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Freshwater and nutrient inputs to a Mississippi River deltaic estuary with river re-introduction

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FRESHWATER AND NUTRIENT INPUTS TO A MISSISSIPPI RIVER DELTAIC
ESTUARY WITH RIVER RE-INTRODUCTION

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Science

in

The Department of Oceanography and Coastal Sciences

by
Emily C. G. Hyfield
B.S., Louisiana State University, 2001
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ABSTRACT

In this study, I quantified freshwater and nutrient inputs in the Breton Sound estuary which is receiving freshwater reintroduction in an effort to restore deteriorating wetlands. Almost all wetlands of the Mississippi deltaic plain are isolated from riverine input due to flood control levees along the Mississippi River. This has altered water and nutrient budgets and is a primary cause of the massive wetland loss in the delta. Maintenance of the delta depends on a healthy, functioning ecosystem which includes riverine input.

The Breton Sound estuary is located southeast of New Orleans and until recently was hydrologically isolated from direct riverine input. In 1992, a freshwater diversion became operational at Caernarvon, LA that re-introduces freshwater, nutrients, and sediments from the Mississippi River into the estuary. Several inputs and losses were calculated for three annual (2000, 2001, and 2002) water budgets including precipitation (PPN), potential evapotranspiration (PET), the diversion, stormwater pumps, and groundwater. The inputs of ammonium ($\text{NH}_4\text{-N}$), nitrate ($\text{NO}_3\text{-N}$), total nitrogen (TN) and total phosphorus (TP) were determined for each of the water sources.

There was a different precipitation pattern for each of the years for which water and nutrient budgets were calculated. Precipitation contributed 48-57% of freshwater input while the diversion structure accounted for 33-48%. The net input of fresh groundwater was 3 to 4 orders of magnitude less than diversion input and precipitation. Atmospheric deposition was the largest contributor of $\text{NH}_4\text{-N}$ accounting for 62-72% of the total NH_4 input followed by the diversion (total annual $\text{NH}_4\text{-N}$ input was 1.39×10^5 to 1.96×10^5 kg). $\text{NO}_3\text{-N}$ input to the estuary was an order of magnitude greater than $\text{NH}_4\text{-N}$ input. The diversion was the greatest source of nitrate to the study area (7.78×10^5 to 1.64×10^6 kg) contributing 77-88% of the total nitrate input. The

diversion contributed 1.26×10^6 to 2.10×10^6 kg of TN, representing 77-79% of TN input. The diversion contributed 81-98% of the TP input and was an order of magnitude greater than precipitation and stormwater pumps combined. Annual loading rates of $\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$ were 0.16-0.22 and 1.6-2.2 $\text{gNm}^{-2}\text{y}^{-1}$, respectively. TN ranged from 1.9 to 3.2 $\text{gNm}^{-2}\text{y}^{-1}$ and TP ranged from 0.17 to 0.29 $\text{gPm}^{-2}\text{y}^{-1}$.

INTRODUCTION

The productivity and sustainability of many coastal wetlands is highly dependent on water and nutrients supplied from the watershed. Almost all wetlands of the Mississippi deltaic plain are isolated from riverine input due to flood control levees along the Mississippi River that have been in place since early in the 20th century (Templett and Meyer-Arendt 1988; Day and Templett 1989). This separation of the river from the delta has altered water and nutrient budgets and is a primary cause of the massive wetland loss taking place in the delta (Boesch et al. 1994, Day et al. 2000a). Determination of the principal sources and sinks of freshwater and nutrients are important to understanding functioning, restoration, and management of coastal wetlands (Day et al. 2000a, 2000b; Glasgow and Burkholder 2000; Oenema et al. 2003; Bowen and Valiela 2004).

Budgets of freshwater and nutrients provide critical information on both human impact and restoration strategies for coastal ecosystems. Due to agriculture, population increase, and development, few unmodified riverine ecosystems remain globally. Dams, flood control structures, and upstream freshwater withdrawals are common. Coastal ecosystems are among the most productive in the world (Day et al. 1989, Mitsch and Gosselink 2001). However, the alteration of riverine input has impacted many coastal systems worldwide. Examples of modified riverine and deltaic systems include the Colorado River, (Stromberg 2001; Osmundson et al. 2002), the Nile (Stanley 1988; Fanos 1995), the Rhône (Pont et al. 2002), the Po river and Venice Lagoon (Sestini 1992), the Ebro (Ibanez et al. 1997; Cardoch et al. 2002), the Santee River (Stephens et al. 1976), the Indus (Milliman et al. 1984; Snedaker 1984), the Yangtze (Yang et al. 2002), and the Everglades (Clarke and Dalrymple 2003; Perry 2004). For these systems, previous research has shown that the restoration of riverine input is important for the restoration of these productive ecosystems. Recently, the reconnection of river systems with

coastal systems has become an important restoration approach (i.e., Santee River, Everglades, Mississippi, Ebro, and Rhône). An important function of freshwater input is to offset saltwater intrusion (Han et al. 2001; Sanders and Piasecki 2002). Saltwater intrusion due to reduced freshwater flow has led to vegetative stress and death, shifts in vegetation composition, and coastal erosion (Milliman et al. 1984; Snedaker 1984; Ibañez et al. 1997; Pont et al. 2002; Elder et al. 2003).

The Mississippi delta contains approximately 40% of the coastal wetlands in the lower 48 states. These wetlands have enormous economic and ecological value (Thibodeau and Ostro 1981; Farber and Costanza 1987; Farber 1988; Costanza et al. 1997; Turner et al. 2000). They provide habitat for numerous species of wildlife and nekton. Biogeochemical transformations in wetlands provide a sink for nitrogen and phosphorus entering the system (Breux et al. 1995; Mitsch et al. 2001, Day et al. 2003; Lane et al. 1999, 2004). The natural capital of coastal wetlands (i.e., fisheries, storm protection) is greater than that of most habitats (Thibodeau and Ostro 1981; Farber and Costanza 1987; Costanza et al. 1997). The maintenance of these natural values depends on a healthy, functioning ecosystem. In a deltaic ecosystem, this includes riverine input (Day et al. 1997).

The quantification of point and non-point sources of water and nutrients to a coastal system is important to understanding its functioning. Water and nutrient budgets have been calculated for several closed systems, such as lakes and estuaries (Degobbis et al. 1986; Jaworski et al. 1992; Owen 1995; Moustafa et al. 1998; Drexler et al. 1999; Mortazavi et al. 2000a, 2000b; Motz et al. 2001; Sutula et al. 2001). The internal fragmentation and hydrologic alteration of the Mississippi delta complicates the quantification of inputs and outputs (Day et al. 1997). In this

paper, I quantify freshwater and nutrient inputs to the Breton Sound estuary in southeastern Louisiana (fig. 1), where freshwater reintroduction from the Mississippi River began in 1992.

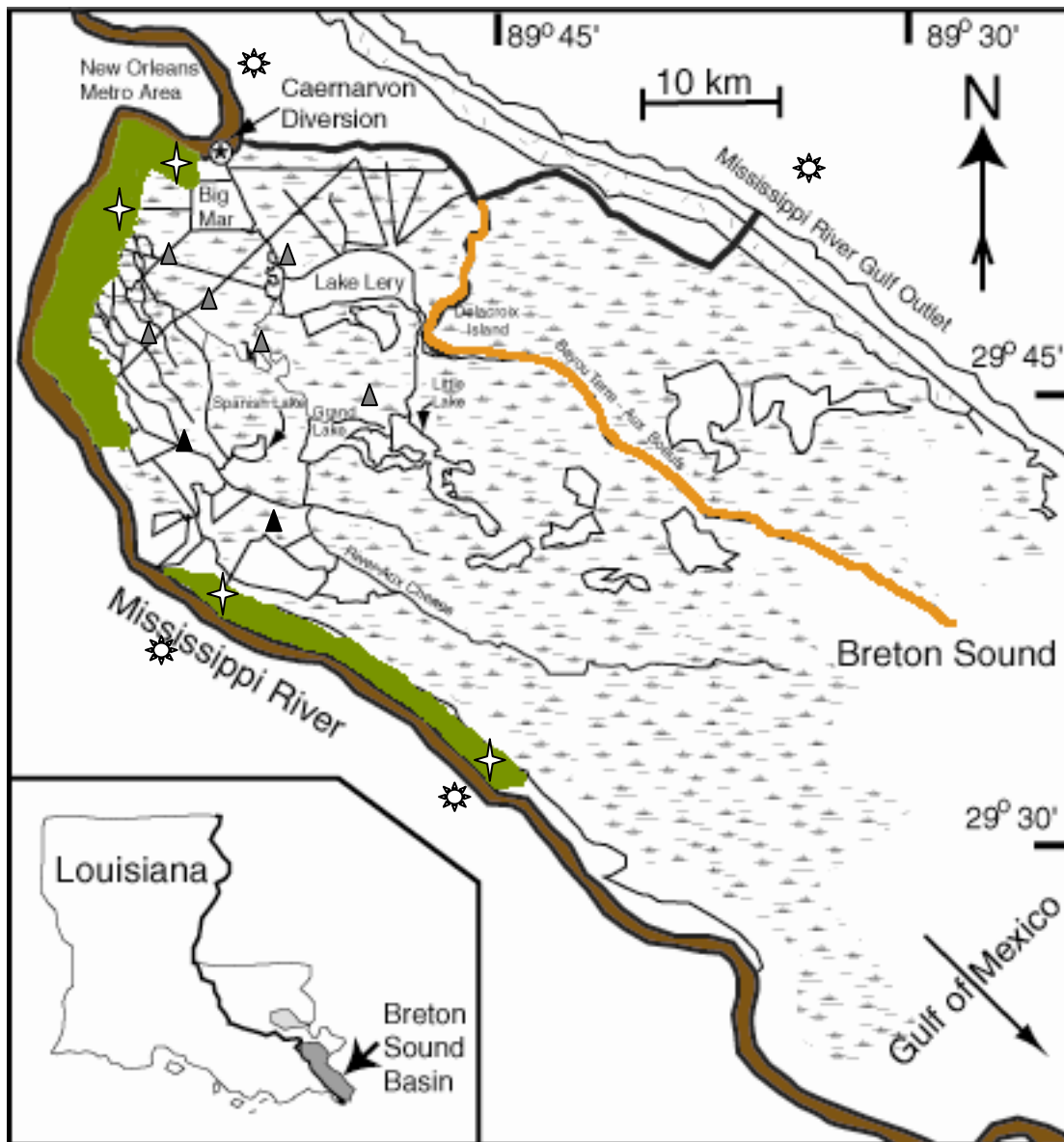


Figure 1. Map of Breton Sound Estuary. Bayou Terre Aux Boeufs designates the eastern boundary. The shaded area east of the Mississippi River are the agricultural impoundments. The star is the location of the diversion structure, Δ = water level recorders, \blacktriangle = water level recorders used for groundwater calculation, \star = storm water pumps, \odot = meteorological stations.

Inputs of freshwater and nutrients to Louisiana estuaries have been greatly altered in the past century. Levees, storm water pumps, diversion structures, and weirs enhance as well as restrict water and nutrient inputs to these estuaries. The construction of flood control levees and

restriction of overland flow due to hydrological disruption has greatly reduced water and nutrients inputs to wetlands (Swenson and Turner 1987, Boumans and Day 1993, Day et al. 2000a).

Nitrogen and phosphorus are two important macronutrients controlling marsh productivity (Mendelssohn and Morris 2000). However, input of these nutrients can result in eutrophication of estuarine and coastal waters (Nixon 1995; Cloern 2001; Paerl et al. 2003). One notable manifestation of eutrophication is a large hypoxic zone in the Gulf of Mexico, where excessive nutrient input has resulted in high phytoplankton growth and low oxygen concentrations in bottom waters (Turner and Rabalais 1994; Justic et al. 1995; Rabalais et al. 1996, 2002). The concentrations of nitrogen, especially nitrate, and phosphorus have increased in the Mississippi River over the past half century (Turner and Rabalais 1991, 1994; Rabalais et al. 1996) due to an increase in fertilizer application, extensive reclamation of wetlands, and highly efficient drainage systems on farms (Turner and Rabalais 1991, 1994; Rabalais et al. 1996; Justic et al. 2003; Mitsch et al. 2001). Elevated nitrogen concentrations in the water column in the estuary can cause hypoxia, anoxia, harmful algal blooms, and a change in phytoplankton species composition (Justic et al. 1993, 1995, 2003; Dortch et al. 1999; Rabalais et al. 2002; Scavia et al. 2003). Wetlands can efficiently assimilate nutrients, especially nitrate (Mitsch et al. 2001, Day et al. 2004), but the extreme hydrological disruption in the Mississippi delta has led to lower marsh uptake. The development of nutrient and water budgets will aid in the formulation of better comprehensive management plans for coastal systems.

Water and nutrient budgets were calculated for the Breton Sound estuary (Fig. 1). Several inputs and losses were included in the water budget including precipitation (PPN), potential evapotranspiration (PET), the diversion structure, stormwater pumps, and groundwater (Fig. 2).

The inputs of ammonium ($\text{NH}_4\text{-N}$), nitrate ($\text{NO}_3\text{-N}$), total nitrogen (TN) and total phosphorus (TP) were determined for each of the water sources.

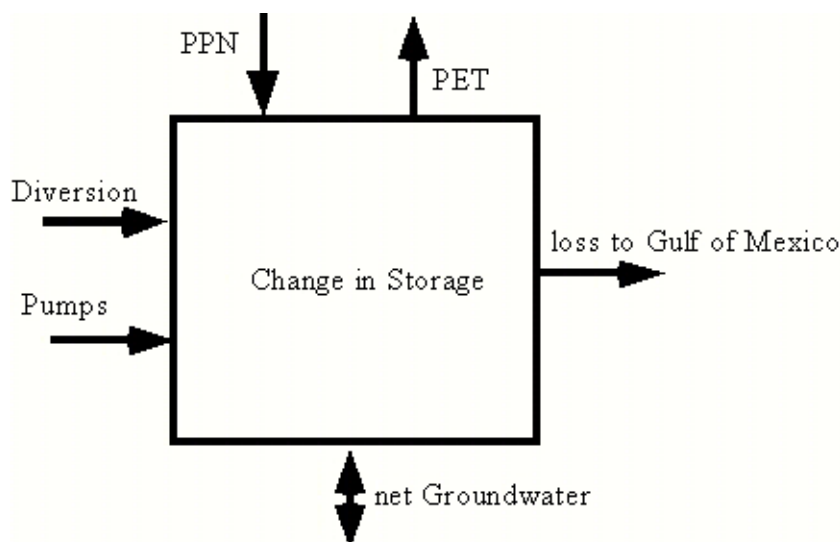


Figure 2. Conceptual model of all inputs and outputs of freshwater to the Breton Sound Estuary.

Study Site Description

The Breton Sound estuary is part of the Mississippi Delta, which formed over the past 6,000-7,000 years as a series of overlapping delta lobes (Fig. 2). Two of these lobes, the St. Bernard delta lobe (of which Bayou Terre aux Boeufs is a relic channel) and the modern Balize delta lobe, encompass the study area (Scruton 1960; Roberts 1997). Over the past century, wetlands in the basin have deteriorated due to retreat of the St. Bernard delta lobe, leveeing of the Mississippi river, and hydrologic alteration within the estuary (Russel 1936, Penland et al. 1988, Day et al. 2000a).

The Breton Sound estuary is located southeast of New Orleans on the east side of the river (Fig. 1) and is bound to the east by a natural levee and to the west by of the Mississippi River containment levee. The upper part of the estuary is dominated by wetlands while the lower estuary is the open water of Breton Sound. The study area for the budget analysis was the part of the estuary that is dominated by wetlands, an 850 km² zone of fresh, brackish, and saline

marshes. There are two major water routes in the basin: Bayou Terre aux Boeufs along the eastern side and River Aux Chene on the western side.

In 1992, a freshwater diversion was constructed at Caernarvon, Louisiana, (river mile 81.5) that introduces freshwater, nutrients, and sediments from the Mississippi River into the Breton Sound estuary. The diversion structure is constructed of five box culverts, each 4.6 m wide with vertical lift gates. The structure is capable of diverting up to a maximum of $230 \text{ m}^3\text{s}^{-1}$, though it typically discharges at $\sim 50 \text{ m}^3\text{s}^{-1}$. The diversion was constructed originally to maintain an optimal salinity regime for oyster production (Chatry and Chew 1985), but coastal marshes have also benefited from the re-introduction of river water and its constituents (e.g., Lane et al. 1999, 2004; DeLaune et al. 2003). The Mississippi River stage must reach a minimum level of approximately 1.2 m at the United States Army Corps of Engineers (USACE) Carrollton river gauge in New Orleans to allow an adequate head differential for the gravity flow of river water into the estuary.

MATERIALS AND METHODS

Water Budget

Land Area and Tidal Prism

The study site area was determined using a 30-m resolution geo-referenced thematic mapper (TM) image of the region taken on February 27, 2002, provided by the U.S. Geological Survey (pers. comm., Steyer, G., USGS). The TM image was classified into polygons of solid marsh, broken marsh, lakes, and ponds, and individual polygons were summed to get the total area (848 km²).

The annual flux of water entering and exiting the basin due to daily tidal exchange was assumed to be zero. This assumption was based on the annual calculation of the water budget, in which the net flux of water due to tide would average to zero over an annual time period. The tidal range in the estuary was small (approximately 10 cm). Additionally, I assumed that there was no net change in storage over an annual period. Therefore, the loss of water to the Gulf equaled the total input of water to the basin.

Precipitation (P) and Potential Evapotranspiration (PET)

Precipitation data were obtained from the Southern Regional Climate Center (SRCC) at LSU from the four weather stations closest to the study area: Chalmette, Myrtle Grove, Buras, and St. Bernard (<http://www.srcc.lsu.edu>; Fig. 1). Monthly and annual precipitation at each station were calculated using Thiessen's Polygon Method, which area-weights the precipitation over the study area (Watson and Burnett 1995). The weighted precipitation from each rain station was summed to obtain the total precipitation over the basin for each year.

Thornwaite's equation was used to calculate potential evapotranspiration (PET) in the basin (McCabe et al. 1985). Precipitation and temperature data were obtained from the same four

meteorological stations. Maximum possible sunshine hours were determined from the 30-year climate normal values for New Orleans station (NOAA 2002). Annual PET was calculated for each station using the Thiessen's polygon method, and the area-weighted PET was determined for the study area (Appendix I).

Diversion and Stormwater Inputs

Daily discharge data for the diversion structure was obtained from the Louisiana Department of Natural Resources and summed to determine the annual contribution from the diversion (Appendix II). The annual diversion discharge was divided by the area of the study site to determine the amount of water (in meters) evenly distributed over the study area. Additional surface water inputs to the estuary are runoff and stormwater pumps. Runoff was negligible in this estuary due to the water management via stormwater pumps. Four stormwater pumps are located along the western boundary of the study area at Bellevue, Braithwaite, East Pointe a La Hache, and Scarsdale (Fig. 1), in forced drainage areas surrounded by levees. Surface runoff collects in canals and is pumped into the Breton Sound Basin. Operational logs of all pumps except Scarsdale were obtained from the Plaquemines Parish Department of Drainage Pumps for 2000-2002 (pers. comm., Plaquemines Parish Department of Drainage Pumps; Belle Chasse, Louisiana). Because the pumps are either open at full capacity or shut off, the length of time each pump is open, multiplied by pump capacity, equals the total volume pumped. Stormwater pumping was performed routinely based on surface water runoff accumulation in canals, and generally pumps were operated simultaneously. Due to the close proximity between the Scarsdale and Braithwaite pump, the log for Braithwaite was used to determine daily discharge from the Scarsdale pump. The annual input from the stormwater pumps was summed to obtain the overall surface runoff to the Breton Sound Estuary (Appendix III).

Groundwater Input and Sensitivity Analysis

Darcy's Law was used to estimate the volume of groundwater seepage under the Mississippi River levee (Hornberger et al. 1998),

$$Q = -KA(dH)/(dL) \quad (\text{Equation 1})$$

where Q is groundwater discharge (m^3s^{-1}), K is the hydraulic conductivity of the sediments (ms^{-1}), A is the cross-sectional area of seepage zone (m^2), dH is the change in head between the Mississippi River and basin water level (m), and dL represents the path length of water passage between the Mississippi River and areas around the basin (m). Any ground water seepage into agricultural impoundments would collect in the drainage canals and be pumped out by the stormwater pumps. To avoid counting this water volume twice as an input, groundwater infiltration from the Mississippi River to the Breton Sound basin was calculated only where there was no pumped drainage area adjacent to the river (Fig. 1). The cross-sectional area was determined by measuring the length along the river (7000m) where infiltration was possible, and the estimated 30-m depth of a higher permeability layer beneath the levee (pers. comm., D. Carlson, Louisiana Geological Survey). The resulting cross-sectional area (A) was 210000 m^2 assuming a uniform zone of aquifer flow along the river length. The range in hydraulic conductivities for silty sand mixtures or loess was estimated to be between 9×10^{-8} and $2 \times 10^{-5} \text{ ms}^{-1}$ (Hornberger et al. 1998). Daily change in head (dH) was determined using two water level gages in the basin and the Mississippi River stage at West Point a la Hache. Ground water seepage was determined for both water level recorders and compared for the validity of the estimate.

A sensitivity analysis was carried out by varying the path length (dL) from 500 m to 6500 m from the levee and using the most conservative value of K (i.e., the value that would result in the

highest groundwater flow, $2 \times 10^{-5} \text{ ms}^{-1}$). Darcy's law was used to calculate the daily maximum and minimum ground water seepage for each path length (Fig. 3). The maximum value for each year (e.g. highest K, shortest $dL=500\text{m}$) was used for the determination of groundwater seepage for the budget (Appendix IV). Thus, estimates for groundwater seepage to Breton Sound estuary may seem high, but when these estimates are compared later to other source/sink terms its relative importance to the overall budget is clear.

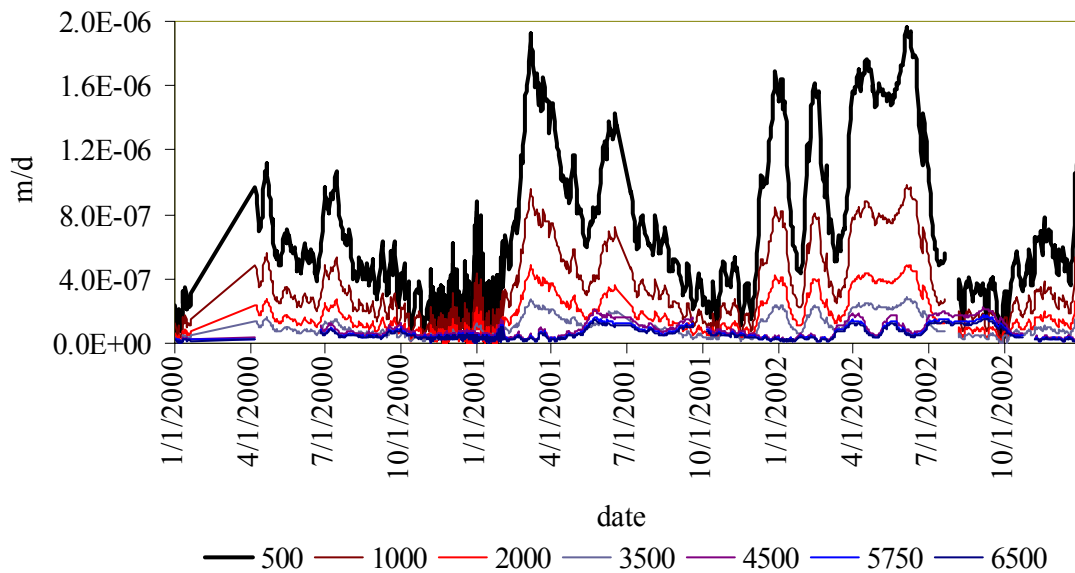


Figure 3. Sensitivity analysis of groundwater input to estuary with varying path lengths (L).

