	5.1

¹ A value of 0.0 may represent a temperature below 0°C.

Vertical Temperature Profiles Inside Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$)					
		Air (12)	Surface (1)	0.43m (2)	1.19m (3)	1.94m (4)	2.71m (5)
3/25/85		6.0	5.8	6.0	5.3	5.4	5.3
3/27/85				6.3	6.0	6.9	6.2
3/29/85		5.2	6.0	7.1	6.9	6.5	6.2
4/ 1/85		4.0	4.0	5.0	4.9	5.0	5.0
4/ 6/85		7.0	6.7	7.6	7.0	6.3	6.1
4/ 7/85		8.5	8.0	8.2	7.5	7.0	6.8
4/ 8/85		7.0	7.5	8.3	7.5	7.0	6.9
4/12/85		7.5	7.6	8.4	7.7	7.1	7.2
4/15/85		12.5	11.5	11.0	10.0	8.7	8.0
4/18/85		11.9	11.8	11.1	11.0	10.0	9.1
4/20/85			7.9	8.3	11.7	10.6	9.7
4/21/85		10.0	10.0	10.5	10.0	9.5	9.0
4/22/85		8.0	8.0	9.9	9.8	9.0	8.7
4/24/85		8.1	8.0	9.0	9.0	8.9	8.2
4/29/85		7.0	7.1	8.8	8.4	8.3	8.1
5/ 2/85		9.0	9.0	10.0	9.2	9.0	8.9
5/ 6/85		11.5	11.5	11.5	10.5	9.5	9.0
5/ 8/85		12.1	12.0	12.8	11.6	10.8	10.2
5/10/85		12.3	12.0	13.0	11.8	10.9	10.2
5/15/85		8.5	8.5	10.5	10.0	9.8	9.4
5/17/85		11.2	11.4	11.9	11.0	10.6	10.1
5/21/85		9.7	9.4	10.5	10.0	9.9	9.5
5/22/85		11.0	11.0	10.5	10.0	9.9	9.5
5/28/85		11.5	11.5	12.6	11.4	10.8	10.1
5/30/85		13.5	13.0	14.5	13.0	12.0	11.0
6/ 4/85		12.0	12.5	14.0	12.9	11.9	11.1
6/ 6/85		13.0	12.5	12.0	11.5	10.9	10.2
6/10/85		15.5	15.5	15.5	14.0	12.9	12.0
6/11/85		14.0	14.5	16.0	14.5	13.1	12.4
6/12/85		16.0	15.0	14.9	13.8	12.5	12.0

Vertical Temperature Profiles Inside Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$)					
		Air (12)	Surface (1)	0.43m (2)	1.19m (3)	1.94m (4)	2.71m (5)
6/14/85		12.2	16.2	15.5	14.2	13.1	12.2
6/17/85		16.5	16.0	17.0	15.2	13.9	13.0
6/19/85		15.2	15.0	16.0	14.9	13.7	13.0
6/21/85		16.5	16.5	17.0	15.5	14.5	13.5
6/24/85		17.0	17.0	17.8	16.3	15.0	14.0
6/26/85		17.0	16.5	17.5	16.0	15.0	14.0
6/29/85		16.1	15.9	17.2	16.0	15.0	14.1
7/ 2/85		16.9	17.0	18.2	17.0	16.0	15.0
7/ 4/85		20.0	18.5	18.0	17.0	16.0	15.0
7/ 6/85		17.6	17.8	19.3	18.0	17.0	15.8
7/ 8/85		19.0	18.9	20.0	18.6	17.2	16.1
7/10/85		18.5	18.0	20.0	18.8	17.5	16.5
7/12/85		19.8	19.9	20.3	19.1	18.0	16.9
7/13/85		22.5	22.0	21.0	19.0	18.0	16.5
7/16/85		19.5	19.0	20.5	19.5	18.0	16.9
7/18/85		19.0	19.5	20.0	19.5	18.5	16.5
7/20/85		21.0	20.5	20.0	19.0	17.8	16.5
7/23/85		19.5	19.0	20.5	19.0	18.0	17.0
7/25/85		18.1	17.8	19.5	18.8	17.8	17.0
7/27/85		21.0	20.2	19.5	18.8	18.0	17.0
7/29/85		18.8	18.8	18.7	18.2	17.8	17.0
7/31/85		17.2	17.1	18.7	18.0	17.4	17.0
8/ 2/85		17.5	17.9	19.4	18.6	18.0	17.4
8/ 7/85		18.1	18.0	19.8	18.9	18.1	17.6
8/ 9/85		18.1	18.2	20.1	19.0	18.5	17.9
8/12/85		19.4	18.5	18.6	18.0	18.5	17.0
8/14/85		19.7	18.8	18.6	18.0	17.5	17.0
8/16/85		19.3	18.8	19.0	18.4	18.0	17.5
8/19/85		17.5	17.2	18.9	18.0	17.8	17.2
8/21/85		17.6	18.0	19.2	18.4	18.0	17.5

Vertical Temperature Profiles Inside Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$)					
		Air (12)	Surface (1)	0.43m (2)	1.19m (3)	1.94m (4)	2.71m (5)
8/23/85		20.0	19.5	20.0	18.8	18.2	17.7
8/26/85		18.9	18.7	20.0	19.0	18.2	18.0
8/30/85		18.5	18.5	19.5	19.0	18.2	17.8
9/ 3/85		18.0	17.1	20.2	19.1	18.6	18.0
9/ 6/85		18.5	17.5	20.0	19.2	18.5	18.0
9/13/85		18.5	17.0	20.0	19.0	18.3	17.8
9/16/85		15.5	15.0	18.0	17.5	17.0	17.0
9/18/85		16.1	16.0	16.8	16.2	16.2	16.1
9/20/85		13.8	14.0	16.1	16.0	16.1	16.1

TABLE 5
HORIZONTAL TEMPERATURE PROFILES
ACROSS CAISSON B

Date	Time	Temperature (°C)			
		0.43m (9) ¹	0.43m (7)	0.43m (6)	0.43m (2)
11/15/84	1445	10.2	7.8	7.5	8.3
11/16/84	0715	9.3	7.5	7.3	8.1
11/16/84	0900	9.9	8.0	8.0	8.5
11/17/84	0700	9.4	7.6	7.6	8.0
11/17/84	1900	9.2	7.5	7.6	8.0
11/18/84	0745	9.0	7.4	7.6	7.7
11/18/84	2022	8.5	7.0	7.4	7.2
11/19/84	0900	8.0	6.9	7.1	7.0
11/20/84	0700	7.9	6.8	7.3	7.2
11/21/84	0900	7.9	6.6	7.1	7.5
11/22/84	0645	7.5	6.3	7.1	7.6
11/23/84	0650	7.3	6.4	7.0	8.0
11/24/84	0730	7.2	6.7	7.3	8.3
11/26/84	0800	7.0	5.8	6.8	7.0
11/27/84	1400	6.4	4.9	5.7	6.0
11/28/84	0900	6.0	4.3	5.2	6.0
11/29/84	0830	5.5	4.3	5.4	6.0
11/30/84	0845	5.1	4.6	5.6	6.0
12 /3/84	0800	5.5	6.4	7.0	5.9
12/ 4/84	0800	4.5	6.0	6.5	5.9
12/ 5/84	0800	4.6	6.0	6.8	5.2
12/ 6/84	1130	4.8	6.5	7.0	5.8
12/ 7/84	0900	4.7	7.0	7.3	6.0
12/ 8/84	0900	4.8	6.7	7.0	5.9
12/ 9/84	1030	5.0	6.9	7.8	6.5
12/10/84	0900	5.0	6.8	7.2	6.5
12/11/84	0900	5.0	6.5	7.0	6.7
12/12/84	0830	5.2	6.5	7.0	6.2
12/13/84	0945	5.3	6.1	6.7	6.0
12/17/84	0930	4.2	4.6	5.1	4.0

¹ Data collected at stations 9, 7, 6, and 2, which are located 0.70 m outside of the caisson, and 2.70, 1.5, and 0.3 m from the caisson wall, respectively.

Horizontal Temperature Profiles Across Caisson B (Cont.)

Date	Time	Temperature (°C)			
		0.43m (9) ¹	0.43m (7)	0.43m (6)	0.43m (2)
12/19/84	0900	4.0	4.4	5.0	4.0
12/21/84	0900	3.6	4.0	4.9	4.0
12/26/84	0900	3.1	3.5	4.0	3.1
12/28/84	0900	3.4	3.2	4.5	3.9
12/31/84	1000	4.0	5.0	5.5	4.9
1/ 3/85	0900	3.0	3.2	3.9	3.2
1/ 5/85	0900	2.9	3.0	3.3	2.9
1/ 7/85	1000	2.6	3.1	3.4	3.3
1/ 9/85	0930	2.5	3.1	3.5	3.6
1/11/85	1100	3.7	3.3	4.0	3.7
1/14/85	0900	2.5	3.8	4.0	3.2
1/16/85	0830	2.3	4.5	5.1	4.0
1/18/85	0830	2.2	5.0	5.6	4.1
1/21/85	0840	3.0	6.0	6.9	5.1
1/23/85	0845	2.5	5.9	6.6	5.0
1/25/85	0900	2.6	6.1	7.0	5.4
1/28/85	0950	3.0	6.9	7.5	6.0
1/30/85	0835	3.0	7.6	7.2	5.0
2/ 1/85	0900	2.9	5.8	6.9	3.3
2/ 8/85	0900	2.0	3.6	4.2	1.8
2/11/85	0900	1.9	4.2	5.5	3.0
2/14/85	0830	1.7	4.8	5.8	4.6
2/18/85	0900	2.7	5.8	6.6	5.8
2/20/85	0845	3.1	6.0	7.0	6.0
2/22/85	0845	3.6	6.2	7.1	6.1
2/25/85	0845	3.0	6.0	7.0	5.0
2/27/85	0835	3.1	6.2	7.2	5.2
3/ 8/85	0830	5.5	6.4	7.0	5.6
3/12/85		8.0	7.2	7.2	7.1
3/19/85		4.1	6.4	7.1	5.6

Horizontal Temperature Profiles Across Caisson B

Date	Time	Temperature ($^{\circ}\text{C}$)			
		0.43m (9) ¹	0.43m (7)	0.43m (6)	0.43m (2)
3/25/85		7.0	7.0	7.0	6.0
3/27/85		7.8	7.1	7.1	6.9
3/29/85		8.0	7.2	7.2	7.1
4/ 1/85		6.0	6.2	7.0	5.0
4/ 6/85		8.3	8.1	8.1	7.6
4/ 7/85		9.0	9.0	8.9	8.2
4/ 8/85		9.7	9.0	9.0	8.3
4/12/85		9.5	9.2	9.1	8.4
4/15/85		11.5	11.5	11.7	11.0
4/18/85		13.0	12.2	12.8	11.1
4/20/85		13.0	12.0	12.7	11.7
4/21/85		12.0	11.5	11.5	10.5
4/22/85		11.8	11.0	11.2	9.9
4/24/85		11.0	10.1	10.4	9.0
4/29/85		10.4	9.7	10.0	8.8
5/ 2/85		11.0	10.3	10.2	10.0
5/ 6/85		13.0	11.5	11.0	11.5
5/ 8/85		14.5	11.9	12.0	12.8
5/10/85		15.5	13.0	12.0	13.0
5/15/85		14.4	12.0	11.0	10.5
5/17/85		15.0	12.6	11.3	11.9
5/21/85		13.6	12.0	11.2	10.5
5/22/85		13.0	11.8	11.1	10.5
5/28/85		14.3	12.9	12.0	12.6
5/30/85		16.0	14.0	13.5	14.5
6/ 4/85		17.1	14.2	13.1	14.0
6/ 6/85		16.0	13.5	12.5	12.0
6/10/85		18.0	16.0	14.7	15.5
6/11/85		19.0	16.3	15.2	16.0
6/12/85		18.3	15.5	14.5	14.9

Horizontal Temperature Profiles Across Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$)			
		0.43m (9) ¹	0.43m (7)	0.43m (6)	0.43m (2)
6/14/85		13.6	16.0	15.0	15.5
6/17/85		19.6	17.0	16.0	17.0
6/19/85		19.0	16.5	15.8	16.0
6/21/85		18.5	17.0	16.0	17.0
6/24/85		19.6	17.5	16.9	17.8
6/26/85		18.5	17.5	16.5	17.5
6/29/85		19.5	17.2	16.8	17.2
7/ 2/85		20.8	18.0	17.3	18.2
7/ 4/85		21.0	18.0	17.5	18.0
7/ 6/85		22.0	19.0	18.0	19.3
7/ 8/85		23.0	19.8	18.6	20.0
7/10/85		23.0	20.0	18.8	20.0
7/12/85		23.8	20.8	20.0	20.3
7/13/85		24.0	21.0	20.7	21.0
7/16/85		24.0	21.5	21.5	20.5
7/18/85		25.0	21.5	21.0	20.0
7/20/85		22.5	21.0	21.0	20.0
7/23/85		22.0	21.0	21.0	20.5
7/25/85		21.8	20.4	20.8	19.5
7/27/85		21.5	20.0	20.5	19.5
7/29/85		21.4	19.9	20.0	18.7
7/31/85		20.9	19.8	19.5	18.7
8/ 2/85		21.0	19.8	20.0	19.4
8/ 7/85		21.0	20.0	20.0	19.8
8/ 9/85		21.5	20.5	20.5	20.1
8/12/85		21.0	19.5	20.0	18.6
8/14/85		20.9	19.6	19.9	18.6
8/16/85		21.3	20.0	19.9	19.0
8/19/85		22.0	19.9	20.0	18.9
8/21/85		22.0	20.0	20.1	19.2

Horizontal Temperature Profiles Across Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$)			
		0.43m (9) ¹	0.43m (7)	0.43m (6)	0.43m (2)
8/23/85		22.0	20.5	20.5	20.0
8/26/85		22.5	21.0	21.0	20.0
8/30/85		22.2	20.7	20.5	19.5
9/ 3/85		23.3	21.2	21.0	20.0
9/ 6/85		23.5	21.0	21.2	20.0
9/13/85		23.0	20.9	20.2	20.0
9/16/85		21.0	19.0	18.5	18.0
9/18/85		19.9	18.0	17.8	16.8
9/20/85		19.0	17.2	17.2	16.1

TABLE 6
VERTICAL TEMPERATURE PROFILES
OUTSIDE CAISSON B

(Thermistors located 1.0 m from edge of caisson wall.)

Date	Time	Temperature (°C)			
		Surface (8)	0.43m (9)	1.0m (10)	2.0m (11)
11/15/84	1445	10.7	10.2	11.3	13.5
11/16/84	0715	3.6	9.3	11.0	13.4
11/16/84	0900	4.0	9.9	11.2	13.7
11/17/84	0700	5.0	9.4	11.2	13.8
11/17/84	1900	4.5	9.2	11.3	13.8
11/18/84	0745	2.5	9.0	11.0	13.5
11/18/84	2022	4.7	8.5	11.0	13.5
11/19/84	0900	2.0	8.0	10.8	13.1
11/20/84	0700	1.8	7.9	10.6	13.2
11/21/84	0900	1.1	7.9	10.4	13.2
11/22/84	0645	2.0	7.5	10.3	13.0
11/23/84	0650	2.0	7.3	10.2	13.0
11/24/84	0730	3.2	7.2	10.1	13.0
11/26/84	0800	0.2	7.0	10.0	12.9
11/27/84	1400	0.2	6.4	9.9	13.0
11/28/84	0900	0.1	6.0	9.5	12.8
11/29/84	0830	0.1	5.5	9.2	12.6
11/30/84	0845	0.1	5.1	9.0	12.4
12/ 3/84	0800	0.9	5.5	8.6	12.3
12/ 4/84	0800	0.1	4.5	8.0	11.9
12/ 5/84	0800	0.2	4.6	8.0	11.8
12/ 6/84	1130	0.1	4.8	8.0	11.8
12/ 7/84	0900	0.1	4.7	7.9	11.8
12/ 8/84	0900	0.1	4.8	8.0	11.8
12/ 9/84	1030	2.5	5.0	7.6	11.7
12/10/84	0900	1.0	5.0	7.5	---
12/11/84	0900	3.0	5.0	7.5	11.2
12/12/84	0830	2.0	5.2	7.5	11.1
12/13/84	0945	1.2	5.3	7.5	11.1
12/17/84	0930	0.2	4.2	7.2	10.9

Vertical Temperature Profiles Outside Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$) ¹			
		Surface (8)	0.43m (9)	1.0m (10)	2.0m (11)
12/19/84	0900	0.2	4.0	7.0	10.6
12/21/84	0900	0.0	3.6	6.7	10.2
12/26/84	0900	0.0	3.1	6.2	10.1
12/28/84	0900	0.0	3.4	6.0	10.4
12/31/84	1000	0.9	4.0	6.0	9.7
1/ 3/85	0900	0.0	3.0	5.2	7.6
1/ 5/85	0900	0.0	2.9	5.3	6.5
1/ 7/85	1000	0.0	2.6	5.1	8.0
1/ 9/85	0930	0.0	2.5	5.0	8.0
1/11/85	1100	0.0	3.7	5.2	6.3
1/14/85	0900	0.0	2.5	5.0	8.0
1/16/85	0830	0.0	2.3	5.0	7.9
1/18/85	0830	0.0	2.2	4.8	7.4
1/21/85	0840	0.0	3.0	5.1	8.0
1/23/85	0845	0.0	2.5	4.9	7.3
1/25/85	0900	0.0	2.6	4.6	7.6
1/28/85	0950	0.9	3.0	5.0	7.6
1/30/85	0835	0.0	3.0	4.5	7.2
2/ 1/85	0900	0.0	2.9	4.8	7.3
2/ 8/85	0900	0.0	2.0	4.2	7.1
2/11/85	0900	0.0	1.9	4.0	7.1
2/14/85	0830	0.0	1.7	3.9	6.9
2/18/85	0900	1.3	2.7	4.0	6.9
2/20/85	0845	2.0	3.1	4.0	6.8
2/22/85	0845	2.3	3.6	4.0	6.5
2/25/85	0845	0.1	3.0	4.1	6.4
2/27/85	0835	1.0	3.1	4.1	0.0
3/ 8/85	0830	3.0	5.5	5.5	0.0
3/12/85		0.1	3.0	4.0	0.0
3/19/85		0.2	4.1	5.0	0.0

¹ A value of 0.0 may represent a temperature below 0 $^{\circ}\text{C}$.

Vertical Temperature Profiles Outside Caisson B (Cont.)

Date	Time	Temperature (°C)			
		Surface (8)	0.43m (9)	1.0m (10)	2.0m (11)
3/25/85		6.9	7.0	6.2	7.0
3/27/85		7.9	7.8	6.5	7.0
3/29/85		7.0	8.0	7.0	6.9
4/ 1/85		1.2	6.0	7.0	7.0
4/ 6/85		7.7	8.3	7.0	7.2
4/ 7/85		11.0	9.0	7.5	7.3
4/ 8/85		9.6	9.7	7.8	7.3
4/12/85		9.6	9.5	7.7	7.3
4/15/85		12.5	11.5	9.5	8.0
4/18/85		13.8	13.0	10.1	8.1
4/20/85		8.2	13.0	10.2	8.1
4/21/85		13.0	12.0	11.0	9.0
4/22/85		7.9	11.8	10.8	8.8
4/24/85		7.1	11.0	10.6	9.0
4/29/85		5.9	10.4	10.6	9.2
5/ 2/85		8.4	11.0	10.3	9.8
5/ 6/85		14.0	13.0	11.0	9.5
5/ 8/85		16.1	14.5	11.9	10.1
5/10/85		15.4	15.5	12.1	10.0
5/15/85		11.0	14.4	13.0	10.6
5/17/85		16.0	15.0	13.0	10.1
5/21/85		9.0	13.6	13.2	11.2
5/22/85		11.0	13.0	13.0	11.5
5/28/85		16.0	14.3	12.4	11.2
5/30/85		20.0	16.0	13.0	11.5
6/ 4/85		17.2	17.1	14.2	11.5
6/ 6/85		14.0	16.0	14.2	12.0
6/10/85		19.0	18.0	15.0	12.5
6/11/85		18.0	19.0	15.7	13.0
6/12/85		18.5	18.3	15.5	12.5

Vertical Temperature Profiles Outside Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}$ C)			
		Surface (8)	0.43m (9)	1.0m (10)	2.0m (11)
6/14/85		19.9	13.6	15.9	12.5
6/17/85		20.5	19.6	16.2	13.0
6/19/85		15.0	19.0	16.5	12.9
6/21/85		19.0	18.5	16.5	13.0
6/24/85		18.9	19.6	16.8	13.2
6/26/85		19.0	18.5	16.5	13.5
6/29/85		19.5	19.5	17.0	13.5
7/ 2/85		20.8	20.8	17.8	14.0
7/ 4/85		23.0	21.0	18.0	14.0
7/ 6/85		23.0	22.0	18.5	14.6
7/ 8/85		24.2	23.0	19.0	15.0
7/10/85		24.0	23.0	19.2	15.0
7/12/85		24.2	23.8	20.0	15.3
7/13/85		27.0	24.0	20.0	15.2
7/16/85		19.0	24.0	21.0	16.0
7/18/85		20.0	25.0	22.0	16.5
7/20/85		21.0	22.5	20.2	16.0
7/23/85		20.0	22.0	20.5	16.5
7/25/85		19.3	21.8	20.3	16.9
7/27/85		23.0	21.5	20.5	17.0
7/29/85		21.0	21.4	20.4	17.2
7/31/85		17.0	20.9	20.2	17.0
8/ 2/85		18.0	21.0	20.0	17.2
8/ 7/85		18.8	21.0	19.8	17.5
8/ 9/85		18.0	21.5	19.9	17.5
8/12/85		19.0	21.0	20.0	17.8
8/14/85		20.8	20.9	20.0	17.8
8/16/85		21.0	21.3	20.0	17.8
8/19/85		17.2	22.0	20.2	17.9
8/21/85		18.8	22.0	20.3	18.0

Vertical Temperature Profiles Outside Caisson B (Cont.)

Date	Time	Temperature ($^{\circ}\text{C}$)			
		Surface (8)	0.43m (9)	1.0m (10)	2.0m (11)
8/23/85		20.8	22.0	20.5	18.0
8/26/85		20.9	22.5	20.8	18.0
8/30/85		19.8	22.2	21.0	18.2
9/ 3/85		19.8	23.3	21.2	18.8
9/ 6/85		19.5	23.5	21.5	18.5
9/13/85		19.0	23.0	21.0	18.0
9/16/85		14.9	21.0	20.5	19.0
9/18/85		17.0	19.9	20.0	15.0
9/20/85		13.0	19.0	20.0	19.0

A. Tracer Data from Access Port Samplers

Iodide, bromide, and lithium concentrations are summarized in Figs. 5-28 as a function of time for each of the sampling locations located at access ports for two steady-state and two unsteady-state pulse experiments. Data are presented for pulse experiments where tracer was added: September 20-26, 1984 (unsteady-state pulse 1); December 6-12, 1984 (steady-state pulse 1); February 8-14, 1985 (steady-state pulse 2); and April 8-14, 1985 (unsteady-state pulse 2). During the final pulse experiment, steady-state flow conditions were maintained until April 29, on which date input matrix solution flow was stopped and the caisson was allowed to drain until July 11, 1985, at which time the matrix solution was reinitiated.

In order to present the data in a more comprehensive manner, the iodide tracer data are presented in Figs. 29 and 30 as a function of time and depth for the steady-state pulse experiments. The iodide peak heights and shapes are similar at all six depths in the caisson as would be expected with these flow conditions. The peak iodide concentrations moved uniformly down the caisson from sampling port to sampling port at a rate that varied from 6.3 to 12.5 cm d⁻¹, except for the relatively fast movement between the 197- to 271-cm depths. This abnormally fast migration was probably caused by a tuff layer of minimal compaction at this depth interval, allowing the flow of water and iodide to increase dramatically. (The void ratio of 0.71 found at the 1.56-m depth was considerably larger than that found at any other depth, thus, promoting conductivity.)