Nutrient Inputs

Annual concentrations of $\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$ from wet atmospheric deposition were obtained from the National Atmospheric Deposition Program website (NADP; Appendix V; <http://nadp.sws.uiuc.edu>) for each time period. Annual concentrations of TN and total TP were obtained from a meteorological station located in Cocodrie, Louisiana (Appendix V; unpublished data, R. Turner, J. Cable, LSU and R. Powell, LUMCON). Wet atmospheric deposition data

were used to calculate the amount of each nutrient introduced to the system by precipitation and stormwater pumps.

The annual average concentrations of $\text{NH}_4\text{-N}$, $\text{NO}_3\text{-N}$, TN, and TP were calculated from monthly data collected by the USACE (Appendix V). The USACE water quality station is located in the Mississippi River at the Luling water plant, located upriver of the diversion structure. The annual input of each nutrient from the diversion and groundwater was determined using the nutrient concentration of the Mississippi River multiplied by the diversion structure or groundwater discharge volume.

Error Estimation

The errors associated with each component in the budgets are important in the construction of a valid budget. As discussed earlier in the text, a sensitivity analysis was completed for the groundwater input and I discuss here the error of the remaining components. The error in the discharge measurements from the diversion structure is approximately 10% based on USACE rating curves (Louisiana Department of Natural Resources). The error associated with monthly precipitation and PET area-weighted values is estimated to be 10% (Winter 1981). The error associated with the storm water pumps was undetermined. However, the relative importance of the calculated storm water pump contribution to the overall budget suggests that even a significant error would not substantially alter the results. The error in the atmospheric deposition concentrations of $\text{NO}_3\text{-N}$ and $\text{NH}_4\text{-N}$ collected from the NADP were 3 and 6%, respectively (pers. comm., Chris Lehmann, NADP). The atmospheric deposition concentrations of TN and TP had an associated analytical error of 5 %. The combined error of precipitation and atmospheric deposition results in an overall error of 13, 16, 15 and 15 % for nitrate, ammonium, TN, and TP from atmospheric deposition, respectively. The nutrient concentrations for

stormwater pumps were assumed to be equal to those from atmospheric deposition. The Mississippi River concentrations collected by the USACOE had an associated error of 5% when combined with the potential error in diversion discharge volume, so that the total error in nutrient addition through the diversion structure was 15%.

RESULTS

Water Budget

There was a different precipitation pattern for each of the three years for which water and nutrient budgets were calculated (fig. 4). Compared to the 30-year average (1971-2000), 2000 was a drought year, 2002 was a wet year, and 2001 was similar to the 30 year average.

Precipitation and the diversion structure were consistently the largest contributors of freshwater to the Breton Sound estuary during the 3-year study (Fig. 5). Precipitation contributed 48 to 57% of freshwater input, while the diversion structure accounted for 33 to 48%. Diversion freshwater input exceeded freshwater input via precipitation only during the 2000 drought. Freshwater input from the diversion was relatively constant for all three years (2000, 2001, and 2002) at 1.06, 0.97, and 1.07m, respectively. Interannual freshwater input variability was primarily driven by precipitation. The relationship between precipitation and PET reflects this interannual precipitation variability, where 2000 was the only year with a water deficit (-0.11m), while 2001 and 2002 had surpluses of 1.46m and 0.76m, respectively.

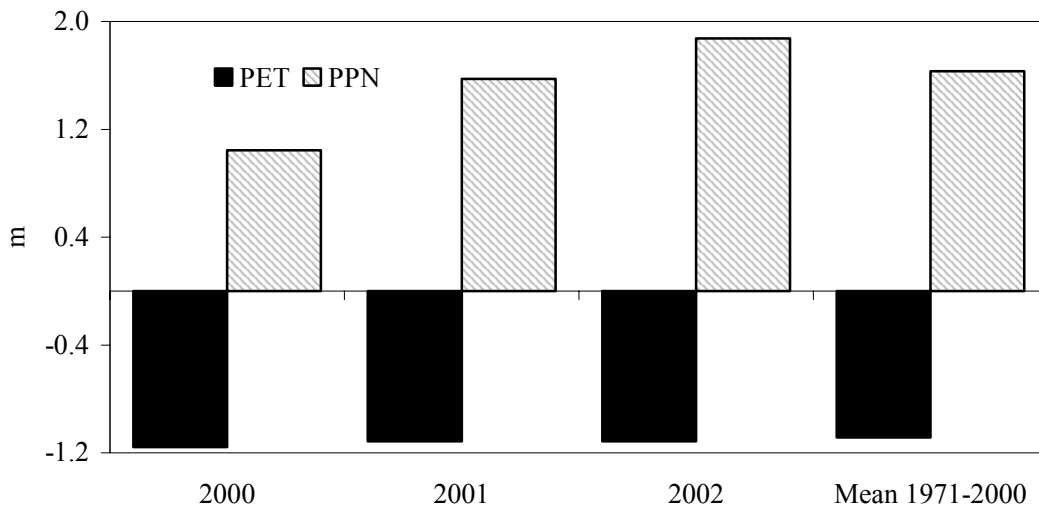


Figure 4. Annual precipitation (PPN=gray bars) and potential evapotranspiration (PET=black bars) over the three years of study; 2000, 2001 and 2002 compared to the 30 year mean.

The net input of freshwater by groundwater discharge was 3 to 4 orders of magnitudes less than diversion input and precipitation. Groundwater accounted for 0.02-0.03% of total freshwater input and appears to be a negligible source term for the estuary, even though the maximum groundwater discharge estimates were used in the water budget. The contribution of freshwater from stormwater pumps was directly related to the annual precipitation and accounted for 0.09, 0.18 and 0.35m, respectively, over the three year period. The storm water pumps contributed 4 to 11% of freshwater input to the system.

Nutrient Inputs

The combination of wet atmospheric deposition (e.g. precipitation), the freshwater diversion, and stormwater pump inputs account for greater than 99% of all nutrient inputs to Breton Sound Estuary. Ground water contributed less than 0.03% of total nutrient input. Wet atmospheric deposition was the largest contributor of $\text{NH}_4\text{-N}$ in the estuary, accounting for 61 to 72% of the total NH_4 budget (Fig. 6a). $\text{NH}_4\text{-N}$ input increased from 8.28×10^4 Kg in 2000, to 1.25×10^5 Kg in 2001, to 1.36×10^5 Kg in 2002, as the drought abated. Additionally, the mean annual concentration of $\text{NH}_4\text{-N}$ was greater in wet atmospheric deposition (0.093, 0.093, 0.086 mg/l over the 3-year period, respectively) than in the river water (0.07, 0.04, 0.03 mg/l, respectively). The freshwater river diversion contributed 15 to 33% of $\text{NH}_4\text{-N}$ inputs, with 4.47×10^4 , 3.97×10^4 , and 2.76×10^4 kg, respectively, during the 3 years. The stormwater pumps accounted for 5 to 13% of $\text{NH}_4\text{-N}$ inputs with the highest contribution in the wet year 2002.

$\text{NO}_3\text{-N}$ input to the Breton Sound estuary was an order of magnitude greater than the more volatile $\text{NH}_4\text{-N}$ input. Most inorganic nitrogen in both precipitation and river water was $\text{NO}_3\text{-N}$. The diversion was the most important source of nitrate to the study area (Fig. 6b). $\text{NO}_3\text{-N}$ input from the river was 7.78×10^5 , 1.64×10^6 and 1.04×10^6 kg, respectively, for the three years, and

contributed 77 to 88% of the total nitrate input. Wet atmospheric deposition accounted for 11 to 20% of $\text{NO}_3\text{-N}$ input and was 1.5×10^4 , 2.05×10^5 , and 2.69×10^5 kg for 2000, 2001, and 2002, respectively. The mean annual concentration of $\text{NO}_3\text{-N}$ in the river (1.2, 1.8, 1.3 mg/l for each year, respectively) was greater than the atmospheric deposition concentration (0.17, 0.15, 0.17 mg/l, respectively). Storm water pumps contributed only 1 to 4% of $\text{NO}_3\text{-N}$ input with a maximum of 4.98×10^4 kg in 2002.

Wet atmospheric deposition and diversion input were the largest contributors of TN. The diversion contributed 1.26×10^6 , 2.10×10^6 and 1.52×10^6 kg of TN, respectively, for the three years, representing 77 to 79% of TN input (Fig. 6c). The diversion input was nearly a factor of four greater than the total nitrogen input by precipitation. Precipitation supplied 18 to 21% of TN with 3.45×10^5 , 5.13×10^5 , and 3.45×10^5 kg annually for 2000, 2001, and 2002, respectively. The storm water pumps contributed a minimal proportion of 2-3% of TN, with a maximum occurring at 6.40×10^4 kg in 2002.

The diversion structure contributed 81 to 98% of TP input and was an order of magnitude greater than precipitation and stormwater pumps combined. Diversion TP input was 1.17×10^5 , 2.32×10^5 , and 1.92×10^5 kg in 2000, 2001, 2002, respectively (Fig. 6d). In contrast, precipitation and stormwater pumps accounted for only 2 to 18% and 0.3 to 1.5% of the TP input, respectively.

Loading Rates

The total annual loading rates of nitrogen and phosphorus were calculated for each constituent over each annual period (Table 2). The maximum loading rate of $\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$ were 0.22 and 2.2 $\text{gNm}^{-2}\text{y}^{-1}$, respectively. TN ranged from 1.9 to 3.2 $\text{gNm}^{-2}\text{y}^{-1}$ and TP ranged from 0.17 to 0.29 $\text{gPm}^{-2}\text{y}^{-1}$. The diversion structure was the overall largest loading factor of

NO₃-N, TN, and TP to the estuary. NH₄-N loading from atmospheric deposition exceeded the diversion in all three years.

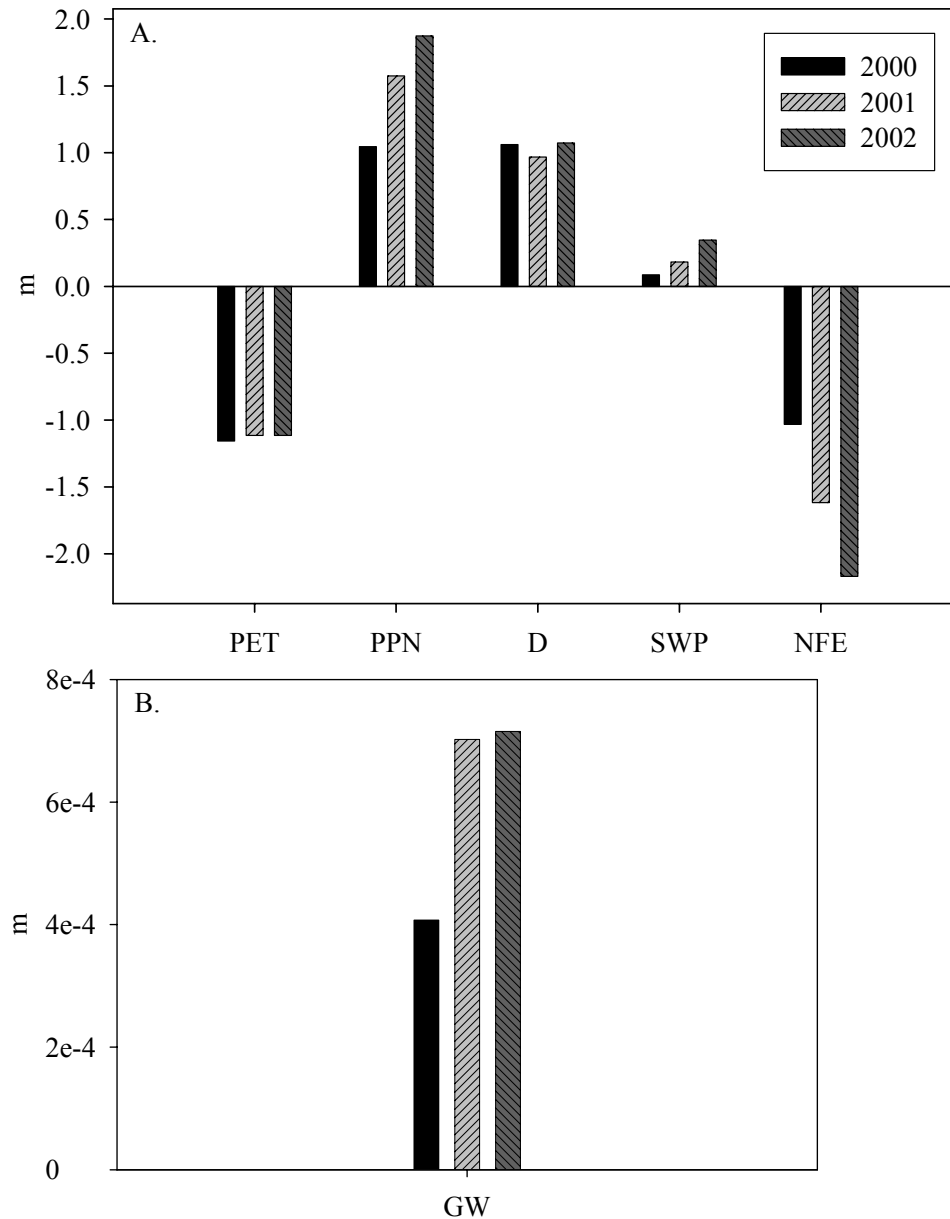


Figure 5. Annual water budget. A.) Major components in the annual water budget: PET- potential evapotranspiration, PPN-precipitation, D- diversion, SWP- storm water pumps, NFE- net freshwater exported. B.) minor component to the annual water budget, GW- groundwater. Note scale change.

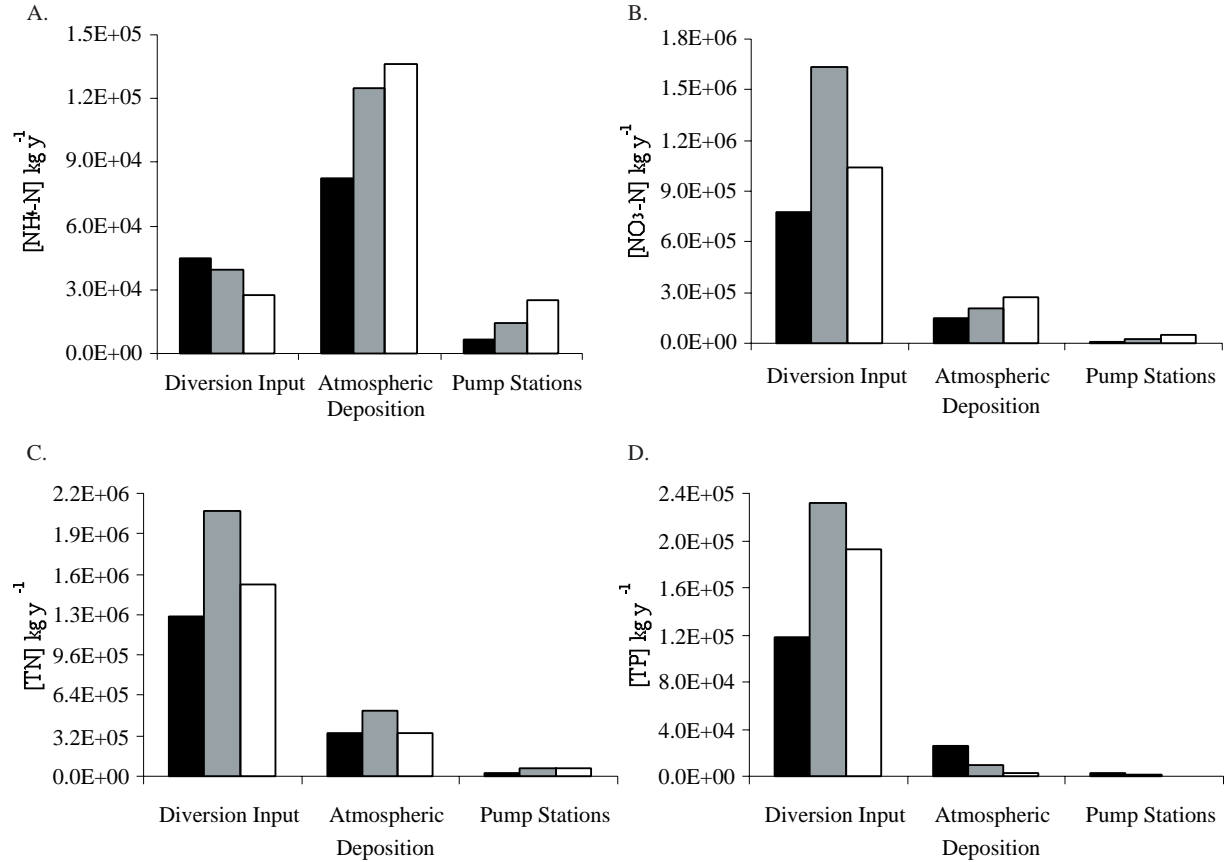


Figure 6. Nutrient sources to the Breton Sound Estuary. A.) Ammonium-N, B.) Nitrate-N, C.) Total Nitrogen-N, D.) Total Phosphorus. Black bars indicate 2000, Gray indicates 2001 and white indicates 2002.

Table 1. Annual loading rate of $\text{NH}_4\text{-N}$, $\text{NO}_3\text{-N}$, TN and TP ($\text{gm}^{-2}\text{y}^{-1}$).

	Year	Total	Diversion Input	Atmospheric Deposition	Pump Station	Groundwater
$\text{NH}_4\text{-N}$	2000	0.16	0.05	0.10	8.0E-03	9.6E-06
	2001	0.21	0.05	0.15	1.7E-02	1.2E-05
	2002	0.22	0.03	0.16	3.0E-02	1.1E-05
$\text{NO}_3\text{-N}$	2000	1.1	0.92	0.18	1.5E-02	1.7E-04
	2001	2.2	2.00	0.24	2.8E-02	4.9E-04
	2002	1.6	1.20	0.32	5.9E-02	4.0E-04
TN	2000	1.9	1.50	0.41	3.4E-02	2.7E-04
	2001	3.2	2.50	0.61	7.0E-02	6.3E-04
	2002	2.3	1.80	0.41	7.5E-02	5.8E-04
TP	2000	0.17	0.14	0.03	2.6E-03	2.5E-05
	2001	0.29	0.27	0.01	1.4E-03	6.9E-05
	2002	0.23	0.23	0.004	6.8E-04	7.4E-05

DISCUSSION AND CONCLUSION

Riverine Input to the Breton Sound Estuary

The diversion structure at Breton Sound contributed 33 to 48% of all freshwater entering the Breton Sound estuary. The re-introduction of the river to the estuary maintains salinity levels for oyster production and reduces the impact of saltwater stress on the marsh (Day et al. 2000a). DeLaune and Pezeshki (2003) and DeLaune et al. (2003) reported that the reduced salinity and increased nutrients resulting from the Caernarvon diversion led to significantly higher marsh productivity. Salinity levels in Apalachicola Bay are also controlled by the freshwater from the Apalachicola River, which provides 70% of the freshwater to the bay (Mortazavi et al. 2000a). Currently, the focus of restoration in the Everglades, Florida, is on hydrologic restoration and reintroduction of freshwater flow in an effort to mimic historical conditions (Clarke and Dalrymple 2003; Perry 2004).

Temporal and spatial patterns are important in determining the relative importance of diverted river water compared to precipitation and other sources. Due to the point source input from the diversion structure, the spatial scale (study area size) used to determine the overall contribution of the diversion to the study area is directly proportional to the percent contribution. The effect of a varying spatial scale is evident by calculating the water budget for the upper basin (370 km²) of the Breton Sound estuary. In this analysis, the impact of diverted water (51 to 70%) was greater than precipitation (29 to 42%) and storm-water pump (2 to 10%) input for all three years. The calculation of the water budget over a smaller study area in the upper basin demonstrates that the diversion has a key role in local effects of freshwater and nutrient inputs in the upper estuary. Additionally, the temporal period selected (weekly, monthly, seasonally, annually) will change the results of the water and nutrient budgets. The importance of diversion

input is much greater during the winter and spring, when diversion discharge is higher. The interannual variability in precipitation changed the relative importance of each component of freshwater and nutrient input. Sutula et al. (2001) reported strong seasonal and interannual variability of freshwater and nutrient inputs for the southeastern Everglades.

Precipitation

Precipitation was a major contributor of freshwater to the Breton Sound estuary and the interannual variability had a strong effect on the water budget. Precipitation was greater than 100 cm for each of the three years of study. In similar subtropical climates, such as the Everglades, precipitation has been shown to exceed surface water inflow for seasonal and annual water budgets of the Taylor Slough/C-111 basin (Sutula et al. 2001). Likewise, in wetland areas with little riverine influence, precipitation can provide almost all of the freshwater input to the system. Owen (1995) reported that precipitation input was greater than 90% of freshwater input to a peat wetland in Wisconsin. In the Breton Sound deltaic estuary, precipitation was 48 to 57% of freshwater input, with the exception of this anomalous drought of 2000, when precipitation was less than fluvial input to the estuary.

As critical as precipitation is as a source of freshwater input to Breton Sound Estuary, potential evapotranspiration is a significant sink of freshwater water from this estuary. In the drought of 2000, PET was the major source of freshwater loss from the estuary and exceeded the input of freshwater through precipitation. In a post-glacial peat wetland in Wisconsin, PET was the dominant output of water throughout the year (Owen 1995). Conversely, PET shows a clear seasonal trend in the Everglades wetlands. Sutula et al (2001) found a water deficit during the February to June dry season and a surplus during the June to November wet season.

Nutrient Input to the Breton Sound Estuary

The diversion structure and atmospheric deposition provided the majority of nitrogen and phosphorus input to the estuary. Concentrations of nutrients have increased in both the Mississippi River and in atmospheric deposition. The increase in N and P in the River is primarily due to agricultural runoff exacerbated by high levels of fertilizer application, massive wetland loss in the Mississippi basin, and highly efficient agricultural drainage systems (Turner and Rabalais 1991, 1994; Rabalais et al 1996; Mitsch et al. 2001). Nitrogen in wet atmospheric deposition is mainly associated with industrial and agricultural processes and fossil fuel combustion processes (McDevitt et al. 1999; Burns 2002). In contrast, atmospheric deposition of phosphorus is generally an insignificant source to the watershed.

Rivers are an important source of nutrients to coastal systems. Pumped river water provided more than 99% of TN and 94% of TP to the Boney Marsh in southern Florida (Moustafa et al. 1998). Nixon et al. (1995) reported that rivers input more than 50% of the TP to Narragansett Bay and are the major source of nitrogen to the system. The Po River, one of several rivers discharging into the Adriatic Sea, contributes more than 50% of the TN to the Sea (DeGobbis et al. 1986). The Apalachicola River contributes 92% of the dissolved inorganic nitrogen (DIN) and 78% of the TP entering Apalachicola Bay, Florida (Mortazavi et al. 2000a, 2000b). In comparison, the Mississippi River water contributed by the diversion structure supplied 77-88% of $\text{NO}_3\text{-N}$, 77-79% of TN, and 81-98% of TP of the overall nutrient inputs to the Breton Sound estuary.

Atmospheric deposition was a major contributor of nitrogen to the Breton Sound estuary. Similar findings have been reported for a number of other coastal systems. Wet atmospheric deposition contributed the majority of $\text{NH}_4\text{-N}$, 11-20% of the $\text{NO}_3\text{-N}$, and 18-21% of TN to

Breton Sound. In the Chesapeake Bay Estuary, wet atmospheric deposition contributed 19% of $\text{NO}_3\text{-N}$ and 40% of TN (Fisher 1991). Jaworski et al. (1992) reported that 28% of the total N inputs to the Upper Potomac River basin were due to atmospheric deposition. The primary source of nitrogen to the Waquoit Bay watershed in Massachusetts was through atmospheric deposition, which provided 30% of the total input to the receiving estuary (Valiela et al. 1997). Whitall et al. (2003) reported that wet atmospheric deposition of nitrogen provided as much as 50% of the nitrogen to the Neuse River Estuary in North Carolina. While atmospheric deposition is rarely important for phosphorus input to most watersheds, it was the major contributor of TP to the phosphorus-limited wetlands of the southeastern Everglades (Sutula et al. 2001). The importance of atmospheric sources of nitrogen to estuaries complicates nutrient reduction programs and is therefore important to quantify.

Minor Sources of Freshwater and Nutrients

Groundwater was an insignificant source of freshwater and nutrients to the Breton Sound Estuary, due to the low permeability of soils in this system. However, ground water is an important freshwater and nutrient source to the overall budgets of some coastal and wetland systems with more permeable soils. Groundwater flow is highly dependent on the substrate permeability (Valiela et al. 1990). For example, groundwater was the primary source (84-88%) of freshwater to a fen in York, England, largely due to a substrate of glacio-fluvial stratified sand and gravel overlain with a highly calcareous mat (Drexler et al. 1999). The karst terrain in the Everglades permits a high degree of interaction between surface water and ground waters, indicating that groundwater may be a significant contributor of freshwater but not nutrients (Sutula et al. 2001). Simmons (1992) reported that cation concentrations in the groundwater seeping into Florida Bay were equivalent to the cation concentration in major southeastern rivers

(i.e., James River, Savannah River, Altamaha River). While riverine input and precipitation contributed the majority of freshwater, groundwater supplied 18.5% of the freshwater input to Lowry Lake in north-Central Florida (Motz et al. 2001). Groundwater input through glacial soils was the major source of nitrogen and phosphorus to Buttermilk Bay and Waquoit Bay, Massachusetts (Valiela and Costa 1988; Valiela et al. 1997).

Stormwater pumps also contributed only a minor input of freshwater to the Breton Sound estuary due to the relatively small area under pump drainage and the event-driven, intermittent nature of this input. The effect of the direct input of storm water into the estuary was diffused throughout the basin, thereby minimizing the impact. Storm water pumps can be a significant contributor of freshwater and nutrients to small areas that receive little additional input of water and nutrients (Richards 1994; White and Bayley 1999).

Nutrient Loading

Nutrient loading rates to the Breton Sound estuary (Table 1) were low in comparison to a number of other coastal systems. High levels of nutrient loading can result in eutrophication, poor water quality resulting in hypoxia, changes in species composition, and harmful algal blooms (Justic et al. 1993, 1995, 2002; Dortch et al. 1999; Rabalais et al. 2002; Scavia et al. 2003). The maximum annual TN and TP loading rates into the Breton Sound study area were 3.2 and 0.29 $\text{gm}^{-2}\text{y}^{-1}$, respectively. Nixon et al. (1996) reported loading rates for several ecosystems worldwide; these values were used for a comparison to the loading rates in Breton Sound. Loading rates were reported for the Baltic Sea (3.04 TN and 0.13 TN $\text{gm}^{-2}\text{y}^{-1}$) and Lake Erie (5.1 TN and 1.3 TP $\text{gm}^{-2}\text{y}^{-1}$). Nutrient loading rates to Narragansett Bay were 27 and 3.6 $\text{gm}^{-2}\text{y}^{-1}$ of TN and TP, respectively. There was high loading of nitrogen and phosphorus into the Scheldt estuary (190 TN and 32 TP $\text{gm}^{-2}\text{y}^{-1}$) in the Netherlands and the Boston Harbor (120 TN

and 20 TP $\text{gm}^{-2}\text{y}^{-1}$). A number of authors have reported that nutrient retention in wetland and coastal systems is related to loading rates, where high nutrient retention occurs at low loading rates (Mitsch and Gosselink 2000; Mitsch et al. 2001). The low loading rates of N and P to the Breton Sound estuary suggests that this system should be efficient at nutrient retention. Lane et al. (1999, 2004) reported high retention of N and P for this estuary.

Residence time and loading rates are important to determine the total reduction of nutrients input to an estuary and the resulting water quality. Nixon et al.'s (1996) analysis of 10 systems revealed that retention rates, i.e., the loss of nutrients due to burial or denitrification, decreased exponentially with increasing residence time. Similarly, Mitsch and Gosselink (2000) and Mitsch et al. (2001), reported that nitrate removal increased exponentially with increased loading rate.

The quantification of the freshwater and nutrient inputs to the Breton Sounds estuary provides valuable information for the management of the area. Several studies have shown beneficial effects of the Caernarvon diversion into Breton Sound, such as nutrient reduction, enhanced accretion, and increased wetland productivity (Lane et al. 1999, 2004; DeLaune et al. 2003; DeLaune and Pezeshki 2003). However, concern has been reported that diverted water will lead to a deterioration of water quality in estuaries such as Breton Sound (Nixon 1995; Valiela and Bowen 2002). While chlorophyll levels are generally low, some high values have been measured. In addition, *Cylindrospermopsis raciborskii*, a potentially toxic blue green algae has been identified in the Breton Sound estuary, though it is not likely a result of the diversion (pers. Comm. H. and S. Rick, University of Louisiana-Lafayette). However, these concerns highlight the importance of carefully quantifying nutrient inputs to the system.

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APPENDIX I-CAERNARVON DIVERSION DISCHARGE DATA

Diversion discharge data was obtained from the Louisiana Department of Natural Resources.

Date	Volume (cf)	Volume (m3)	Volume/area
1/1/2000	0	0	0
1/2/2000	0	0	0
1/3/2000	0	0	0
1/4/2000	0	0	0
1/5/2000	0	0	0
1/6/2000	0	0	0
1/7/2000	0	0	0
1/8/2000	0	0	0
1/9/2000	0	0	0
1/10/2000	0	0	0
1/11/2000	0	0	0
1/12/2000	0	0	0
1/13/2000	0	0	0
1/14/2000	0	0	0
1/15/2000	0	0	0
1/16/2000	0	0	0
1/17/2000	0	0	0
1/18/2000	1.40E+08	3.97E+06	4.69E-03
1/19/2000	1.49E+08	4.22E+06	4.98E-03
1/20/2000	1.09E+08	3.09E+06	3.64E-03
1/21/2000	1.82E+07	5.15E+05	6.07E-04
1/22/2000	0	0	0
1/23/2000	0	0	0
1/24/2000	1.97E+08	5.57E+06	6.57E-03
1/25/2000	1.86E+08	5.27E+06	6.22E-03
1/26/2000	7.72E+07	2.18E+06	2.58E-03
1/27/2000	0	0	0
1/28/2000	0	0	0
1/29/2000	0	0	0
1/30/2000	0	0	0
1/31/2000	0	0	0
2/1/2000	0	0	0
2/2/2000	0	0	0
2/3/2000	0	0	0

2/4/2000	0	0	0
2/5/2000	0	0	0
2/6/2000	0	0	0
2/7/2000	0	0	0
2/8/2000	0	0	0
2/9/2000	0	0	0
2/10/2000	0	0	0
2/11/2000	0	0	0
2/12/2000	0	0	0
2/13/2000	0	0	0
2/14/2000	0	0	0
2/15/2000	0	0	0
2/16/2000	0	0	0
2/17/2000	0	0	0
2/18/2000	0	0	0
2/19/2000	0	0	0
2/20/2000	0	0	0
2/21/2000	0	0	0
2/22/2000	0	0	0
2/23/2000	0	0	0
2/24/2000	0	0	0
2/25/2000	0	0	0
2/26/2000	0	0	0
2/27/2000	0	0	0
2/28/2000	9.23E+07	2.61E+06	3.08E-03
2/29/2000	1.73E+08	4.91E+06	5.79E-03
3/1/2000	1.76E+08	5.00E+06	5.89E-03
3/2/2000	1.76E+08	4.99E+06	5.88E-03
3/3/2000	1.79E+08	5.05E+06	5.96E-03
3/4/2000	1.85E+08	5.24E+06	6.18E-03
3/5/2000	1.80E+08	5.09E+06	6.01E-03
3/6/2000	1.71E+08	4.84E+06	5.71E-03
3/7/2000	1.71E+08	4.84E+06	5.71E-03
3/8/2000	5.38E+07	1.52E+06	1.80E-03
3/9/2000	1.23E+08	3.49E+06	4.11E-03
3/10/2000	2.91E+08	8.25E+06	9.73E-03
3/11/2000	2.88E+08	8.16E+06	9.62E-03
3/12/2000	3.06E+08	8.67E+06	1.02E-02
3/13/2000	368064000	1.04E+07	1.23E-02
3/14/2000	352425600	9.98E+06	1.18E-02
3/15/2000	2.43E+08	6.88E+06	8.11E-03

3/16/2000	2.18E+08	6.18E+06	7.28E-03
3/17/2000	5.91E+07	1.67E+06	1.97E-03
3/18/2000	0	0	0
3/19/2000	0	0	0
3/20/2000	2.20E+08	6.24E+06	7.35E-03
3/21/2000	2.20E+08	6.23E+06	7.34E-03
3/22/2000	1.86E+08	5.27E+06	6.22E-03
3/23/2000	2.18E+08	6.18E+06	7.28E-03
3/24/2000	5.91E+07	1.67E+06	1.97E-03
3/25/2000	0	0	0
3/26/2000	0	0	0
3/27/2000	2.81E+08	7.95E+06	9.38E-03
3/28/2000	366854400	1.04E+07	1.22E-02
3/29/2000	5.98E+07	1.69E+06	2.00E-03
3/30/2000	0	0	0
3/31/2000	0	0	0
4/1/2000	0	0	0
4/2/2000	0	0	0
4/3/2000	0	0	0
4/4/2000	9.94E+07	2.82E+06	3.32E-03
4/5/2000	2.83E+08	8.00E+06	9.44E-03
4/6/2000	2.66E+08	7.53E+06	8.88E-03
4/7/2000	2.49E+08	7.06E+06	8.32E-03
4/8/2000	2.41E+08	6.84E+06	8.06E-03
4/9/2000	2.35E+08	6.66E+06	7.85E-03
4/10/2000	2.29E+08	6.48E+06	7.64E-03
4/11/2000	2.29E+08	6.48E+06	7.64E-03
4/12/2000	2.31E+08	6.54E+06	7.72E-03
4/13/2000	2.37E+08	6.72E+06	7.92E-03
4/14/2000	2.47E+08	7.00E+06	8.26E-03
4/15/2000	2.51E+08	7.11E+06	8.39E-03
4/16/2000	2.66E+08	7.53E+06	8.88E-03
4/17/2000	1.81E+08	5.13E+06	6.05E-03
4/18/2000	8.38E+07	2.37E+06	2.80E-03
4/19/2000	8.61E+07	2.44E+06	2.88E-03
4/20/2000	8.74E+07	2.48E+06	2.92E-03
4/21/2000	8.57E+07	2.43E+06	2.86E-03
4/22/2000	8.44E+07	2.39E+06	2.82E-03
4/23/2000	8.35E+07	2.37E+06	2.79E-03
4/24/2000	8.44E+07	2.39E+06	2.82E-03
4/25/2000	8.53E+07	2.41E+06	2.85E-03

4/26/2000	8.47E+07	2.40E+06	2.83E-03
4/27/2000	8.67E+07	2.46E+06	2.90E-03
4/28/2000	8.74E+07	2.48E+06	2.92E-03
4/29/2000	8.35E+07	2.36E+06	2.79E-03
4/30/2000	8.44E+07	2.39E+06	2.82E-03
5/1/2000	8.79E+07	2.49E+06	2.93E-03
5/2/2000	8.68E+07	2.46E+06	2.90E-03
5/3/2000	8.58E+07	2.43E+06	2.86E-03
5/4/2000	8.61E+07	2.44E+06	2.88E-03
5/5/2000	8.73E+07	2.47E+06	2.91E-03
5/6/2000	8.99E+07	2.54E+06	3.00E-03
5/7/2000	9.24E+07	2.62E+06	3.09E-03
5/8/2000	9.42E+07	2.67E+06	3.14E-03
5/9/2000	9.12E+07	2.58E+06	3.05E-03
5/10/2000	8.74E+07	2.48E+06	2.92E-03
5/11/2000	8.78E+07	2.49E+06	2.93E-03
5/12/2000	8.81E+07	2.50E+06	2.94E-03
5/13/2000	8.81E+07	2.50E+06	2.94E-03
5/14/2000	8.81E+07	2.50E+06	2.94E-03
5/15/2000	8.90E+07	2.52E+06	2.97E-03
5/16/2000	8.99E+07	2.54E+06	3.00E-03
5/17/2000	8.99E+07	2.54E+06	3.00E-03
5/18/2000	8.99E+07	2.54E+06	3.00E-03
5/19/2000	8.63E+07	2.44E+06	2.88E-03
5/20/2000	7.97E+07	2.26E+06	2.66E-03
5/21/2000	7.37E+07	2.09E+06	2.46E-03
5/22/2000	6.70E+07	1.90E+06	2.24E-03
5/23/2000	7.57E+07	2.14E+06	2.53E-03
5/24/2000	8.78E+07	2.49E+06	2.93E-03
5/25/2000	8.78E+07	2.49E+06	2.93E-03
5/26/2000	8.78E+07	2.49E+06	2.93E-03
5/27/2000	8.78E+07	2.49E+06	2.93E-03
5/28/2000	8.78E+07	2.49E+06	2.93E-03
5/29/2000	8.78E+07	2.49E+06	2.93E-03
5/30/2000	8.78E+07	2.49E+06	2.93E-03
5/31/2000	8.78E+07	2.49E+06	2.93E-03
6/1/2000	8.66E+07	2.45E+06	2.89E-03
6/2/2000	8.67E+07	2.46E+06	2.90E-03
6/3/2000	9.21E+07	2.61E+06	3.07E-03
6/4/2000	9.24E+07	2.62E+06	3.09E-03
6/5/2000	1.31E+08	3.70E+06	4.36E-03

6/6/2000	1.69E+08	4.79E+06	5.64E-03
6/7/2000	1.73E+08	4.89E+06	5.77E-03
6/8/2000	1.71E+08	4.84E+06	5.71E-03
6/9/2000	4.93E+07	1.40E+06	1.65E-03
6/10/2000	0	0	0
6/11/2000	0	0	0
6/12/2000	7.20E+07	2.04E+06	2.40E-03
6/13/2000	1.73E+08	4.89E+06	5.77E-03
6/14/2000	1.73E+08	4.89E+06	5.76E-03
6/15/2000	1.72E+08	4.88E+06	5.76E-03
6/16/2000	1.72E+08	4.88E+06	5.76E-03
6/17/2000	1.72E+08	4.88E+06	5.76E-03
6/18/2000	1.72E+08	4.88E+06	5.76E-03
6/19/2000	1.72E+08	4.88E+06	5.76E-03
6/20/2000	1.72E+08	4.88E+06	5.76E-03
6/21/2000	1.72E+08	4.88E+06	5.76E-03
6/22/2000	1.72E+08	4.88E+06	5.76E-03
6/23/2000	1.75E+08	4.94E+06	5.83E-03
6/24/2000	1.79E+08	5.06E+06	5.97E-03
6/25/2000	1.78E+08	5.03E+06	5.93E-03
6/26/2000	1.75E+08	4.96E+06	5.85E-03
6/27/2000	1.76E+08	4.97E+06	5.86E-03
6/28/2000	1.73E+08	4.90E+06	5.77E-03
6/29/2000	1.71E+08	4.85E+06	5.72E-03
6/30/2000	1.72E+08	4.87E+06	5.74E-03
7/1/2000	1.72E+08	4.87E+06	5.74E-03
7/2/2000	1.72E+08	4.87E+06	5.74E-03
7/3/2000	1.72E+08	4.87E+06	5.74E-03
7/4/2000	1.72E+08	4.87E+06	5.74E-03
7/5/2000	1.72E+08	4.87E+06	5.74E-03
7/6/2000	1.72E+08	4.87E+06	5.74E-03
7/7/2000	1.73E+08	4.90E+06	5.78E-03
7/8/2000	1.75E+08	4.97E+06	5.86E-03
7/9/2000	1.73E+08	4.91E+06	5.78E-03
7/10/2000	1.72E+08	4.87E+06	5.74E-03
7/11/2000	1.74E+08	4.93E+06	5.82E-03
7/12/2000	1.73E+08	4.90E+06	5.78E-03
7/13/2000	1.72E+08	4.87E+06	5.74E-03
7/14/2000	1.68E+08	4.76E+06	5.62E-03
7/15/2000	1.58E+08	4.48E+06	5.28E-03
7/16/2000	1.59E+08	4.52E+06	5.32E-03

7/17/2000	1.67E+08	4.74E+06	5.59E-03
7/18/2000	1.71E+08	4.84E+06	5.71E-03
7/19/2000	1.72E+08	4.88E+06	5.76E-03
7/20/2000	1.74E+08	4.93E+06	5.81E-03
7/21/2000	1.77E+08	5.02E+06	5.92E-03
7/22/2000	1.77E+08	5.02E+06	5.92E-03
7/23/2000	1.77E+08	5.02E+06	5.92E-03
7/24/2000	1.77E+08	5.02E+06	5.92E-03
7/25/2000	1.77E+08	5.02E+06	5.92E-03
7/26/2000	1.77E+08	5.02E+06	5.92E-03
7/27/2000	1.77E+08	5.02E+06	5.92E-03
7/28/2000	1.77E+08	5.02E+06	5.92E-03
7/29/2000	1.77E+08	5.02E+06	5.92E-03
7/30/2000	1.77E+08	5.02E+06	5.92E-03
7/31/2000	1.83E+08	5.18E+06	6.10E-03
8/1/2000	1.88E+08	5.33E+06	6.28E-03
8/2/2000	1.88E+08	5.33E+06	6.28E-03
8/3/2000	1.88E+08	5.33E+06	6.28E-03
8/4/2000	1.83E+08	5.19E+06	6.12E-03
8/5/2000	1.73E+08	4.91E+06	5.79E-03
8/6/2000	1.71E+08	4.83E+06	5.70E-03
8/7/2000	1.73E+08	4.90E+06	5.78E-03
8/8/2000	1.73E+08	4.90E+06	5.78E-03
8/9/2000	1.73E+08	4.89E+06	5.76E-03
8/10/2000	1.73E+08	4.89E+06	5.77E-03
8/11/2000	1.73E+08	4.91E+06	5.79E-03
8/12/2000	1.73E+08	4.91E+06	5.79E-03
8/13/2000	1.73E+08	4.91E+06	5.79E-03
8/14/2000	1.73E+08	4.91E+06	5.79E-03
8/15/2000	1.73E+08	4.91E+06	5.79E-03
8/16/2000	1.73E+08	4.90E+06	5.78E-03
8/17/2000	1.73E+08	4.90E+06	5.77E-03
8/18/2000	1.64E+08	4.64E+06	5.47E-03
8/19/2000	1.44E+08	4.09E+06	4.82E-03
8/20/2000	1.34E+08	3.79E+06	4.47E-03
8/21/2000	1.54E+08	4.35E+06	5.13E-03
8/22/2000	1.62E+08	4.58E+06	5.40E-03
8/23/2000	1.61E+08	4.57E+06	5.39E-03
8/24/2000	1.73E+08	4.90E+06	5.77E-03
8/25/2000	1.73E+08	4.90E+06	5.77E-03
8/26/2000	1.73E+08	4.90E+06	5.77E-03

8/27/2000	1.73E+08	4.90E+06	5.77E-03
8/28/2000	1.73E+08	4.90E+06	5.77E-03
8/29/2000	1.73E+08	4.90E+06	5.77E-03
8/30/2000	1.73E+08	4.90E+06	5.77E-03
8/31/2000	1.64E+08	4.64E+06	5.47E-03
9/1/2000	1.62E+08	4.58E+06	5.40E-03
9/2/2000	1.50E+08	4.25E+06	5.01E-03
9/3/2000	1.36E+08	3.86E+06	4.55E-03
9/4/2000	1.22E+08	3.47E+06	4.09E-03
9/5/2000	1.22E+08	3.47E+06	4.09E-03
9/6/2000	1.48E+08	4.19E+06	4.94E-03
9/7/2000	1.73E+08	4.91E+06	5.78E-03
9/8/2000	1.48E+08	4.19E+06	4.94E-03
9/9/2000	6.13E+07	1.73E+06	2.05E-03
9/10/2000	0	0	0
9/11/2000	0	0	0
9/12/2000	0	0	0
9/13/2000	0	0	0
9/14/2000	0	0	0
9/15/2000	0	0	0
9/16/2000	0	0	0
9/17/2000	0	0	0
9/18/2000	0	0	0
9/19/2000	0	0	0
9/20/2000	0	0	0
9/21/2000	0	0	0
9/22/2000	0	0	0
9/23/2000	0	0	0
9/24/2000	0	0	0
9/25/2000	0	0	0
9/26/2000	0	0	0
9/27/2000	0	0	0
9/28/2000	0	0	0
9/29/2000	0	0	0
9/30/2000	0	0	0
10/1/2000	0	0	0
10/2/2000	0	0	0
10/3/2000	0	0	0
10/4/2000	0	0	0
10/5/2000	0	0	0
10/6/2000	0	0	0

10/7/2000	0	0	0
10/8/2000	0	0	0
10/9/2000	0	0	0
10/10/2000	0	0	0
10/11/2000	0	0	0
10/12/2000	0	0	0
10/13/2000	0	0	0
10/14/2000	0	0	0
10/15/2000	0	0	0
10/16/2000	0	0	0
10/17/2000	0	0	0
10/18/2000	0	0	0
10/19/2000	0	0	0
10/20/2000	0	0	0
10/21/2000	0	0	0
10/22/2000	0	0	0
10/23/2000	0	0	0
10/24/2000	0	0	0
10/25/2000	0	0	0
10/26/2000	0	0	0
10/27/2000	0	0	0
10/28/2000	0	0	0
10/29/2000	0	0	0
10/30/2000	0	0	0
10/31/2000	0	0	0
11/1/2000	0	0	0
11/2/2000	0	0	0
11/3/2000	0	0	0
11/4/2000	0	0	0
11/5/2000	0	0	0
11/6/2000	0	0	0
11/7/2000	0	0	0
11/8/2000	0	0	0
11/9/2000	0	0	0
11/10/2000	0	0	0
11/11/2000	0	0	0
11/12/2000	0	0	0
11/13/2000	0	0	0
11/14/2000	0	0	0
11/15/2000	0	0	0
11/16/2000	0	0	0

11/17/2000	0	0	0
11/18/2000	0	0	0
11/19/2000	0	0	0
11/20/2000	0	0	0
11/21/2000	0	0	0
11/22/2000	0	0	0
11/23/2000	0	0	0
11/24/2000	0	0	0
11/25/2000	0	0	0
11/26/2000	0	0	0
11/27/2000	0	0	0
11/28/2000	0	0	0
11/28/2000	1.72E+08	4.87E+06	5.75E-03
11/29/2000	1.73E+08	4.89E+06	5.76E-03
11/30/2000	1.73E+08	4.89E+06	5.76E-03
12/1/2000	1.08E+08	3.05E+06	3.60E-03
12/2/2000	4.86E+07	1.37E+06	1.62E-03
12/3/2000	4.86E+07	1.38E+06	1.62E-03
12/4/2000	1.98E+08	5.62E+06	6.62E-03
12/5/2000	2.04E+08	5.79E+06	6.82E-03
12/6/2000	1.65E+08	4.67E+06	5.50E-03
12/7/2000	1.37E+08	3.87E+06	4.56E-03
12/8/2000	1.17E+08	3.30E+06	3.89E-03
12/9/2000	9.65E+07	2.73E+06	3.22E-03
12/10/2000	4.83E+07	1.37E+06	1.61E-03
12/11/2000	0	0	0
12/12/2000	0	0	0
12/13/2000	0	0	0
12/14/2000	0	0	0
12/15/2000	0	0	0
12/16/2000	0	0	0
12/17/2000	0	0	0
12/18/2000	0	0	0
12/19/2000	0	0	0
12/20/2000	0	0	0
12/21/2000	0	0	0
12/22/2000	0	0	0
12/23/2000	0	0	0
12/24/2000	0	0	0
12/25/2000	0	0	0
12/26/2000	0	0	0