Similar iodide tracer data are presented for the two unsteady-state pulse experiments in Figs. 31 and 32. In contrast to the steady-state data (Figs. 29 and 30), the iodide peak heights and shapes are not similar at all six sampling depths in the caisson. Eventually, after the peak iodide

concentration passes a sampling depth, a small concentration (tail) persists for a long time. In spite of these differences, the iodide peak concentration transport times ranged from 6.3 to 11.0 cm d⁻¹, similar to those of the steady-state experiments (Figs. 29 and 30).

We also compared the transport of iodide to that of bromide (Fig. 33) and lithium (Fig. 34). Bromide appeared to migrate similarly to iodide (Fig. 33), as would be expected, but lithium and iodide were not similar in their steady-state transport behavior (compare Fig. 34 with Fig. 29, as well as Figs. 11-22). It was expected that lithium would be mobile because of its weak affinity for exchange sites in the presence of the 200 ppm calcium in the inflow solution. However, the lithium traveled about 15% slower than the iodide in the first steady-state experiment (notice the time axis in Fig. 34 is different from Fig. 29) and exhibited concentrations that changed very slowly relative to iodide, resulting in very dissimilar transport when compared with iodide.

The differences in solute transport under steady-state flow conditions were observed to be even more exaggerated under unsteady-state flow conditions. The second unsteady-state pulse, for example, represented an extreme case, as far as variation in solution flow rates, when compared with the first unsteady-state pulse, and the tracer data reflect this difference (Figs. 23-28). Although the volumetric soil water content of the tuff in Caisson B remained consistently at 27-28% for the first twenty days of the experiment, it decreased to almost 15% 60 days later (Appendix A). During this drainage period it appears that the iodide and bromide migration was enhanced relative to steady-state migration at the 347-cm (Fig. 27) and 421-cm (Fig. 28) sampling depths. In contrast, transport of lithium at these two depths seemed to be dramatically reduced during the (unsteady-state) drainage portion of the

second unsteady-state pulse experiment relative to steady-state migration. The latter observation is based on an analysis of the peak tracer concentrations as a function of time at each sampling depth; further data analysis and modeling need to be accomplished to make this point more valid by comparing tracer concentrations as a function of pore volumes of solution being transported through a sampling depth. These observations have very important implications, as far as applying any type of modeling approach to the transport of either nonsorbing (iodide, bromide) or partially-sorbing (lithium) tracers under extreme unsteady-state flow conditions, conditions which would prevail under field conditions.

Fig. 5. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 1 was started at the 43-cm depth.

UNSTEADY-STATE PULSE 1 Sampling Depth: 119 cm

Fig. 6. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 1 was started at the 119-cm depth.

UNSTEADY-STATE PULSE 1 Sampling Depth: 194 cm

Fig. 7. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 1 was started at the 194-cm depth.

UNSTEADY-STATE PULSE 1 Sampling Depth: 271 cm

Fig. 8. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 1 was started at the 271-cm depth.

UNSTEADY-STATE PULSE 1 Sampling Depth: 347 cm

Fig. 9. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 1 was started at the 347-cm depth.

UNSTEADY-STATE PULSE 1 Sampling Depth: 421 cm

Fig. 10. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 1 was started at the 421-cm depth.

STEADY-STATE PULSE 1 Sampling Depth: 43 cm

Fig. 11. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 1 was started at the 43-cm depth.

STEADY-STATE PULSE 1

Sampling Depth: 119 cm

Fig. 12. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 1 was started at the 119-cm depth.

STEADY-STATE PULSE 1

Sampling Depth: 194 cm

Fig. 13. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 1 was started at the 194-cm depth.

STEADY-STATE PULSE 1

Sampling Depth: 271 cm

Fig. 14. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 1 was started at the 271-cm depth.

STEADY-STATE PULSE 1

Sampling Depth: 347 cm

Fig. 15. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 1 was started at the 347-cm depth.

STEADY-STATE PULSE 1 Sampling Depth: 421 cm

Fig. 16. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 1 was started at the 421-cm depth.

STEADY-STATE PULSE 2 Sampling Depth: 43 cm

Fig. 17. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 2 was started at the 43-cm depth.

STEADY-STATE PULSE 2 Sampling Depth: 119 cm

Fig. 18. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 2 was started at the 119-cm depth.

STEADY-STATE PULSE 2
Sampling Depth: 194 cm

Fig. 19. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 2 was started at the 194-cm depth.

STEADY-STATE PULSE 2 Sampling Depth: 271 cm

Fig. 20. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 2 was started at the 271-cm depth.

STEADY-STATE PULSE 2 Sampling Depth: 347 cm

Fig. 21. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 2 was started at the 347-cm depth.

STEADY-STATE PULSE 2 Sampling Depth: 421 cm

Fig. 22. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the steady-state pulse 2 was started at the 421-cm depth.

UNSTEADY-STATE PULSE 2 Sampling Depth: 43 cm

Fig. 23. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 2 was started at the 43-cm depth.

UNSTEADY-STATE PULSE 2 Sampling Depth: 119 cm

Fig. 24. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 2 was started at the 119-cm depth.

UNSTEADY-STATE PULSE 2
Sampling Depth: 194 cm

Fig. 25. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 2 was started at the 194-cm depth.

UNSTEADY-STATE PULSE 2 Sampling Depth: 271 cm

Fig. 26. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 2 was started at the 271-cm depth.

UNSTEADY-STATE PULSE 2 Sampling Depth: 347 cm

Fig. 27. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 2 was started at the 347-cm depth.

UNSTEADY-STATE PULSE 2 Sampling Depth: 421 cm

Fig. 28. Iodide, bromide, and lithium concentrations in Caisson B as a function of time after the unsteady-state pulse 2 was started at the 421-cm depth.

Iodide migration: first steady-state pulse

Fig. 29. Iodide concentration in the first steady-state pulse experiment in Caisson B as functions of depth and time.

Iodide migration: second steady-state pulse

Fig. 30. Iodide concentration in the second steady-state pulse experiment in Caisson B as functions of depth and time.

Iodide migration: first unsteady-state pulse

Fig. 31. Iodide concentration in the first unsteady-state pulse experiment in Caisson B as functions of depth and time.

Iodide migration: second unsteady-state pulse

Fig. 32. Iodide concentration in the first second unsteady-state pulse experiment in Caisson B as functions of depth and time.

Fig. 33. Iodide versus bromide concentrations for two pulses in the Caisson B experiment .

Lithium migration: first steady-state pulse

Fig. 34. Lithium concentrations in the first steady-state pulse experiment in Caisson B as functions of depth and time.

B. Tracer Data from Vertical Samplers

Using the vertical samplers, we were able to study the transport of tracers in the upper 118 cm of Caisson B in more detail than with the samplers located at the access ports in the top 421 cm of the caisson. Although these samplers will probably be the only samplers used for cesium transport (cesium was observed to be very strongly absorbed by the tuff in the upper portions of the caisson), they will be used to generate a second set of absorption parameter estimates for iodide, lithium, and bromide in future data analysis.

Basically, only steady-state flow conditions were studied for iodide, bromide, and lithium in these samplers (Figs. 35-46). All of the conclusions drawn for the transport of these three tracers, using the samplers located at the access ports, also apply to this data set (see previous section). Included in this set of conclusions, in spite of the short travel distance (43 cm to 188 cm), was the observation that lithium migrated slower than iodide and bromide through the crushed tuff profile.

C. Modeling Efforts

The following information covers only the results from modeling efforts for iodide, bromide, and lithium transport in the pulses of August 1983, September 1984, and December 1984. Modeling consisted of estimating the dispersion coefficient and retardation factor by an optimal parameter curve-fitting applied to an analytical solution of the advective-dispersive equation. The August 1983 and September 1984 pulses occurred at unsteady-state flow. Flow through the caisson was maintained at about $200 \text{ cm}^3 \text{ min}^{-1}$, which is equivalent to an average pore velocity of 14 cm d^{-1} . The flow during the September 1984 pulse ranged from about 60 to $200 \text{ cm}^3/\text{min}$. Moisture content varied with time and depth from 25 to 39% with an arithmetic average of about 28%.

Figs. 47 to 49 summarize the estimates for the flow and transport parameters of the August 1983, September 1984, and December 1984 pulses. The most relevant features observed from those pulses and their comparisons follow:

- (1) The parameters, dispersion coefficient, and retardance factor for bromide track those for iodide very well as a function of depth. Any differences are well within the expected experimental and analytical errors.
- (2) The retardance factor tends to approach 1.0 with an increase in depth. A value of about 1.0 is expected for conservative tracers, such as iodide and bromide. The tendency for the retardance factor to approach unity with an increase in depth agrees with the state-of-the-art issue that Fickian models (Eq. 1, for example) represent reality better at distances far from the source than at distances close to the source.
- (3) The parameter estimates of the lower depths for both pulses are consistent with the expected dispersion coefficients and retardance factors. The deviation from those estimates at the upper levels of the caisson is greater for the August pulse than for the December pulse. Two major factors could account for the improvement in the parameter estimates for the latter pulse. One is an increase in the homogeneity of the soil characteristics through rearrangement of the soil matrix. The second is more uniformity in the tracer application of the December pulse: the tracers were distributed through 96 outlets in the December pulse and through only 64 outlets in the August pulse.
- (4) Lithium shows a slightly higher stabilized retardation factor than iodide or bromide; however, its physical dispersion coefficient is well within the range of those for either iodide or bromide.
- (5) Breakthrough predictions are quite satisfactory for all pulses. Although problems exist at the upper levels in the caissons, the

predictions get better as depth increases. Conservation of mass in the predictions is not effectively maintained. Reasons may be related to either the applicability of the model itself, the lack of spatial variability considerations, or both.

The retardation factors and dispersion coefficients for three iodide tracer pulses are shown as functions of caisson depth in Fig. 49. The results indicate that parameter estimates can be reproduced reasonably well for iodide transport for depths of 1 m or greater. The unusually high retardation factors and dispersion coefficients above the 1-m depth probably result from nonuniform input of solutes at the soil surface. Unlike the other two pulses (Fig. 49), the pulse introduced in September was an unsteady-state pulse; parameter estimates for this pulse could not be made because the parameter estimation techniques used assumed steady-state flow conditions.

Fig. 35. Iodide, bromide, and lithium concentrations as a function of time for the vertical sampler emplaced at the 43-cm depth in Caisson B.

STEADY-STATE PULSE 2
Sampling Depth: 58 cm

Fig. 36. Iodide, bromide, and lithium concentrations as a function of time for the vertical sampler emplaced at the 58-cm depth in Caisson B.

Fig. 37. Iodide, bromide, and lithium concentrations as a function of time for the vertical sampler emplaced at the 73-cm depth in Caisson B.

STEADY-STATE PULSE 2 Sampling Depth: 88 cm

Fig. 38. Iodide, bromide, and lithium concentrations as a function of time for the vertical sampler emplaced at the 88-cm depth in Caisson B.

STEADY-STATE PULSE 2
Sampling Depth: 103 cm

Fig. 39. Iodide, bromide, and lithium concentrations as a function of time for the vertical sampler emplaced at the 103-cm depth in Caisson B.

STEADY-STATE PULSE 2 Sampling Depth: 118 cm

Fig. 40. Iodide, bromide, and lithium concentrations as a function of time for the vertical sampler emplaced at the 118-cm depth in Caisson B.

UNSTEADY-STATE PULSE 2
Sampling Depth: 43 cm

Fig. 41. Iodide and lithium concentrations as a function of time for the vertical sampler emplaced at the 43-cm depth in Caisson B.

UNSTEADY-STATE PULSE 2 Sampling Depth: 58 cm

Fig. 42. Iodide and lithium concentrations as a function of time for the vertical sampler emplaced at the 58-cm depth in Caisson B.

UNSTEADY-STATE PULSE 2 Sampling Depth: 73 cm

Fig. 43. Iodide and lithium concentrations as a function of time for the vertical sampler emplaced at the 73-cm depth in Caisson B.

UNSTEADY-STATE PULSE 2
Sampling Depth: 88 cm

Fig. 44. Iodide and lithium concentrations as a function of time for the vertical sampler emplaced at the 88-cm depth in Caisson B.

UNSTEADY-STATE PULSE 2 Sampling Depth: 103 cm

Fig. 45. Iodide and lithium concentrations as a function of time for the vertical sampler emplaced at the 103-cm depth in Caisson B.

Fig. 46. Iodide and lithium concentrations as a function of time for the vertical sampler emplaced at the 118-cm depth in Caisson B.

OPTIMAL PARAMETER ESTIMATES

Fig. 47. Parameter estimates for three tracers as a function of depth in Caisson B (steady-state pulse).

OPTIMAL PARAMETER ESTIMATES

Fig. 48. Parameter estimates for three tracers as a function of depth in Caisson B (unsteady-state pulse).

OPTIMAL PARAMETER ESTIMATES FROM IODIDE TRACER STUDIES IN CAISSON B

Fig. 49. Parameter estimates for iodide tracer studies in Caisson B.

V. FUTURE RESEARCH CONSIDERATIONS

Since the field work for this experiment was concluded at the end of 1985 and most of the chemical assays were finished in September 1985, we have not performed extensive data analysis on the transport of iodide, bromide, and lithium in this document. However, the results of these field experiments are so impressive that we have convinced several funding agencies that considerable modeling efforts should be expended on this data during 1986. Basically, additional parameter estimates need to be made for all of the tracer data, except for the preliminary results shown in Figs. 47-49. The inflow/outflow tracer data need to be tabulated and analyzed, and final analytical work for the NRC program (cesium and strontium) needs to be completed, followed by extensive transport modeling.

In spite of these few loose ends, the unique field data sets included in this report can now be used to model chemical transport in unsaturated conditions for both steady-state and unsteady-state flow. Considerable information has been collected on the transport of iodide, bromide, and lithium under steady-state flow conditions that can be used to field-validate several current transport codes. Although this will be useful to the waste management community, the real challenge will be met in modeling the unsteady-state flow of these tracers with current transport codes, and finding their limitations.

Our preliminary findings were that iodide and bromide migration seem to be enhanced under unsteady-state flow conditions, while lithium transport demonstrated just the opposite pattern. This behavior, along with similar NRC data on cesium and strontium transport, will provide real challenges to current transport codes, many of which will probably only work successfully under steady-state flow conditions. Because most transport in the field, such

as liquid waste spills and leaching of buried wastes in landfills, probably occurs within the unsteady-state (unsaturated) flow regime, our ultimate goal is to be able to model chemical transport under these transient conditions. We believe that successful modeling of the tracer data included in this report will be a big step in this direction.

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APPENDIX A
VOLUMETRIC WATER CONTENT DATA BASE
FOR THE CAISSON B EXPERIMENTS

DESCRIPTION OF THE VOLUMETRIC WATER CONTENT
DATA BASE FOR THE CAISSON B EXPERIMENTS

Six access tubes were emplaced in Caisson B, located at the Los Alamos EETF, to determine soil water content, using a neutron moisture gauge, as a function of soil depth and time. These access tubes were emplaced horizontally through access ports located in the instrument caisson and data were collected various distances from the center of Caisson B.

Access tubes 802, 803, 804, 805, 806, and 807 were located 68, 145, 220, 295, 370, and 445 cm, respectively, from the soil surface in Caisson B. Soil water content determinations were usually performed within each tube at 10-cm increments from 0 to 130 cm from the center of Caisson B.

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
12APR84	68	0	18.7
12APR84	68	10	17.8
12APR84	68	20	17.8
12APR84	68	30	17.9
12APR84	68	40	18.0
12APR84	68	50	17.8
12APR84	68	60	17.3
12APR84	68	70	17.1
12APR84	68	80	17.1
12APR84	68	90	17.4
12APR84	68	100	17.9
12APR84	68	110	17.0
12APR84	68	120	15.8
12APR84	68	130	10.6
10MAY84	68	0	16.8
10MAY84	68	10	16.6
10MAY84	68	20	16.1
10MAY84	68	30	16.0
10MAY84	68	40	16.1
10MAY84	68	50	16.4
10MAY84	68	60	16.3
10MAY84	68	70	16.2
10MAY84	68	80	16.1
10MAY84	68	90	16.1
10MAY84	68	100	16.1
10MAY84	68	110	15.6
10MAY84	68	120	14.3
06JUN84	68	0	29.5
06JUN84	68	10	27.6
06JUN84	68	20	27.6
06JUN84	68	30	27.5
06JUN84	68	40	26.8
06JUN84	68	50	27.3
06JUN84	68	60	26.1
06JUN84	68	70	26.6
06JUN84	68	80	26.8
06JUN84	68	90	26.3
06JUN84	68	100	25.7
06JUN84	68	110	25.6
06JUN84	68	120	24.3
25JUL84	68	0	29.5
25JUL84	68	10	27.9
25JUL84	68	20	27.8
25JUL84	68	30	27.7
25JUL84	68	40	27.5

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
25JUL84	68	50	26.8
25JUL84	68	60	27.2
25JUL84	68	70	27.5
25JUL84	68	80	27.7
25JUL84	68	90	27.3
25JUL84	68	100	26.5
25JUL84	68	110	26.4
25JUL84	68	120	25.3
09AUG84	68	0	31.9
09AUG84	68	0	30.7
09AUG84	68	10	28.7
09AUG84	68	10	29.8
09AUG84	68	20	30.0
09AUG84	68	20	28.9
09AUG84	68	30	28.5
09AUG84	68	30	29.6
09AUG84	68	40	28.4
09AUG84	68	40	29.5
09AUG84	68	50	28.5
09AUG84	68	50	29.5
09AUG84	68	60	28.2
09AUG84	68	60	29.2
09AUG84	68	70	29.6
09AUG84	68	70	28.6
09AUG84	68	80	29.2
09AUG84	68	80	28.2
09AUG84	68	90	29.0
09AUG84	68	90	28.0
09AUG84	68	100	27.5
09AUG84	68	100	28.4
09AUG84	68	110	27.7
09AUG84	68	110	28.7
09AUG84	68	120	26.3
09AUG84	68	120	27.2
20AUG84	68	0	33.5
20AUG84	68	10	31.8
20AUG84	68	20	30.7
20AUG84	68	30	31.4
20AUG84	68	40	30.7
20AUG84	68	50	30.2
20AUG84	68	60	30.5
20AUG84	68	70	31.0
20AUG84	68	80	30.7
20AUG84	68	90	30.5
20AUG84	68	100	29.6

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20AUG84	68	110	29.1
20AUG84	68	120	28.6
04SEP84	68	0	32.1
04SEP84	68	10	30.0
04SEP84	68	20	30.1
04SEP84	68	30	30.0
04SEP84	68	40	29.5
04SEP84	68	50	29.3
04SEP84	68	60	29.2
04SEP84	68	70	29.5
04SEP84	68	80	29.5
04SEP84	68	90	28.5
04SEP84	68	100	27.9
04SEP84	68	110	28.2
04SEP84	68	120	26.4
18SEP84	68	0	29.3
18SEP84	68	10	27.7
18SEP84	68	20	27.4
18SEP84	68	30	27.3
18SEP84	68	40	27.2
18SEP84	68	50	27.4
18SEP84	68	60	26.9
18SEP84	68	70	27.2
18SEP84	68	80	27.0
18SEP84	68	90	26.4
18SEP84	68	100	26.2
18SEP84	68	110	25.5
18SEP84	68	120	24.5
02OCT84	68	0	28.8
02OCT84	68	10	27.2
02OCT84	68	20	27.0
02OCT84	68	30	26.9
02OCT84	68	40	26.8
02OCT84	68	50	26.9
02OCT84	68	60	26.6
02OCT84	68	70	26.4
02OCT84	68	80	26.4
02OCT84	68	90	25.9
02OCT84	68	100	25.3
02OCT84	68	110	25.0
02OCT84	68	120	24.1
18OCT84	68	0	30.0
18OCT84	68	10	27.8
18OCT84	68	20	28.2
18OCT84	68	30	27.4

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBFR=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
18OCT84	68	40	27.0
18OCT84	68	50	27.0
18OCT84	68	60	26.4
18OCT84	68	70	27.5
18OCT84	68	80	27.5
18OCT84	68	90	26.2
18OCT84	68	100	26.2
18OCT84	68	110	26.2
18OCT84	68	120	25.6
31OCT84	68	0	29.1
31OCT84	68	10	27.6
31OCT84	68	20	27.9
31OCT84	68	30	27.0
31OCT84	68	40	27.2
31OCT84	68	50	26.8
31OCT84	68	60	26.8
31OCT84	68	70	26.8
31OCT84	68	80	26.7
31OCT84	68	90	26.4
31OCT84	68	100	24.9
31OCT84	68	110	25.1
31OCT84	68	120	24.3
28NOV84	68	0	30.2
28NOV84	68	10	28.3
28NOV84	68	20	27.9
28NOV84	68	30	28.0
28NOV84	68	40	27.6
28NOV84	68	50	27.6
28NOV84	68	60	27.7
28NOV84	68	70	27.4
28NOV84	68	80	27.8
28NOV84	68	90	27.4
28NOV84	68	100	26.5
28NOV84	68	110	26.6
28NOV84	68	120	25.6
03JAN85	68	0	28.3
03JAN85	68	60	26.2
03JAN85	68	120	24.8
17JAN85	68	0	30.5
17JAN85	68	60	29.4
17JAN85	68	120	27.9
04FEB85	68	0	25.8
04FEB85	68	60	24.1
04FEB85	68	120	22.1
20FEB85	68	0	29.5

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20FEB85	68	60	27.9
20FEB85	68	120	26.1
06MAR85	68	0	31.0
06MAR85	68	60	29.1
06MAR85	68	120	27.1
21MAR85	68	0	31.4
21MAR85	68	60	29.5
21MAR85	68	120	28.1
01APR85	68	0	33.4
01APR85	68	60	31.0
01APR85	68	120	29.0
08APR85	68	0	30.9
08APR85	68	60	29.0
08APR85	68	120	27.2
25APR85	68	0	29.9
25APR85	68	60	27.7
25APR85	68	120	25.8
29APR85	68	0	29.6
29APR85	68	60	27.7
29APR85	68	120	25.7
30APR85	68	0	27.5
30APR85	68	60	26.0
30APR85	68	120	22.6
01MAY85	68	0	26.0
01MAY85	68	60	24.7
01MAY85	68	120	21.4
02MAY85	68	0	25.2
02MAY85	68	60	23.4
02MAY85	68	120	19.4
03MAY85	68	0	24.3
03MAY85	68	60	23.2
03MAY85	68	120	18.6
06MAY85	68	0	23.1
06MAY85	68	60	21.9
06MAY85	68	120	19.0
08MAY85	68	0	22.5
08MAY85	68	60	21.2
08MAY85	68	120	17.3
10MAY85	68	0	21.8
10MAY85	68	60	20.7
10MAY85	68	120	17.4
13MAY85	68	0	21.5
13MAY85	68	60	20.2
13MAY85	68	120	18.1
15MAY85	68	0	21.0