12/27/2000	0	0	0
12/28/2000	2.09E+08	5.93E+06	6.99E-03
12/29/2000	1.32E+08	3.73E+06	4.40E-03
12/30/2000	1.36E+08	3.86E+06	4.55E-03
12/31/2000	1.40E+08	3.95E+06	4.66E-03
1/1/2001	1.36E+08	3.85E+06	4.54E-03
1/2/2001	2.06E+08	5.84E+06	6.89E-03
1/3/2001	2.71E+08	7.67E+06	9.04E-03
1/4/2001	2.97E+08	8.41E+06	9.91E-03
1/5/2001	318729600	9.03E+06	1.06E-02
1/6/2001	2.31E+08	6.55E+06	7.72E-03
1/7/2001	1.26E+08	3.58E+06	4.22E-03
1/8/2001	9.25E+07	2.62E+06	3.09E-03
1/9/2001	2.51E+07	7.10E+05	8.37E-04
1/10/2001	0	0	0
1/11/2001	0	0	0
1/12/2001	6.64E+07	1.88E+06	2.22E-03
1/13/2001	0	0	0
1/14/2001	0	0	0
1/15/2001	0	0	0
1/16/2001	0	0	0
1/17/2001	0	0	0
1/18/2001	0	0	0
1/19/2001	0	0	0
1/20/2001	0	0	0
1/21/2001	0	0	0
1/22/2001	1.78E+08	5.05E+06	5.96E-03
1/23/2001	1.65E+08	4.67E+06	5.50E-03
1/24/2001	1.50E+08	4.24E+06	5.00E-03
1/25/2001	1.50E+08	4.24E+06	5.00E-03
1/26/2001	1.78E+08	5.03E+06	5.93E-03
1/27/2001	2.02E+08	5.71E+06	6.73E-03
1/28/2001	2.13E+08	6.03E+06	7.11E-03
1/29/2001	2.13E+08	6.03E+06	7.11E-03
1/30/2001	2.53E+08	7.16E+06	8.45E-03
1/31/2001	2.93E+08	8.30E+06	9.78E-03
2/1/2001	3.02E+08	8.56E+06	1.01E-02
2/2/2001	2.52E+08	7.13E+06	8.41E-03
2/3/2001	2.52E+08	7.13E+06	8.41E-03
2/4/2001	2.52E+08	7.13E+06	8.41E-03
2/5/2001	2.52E+08	7.13E+06	8.41E-03

2/6/2001	2.32E+08	6.58E+06	7.76E-03
2/7/2001	5.77E+07	1.63E+06	1.92E-03
2/8/2001	4.30E+07	1.22E+06	1.44E-03
2/9/2001	0	0	0
2/10/2001	0	0	0
2/11/2001	0	0	0
2/12/2001	0	0	0
2/13/2001	0	0	0
2/14/2001	0	0	0
2/15/2001	4.48E+07	1.27E+06	1.50E-03
2/16/2001	4.31E+07	1.22E+06	1.44E-03
2/17/2001	4.59E+07	1.30E+06	1.53E-03
2/18/2001	4.92E+07	1.39E+06	1.64E-03
2/19/2001	4.79E+07	1.36E+06	1.60E-03
2/20/2001	4.51E+07	1.28E+06	1.51E-03
2/21/2001	4.42E+07	1.25E+06	1.47E-03
2/22/2001	4.35E+07	1.23E+06	1.45E-03
2/23/2001	4.42E+07	1.25E+06	1.48E-03
2/24/2001	4.49E+07	1.27E+06	1.50E-03
2/25/2001	4.28E+07	1.21E+06	1.43E-03
2/26/2001	4.06E+07	1.15E+06	1.36E-03
2/27/2001	4.11E+07	1.16E+06	1.37E-03
2/28/2001	6.05E+06	1.71E+05	2.02E-04
3/1/2001	0	0	0
3/2/2001	0	0	0
3/3/2001	0	0	0
3/4/2001	0	0	0
3/5/2001	0	0	0
3/6/2001	0	0	0
3/7/2001	1.47E+08	4.16E+06	4.91E-03
3/8/2001	5.63E+08	1.59E+07	1.88E-02
3/9/2001	5.61E+08	1.59E+07	1.87E-02
3/10/2001	5.63E+08	1.59E+07	1.88E-02
3/11/2001	5.65E+08	1.60E+07	1.89E-02
3/12/2001	5.67E+08	1.60E+07	1.89E-02
3/13/2001	5.66E+08	1.60E+07	1.89E-02
3/14/2001	2.36E+08	6.67E+06	7.87E-03
3/15/2001	5.65E+08	1.60E+07	1.89E-02
3/16/2001	5.61E+08	1.59E+07	1.87E-02
3/17/2001	5.53E+08	1.57E+07	1.85E-02
3/18/2001	5.55E+08	1.57E+07	1.85E-02

3/19/2001	5.62E+08	1.59E+07	1.88E-02
3/20/2001	5.58E+08	1.58E+07	1.86E-02
3/21/2001	4.95E+08	1.40E+07	1.65E-02
3/22/2001	2.12E+07	6.01E+05	7.08E-04
3/23/2001	3.92E+07	1.11E+06	1.31E-03
3/24/2001	4.03E+07	1.14E+06	1.34E-03
3/25/2001	4.11E+07	1.16E+06	1.37E-03
3/26/2001	4.13E+07	1.17E+06	1.38E-03
3/27/2001	4.19E+07	1.19E+06	1.40E-03
3/28/2001	2.13E+07	6.02E+05	7.10E-04
3/29/2001	0	0	0
3/30/2001	1.98E+07	5.60E+05	6.61E-04
3/31/2001	3.94E+07	1.12E+06	1.32E-03
4/1/2001	1.97E+07	5.58E+05	6.58E-04
4/2/2001	0	0	0
4/3/2001	1.57E+07	4.44E+05	5.24E-04
4/4/2001	4.21E+07	1.19E+06	1.40E-03
4/5/2001	4.69E+07	1.33E+06	1.57E-03
4/6/2001	4.61E+07	1.30E+06	1.54E-03
4/7/2001	4.61E+07	1.30E+06	1.54E-03
4/8/2001	371260800	1.05E+07	1.24E-02
4/9/2001	4.42E+07	1.25E+06	1.48E-03
4/10/2001	4.18E+07	1.18E+06	1.40E-03
4/11/2001	4.09E+07	1.16E+06	1.36E-03
4/12/2001	4.03E+07	1.14E+06	1.35E-03
4/13/2001	3.99E+07	1.13E+06	1.33E-03
4/14/2001	3.97E+07	1.13E+06	1.33E-03
4/15/2001	4.33E+07	1.23E+06	1.45E-03
4/16/2001	4.67E+07	1.32E+06	1.56E-03
4/17/2001	4.67E+07	1.32E+06	1.56E-03
4/18/2001	4.67E+07	1.32E+06	1.56E-03
4/19/2001	4.58E+07	1.30E+06	1.53E-03
4/20/2001	4.51E+07	1.28E+06	1.51E-03
4/21/2001	4.56E+07	1.29E+06	1.52E-03
4/22/2001	4.63E+07	1.31E+06	1.55E-03
4/23/2001	4.33E+07	1.23E+06	1.45E-03
4/24/2001	4.12E+07	1.17E+06	1.38E-03
4/25/2001	4.29E+07	1.21E+06	1.43E-03
4/26/2001	4.30E+07	1.22E+06	1.44E-03
4/27/2001	4.27E+07	1.21E+06	1.42E-03
4/28/2001	4.20E+07	1.19E+06	1.40E-03

4/29/2001	4.14E+07	1.17E+06	1.38E-03
4/30/2001	6.26E+07	1.77E+06	2.09E-03
5/1/2001	8.35E+07	2.37E+06	2.79E-03
5/2/2001	8.31E+07	2.35E+06	2.77E-03
5/3/2001	8.31E+07	2.35E+06	2.77E-03
5/4/2001	8.17E+07	2.31E+06	2.73E-03
5/5/2001	7.99E+07	2.26E+06	2.67E-03
5/6/2001	8.16E+07	2.31E+06	2.72E-03
5/7/2001	8.48E+07	2.40E+06	2.83E-03
5/8/2001	1.07E+08	3.04E+06	3.59E-03
5/9/2001	1.30E+08	3.68E+06	4.34E-03
5/10/2001	1.29E+08	3.65E+06	4.30E-03
5/11/2001	1.25E+08	3.53E+06	4.16E-03
5/12/2001	1.21E+08	3.44E+06	4.05E-03
5/13/2001	1.26E+08	3.57E+06	4.21E-03
5/14/2001	1.31E+08	3.70E+06	4.36E-03
5/15/2001	1.29E+08	3.66E+06	4.31E-03
5/16/2001	1.29E+08	3.66E+06	4.32E-03
5/17/2001	1.30E+08	3.67E+06	4.32E-03
5/18/2001	1.31E+08	3.71E+06	4.37E-03
5/19/2001	1.34E+08	3.78E+06	4.46E-03
5/20/2001	1.32E+08	3.74E+06	4.41E-03
5/21/2001	1.28E+08	3.63E+06	4.27E-03
5/22/2001	1.26E+08	3.56E+06	4.20E-03
5/23/2001	1.26E+08	3.58E+06	4.22E-03
5/24/2001	1.29E+08	3.66E+06	4.32E-03
5/25/2001	1.32E+08	3.74E+06	4.41E-03
5/26/2001	1.34E+08	3.79E+06	4.47E-03
5/27/2001	1.36E+08	3.85E+06	4.53E-03
5/28/2001	1.35E+08	3.82E+06	4.51E-03
5/29/2001	1.31E+08	3.72E+06	4.38E-03
5/30/2001	1.30E+08	3.68E+06	4.34E-03
5/31/2001	1.31E+08	3.70E+06	4.36E-03
6/1/2001	1.33E+08	3.77E+06	4.44E-03
6/2/2001	1.37E+08	3.88E+06	4.57E-03
6/3/2001	1.32E+08	3.75E+06	4.42E-03
6/4/2001	1.29E+08	3.64E+06	4.29E-03
6/5/2001	2.73E+07	7.74E+05	9.12E-04
6/6/2001	0	0	0
6/7/2001	0	0	0
6/8/2001	0	0	0

6/9/2001	0	0	0
6/10/2001	0	0	0
6/11/2001	0	0	0
6/12/2001	0	0	0
6/13/2001	0	0	0
6/14/2001	0	0	0
6/15/2001	0	0	0
6/16/2001	0	0	0
6/17/2001	0	0	0
6/18/2001	0	0	0
6/19/2001	0	0	0
6/20/2001	2.16E+07	6.11E+05	7.21E-04
6/21/2001	6.53E+07	1.85E+06	2.18E-03
6/22/2001	8.29E+07	2.35E+06	2.77E-03
6/23/2001	8.05E+07	2.28E+06	2.69E-03
6/24/2001	8.23E+07	2.33E+06	2.75E-03
6/25/2001	8.43E+07	2.39E+06	2.82E-03
6/26/2001	2.18E+08	6.18E+06	7.28E-03
6/27/2001	8.81E+07	2.50E+06	2.94E-03
6/28/2001	8.87E+07	2.51E+06	2.96E-03
6/29/2001	8.77E+07	2.48E+06	2.93E-03
6/30/2001	8.67E+07	2.46E+06	2.90E-03
7/1/2001	8.47E+07	2.40E+06	2.83E-03
7/2/2001	8.36E+07	2.37E+06	2.79E-03
7/3/2001	8.71E+07	2.47E+06	2.91E-03
7/5/2001	8.60E+07	2.43E+06	2.87E-03
7/6/2001	8.29E+07	2.35E+06	2.77E-03
7/7/2001	8.48E+07	2.40E+06	2.83E-03
7/8/2001	8.73E+07	2.47E+06	2.91E-03
7/9/2001	8.77E+07	2.48E+06	2.93E-03
7/10/2001	8.80E+07	2.49E+06	2.94E-03
7/11/2001	8.72E+07	2.47E+06	2.91E-03
7/12/2001	8.72E+07	2.47E+06	2.91E-03
7/13/2001	8.79E+07	2.49E+06	2.93E-03
7/14/2001	8.79E+07	2.49E+06	2.93E-03
7/15/2001	8.68E+07	2.46E+06	2.90E-03
7/16/2001	8.58E+07	2.43E+06	2.86E-03
7/17/2001	2.17E+08	6.14E+06	7.24E-03
7/18/2001	2.17E+08	6.14E+06	7.24E-03
7/19/2001	8.64E+07	2.45E+06	2.88E-03
7/20/2001	8.64E+07	2.45E+06	2.88E-03

7/21/2001	8.54E+07	2.42E+06	2.85E-03
7/22/2001	8.45E+07	2.39E+06	2.82E-03
7/23/2001	8.43E+07	2.39E+06	2.82E-03
7/24/2001	8.48E+07	2.40E+06	2.83E-03
7/25/2001	8.39E+07	2.38E+06	2.80E-03
7/26/2001	8.48E+07	2.40E+06	2.83E-03
7/27/2001	8.74E+07	2.48E+06	2.92E-03
7/28/2001	8.78E+07	2.49E+06	2.93E-03
7/29/2001	8.76E+07	2.48E+06	2.92E-03
7/30/2001	8.74E+07	2.48E+06	2.92E-03
7/31/2001	8.74E+07	2.48E+06	2.92E-03
8/1/2001	8.74E+07	2.48E+06	2.92E-03
8/2/2001	4.37E+07	1.24E+06	1.46E-03
8/3/2001	0	0	0
8/4/2001	0	0	0
8/5/2001	0	0	0
8/6/2001	0	0	0
8/7/2001	0	0	0
8/8/2001	0	0	0
8/8/2001	5.10E+07	1.44E+06	1.70E-03
8/9/2001	8.74E+07	2.47E+06	2.92E-03
8/10/2001	7.85E+07	2.22E+06	2.62E-03
8/11/2001	7.46E+07	2.11E+06	2.49E-03
8/12/2001	8.24E+07	2.33E+06	2.75E-03
8/13/2001	8.54E+07	2.42E+06	2.85E-03
8/14/2001	8.67E+07	2.46E+06	2.90E-03
8/15/2001	8.81E+07	2.50E+06	2.94E-03
8/16/2001	8.81E+07	2.50E+06	2.94E-03
8/17/2001	8.74E+07	2.47E+06	2.92E-03
8/18/2001	8.70E+07	2.46E+06	2.90E-03
8/19/2001	8.76E+07	2.48E+06	2.92E-03
8/20/2001	8.78E+07	2.49E+06	2.93E-03
8/21/2001	8.76E+07	2.48E+06	2.92E-03
8/22/2001	8.74E+07	2.48E+06	2.92E-03
8/23/2001	8.74E+07	2.48E+06	2.92E-03
8/24/2001	8.74E+07	2.48E+06	2.92E-03
8/25/2001	8.74E+07	2.48E+06	2.92E-03
8/26/2001	8.74E+07	2.48E+06	2.92E-03
8/27/2001	8.74E+07	2.48E+06	2.92E-03
8/28/2001	8.74E+07	2.48E+06	2.92E-03
8/29/2001	8.74E+07	2.48E+06	2.92E-03

8/30/2001	8.74E+07	2.48E+06	2.92E-03
8/31/2001	8.74E+07	2.48E+06	2.92E-03
9/1/2001	8.74E+07	2.48E+06	2.92E-03
9/2/2001	8.74E+07	2.48E+06	2.92E-03
9/3/2001	8.74E+07	2.48E+06	2.92E-03
9/4/2001	8.74E+07	2.48E+06	2.92E-03
9/5/2001	8.74E+07	2.48E+06	2.92E-03
9/6/2001	8.74E+07	2.48E+06	2.92E-03
9/7/2001	8.74E+07	2.48E+06	2.92E-03
9/8/2001	8.74E+07	2.48E+06	2.92E-03
9/9/2001	8.74E+07	2.48E+06	2.92E-03
9/10/2001	8.74E+07	2.48E+06	2.92E-03
9/11/2001	4.37E+07	1.24E+06	1.46E-03
9/12/2001	0	0	0
9/13/2001	0	0	0
9/14/2001	0	0	0
9/15/2001	0	0	0
9/16/2001	0	0	0
9/17/2001	0	0	0
9/18/2001	0	0	0
9/19/2001	0	0	0
9/20/2001	0	0	0
9/21/2001	5.70E+07	1.61E+06	1.90E-03
9/22/2001	8.36E+07	2.37E+06	2.79E-03
9/23/2001	8.50E+07	2.41E+06	2.84E-03
9/24/2001	1.15E+08	3.25E+06	3.83E-03
9/25/2001	1.14E+08	3.24E+06	3.82E-03
9/26/2001	8.58E+07	2.43E+06	2.86E-03
9/27/2001	8.58E+07	2.43E+06	2.86E-03
9/28/2001	8.21E+07	2.32E+06	2.74E-03
9/29/2001	6.96E+07	1.97E+06	2.32E-03
9/30/2001	3.03E+07	8.59E+05	1.01E-03
10/1/2001	0	0	0
10/2/2001	0	0	0
10/3/2001	0	0	0
10/4/2001	0	0	0
10/5/2001	0	0	0
10/6/2001	0	0	0
10/7/2001	0	0	0
10/8/2001	0	0	0
10/9/2001	0	0	0

10/10/2001	0	0	0
10/11/2001	0	0	0
10/12/2001	0	0	0
10/13/2001	0	0	0
10/14/2001	0	0	0
10/15/2001	0	0	0
10/16/2001	0	0	0
10/17/2001	0	0	0
10/18/2001	0	0	0
10/19/2001	0	0	0
10/20/2001	0	0	0
10/21/2001	0	0	0
10/22/2001	4.82E+07	1.36E+06	1.61E-03
10/23/2001	8.61E+07	2.44E+06	2.88E-03
10/24/2001	8.66E+07	2.45E+06	2.89E-03
10/25/2001	8.50E+07	2.41E+06	2.84E-03
10/26/2001	8.35E+07	2.36E+06	2.79E-03
10/27/2001	8.18E+07	2.32E+06	2.73E-03
10/28/2001	8.29E+07	2.35E+06	2.77E-03
10/29/2001	8.55E+07	2.42E+06	2.86E-03
10/30/2001	8.55E+07	2.42E+06	2.86E-03
10/31/2001	8.64E+07	2.45E+06	2.88E-03
11/1/2001	4.36E+07	1.24E+06	1.46E-03
11/2/2001	0	0	0
11/3/2001	0	0	0
11/4/2001	0	0	0
11/5/2001	0	0	0
11/6/2001	3.58E+07	1.01E+06	1.19E-03
11/7/2001	8.60E+07	2.43E+06	2.87E-03
11/8/2001	8.60E+07	2.43E+06	2.87E-03
11/9/2001	8.60E+07	2.43E+06	2.87E-03
11/10/2001	8.60E+07	2.43E+06	2.87E-03
11/11/2001	8.60E+07	2.43E+06	2.87E-03
11/12/2001	8.60E+07	2.43E+06	2.87E-03
11/13/2001	8.60E+07	2.43E+06	2.87E-03
11/14/2001	4.30E+07	1.22E+06	1.44E-03
11/15/2001	0	0	0
11/16/2001	0	0	0
11/17/2001	0	0	0
11/18/2001	0	0	0
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11/20/2001	0	0	0
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11/26/2001	0	0	0
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11/30/2001	0	0	0
12/1/2001	0	0	0
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12/26/2001	0	0	0
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12/28/2001	0	0	0
12/29/2001	0	0	0
12/30/2001	0	0	0

12/31/2001	0	0	0
1/1/2002	1.76E+08	4.97E+06	5.86E-03
1/2/2002	2.69E+08	7.62E+06	8.99E-03
1/3/2002	2.57E+08	7.27E+06	8.57E-03
1/4/2002	2.52E+08	7.15E+06	8.43E-03
1/5/2002	2.44E+08	6.92E+06	8.16E-03
1/6/2002	2.71E+08	7.67E+06	9.04E-03
1/7/2002	3.02E+08	8.57E+06	1.01E-02
1/8/2002	3.05E+08	8.63E+06	1.02E-02
1/9/2002	3.06E+08	8.65E+06	1.02E-02
1/10/2002	3.04E+08	8.62E+06	1.02E-02
1/11/2002	2.96E+08	8.37E+06	9.87E-03
1/12/2002	2.69E+08	7.62E+06	8.98E-03
1/13/2002	2.78E+08	7.86E+06	9.27E-03
1/14/2002	3.02E+08	8.57E+06	1.01E-02
1/15/2002	3.02E+08	8.54E+06	1.01E-02
1/16/2002	8.81E+07	2.50E+06	2.94E-03
1/17/2002	1.76E+08	4.98E+06	5.87E-03
1/18/2002	2.92E+08	8.27E+06	9.75E-03
1/19/2002	2.66E+08	7.52E+06	8.86E-03
1/20/2002	2.39E+08	6.76E+06	7.97E-03
1/21/2002	1.15E+08	3.25E+06	3.83E-03
1/22/2002	0	0	0
1/23/2002	0	0	0
1/24/2002	0	0	0
1/25/2002	3.04E+08	8.61E+06	1.01E-02
1/26/2002	313545600	8.88E+06	1.05E-02
1/27/2002	313545600	8.88E+06	1.05E-02
1/28/2002	2.29E+08	6.49E+06	7.66E-03
1/29/2002	372384000	1.05E+07	1.24E-02
1/30/2002	4.52E+08	1.28E+07	1.51E-02
1/31/2002	5.26E+08	1.49E+07	1.76E-02
2/1/2002	2.51E+08	7.11E+06	8.38E-03
2/2/2002	388627200	1.10E+07	1.30E-02
2/3/2002	388454400	1.10E+07	1.30E-02
2/4/2002	386985600	1.10E+07	1.29E-02
2/5/2002	387331200	1.10E+07	1.29E-02
2/6/2002	388886400	1.10E+07	1.30E-02
2/7/2002	390268800	1.11E+07	1.30E-02
2/8/2002	2.70E+08	7.63E+06	9.00E-03
2/9/2002	4.39E+08	1.24E+07	1.47E-02

2/10/2002	393465600	1.11E+07	1.31E-02
2/11/2002	344390400	9.75E+06	1.15E-02
2/12/2002	346118400	9.80E+06	1.16E-02
2/13/2002	343440000	9.73E+06	1.15E-02
2/14/2002	344390400	9.75E+06	1.15E-02
2/15/2002	1.94E+08	5.50E+06	6.49E-03
2/16/2002	4.60E+07	1.30E+06	1.53E-03
2/17/2002	4.67E+07	1.32E+06	1.56E-03
2/18/2002	4.60E+07	1.30E+06	1.53E-03
2/19/2002	4.39E+07	1.24E+06	1.47E-03
2/20/2002	4.25E+07	1.20E+06	1.42E-03
2/21/2002	4.20E+07	1.19E+06	1.40E-03
2/22/2002	4.13E+07	1.17E+06	1.38E-03
2/23/2002	3.97E+07	1.13E+06	1.33E-03
2/24/2002	4.16E+07	1.18E+06	1.39E-03
2/25/2002	4.43E+07	1.26E+06	1.48E-03
2/26/2002	4.43E+07	1.26E+06	1.48E-03
2/27/2002	4.43E+07	1.26E+06	1.48E-03
2/28/2002	2.22E+07	6.29E+05	7.41E-04
3/1/2002	0	0	0
3/2/2002	0	0	0
3/3/2002	0	0	0
3/4/2002	2.45E+08	6.94E+06	8.19E-03
3/5/2002	5.61E+08	1.59E+07	1.87E-02
3/6/2002	5.35E+08	1.52E+07	1.79E-02
3/7/2002	4.77E+08	1.35E+07	1.59E-02
3/8/2002	4.29E+08	1.22E+07	1.43E-02
3/9/2002	393638400	1.11E+07	1.31E-02
3/10/2002	354672000	1.00E+07	1.18E-02
3/11/2002	311040000	8.81E+06	1.04E-02
3/12/2002	1.44E+08	4.08E+06	4.81E-03
3/13/2002	1.76E+08	4.98E+06	5.87E-03
3/14/2002	348969600	9.88E+06	1.17E-02
3/15/2002	4.92E+08	1.39E+07	1.64E-02
3/16/2002	4.30E+08	1.22E+07	1.44E-02
3/17/2002	2.36E+08	6.69E+06	7.89E-03
3/18/2002	4.22E+07	1.19E+06	1.41E-03
3/19/2002	4.26E+07	1.21E+06	1.42E-03
3/20/2002	4.29E+07	1.22E+06	1.43E-03
3/21/2002	4.16E+07	1.18E+06	1.39E-03
3/22/2002	4.16E+07	1.18E+06	1.39E-03

3/23/2002	4.42E+07	1.25E+06	1.47E-03
3/24/2002	4.26E+07	1.21E+06	1.42E-03
3/25/2002	4.12E+07	1.17E+06	1.38E-03
3/26/2002	4.49E+07	1.27E+06	1.50E-03
3/27/2002	4.34E+07	1.23E+06	1.45E-03
3/28/2002	2.00E+07	5.68E+05	6.69E-04
3/29/2002	2.03E+07	5.75E+05	6.78E-04
3/30/2002	2.05E+07	5.80E+05	6.84E-04
3/31/2002	3.13E+07	8.86E+05	1.04E-03
4/1/2002	4.18E+07	1.18E+06	1.40E-03
4/2/2002	4.20E+07	1.19E+06	1.40E-03
4/3/2002	4.25E+07	1.20E+06	1.42E-03
4/4/2002	4.29E+07	1.21E+06	1.43E-03
4/5/2002	4.29E+07	1.21E+06	1.43E-03
4/6/2002	4.31E+07	1.22E+06	1.44E-03
4/7/2002	4.32E+07	1.22E+06	1.44E-03
4/8/2002	4.30E+07	1.22E+06	1.44E-03
4/9/2002	4.28E+07	1.21E+06	1.43E-03
4/10/2002	4.29E+07	1.21E+06	1.43E-03
4/11/2002	4.29E+07	1.21E+06	1.43E-03
4/12/2002	4.29E+07	1.21E+06	1.43E-03
4/13/2002	4.32E+07	1.22E+06	1.44E-03
4/14/2002	4.34E+07	1.23E+06	1.45E-03
4/15/2002	4.36E+07	1.24E+06	1.46E-03
4/16/2002	4.38E+07	1.24E+06	1.46E-03
4/17/2002	4.35E+07	1.23E+06	1.45E-03
4/18/2002	4.32E+07	1.22E+06	1.44E-03
4/19/2002	4.30E+07	1.22E+06	1.44E-03
4/20/2002	4.25E+07	1.20E+06	1.42E-03
4/21/2002	4.19E+07	1.19E+06	1.40E-03
4/22/2002	4.15E+07	1.17E+06	1.38E-03
4/23/2002	4.10E+07	1.16E+06	1.37E-03
4/24/2002	4.06E+07	1.15E+06	1.36E-03
4/25/2002	4.06E+07	1.15E+06	1.36E-03
4/26/2002	4.05E+07	1.15E+06	1.35E-03
4/27/2002	4.03E+07	1.14E+06	1.34E-03
4/28/2002	4.02E+07	1.14E+06	1.34E-03
4/29/2002	4.03E+07	1.14E+06	1.34E-03
4/30/2002	4.02E+07	1.14E+06	1.34E-03
5/1/2002	3.99E+07	1.13E+06	1.33E-03
5/2/2002	3.99E+07	1.13E+06	1.33E-03

5/3/2002	3.99E+07	1.13E+06	1.33E-03
5/4/2002	3.99E+07	1.13E+06	1.33E-03
5/5/2002	3.99E+07	1.13E+06	1.33E-03
5/6/2002	2.00E+07	5.65E+05	6.66E-04
5/7/2002	2.01E+07	5.70E+05	6.72E-04
5/8/2002	4.04E+07	1.15E+06	1.35E-03
5/9/2002	4.06E+07	1.15E+06	1.36E-03
5/10/2002	4.05E+07	1.15E+06	1.35E-03
5/11/2002	4.05E+07	1.15E+06	1.35E-03
5/12/2002	4.05E+07	1.15E+06	1.35E-03
5/13/2002	4.03E+07	1.14E+06	1.35E-03
5/14/2002	4.03E+07	1.14E+06	1.35E-03
5/15/2002	4.02E+07	1.14E+06	1.34E-03
5/16/2002	3.99E+07	1.13E+06	1.33E-03
5/17/2002	4.03E+07	1.14E+06	1.34E-03
5/18/2002	4.08E+07	1.15E+06	1.36E-03
5/19/2002	4.11E+07	1.16E+06	1.37E-03
5/20/2002	4.15E+07	1.17E+06	1.38E-03
5/21/2002	4.17E+07	1.18E+06	1.39E-03
5/22/2002	4.18E+07	1.18E+06	1.40E-03
5/23/2002	4.18E+07	1.18E+06	1.40E-03
5/24/2002	4.18E+07	1.18E+06	1.40E-03
5/25/2002	4.21E+07	1.19E+06	1.40E-03
5/26/2002	4.25E+07	1.20E+06	1.42E-03
5/27/2002	4.28E+07	1.21E+06	1.43E-03
5/28/2002	4.30E+07	1.22E+06	1.44E-03
5/29/2002	4.31E+07	1.22E+06	1.44E-03
5/30/2002	4.29E+07	1.22E+06	1.43E-03
5/31/2002	4.33E+07	1.23E+06	1.45E-03
6/1/2002	4.40E+07	1.25E+06	1.47E-03
6/2/2002	4.47E+07	1.26E+06	1.49E-03
6/3/2002	4.49E+07	1.27E+06	1.50E-03
6/4/2002	4.51E+07	1.28E+06	1.51E-03
6/5/2002	4.51E+07	1.28E+06	1.51E-03
6/6/2002	6.77E+07	1.92E+06	2.26E-03
6/7/2002	8.99E+07	2.54E+06	3.00E-03
6/8/2002	8.93E+07	2.53E+06	2.98E-03
6/9/2002	8.88E+07	2.52E+06	2.97E-03
6/10/2002	8.86E+07	2.51E+06	2.96E-03
6/11/2002	8.75E+07	2.48E+06	2.92E-03
6/12/2002	8.64E+07	2.45E+06	2.88E-03

6/13/2002	8.54E+07	2.42E+06	2.85E-03
6/14/2002	8.38E+07	2.37E+06	2.80E-03
6/15/2002	8.24E+07	2.33E+06	2.75E-03
6/16/2002	8.58E+07	2.43E+06	2.86E-03
6/17/2002	8.93E+07	2.53E+06	2.98E-03
6/18/2002	8.82E+07	2.50E+06	2.95E-03
6/19/2002	8.71E+07	2.47E+06	2.91E-03
6/20/2002	8.62E+07	2.44E+06	2.88E-03
6/21/2002	8.48E+07	2.40E+06	2.83E-03
6/22/2002	8.27E+07	2.34E+06	2.76E-03
6/23/2002	8.09E+07	2.29E+06	2.70E-03
6/24/2002	8.85E+07	2.51E+06	2.95E-03
6/25/2002	8.74E+07	2.48E+06	2.92E-03
6/26/2002	8.54E+07	2.42E+06	2.85E-03
6/27/2002	8.57E+07	2.43E+06	2.86E-03
6/28/2002	8.57E+07	2.43E+06	2.86E-03
6/29/2002	8.74E+07	2.47E+06	2.92E-03
6/30/2002	8.92E+07	2.52E+06	2.98E-03
7/1/2002	8.86E+07	2.51E+06	2.96E-03
7/2/2002	8.77E+07	2.48E+06	2.93E-03
7/3/2002	8.60E+07	2.43E+06	2.87E-03
7/4/2002	8.30E+07	2.35E+06	2.77E-03
7/5/2002	8.14E+07	2.30E+06	2.72E-03
7/6/2002	8.35E+07	2.37E+06	2.79E-03
7/7/2002	8.62E+07	2.44E+06	2.88E-03
7/8/2002	8.79E+07	2.49E+06	2.93E-03
7/9/2002	8.79E+07	2.49E+06	2.93E-03
7/10/2002	8.99E+07	2.54E+06	3.00E-03
7/11/2002	8.88E+07	2.52E+06	2.97E-03
7/12/2002	8.61E+07	2.44E+06	2.88E-03
7/13/2002	8.64E+07	2.45E+06	2.88E-03
7/14/2002	8.59E+07	2.43E+06	2.87E-03
7/15/2002	8.54E+07	2.42E+06	2.85E-03
7/16/2002	8.54E+07	2.42E+06	2.85E-03
7/17/2002	8.54E+07	2.42E+06	2.85E-03
7/18/2002	8.54E+07	2.42E+06	2.85E-03
7/19/2002	8.67E+07	2.46E+06	2.90E-03
7/20/2002	8.81E+07	2.50E+06	2.94E-03
7/21/2002	8.67E+07	2.46E+06	2.90E-03
7/22/2002	8.54E+07	2.42E+06	2.85E-03
7/23/2002	8.54E+07	2.42E+06	2.85E-03

7/24/2002	8.54E+07	2.42E+06	2.85E-03
7/25/2002	8.62E+07	2.44E+06	2.88E-03
7/26/2002	8.71E+07	2.47E+06	2.91E-03
7/27/2002	8.71E+07	2.47E+06	2.91E-03
7/28/2002	8.71E+07	2.47E+06	2.91E-03
7/29/2002	8.71E+07	2.47E+06	2.91E-03
7/30/2002	8.71E+07	2.47E+06	2.91E-03
7/31/2002	8.71E+07	2.47E+06	2.91E-03
8/1/2002	8.71E+07	2.47E+06	2.91E-03
8/2/2002	8.71E+07	2.47E+06	2.91E-03
8/3/2002	4.35E+07	1.23E+06	1.45E-03
8/4/2002	0	0	0
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10/22/2002	0	0	0
10/23/2002	0	0	0
10/24/2002	0	0	0
10/25/2002	0	0	0
10/26/2002	0	0	0
10/27/2002	0	0	0
10/28/2002	0	0	0
10/29/2002	0	0	0
10/30/2002	0	0	0
10/31/2002	0	0	0
11/1/2002	0	0	0
11/2/2002	0	0	0
11/3/2002	0	0	0
11/4/2002	0	0	0
11/5/2002	0	0	0
11/6/2002	0	0	0
11/7/2002	0	0	0
11/8/2002	0	0	0
11/9/2002	0	0	0
11/10/2002	0	0	0
11/11/2002	0	0	0
11/12/2002	0	0	0
11/13/2002	0	0	0
11/14/2002	0	0	0
11/15/2002	0	0	0
11/16/2002	0	0	0
11/17/2002	0	0	0
11/18/2002	0	0	0
11/19/2002	8.53E+07	2.41E+06	2.85E-03
11/20/2002	1.41E+08	3.98E+06	4.70E-03
11/21/2002	1.13E+08	3.19E+06	3.76E-03
11/22/2002	1.15E+08	3.24E+06	3.82E-03
11/23/2002	1.16E+08	3.30E+06	3.89E-03

11/24/2002	1.24E+08	3.50E+06	4.13E-03
11/25/2002	1.29E+08	3.66E+06	4.32E-03
11/26/2002	1.30E+08	3.67E+06	4.33E-03
11/27/2002	1.28E+08	3.62E+06	4.27E-03
11/28/2002	1.25E+08	3.53E+06	4.16E-03
11/29/2002	1.13E+08	3.20E+06	3.77E-03
11/30/2002	1.01E+08	2.86E+06	3.37E-03
12/1/2002	1.14E+08	3.22E+06	3.80E-03
12/2/2002	1.29E+08	3.65E+06	4.30E-03
12/3/2002	1.29E+08	3.65E+06	4.30E-03
12/4/2002	1.29E+08	3.65E+06	4.30E-03
12/5/2002	1.29E+08	3.65E+06	4.30E-03
12/6/2002	1.35E+08	3.82E+06	4.51E-03
12/7/2002	1.47E+08	4.16E+06	4.90E-03
12/8/2002	7.63E+07	2.16E+06	2.55E-03
12/9/2002	6.48E+07	1.83E+06	2.16E-03
12/10/2002	1.59E+08	4.51E+06	5.32E-03
12/11/2002	1.58E+08	4.48E+06	5.29E-03
12/12/2002	1.28E+08	3.62E+06	4.27E-03
12/13/2002	1.25E+08	3.54E+06	4.17E-03
12/14/2002	1.22E+08	3.45E+06	4.07E-03
12/15/2002	1.25E+08	3.54E+06	4.17E-03
12/16/2002	1.28E+08	3.63E+06	4.27E-03
12/17/2002	1.28E+08	3.63E+06	4.28E-03
12/18/2002	1.28E+08	3.63E+06	4.28E-03
12/19/2002	1.28E+08	3.63E+06	4.28E-03
12/20/2002	1.28E+08	3.63E+06	4.28E-03
12/21/2002	1.58E+08	4.47E+06	5.28E-03
12/22/2002	2.08E+08	5.88E+06	6.93E-03
12/23/2002	1.57E+08	4.44E+06	5.24E-03
12/24/2002	9.23E+07	2.61E+06	3.08E-03
12/25/2002	9.15E+07	2.59E+06	3.05E-03
12/26/2002	8.53E+07	2.41E+06	2.85E-03
12/27/2002	8.70E+07	2.46E+06	2.90E-03
12/28/2002	9.03E+07	2.56E+06	3.01E-03
12/29/2002	8.88E+07	2.52E+06	2.97E-03
12/30/2002	8.54E+07	2.42E+06	2.85E-03
12/31/2002	8.54E+07	2.42E+06	2.85E-03

APPENDIX II-PRECIPIATION AND POTENTIAL EVAPOTRANSPIRATION DATA

Precipitation Data was obtained from the Southern Regional Climate Center. Potential Evapotranspiration was calculated using Thornwaite's Equation.

$$PET_m = 16 N_m [10 * (T_m/I)^a]$$

Where:

PET_m = monthly potential evapotranspiration (mm)

N_m = monthly adjustment factor related to the hours of daylight for a given latitude normalized to 12 hours, where N_m = Number of daylight hours/12

T_m = mean monthly temperature (°C)

I = annual heat index, where $I = \sum i_m = \sum [T_m/5]^{1.5}$ for each month

a = exponent derived from annual heat index, where

$$a = (6.7 \times 10^{-7}) I^3 - (7.7 \times 10^{-5}) I^2 + (1.8 \times 10^{-2}) I + 0.49$$

Station Name	Year	annual PET (cm)	annual PPN (cm)	area of station influence (km ²)	Weighted area %	Weighted PET (cm)	Weighted PPN (cm)
Chalmette	2000	117.15	102.31	378	0.22	26.1	22.8
Chalmette	2001	110.84	184.35	378	0.22	24.7	41.1
Chalmette	2002	108.04	192.43	378	0.22	24.1	42.9
St. Bernard	2000	112.41	75.54	378	0.22	25.1	16.9
St. Bernard	2001	104.34	175.18	378	0.22	23.3	39.1
St. Bernard	2002	107.11	141.27	378	0.22	23.9	31.5
Myrtle Grove	2000	116.93	109.70	470	0.28	32.4	30.4
Myrtle Grove	2001	110.88	153.64	470	0.28	30.7	42.6
Myrtle Grove	2002	113.30	198.78	470	0.28	31.4	55.1
Buras	2000	115.81	124.54	470	0.28	32.1	34.5
Buras	2001	118.23	125.15	470	0.28	32.7	34.7
Buras	2002	115.96	209.02	470	0.28	32.1	57.9
		PET(cm)	PPN (cm)	PET(m)	PPN(m)		
	2000	-115.7	104.6	-1.2	1.0		
	2001	-111.5	157.4	-1.1	1.6		
	2002	-111.5	187.4	-1.1	1.9		

APPENDIX III- STORM WATER PUMP DATA

Storm Water Pump Data obtained from the Plaquemines Parish Department of Drainage

Pumps located at 206 Pump Station Rd., Belle Chasse, Louisiana 70037.

Calculated by dividing annual cubic meters of water by the size of the study area (850 km²)

Station	Year	Hours operating	Seconds operating	Cubic Feet	Cubic Meters	annual contribution (m)
Bellevue						
	2000	180	6.48E+05	6.48E+08	1.83E+07	0.0216
	2001	35	1.26E+05	1.26E+08	3.57E+06	0.0042
	2002	728.75	2.62E+06	2.62E+09	7.43E+07	0.0876
East Point a la Hache						
	2000	325	1.17E+06	1.17E+09	3.31E+07	0.0391
	2001	304.5	1.10E+06	1.10E+09	3.10E+07	0.0366
	2002	425	1.53E+06	1.53E+09	4.33E+07	0.0511
Braithwaite						
	2000	110	3.96E+05	4.32E+07	1.22E+06	0.0014
	2001	618.5	2.23E+06	2.43E+08	6.87E+06	0.0081
	2002	907.5	3.27E+06	3.56E+08	1.01E+07	0.0119
Scarsdale (no records found as of yet) using same pump schedule as Braithwaite						
	2000	110	3.96E+05	7.13E+08	2.02E+07	0.0238
	2001	618.5	2.23E+06	4.01E+09	1.13E+08	0.1338
	2002	907.5	3.27E+06	5.88E+09	1.67E+08	0.1963

APPENDIX IV- GROUNDWATER INPUT

Darcy's Law was used to estimate the volume of groundwater seepage under the levee

(Hornberger et al. 1998),

$$Q = -KA(\Delta H)/L$$

	Variable	value
Cross-sectional area of seepage zone (m ²)	A	2.08E+05
Path Length (m)	L	500
Minimum Hydraulic Conductivity (ms ⁻¹)	K	9.00E-08
Maximum Hydraulic Conductivity (ms ⁻¹)	K	2.00E-05
seconds conversion		8.64E+04
Study area (m ²)		8.48E+08

Date	Adjusted Water Elev. To Datum (NAVD) ft	MR Stage at WPALH (NAVD) ft	Change in Head (m)	Qmin (m ³ /s)	Qmax (m ³ /s)	Minimum Groundwater (m/d)	Maximum Groundwater (m/d)
1/1/2000	0.01	0.93	0.28	1.05E-05	2.32E-03	1.07E-09	2.37E-07
1/2/2000	0.20	0.78	0.18	6.58E-06	1.46E-03	6.70E-10	1.49E-07
1/3/2000	0.35	0.95	0.18	6.81E-06	1.51E-03	6.93E-10	1.54E-07
1/4/2000	0.40	0.69	0.09	3.27E-06	7.26E-04	3.33E-10	7.39E-08
1/5/2000	-0.30	0.54	0.25	9.55E-06	2.12E-03	9.73E-10	2.16E-07
1/6/2000	0.09	0.47	0.11	4.29E-06	9.54E-04	4.37E-10	9.72E-08
1/7/2000	0.26	0.54	0.08	3.15E-06	7.00E-04	3.21E-10	7.14E-08
1/8/2000	0.42	0.83	0.12	4.64E-06	1.03E-03	4.72E-10	1.05E-07
1/9/2000	0.60	1.24	0.19	7.26E-06	1.61E-03	7.40E-10	1.64E-07
1/10/2000	0.25	1.49	0.38	1.41E-05	3.14E-03	1.44E-09	3.20E-07
1/11/2000	0.31	1.29	0.30	1.11E-05	2.48E-03	1.14E-09	2.52E-07
1/12/2000	0.28	1.27	0.30	1.13E-05	2.50E-03	1.15E-09	2.55E-07
1/13/2000	0.30	1.65	0.41	1.54E-05	3.42E-03	1.57E-09	3.48E-07
1/14/2000	0.44	1.60	0.35	1.32E-05	2.93E-03	1.34E-09	2.99E-07
1/15/2000	0.73	1.54	0.25	9.20E-06	2.05E-03	9.38E-10	2.08E-07
1/16/2000	0.16	1.15	0.30	1.13E-05	2.50E-03	1.15E-09	2.55E-07
1/17/2000	0.15	1.14	0.30	1.13E-05	2.50E-03	1.15E-09	2.55E-07
1/18/2000	0.21	1.06	0.26	9.66E-06	2.15E-03	9.84E-10	2.19E-07
1/19/2000	0.06	0.97	0.28	1.03E-05	2.30E-03	1.05E-09	2.34E-07

1/20/2000	-0.06	1.13	0.36	1.35E-05	3.01E-03	1.38E-09	3.07E-07
1/21/2000	0.33	N/A					
1/22/2000	0.69	N/A					
1/23/2000	0.55	N/A					
1/24/2000	0.47	N/A					
1/25/2000	-0.06	N/A					
1/26/2000	-0.56	N/A					
1/27/2000	0.17	N/A					
1/28/2000	1.3	N/A					
1/29/2000	1.02	N/A					
1/30/2000	0.42	N/A					
1/31/2000	0.29	N/A					
2/1/2000	0.22	N/A					
2/2/2000	0.26	N/A					
2/3/2000	0.17	N/A					
2/4/2000	-0.09	N/A					
2/5/2000	-0.05	N/A					
2/6/2000	-0.2	N/A					
2/7/2000	-0.05	N/A					
2/8/2000	-0.09	N/A					
2/9/2000	-0.18	N/A					
2/10/2000	-0.27	N/A					
2/11/2000	-0.22	N/A					
2/12/2000	-0.22	N/A					
2/13/2000	-0.1	N/A					
2/14/2000	0.07	N/A					
2/15/2000	0.17	N/A					
2/16/2000	0.51	N/A					
2/17/2000	0.42	N/A					
2/18/2000	0.7	N/A					
2/19/2000	0.49	N/A					
2/20/2000	0.5	N/A					
2/21/2000	0.41	N/A					
2/22/2000	0.29	N/A					
2/23/2000	0.67	N/A					
2/24/2000	0.51	N/A					
2/25/2000	0.56	N/A					
2/26/2000	0.74	N/A					
2/27/2000	0.59	N/A					

2/28/2000	0.47	N/A
2/29/2000	0.5	N/A
3/1/2000	0.47	N/A
3/2/2000	0.15	N/A
3/3/2000	0.35	N/A
3/4/2000	-0.17	N/A
3/5/2000	0.23	N/A
3/6/2000	0.45	N/A
3/7/2000	0.5	N/A
3/8/2000	0.73	N/A
3/9/2000	0.57	N/A
3/10/2000	0.37	N/A
3/11/2000	0.35	N/A
3/12/2000	-0.17	N/A
3/13/2000	0.14	N/A
3/14/2000	0.51	N/A
3/15/2000	0.98	N/A
3/16/2000	1.43	N/A
3/17/2000	1.01	N/A
3/18/2000	1.06	N/A
3/19/2000	1.37	N/A
3/20/2000	0.55	N/A
3/21/2000	0.79	N/A
3/22/2000	0.69	N/A
3/23/2000	0.4	N/A
3/24/2000	0.59	N/A
3/25/2000	0.53	N/A
3/26/2000	0.31	N/A
3/27/2000	0.1	N/A
3/28/2000	0.2	N/A
3/29/2000	0.44	N/A
3/30/2000	0.66	N/A
3/31/2000	0.52	N/A
4/1/2000	0.82	N/A
4/2/2000	1.11	N/A
4/3/2000	1.13	N/A
4/4/2000	0.38	N/A
4/5/2000	0.27	N/A
4/6/2000	0.17	N/A