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15MAY85	68	60	20.0
15MAY85	68	120	17.9
17MAY85	68	0	20.8
17MAY85	68	60	19.7
17MAY85	68	120	16.9
21MAY85	68	0	20.3
21MAY85	68	60	19.5
21MAY85	68	120	17.5
23MAY85	68	0	20.5
23MAY85	68	60	18.9
23MAY85	68	120	17.4
28MAY85	68	0	20.1
28MAY85	68	60	18.8
28MAY85	68	120	16.9
30MAY85	68	0	19.6
30MAY85	68	60	18.8
30MAY85	68	120	16.5
04JUN85	68	0	18.9
04JUN85	68	60	18.2
04JUN85	68	120	16.0
12JUN85	68	0	18.0
12JUN85	68	60	17.5
12JUN85	68	120	15.8
18JUN85	68	0	18.0
18JUN85	68	60	17.0
18JUN85	68	120	14.7
25JUN85	68	0	17.2
25JUN85	68	60	16.7
25JUN85	68	120	15.0
02JUL85	68	0	17.0
02JUL85	68	60	16.2
02JUL85	68	120	14.8
11JUL85	68	0	16.5
11JUL85	68	60	15.9
11JUL85	68	120	14.0
12JUL85	68	0	23.0
12JUL85	68	60	20.5
12JUL85	68	120	15.5
13JUL85	68	0	26.9
13JUL85	68	60	24.5
13JUL85	68	120	21.5
14JUL85	68	0	28.1
14JUL85	68	60	25.7
14JUL85	68	120	23.0
15JUL85	68	0	27.7

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15JUL85	68	60	25.9
15JUL85	68	120	22.8
16JUL85	68	0	27.8
16JUL85	68	60	25.8
16JUL85	68	120	20.6
17JUL85	68	0	27.5
17JUL85	68	60	25.4
17JUL85	68	120	23.3
18JUL85	68	0	28.3
18JUL85	68	60	25.7
18JUL85	68	120	23.7
19JUL85	68	0	28.2
19JUL85	68	60	25.7
19JUL85	68	120	20.6
21JUL85	68	0	28.2
21JUL85	68	60	25.7
21JUL85	68	120	22.8
22JUL85	68	0	28.5
22JUL85	68	60	25.8
22JUL85	68	120	23.8
23JUL85	68	0	28.7
23JUL85	68	60	25.7
23JUL85	68	120	22.9
24JUL85	68	0	28.6
24JUL85	68	60	25.9
24JUL85	68	120	22.1
25JUL85	68	0	29.0
25JUL85	68	60	26.4
25JUL85	68	120	23.1
26JUL85	68	0	28.9
26JUL85	68	60	26.5
26JUL85	68	120	23.5
27JUL85	68	0	29.0
27JUL85	68	60	26.3
27JUL85	68	120	24.3
29JUL85	68	0	28.2
29JUL85	68	60	26.2
29JUL85	68	120	23.5
30JUL85	68	0	28.7
30JUL85	68	60	26.2
30JUL85	68	100	28.7
30JUL85	68	110	27.7
30JUL85	68	120	23.8
30JUL85	68	120	27.5
30JUL85	68	130	22.5

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
02AUG85	68	0	28.7
02AUG85	68	60	26.9
02AUG85	68	120	23.4
04AUG85	68	0	28.9
04AUG85	68	60	26.6
04AUG85	68	120	24.2
06AUG85	68	0	29.2
06AUG85	68	60	26.9
06AUG85	68	120	25.0
09AUG85	68	0	28.6
09AUG85	68	60	26.6
09AUG85	68	120	24.6
14AUG85	68	0	29.0
14AUG85	68	60	26.8
14AUG85	68	120	24.3
16AUG85	68	0	28.5
16AUG85	68	0	29.0
16AUG85	68	60	26.9
16AUG85	68	60	26.0
16AUG85	68	120	25.2
21AUG85	68	0	29.3
21AUG85	68	60	26.5
21AUG85	68	120	24.6
23AUG85	68	0	29.0
23AUG85	68	60	27.1
23AUG85	68	120	24.8
27AUG85	68	0	29.1
27AUG85	68	60	27.0
27AUG85	68	120	24.5
30AUG85	68	0	29.7
30AUG85	68	60	27.0
30AUG85	68	120	24.6
03SEP85	68	0	29.2
03SEP85	68	60	27.0
03SEP85	68	120	24.8
09SEP85	68	0	29.1
09SEP85	68	60	27.6
09SEP85	68	120	24.8
18SEP85	68	0	29.3
18SEP85	68	60	27.7
18SEP85	68	120	23.4
30SEP85	68	0	29.5
30SEP85	68	60	27.5
30SEP85	68	120	25.1
09OCT85	68	0	29.0

-----TREAT=68 cm. HORIZONTAL TUBE TUBE NUMBER=802-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
09OCT85	68	60	27.9
09OCT85	68	120	24.0
16OCT85	68	0	30.1
16OCT85	68	60	26.6
16OCT85	68	120	24.8
23OCT85	68	0	28.7
23OCT85	68	60	27.4
23OCT85	68	120	26.2
30OCT85	68	0	29.0
30OCT85	68	60	27.0
30OCT85	68	120	25.3
06NOV85	68	0	29.7
06NOV85	68	60	27.7
06NOV85	68	120	24.8

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
10MAY84	145	0	19.5
10MAY84	145	10	18.3
10MAY84	145	20	18.3
10MAY84	145	30	18.4
10MAY84	145	40	18.6
10MAY84	145	50	18.5
10MAY84	145	60	18.4
10MAY84	145	70	18.1
10MAY84	145	80	17.5
10MAY84	145	90	17.7
10MAY84	145	100	17.4
10MAY84	145	110	17.0
10MAY84	145	120	15.4
06JUN84	145	0	28.0
06JUN84	145	10	27.3
06JUN84	145	20	26.9
06JUN84	145	30	26.9
06JUN84	145	40	26.0
06JUN84	145	50	26.1
06JUN84	145	60	26.0
06JUN84	145	70	25.7
06JUN84	145	80	26.5
06JUN84	145	90	26.2
06JUN84	145	100	26.0
06JUN84	145	110	25.8
06JUN84	145	120	24.7
25JUL84	145	0	29.4
25JUL84	145	10	27.2
25JUL84	145	20	27.5
25JUL84	145	30	26.8
25JUL84	145	40	26.9
25JUL84	145	50	26.6
25JUL84	145	60	26.6
25JUL84	145	70	26.8
25JUL84	145	80	26.6
25JUL84	145	90	26.6
25JUL84	145	100	26.8
25JUL84	145	110	26.4
25JUL84	145	120	24.9
09AUG84	145	0	31.5
09AUG84	145	0	30.3
09AUG84	145	10	28.3
09AUG84	145	10	29.3
09AUG84	145	20	28.5
09AUG84	145	20	29.6

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
09AUG84	145	30	28.9
09AUG84	145	30	27.9
09AUG84	145	40	27.5
09AUG84	145	40	28.5
09AUG84	145	50	27.7
09AUG84	145	50	28.7
09AUG84	145	60	28.7
09AUG84	145	60	27.8
09AUG84	145	70	27.8
09AUG84	145	70	28.8
09AUG84	145	80	27.6
09AUG84	145	80	28.6
09AUG84	145	90	28.7
09AUG84	145	90	27.7
09AUG84	145	100	27.4
09AUG84	145	100	28.4
09AUG84	145	110	27.9
09AUG84	145	110	26.9
09AUG84	145	120	25.9
09AUG84	145	120	26.7
20AUG84	145	0	33.0
20AUG84	145	10	30.8
20AUG84	145	20	30.5
20AUG84	145	30	30.7
20AUG84	145	40	29.8
20AUG84	145	50	30.0
20AUG84	145	60	30.0
20AUG84	145	70	29.1
20AUG84	145	80	29.9
20AUG84	145	90	29.6
20AUG84	145	100	29.1
20AUG84	145	110	29.4
20AUG84	145	120	28.3
04SEP84	145	0	31.0
04SEP84	145	10	29.6
04SEP84	145	20	28.8
04SEP84	145	30	28.8
04SEP84	145	40	28.3
04SEP84	145	50	28.5
04SEP84	145	60	27.9
04SEP84	145	70	28.5
04SEP84	145	80	28.1
04SEP84	145	90	28.0
04SEP84	145	100	28.2
04SEP84	145	110	28.0

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
04SEP84	145	120	26.1
18SEP84	145	0	28.5
18SEP84	145	10	27.1
18SEP84	145	20	26.9
18SEP84	145	30	26.6
18SEP84	145	40	26.5
18SEP84	145	50	26.0
18SEP84	145	60	26.4
18SEP84	145	70	26.2
18SEP84	145	80	26.5
18SEP84	145	90	26.3
18SEP84	145	100	26.3
18SEP84	145	110	25.9
18SEP84	145	120	24.3
02OCT84	145	0	27.4
02OCT84	145	10	26.2
02OCT84	145	20	25.4
02OCT84	145	30	25.9
02OCT84	145	40	25.2
02OCT84	145	50	25.3
02OCT84	145	60	25.0
02OCT84	145	70	25.1
02OCT84	145	80	24.9
02OCT84	145	90	24.8
02OCT84	145	100	24.2
02OCT84	145	110	24.4
02OCT84	145	120	22.8
18OCT84	145	0	28.7
18OCT84	145	10	26.9
18OCT84	145	20	27.0
18OCT84	145	30	26.3
18OCT84	145	40	26.7
18OCT84	145	50	26.4
18OCT84	145	60	25.6
18OCT84	145	70	26.7
18OCT84	145	80	26.1
18OCT84	145	90	26.5
18OCT84	145	100	26.4
18OCT84	145	110	25.8
18OCT84	145	120	24.1
31OCT84	145	0	27.9
31OCT84	145	10	26.2
31OCT84	145	20	26.2
31OCT84	145	30	26.6
31OCT84	145	40	25.9

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
31OCT84	145	50	25.5
31OCT84	145	60	25.8
31OCT84	145	70	25.7
31OCT84	145	80	25.4
31OCT84	145	90	25.3
31OCT84	145	100	25.2
31OCT84	145	110	24.7
31OCT84	145	120	23.3
28NOV84	145	0	29.1
28NOV84	145	10	27.8
28NOV84	145	20	27.1
28NOV84	145	30	26.9
28NOV84	145	40	27.5
28NOV84	145	50	26.6
28NOV84	145	60	26.6
28NOV84	145	70	26.3
28NOV84	145	80	26.7
28NOV84	145	90	26.8
28NOV84	145	100	26.4
28NOV84	145	110	26.2
28NOV84	145	120	25.2
03JAN85	145	0	28.2
03JAN85	145	60	26.3
03JAN85	145	120	25.0
17JAN85	145	0	30.6
17JAN85	145	60	28.0
17JAN85	145	120	26.6
04FEB85	145	0	27.7
04FEB85	145	60	24.7
04FEB85	145	120	22.6
20FEB85	145	0	28.7
20FEB85	145	60	27.0
20FEB85	145	120	25.7
06MAR85	145	0	30.2
06MAR85	145	60	27.3
06MAR85	145	120	26.1
21MAR85	145	0	30.5
21MAR85	145	60	28.2
21MAR85	145	120	26.5
01APR85	145	0	32.0
01APR85	145	60	29.1
01APR85	145	120	27.9
08APR85	145	0	30.3
08APR85	145	60	27.8
08APR85	145	120	25.9

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
25APR85	145	0	28.8
25APR85	145	60	26.7
25APR85	145	120	24.7
29APR85	145	0	29.3
29APR85	145	60	27.0
29APR85	145	120	25.7
30APR85	145	0	28.5
30APR85	145	60	26.3
30APR85	145	120	24.2
01MAY85	145	0	27.6
01MAY85	145	60	25.1
01MAY85	145	120	22.8
02MAY85	145	0	27.0
02MAY85	145	60	24.1
02MAY85	145	120	18.9
03MAY85	145	0	26.5
03MAY85	145	60	23.8
03MAY85	145	120	19.0
06MAY85	145	0	25.4
06MAY85	145	60	22.4
06MAY85	145	120	19.8
08MAY85	145	0	24.0
08MAY85	145	60	21.7
08MAY85	145	120	17.7
10MAY85	145	0	23.5
10MAY85	145	60	21.4
10MAY85	145	120	17.6
13MAY85	145	0	22.8
13MAY85	145	60	21.0
13MAY85	145	120	18.4
15MAY85	145	0	22.0
15MAY85	145	60	21.2
15MAY85	145	120	17.5
17MAY85	145	0	22.0
17MAY85	145	60	20.6
17MAY85	145	120	18.1
21MAY85	145	0	21.6
21MAY85	145	60	20.5
21MAY85	145	120	17.5
23MAY85	145	0	21.4
23MAY85	145	60	20.2
23MAY85	145	120	17.7
28MAY85	145	0	21.0
28MAY85	145	60	19.8
28MAY85	145	120	16.8

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
30MAY85	145	0	20.8
30MAY85	145	60	19.6
30MAY85	145	120	16.6
04JUN85	145	0	21.0
04JUN85	145	60	19.7
04JUN85	145	120	15.9
12JUN85	145	0	19.9
12JUN85	145	60	19.3
12JUN85	145	120	16.1
18JUN85	145	0	20.1
18JUN85	145	60	18.8
18JUN85	145	120	15.4
25JUN85	145	0	19.5
25JUN85	145	60	18.9
25JUN85	145	120	15.7
02JUL85	145	0	19.3
02JUL85	145	60	18.4
02JUL85	145	120	14.3
11JUL85	145	0	18.7
11JUL85	145	60	18.0
11JUL85	145	120	15.0
12JUL85	145	0	18.6
12JUL85	145	60	17.5
12JUL85	145	120	14.5
13JUL85	145	0	18.8
13JUL85	145	60	17.8
13JUL85	145	120	14.1
14JUL85	145	0	21.0
14JUL85	145	60	19.4
14JUL85	145	120	16.7
15JUL85	145	0	26.6
15JUL85	145	60	24.0
15JUL85	145	120	18.7
16JUL85	145	0	27.2
16JUL85	145	60	25.2
16JUL85	145	120	19.4
17JUL85	145	0	27.5
17JUL85	145	60	25.5
17JUL85	145	120	22.6
18JUL85	145	0	27.2
18JUL85	145	60	25.0
18JUL85	145	120	22.1
19JUL85	145	0	26.9
19JUL85	145	60	25.2
19JUL85	145	120	19.7

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
21JUL85	145	0	27.9
21JUL85	145	60	25.0
21JUL85	145	120	22.1
22JUL85	145	0	27.4
22JUL85	145	60	25.2
22JUL85	145	120	22.7
23JUL85	145	0	27.4
23JUL85	145	60	25.2
23JUL85	145	120	22.6
24JUL85	145	0	28.2
24JUL85	145	60	25.4
24JUL85	145	120	22.3
25JUL85	145	0	27.7
25JUL85	145	60	25.4
25JUL85	145	120	21.9
26JUL85	145	0	28.1
26JUL85	145	60	25.7
26JUL85	145	120	21.7
27JUL85	145	0	27.7
27JUL85	145	60	25.3
27JUL85	145	120	24.3
28JUL85	145	0	29.0
28JUL85	145	0	28.1
28JUL85	145	60	25.8
28JUL85	145	60	26.6
28JUL85	145	120	23.4
28JUL85	145	120	24.6
29JUL85	145	0	27.9
29JUL85	145	60	25.3
29JUL85	145	120	23.0
30JUL85	145	0	28.1
30JUL85	145	60	25.4
30JUL85	145	120	22.6
02AUG85	145	0	27.4
02AUG85	145	60	25.6
02AUG85	145	120	21.7
04AUG85	145	0	27.8
04AUG85	145	60	25.7
04AUG85	145	120	23.7
06AUG85	145	0	28.9
06AUG85	145	60	26.1
06AUG85	145	120	23.6
09AUG85	145	0	28.0
09AUG85	145	60	25.8
09AUG85	145	120	24.2

-----TREAT=145 cm. HORIZONTAL TUBE TUBE NUMBER=803-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
14AUG85	145	0	28.4
14AUG85	145	60	26.1
14AUG85	145	120	23.9
21AUG85	145	0	28.8
21AUG85	145	60	26.3
21AUG85	145	120	23.8
23AUG85	145	0	28.5
23AUG85	145	60	25.9
23AUG85	145	120	24.3
27AUG85	145	0	28.3
27AUG85	145	60	25.8
27AUG85	145	120	24.6
30AUG85	145	0	28.6
30AUG85	145	60	25.6
30AUG85	145	120	24.1
03SEP85	145	0	28.7
03SEP85	145	60	25.8
03SEP85	145	120	24.3
09SEP85	145	0	28.5
09SEP85	145	60	25.9
09SEP85	145	120	24.2
18SEP85	145	0	28.6
18SEP85	145	60	26.3
18SEP85	145	120	24.7
30SEP85	145	0	28.2
30SEP85	145	60	25.9
30SEP85	145	120	24.0
09OCT85	145	0	28.3
09OCT85	145	60	26.2
09OCT85	145	120	22.6
16OCT85	145	0	28.8
16OCT85	145	60	25.4
16OCT85	145	120	24.4
23OCT85	145	0	29.1
23OCT85	145	60	25.6
23OCT85	145	120	24.4
30OCT85	145	0	28.5
30OCT85	145	60	25.8
30OCT85	145	120	24.4
06NOV85	145	0	27.7
06NOV85	145	60	26.0
06NOV85	145	120	22.9

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
12APR84	220	0	21.6
12APR84	220	10	20.2
12APR84	220	20	20.6
12APR84	220	30	20.3
12APR84	220	40	20.0
12APR84	220	50	20.3
12APR84	220	60	20.1
12APR84	220	70	20.4
12APR84	220	80	19.8
12APR84	220	90	19.9
12APR84	220	100	19.4
12APR84	220	110	18.9
12APR84	220	120	17.1
12APR84	220	130	12.5
10MAY84	220	0	19.8
10MAY84	220	10	19.0
10MAY84	220	20	19.0
10MAY84	220	30	18.8
10MAY84	220	40	18.6
10MAY84	220	50	18.9
10MAY84	220	60	18.9
10MAY84	220	70	18.6
10MAY84	220	80	18.3
10MAY84	220	90	18.3
10MAY84	220	100	18.0
10MAY84	220	110	17.2
10MAY84	220	120	16.1
06JUN84	220	0	28.3
06JUN84	220	10	27.1
06JUN84	220	20	26.2
06JUN84	220	30	26.3
06JUN84	220	40	26.1
06JUN84	220	50	26.1
06JUN84	220	60	25.9
06JUN84	220	70	26.0
06JUN84	220	80	26.0
06JUN84	220	90	26.1
06JUN84	220	100	25.8
06JUN84	220	110	25.4
06JUN84	220	120	24.2
25JUL84	220	0	29.1
25JUL84	220	10	27.8
25JUL84	220	20	27.3
25JUL84	220	30	27.2
25JUL84	220	40	27.1

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
25JUL84	220	50	26.6
25JUL84	220	60	26.8
25JUL84	220	70	26.6
25JUL84	220	80	26.9
25JUL84	220	90	27.4
25JUL84	220	100	26.9
25JUL84	220	110	26.7
25JUL84	220	120	25.6
09AUG84	220	0	31.1
09AUG84	220	0	30.0
09AUG84	220	10	28.7
09AUG84	220	10	29.7
09AUG84	220	20	29.8
09AUG84	220	20	28.8
09AUG84	220	30	28.5
09AUG84	220	30	29.5
09AUG84	220	40	29.3
09AUG84	220	40	28.2
09AUG84	220	50	27.9
09AUG84	220	50	28.8
09AUG84	220	60	27.8
09AUG84	220	60	28.8
09AUG84	220	70	28.8
09AUG84	220	70	27.8
09AUG84	220	80	28.1
09AUG84	220	80	29.1
09AUG84	220	90	28.0
09AUG84	220	90	29.0
09AUG84	220	100	29.3
09AUG84	220	100	28.2
09AUG84	220	110	27.5
09AUG84	220	110	28.5
09AUG84	220	120	27.5
09AUG84	220	120	26.6
20AUG84	220	0	32.9
20AUG84	220	10	31.2
20AUG84	220	20	30.6
20AUG84	220	30	29.9
20AUG84	220	40	29.8
20AUG84	220	50	29.9
20AUG84	220	60	29.2
20AUG84	220	70	29.8
20AUG84	220	80	30.1
20AUG84	220	90	30.4
20AUG84	220	100	29.8

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20AUG84	220	110	29.7
20AUG84	220	120	28.2
04SEP84	220	0	31.5
04SEP84	220	10	29.7
04SEP84	220	20	29.1
04SEP84	220	30	28.7
04SEP84	220	40	28.7
04SEP84	220	50	27.8
04SEP84	220	60	28.3
04SEP84	220	70	28.5
04SEP84	220	80	29.1
04SEP84	220	90	28.8
04SEP84	220	100	28.6
04SEP84	220	110	28.3
04SEP84	220	120	26.3
18SEP84	220	0	29.1
18SEP84	220	10	27.2
18SEP84	220	20	26.9
18SEP84	220	30	26.4
18SEP84	220	40	26.0
18SEP84	220	50	26.0
18SEP84	220	60	26.1
18SEP84	220	70	26.1
18SEP84	220	80	26.4
18SEP84	220	90	26.6
18SEP84	220	100	26.3
18SEP84	220	110	26.2
18SEP84	220	120	25.2
02OCT84	220	0	27.4
02OCT84	220	10	25.2
02OCT84	220	20	24.8
02OCT84	220	30	24.9
02OCT84	220	40	24.6
02OCT84	220	50	24.7
02OCT84	220	60	25.0
02OCT84	220	70	24.7
02OCT84	220	80	24.7
02OCT84	220	90	24.4
02OCT84	220	100	24.2
02OCT84	220	110	24.3
02OCT84	220	120	22.3
18OCT84	220	0	28.4
18OCT84	220	10	27.2
18OCT84	220	20	26.9
18OCT84	220	30	26.7

-----TREAT=220 cm, HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
18OCT84	220	40	26.8
18OCT84	220	50	26.4
18OCT84	220	60	25.4
18OCT84	220	70	26.3
18OCT84	220	80	26.2
18OCT84	220	90	25.6
18OCT84	220	100	26.2
18OCT84	220	110	26.1
18OCT84	220	120	25.0
31OCT84	220	0	27.9
31OCT84	220	10	26.7
31OCT84	220	20	26.0
31OCT84	220	30	25.9
31OCT84	220	40	26.0
31OCT84	220	50	25.9
31OCT84	220	60	25.6
31OCT84	220	70	25.7
31OCT84	220	80	25.8
31OCT84	220	90	25.8
31OCT84	220	100	25.5
31OCT84	220	110	25.3
31OCT84	220	120	24.1
28NOV84	220	0	29.5
28NOV84	220	10	27.9
28NOV84	220	20	27.0
28NOV84	220	30	26.8
28NOV84	220	40	27.0
28NOV84	220	50	26.7
28NOV84	220	60	26.8
28NOV84	220	70	26.9
28NOV84	220	80	26.9
28NOV84	220	90	27.2
28NOV84	220	100	27.0
28NOV84	220	110	26.6
28NOV84	220	120	25.2
03JAN85	220	0	28.6
03JAN85	220	60	26.4
03JAN85	220	120	25.0
17JAN85	220	0	30.5
17JAN85	220	60	28.5
17JAN85	220	120	27.1
04FEB85	220	0	28.3
04FEB85	220	60	25.1
04FEB85	220	120	23.6
20FEB85	220	0	29.7