4/7/2000	0.22	3.95	1.14	4.26E-05	9.46E-03	4.33E-09	9.63E-07
4/8/2000	0.23	3.79	1.08	4.06E-05	9.02E-03	4.14E-09	9.19E-07
4/9/2000	0.06	3.41	1.02	3.82E-05	8.49E-03	3.89E-09	8.65E-07
4/10/2000	0.23	3.14	0.89	3.32E-05	7.38E-03	3.38E-09	7.51E-07
4/11/2000	0.33	3.12	0.85	3.18E-05	7.07E-03	3.24E-09	7.20E-07
4/12/2000	0.59	3.27	0.82	3.06E-05	6.79E-03	3.11E-09	6.92E-07
4/13/2000	0.64	3.43	0.85	3.18E-05	7.07E-03	3.24E-09	7.20E-07
4/14/2000	0.64	3.63	0.91	3.41E-05	7.58E-03	3.47E-09	7.72E-07
4/15/2000	1.08	4.10	0.92	3.44E-05	7.65E-03	3.51E-09	7.80E-07
4/16/2000	0.95	4.25	1.00	3.76E-05	8.36E-03	3.83E-09	8.52E-07
4/17/2000	0.56	4.28	1.13	4.24E-05	9.43E-03	4.32E-09	9.61E-07
4/18/2000	0.45	4.39	1.20	4.50E-05	9.99E-03	4.58E-09	1.02E-06
4/19/2000	0.40	4.52	1.25	4.70E-05	1.04E-02	4.79E-09	1.06E-06
4/20/2000	0.48	4.55	1.24	4.64E-05	1.03E-02	4.73E-09	1.05E-06
4/21/2000	0.11	4.43	1.32	4.93E-05	1.10E-02	5.02E-09	1.12E-06
4/22/2000	0.29	4.35	1.24	4.63E-05	1.03E-02	4.72E-09	1.05E-06
4/23/2000	0.39	4.20	1.16	4.35E-05	9.66E-03	4.43E-09	9.84E-07
4/24/2000	0.60	4.18	1.09	4.08E-05	9.08E-03	4.16E-09	9.24E-07
4/25/2000	0.30	3.78	1.06	3.97E-05	8.82E-03	4.04E-09	8.99E-07
4/26/2000	0.28	3.37	0.94	3.52E-05	7.83E-03	3.59E-09	7.98E-07
4/27/2000	0.20	3.06	0.87	3.26E-05	7.25E-03	3.32E-09	7.38E-07
4/28/2000	-0.04	2.94	0.91	3.40E-05	7.55E-03	3.46E-09	7.69E-07
4/29/2000	0.31	2.74	0.74	2.77E-05	6.16E-03	2.82E-09	6.27E-07
4/30/2000	0.41	2.67	0.69	2.58E-05	5.73E-03	2.62E-09	5.83E-07
5/1/2000	0.74	2.87	0.65	2.43E-05	5.40E-03	2.47E-09	5.50E-07
5/2/2000	0.89	2.92	0.62	2.31E-05	5.14E-03	2.36E-09	5.24E-07
5/3/2000	1.04	3.26	0.68	2.53E-05	5.62E-03	2.58E-09	5.73E-07
5/4/2000	1.08	3.12	0.62	2.33E-05	5.17E-03	2.37E-09	5.26E-07
5/5/2000	1.21	3.25	0.62	2.33E-05	5.17E-03	2.37E-09	5.26E-07
5/6/2000	1.20	3.10	0.58	2.17E-05	4.81E-03	2.21E-09	4.90E-07
5/7/2000	1.10	3.00	0.58	2.17E-05	4.81E-03	2.21E-09	4.90E-07
5/8/2000	0.96	3.09	0.65	2.43E-05	5.40E-03	2.47E-09	5.50E-07
5/9/2000	0.87	3.07	0.67	2.51E-05	5.57E-03	2.55E-09	5.68E-07
5/10/2000	0.66	3.07	0.73	2.75E-05	6.11E-03	2.80E-09	6.22E-07
5/11/2000	0.54	3.04	0.76	2.85E-05	6.33E-03	2.90E-09	6.45E-07
5/12/2000	0.49	3.13	0.80	3.01E-05	6.69E-03	3.07E-09	6.81E-07
5/13/2000	0.53	3.20	0.81	3.04E-05	6.77E-03	3.10E-09	6.89E-07
5/14/2000	0.58	3.24	0.81	3.03E-05	6.74E-03	3.09E-09	6.87E-07
5/15/2000	0.83	3.26	0.74	2.77E-05	6.16E-03	2.82E-09	6.27E-07

5/16/2000	0.51	3.24	0.83	3.11E-05	6.92E-03	3.17E-09	7.05E-07
5/17/2000	0.68	3.24	0.78	2.92E-05	6.49E-03	2.97E-09	6.61E-07
5/18/2000	0.79	3.37	0.79	2.94E-05	6.54E-03	3.00E-09	6.66E-07
5/19/2000	0.73	3.03	0.70	2.62E-05	5.83E-03	2.67E-09	5.94E-07
5/20/2000	0.68	3.02	0.71	2.67E-05	5.93E-03	2.72E-09	6.04E-07
5/21/2000	0.51	2.73	0.68	2.53E-05	5.62E-03	2.58E-09	5.73E-07
5/22/2000	0.28	2.52	0.68	2.55E-05	5.67E-03	2.60E-09	5.78E-07
5/23/2000	0.21	2.37	0.66	2.46E-05	5.47E-03	2.51E-09	5.57E-07
5/24/2000	-0.01	2.29	0.70	2.62E-05	5.83E-03	2.67E-09	5.94E-07
5/25/2000	-0.07	2.16	0.68	2.54E-05	5.65E-03	2.59E-09	5.75E-07
5/26/2000	0.14	2.10	0.60	2.23E-05	4.96E-03	2.28E-09	5.06E-07
5/27/2000	0.32	2.07	0.53	1.99E-05	4.43E-03	2.03E-09	4.51E-07
5/28/2000	0.13	1.89	0.54	2.01E-05	4.46E-03	2.04E-09	4.54E-07
5/29/2000	-0.10	1.92	0.61	2.30E-05	5.12E-03	2.35E-09	5.21E-07
5/30/2000	0.38	2.22	0.56	2.10E-05	4.66E-03	2.14E-09	4.75E-07
5/31/2000	0.66	2.38	0.52	1.96E-05	4.36E-03	2.00E-09	4.44E-07
6/1/2000	0.95	2.65	0.52	1.94E-05	4.30E-03	1.97E-09	4.38E-07
6/2/2000	0.89	2.64	0.53	1.99E-05	4.43E-03	2.03E-09	4.51E-07
6/3/2000	0.65	2.68	0.62	2.31E-05	5.14E-03	2.36E-09	5.24E-07
6/4/2000	0.45	2.62	0.66	2.47E-05	5.50E-03	2.52E-09	5.60E-07
6/5/2000	0.29	2.72	0.74	2.77E-05	6.16E-03	2.82E-09	6.27E-07
6/6/2000	0.20	2.57	0.72	2.70E-05	6.00E-03	2.75E-09	6.12E-07
6/7/2000	0.56	2.72	0.66	2.46E-05	5.47E-03	2.51E-09	5.57E-07
6/8/2000	0.59	2.80	0.67	2.52E-05	5.60E-03	2.57E-09	5.70E-07
6/9/2000	0.78	2.82	0.62	2.33E-05	5.17E-03	2.37E-09	5.26E-07
6/10/2000	1.00	2.92	0.58	2.19E-05	4.86E-03	2.23E-09	4.95E-07
6/11/2000	1.00	2.94	0.59	2.21E-05	4.91E-03	2.25E-09	5.00E-07
6/12/2000	1.01	2.99	0.60	2.26E-05	5.01E-03	2.30E-09	5.11E-07
6/13/2000	0.89	2.98	0.64	2.38E-05	5.29E-03	2.43E-09	5.39E-07
6/14/2000	0.73	2.99	0.69	2.58E-05	5.73E-03	2.62E-09	5.83E-07
6/15/2000	0.76	2.85	0.64	2.38E-05	5.29E-03	2.43E-09	5.39E-07
6/16/2000	0.79	2.97	0.66	2.49E-05	5.52E-03	2.53E-09	5.63E-07
6/17/2000	0.97	2.83	0.57	2.12E-05	4.71E-03	2.16E-09	4.80E-07
6/18/2000	1.01	2.71	0.52	1.94E-05	4.30E-03	1.97E-09	4.38E-07
6/19/2000	0.96	2.69	0.53	1.97E-05	4.38E-03	2.01E-09	4.46E-07
6/20/2000	0.86	2.37	0.46	1.72E-05	3.82E-03	1.75E-09	3.89E-07
6/21/2000	0.68	2.32	0.50	1.87E-05	4.15E-03	1.90E-09	4.23E-07
6/22/2000	0.39	2.22	0.56	2.09E-05	4.63E-03	2.12E-09	4.72E-07
6/23/2000	0.30	2.30	0.61	2.28E-05	5.07E-03	2.32E-09	5.16E-07

6/24/2000	0.34	2.54	0.67	2.51E-05	5.57E-03	2.55E-09	5.68E-07
6/25/2000	0.37	2.71	0.71	2.67E-05	5.93E-03	2.72E-09	6.04E-07
6/26/2000	0.54	2.95	0.73	2.75E-05	6.11E-03	2.80E-09	6.22E-07
6/27/2000	0.72	3.43	0.82	3.09E-05	6.87E-03	3.15E-09	7.00E-07
6/28/2000	0.77	3.80	0.92	3.46E-05	7.68E-03	3.52E-09	7.82E-07
6/29/2000	0.57	4.04	1.06	3.96E-05	8.80E-03	4.03E-09	8.96E-07
6/30/2000	0.35	4.11	1.14	4.29E-05	9.53E-03	4.37E-09	9.71E-07
7/1/2000	0.48	4.05	1.09	4.07E-05	9.05E-03	4.15E-09	9.22E-07
7/2/2000	0.50	3.97	1.06	3.96E-05	8.80E-03	4.03E-09	8.96E-07
7/3/2000	0.63	3.92	1.00	3.75E-05	8.34E-03	3.82E-09	8.49E-07
7/4/2000	0.72	3.88	0.96	3.60E-05	8.01E-03	3.67E-09	8.16E-07
7/5/2000	0.80	3.92	0.95	3.56E-05	7.91E-03	3.62E-09	8.06E-07
7/6/2000	0.71	3.95	0.99	3.70E-05	8.21E-03	3.76E-09	8.37E-07
7/7/2000	0.49	4.00	1.07	4.00E-05	8.90E-03	4.08E-09	9.06E-07
7/8/2000	0.44	4.07	1.11	4.14E-05	9.20E-03	4.22E-09	9.37E-07
7/9/2000	0.66	4.12	1.05	3.95E-05	8.77E-03	4.02E-09	8.93E-07
7/10/2000	0.56	4.20	1.11	4.15E-05	9.23E-03	4.23E-09	9.40E-07
7/11/2000	0.38	4.09	1.13	4.23E-05	9.41E-03	4.31E-09	9.58E-07
7/12/2000	0.27	4.11	1.17	4.38E-05	9.74E-03	4.46E-09	9.92E-07
7/13/2000	-0.15	3.83	1.21	4.54E-05	1.01E-02	4.63E-09	1.03E-06
7/14/2000	-0.45	3.70	1.26	4.73E-05	1.05E-02	4.82E-09	1.07E-06
7/15/2000	-0.36	3.45	1.16	4.35E-05	9.66E-03	4.43E-09	9.84E-07
7/16/2000	-0.02	3.32	1.02	3.81E-05	8.47E-03	3.88E-09	8.62E-07
7/17/2000	-0.04	3.09	0.95	3.57E-05	7.93E-03	3.64E-09	8.08E-07
7/18/2000	-0.21	2.88	0.94	3.52E-05	7.83E-03	3.59E-09	7.98E-07
7/19/2000	-0.24	2.70	0.89	3.35E-05	7.45E-03	3.42E-09	7.59E-07
7/20/2000	-0.29	2.54	0.86	3.23E-05	7.17E-03	3.29E-09	7.31E-07
7/21/2000	-0.23	2.51	0.83	3.12E-05	6.94E-03	3.18E-09	7.07E-07
7/22/2000	0.13	2.62	0.76	2.84E-05	6.31E-03	2.89E-09	6.43E-07
7/23/2000	0.24	2.73	0.76	2.84E-05	6.31E-03	2.89E-09	6.43E-07
7/24/2000	0.11	2.70	0.79	2.95E-05	6.56E-03	3.01E-09	6.69E-07
7/25/2000	0.39	2.79	0.73	2.74E-05	6.08E-03	2.79E-09	6.19E-07
7/26/2000	0.61	2.97	0.72	2.69E-05	5.98E-03	2.74E-09	6.09E-07
7/27/2000	0.61	2.95	0.71	2.67E-05	5.93E-03	2.72E-09	6.04E-07
7/28/2000	0.62	3.09	0.75	2.82E-05	6.26E-03	2.87E-09	6.38E-07
7/29/2000	0.53	3.20	0.81	3.04E-05	6.77E-03	3.10E-09	6.89E-07
7/30/2000	0.32	3.08	0.84	3.15E-05	6.99E-03	3.21E-09	7.12E-07
7/31/2000	0.31	2.82	0.76	2.86E-05	6.36E-03	2.92E-09	6.48E-07
8/1/2000	0.45	2.53	0.63	2.37E-05	5.27E-03	2.42E-09	5.37E-07

8/2/2000	0.42	2.34	0.58	2.19E-05	4.86E-03	2.23E-09	4.95E-07
8/3/2000	0.68	2.30	0.49	1.85E-05	4.10E-03	1.88E-09	4.18E-07
8/4/2000	0.54	2.10	0.47	1.78E-05	3.95E-03	1.81E-09	4.02E-07
8/5/2000	0.38	2.08	0.52	1.94E-05	4.30E-03	1.97E-09	4.38E-07
8/6/2000	0.49	2.23	0.53	1.98E-05	4.41E-03	2.02E-09	4.49E-07
8/7/2000	0.78	2.32	0.47	1.75E-05	3.90E-03	1.79E-09	3.97E-07
8/8/2000	0.85	2.36	0.46	1.72E-05	3.82E-03	1.75E-09	3.89E-07
8/9/2000	0.76	2.40	0.50	1.87E-05	4.15E-03	1.90E-09	4.23E-07
8/10/2000	0.55	2.44	0.57	2.15E-05	4.79E-03	2.19E-09	4.88E-07
8/11/2000	0.49	2.58	0.64	2.38E-05	5.29E-03	2.43E-09	5.39E-07
8/12/2000	0.59	2.38	0.54	2.04E-05	4.53E-03	2.08E-09	4.62E-07
8/13/2000	0.59	2.56	0.60	2.25E-05	4.99E-03	2.29E-09	5.08E-07
8/14/2000	0.73	2.54	0.55	2.06E-05	4.58E-03	2.10E-09	4.67E-07
8/15/2000	0.60	2.13	0.47	1.74E-05	3.87E-03	1.78E-09	3.95E-07
8/16/2000	0.22	1.82	0.49	1.82E-05	4.05E-03	1.86E-09	4.13E-07
8/17/2000	0.21	1.78	0.48	1.79E-05	3.97E-03	1.82E-09	4.05E-07
8/18/2000	0.30	1.82	0.46	1.73E-05	3.85E-03	1.76E-09	3.92E-07
8/19/2000	0.18	1.72	0.47	1.75E-05	3.90E-03	1.79E-09	3.97E-07
8/20/2000	0.05	2.00	0.59	2.22E-05	4.94E-03	2.26E-09	5.03E-07
8/21/2000	0.49	2.07	0.48	1.80E-05	4.00E-03	1.83E-09	4.07E-07
8/22/2000	0.89	2.30	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
8/23/2000	1.21	2.64	0.43	1.63E-05	3.62E-03	1.66E-09	3.69E-07
8/24/2000	1.15	2.71	0.47	1.78E-05	3.95E-03	1.81E-09	4.02E-07
8/25/2000	1.05	2.77	0.52	1.96E-05	4.36E-03	2.00E-09	4.44E-07
8/26/2000	0.81	2.72	0.58	2.18E-05	4.84E-03	2.22E-09	4.93E-07
8/27/2000	0.63	2.66	0.62	2.31E-05	5.14E-03	2.36E-09	5.24E-07
8/28/2000	0.63	2.43	0.55	2.05E-05	4.56E-03	2.09E-09	4.64E-07
8/29/2000	0.63	2.12	0.45	1.70E-05	3.77E-03	1.73E-09	3.84E-07
8/30/2000	0.63	1.84	0.37	1.38E-05	3.06E-03	1.40E-09	3.11E-07
8/31/2000	0.63	1.88	0.38	1.42E-05	3.15E-03	1.45E-09	3.21E-07
9/1/2000	0.63	1.71	0.33	1.22E-05	2.72E-03	1.25E-09	2.77E-07
9/2/2000	0.63	1.77	0.34	1.29E-05	2.87E-03	1.32E-09	2.92E-07
9/3/2000	0.64	1.99	0.41	1.54E-05	3.43E-03	1.57E-09	3.49E-07
9/4/2000	0.64	2.22	0.48	1.80E-05	4.01E-03	1.84E-09	4.08E-07
9/5/2000	0.64	2.47	0.56	2.09E-05	4.64E-03	2.13E-09	4.73E-07
9/6/2000	0.64	2.78	0.65	2.44E-05	5.42E-03	2.49E-09	5.53E-07
9/7/2000	0.64	3.09	0.75	2.79E-05	6.21E-03	2.85E-09	6.32E-07
9/8/2000	0.64	3.04	0.73	2.74E-05	6.08E-03	2.79E-09	6.19E-07
9/9/2000	0.64	2.86	0.67	2.53E-05	5.62E-03	2.58E-09	5.72E-07

9/10/2000	0.64	2.37	0.53	1.97E-05	4.37E-03	2.00E-09	4.46E-07
9/11/2000	0.64	2.16	0.46	1.73E-05	3.84E-03	1.76E-09	3.91E-07
9/12/2000	0.64	2.12	0.45	1.68E-05	3.73E-03	1.71E-09	3.80E-07
9/13/2000	0.65	1.81	0.35	1.33E-05	2.95E-03	1.35E-09	3.00E-07
9/14/2000	0.65	1.95	0.40	1.48E-05	3.30E-03	1.51E-09	3.36E-07
9/15/2000	0.65	1.85	0.37	1.37E-05	3.04E-03	1.39E-09	3.10E-07
9/16/2000	0.65	2.37	0.52	1.96E-05	4.36E-03	2.00E-09	4.44E-07
9/17/2000	0.65	2.62	0.60	2.25E-05	4.99E-03	2.29E-09	5.08E-07
9/18/2000	0.65	2.85	0.67	2.51E-05	5.57E-03	2.55E-09	5.68E-07
9/19/2000	0.65	2.39	0.53	1.98E-05	4.40E-03	2.02E-09	4.48E-07
9/20/2000	0.65	2.31	0.50	1.89E-05	4.20E-03	1.92E-09	4.28E-07
9/21/2000	0.65	2.80	0.65	2.45E-05	5.44E-03	2.49E-09	5.54E-07
9/22/2000	0.65	3.10	0.74	2.79E-05	6.20E-03	2.84E-09	6.31E-07
9/23/2000	0.66	2.77	0.64	2.41E-05	5.36E-03	2.46E-09	5.46E-07
9/24/2000	0.66	2.37	0.52	1.95E-05	4.34E-03	1.99E-09	4.42E-07
9/25/2000	0.66	2.03	0.42	1.56E-05	3.47E-03	1.59E-09	3.54E-07
9/26/2000	0.66	1.58	0.28	1.05E-05	2.33E-03	1.07E-09	2.37E-07
9/27/2000	0.66	1.53	0.26	9.90E-06	2.20E-03	1.01E-09	2.24E-07
9/28/2000	0.66	1.65	0.30	1.13E-05	2.50E-03	1.15E-09	2.55E-07
9/29/2000	0.66	1.94	0.39	1.46E-05	3.24E-03	1.48E-09	3.30E-07
9/30/2000	0.66	2.21	0.47	1.76E-05	3.92E-03	1.80E-09	3.99E-07
10/1/2000	0.66	2.36	0.52	1.93E-05	4.30E-03	1.97E-09	4.38E-07
10/2/2000	0.66	2.26	0.49	1.82E-05	4.04E-03	1.85E-09	4.12E-07
10/3/2000	0.66	2.29	0.49	1.85E-05	4.11E-03	1.89E-09	4.19E-07
10/4/2000	0.67	2.57	0.58	2.17E-05	4.82E-03	2.21E-09	4.91E-07
10/5/2000	1.31	2.35	0.32	1.18E-05	2.63E-03	1.21E-09	2.68E-07
10/6/2000	1.17	2.59	0.43	1.62E-05	3.59E-03	1.65E-09	3.66E-07
10/7/2000	1.15	2.54	0.42	1.58E-05	3.52E-03	1.61E-09	3.58E-07
10/8/2000	1.20	2.44	0.38	1.41E-05	3.14E-03	1.44E-09	3.20E-07
10/9/2000	1.20	2.69	0.45	1.70E-05	3.78E-03	1.73E-09	3.85E-07
10/10/2000	1.20	1.96	0.23	8.67E-06	1.93E-03	8.83E-10	1.96E-07
10/11/2000	1.20	1.38	0.05	2.05E-06	4.56E-04	2.09E-10	4.64E-08
10/12/2000	1.20	1.50	0.09	3.42E-06	7.61E-04	3.49E-10	7.75E-08
10/13/2000	1.20	1.48	0.09	3.20E-06	7.10E-04	3.26E-10	7.24E-08
10/14/2000	1.20	1.71	0.16	5.83E-06	1.29E-03	5.93E-10	1.32E-07
10/15/2000	1.20	1.88	0.21	7.77E-06	1.73E-03	7.91E-10	1.76E-07
10/16/2000	1.20	2.06	0.26	9.83E-06	2.18E-03	1.00E-09	2.22E-07
10/17/2000	1.20	2.41	0.37	1.38E-05	3.07E-03	1.41E-09	3.13E-07
10/18/2000	1.20	2.38	0.36	1.35E-05	3.00E-03	1.37E-09	3.05E-07