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20FEB85	220	60	27.4
20FEB85	220	120	26.3
06MAR85	220	0	31.2
06MAR85	220	60	27.6
06MAR85	220	120	26.5
21MAR85	220	0	31.3
21MAR85	220	60	28.0
21MAR85	220	120	26.5
01APR85	220	0	32.0
01APR85	220	60	30.1
01APR85	220	120	28.2
08APR85	220	0	31.0
08APR85	220	60	27.8
08APR85	220	120	26.0
25APR85	220	0	29.5
25APR85	220	60	26.5
25APR85	220	120	25.4
29APR85	220	0	29.5
29APR85	220	60	27.2
29APR85	220	120	26.0
30APR85	220	0	29.6
30APR85	220	60	26.8
30APR85	220	120	24.2
01MAY85	220	0	28.3
01MAY85	220	60	25.9
01MAY85	220	120	23.9
02MAY85	220	0	27.4
02MAY85	220	60	25.5
02MAY85	220	120	21.1
03MAY85	220	0	27.1
03MAY85	220	60	24.8
03MAY85	220	120	21.8
06MAY85	220	0	26.1
06MAY85	220	60	23.8
06MAY85	220	120	21.6
08MAY85	220	0	24.8
08MAY85	220	60	23.0
08MAY85	220	120	18.6
10MAY85	220	0	24.5
10MAY85	220	60	22.8
10MAY85	220	120	19.2
13MAY85	220	0	23.8
13MAY85	220	60	22.0
13MAY85	220	120	19.4
15MAY85	220	0	23.3

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15MAY85	220	60	21.7
15MAY85	220	120	19.0
17MAY85	220	0	22.8
17MAY85	220	60	21.3
17MAY85	220	120	19.4
21MAY85	220	0	22.3
21MAY85	220	60	21.3
21MAY85	220	120	18.1
23MAY85	220	0	22.3
23MAY85	220	60	20.6
23MAY85	220	120	17.5
28MAY85	220	0	22.0
28MAY85	220	60	20.3
28MAY85	220	120	17.9
30MAY85	220	0	21.9
30MAY85	220	60	20.6
30MAY85	220	120	18.0
04JUN85	220	0	21.8
04JUN85	220	60	20.2
04JUN85	220	120	17.5
12JUN85	220	0	21.0
12JUN85	220	60	19.4
12JUN85	220	120	16.6
18JUN85	220	0	20.9
18JUN85	220	60	19.9
18JUN85	220	120	16.2
25JUN85	220	0	20.4
25JUN85	220	60	19.1
25JUN85	220	120	16.3
02JUL85	220	0	19.6
02JUL85	220	60	18.7
02JUL85	220	120	15.7
11JUL85	220	0	19.8
11JUL85	220	60	18.6
11JUL85	220	120	15.7
12JUL85	220	0	19.1
12JUL85	220	60	18.2
12JUL85	220	120	15.3
13JUL85	220	0	18.8
13JUL85	220	60	17.7
13JUL85	220	120	15.0
14JUL85	220	0	19.4
14JUL85	220	60	17.9
14JUL85	220	120	15.0
15JUL85	220	0	19.4

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15JUL85	220	60	18.4
15JUL85	220	120	11.2
16JUL85	220	0	20.5
16JUL85	220	60	19.4
16JUL85	220	120	12.7
17JUL85	220	0	26.0
17JUL85	220	60	23.2
17JUL85	220	120	21.7
18JUL85	220	0	28.2
18JUL85	220	60	25.4
18JUL85	220	120	23.4
19JUL85	220	0	28.0
19JUL85	220	60	25.4
19JUL85	220	120	20.5
21JUL85	220	0	27.9
21JUL85	220	60	25.6
21JUL85	220	120	23.2
22JUL85	220	0	28.0
22JUL85	220	60	25.4
22JUL85	220	120	22.9
23JUL85	220	0	28.0
23JUL85	220	60	25.1
23JUL85	220	120	23.6
24JUL85	220	0	28.0
24JUL85	220	60	25.9
24JUL85	220	120	22.9
25JUL85	220	0	27.9
25JUL85	220	60	25.2
25JUL85	220	120	21.9
26JUL85	220	0	28.4
26JUL85	220	60	25.6
26JUL85	220	120	23.4
27JUL85	220	0	28.0
27JUL85	220	60	25.9
27JUL85	220	120	23.9
28JUL85	220	0	28.2
28JUL85	220	60	25.8
28JUL85	220	120	24.0
29JUL85	220	0	27.9
29JUL85	220	60	25.6
29JUL85	220	120	23.6
30JUL85	220	0	28.1
30JUL85	220	60	26.2
30JUL85	220	120	23.6
02AUG85	220	0	28.6

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
02AUG85	220	60	26.2
02AUG85	220	120	22.9
04AUG85	220	0	28.7
04AUG85	220	60	25.8
04AUG85	220	120	24.3
06AUG85	220	0	29.0
06AUG85	220	60	25.8
06AUG85	220	120	24.6
09AUG85	220	0	28.5
09AUG85	220	60	25.9
09AUG85	220	120	24.3
14AUG85	220	0	28.7
14AUG85	220	60	26.1
14AUG85	220	120	24.1
16AUG85	220	0	28.6
16AUG85	220	60	26.4
16AUG85	220	120	24.5
21AUG85	220	0	28.6
21AUG85	220	60	26.1
21AUG85	220	120	24.4
23AUG85	220	0	29.1
23AUG85	220	60	26.1
23AUG85	220	120	24.5
27AUG85	220	0	28.8
27AUG85	220	60	26.3
27AUG85	220	120	24.1
30AUG85	220	0	28.5
30AUG85	220	60	26.0
30AUG85	220	120	24.5
03SEP85	220	0	28.7
03SEP85	220	60	26.6
03SEP85	220	120	24.5
09SEP85	220	0	28.4
09SEP85	220	60	26.4
09SEP85	220	120	24.6
18SEP85	220	0	28.9
18SEP85	220	60	26.4
18SEP85	220	120	24.7
30SEP85	220	0	28.9
30SEP85	220	60	25.9
30SEP85	220	120	24.7
09OCT85	220	0	29.0
09OCT85	220	60	26.4
09OCT85	220	120	23.3
16OCT85	220	0	28.4

-----TREAT=220 cm. HORIZONTAL TUBE TUBE NUMBER=804-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
16OCT85	220	60	27.0
16OCT85	220	120	24.8
23OCT85	220	0	29.0
23OCT85	220	60	25.9
23OCT85	220	120	24.4
30OCT85	220	0	28.2
30OCT85	220	60	25.9
30OCT85	220	120	23.3
06NOV85	220	0	28.3
06NOV85	220	60	27.0
06NOV85	220	120	23.4

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
12APR84	295	0	21.8
12APR84	295	10	21.2
12APR84	295	20	20.4
12APR84	295	30	20.3
12APR84	295	40	20.5
12APR84	295	50	20.7
12APR84	295	60	21.3
12APR84	295	70	20.8
12APR84	295	80	20.6
12APR84	295	90	20.4
12APR84	295	100	19.8
12APR84	295	110	19.1
12APR84	295	120	17.7
12APR84	295	130	12.4
10MAY84	295	0	20.2
10MAY84	295	10	19.6
10MAY84	295	20	19.5
10MAY84	295	30	19.3
10MAY84	295	40	19.3
10MAY84	295	50	19.4
10MAY84	295	60	19.5
10MAY84	295	70	19.4
10MAY84	295	80	19.3
10MAY84	295	90	19.0
10MAY84	295	100	18.4
10MAY84	295	110	18.0
10MAY84	295	120	16.5
06JUN84	295	0	28.5
06JUN84	295	10	26.8
06JUN84	295	20	26.6
06JUN84	295	30	26.7
06JUN84	295	40	26.5
06JUN84	295	50	26.6
06JUN84	295	60	26.2
06JUN84	295	70	26.5
06JUN84	295	80	26.5
06JUN84	295	90	25.8
06JUN84	295	100	26.0
06JUN84	295	110	25.7
06JUN84	295	120	24.5
25JUL84	295	0	28.9
25JUL84	295	10	27.5
25JUL84	295	20	27.1
25JUL84	295	30	26.9
25JUL84	295	40	27.2

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
25JUL84	295	50	27.1
25JUL84	295	60	27.2
25JUL84	295	70	26.9
25JUL84	295	80	26.9
25JUL84	295	90	26.9
25JUL84	295	100	26.7
25JUL84	295	110	27.4
25JUL84	295	120	26.0
09AUG84	295	0	30.9
09AUG84	295	0	29.8
09AUG84	295	10	30.2
09AUG84	295	10	29.1
09AUG84	295	20	29.8
09AUG84	295	20	28.8
09AUG84	295	30	29.4
09AUG84	295	30	28.4
09AUG84	295	40	28.8
09AUG84	295	40	29.9
09AUG84	295	50	29.3
09AUG84	295	50	30.3
09AUG84	295	60	29.1
09AUG84	295	60	28.1
09AUG84	295	70	29.0
09AUG84	295	70	28.0
09AUG84	295	80	29.2
09AUG84	295	80	28.2
09AUG84	295	90	29.2
09AUG84	295	90	28.2
09AUG84	295	100	29.0
09AUG84	295	100	30.1
09AUG84	295	110	29.4
09AUG84	295	110	28.4
09AUG84	295	120	27.6
09AUG84	295	120	28.6
20AUG84	295	0	31.9
20AUG84	295	10	30.0
20AUG84	295	20	30.6
20AUG84	295	30	30.9
20AUG84	295	40	30.8
20AUG84	295	50	30.8
20AUG84	295	60	30.6
20AUG84	295	70	30.5
20AUG84	295	80	30.3
20AUG84	295	90	29.6
20AUG84	295	100	29.8

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20AUG84	295	110	30.3
20AUG84	295	120	29.2
04SEP84	295	0	30.2
04SEP84	295	10	29.8
04SEP84	295	20	29.4
04SEP84	295	30	29.2
04SEP84	295	40	29.5
04SEP84	295	50	29.7
04SEP84	295	60	29.2
04SEP84	295	70	29.3
04SEP84	295	80	29.3
04SEP84	295	90	29.2
04SEP84	295	100	29.2
04SEP84	295	110	29.2
04SEP84	295	120	28.1
18SEP84	295	0	28.7
18SEP84	295	10	26.9
18SEP84	295	20	26.9
18SEP84	295	30	27.4
18SEP84	295	40	27.1
18SEP84	295	50	27.0
18SEP84	295	60	26.8
18SEP84	295	70	26.8
18SEP84	295	80	27.0
18SEP84	295	90	26.8
18SEP84	295	100	27.2
18SEP84	295	110	26.9
18SEP84	295	120	25.5
02OCT84	295	0	27.2
02OCT84	295	10	25.9
02OCT84	295	20	25.9
02OCT84	295	30	25.7
02OCT84	295	40	25.8
02OCT84	295	50	25.9
02OCT84	295	60	26.2
02OCT84	295	70	25.8
02OCT84	295	80	25.2
02OCT84	295	90	24.7
02OCT84	295	100	25.0
02OCT84	295	110	24.9
02OCT84	295	120	23.7
18OCT84	295	0	28.9
18OCT84	295	10	26.6
18OCT84	295	20	27.2
18OCT84	295	30	26.9

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
18OCT84	295	40	27.1
18OCT84	295	50	27.0
18OCT84	295	60	26.7
18OCT84	295	70	26.9
18OCT84	295	80	26.4
18OCT84	295	90	26.0
18OCT84	295	100	26.9
18OCT84	295	110	26.5
18OCT84	295	120	25.5
31OCT84	295	0	28.4
31OCT84	295	10	26.8
31OCT84	295	20	27.1
31OCT84	295	30	27.1
31OCT84	295	40	26.9
31OCT84	295	50	26.6
31OCT84	295	60	26.8
31OCT84	295	70	26.6
31OCT84	295	80	26.3
31OCT84	295	90	26.5
31OCT84	295	100	26.5
31OCT84	295	110	26.5
31OCT84	295	120	24.9
28NOV84	295	0	28.8
28NOV84	295	10	27.4
28NOV84	295	20	27.6
28NOV84	295	30	27.7
28NOV84	295	40	27.2
28NOV84	295	50	27.2
28NOV84	295	60	27.3
28NOV84	295	70	27.6
28NOV84	295	80	27.1
28NOV84	295	90	26.9
28NOV84	295	100	27.0
28NOV84	295	110	27.3
28NOV84	295	120	26.2
03JAN85	295	0	28.5
03JAN85	295	60	27.2
03JAN85	295	120	26.0
17JAN85	295	0	30.7
17JAN85	295	60	28.7
17JAN85	295	120	28.2
04FEB85	295	0	28.4
04FEB85	295	60	27.2
04FEB85	295	120	25.3
20FEB85	295	0	29.3

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20FEB85	295	60	27.8
20FEB85	295	120	27.2
06MAR85	295	0	30.0
06MAR85	295	60	28.5
06MAR85	295	120	27.7
21MAR85	295	0	30.7
21MAR85	295	60	28.6
21MAR85	295	120	27.7
01APR85	295	0	31.7
01APR85	295	60	30.4
01APR85	295	120	28.8
08APR85	295	0	30.1
08APR85	295	60	28.0
08APR85	295	120	27.1
25APR85	295	0	28.8
25APR85	295	60	26.8
25APR85	295	120	25.7
29APR85	295	0	29.3
29APR85	295	60	27.0
29APR85	295	120	26.3
30APR85	295	0	29.0
30APR85	295	60	27.0
30APR85	295	120	25.9
01MAY85	295	0	28.8
01MAY85	295	60	27.1
01MAY85	295	120	25.0
02MAY85	295	0	28.8
02MAY85	295	60	26.4
02MAY85	295	120	23.1
03MAY85	295	0	28.5
03MAY85	295	60	26.6
03MAY85	295	120	22.1
06MAY85	295	0	27.8
06MAY85	295	60	26.0
06MAY85	295	120	23.2
08MAY85	295	0	26.9
08MAY85	295	60	25.4
08MAY85	295	120	21.5
10MAY85	295	0	26.8
10MAY85	295	60	25.1
10MAY85	295	120	21.0
13MAY85	295	0	26.1
13MAY85	295	60	24.6
13MAY85	295	120	21.7
15MAY85	295	0	25.6

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15MAY85	295	60	23.9
15MAY85	295	120	21.3
17MAY85	295	0	25.4
17MAY85	295	60	23.8
17MAY85	295	120	21.0
21MAY85	295	0	24.1
21MAY85	295	60	22.4
21MAY85	295	120	19.6
23MAY85	295	0	23.8
23MAY85	295	60	22.4
23MAY85	295	120	19.2
28MAY85	295	0	22.4
28MAY85	295	60	21.2
28MAY85	295	120	18.3
30MAY85	295	0	21.7
30MAY85	295	60	20.9
30MAY85	295	120	18.4
04JUN85	295	0	22.1
04JUN85	295	60	20.7
04JUN85	295	120	18.1
12JUN85	295	0	21.2
12JUN85	295	60	20.1
12JUN85	295	120	17.3
18JUN85	295	0	21.0
18JUN85	295	60	20.2
18JUN85	295	120	17.2
25JUN85	295	0	21.1
25JUN85	295	60	19.9
25JUN85	295	120	16.7
02JUL85	295	0	20.6
02JUL85	295	60	20.1
02JUL85	295	120	16.1
11JUL85	295	0	20.2
11JUL85	295	60	19.5
11JUL85	295	120	16.4
12JUL85	295	0	20.0
12JUL85	295	60	18.7
12JUL85	295	120	16.3
13JUL85	295	0	19.5
13JUL85	295	60	19.0
13JUL85	295	120	15.6
14JUL85	295	0	19.7
14JUL85	295	60	18.7
14JUL85	295	120	15.2
15JUL85	295	0	19.6

-----TREAT=295 cm, HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15JUL85	295	60	18.9
15JUL85	295	120	12.6
16JUL85	295	0	19.2
16JUL85	295	60	18.7
16JUL85	295	120	11.4
17JUL85	295	0	20.2
17JUL85	295	60	18.9
17JUL85	295	120	15.5
18JUL85	295	0	21.6
18JUL85	295	60	20.1
18JUL85	295	120	16.5
19JUL85	295	0	25.8
19JUL85	295	60	24.3
19JUL85	295	120	19.8
21JUL85	295	0	27.4
21JUL85	295	60	25.9
21JUL85	295	120	24.2
22JUL85	295	0	27.1
22JUL85	295	60	26.0
22JUL85	295	120	24.2
23JUL85	295	0	27.6
23JUL85	295	60	25.8
23JUL85	295	120	24.0
24JUL85	295	0	26.9
24JUL85	295	60	26.0
24JUL85	295	120	23.8
25JUL85	295	0	27.7
25JUL85	295	60	25.7
25JUL85	295	120	22.6
26JUL85	295	0	27.6
26JUL85	295	60	26.0
26JUL85	295	120	24.2
27JUL85	295	0	28.0
27JUL85	295	60	26.1
27JUL85	295	120	24.8
28JUL85	295	0	27.8
28JUL85	295	60	25.8
28JUL85	295	120	24.7
29JUL85	295	0	27.8
29JUL85	295	60	26.3
29JUL85	295	120	24.5
30JUL85	295	0	28.0
30JUL85	295	60	26.2
30JUL85	295	120	24.4
02AUG85	295	0	26.4

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
02AUG85	295	60	26.1
02AUG85	295	120	24.6
04AUG85	295	0	27.6
04AUG85	295	60	25.9
04AUG85	295	120	24.9
06AUG85	295	0	28.2
06AUG85	295	60	26.6
06AUG85	295	120	25.1
09AUG85	295	0	27.9
09AUG85	295	60	26.3
09AUG85	295	120	25.1
14AUG85	295	0	28.3
14AUG85	295	60	26.3
14AUG85	295	120	24.6
16AUG85	295	0	28.2
16AUG85	295	60	26.7
16AUG85	295	120	24.7
21AUG85	295	0	28.6
21AUG85	295	60	26.9
21AUG85	295	120	25.2
23AUG85	295	0	28.2
23AUG85	295	60	26.6
23AUG85	295	120	24.9
27AUG85	295	0	28.8
27AUG85	295	60	26.7
27AUG85	295	120	24.9
30AUG85	295	0	27.9
30AUG85	295	60	26.7
30AUG85	295	120	24.9
03SEP85	295	0	28.4
03SEP85	295	60	27.3
03SEP85	295	120	25.4
09SEP85	295	0	28.5
09SEP85	295	60	26.9
09SEP85	295	120	25.1
18SEP85	295	0	28.5
18SEP85	295	60	26.8
18SEP85	295	120	25.3
30SEP85	295	0	28.6
30SEP85	295	60	26.4
30SEP85	295	120	25.1
09OCT85	295	0	28.4
09OCT85	295	60	26.9
09OCT85	295	120	25.3
16OCT85	295	0	29.0

-----TREAT=295 cm. HORIZONTAL TUBE TUBE NUMBER=805-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
16OCT85	295	60	26.2
16OCT85	295	120	25.2
23OCT85	295	0	28.7
23OCT85	295	60	27.0
23OCT85	295	120	25.6
30OCT85	295	0	28.4
30OCT85	295	60	26.8
30OCT85	295	120	25.1
06NOV85	295	0	28.4
06NOV85	295	60	26.6
06NOV85	295	120	25.3

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
12APR84	370	0	22.4
12APR84	370	10	21.0
12APR84	370	20	21.2
12APR84	370	30	21.0
12APR84	370	40	21.7
12APR84	370	50	21.8
12APR84	370	60	21.7
12APR84	370	70	22.1
12APR84	370	80	21.3
12APR84	370	90	20.9
12APR84	370	100	20.7
12APR84	370	110	20.0
12APR84	370	120	18.6
12APR84	370	130	12.8
10MAY84	370	0	20.9
10MAY84	370	10	20.3
10MAY84	370	20	20.4
10MAY84	370	30	20.2
10MAY84	370	40	20.5
10MAY84	370	50	20.5
10MAY84	370	60	20.8
10MAY84	370	70	20.4
10MAY84	370	80	20.6
10MAY84	370	90	19.8
10MAY84	370	100	19.2
10MAY84	370	110	19.2
10MAY84	370	120	18.0
06JUN84	370	0	26.2
06JUN84	370	10	25.9
06JUN84	370	20	26.0
06JUN84	370	30	26.2
06JUN84	370	40	26.4
06JUN84	370	50	26.5
06JUN84	370	60	26.0
06JUN84	370	70	26.6
06JUN84	370	80	26.2
06JUN84	370	90	27.2
06JUN84	370	100	27.9
06JUN84	370	110	28.0
06JUN84	370	120	26.8
25JUL84	370	0	31.5
25JUL84	370	10	29.6
25JUL84	370	20	29.2
25JUL84	370	30	28.5
25JUL84	370	40	27.9

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
25JUL84	370	50	27.6
25JUL84	370	60	27.0
25JUL84	370	70	27.3
25JUL84	370	80	27.9
25JUL84	370	90	27.8
25JUL84	370	100	28.4
25JUL84	370	110	28.9
25JUL84	370	120	28.1
09AUG84	370	0	34.0
09AUG84	370	0	32.7
09AUG84	370	10	31.1
09AUG84	370	10	32.3
09AUG84	370	20	31.8
09AUG84	370	20	30.6
09AUG84	370	30	31.4
09AUG84	370	30	30.3
09AUG84	370	40	31.1
09AUG84	370	40	30.0
09AUG84	370	50	30.4
09AUG84	370	50	29.3
09AUG84	370	60	30.1
09AUG84	370	60	29.1
09AUG84	370	70	29.2
09AUG84	370	70	30.2
09AUG84	370	80	29.2
09AUG84	370	80	30.3
09AUG84	370	90	30.6
09AUG84	370	90	29.5
09AUG84	370	100	30.9
09AUG84	370	100	29.8
09AUG84	370	110	30.6
09AUG84	370	110	31.8
09AUG84	370	120	30.1
09AUG84	370	120	31.2
20AUG84	370	0	35.4
20AUG84	370	10	33.9
20AUG84	370	20	33.0
20AUG84	370	30	32.3
20AUG84	370	40	31.5
20AUG84	370	50	31.6
20AUG84	370	60	31.0
20AUG84	370	70	30.6
20AUG84	370	80	31.1
20AUG84	370	90	31.5
20AUG84	370	100	31.8

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20AUG84	370	110	32.8
20AUG84	370	120	31.8
04SEP84	370	0	34.4
04SEP84	370	10	32.5
04SEP84	370	20	32.1
04SEP84	370	30	31.6
04SEP84	370	40	30.7
04SEP84	370	50	30.4
04SEP84	370	60	30.0
04SEP84	370	70	29.6
04SEP84	370	80	30.4
04SEP84	370	90	30.4
04SEP84	370	100	31.0
04SEP84	370	110	31.8
04SEP84	370	120	31.3
18SEP84	370	0	31.2
18SEP84	370	10	30.1
18SEP84	370	20	29.3
18SEP84	370	30	29.0
18SEP84	370	40	28.5
18SEP84	370	50	28.1
18SEP84	370	60	27.8
18SEP84	370	70	27.8
18SEP84	370	80	28.4
18SEP84	370	90	28.4
18SEP84	370	100	29.1
18SEP84	370	110	29.0
18SEP84	370	120	28.5
02OCT84	370	0	29.5
02OCT84	370	10	28.7
02OCT84	370	20	28.7
02OCT84	370	30	28.2
02OCT84	370	40	27.8
02OCT84	370	50	27.5
02OCT84	370	60	27.4
02OCT84	370	70	27.1
02OCT84	370	80	27.8
02OCT84	370	90	28.2
02OCT84	370	100	28.5
02OCT84	370	110	28.6
02OCT84	370	120	26.9
18OCT84	370	0	31.2
18OCT84	370	10	29.6
18OCT84	370	20	29.7
18OCT84	370	30	28.9

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
18OCT84	370	40	28.4
18OCT84	370	50	28.0
18OCT84	370	60	27.7
18OCT84	370	70	28.1
18OCT84	370	80	28.1
18OCT84	370	90	28.9
18OCT84	370	100	29.4
18OCT84	370	110	29.4
18OCT84	370	120	27.7
31OCT84	370	0	30.7
31OCT84	370	10	30.1
31OCT84	370	20	29.7
31OCT84	370	30	29.0
31OCT84	370	40	28.8
31OCT84	370	50	28.2
31OCT84	370	60	27.6
31OCT84	370	70	27.8
31OCT84	370	80	28.0
31OCT84	370	90	28.4
31OCT84	370	100	29.0
31OCT84	370	110	29.5
31OCT84	370	120	28.8
28NOV84	370	0	31.4
28NOV84	370	10	30.2
28NOV84	370	20	29.8
28NOV84	370	30	29.4
28NOV84	370	40	28.9
28NOV84	370	50	28.3
28NOV84	370	60	28.1
28NOV84	370	70	28.0
28NOV84	370	80	28.1
28NOV84	370	90	28.6
28NOV84	370	100	29.5
28NOV84	370	110	29.5
28NOV84	370	120	28.9
03JAN85	370	0	29.1
03JAN85	370	60	27.1
03JAN85	370	120	26.6
17JAN85	370	0	33.0
17JAN85	370	60	28.7
17JAN85	370	120	31.0
04FEB85	370	0	31.5
04FEB85	370	60	28.4
04FEB85	370	120	28.8
20FEB85	370	0	31.9

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20FEB85	370	60	28.2
20FEB85	370	120	30.0
06MAR85	370	0	32.1
06MAR85	370	60	29.1
06MAR85	370	120	29.8
21MAR85	370	0	32.9
21MAR85	370	60	29.1
21MAR85	370	120	29.0
01APR85	370	0	34.5
01APR85	370	60	30.3
01APR85	370	120	31.7
08APR85	370	0	32.3
08APR85	370	60	29.0
08APR85	370	120	30.0
25APR85	370	0	31.2
25APR85	370	60	27.6
25APR85	370	120	28.2
29APR85	370	0	31.2
29APR85	370	60	28.0
29APR85	370	120	28.5
30APR85	370	0	31.8
30APR85	370	60	27.9
30APR85	370	120	29.1
01MAY85	370	0	31.3
01MAY85	370	60	28.3
01MAY85	370	120	27.3
02MAY85	370	0	31.2
02MAY85	370	60	28.2
02MAY85	370	120	26.3
03MAY85	370	0	31.2
03MAY85	370	60	28.0
03MAY85	370	120	25.5
06MAY85	370	0	30.0
06MAY85	370	60	27.7
06MAY85	370	120	27.3
08MAY85	370	0	28.4
08MAY85	370	60	27.6
08MAY85	370	120	23.2
10MAY85	370	0	27.2
10MAY85	370	60	25.8
10MAY85	370	120	20.8
13MAY85	370	0	25.6
13MAY85	370	60	24.0
13MAY85	370	120	21.9
15MAY85	370	0	24.6

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15MAY85	370	60	23.4
15MAY85	370	120	20.9
17MAY85	370	0	24.0
17MAY85	370	60	23.3
17MAY85	370	120	21.5
21MAY85	370	0	23.4
21MAY85	370	60	22.5
21MAY85	370	120	19.8
23MAY85	370	0	22.6
23MAY85	370	60	22.2
23MAY85	370	120	19.9
28MAY85	370	0	22.1
28MAY85	370	60	21.6
28MAY85	370	120	19.5
30MAY85	370	0	22.2
30MAY85	370	60	21.7
30MAY85	370	120	18.5
04JUN85	370	0	21.9
04JUN85	370	60	21.5
04JUN85	370	120	18.3
12JUN85	370	0	21.8
12JUN85	370	60	21.2
12JUN85	370	120	18.5
18JUN85	370	0	21.3
18JUN85	370	60	21.0
18JUN85	370	120	17.9
25JUN85	370	0	21.3
25JUN85	370	60	21.2
25JUN85	370	120	18.2
02JUL85	370	0	21.3
02JUL85	370	60	20.8
02JUL85	370	120	18.4
11JUL85	370	0	21.0
11JUL85	370	60	20.6
11JUL85	370	120	17.7
12JUL85	370	0	20.6
12JUL85	370	60	20.0
12JUL85	370	120	17.0
13JUL85	370	0	20.0
13JUL85	370	60	20.0
13JUL85	370	120	17.4
14JUL85	370	0	20.2
14JUL85	370	60	20.2
14JUL85	370	120	16.8
15JUL85	370	0	19.7

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
15JUL85	370	60	20.2
15JUL85	370	120	12.0
16JUL85	370	0	20.1
16JUL85	370	60	20.0
16JUL85	370	120	9.9
17JUL85	370	0	20.3
17JUL85	370	60	20.4
17JUL85	370	120	16.7
18JUL85	370	0	20.5
18JUL85	370	60	20.3
18JUL85	370	120	16.7
19JUL85	370	0	20.8
19JUL85	370	60	20.3
19JUL85	370	120	9.9
21JUL85	370	0	27.2
21JUL85	370	60	25.1
21JUL85	370	120	25.6
22JUL85	370	0	29.6
22JUL85	370	60	25.7
22JUL85	370	120	26.6
23JUL85	370	0	29.0
23JUL85	370	0	29.0
23JUL85	370	60	26.1
23JUL85	370	60	26.1
23JUL85	370	120	26.1
23JUL85	370	120	26.1
24JUL85	370	0	29.6
24JUL85	370	60	26.4
24JUL85	370	120	26.7
25JUL85	370	0	29.9
25JUL85	370	60	26.3
25JUL85	370	120	26.5
26JUL85	370	0	29.7
26JUL85	370	60	26.0
26JUL85	370	120	27.5
27JUL85	370	0	29.7
27JUL85	370	60	26.4
27JUL85	370	120	27.2
28JUL85	370	0	29.8
28JUL85	370	60	26.4
28JUL85	370	120	27.8
29JUL85	370	0	30.4
29JUL85	370	60	26.3
29JUL85	370	120	26.9
30JUL85	370	0	30.4

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
30JUL85	370	60	26.0
30JUL85	370	120	26.6
02AUG85	370	0	29.6
02AUG85	370	60	26.4
02AUG85	370	120	26.9
04AUG85	370	0	29.7
04AUG85	370	60	26.6
04AUG85	370	120	27.2
06AUG85	370	0	30.4
06AUG85	370	60	26.6
06AUG85	370	120	27.2
09AUG85	370	0	30.9
09AUG85	370	60	26.5
09AUG85	370	120	28.2
14AUG85	370	0	30.7
14AUG85	370	60	26.6
14AUG85	370	120	27.7
16AUG85	370	0	30.4
16AUG85	370	60	26.5
16AUG85	370	120	27.7
21AUG85	370	0	31.0
21AUG85	370	60	26.6
21AUG85	370	120	27.4
23AUG85	370	0	30.6
23AUG85	370	60	26.4
23AUG85	370	120	27.7
27AUG85	370	0	30.7
27AUG85	370	60	27.3
27AUG85	370	120	27.6
30AUG85	370	0	30.8
30AUG85	370	60	27.3
30AUG85	370	120	27.8
03SEP85	370	0	30.7
03SEP85	370	60	26.6
03SEP85	370	120	28.0
09SEP85	370	0	30.5
09SEP85	370	60	27.0
09SEP85	370	120	28.1
18SEP85	370	0	30.8
18SEP85	370	60	26.8
18SEP85	370	120	28.2
30SEP85	370	0	31.2
30SEP85	370	60	27.0
30SEP85	370	120	27.7
09OCT85	370	0	31.0

-----TREAT=370 cm. HORIZONTAL TUBE TUBE NUMBER=806-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
09OCT85	370	60	26.9
09OCT85	370	120	27.8
16OCT85	370	0	31.7
16OCT85	370	60	27.1
16OCT85	370	120	27.9
23OCT85	370	0	31.0
23OCT85	370	60	26.9
23OCT85	370	120	28.3
30OCT85	370	0	31.0
30OCT85	370	60	27.4
30OCT85	370	120	28.0
06NOV85	370	0	31.5
06NOV85	370	60	27.4
06NOV85	370	120	27.6

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
12APR84	445	0	25.2
12APR84	445	10	25.1
12APR84	445	20	24.7
12APR84	445	30	25.0
12APR84	445	40	24.3
12APR84	445	50	24.1
12APR84	445	60	23.8
12APR84	445	70	23.2
12APR84	445	80	23.3
12APR84	445	90	23.6
12APR84	445	100	22.8
12APR84	445	110	22.3
12APR84	445	120	20.7
12APR84	445	130	15.2
10MAY84	445	0	23.9
10MAY84	445	10	23.3
10MAY84	445	20	23.2
10MAY84	445	30	23.3
10MAY84	445	40	23.2
10MAY84	445	50	22.9
10MAY84	445	60	22.9
10MAY84	445	70	22.5
10MAY84	445	80	21.9
10MAY84	445	90	22.2
10MAY84	445	100	21.9
10MAY84	445	110	21.0
10MAY84	445	120	19.3
06JUN84	445	0	25.4
06JUN84	445	10	24.7
06JUN84	445	20	25.1
06JUN84	445	30	24.7
06JUN84	445	40	25.2
06JUN84	445	50	24.6
06JUN84	445	60	23.8
06JUN84	445	70	23.6
06JUN84	445	80	23.9
06JUN84	445	90	23.8
06JUN84	445	100	23.4
06JUN84	445	110	22.7
06JUN84	445	120	20.7
25JUL84	445	0	29.6
25JUL84	445	10	27.6
25JUL84	445	20	27.9
25JUL84	445	30	27.3
25JUL84	445	40	27.4

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
25JUL84	445	50	27.3
25JUL84	445	60	27.5
25JUL84	445	70	27.6
25JUL84	445	80	27.3
25JUL84	445	90	27.5
25JUL84	445	100	28.1
25JUL84	445	110	28.2
25JUL84	445	120	27.2
09AUG84	445	0	32.2
09AUG84	445	0	31.1
09AUG84	445	10	31.0
09AUG84	445	10	29.9
09AUG84	445	20	30.9
09AUG84	445	20	29.8
09AUG84	445	30	30.5
09AUG84	445	30	29.4
09AUG84	445	40	29.4
09AUG84	445	40	30.5
09AUG84	445	50	29.2
09AUG84	445	50	30.3
09AUG84	445	60	30.1
09AUG84	445	60	29.1
09AUG84	445	70	31.0
09AUG84	445	70	29.9
09AUG84	445	80	29.2
09AUG84	445	80	30.2
09AUG84	445	90	29.4
09AUG84	445	90	30.5
09AUG84	445	100	30.1
09AUG84	445	100	31.2
09AUG84	445	110	32.0
09AUG84	445	110	30.9
09AUG84	445	120	29.4
09AUG84	445	120	30.5
20AUG84	445	0	33.2
20AUG84	445	10	31.5
20AUG84	445	20	30.6
20AUG84	445	30	31.1
20AUG84	445	40	30.6
20AUG84	445	50	30.7
20AUG84	445	60	31.3
20AUG84	445	70	30.7
20AUG84	445	80	30.7
20AUG84	445	90	30.6
20AUG84	445	100	31.1

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
20AUG84	445	110	31.4
20AUG84	445	120	30.0
04SEP84	445	0	31.8
04SEP84	445	10	29.9
04SEP84	445	20	29.9
04SEP84	445	30	29.6
04SEP84	445	40	30.3
04SEP84	445	50	29.7
04SEP84	445	60	30.0
04SEP84	445	70	29.7
04SEP84	445	80	29.6
04SEP84	445	90	29.5
04SEP84	445	100	29.7
04SEP84	445	110	30.0
04SEP84	445	120	28.7
18SEP84	445	0	29.6
18SEP84	445	10	27.8
18SEP84	445	20	27.3
18SEP84	445	30	27.9
18SEP84	445	40	27.3
18SEP84	445	50	27.5
18SEP84	445	60	27.4
18SEP84	445	70	26.9
18SEP84	445	80	22.3
18SEP84	445	90	27.2
18SEP84	445	100	27.8
18SEP84	445	110	27.5
18SEP84	445	120	26.3
02OCT84	445	0	28.3
02OCT84	445	10	26.8
02OCT84	445	20	26.8
02OCT84	445	30	26.6
02OCT84	445	40	26.4
02OCT84	445	50	26.4
02OCT84	445	60	26.3
02OCT84	445	70	26.0
02OCT84	445	80	25.8
02OCT84	445	90	25.7
02OCT84	445	100	25.6
02OCT84	445	110	24.9
02OCT84	445	120	22.8
18OCT84	445	0	29.1
18OCT84	445	10	27.9
18OCT84	445	20	26.9
18OCT84	445	30	27.4

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
18OCT84	445	40	27.5
18OCT84	445	50	27.1
18OCT84	445	60	27.6
18OCT84	445	70	26.8
18OCT84	445	80	27.1
18OCT84	445	90	27.1
18OCT84	445	100	27.3
18OCT84	445	110	26.8
18OCT84	445	120	25.4
31OCT84	445	0	29.4
31OCT84	445	10	27.9
31OCT84	445	20	28.0
31OCT84	445	30	27.6
31OCT84	445	40	28.0
31OCT84	445	50	26.9
31OCT84	445	60	27.3
31OCT84	445	70	27.1
31OCT84	445	80	27.5
31OCT84	445	90	27.2
31OCT84	445	100	27.2
31OCT84	445	110	26.6
31OCT84	445	120	26.0
28NOV84	445	0	29.3
28NOV84	445	10	28.3
28NOV84	445	20	27.7
28NOV84	445	30	28.1
28NOV84	445	40	27.7
28NOV84	445	50	27.5
28NOV84	445	60	27.7
28NOV84	445	70	27.6
28NOV84	445	80	27.3
28NOV84	445	90	27.0
28NOV84	445	100	27.7
28NOV84	445	110	27.8
28NOV84	445	120	26.8
17JAN85	445	0	31.3
17JAN85	445	60	28.6
17JAN85	445	120	28.9
04FEB85	445	0	29.1
04FEB85	445	60	27.1
04FEB85	445	120	26.1
20FEB85	445	0	30.5
20FEB85	445	60	28.5
20FEB85	445	180	27.8
06MAR85	445	0	30.4

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
06MAR85	445	60	28.9
06MAR85	445	120	27.8
21MAR85	445	0	31.0
21MAR85	445	60	29.1
21MAR85	445	120	29.3
01APR85	445	0	32.7
01APR85	445	60	30.3
01APR85	445	120	30.1
08APR85	445	0	30.6
08APR85	445	60	28.3
08APR85	445	120	27.9
25APR85	445	0	28.6
25APR85	445	60	27.3
25APR85	445	120	26.5
30APR85	445	0	30.2
30APR85	445	60	27.8
30APR85	445	120	27.1
02MAY85	445	0	29.2
02MAY85	445	60	27.5
02MAY85	445	120	24.3
03MAY85	445	0	29.5
03MAY85	445	60	27.3
03MAY85	445	120	23.6
06MAY85	445	0	28.5
06MAY85	445	60	26.8
06MAY85	445	120	23.5
08MAY85	445	0	27.7
08MAY85	445	60	26.0
08MAY85	445	120	20.4
10MAY85	445	0	27.4
10MAY85	445	60	25.8
10MAY85	445	120	20.8
13MAY85	445	0	26.8
13MAY85	445	60	25.3
13MAY85	445	120	21.4
15MAY85	445	0	26.6
15MAY85	445	60	24.7
15MAY85	445	120	21.5
17MAY85	445	0	26.4
17MAY85	445	60	24.4
17MAY85	445	120	21.5
21MAY85	445	0	25.7
21MAY85	445	60	23.9
21MAY85	445	120	20.7
23MAY85	445	0	25.4

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
23MAY85	445	60	23.7
23MAY85	445	120	21.6
28MAY85	445	0	25.0
28MAY85	445	60	23.8
28MAY85	445	120	19.8
30MAY85	445	0	24.9
30MAY85	445	60	23.1
30MAY85	445	120	20.0
04JUN85	445	0	24.7
04JUN85	445	60	23.1
04JUN85	445	120	19.4
12JUN85	445	0	24.1
12JUN85	445	60	22.9
12JUN85	445	120	19.5
18JUN85	445	0	24.5
18JUN85	445	60	23.1
18JUN85	445	120	19.5
25JUN85	445	0	24.4
25JUN85	445	60	22.9
25JUN85	445	120	19.2
02JUL85	445	0	24.3
02JUL85	445	60	23.0
02JUL85	445	120	19.5
11JUL85	445	0	24.1
11JUL85	445	60	22.7
11JUL85	445	120	18.9
12JUL85	445	0	22.9
12JUL85	445	60	22.2
12JUL85	445	120	18.7
13JUL85	445	0	23.4
13JUL85	445	60	21.7
13JUL85	445	120	17.4
14JUL85	445	0	23.2
14JUL85	445	60	21.9
15JUL85	445	0	23.5
15JUL85	445	60	21.7
15JUL85	445	120	13.4
16JUL85	445	0	22.8
16JUL85	445	60	21.7
16JUL85	445	120	12.3
17JUL85	445	0	23.3
17JUL85	445	60	22.2
17JUL85	445	120	18.3
18JUL85	445	0	23.1
18JUL85	445	60	22.5

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
18JUL85	445	120	18.3
19JUL85	445	0	22.4
19JUL85	445	60	21.9
19JUL85	445	120	11.0
21JUL85	445	0	24.4
21JUL85	445	60	22.8
21JUL85	445	120	18.7
22JUL85	445	0	26.4
22JUL85	445	60	25.0
22JUL85	445	120	22.4
24JUL85	445	0	28.3
24JUL85	445	60	26.4
24JUL85	445	120	25.0
25JUL85	445	0	27.9
25JUL85	445	60	26.4
25JUL85	445	120	24.8
26JUL85	445	0	28.0
26JUL85	445	60	26.1
26JUL85	445	120	25.6
27JUL85	445	0	28.5
27JUL85	445	60	26.4
27JUL85	445	120	25.6
28JUL85	445	0	28.0
28JUL85	445	60	26.8
28JUL85	445	120	26.4
29JUL85	445	0	28.2
29JUL85	445	60	26.4
29JUL85	445	120	26.1
30JUL85	445	0	28.2
30JUL85	445	60	26.6
30JUL85	445	120	24.9
02AUG85	445	0	28.9
02AUG85	445	60	26.5
02AUG85	445	120	25.7
04AUG85	445	0	28.6
04AUG85	445	60	26.7
04AUG85	445	120	25.7
06AUG85	445	0	28.9
06AUG85	445	60	26.7
06AUG85	445	120	26.0
09AUG85	445	0	28.9
09AUG85	445	60	26.6
09AUG85	445	120	25.9
14AUG85	445	0	28.5
14AUG85	445	60	26.6

-----TREAT=445 cm. HORIZONTAL TUBE TUBE NUMBER=807-----

SAMPLING DATE	DEPTH FROM SURFACE (cm.)	DISTANCE FROM CENTER	VOLUMETRIC MOISTURE CONTENT (%)
14AUG85	445	120	24.9
16AUG85	445	0	28.6
16AUG85	445	60	26.9
16AUG85	445	120	25.4
21AUG85	445	0	29.2
21AUG85	445	60	26.7
21AUG85	445	120	25.9
23AUG85	445	0	28.4
23AUG85	445	60	26.6
23AUG85	445	120	26.3
27AUG85	445	0	28.8
27AUG85	445	60	26.9
27AUG85	445	120	26.3
30AUG85	445	0	29.0
30AUG85	445	60	26.6
30AUG85	445	120	26.3
03SEP85	445	0	28.9
03SEP85	445	60	26.7
03SEP85	445	120	25.9
09SEP85	445	0	29.1
09SEP85	445	60	27.0
09SEP85	445	120	26.2
18SEP85	445	0	29.1
18SEP85	445	60	27.3
18SEP85	445	120	26.6
30SEP85	445	0	28.7
30SEP85	445	60	27.1
30SEP85	445	120	25.8
09OCT85	445	0	28.6
09OCT85	445	60	27.1
09OCT85	445	120	25.9
16OCT85	445	0	28.7
16OCT85	445	60	26.7
16OCT85	445	120	25.9
23OCT85	445	0	29.4
23OCT85	445	60	26.7
23OCT85	445	120	25.5
30OCT85	445	0	28.8
30OCT85	445	60	26.8
30OCT85	445	120	24.0
06NOV85	445	0	28.2
06NOV85	445	60	26.1
06NOV85	445	120	25.3

APPENDIX B
TRACER DATA BASE
FOR THE CAISSON B EXPERIMENTS

DESCRIPTION OF TRACER DATA
FOR THE CAISSON B EXPERIMENTS

This data base contains the iodide, bromide, and lithium concentration data for the soil solutions collected in Caisson B as a function of sampling depth and time for several pulse experiments. The data presented are for the samples collected 1.5 m into the tuff matrix from the six access ports within Caisson B, as well as the vertical samples and the caisson outflow samples.

-----TYPE=Caisson B 43 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
27AUG84	.	0.020	.
05SEP84	0.03	.	.
07SEP84	0.03	0.020	0.037
11SEP84	.	0.020	.
12SEP84	.	0.020	.
13SEP84	0.03	.	.
14SEP84	0.03	0.020	.
17SEP84	0.03	0.020	.
19SEP84	0.03	0.020	.
20SEP84	0.02	0.041	0.040
21SEP84	0.04	1.520	0.080
24SEP84	2.60	1.502	0.080
25SEP84	12.40	6.880	0.070
26SEP84	64.00	33.730	0.660
27SEP84	130.00	67.470	3.690
28SEP84	150.00	82.190	5.330
01OCT84	6.30	2.600	0.370
02OCT84	0.56	0.105	0.070
03OCT84	0.35	0.113	0.050
04OCT84	0.44	0.297	0.100
05OCT84	0.47	0.377	0.140
09OCT84	2.00	1.670	0.320
10OCT84	2.10	1.670	0.340
11OCT84	1.70	1.418	0.340
12OCT84	1.40	1.283	0.300
15OCT84	1.30	1.040	0.210
16OCT84	0.33	0.258	0.070
17OCT84	0.64	0.459	0.060
18OCT84	0.76	0.499	0.120
19OCT84	1.40	0.870	0.130
22OCT84	0.23	0.102	0.050
23OCT84	0.09	0.076	0.030
24OCT84	0.04	0.057	0.040
25OCT84	1.10	0.052	0.050
26OCT84	0.10	0.131	0.030
29OCT84	0.35	0.378	.
30OCT84	0.38	0.309	.
31OCT84	0.22	0.139	.
02NOV84	0.09	0.020	.
05NOV84	0.03	0.020	.
07NOV84	0.02	0.020	.
09NOV84	.	0.020	.
12NOV84	0.06	.	.
14NOV84	.	0.020	.
16NOV84	0.05	.	.

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
21NOV84	0.04	.	.
23NOV84	0.03	0.109	.
26NOV84	.	0.726	.
28NOV84	0.03	0.020	.
30NOV84	.	0.127	.
03DEC84	0.04	0.364	.
05DEC84	0.02	0.389	.
07DEC84	0.43	0.402	0.04
08DEC84	58.00	28.135	2.38
09DEC84	146.00	67.880	5.41
10DEC84	130.00	77.200	6.32
11DEC84	160.00	81.630	7.87
12DEC84	159.00	87.180	8.02
13DEC84	152.00	78.610	7.97
14DEC84	102.00	51.430	5.55
15DEC84	38.00	19.670	2.65
17DEC84	7.20	3.540	0.59
18DEC84	2.85	1.445	0.20
19DEC84	1.27	0.769	0.10
20DEC84	.	0.272	.
20DEC84	0.61	.	0.06
21DEC84	.	0.290	.
21DEC84	0.48	.	0.06
22DEC84	.	0.184	.
22DEC84	0.36	.	0.05
24DEC84	.	0.165	.
24DEC84	0.33	.	0.04
26DEC84	.	0.006	.
26DEC84	0.22	.	0.04
27DEC84	.	0.274	.
27DEC84	0.58	.	0.09
28DEC84	.	0.020	.
28DEC84	0.13	.	0.04
29DEC84	0.11	.	0.04
31DEC84	0.11	.	0.04
02JAN85	0.10	.	0.04
03JAN85	0.12	.	.
04JAN85	0.10	.	.
05JAN85	.	0.067	.
05JAN85	0.10	.	.
07JAN85	0.06	.	.
08JAN85	0.05	.	.
09JAN85	0.49	.	.
10JAN85	0.05	.	.
11JAN85	0.05	.	.