10/19/2000	1.19	2.48	0.39	1.46E-05	3.25E-03	1.49E-09	3.31E-07
10/20/2000	1.19	2.51	0.40	1.50E-05	3.33E-03	1.53E-09	3.39E-07
10/21/2000	1.19	2.41	0.37	1.38E-05	3.07E-03	1.41E-09	3.13E-07
10/22/2000	1.19	2.69	0.45	1.70E-05	3.79E-03	1.74E-09	3.86E-07
10/23/2000	1.19	2.45	0.38	1.43E-05	3.18E-03	1.46E-09	3.24E-07
10/24/2000	1.19	2.15	0.29	1.09E-05	2.42E-03	1.11E-09	2.46E-07
10/25/2000	1.19	1.89	0.21	7.91E-06	1.76E-03	8.06E-10	1.79E-07
10/26/2000	1.19	1.83	0.19	7.23E-06	1.61E-03	7.36E-10	1.64E-07
10/27/2000	1.19	1.70	0.15	5.74E-06	1.28E-03	5.85E-10	1.30E-07
10/28/2000	1.19	1.49	0.09	3.35E-06	7.44E-04	3.41E-10	7.58E-08
10/29/2000	1.19	1.74	0.17	6.20E-06	1.38E-03	6.32E-10	1.40E-07
10/30/2000	1.19	1.74	0.17	6.21E-06	1.38E-03	6.32E-10	1.41E-07
10/31/2000	1.19	1.86	0.20	7.58E-06	1.68E-03	7.72E-10	1.72E-07
11/1/2000	1.19	2.00	0.25	9.18E-06	2.04E-03	9.35E-10	2.08E-07
11/2/2000	1.19	2.19	0.30	1.14E-05	2.52E-03	1.16E-09	2.57E-07
11/3/2000	1.19	2.17	0.30	1.11E-05	2.47E-03	1.13E-09	2.52E-07
11/4/2000	1.19	2.04	0.26	9.65E-06	2.14E-03	9.82E-10	2.18E-07
11/5/2000	1.19	2.33	0.35	1.30E-05	2.88E-03	1.32E-09	2.93E-07
11/6/2000	1.19	2.97	0.54	2.03E-05	4.50E-03	2.06E-09	4.59E-07
11/7/2000	1.19	2.37	0.36	1.34E-05	2.98E-03	1.37E-09	3.04E-07
11/8/2000	1.19	2.54	0.41	1.54E-05	3.41E-03	1.57E-09	3.48E-07
11/9/2000	1.19	2.39	0.36	1.37E-05	3.03E-03	1.39E-09	3.09E-07
11/10/2000	1.19	2.06	0.26	9.89E-06	2.20E-03	1.01E-09	2.24E-07
11/11/2000	1.19	1.81	0.19	7.04E-06	1.56E-03	7.17E-10	1.59E-07
11/12/2000	1.03	1.76	0.22	8.29E-06	1.84E-03	8.45E-10	1.88E-07
11/13/2000	1.14	1.90	0.23	8.63E-06	1.92E-03	8.79E-10	1.95E-07
11/14/2000	0.95	2.13	0.36	1.34E-05	2.98E-03	1.37E-09	3.04E-07
11/15/2000	0.99	2.05	0.32	1.21E-05	2.68E-03	1.23E-09	2.73E-07
11/16/2000	1.08	2.38	0.40	1.48E-05	3.29E-03	1.51E-09	3.35E-07
11/17/2000	1.19	2.44	0.38	1.42E-05	3.16E-03	1.45E-09	3.22E-07
11/18/2000	1.46	2.87	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
11/19/2000	2.73	3.58	0.26	9.66E-06	2.15E-03	9.84E-10	2.19E-07
11/20/2000	1.37	2.27	0.27	1.02E-05	2.27E-03	1.04E-09	2.32E-07
11/21/2000	0.58	1.47	0.27	1.01E-05	2.25E-03	1.03E-09	2.29E-07
11/22/2000	0.07	1.20	0.34	1.29E-05	2.86E-03	1.31E-09	2.91E-07
11/23/2000	0.05	1.23	0.36	1.34E-05	2.98E-03	1.37E-09	3.04E-07
11/24/2000	0.79	1.81	0.31	1.16E-05	2.58E-03	1.18E-09	2.63E-07
11/25/2000	0.54	1.66	0.34	1.27E-05	2.83E-03	1.30E-09	2.89E-07
11/26/2000	0.65	1.81	0.35	1.32E-05	2.93E-03	1.34E-09	2.99E-07

11/27/2000	0.36	1.72	0.41	1.55E-05	3.44E-03	1.58E-09	3.51E-07
11/28/2000	0.51	2.00	0.45	1.70E-05	3.77E-03	1.73E-09	3.84E-07
11/29/2000	0.60	2.17	0.48	1.79E-05	3.97E-03	1.82E-09	4.05E-07
11/30/2000	0.73	2.36	0.50	1.86E-05	4.13E-03	1.89E-09	4.20E-07
12/1/2000	0.77	2.48	0.52	1.95E-05	4.33E-03	1.98E-09	4.41E-07
12/2/2000	0.58	2.52	0.59	2.21E-05	4.91E-03	2.25E-09	5.00E-07
12/3/2000	0.06	2.46	0.73	2.74E-05	6.08E-03	2.79E-09	6.19E-07
12/4/2000	0.68	2.33	0.50	1.88E-05	4.18E-03	1.91E-09	4.26E-07
12/5/2000	0.29	2.05	0.54	2.01E-05	4.46E-03	2.04E-09	4.54E-07
12/6/2000	0.16	1.92	0.54	2.01E-05	4.46E-03	2.04E-09	4.54E-07
12/7/2000	0.42	1.74	0.40	1.50E-05	3.34E-03	1.53E-09	3.40E-07
12/8/2000	0.54	1.77	0.37	1.40E-05	3.11E-03	1.43E-09	3.17E-07
12/9/2000	0.60	1.48	0.27	1.00E-05	2.22E-03	1.02E-09	2.26E-07
12/10/2000	0.64	1.58	0.29	1.07E-05	2.38E-03	1.09E-09	2.42E-07
12/11/2000	0.73	1.61	0.27	1.00E-05	2.22E-03	1.02E-09	2.26E-07
12/12/2000	0.89	1.90	0.31	1.15E-05	2.55E-03	1.17E-09	2.60E-07
12/13/2000	1.28	2.17	0.27	1.01E-05	2.25E-03	1.03E-09	2.29E-07
12/14/2000	1.11	2.08	0.29	1.10E-05	2.45E-03	1.12E-09	2.50E-07
12/15/2000	1.09	2.25	0.35	1.32E-05	2.93E-03	1.34E-09	2.99E-07
12/16/2000	0.98	2.26	0.39	1.46E-05	3.24E-03	1.48E-09	3.30E-07
12/17/2000	-0.51	1.45	0.60	2.23E-05	4.96E-03	2.28E-09	5.06E-07
12/18/2000	-0.15	1.43	0.48	1.80E-05	4.00E-03	1.83E-09	4.07E-07
12/19/2000	-0.79	0.86	0.50	1.88E-05	4.18E-03	1.91E-09	4.26E-07
12/20/2000	-0.85	0.64	0.45	1.70E-05	3.77E-03	1.73E-09	3.84E-07
12/21/2000	-0.03	1.08	0.34	1.26E-05	2.81E-03	1.29E-09	2.86E-07
12/22/2000	0.17	1.17	0.30	1.14E-05	2.53E-03	1.16E-09	2.57E-07
12/23/2000	0.43	1.10	0.20	7.61E-06	1.69E-03	7.75E-10	1.72E-07
12/24/2000	0.38	1.04	0.20	7.49E-06	1.66E-03	7.63E-10	1.70E-07
12/25/2000	0.48	1.29	0.25	9.20E-06	2.05E-03	9.38E-10	2.08E-07
12/26/2000	0.92	1.87	0.29	1.08E-05	2.40E-03	1.10E-09	2.45E-07
12/27/2000	1.02	2.46	0.44	1.64E-05	3.64E-03	1.67E-09	3.71E-07
12/28/2000	0.59	2.69	0.64	2.39E-05	5.32E-03	2.44E-09	5.42E-07
12/29/2000	-0.21	2.63	0.86	3.24E-05	7.20E-03	3.30E-09	7.33E-07
12/30/2000	-0.76	2.65	1.04	3.89E-05	8.64E-03	3.96E-09	8.81E-07
12/31/2000	-0.43	2.76	0.97	3.64E-05	8.09E-03	3.71E-09	8.24E-07
1/1/2001	-0.12	2.92	0.93	3.47E-05	7.71E-03	3.53E-09	7.85E-07
1/2/2001	0.20	2.94	0.83	3.12E-05	6.94E-03	3.18E-09	7.07E-07
1/3/2001	-0.17	2.59	0.84	3.15E-05	6.99E-03	3.21E-09	7.12E-07
1/4/2001	-0.76	2.30	0.93	3.49E-05	7.76E-03	3.56E-09	7.90E-07

1/5/2001	-0.48	2.03	0.76	2.86E-05	6.36E-03	2.92E-09	6.48E-07
1/6/2001	-0.53	1.65	0.66	2.49E-05	5.52E-03	2.53E-09	5.63E-07
1/7/2001	-0.17	1.51	0.51	1.91E-05	4.25E-03	1.95E-09	4.33E-07
1/8/2001	-0.01	1.30	0.40	1.49E-05	3.31E-03	1.52E-09	3.38E-07
1/9/2001	-0.01	1.08	0.33	1.24E-05	2.76E-03	1.26E-09	2.81E-07
1/10/2001	0.34	1.13	0.24	8.98E-06	1.99E-03	9.14E-10	2.03E-07
1/11/2001	0.67	1.58	0.28	1.03E-05	2.30E-03	1.05E-09	2.34E-07
1/12/2001	-0.06	1.39	0.44	1.65E-05	3.67E-03	1.68E-09	3.74E-07
1/13/2001	0.45	1.67	0.37	1.39E-05	3.09E-03	1.41E-09	3.14E-07
1/14/2001	0.51	1.72	0.37	1.38E-05	3.06E-03	1.40E-09	3.12E-07
1/15/2001	0.02	1.52	0.46	1.71E-05	3.80E-03	1.74E-09	3.87E-07
1/16/2001	0.48	1.38	0.27	1.02E-05	2.27E-03	1.04E-09	2.32E-07
1/17/2001	0.77	1.36	0.18	6.69E-06	1.49E-03	6.82E-10	1.51E-07
1/18/2001	0.34	1.20	0.26	9.78E-06	2.17E-03	9.96E-10	2.21E-07
1/19/2001	0.38	1.44	0.32	1.21E-05	2.68E-03	1.23E-09	2.73E-07
1/20/2001	-0.82	0.78	0.49	1.82E-05	4.05E-03	1.86E-09	4.13E-07
1/21/2001	-0.57	0.82	0.42	1.58E-05	3.52E-03	1.61E-09	3.58E-07
1/22/2001	-0.39	0.76	0.35	1.31E-05	2.91E-03	1.33E-09	2.96E-07
1/23/2001	-0.39	0.93	0.40	1.50E-05	3.34E-03	1.53E-09	3.40E-07
1/24/2001	-0.45	1.19	0.50	1.87E-05	4.15E-03	1.90E-09	4.23E-07
1/25/2001	-0.49	1.07	0.47	1.78E-05	3.95E-03	1.81E-09	4.02E-07
1/26/2001	-0.13	1.45	0.48	1.80E-05	4.00E-03	1.83E-09	4.07E-07
1/27/2001	-0.05	1.57	0.49	1.85E-05	4.10E-03	1.88E-09	4.18E-07
1/28/2001	0.33	1.85	0.46	1.73E-05	3.85E-03	1.76E-09	3.92E-07
1/29/2001	0.75	2.28	0.47	1.74E-05	3.87E-03	1.78E-09	3.95E-07
1/30/2001	0.32	2.37	0.62	2.34E-05	5.19E-03	2.38E-09	5.29E-07
1/31/2001	0.21	2.66	0.75	2.79E-05	6.21E-03	2.85E-09	6.32E-07
2/1/2001	0.05	2.52	0.75	2.82E-05	6.26E-03	2.87E-09	6.38E-07
2/2/2001	0.13	2.38	0.68	2.57E-05	5.70E-03	2.61E-09	5.81E-07
2/3/2001	-0.24	2.34	0.79	2.94E-05	6.54E-03	3.00E-09	6.66E-07
2/4/2001	-0.12	2.25	0.72	2.70E-05	6.00E-03	2.75E-09	6.12E-07
2/5/2001	-0.20	2.16	0.72	2.69E-05	5.98E-03	2.74E-09	6.09E-07
2/6/2001	-0.19	2.07	0.69	2.58E-05	5.73E-03	2.62E-09	5.83E-07
2/7/2001	0.17	2.17	0.61	2.28E-05	5.07E-03	2.32E-09	5.16E-07
2/8/2001	0.54	2.32	0.54	2.03E-05	4.51E-03	2.07E-09	4.59E-07
2/9/2001	0.83	2.69	0.57	2.12E-05	4.71E-03	2.16E-09	4.80E-07
2/10/2001	0.35	2.79	0.74	2.78E-05	6.18E-03	2.83E-09	6.30E-07
2/11/2001	0.46	2.90	0.74	2.78E-05	6.18E-03	2.83E-09	6.30E-07
2/12/2001	0.31	3.05	0.83	3.12E-05	6.94E-03	3.18E-09	7.07E-07

2/13/2001	0.20	2.99	0.85	3.18E-05	7.07E-03	3.24E-09	7.20E-07
2/14/2001	0.05	2.98	0.89	3.34E-05	7.43E-03	3.40E-09	7.56E-07
2/15/2001	-0.03	2.90	0.89	3.34E-05	7.43E-03	3.40E-09	7.56E-07
2/16/2001	0.02	2.77	0.84	3.14E-05	6.97E-03	3.19E-09	7.10E-07
2/17/2001	-0.70	2.53	0.98	3.68E-05	8.19E-03	3.75E-09	8.34E-07
2/18/2001	0.09	2.75	0.81	3.03E-05	6.74E-03	3.09E-09	6.87E-07
2/19/2001	0.10	3.13	0.92	3.46E-05	7.68E-03	3.52E-09	7.82E-07
2/20/2001	0.27	3.70	1.04	3.91E-05	8.69E-03	3.99E-09	8.86E-07
2/21/2001	0.33	4.31	1.21	4.54E-05	1.01E-02	4.63E-09	1.03E-06
2/22/2001	0.40	4.87	1.36	5.10E-05	1.13E-02	5.20E-09	1.15E-06
2/23/2001	0.70	5.24	1.38	5.18E-05	1.15E-02	5.28E-09	1.17E-06
2/24/2001	1.39	5.70	1.31	4.92E-05	1.09E-02	5.01E-09	1.11E-06
2/25/2001	1.10	5.85	1.45	5.42E-05	1.20E-02	5.52E-09	1.23E-06
2/26/2001	0.85	5.97	1.56	5.84E-05	1.30E-02	5.95E-09	1.32E-06
2/27/2001	0.35	6.01	1.72	6.46E-05	1.44E-02	6.58E-09	1.46E-06
2/28/2001	0.30	6.27	1.82	6.81E-05	1.51E-02	6.94E-09	1.54E-06
3/1/2001	0.18	6.26	1.85	6.94E-05	1.54E-02	7.07E-09	1.57E-06
3/2/2001	0.18	6.36	1.88	7.05E-05	1.57E-02	7.18E-09	1.60E-06
3/3/2001	0.11	6.58	1.97	7.38E-05	1.64E-02	7.52E-09	1.67E-06
3/4/2001	-0.15	6.61	2.06	7.72E-05	1.71E-02	7.86E-09	1.75E-06
3/5/2001	-0.70	6.57	2.21	8.30E-05	1.84E-02	8.45E-09	1.88E-06
3/6/2001	-0.85	6.59	2.27	8.49E-05	1.89E-02	8.65E-09	1.92E-06
3/7/2001	-0.48	6.65	2.17	8.14E-05	1.81E-02	8.29E-09	1.84E-06
3/8/2001	-0.26	6.76	2.14	8.01E-05	1.78E-02	8.16E-09	1.81E-06
3/9/2001	0.43	7.09	2.03	7.60E-05	1.69E-02	7.74E-09	1.72E-06
3/10/2001	0.73	7.11	1.94	7.28E-05	1.62E-02	7.42E-09	1.65E-06
3/11/2001	0.87	7.20	1.93	7.22E-05	1.61E-02	7.36E-09	1.64E-06
3/12/2001	1.24	7.39	1.87	7.02E-05	1.56E-02	7.15E-09	1.59E-06
3/13/2001	0.84	7.19	1.93	7.25E-05	1.61E-02	7.38E-09	1.64E-06
3/14/2001	0.48	6.96	1.97	7.40E-05	1.64E-02	7.53E-09	1.67E-06
3/15/2001	1.45	7.16	1.74	6.52E-05	1.45E-02	6.64E-09	1.48E-06
3/16/2001	0.65	6.90	1.90	7.13E-05	1.59E-02	7.27E-09	1.61E-06
3/17/2001	0.54	6.80	1.91	7.14E-05	1.59E-02	7.28E-09	1.62E-06
3/18/2001	1.04	6.75	1.74	6.52E-05	1.45E-02	6.64E-09	1.48E-06
3/19/2001	1.06	6.66	1.71	6.39E-05	1.42E-02	6.51E-09	1.45E-06
3/20/2001	0.91	6.54	1.71	6.43E-05	1.43E-02	6.54E-09	1.45E-06
3/21/2001	-0.12	6.29	1.95	7.32E-05	1.63E-02	7.45E-09	1.66E-06
3/22/2001	-0.03	6.13	1.88	7.03E-05	1.56E-02	7.16E-09	1.59E-06
3/23/2001	-0.07	6.09	1.88	7.03E-05	1.56E-02	7.16E-09	1.59E-06

3/24/2001	0.29	6.14	1.78	6.68E-05	1.48E-02	6.80E-09	1.51E-06
3/25/2001	0.26	6.14	1.79	6.71E-05	1.49E-02	6.84E-09	1.52E-06
3/26/2001	0.46	6.30	1.78	6.66E-05	1.48E-02	6.79E-09	1.51E-06
3/27/2001	0.42	6.26	1.78	6.66E-05	1.48E-02	6.79E-09	1.51E-06
3/28/2001	0.88	6.52	1.72	6.44E-05	1.43E-02	6.56E-09	1.46E-06
3/29/2001	1.92	6.97	1.54	5.76E-05	1.28E-02	5.87E-09	1.30E-06
3/30/2001	1.09	6.61	1.68	6.30E-05	1.40E-02	6.42E-09	1.43E-06
3/31/2001	0.55	6.32	1.76	6.59E-05	1.46E-02	6.71E-09	1.49E-06
4/1/2001	0.37	6.15	1.76	6.60E-05	1.47E-02	6.72E-09	1.49E-06
4/2/2001	0.37	6.03	1.72	6.46E-05	1.44E-02	6.58E-09	1.46E-06
4/3/2001	0.62	5.97	1.63	6.11E-05	1.36E-02	6.22E-09	1.38E-06
4/4/2001	0.56	5.88	1.62	6.07E-05	1.35E-02	6.18E-09	1.37E-06
4/5/2001	0.69	5.83	1.57	5.87E-05	1.30E-02	5.97E-09	1.33E-06
4/6/2001	0.93	5.75	1.47	5.50E-05	1.22E-02	5.60E-09	1.25E-06
4/7/2001	0.99	5.70	1.43	5.37E-05	1.19E-02	5.47E-09	1.22E-06
4/8/2001	0.91	5.51	1.40	5.25E-05	1.17E-02	5.35E-09	1.19E-06
4/9/2001	0.68	5.26	1.39	5.23E-05	1.16E-02	5.32E-09	1.18E-06
4/10/2001	0.55	5.08	1.38	5.17E-05	1.15E-02	5.27E-09	1.17E-06
4/11/2001	0.65	4.88	1.29	4.83E-05	1.07E-02	4.92E-09	1.09E-06
4/12/2001	0.70	4.63	1.20	4.48E-05	9.96E-03	4.57E-09	1.01E-06
4/13/2001	0.52	4.42	1.19	4.45E-05	9.89E-03	4.53E-09	1.01E-06
4/14/2001	0.16	4.12	1.21	4.52E-05	1.00E-02	4.60E-09	1.02E-06
4/15/2001	0.08	4.14	1.24	4.63E-05	1.03E-02	4.72E-09	1.05E-06
4/16/2001	0.13	4.05	1.19	4.47E-05	9.94E-03	4.56E-09	1.01E-06
4/17/2001	0.27	4.05	1.15	4.31E-05	9.58E-03	4.39E-09	9.76E-07
4/18/2001	0.54	4.06	1.07	4.02E-05	8.92E-03	4.09E-09	9.09E-07
4/19/2001	0.07	4.02	1.20	4.51E-05	1.00E-02	4.59E-09	1.02E-06
4/20/2001	0.42	4.10	1.12	4.20E-05	9.33E-03	4.28E-09	9.50E-07
4/21/2001	0.92	4.46	1.08	4.04E-05	8.97E-03	4.11E-09	9.14E-07
4/22/2001	1.20	4.55	1.02	3.82E-05	8.49E-03	3.89E-09	8.65E-07
4/23/2001	1.31	4.80	1.06	3.98E-05	8.85E-03	4.06E-09	9.01E-07
4/24/2001	0.96	4.92	1.21	4.52E-05	1.00E-02	4.60E-09	1.02E-06
4/25/2001	0.83	5.06	1.29	4.83E-05	1.07E-02	4.92E-09	1.09E-06
4/26/2001	0.78	5.13	1.32	4.96E-05	1.10E-02	5.06E-09	1.12E-06
4/27/2001	0.49	4.99	1.37	5.13E-05	1.14E-02	5.23E-09	1.16E-06
4/28/2001	0.36	4.89	1.38	5.17E-05	1.15E-02	5.27E-09	1.17E-06
4/29/2001	0.68	4.77	1.25	4.67E-05	1.04E-02	4.75E-09	1.06E-06
4/30/2001	1.03	4.72	1.12	4.21E-05	9.35E-03	4.29E-09	9.53E-07
5/1/2001	1.44	4.59	0.96	3.59E-05	7.98E-03	3.66E-09	8.13E-07

5/2/2001	1.35	4.73	1.03	3.86E-05	8.57E-03	3.93E-09	8.73E-07
5/3/2001	1.40	4.65	0.99	3.71E-05	8.24E-03	3.78E-09	8.39E-07
5/4/2001	1.33	4.45	0.95	3.56E-05	7.91E-03	3.62E-09	8.06E-07
5/5/2001	1.20	4.44	0.99	3.70E-05	8.21E-03	3.76E-09	8.37E-07
5/6/2001	1.13	4.25	0.95	3.56E-05	7.91E-03	3.62E-09	8.06E-07
5/7/2001	0.96	3.92	0.90	3.38E-05	7.50E-03	3.44E-09	7.64E-07
5/8/2001	1.00	3.72	0.83	3.10E-05	6.89E-03	3.16E-09	7.02E-07
5/9/2001	1.02	3.66	0.80	3.01E-05	6.69E-03	3.07E-09	6.81E-07
5/10/2001	0.84	3.36	0.77	2.87E-05	6.39E-03	2.93E-09	6.50E-07
5/11/2001	0.91	3.27	0.72	2.69E-05	5.98E-03	2.74E-09	6.09E-07
5/12/2001	0.79	3.12	0.71	2.66E-05	5.90E-03	2.71E-09	6.01E-07
5/13/2001	0.57	3.04	0.75	2.82E-05	6.26E-03	2.87E-09	6.38E-07
5/14/2001	0.52	2.91	0.73	2.72E-05	6.06E-03	2.78E-09	6.17E-07
5/15/2001	0.40	2.93	0.77	2.88E-05	6.41E-03	2.94E-09	6.53E-07
5/16/2001	0.18	2.91	0.83	3.11E-05	6.92E-03	3.17E-09	7.05E-07
5/17/2001	-0.04	2.91	0.90	3.36E-05	7.48E-03	3.43E-09	7.62E-07
5/18/2001	0.08	2.92	0.86	3.24E-05	7.20E-03	3.30E-09	7.33E-07
5/19/2001	0.01	2.95	0.89	3.35E-05	7.45E-03	3.42E-09	7.59E-07
5/20/2001	-0.17	3.06	0.98	3.68E-05	8.19E-03	3.75E-09	8.34E-07
5/21/2001	0.03	3.29	0.99	3.72E-05	8.26E-03	3.79E-09	8.42E-07
5/22/2001	0.15	3.38	0.98	3.68E-05	8.19E-03	3.75E-09	8.34E-07
5/23/2001	0.29	3.31	0.92	3.44E-05	7.65E-03	3.51E-09	7.80E-07
5/24/2001	0.12	3.40	1.00	3.74E-05	8.31E-03	3.81E-09	8.47E-07
5/25/2001	0.01	3.30	1.00	3.75E-05	8.34E-03	3.82E-09	8.49E-07
5/26/2001	0.08	3.29	0.98	3.66E-05	8.14E-03	3.73E-09	8.29E-07
5/27/2001	0.20	3.32	0.95	3.56E-05	7.91E-03	3.62E-09	8.06E-07
5/28/2001	0.00	3.54	1.08	4.04E-05	8.97E-03	4.11E-09	9.14E-07
5/29/2001	-0.17	3.68	1.17	4.39E-05	9.76E-03	4.47E-09	9.94E-07
5/30/2001	-0.18	3.83	1.22	4.58E-05	1.02E-02	4.66E-09	1.04E-06
5/31/2001	-0.12	4.08	1.28	4.79E-05	1.06E-02	4.88E-09	1.08E-06
6/1/2001	0.03	4.42	1.34	5.01E-05	1.11E-02	5.10E-09	1.13E-06
6/2/2001	-0.01	4.70	1.43	5.37E-05	1.19E-02	5.47E-09	1.22E-06
6/3/2001	-0.01	4.80	1.46	5.49E-05	1.22E-02	5.59E-09	1.24E-06
6/4/2001	0.29	5.15	1.48	5.55E-05	1.23E-02	5.65E-09	1.26E-06
6/5/2001	0.68	5.29	1.40	5.26E-05	1.17E-02	5.36E-09	1.19E-06
6/6/2001	1.33	5.75	1.35	5.04E-05	1.12E-02	5.14E-09	1.14E-06
6/7/2001	0.96	5.81	1.48	5.53E-05	1.23E-02	5.64E-09	1.25E-06
6/8/2001	0.76	5.88	1.56	5.84E-05	1.30E-02	5.95E-09	1.32E-06
6/9/2001	0.48	5.84	1.63	6.12E-05	1.36E-02	6.23E-09	1.38E-06