-----TYPE=Caisson B 43 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
12JAN85	0.060	.	.
14JAN85	0.070	.	.
16JAN85	0.030	.	.
18JAN85	0.030	.	.
18JAN85	0.050	.	.
21JAN85	0.049	.	.
25JAN85	0.040	.	.
28JAN85	.	0.043	.
28JAN85	0.040	.	.
30JAN85	0.040	.	.
01FEB85	.	0.345	.
01FEB85	0.040	.	.
04FEB85	.	0.020	.
04FEB85	0.020	.	.
06FEB85	.	0.197	.
06FEB85	0.020	.	.
08FEB85	.	0.051	.
08FEB85	0.020	.	.
09FEB85	3.460	.	.
10FEB85	98.000	.	.
11FEB85	.	.	7.08
11FEB85	177.000	.	.
12FEB85	.	95.220	7.70
12FEB85	198.000	.	.
13FEB85	.	.	7.57
13FEB85	156.000	.	.
14FEB85	.	75.790	7.20
14FEB85	143.000	.	.
15FEB85	.	79.570	6.91
15FEB85	140.000	.	.
16FEB85	.	79.120	6.01
16FEB85	107.000	.	.
18FEB85	.	16.000	2.18
18FEB85	28.500	.	.
19FEB85	.	.	0.79
19FEB85	10.100	.	.
20FEB85	.	3.000	.
20FEB85	3.300	.	.
21FEB85	.	0.600	.
21FEB85	1.550	.	.
22FEB85	.	2.000	.
22FEB85	0.950	.	.
23FEB85	0.400	.	.
25FEB85	0.230	.	.
27FEB85	.	0.900	.

-----TYPE=Caisson B 43 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
27FEB85	0.13	.	.
28FEB85	0.26	.	.
01MAR85	0.36	.	.
02MAR85	0.22	.	.
04MAR85	1.47	.	.
05MAR85	0.19	.	.
07MAR85	0.24	.	.
08MAR85	0.27	.	.
10MAR85	0.17	.	.
11MAR85	0.27	.	.
13MAR85	0.14	.	.
15MAR85	0.43	.	.
18MAR85	0.54	.	.
20MAR85	0.07	.	.
22MAR85	0.05	.	.
25MAR85	0.06	.	.
27MAR85	0.05	.	.
09APR85	.	9.17	.
09APR85	14.40	.	0.29
10APR85	.	67.60	.
10APR85	109.00	.	4.31
11APR85	.	91.20	.
11APR85	164.00	.	6.83
12APR85	.	103.00	.
12APR85	188.00	.	7.68
13APR85	.	94.10	.
13APR85	178.00	.	7.54
14APR85	.	102.00	.
14APR85	174.00	.	7.88
15APR85	.	66.20	.
15APR85	113.00	.	6.01
16APR85	.	15.80	.
16APR85	28.00	.	1.80
17APR85	.	2.63	.
17APR85	5.60	.	0.43
18APR85	.	0.28	.
18APR85	1.23	.	0.12
19APR85	.	0.05	.
19APR85	0.57	.	0.06
20APR85	.	0.25	.
21APR85	.	0.11	.
21APR85	0.25	.	.
22APR85	0.18	.	0.04
23APR85	0.17	.	.
24APR85	0.21	.	0.04

-----TYPE=Caisson B 43 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
25APR85	0.16	.	.
26APR85	0.17	.	0.04
28APR85	0.16	.	0.04
29APR85	0.06	.	.
02MAY85	0.11	.	.
08MAY85	0.17	.	.
15MAY85	0.23	.	.
13JUL85	125.00	.	4.45
14JUL85	171.00	.	7.16
15JUL85	155.00	.	7.16
16JUL85	186.00	.	8.29
17JUL85	185.00	.	8.42
18JUL85	145.00	.	7.52
19JUL85	196.00	.	8.46
20JUL85	123.00	.	5.71
21JUL85	27.00	.	1.81
22JUL85	7.60	.	0.61
23JUL85	1.37	.	0.16
24JUL85	1.62	.	0.14
25JUL85	6.20	.	0.36
26JUL85	49.00	.	0.32
27JUL85	.	.	0.13
28JUL85	.	.	0.07
29JUL85	.	.	0.12

-----TYPE=Caisson B 119 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
17AUG84	.	.	0.030
18AUG84	.	.	0.030
19AUG84	.	.	0.030
20AUG84	.	.	0.030
21AUG84	.	.	0.030
31AUG84	.	0.020	.
06SEP84	0.03	.	.
07SEP84	.	0.020	0.030
12SEP84	.	0.020	.
13SEP84	0.04	0.020	.
14SEP84	0.04	0.020	0.452
17SEP84	0.04	0.020	.
19SEP84	0.03	0.020	.
20SEP84	0.01	0.020	0.040
21SEP84	0.01	0.020	0.040
24SEP84	0.01	0.020	0.040
25SEP84	0.01	0.020	0.040
26SEP84	0.01	0.020	0.040
27SEP84	0.02	0.075	0.040
28SEP84	0.02	0.020	0.040
01OCT84	0.03	0.020	0.040
02OCT84	0.48	0.305	0.040
03OCT84	6.00	3.475	0.040
04OCT84	42.00	24.300	0.030
05OCT84	73.00	53.610	0.560
09OCT84	100.00	70.400	5.410
10OCT84	107.00	69.100	7.490
11OCT84	101.00	63.680	8.180
12OCT84	94.00	56.820	8.410
15OCT84	40.00	28.285	6.490
16OCT84	21.00	12.111	3.250
17OCT84	16.00	7.869	1.990
18OCT84	10.70	5.372	1.470
19OCT84	7.00	2.976	1.090
22OCT84	3.10	1.268	0.560
23OCT84	1.46	0.566	0.280
24OCT84	1.10	0.371	0.200
25OCT84	0.73	0.240	0.150
26OCT84	0.65	0.197	0.120
29OCT84	0.85	0.339	.
30OCT84	0.01	0.160	0.050
31OCT84	0.01	0.020	0.060
02NOV84	0.01	0.020	0.060
05NOV84	0.05	0.020	0.050
07NOV84	0.01	0.020	0.050

-----TYPE=Caisson B 119 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
09NOV84	.	0.020	0.06
12NOV84	0.030	.	0.06
14NOV84	.	0.020	0.06
16NOV84	0.030	.	0.07
19NOV84	.	.	0.08
21NOV84	0.020	.	0.05
23NOV84	0.020	0.020	0.05
26NOV84	.	0.020	.
28NOV84	0.023	0.497	.
30NOV84	.	0.150	.
03DEC84	0.020	0.293	.
05DEC84	0.010	0.227	.
07DEC84	0.020	0.435	.
08DEC84	0.030	0.329	.
09DEC84	0.090	0.299	.
10DEC84	0.090	0.520	.
11DEC84	0.020	0.514	0.04
12DEC84	0.160	0.020	0.04
13DEC84	1.220	0.620	0.08
14DEC84	21.700	10.840	0.08
15DEC84	79.000	42.970	0.51
17DEC84	118.000	69.190	3.44
18DEC84	154.000	84.550	5.35
19DEC84	145.000	75.830	6.92
20DEC84	.	88.520	.
20DEC84	116.000	.	7.11
21DEC84	.	25.550	.
21DEC84	51.000	.	5.80
22DEC84	.	7.870	.
22DEC84	15.600	.	3.40
24DEC84	.	4.239	.
24DEC84	8.500	.	1.70
26DEC84	.	0.699	.
26DEC84	1.890	.	0.67
27DEC84	.	0.236	.
27DEC84	0.910	.	.
28DEC84	.	0.150	.
28DEC84	0.380	.	0.21
29DEC84	.	0.087	.
29DEC84	0.240	.	.
31DEC84	.	0.648	.
31DEC84	0.200	.	.
02JAN85	.	0.168	.
02JAN85	0.200	.	0.13
03JAN85	.	0.020	.

-----TYPE=Caisson B 119 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
03JAN85	0.13	.	.
04JAN85	0.12	.	0.08
05JAN85	.	0.270	.
05JAN85	0.10	.	0.07
07JAN85	.	0.020	.
07JAN85	0.08	.	0.07
08JAN85	0.07	.	.
09JAN85	.	0.020	.
09JAN85	0.06	.	.
10JAN85	0.06	.	.
11JAN85	0.06	.	.
12JAN85	0.05	.	.
14JAN85	.	0.020	.
14JAN85	0.07	.	.
16JAN85	0.05	.	.
18JAN85	0.02	.	.
21JAN85	.	0.060	.
21JAN85	0.12	.	.
23JAN85	0.02	.	.
25JAN85	0.07	.	.
28JAN85	.	0.010	.
28JAN85	0.07	.	.
30JAN85	0.06	.	.
01FEB85	0.06	0.020	.
04FEB85	0.37	0.255	.
06FEB85	0.03	0.427	.
08FEB85	0.02	0.061	.
09FEB85	0.02	.	.
10FEB85	0.02	.	.
11FEB85	0.06	.	.
12FEB85	0.05	0.020	.
13FEB85	0.02	.	.
14FEB85	0.02	0.110	.
15FEB85	5.44	2.968	0.04
16FEB85	37.30	22.220	0.06
18FEB85	122.00	65.000	1.73
19FEB85	150.00	.	4.52
20FEB85	157.00	80.000	5.47
21FEB85	155.00	71.000	5.70
22FEB85	121.00	66.000	5.70
23FEB85	73.10	46.000	5.37
25FEB85	32.90	20.000	3.65
26FEB85	14.80	9.000	1.83
27FEB85	9.00	5.000	1.19
28FEB85	8.36	3.000	0.82

-----TYPE=Caisson B 119 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
01MAR85	6.16	3.00	0.59
02MAR85	5.12	0.30	0.47
04MAR85	3.72	1.00	0.33
05MAR85	2.65	0.90	.
06MAR85	1.47	0.70	.
07MAR85	0.90	1.00	.
08MAR85	0.49	1.00	.
11MAR85	0.23	.	.
13MAR85	0.09	.	.
15MAR85	0.29	.	.
18MAR85	0.43	.	.
20MAR85	0.15	.	.
22MAR85	0.11	.	.
25MAR85	0.12	.	.
27MAR85	0.09	.	.
13APR85	.	.	0.04
14APR85	.	0.24	.
14APR85	0.32	.	0.04
15APR85	.	6.22	.
15APR85	9.90	.	0.04
16APR85	.	31.10	.
16APR85	51.00	.	0.17
17APR85	.	60.30	.
17APR85	106.00	.	1.38
18APR85	.	80.90	.
18APR85	155.00	.	3.73
19APR85	.	88.80	.
19APR85	169.00	.	5.72
20APR85	.	91.00	.
21APR85	.	72.40	.
21APR85	131.00	.	6.51
22APR85	.	36.30	.
22APR85	65.00	.	5.62
23APR85	.	11.90	.
23APR85	23.00	.	3.26
24APR85	.	3.29	.
24APR85	6.60	.	1.94
25APR85	.	1.15	.
25APR85	3.10	.	1.22
26APR85	.	0.44	.
26APR85	1.36	.	0.66
28APR85	0.90	.	0.36
29APR85	0.47	.	0.20
02MAY85	0.44	.	0.15
08MAY85	0.40	.	0.12

-----TYPE=Caisson B 119 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
15MAY85	0.41	.	0.13
15JUL85	2.90	.	.
16JUL85	1.35	.	.
17JUL85	1.90	.	0.19
18JUL85	13.40	.	0.12
19JUL85	69.00	.	0.42
20JUL85	150.00	.	2.47
21JUL85	170.00	.	5.79
22JUL85	170.00	.	7.17
23JUL85	170.00	.	7.59
24JUL85	141.00	.	7.46
25JUL85	96.00	.	7.32
26JUL85	31.70	.	5.92
27JUL85	.	.	3.28
28JUL85	.	.	1.66
29JUL85	.	.	0.93
30JUL85	.	.	0.52
01AUG85	.	.	0.31
02AUG85	.	.	0.18
04AUG85	.	.	0.13

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
17AUG84	.	.	0.020
18AUG84	.	.	0.020
19AUG84	.	.	0.020
20AUG84	.	.	0.020
21AUG84	.	.	0.020
30AUG84	.	0.020	.
04SEP84	0.03	.	.
06SEP84	.	0.096	0.030
11SEP84	.	0.020	.
13SEP84	.	0.020	.
14SEP84	.	0.020	.
17SEP84	0.03	.	.
19SEP84	0.02	.	.
20SEP84	0.01	0.770	.
21SEP84	0.05	0.090	.
24SEP84	0.02	0.020	.
25SEP84	0.02	0.020	.
26SEP84	0.25	0.205	.
27SEP84	0.09	0.020	.
28SEP84	0.11	.	.
01OCT84	0.01	0.020	.
02OCT84	0.01	0.020	.
03OCT84	0.01	0.067	.
04OCT84	0.01	0.028	.
05OCT84	0.01	0.020	0.030
09OCT84	0.09	0.089	0.030
10OCT84	0.95	0.656	0.030
11OCT84	4.10	2.837	0.030
12OCT84	10.70	7.402	0.030
15OCT84	94.00	60.900	0.060
16OCT84	129.00	77.490	0.040
17OCT84	113.00	66.710	3.980
18OCT84	102.00	60.350	6.240
19OCT84	82.00	53.185	7.070
22OCT84	12.30	7.422	2.490
23OCT84	1.46	0.736	1.220
24OCT84	0.64	0.380	0.800
25OCT84	0.38	0.187	0.520
26OCT84	0.12	0.020	0.350
29OCT84	0.12	0.020	0.270
30OCT84	0.04	0.020	0.225
31OCT84	0.03	0.020	0.200
02NOV84	0.05	0.020	0.150
05NOV84	0.04	0.020	0.110
07NOV84	0.03	0.020	0.100

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
09NOV84	0.070	0.200	0.09
12NOV84	0.080	0.020	0.09
14NOV84	0.070	0.155	0.07
16NOV84	0.060	.	0.07
19NOV84	0.040	0.020	0.06
21NOV84	0.030	.	0.06
23NOV84	0.033	0.047	0.06
26NOV84	.	0.020	.
28NOV84	0.030	0.544	.
30NOV84	0.050	0.198	.
03DEC84	0.030	0.327	.
05DEC84	0.020	0.227	.
07DEC84	0.020	0.220	.
07DEC84	0.050	0.157	.
08DEC84	0.020	0.231	.
09DEC84	0.030	0.020	.
10DEC84	0.030	0.658	.
11DEC84	0.050	0.598	.
12DEC84	0.040	0.020	.
13DEC84	0.220	0.020	.
14DEC84	0.140	0.098	.
15DEC84	0.100	0.077	0.04
17DEC84	0.100	0.020	0.04
18DEC84	0.090	0.020	0.04
19DEC84	4.900	2.274	0.04
20DEC84	54.000	.	0.04
21DEC84	114.000	.	0.04
22DEC84	133.000	.	0.68
24DEC84	136.000	.	5.65
26DEC84	71.000	.	6.43
27DEC84	26.500	.	5.90
28DEC84	10.100	.	4.07
29DEC84	5.200	.	2.60
31DEC84	1.850	.	1.17
02JAN85	0.970	.	0.57
03JAN85	0.690	.	0.41
04JAN85	0.500	.	0.32
05JAN85	0.400	.	0.26
07JAN85	0.270	.	0.19
08JAN85	0.230	.	0.17
09JAN85	0.210	.	0.15
10JAN85	0.180	.	.
11JAN85	0.170	.	.
12JAN85	0.130	.	.
14JAN85	0.120	.	.

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
16JAN85	0.09	.	.
18JAN85	0.02	.	.
21JAN85	0.10	.	.
23JAN85	0.02	.	.
25JAN85	0.09	.	.
28JAN85	0.10	.	.
30JAN85	0.09	.	.
01FEB85	0.07	0.125	.
04FEB85	0.03	0.094	.
06FEB85	0.03	0.514	.
08FEB85	0.04	0.083	.
09FEB85	0.04	.	.
10FEB85	0.03	.	.
11FEB85	0.05	.	.
12FEB85	0.04	0.020	.
13FEB85	0.02	.	.
14FEB85	0.02	0.020	.
15FEB85	0.01	.	.
16FEB85	0.05	0.020	.
18FEB85	0.04	0.400	.
19FEB85	0.08	.	.
20FEB85	0.07	.	.
21FEB85	4.80	1.000	0.04
22FEB85	37.20	17.000	0.04
23FEB85	89.00	47.000	0.05
25FEB85	124.00	81.000	2.81
26FEB85	139.00	80.000	4.66
27FEB85	116.00	78.000	5.29
28FEB85	120.00	66.000	5.66
01MAR85	73.10	43.000	5.65
02MAR85	42.30	23.000	5.07
04MAR85	20.10	7.000	3.26
05MAR85	9.50	4.000	2.27
06MAR85	6.00	3.000	1.58
07MAR85	4.00	2.000	1.10
08MAR85	2.24	2.000	0.82
11MAR85	1.60	.	0.50
13MAR85	0.50	.	.
15MAR85	0.08	.	.
18MAR85	0.40	.	.
20MAR85	0.14	.	.
22MAR85	0.77	.	.
25MAR85	0.17	.	.
27MAR85	0.11	.	.
29MAR85	0.10	.	.

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
17APR85	.	0.18	.
17APR85	0.09	.	0.04
18APR85	.	0.17	.
18APR85	1.00	.	0.06
19APR85	.	14.30	.
19APR85	26.30	.	0.04
20APR85	.	45.20	.
21APR85	.	74.10	.
21APR85	148.00	.	1.48
22APR85	.	86.40	.
22APR85	160.00	.	3.76
23APR85	.	89.80	.
23APR85	162.00	.	5.65
24APR85	.	84.70	.
24APR85	143.00	.	6.37
25APR85	.	54.20	.
25APR85	88.00	.	6.25
26APR85	.	21.60	.
26APR85	35.00	.	5.29
28APR85	.	4.19	.
28APR85	7.40	.	2.13
29APR85	.	0.43	.
29APR85	0.95	.	1.00
02MAY85	.	0.17	.
02MAY85	0.57	.	0.49
08MAY85	0.43	.	0.33
15MAY85	0.38	.	0.28
15JUL85	3.30	.	.
17JUL85	0.21	.	.
18JUL85	0.77	.	.
19JUL85	0.10	.	.
20JUL85	0.43	.	.
21JUL85	0.35	.	0.18
22JUL85	2.40	.	0.18
23JUL85	16.90	.	0.19
24JUL85	84.00	.	0.16
25JUL85	131.00	.	0.30
26JUL85	132.00	.	1.51
27JUL85	.	.	4.76
28JUL85	.	.	6.73
29JUL85	.	.	7.03
30JUL85	.	.	6.83
01AUG85	.	.	4.14
04AUG85	.	.	0.92
05AUG85	.	.	0.49

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
12AUG85	.	.	2.30
04SEP84	0.02	.	.
05SEP84	0.03	.	.
06SEP84	.	0.040	0.03
14SEP84	.	0.238	.
17SEP84	0.04	.	.
19SEP84	0.03	.	.
20SEP84	0.01	0.020	.
21SEP84	0.01	0.020	.
24SEP84	0.01	0.020	.
25SEP84	0.01	0.020	.
26SEP84	0.01	0.020	.
27SEP84	0.01	0.020	.
28SEP84	0.01	0.020	.
01OCT84	0.01	0.020	.
02OCT84	0.01	0.061	.
03OCT84	0.01	0.092	.
04OCT84	0.01	0.020	.
05OCT84	0.01	0.020	0.03
09OCT84	0.01	0.020	0.03
10OCT84	0.01	0.020	0.03
11OCT84	0.02	0.020	0.03
12OCT84	0.21	0.191	0.03
15OCT84	57.00	37.590	0.03
16OCT84	112.50	75.630	0.03
17OCT84	130.00	77.810	0.09
18OCT84	127.00	13.810	2.51
19OCT84	99.00	52.110	5.21
22OCT84	31.00	19.795	6.69
23OCT84	10.60	5.942	5.60
24OCT84	5.70	3.028	3.69
25OCT84	2.80	1.402	2.49
26OCT84	1.43	0.643	1.73
29OCT84	0.62	4.112	0.97
30OCT84	0.27	0.092	0.62
31OCT84	0.19	0.073	0.51
02NOV84	0.14	0.020	0.39
05NOV84	0.11	0.020	0.26
07NOV84	0.02	0.076	0.21
09NOV84	0.20	0.152	0.18
12NOV84	0.40	0.380	0.15
14NOV84	0.34	0.235	0.14
16NOV84	0.06	.	0.12
19NOV84	0.08	0.020	0.10
21NOV84	0.05	.	0.09

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
23NOV84	0.04	0.187	0.09
26NOV84	0.07	0.020	.
28NOV84	0.03	0.317	.
30NOV84	0.04	0.020	.
03DEC84	0.03	0.277	.
05DEC84	0.02	0.125	.
08DEC84	0.09	0.064	.
09DEC84	0.02	0.616	.
10DEC84	0.02	0.326	.
11DEC84	0.03	0.580	.
12DEC84	0.03	0.020	.
13DEC84	0.05	0.020	.
14DEC84	0.05	0.020	.
15DEC84	0.10	0.077	0.06
17DEC84	0.10	0.052	0.06
18DEC84	0.04	0.020	0.06
19DEC84	1.22	2.052	0.06
20DEC84	25.80	.	0.05
21DEC84	85.00	.	0.18
22DEC84	128.00	.	0.12
24DEC84	139.00	.	2.99
26DEC84	112.00	.	6.20
27DEC84	36.10	.	6.33
28DEC84	12.60	.	5.30
29DEC84	3.80	.	3.90
31DEC84	1.28	.	2.00
02JAN85	0.46	.	0.80
03JAN85	0.25	.	0.42
04JAN85	0.19	.	0.30
05JAN85	0.15	.	0.24
07JAN85	0.14	.	0.19
08JAN85	0.09	.	0.15
09JAN85	0.09	.	0.13
10JAN85	0.05	.	.
11JAN85	0.05	.	.
12JAN85	0.06	.	.
14JAN85	0.08	.	.
16JAN85	0.03	.	.
18JAN85	0.02	.	.
21JAN85	0.11	.	.
23JAN85	0.04	.	.
25JAN85	0.06	.	.
28JAN85	0.09	.	.
30JAN85	0.06	.	.
01FEB85	0.05	0.049	.

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
04FEB85	0.10	0.020	.
06FEB85	0.02	0.165	.
08FEB85	0.02	0.039	.
09FEB85	0.04	.	.
10FEB85	0.01	.	.
10FEB85	0.03	.	.
12FEB85	0.05	0.194	.
13FEB85	0.01	.	.
14FEB85	0.18	0.285	.
15FEB85	0.01	.	.
16FEB85	1.80	0.503	.
18FEB85	0.01	.	.
19FEB85	0.01	.	.
20FEB85	0.03	.	.
21FEB85	0.31	.	0.04
22FEB85	19.00	9.000	0.04
23FEB85	103.00	58.000	0.05
25FEB85	151.00	85.000	2.79
27FEB85	124.00	80.000	6.04
28FEB85	120.00	71.000	6.05
01MAR85	54.70	33.000	5.79
02MAR85	17.10	8.000	5.33
04MAR85	4.93	2.000	3.24
05MAR85	0.71	.	1.34
06MAR85	0.15	.	0.75
07MAR85	0.12	.	0.48
08MAR85	0.23	.	0.38
11MAR85	0.18	.	0.26
13MAR85	0.07	.	.
15MAR85	0.34	.	.
18MAR85	0.45	.	.
20MAR85	0.10	.	.
22MAR85	0.14	.	.
25MAR85	0.13	.	.
27MAR85	0.07	.	.
29MAR85	0.07	.	.
17APR85	0.05	.	.
18APR85	0.06	.	.
19APR85	.	0.600	.
19APR85	0.06	.	0.04
20APR85	.	0.030	.
21APR85	.	11.800	.
21APR85	21.00	.	0.05
22APR85	.	47.000	.
22APR85	84.00	.	0.05

-----TYPE=Caisson B 194 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
23APR85	.	75.50	.
23APR85	145.00	.	0.06
24APR85	.	88.40	.
24APR85	159.00	.	1.74
25APR85	.	89.40	.
25APR85	157.00	.	4.96
26APR85	.	85.60	.
26APR85	145.00	.	6.26
28APR85	.	50.50	.
28APR85	87.00	.	6.30
29APR85	.	9.14	.
29APR85	16.30	.	5.48
02MAY85	.	1.52	.
02MAY85	4.20	.	2.96
08MAY85	1.32	.	1.25
15MAY85	0.78	.	1.49
18JUL85	11.40	.	.
19JUL85	2.10	.	.
20JUL85	0.27	.	.
22JUL85	0.20	.	.
23JUL85	0.21	.	.
25JUL85	3.50	.	0.16
27JUL85	.	.	0.13
28JUL85	.	.	0.28
29JUL85	.	.	4.38
30JUL85	.	.	6.89
01AUG85	.	.	6.45
02AUG85	.	.	4.36
04AUG85	.	.	2.10
05AUG85	.	.	0.84

-----TYPE=Caisson B 271 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
17AUG84	.	.	0.020
18AUG84	.	.	0.020
19AUG84	.	.	0.020
20AUG84	.	.	0.020
21AUG84	.	.	0.020
27AUG84	.	0.020	.
31AUG84	.	.	0.033
06SEP84	0.03	.	.
07SEP84	.	0.407	.
11SEP84	.	0.020	.
12SEP84	.	0.020	.
13SEP84	.	0.020	.
17SEP84	0.04	.	.
19SEP84	0.04	.	.
20SEP84	0.04	.	.
21SEP84	0.04	.	.
24SEP84	0.04	.	.
25SEP84	0.04	.	.
26SEP84	0.04	.	.
27SEP84	0.04	.	.
28SEP84	0.04	.	.
01OCT84	0.04	.	.
02OCT84	0.04	.	.
03OCT84	0.04	.	.
04OCT84	0.04	.	.
05OCT84	0.01	.	.
09OCT84	0.03	0.020	.
10OCT84	0.01	0.020	.
11OCT84	0.04	0.020	.
12OCT84	0.03	0.020	.
15OCT84	0.01	0.020	0.030
16OCT84	0.01	0.020	0.030
17OCT84	0.02	0.020	0.030
18OCT84	0.03	0.020	0.030
19OCT84	0.16	1.070	0.030
22OCT84	22.00	7.590	0.030
23OCT84	34.00	22.515	0.030
24OCT84	38.00	23.495	0.030
25OCT84	30.20	20.106	0.030
26OCT84	18.80	11.607	0.050
29OCT84	6.60	4.169	0.830
30OCT84	7.90	4.783	1.130
31OCT84	10.80	6.475	1.070
02NOV84	10.50	6.593	0.720
05NOV84	7.60	4.542	0.750

-----TYPE=Caisson B 271 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
07NOV84	5.90	3.419	0.77
09NOV84	1.04	2.994	0.63
12NOV84	3.26	2.042	0.50
14NOV84	4.90	4.622	0.47
16NOV84	6.10	3.357	0.35
19NOV84	1.09	0.699	0.44
21NOV84	0.46	0.245	0.44
23NOV84	0.24	0.114	0.33
26NOV84	0.16	0.084	0.23
28NOV84	0.11	0.276	0.18
30NOV84	0.10	0.020	0.14
03DEC84	0.06	0.296	.
04DEC84	0.06	1.625	.
05DEC84	0.04	0.490	0.09
07DEC84	0.04	0.394	0.08
08DEC84	0.04	0.342	.
09DEC84	0.42	0.638	0.07
10DEC84	0.05	0.596	0.06
11DEC84	0.04	0.149	.
12DEC84	0.09	0.069	.
13DEC84	.	0.194	.
14DEC84	.	0.020	.
15DEC84	0.02	.	.
17DEC84	0.10	0.097	0.04
18DEC84	0.04	.	0.04
19DEC84	0.06	0.293	0.04
20DEC84	.	1.607	.
20DEC84	3.15	.	0.04
21DEC84	.	16.760	.
21DEC84	31.00	.	0.04
22DEC84	.	52.390	.
22DEC84	90.00	.	0.04
24DEC84	.	75.610	.
24DEC84	131.00	.	1.69
26DEC84	.	67.140	.
26DEC84	130.00	.	5.68
27DEC84	.	23.225	.
27DEC84	10.80	.	4.59
27DEC84	83.00	.	6.04
28DEC84	.	17.612	.
28DEC84	33.20	.	5.71
29DEC84	.	5.144	.
31DEC84	.	1.081	.
31DEC84	2.60	.	2.11
02JAN85	.	0.397	.

-----TYPE=Caisson B 271 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
02JAN85	1.05	.	0.87
03JAN85	.	0.238	.
03JAN85	0.71	.	0.53
04JAN85	.	0.215	.
04JAN85	7.10	.	0.36
05JAN85	.	0.148	.
05JAN85	0.56	.	0.27
07JAN85	.	0.136	.
07JAN85	0.43	.	0.21
08JAN85	.	0.131	.
08JAN85	0.38	.	0.17
09JAN85	.	0.129	.
09JAN85	0.40	.	0.15
10JAN85	.	0.117	.
10JAN85	0.31	.	0.13
11JAN85	.	0.127	.
11JAN85	0.34	.	0.12
12JAN85	.	0.100	.
12JAN85	0.25	.	0.10
14JAN85	.	0.083	.
14JAN85	0.27	.	0.09
16JAN85	0.22	.	0.08
18JAN85	0.12	.	0.07
21JAN85	.	0.073	.
21JAN85	0.09	.	0.06
23JAN85	0.11	.	0.05
25JAN85	0.18	.	0.05
28JAN85	.	0.069	.
28JAN85	0.19	.	0.05
30JAN85	0.16	.	.
01FEB85	.	0.082	.
01FEB85	0.11	.	.
04FEB85	.	0.128	.
04FEB85	0.11	.	.
06FEB85	.	0.545	.
06FEB85	0.11	.	.
08FEB85	0.10	0.060	.
09FEB85	0.09	.	.
10FEB85	0.08	.	.
11FEB85	0.10	.	.
12FEB85	0.09	0.020	.
13FEB85	0.05	.	.
14FEB85	0.06	0.071	.
15FEB85	0.07	.	.
16FEB85	0.06	.	.

-----TYPE=Caisson B 271 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
18FEB85	0.07	.	.
19FEB85	0.05	.	.
20FEB85	0.05	.	.
21FEB85	0.49	.	0.04
22FEB85	11.50	6.0	0.04
23FEB85	69.70	40.0	0.04
25FEB85	147.00	86.0	1.67
26FEB85	148.00	.	.
27FEB85	120.00	81.0	5.75
28FEB85	120.00	72.0	5.96
01MAR85	76.00	49.0	5.72
02MAR85	31.30	20.0	5.25
04MAR85	7.36	4.0	3.34
05MAR85	2.15	.	1.81
06MAR85	1.26	.	0.98
07MAR85	0.67	.	0.62
08MAR85	0.32	.	0.42
11MAR85	0.20	.	0.25
13MAR85	0.49	.	.
15MAR85	0.06	.	0.12
18MAR85	0.23	.	0.09
20MAR85	0.48	.	.
22MAR85	0.37	.	.
25MAR85	0.30	.	.
27MAR85	0.29	.	.
29MAR85	0.18	.	.
01APR85	0.17	.	.
03APR85	0.25	.	.
05APR85	0.41	.	.
08APR85	0.24	.	.
09APR85	0.22	.	.
10APR85	.	.	0.04
19APR85	0.21	.	0.04
21APR85	.	20.3	.
21APR85	35.00	.	0.04
22APR85	.	49.9	.
22APR85	90.00	.	0.04
23APR85	.	75.7	.
23APR85	146.00	.	0.97
24APR85	.	84.3	.
24APR85	152.00	.	3.07
25APR85	.	91.3	.
25APR85	151.00	.	5.45
26APR85	.	85.7	.
26APR85	143.00	.	6.39

-----TYPE=Caisson B 271 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
28APR85	.	41.70	.
28APR85	73.00	.	6.21
29APR85	.	13.30	.
29APR85	21.00	.	5.08
02MAY85	.	1.40	.
02MAY85	3.82	.	2.14
08MAY85	.	0.27	.
08MAY85	1.11	.	0.66
15MAY85	.	0.19	.
15MAY85	0.89	.	0.37
14JUL85	4.50	.	.
15JUL85	3.50	.	.
16JUL85	3.30	.	.
17JUL85	2.97	.	.
18JUL85	1.50	.	.
19JUL85	1.90	.	.
20JUL85	.	.	0.24
20JUL85	0.82	.	.
21JUL85	.	.	0.25
21JUL85	0.60	.	.
22JUL85	.	.	0.28
22JUL85	1.90	.	.
23JUL85	.	.	0.19
23JUL85	0.66	.	.
24JUL85	.	.	0.23
24JUL85	2.02	.	.
25JUL85	.	.	0.16
25JUL85	0.48	.	.
26JUL85	.	.	0.19
26JUL85	0.92	.	.
27JUL85	1.06	.	0.14
28JUL85	24.40	.	0.13
29JUL85	77.00	.	0.13
30JUL85	130.00	.	0.13
01AUG85	149.00	.	2.85
02AUG85	119.00	.	5.36
04AUG85	32.00	.	5.63
05AUG85	7.80	.	3.84
07AUG85	2.20	.	1.54
09AUG85	1.18	.	0.68
12AUG85	0.82	.	0.30
14AUG85	.	.	0.19
16AUG85	.	.	0.15
19AUG85	0.59	.	.
21AUG85	0.59	.	.

-----TYPE=Caisson B 271 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
23AUG85	0.6	.	.

-----TYPE=Caisson B 347 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
02JAN84	4.90	.	.
03JAN84	29.00	.	.
17AUG84	.	.	0.02
20AUG84	.	.	0.02
05SEP84	0.03	.	.
06SEP84	.	0.187	.
07SEP84	.	.	0.04
11SEP84	.	0.020	.
17SEP84	0.03	.	.
21SEP84	0.03	.	.
24SEP84	0.03	.	.
26SEP84	0.03	.	.
28SEP84	0.03	.	.
01OCT84	0.03	.	0.04
04OCT84	0.03	.	.
05OCT84	0.03	.	0.04
09OCT84	0.03	.	.
10OCT84	0.03	0.020	0.04
11OCT84	0.03	.	.
12OCT84	0.02	0.020	0.04
15OCT84	0.02	0.020	.
16OCT84	0.02	.	0.04
18OCT84	0.02	.	.
19OCT84	0.01	0.020	0.04
22OCT84	0.15	.	0.04
23OCT84	0.15	0.020	.
24OCT84	0.15	.	0.04
25OCT84	0.15	0.020	.
26OCT84	0.12	0.020	0.04
29OCT84	0.50	7.518	.
30OCT84	36.00	24.300	0.04
31OCT84	78.00	51.010	.
02NOV84	93.00	58.790	0.03
05NOV84	71.00	41.000	0.15
07NOV84	47.00	29.380	1.04
09NOV84	12.10	10.615	3.95
12NOV84	7.80	4.419	3.71
14NOV84	2.95	1.361	2.18
16NOV84	1.09	0.146	1.31
19NOV84	0.35	0.132	0.90
21NOV84	0.22	0.010	0.76
23NOV84	0.14	0.020	0.62
26NOV84	0.12	0.163	0.40
28NOV84	0.08	0.020	0.31
30NOV84	0.08	0.440	0.25

-----TYPE=Caisson B 347 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
03DEC84	0.05	0.421	.
05DEC84	0.03	0.322	0.17
07DEC84	0.03	0.416	0.15
08DEC84	0.03	0.280	.
09DEC84	0.08	0.465	0.13
10DEC84	0.03	0.558	.
11DEC84	0.03	0.640	.
12DEC84	0.03	0.020	.
13DEC84	.	0.020	.
14DEC84	.	0.020	.
15DEC84	0.05	.	.
17DEC84	0.10	0.119	.
18DEC84	0.07	.	.
19DEC84	.	0.020	.
19DEC84	0.03	0.020	.
20DEC84	.	0.020	.
20DEC84	0.06	.	.
21DEC84	.	0.020	.
21DEC84	0.06	.	.
22DEC84	.	13.560	.
22DEC84	0.06	.	.
24DEC84	.	0.020	.
24DEC84	0.06	.	.
26DEC84	.	0.167	.
26DEC84	0.39	.	.
27DEC84	.	0.020	.
27DEC84	0.14	.	.
28DEC84	.	0.020	.
28DEC84	0.10	.	.
29DEC84	.	0.020	.
29DEC84	4.90	.	.
31DEC84	.	0.020	.
31DEC84	0.03	.	.
02JAN85	.	3.153	.
03JAN85	.	16.390	.
04JAN85	.	38.070	.
04JAN85	73.00	.	.
05JAN85	.	61.140	.
05JAN85	116.00	.	.
07JAN85	.	73.710	.
07JAN85	140.00	.	.
08JAN85	.	69.840	.
08JAN85	132.00	.	.
09JAN85	.	59.640	.
09JAN85	111.00	.	.

-----TYPE=Caisson B 347 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
10JAN85	.	34.070	.
10JAN85	71.00	.	.
11JAN85	.	12.560	.
11JAN85	29.00	.	.
12JAN85	.	4.183	.
12JAN85	7.80	.	.
14JAN85	.	1.080	.
14JAN85	2.96	.	.
16JAN85	.	0.320	.
16JAN85	1.09	.	.
18JAN85	.	0.115	.
18JAN85	0.39	.	.
21JAN85	.	0.215	.
21JAN85	0.22	.	.
23JAN85	.	0.020	.
23JAN85	0.11	.	.
25JAN85	0.16	.	.
28JAN85	0.13	.	.
30JAN85	0.10	.	.
01FEB85	.	0.020	.
01FEB85	0.18	.	.
04FEB85	.	0.047	.
04FEB85	0.04	.	.
06FEB85	.	0.579	.
06FEB85	0.02	.	.
08FEB85	0.03	0.093	.
09FEB85	0.02	.	.
10FEB85	0.02	.	.
11FEB85	0.02	.	.
12FEB85	0.02	0.211	.
13FEB85	0.01	.	.
14FEB85	0.01	0.089	.
15FEB85	0.01	.	.
16FEB85	0.01	.	.
18FEB85	0.02	.	.
19FEB85	0.01	.	.
20FEB85	0.06	.	.
21FEB85	0.56	.	.
22FEB85	0.04	.	.
23FEB85	0.05	.	.
25FEB85	0.07	.	.
26FEB85	0.07	.	.
27FEB85	0.07	.	.
28FEB85	0.35	.	.
01MAR85	0.37	.	.

-----TYPE=Caisson B 347 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
02MAR85	0.28	.	.
04MAR85	0.40	.	.
05MAR85	0.36	.	.
06MAR85	2.74	2.00	0.05
07MAR85	18.20	11.00	0.05
08MAR85	60.00	38.00	0.06
11MAR85	118.00	75.00	0.16
13MAR85	100.00	65.00	.
15MAR85	49.00	27.00	4.33
18MAR85	12.40	2.00	4.43
20MAR85	5.50	.	2.85
22MAR85	4.04	.	1.62
25MAR85	2.88	.	0.90
27MAR85	2.08	.	0.58
29MAR85	1.90	.	0.37
01APR85	0.39	.	.
03APR85	1.50	.	0.22
05APR85	1.30	.	.
08APR85	1.21	.	.
09APR85	0.86	.	.
10APR85	.	.	0.12
15APR85	.	.	0.10
21APR85	.	0.19	.
21APR85	0.55	.	0.07
22APR85	.	0.15	.
22APR85	0.49	.	0.07
23APR85	.	0.08	.
23APR85	0.52	.	0.07
24APR85	.	0.44	.
24APR85	0.50	.	0.07
25APR85	0.78	.	0.09
26APR85	.	0.48	.
26APR85	0.39	.	0.07
28APR85	.	0.09	.
28APR85	0.52	.	0.07
29APR85	.	0.13	.
29APR85	0.37	.	0.08
02MAY85	.	0.14	.
02MAY85	0.71	.	0.07
08MAY85	.	56.40	.
08MAY85	86.00	.	0.08
15MAY85	213.00	.	0.09
21JUL85	.	.	2.84
23JUL85	.	.	13.42
23JUL85	80.00	.	.

-----TYPE=Caisson B 347 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
24JUL85	.	.	10.21
24JUL85	23.00	.	.
26JUL85	.	.	9.43
26JUL85	10.60	.	.
27JUL85	9.20	.	7.72
28JUL85	.	.	6.01
29JUL85	6.10	.	6.70
30JUL85	4.00	.	4.37
01AUG85	3.20	.	3.29
02AUG85	1.89	.	2.19
04AUG85	1.76	.	1.57
06AUG85	2.10	.	.
08AUG85	27.00	.	.
12AUG85	250.00	.	1.83
15AUG85	148.00	.	.
19AUG85	11.00	.	.
23AUG85	4.90	.	.

-----TYPE=Caisson B 421 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
17AUG84	.	.	0.02
20AUG84	.	.	0.02
21AUG84	.	.	0.02
05SEP84	0.03	0.020	.
06SEP84	.	0.547	.
07SEP84	.	.	0.04
11SEP84	.	0.020	.
17SEP84	0.03	.	.
21SEP84	0.03	.	.
24SEP84	0.03	.	.
26SEP84	0.02	.	.
28SEP84	0.03	.	.
01OCT84	0.03	.	.
03OCT84	0.03	.	.
05OCT84	0.03	.	.
09OCT84	0.03	.	.
10OCT84	0.03	0.020	.
11OCT84	0.03	.	.
15OCT84	0.03	0.020	.
16OCT84	0.02	.	.
17OCT84	0.02	0.020	.
18OCT84	0.02	.	.
22OCT84	0.15	.	.
23OCT84	0.15	0.020	.
24OCT84	0.15	.	.
25OCT84	0.15	0.020	0.04
26OCT84	.	0.020	0.04
29OCT84	0.01	0.020	0.04
30OCT84	0.10	0.020	0.04
31OCT84	0.10	0.020	0.04
02NOV84	0.10	0.120	0.04
05NOV84	16.10	9.800	0.04
07NOV84	60.00	54.990	0.04
09NOV84	60.00	39.790	0.04
12NOV84	14.40	7.835	0.38
14NOV84	1.88	1.020	2.33
16NOV84	0.49	0.362	2.32
19NOV84	0.20	0.078	1.22
21NOV84	0.11	0.010	0.80
23NOV84	0.07	0.020	0.60
26NOV84	0.09	0.020	0.43
28NOV84	0.06	0.365	0.37
30NOV84	0.06	0.257	0.32
03DEC84	0.03	0.131	.
05DEC84	0.02	0.277	0.21

-----TYPE=Caisson B 421 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
07DEC84	0.02	0.405	0.19
08DEC84	0.02	0.186	.
09DEC84	0.04	0.179	0.17
10DEC84	0.02	0.594	.
11DEC84	0.02	0.343	.
12DEC84	0.02	0.020	.
13DEC84	.	0.020	.
14DEC84	.	0.020	.
15DEC84	0.01	.	.
17DEC84	0.10	0.089	.
18DEC84	0.03	.	.
19DEC84	0.02	0.020	.
20DEC84	.	0.020	.
20DEC84	0.03	.	.
21DEC84	.	0.020	.
21DEC84	0.03	.	.
22DEC84	.	0.020	.
22DEC84	0.02	.	.
24DEC84	.	0.020	.
24DEC84	0.03	.	.
26DEC84	.	0.133	.
26DEC84	0.25	.	.
27DEC84	.	0.103	.
27DEC84	0.19	.	.
28DEC84	.	0.519	.
28DEC84	0.06	.	.
29DEC84	.	0.040	.
29DEC84	0.03	.	.
31DEC84	.	0.020	.
31DEC84	0.02	.	.
02JAN85	.	0.020	.
02JAN85	0.03	.	.
03JAN85	.	0.020	.
03JAN85	0.04	.	.
04JAN85	.	0.020	.
04JAN85	0.07	.	.
05JAN85	.	0.054	.
05JAN85	0.10	.	.
07JAN85	.	0.433	.
07JAN85	0.68	.	.
08JAN85	.	3.228	.
08JAN85	5.40	.	.
09JAN85	.	12.270	.
09JAN85	22.00	.	.
10JAN85	.	29.650	.

-----TYPE=Caisson B 421 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
11JAN85	.	52.870	.
12JAN85	.	69.560	0.04
12JAN85	129.00	.	.
14JAN85	.	72.440	0.04
14JAN85	143.00	.	.
16JAN85	.	45.750	0.46
16JAN85	93.00	.	.
18JAN85	.	11.620	3.42
18JAN85	16.80	.	.
21JAN85	.	1.173	4.45
21JAN85	1.88	.	.
23JAN85	.	0.175	3.16
23JAN85	0.55	.	.
25JAN85	.	0.416	1.83
25JAN85	0.38	.	.
28JAN85	.	0.104	0.89
28JAN85	0.26	.	.
30JAN85	.	0.113	0.60
30JAN85	0.18	.	.
01FEB85	.	0.051	0.45
01FEB85	0.13	.	.
04FEB85	.	0.070	.
04FEB85	0.08	.	.
06FEB85	.	0.020	.
06FEB85	0.05	.	.
08FEB85	0.04	0.068	.
09FEB85	0.03	.	.
10FEB85	0.03	.	.
11FEB85	0.04	.	.
12FEB85	0.03	.	.
13FEB85	0.01	.	.
14FEB85	0.01	0.174	.
15FEB85	0.02	.	.
16FEB85	0.04	.	.
18FEB85	0.03	.	.
19FEB85	0.02	.	.
20FEB85	0.02	.	.
21FEB85	0.54	.	.
22FEB85	0.08	.	.
23FEB85	0.05	.	.
25FEB85	0.15	.	.
26FEB85	0.05	.	.
27FEB85	0.05	.	.
28FEB85	0.38	.	.
01MAR85	0.38	.	.

-----TYPE=Caisson B 421 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
02MAR85	0.28	.	.
04MAR85	0.39	.	.
05MAR85	0.39	.	.
06MAR85	0.39	.	.
07MAR85	0.39	.	.
08MAR85	0.39	.	.
11MAR85	0.14	.	.
13MAR85	15.80	11.000	.
15MAR85	98.00	56.000	.
18MAR85	131.00	80.000	0.06
20MAR85	.	60.700	.
20MAR85	102.00	.	1.58
22MAR85	.	22.500	.
22MAR85	42.30	.	3.96
25MAR85	.	3.380	.
25MAR85	7.26	.	4.30
27MAR85	.	0.060	.
27MAR85	1.59	.	3.24
29MAR85	.	0.650	.
29MAR85	0.70	.	1.99
01APR85	1.70	.	0.27
03APR85	0.35	.	0.68
05APR85	0.30	.	0.47
08APR85	0.21	.	0.35
09APR85	0.14	.	.
10APR85	.	.	0.25
15APR85	.	.	0.15
21APR85	.	.	0.11
22APR85	.	0.004	.
22APR85	0.07	.	.
23APR85	.	0.080	.
23APR85	0.06	.	.
24APR85	.	0.180	.
24APR85	0.16	.	.
25APR85	.	0.090	.
25APR85	0.08	.	.
26APR85	.	0.400	.
26APR85	0.05	.	0.08
28APR85	.	0.180	.
28APR85	0.07	.	0.08
29APR85	.	0.270	.
29APR85	0.07	.	0.08
02MAY85	.	0.280	.
02MAY85	0.05	.	0.07
08MAY85	.	0.150	.

-----TYPE=Caisson B 421 cm Depth Port-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
08MAY85	0.31	.	0.07
15MAY85	.	17.2	.
15MAY85	58.00	.	0.08
18JUL85	.	.	2.94
18JUL85	280.00	.	.
22JUL85	.	.	3.13
22JUL85	72.00	.	.
23JUL85	.	.	3.30
23JUL85	96.00	.	.
24JUL85	.	.	3.86
24JUL85	67.00	.	.
25JUL85	.	.	4.39
25JUL85	39.60	.	.
26JUL85	.	.	5.62
26JUL85	28.20	.	.
27JUL85	20.70	.	5.92
28JUL85	12.30	.	4.59
29JUL85	12.10	.	5.77
30JUL85	7.10	.	5.51
01AUG85	4.20	.	4.33
02AUG85	1.83	.	3.61
04AUG85	1.53	.	2.68
05AUG85	1.51	.	2.21
07AUG85	1.96	.	1.88
09AUG85	1.48	.	1.70
12AUG85	1.24	.	1.36
14AUG85	2.70	.	1.03
16AUG85	45.00	.	0.79
19AUG85	132.00	.	0.60
21AUG85	149.00	.	1.14
23AUG85	74.00	.	3.99
28AUG85	4.40	.	4.35

-----TYPE=Caisson B Vertical Sampler at 43 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15FEB85	142.00	72.98	6.61
16FEB85	115.00	62.33	6.23
18FEB85	97.20	6.16	1.32
19FEB85	0.90	.	0.45
20FEB85	0.51	.	0.13
21FEB85	0.51	.	0.07
23FEB85	0.05	.	0.04
25FEB85	0.21	.	0.05
26FEB85	0.05	.	0.04
27FEB85	0.04	.	.
28FEB85	0.04	.	.
05MAR85	0.06	.	.
06MAR85	0.40	.	.
07MAR85	0.39	.	.
08MAR85	0.41	.	.
11MAR85	0.40	.	.
13MAR85	0.70	.	.
15MAR85	0.40	.	.
18MAR85	0.16	.	.
20MAR85	0.65	.	.
22MAR85	0.20	.	.
25MAR85	0.07	.	.
27MAR85	2.17	.	.
29MAR85	0.02	.	.
10APR85	13.10	.	0.07
11APR85	0.89	.	0.04
12APR85	151.00	.	6.04
13APR85	157.00	.	7.20
14APR85	178.00	.	7.63
15APR85	174.00	.	7.61
16APR85	100.00	.	6.23
17APR85	43.00	.	2.93
18APR85	14.30	.	1.33
19APR85	4.10	.	0.55
21APR85	0.19	.	0.07
21APR85	0.36	.	0.12
23APR85	0.11	.	0.05
24APR85	0.09	.	.
25APR85	0.11	.	.
26APR85	0.08	.	.
28APR85	0.06	.	.
29APR85	0.07	.	.
02MAY85	0.07	.	.
13JUL85	213.90	.	5.87
14JUL85	192.00	.	7.85

-----TYPE=Caisson B Vertical Sampler at 43 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15JUL85	200.00	.	8.49
16JUL85	155.00	.	7.37
18JUL85	46.10	.	.
20JUL85	2.90	.	0.44
21JUL85	2.90	.	0.35
22JUL85	0.60	.	.
23JUL85	0.37	.	.
24JUL85	0.29	.	.

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-----TYPE=Caisson B Vertical Sampler at 58 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15FEB85	177.00	84.08	7.03
16FEB85	152.00	78.00	7.11
18FEB85	112.00	69.00	6.35
19FEB85	57.00	.	4.90
20FEB85	18.40	9.00	2.71
21FEB85	2.43	0.40	1.10
22FEB85	0.05	.	0.38
23FEB85	0.18	.	0.15
25FEB85	0.15	.	0.07
26FEB85	0.09	.	0.06
28FEB85	0.36	.	.
01MAR85	0.36	.	.
02MAR85	0.39	.	.
04MAR85	0.29	.	.
05MAR85	0.22	.	.
06MAR85	0.34	.	.
07MAR85	0.39	.	.
08MAR85	0.39	.	.
11MAR85	0.39	.	.
13MAR85	0.15	.	.
15MAR85	0.43	.	.
18MAR85	0.56	.	.
20MAR85	0.12	.	.
22MAR85	0.03	.	.
25MAR85	0.03	.	.
27MAR85	0.05	.	.
27MAR85	0.08	.	0.05
29MAR85	0.01	.	.
01APR85	.	.	2.02
10APR85	0.14	.	0.04
11APR85	0.09	.	0.04
12APR85	68.00	.	1.03
12APR85	138.00	.	4.97
14APR85	175.00	.	7.13
15APR85	178.00	.	7.24
16APR85	164.00	.	7.17
17APR85	150.00	.	7.05
18APR85	58.00	.	4.63
19APR85	10.60	.	1.44
21APR85	1.66	.	0.17
22APR85	0.56	.	0.10
23APR85	0.34	.	0.07
24APR85	0.19	.	0.06
25APR85	0.13	.	0.05
26APR85	0.09	.	0.04

-----TYPE=Caisson B Vertical Sampler at 58 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
28APR85	0.08	.	0.04
29APR85	0.08	.	.
02MAY85	0.07	.	.
08MAY85	0.10	.	.
13JUL85	0.17	.	0.13
14JUL85	45.00	.	0.08
15JUL85	158.00	.	5.70
16JUL85	169.00	.	7.41
17JUL85	166.00	.	7.42
18JUL85	151.00	.	7.49
19JUL85	128.00	.	6.71
20JUL85	26.00	.	2.70
21JUL85	2.60	.	0.63
22JUL85	1.60	.	.
23JUL85	0.35	.	.

-----TYPE=Caisson B Vertical Sampler at 73 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15FEB85	132.00	59.54	2.12
16FEB85	155.00	81.49	3.51
18FEB85	170.00	86.00	6.29
19FEB85	155.00	.	6.67
20FEB85	136.00	76.00	6.46
21FEB85	100.00	47.00	5.89
22FEB85	89.20	15.00	4.33
23FEB85	7.55	1.00	2.73
25FEB85	0.73	0.70	0.68
26FEB85	0.26	.	0.31
27FEB85	0.25	.	0.18
28FEB85	0.19	.	0.13
01MAR85	0.25	.	0.10
01MAR85	0.34	.	0.09
04MAR85	0.30	.	0.07
05MAR85	0.35	.	.
06MAR85	0.27	.	.
07MAR85	0.23	.	.
08MAR85	0.29	.	.
11MAR85	0.35	.	.
13MAR85	0.13	.	.
15MAR85	0.41	.	.
18MAR85	0.54	.	.
20MAR85	0.08	.	.
22MAR85	0.08	.	.
25MAR85	0.05	.	.
27MAR85	0.05	.	.
29MAR85	0.02	.	.
10APR85	.	.	0.04
11APR85	.	.	0.04
12APR85	0.11	.	0.04
13APR85	13.00	.	0.04
14APR85	73.00	.	0.63
15APR85	142.00	.	2.75
16APR85	175.00	.	5.51
17APR85	189.00	.	7.30
18APR85	178.00	.	7.39
19APR85	138.00	.	6.82
21APR85	14.90	.	2.69
22APR85	4.40	.	1.03
23APR85	1.70	.	0.49
24APR85	1.08	.	0.29
25APR85	0.40	.	0.18
26APR85	0.22	.	0.12
28APR85	0.16	.	0.07

-----TYPE=Caisson B Vertical Sampler at 73 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
29APR85	0.14	.	0.06
02MAY85	0.13	.	.
08MAY85	0.33	.	.
13JUL85	0.30	.	0.13
15JUL85	0.66	.	0.10
16JUL85	110.00	.	0.37
17JUL85	.	.	0.08
17JUL85	172.00	.	6.50
18JUL85	200.00	.	8.72
19JUL85	178.00	.	7.21
20JUL85	180.00	.	8.56
21JUL85	55.00	.	6.01
22JUL85	3.50	.	1.77
23JUL85	0.91	.	0.55
24JUL85	0.95	.	0.30
25JUL85	0.52	.	0.19
26JUL85		.	0.12

-----TYPE-Caisson B Vertical Sampler at 88 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15FEB85	106.00	48.13	2.79
16FEB85	113.00	57.09	3.61
18FEB85	120.00	73.00	4.47
19FEB85	133.00	.	4.65
20FEB85	116.00	63.00	4.88
21FEB85	100.00	47.00	4.44
22FEB85	74.90	32.00	3.60
23FEB85	41.10	23.00	2.22
25FEB85	21.20	14.00	1.98
26FEB85	11.10	7.00	1.68
27FEB85	4.11	2.00	1.24
28FEB85	1.14	0.40	0.81
01MAR85	0.18	.	0.49
02MAR85	0.23	.	0.31
04MAR85	0.28	.	0.14
05MAR85	0.35	.	0.11
06MAR85	0.19	.	0.09
07MAR85	0.26	.	.
08MAR85	0.27	.	.
11MAR85	0.31	.	.
12MAR85	0.13	.	.
15MAR85	0.43	.	.
18MAR85	0.54	.	.
20MAR85	0.08	.	.
22MAR85	0.05	.	.
25MAR85	0.04	.	.
27MAR85	0.04	.	.
10APR85	.	.	0.04
11APR85	.	.	0.04
12APR85	0.11	.	0.04
13APR85	6.40	.	0.04
14APR85	48.00	.	0.55
15APR85	75.00	.	1.86
16APR85	108.00	.	3.10
17APR85	126.00	.	3.88
18APR85	137.00	.	4.47
19APR85	132.00	.	4.95
21APR85	63.00	.	3.70
22APR85	45.00	.	2.98
23APR85	32.00	.	2.43
24APR85	20.70	.	2.07
25APR85	6.00	.	1.49
26APR85	1.56	.	0.77
28APR85	0.49	.	0.23
29APR85	0.19	.	0.04

-----TYPE=Caisson B Vertical Sampler at 88 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
02MAY85	0.15	.	0.12
08MAY85	0.16	.	0.12
15MAY85	0.21	.	.
13JUL85	0.37	.	0.13
15JUL85	0.11	.	0.09
16JUL85	5.40	.	0.08
17JUL85	70.00	.	0.87
18JUL85	114.00	.	2.80
19JUL85	166.00	.	4.35
20JUL85	170.00	.	7.21
21JUL85	140.00	.	7.60
22JUL85	79.00	.	5.99
23JUL85	39.00	.	3.86
24JUL85	9.30	.	2.23
25JUL85	2.40	.	1.08
26JUL85	0.57	.	0.47
27JUL85	.	.	0.25
28JUL85	.	.	0.16

-----TYPE-Gaission B Vertical Sampler at 103 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15FEB85	60.20	18.4	0.14
16FEB85	68.00	.	1.03
18FEB85	79.00	49.0	2.06
19FEB85	91.00	.	2.64
20FEB85	101.00	58.0	2.97
21FEB85	104.00	50.0	3.18
22FEB85	78.20	38.0	2.97
23FEB85	55.80	33.0	2.47
25FEB85	58.70	40.0	1.95
26FEB85	51.50	35.0	1.84
27FEB85	60.90	25.0	1.95
28FEB85	44.20	21.0	2.11
01MAR85	32.60	20.0	2.05
02MAR85	25.00	13.0	2.01
04MAR85	10.20	4.0	1.68
05MAR85	3.09	1.0	1.16
06MAR85	0.72	.	0.83
07MAR85	0.12	.	.
08MAR85	0.18	.	.
11MAR85	0.27	.	.
13MAR85	0.08	.	.
15MAR85	0.39	.	.
18MAR85	0.52	.	.
20MAR85	0.08	.	.
22MAR85	0.06	.	.
25MAR85	0.05	.	.
27MAR85	0.05	.	.
10APR85	.	.	0.04
11APR85	.	.	3.47
12APR85	.	.	0.04
13APR85	.	.	0.04
14APR85	0.04	.	0.04
15APR85	.	.	0.04
16APR85	14.30	.	0.04
17APR85	34.00	.	0.25
18APR85	54.00	.	0.80
19APR85	74.00	.	1.49
21APR85	92.00	.	2.64
22APR85	93.00	.	2.93
23APR85	87.00	.	2.91
24APR85	79.00	.	2.90
25APR85	69.00	.	2.80
26APR85	55.00	.	2.82
28APR85	49.00	.	3.07
29APR85	24.00	.	2.73

-----TYPE=Caisson B Vertical Sampler at 103 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
02MAY85	10.00	.	2.71
08MAY85	1.50	.	1.37
15MAY85	0.55	.	0.67
13JUL85	0.19	.	0.19
15JUL85	0.16	.	0.16
16JUL85	1.05	.	0.20
17JUL85	1.81	.	0.16
18JUL85	18.00	.	0.19
19JUL85	73.00	.	1.11
20JUL85	113.00	.	2.94
21JUL85	132.00	.	3.50
22JUL85	150.00	.	4.81
23JUL85	131.00	.	5.31
24JUL85	100.00	.	5.80
25JUL85	81.00	.	5.60
26JUL85	47.00	.	4.21
27JUL85	.	.	3.50
28JUL85	.	.	2.40
29JUL85	.	.	1.38
30JUL85	.	.	0.71
01AUG85	.	.	0.28
04AUG85	.	.	0.12

-----TYPE=Caisson B Vertical Sampler at 118 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
06FEB85	7.10	4.38	0.04
08FEB85	93.00	58.00	1.55
15FEB85	0.03	1.30	0.04
19FEB85	120.00	.	2.58
20FEB85	132.00	70.00	3.69
21FEB85	136.00	67.00	4.10
22FEB85	118.00	65.00	.
25FEB85	43.40	31.00	2.95
26FEB85	37.60	26.00	2.35
27FEB85	28.50	22.00	1.86
28FEB85	37.30	20.00	1.71
28FEB85	81.10	52.00	4.19
01MAR85	31.60	22.00	1.46
02MAR85	25.30	17.00	1.35
04MAR85	20.30	7.00	1.34
05MAR85	14.90	6.00	1.37
06MAR85	9.60	2.00	1.31
07MAR85	6.32	3.00	1.27
08MAR85	3.59	2.00	1.16
11MAR85	0.47	.	0.70
12MAR85	0.10	.	.
15MAR85	0.31	.	.
18MAR85	0.46	.	.
20MAR85	0.20	.	.
22MAR85	0.09	.	.
25MAR85	0.09	.	.
27MAR85	0.08	.	.
10APR85	.	.	0.04
13APR85	.	.	0.04
14APR85	.	.	0.04
15APR85	0.04	.	0.04
16APR85	0.29	.	0.04
17APR85	17.20	.	0.04
18APR85	48.00	.	0.09
19APR85	87.00	.	1.37
21APR85	122.00	.	3.46
22APR85	121.00	.	3.75
23APR85	93.00	.	4.21
24APR85	68.00	.	3.83
25APR85	47.00	.	3.27
26APR85	36.00	.	2.73
28APR85	22.00	.	1.72
29APR85	17.00	.	1.61
02MAY85	12.90	.	1.45
08MAY85	6.30	.	1.05

-----TYPE=Caisson B Vertical Sampler at 118 cm-----

Sampling Date	Iodide concentration (ppm)	Bromide concentration (ppm)	Lithium concentration (ppm)
15MAY85	4.50	.	0.88
14JUL85	0.45	.	.
16JUL85	0.22	.	0.34
17JUL85	0.84	.	0.22
18JUL85	3.16	.	0.30
19JUL85	12.60	.	0.30
20JUL85	97.00	.	0.63
21JUL85	132.00	.	3.40
22JUL85	120.00	.	4.05
23JUL85	148.00	.	5.00
24JUL85	129.00	.	5.89
25JUL85	85.00	.	5.96
26JUL85	46.00	.	4.12
27JUL85	.	.	3.35
28JUL85	.	.	2.63
29JUL85	.	.	2.05
30JUL85	.	.	1.54
01AUG85	.	.	0.69
02AUG85	.	.	0.41
04AUG85	.	.	0.19

-----TYPE=Caisson B Outflow-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
30JUL84	.	0.085	0.020
01AUG84	0.02	.	0.020
02AUG84	0.02	.	0.013
03AUG84	.	.	0.010
06AUG84	.	.	0.020
07AUG84	.	.	0.020
08AUG84	.	.	0.020
09AUG84	.	.	0.020
10AUG84	.	.	0.020
11AUG84	.	.	0.020
12AUG84	.	.	0.020
13AUG84	.	.	0.020
19AUG84	.	.	0.020
20AUG84	.	.	0.020
21AUG84	.	.	0.020
26AUG84	.	0.020	.
04SEP84	.	0.020	.
06SEP84	0.04	.	.
07SEP84	.	0.218	0.040
11SEP84	.	0.020	.
14SEP84	.	0.020	.
05OCT84	0.04	.	.
10OCT84	.	0.020	.
12OCT84	.	0.020	.
15OCT84	.	0.020	.
17OCT84	.	0.020	.
19OCT84	.	0.092	.
23OCT84	.	0.020	.
24OCT84	.	.	0.040
25OCT84	.	0.020	0.040
29OCT84	0.08	0.548	0.040
30OCT84	1.95	1.218	0.040
31OCT84	3.60	2.090	0.040
02NOV84	3.80	2.312	0.040
05NOV84	3.60	2.216	0.080
07NOV84	3.30	1.805	0.090
09NOV84	0.78	2.083	0.100
12NOV84	6.40	4.898	0.110
14NOV84	8.80	6.439	0.110
16NOV84	8.80	7.467	0.120
19NOV84	8.70	9.516	0.170
21NOV84	13.60	12.407	0.200
23NOV84	10.30	16.250	0.240
26NOV84	22.00	15.920	0.340
28NOV84	15.20	13.468	0.370

-----TYPE=Caisson B Outflow-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
30NOV84	5.60	7.465	0.40
03DEC84	2.80	2.456	0.40
04DEC84	2.40	2.089	.
05DEC84	0.80	1.032	0.82
06DEC84	0.80	0.833	.
07DEC84	0.17	0.462	.
08DEC84	0.29	0.412	0.85
09DEC84	0.09	0.736	0.78
10DEC84	0.09	0.467	0.72
11DEC84	0.04	0.441	.
12DEC84	0.10	0.325	.
13DEC84	.	0.283	.
14DEC84	.	0.225	.
15DEC84	0.28	0.281	.
17DEC84	0.09	0.196	.
18DEC84	0.15	0.132	.
19DEC84	0.14	0.135	.
20DEC84	0.16	.	.
21DEC84	0.15	.	.
22DEC84	0.12	.	.
24DEC84	0.07	.	.
26DEC84	0.08	.	.
27DEC84	0.07	.	.
28DEC84	0.17	.	.
29DEC84	0.06	.	.
31DEC84	1.90	.	.
02JAN85	10.10	.	.
03JAN85	15.90	.	.
04JAN85	22.10	.	.
05JAN85	28.30	.	.
07JAN85	36.00	.	.
08JAN85	35.00	.	.
09JAN85	33.10	.	.
10JAN85	33.00	.	.
11JAN85	35.00	.	.
12JAN85	27.70	.	.
14JAN85	25.30	.	.
16JAN85	22.20	.	.
18JAN85	17.70	.	.
21JAN85	14.28	.	.
23JAN85	17.50	.	.
25JAN85	26.10	.	.
28JAN85	27.90	.	.
30JAN85	23.80	.	.
01FEB85	7.41	.	.

-----TYPE-Caisson B Outflow-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
04FEB85	5.20	.	.
06FEB85	5.20	2.713	.
08FEB85	3.67	2.094	.
09FEB85	3.38	1.874	.
10FEB85	2.53	1.494	.
11FEB85	2.83	.	.
12FEB85	1.22	.	.
13FEB85	0.75	.	.
14FEB85	0.69	0.494	.
15FEB85	0.53	.	.
16FEB85	0.34	.	.
18FEB85	0.23	.	.
19FEB85	0.19	.	.
20FEB85	0.19	.	.
21FEB85	0.37	.	.
22FEB85	0.16	.	.
23FEB85	0.13	.	.
25FEB85	0.11	.	.
26FEB85	0.11	.	.
27FEB85	0.11	.	.
28FEB85	0.32	.	.
01MAR85	0.32	.	.
02MAR85	0.28	.	.
04MAR85	0.46	.	.
05MAR85	3.80	.	.
06MAR85	10.60	.	.
07MAR85	16.30	.	0.15
08MAR85	22.50	.	.
11MAR85	40.50	.	0.41
13MAR85	35.30	.	0.91
15MAR85	33.00	.	1.34
18MAR85	26.20	.	1.55
20MAR85	23.40	.	1.34
22MAR85	23.90	.	1.20
25MAR85	21.30	.	0.97
27MAR85	22.20	.	0.88
29MAR85	32.00	.	0.84
01APR85	36.00	.	.
03APR85	27.00	.	.
05APR85	17.00	.	.
08APR85	6.40	.	.
09APR85	5.40	.	.
10APR85	.	.	1.09
15APR85	.	.	0.87
21APR85	.	.	0.44

-----TYPE-Caisson B Outflow-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
22APR85	0.11	.	.
23APR85	0.09	.	.
24APR85	0.10	.	0.35
25APR85	0.25	.	.
26APR85	0.04	.	.
28APR85	4.50	.	0.25
29APR85	4.10	.	0.30
20MAY85	11.60	.	0.64
21MAY85	16.70	.	0.54
22MAY85	16.00	.	0.52
23MAY85	12.00	.	0.54
24MAY85	17.20	.	0.51
28MAY85	16.50	.	0.54
30MAY85	16.80	.	0.48
04JUN85	10.00	.	0.53
13JUL85	.	.	0.55
13JUL85	20.50	.	.
14JUL85	.	.	1.49
14JUL85	20.40	.	.
15JUL85	13.00	.	.
16JUL85	16.80	.	.
17JUL85	.	.	0.64
17JUL85	17.30	.	.
18JUL85	18.30	.	.
19JUL85	.	.	0.47
19JUL85	17.00	.	.
20JUL85	18.00	.	.
21JUL85	.	.	0.93
21JUL85	18.00	.	.
22JUL85	10.30	.	.
23JUL85	.	.	0.45
23JUL85	9.10	.	.
24JUL85	19.70	.	.
25JUL85	.	.	0.55
25JUL85	23.80	.	.
26JUL85	25.00	.	.
27JUL85	42.00	.	0.58
28JUL85	54.00	.	.
29JUL85	50.00	.	1.03
01AUG85	35.00	.	1.42
02AUG85	34.00	.	.
04AUG85	30.00	.	1.54
05AUG85	33.00	.	.
07AUG85	39.00	.	1.40
09AUG85	50.00	.	.

-----TYPE-Caisson B Outflow-----

Sampling Date	Iodide Concentration (ppm)	Bromide Concentration (ppm)	Lithium Concentration (ppm)
12AUG85	41.0	.	1.56
14AUG85	56.0	.	.
16AUG85	46.0	.	2.32
19AUG85	34.0	.	2.86
21AUG85	23.6	.	.
23AUG85	21.5	.	2.48
28AUG85	.	.	1.96