6/10/2001	0.68	5.68	1.52	5.71E-05	1.27E-02	5.81E-09	1.29E-06
6/11/2001	1.02	6.09	1.54	5.79E-05	1.29E-02	5.89E-09	1.31E-06
6/12/2001	0.19	5.33	1.57	5.87E-05	1.30E-02	5.97E-09	1.33E-06
6/13/2001	0.28	5.29	1.53	5.72E-05	1.27E-02	5.82E-09	1.29E-06
6/14/2001	0.30	5.22	1.50	5.61E-05	1.25E-02	5.72E-09	1.27E-06
6/15/2001	0.13	5.23	1.55	5.82E-05	1.29E-02	5.93E-09	1.32E-06
6/16/2001	-0.32	5.21	1.68	6.31E-05	1.40E-02	6.43E-09	1.43E-06
6/17/2001	0.15	5.35	1.58	5.93E-05	1.32E-02	6.04E-09	1.34E-06
6/18/2001	0.29	5.52	1.59	5.97E-05	1.33E-02	6.08E-09	1.35E-06
7/4/2001	0.75	4.35	1.10	4.11E-05	9.13E-03	4.18E-09	9.30E-07
7/5/2001	0.50	4.16	1.11	4.18E-05	9.28E-03	4.25E-09	9.45E-07
7/6/2001	0.38	4.04	1.11	4.18E-05	9.28E-03	4.25E-09	9.45E-07
7/7/2001	0.38	3.78	1.04	3.88E-05	8.62E-03	3.95E-09	8.78E-07
7/8/2001	0.38	3.49	0.95	3.55E-05	7.88E-03	3.61E-09	8.03E-07
7/9/2001	0.38	3.33	0.90	3.36E-05	7.48E-03	3.43E-09	7.61E-07
7/10/2001	0.38	3.07	0.82	3.07E-05	6.82E-03	3.12E-09	6.94E-07
7/11/2001	0.38	2.85	0.75	2.82E-05	6.26E-03	2.87E-09	6.37E-07
7/12/2001	0.38	2.85	0.75	2.82E-05	6.26E-03	2.87E-09	6.37E-07
7/13/2001	0.38	2.64	0.69	2.58E-05	5.72E-03	2.62E-09	5.83E-07
7/14/2001	0.38	2.70	0.71	2.64E-05	5.87E-03	2.69E-09	5.98E-07
7/15/2001	0.38	2.98	0.79	2.96E-05	6.59E-03	3.02E-09	6.71E-07
7/16/2001	0.38	3.17	0.85	3.18E-05	7.07E-03	3.24E-09	7.20E-07
7/17/2001	0.38	3.31	0.89	3.34E-05	7.42E-03	3.40E-09	7.56E-07
7/18/2001	0.38	3.41	0.92	3.45E-05	7.68E-03	3.52E-09	7.82E-07
7/19/2001	0.38	3.45	0.93	3.50E-05	7.78E-03	3.56E-09	7.92E-07
7/20/2001	0.38	3.31	0.89	3.34E-05	7.42E-03	3.40E-09	7.56E-07
7/21/2001	0.38	3.10	0.83	3.10E-05	6.89E-03	3.16E-09	7.02E-07
7/22/2001	0.38	3.02	0.80	3.01E-05	6.68E-03	3.06E-09	6.81E-07
7/23/2001	0.38	3.02	0.80	3.01E-05	6.68E-03	3.06E-09	6.81E-07
7/24/2001	0.38	2.93	0.78	2.90E-05	6.46E-03	2.96E-09	6.58E-07
7/25/2001	0.38	2.93	0.78	2.90E-05	6.45E-03	2.96E-09	6.58E-07
7/26/2001	0.38	2.73	0.71	2.68E-05	5.95E-03	2.73E-09	6.06E-07
7/27/2001	0.38	2.77	0.73	2.72E-05	6.05E-03	2.77E-09	6.16E-07
7/28/2001	0.38	2.73	0.71	2.68E-05	5.95E-03	2.73E-09	6.06E-07
7/29/2001	0.38	2.74	0.72	2.69E-05	5.97E-03	2.74E-09	6.08E-07
7/30/2001	0.38	2.69	0.70	2.63E-05	5.84E-03	2.68E-09	5.95E-07
7/31/2001	0.38	2.59	0.67	2.52E-05	5.59E-03	2.56E-09	5.69E-07
8/1/2001	0.38	2.52	0.65	2.44E-05	5.41E-03	2.48E-09	5.51E-07
8/2/2001	0.38	2.87	0.76	2.83E-05	6.30E-03	2.89E-09	6.42E-07

8/3/2001	0.38	3.20	0.86	3.21E-05	7.14E-03	3.27E-09	7.27E-07
8/4/2001	0.38	3.44	0.93	3.49E-05	7.75E-03	3.55E-09	7.89E-07
8/5/2001	0.38	3.22	0.86	3.23E-05	7.19E-03	3.29E-09	7.32E-07
8/6/2001	0.38	3.15	0.84	3.15E-05	7.01E-03	3.21E-09	7.14E-07
8/7/2001	0.38	2.84	0.75	2.80E-05	6.22E-03	2.85E-09	6.34E-07
8/8/2001	0.38	2.54	0.66	2.46E-05	5.46E-03	2.50E-09	5.56E-07
8/9/2001	0.38	2.59	0.67	2.51E-05	5.59E-03	2.56E-09	5.69E-07
8/10/2001	0.38	2.53	0.65	2.45E-05	5.43E-03	2.49E-09	5.54E-07
8/11/2001	0.39	2.68	0.70	2.62E-05	5.81E-03	2.67E-09	5.92E-07
8/12/2001	0.39	2.82	0.74	2.78E-05	6.17E-03	2.83E-09	6.28E-07
8/13/2001	0.39	2.89	0.76	2.86E-05	6.35E-03	2.91E-09	6.46E-07
8/14/2001	0.39	2.82	0.74	2.78E-05	6.17E-03	2.83E-09	6.28E-07
8/15/2001	0.39	3.06	0.81	3.05E-05	6.78E-03	3.11E-09	6.90E-07
8/16/2001	0.39	3.19	0.85	3.20E-05	7.11E-03	3.26E-09	7.24E-07
8/17/2001	0.39	2.90	0.77	2.87E-05	6.37E-03	2.92E-09	6.49E-07
8/18/2001	0.39	2.79	0.73	2.74E-05	6.09E-03	2.79E-09	6.20E-07
8/19/2001	0.39	2.67	0.69	2.60E-05	5.79E-03	2.65E-09	5.89E-07
8/20/2001	0.39	2.35	0.60	2.24E-05	4.97E-03	2.28E-09	5.07E-07
8/21/2001	0.39	2.14	0.53	2.00E-05	4.44E-03	2.04E-09	4.52E-07
8/22/2001	0.39	2.12	0.53	1.98E-05	4.39E-03	2.01E-09	4.47E-07
8/23/2001	0.39	2.21	0.55	2.08E-05	4.62E-03	2.12E-09	4.70E-07
8/24/2001	0.39	2.12	0.53	1.97E-05	4.39E-03	2.01E-09	4.47E-07
8/25/2001	0.39	2.33	0.59	2.21E-05	4.92E-03	2.26E-09	5.01E-07
8/26/2001	0.39	2.41	0.62	2.31E-05	5.12E-03	2.35E-09	5.22E-07
8/27/2001	0.39	2.37	0.60	2.26E-05	5.02E-03	2.30E-09	5.12E-07
8/28/2001	0.39	2.40	0.61	2.29E-05	5.10E-03	2.34E-09	5.19E-07
8/29/2001	0.39	2.34	0.59	2.23E-05	4.95E-03	2.27E-09	5.04E-07
8/30/2001	0.39	2.36	0.60	2.25E-05	5.00E-03	2.29E-09	5.09E-07
8/31/2001	0.39	2.27	0.57	2.15E-05	4.77E-03	2.19E-09	4.86E-07
9/1/2001	0.39	2.18	0.55	2.04E-05	4.54E-03	2.08E-09	4.62E-07
9/2/2001	0.39	2.09	0.52	1.94E-05	4.31E-03	1.98E-09	4.39E-07
9/3/2001	0.39	1.98	0.48	1.81E-05	4.03E-03	1.85E-09	4.10E-07
9/4/2001	0.39	1.92	0.47	1.74E-05	3.88E-03	1.78E-09	3.95E-07
9/5/2001	0.56	1.89	0.40	1.51E-05	3.37E-03	1.54E-09	3.43E-07
9/6/2001	0.69	1.84	0.35	1.31E-05	2.91E-03	1.33E-09	2.96E-07
9/7/2001	0.81	2.03	0.37	1.39E-05	3.09E-03	1.41E-09	3.14E-07
9/8/2001	0.95	2.21	0.38	1.43E-05	3.19E-03	1.46E-09	3.25E-07
9/9/2001	1.13	2.40	0.39	1.45E-05	3.21E-03	1.47E-09	3.27E-07
9/10/2001	1.10	2.49	0.42	1.58E-05	3.52E-03	1.61E-09	3.58E-07

9/11/2001	1.02	2.40	0.42	1.57E-05	3.49E-03	1.60E-09	3.56E-07
9/12/2001	1.09	3.04	0.59	2.22E-05	4.94E-03	2.26E-09	5.03E-07
9/13/2001	1.92	3.80	0.57	2.14E-05	4.76E-03	2.18E-09	4.85E-07
9/14/2001	2.09	3.81	0.52	1.96E-05	4.36E-03	2.00E-09	4.44E-07
9/15/2001	1.63	2.98	0.41	1.54E-05	3.42E-03	1.57E-09	3.48E-07
9/16/2001	1.07	2.17	0.33	1.25E-05	2.78E-03	1.28E-09	2.83E-07
9/17/2001	0.97	1.96	0.30	1.13E-05	2.50E-03	1.15E-09	2.55E-07
9/18/2001	0.70	1.72	0.31	1.16E-05	2.58E-03	1.18E-09	2.63E-07
9/19/2001	0.97	1.79	0.25	9.32E-06	2.07E-03	9.49E-10	2.11E-07
9/20/2001	0.82	1.72	0.27	1.02E-05	2.27E-03	1.04E-09	2.32E-07
9/21/2001	1.24	2.21	0.29	1.10E-05	2.45E-03	1.12E-09	2.50E-07
9/22/2001	1.25	2.32	0.32	1.22E-05	2.71E-03	1.24E-09	2.76E-07
9/23/2001	1.26	2.48	0.37	1.39E-05	3.09E-03	1.41E-09	3.14E-07
9/24/2001	1.18	2.47	0.39	1.47E-05	3.26E-03	1.50E-09	3.32E-07
9/25/2001	1.22	2.90	0.51	1.91E-05	4.25E-03	1.95E-09	4.33E-07
9/26/2001	1.23	2.56	0.40	1.51E-05	3.37E-03	1.54E-09	3.43E-07
9/27/2001	1.08	2.49	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
9/28/2001	1.04	2.58	0.47	1.75E-05	3.90E-03	1.79E-09	3.97E-07
9/29/2001	1.18	2.71	0.47	1.74E-05	3.87E-03	1.78E-09	3.95E-07
9/30/2001	1.35	2.39	0.32	1.18E-05	2.63E-03	1.21E-09	2.68E-07
10/1/2001	0.95	1.88	0.28	1.06E-05	2.35E-03	1.08E-09	2.39E-07
10/2/2001	0.62	1.69	0.32	1.22E-05	2.71E-03	1.24E-09	2.76E-07
10/3/2001	0.50	1.60	0.33	1.25E-05	2.78E-03	1.28E-09	2.83E-07
10/4/2001	0.80	1.67	0.26	9.89E-06	2.20E-03	1.01E-09	2.24E-07
10/5/2001	1.05	1.88	0.25	9.43E-06	2.10E-03	9.61E-10	2.14E-07
10/6/2001	1.22	1.96	0.22	8.41E-06	1.87E-03	8.56E-10	1.90E-07
10/7/2001	1.52	2.51	0.30	1.13E-05	2.50E-03	1.15E-09	2.55E-07
10/8/2001	1.37	2.20	0.25	9.43E-06	2.10E-03	9.61E-10	2.14E-07
10/9/2001	1.83	2.80	0.29	1.10E-05	2.45E-03	1.12E-09	2.50E-07
10/10/2001	2.31	2.96	0.20	7.38E-06	1.64E-03	7.52E-10	1.67E-07
10/11/2001	2.20	3.15	0.29	1.08E-05	2.40E-03	1.10E-09	2.45E-07
10/12/2001	2.34	3.16	0.25	9.32E-06	2.07E-03	9.49E-10	2.11E-07
10/13/2001	2.01	3.50	0.45	1.70E-05	3.77E-03	1.73E-09	3.84E-07
10/14/2001	1.68	2.59	0.28	1.03E-05	2.30E-03	1.05E-09	2.34E-07
10/15/2001	1.65	2.61	0.29	1.09E-05	2.43E-03	1.11E-09	2.47E-07
10/16/2001	1.56	2.11	0.17	6.24E-06	1.39E-03	6.35E-10	1.41E-07
10/17/2001	1.38	2.41	0.31	1.17E-05	2.60E-03	1.19E-09	2.65E-07
10/18/2001	1.27	1.85	0.18	6.58E-06	1.46E-03	6.70E-10	1.49E-07
10/19/2001	1.17	1.84	0.20	7.61E-06	1.69E-03	7.75E-10	1.72E-07

10/20/2001	1.17	2.27	0.33	1.25E-05	2.78E-03	1.28E-09	2.83E-07
10/21/2001	1.23	2.49	0.38	1.43E-05	3.19E-03	1.46E-09	3.25E-07
10/22/2001	1.20	2.58	0.42	1.57E-05	3.49E-03	1.60E-09	3.56E-07
10/23/2001	1.22	2.93	0.52	1.95E-05	4.33E-03	1.98E-09	4.41E-07
10/24/2001	1.25	3.11	0.57	2.12E-05	4.71E-03	2.16E-09	4.80E-07
10/25/2001	1.12	3.08	0.60	2.23E-05	4.96E-03	2.28E-09	5.06E-07
10/26/2001	1.30	3.25	0.59	2.22E-05	4.94E-03	2.26E-09	5.03E-07
10/27/2001	0.93	2.68	0.53	1.99E-05	4.43E-03	2.03E-09	4.51E-07
10/28/2001	0.88	2.61	0.53	1.97E-05	4.38E-03	2.01E-09	4.46E-07
10/29/2001	0.64	2.22	0.48	1.80E-05	4.00E-03	1.83E-09	4.07E-07
10/30/2001	0.81	2.21	0.43	1.59E-05	3.54E-03	1.62E-09	3.61E-07
10/31/2001	0.77	2.28	0.46	1.72E-05	3.82E-03	1.75E-09	3.89E-07
11/1/2001	0.70	2.19	0.45	1.70E-05	3.77E-03	1.73E-09	3.84E-07
11/2/2001	0.95	2.28	0.40	1.51E-05	3.37E-03	1.54E-09	3.43E-07
11/3/2001	1.08	2.59	0.46	1.72E-05	3.82E-03	1.75E-09	3.89E-07
11/4/2001	1.18	2.72	0.47	1.75E-05	3.90E-03	1.79E-09	3.97E-07
11/5/2001	1.24	3.07	0.56	2.09E-05	4.63E-03	2.12E-09	4.72E-07
11/6/2001	1.00	2.92	0.58	2.19E-05	4.86E-03	2.23E-09	4.95E-07
11/7/2001	0.86	2.81	0.59	2.22E-05	4.94E-03	2.26E-09	5.03E-07
11/8/2001	0.85	2.94	0.64	2.38E-05	5.29E-03	2.43E-09	5.39E-07
11/9/2001	0.97	2.77	0.55	2.05E-05	4.56E-03	2.09E-09	4.64E-07
11/10/2001	0.85	2.58	0.53	1.97E-05	4.38E-03	2.01E-09	4.46E-07
11/11/2001	0.64	2.47	0.56	2.09E-05	4.63E-03	2.12E-09	4.72E-07
11/12/2001	0.59	2.02	0.43	1.63E-05	3.62E-03	1.66E-09	3.69E-07
11/13/2001	0.73	1.78	0.32	1.19E-05	2.65E-03	1.22E-09	2.70E-07
11/14/2001	1.29	1.83	0.16	6.12E-06	1.36E-03	6.24E-10	1.39E-07
11/15/2001	1.24	1.69	0.14	5.09E-06	1.13E-03	5.19E-10	1.15E-07
11/16/2001	1.06	1.67	0.18	6.92E-06	1.54E-03	7.05E-10	1.57E-07
11/17/2001	0.82	1.40	0.18	6.58E-06	1.46E-03	6.70E-10	1.49E-07
11/18/2001	0.66	1.43	0.23	8.75E-06	1.94E-03	8.91E-10	1.98E-07
11/19/2001	0.82	1.79	0.29	1.10E-05	2.45E-03	1.12E-09	2.50E-07
11/20/2001	0.63	1.93	0.40	1.48E-05	3.29E-03	1.51E-09	3.35E-07
11/21/2001	0.83	2.22	0.42	1.58E-05	3.52E-03	1.61E-09	3.58E-07
11/22/2001	0.89	2.34	0.44	1.65E-05	3.67E-03	1.68E-09	3.74E-07
11/23/2001	1.14	2.46	0.40	1.50E-05	3.34E-03	1.53E-09	3.40E-07
11/24/2001	1.18	2.61	0.43	1.63E-05	3.62E-03	1.66E-09	3.69E-07
11/25/2001	0.72	1.94	0.37	1.39E-05	3.09E-03	1.41E-09	3.14E-07
11/26/2001	0.82	1.85	0.31	1.17E-05	2.60E-03	1.19E-09	2.65E-07
11/27/2001	0.78	1.57	0.24	8.98E-06	1.99E-03	9.14E-10	2.03E-07

11/28/2001	1.10	1.66	0.17	6.35E-06	1.41E-03	6.47E-10	1.44E-07
11/29/2001	1.39	2.10	0.22	8.06E-06	1.79E-03	8.21E-10	1.83E-07
11/30/2001	0.68	1.74	0.32	1.21E-05	2.68E-03	1.23E-09	2.73E-07
12/1/2001	0.90	2.04	0.35	1.30E-05	2.88E-03	1.32E-09	2.94E-07
12/2/2001	0.87	2.06	0.36	1.35E-05	3.01E-03	1.38E-09	3.07E-07
12/3/2001	0.78	2.25	0.45	1.67E-05	3.72E-03	1.71E-09	3.79E-07
12/4/2001	0.85	2.60	0.53	1.99E-05	4.43E-03	2.03E-09	4.51E-07
12/5/2001	1.02	3.18	0.66	2.46E-05	5.47E-03	2.51E-09	5.57E-07
12/6/2001	0.92	3.52	0.79	2.96E-05	6.59E-03	3.02E-09	6.71E-07
12/7/2001	0.84	3.94	0.94	3.54E-05	7.86E-03	3.60E-09	8.00E-07
12/8/2001	0.71	4.19	1.06	3.97E-05	8.82E-03	4.04E-09	8.99E-07
12/9/2001	0.62	4.37	1.14	4.28E-05	9.51E-03	4.36E-09	9.68E-07
12/10/2001	0.48	4.51	1.23	4.60E-05	1.02E-02	4.68E-09	1.04E-06
12/11/2001	0.49	4.50	1.22	4.58E-05	1.02E-02	4.66E-09	1.04E-06
12/12/2001	0.81	4.54	1.14	4.26E-05	9.46E-03	4.33E-09	9.63E-07
12/13/2001	0.80	4.56	1.14	4.29E-05	9.53E-03	4.37E-09	9.71E-07
12/14/2001	0.82	4.68	1.18	4.40E-05	9.79E-03	4.49E-09	9.97E-07
12/15/2001	0.93	4.76	1.17	4.37E-05	9.71E-03	4.45E-09	9.89E-07
12/16/2001	1.15	5.01	1.18	4.40E-05	9.79E-03	4.49E-09	9.97E-07
12/17/2001	1.26	5.22	1.21	4.52E-05	1.00E-02	4.60E-09	1.02E-06
12/18/2001	0.71	5.10	1.34	5.01E-05	1.11E-02	5.10E-09	1.13E-06
12/19/2001	0.67	5.25	1.39	5.23E-05	1.16E-02	5.32E-09	1.18E-06
12/20/2001	0.39	5.25	1.48	5.55E-05	1.23E-02	5.65E-09	1.26E-06
12/21/2001	0.63	5.57	1.50	5.64E-05	1.25E-02	5.74E-09	1.28E-06
12/22/2001	0.68	5.88	1.58	5.93E-05	1.32E-02	6.04E-09	1.34E-06
12/23/2001	1.07	6.46	1.64	6.15E-05	1.37E-02	6.27E-09	1.39E-06
12/24/2001	0.58	6.34	1.75	6.57E-05	1.46E-02	6.70E-09	1.49E-06
12/25/2001	0.47	6.42	1.81	6.79E-05	1.51E-02	6.92E-09	1.54E-06
12/26/2001	0.34	6.45	1.86	6.97E-05	1.55E-02	7.10E-09	1.58E-06
12/27/2001	-0.20	6.36	2.00	7.49E-05	1.66E-02	7.63E-09	1.69E-06
12/28/2001	0.27	6.51	1.90	7.12E-05	1.58E-02	7.25E-09	1.61E-06
12/29/2001	0.61	6.72	1.86	6.97E-05	1.55E-02	7.10E-09	1.58E-06
12/30/2001	0.85	6.78	1.81	6.77E-05	1.50E-02	6.89E-09	1.53E-06
12/31/2001	0.97	6.81	1.78	6.66E-05	1.48E-02	6.79E-09	1.51E-06
1/1/2002	1.03	6.91	1.79	6.71E-05	1.49E-02	6.84E-09	1.52E-06
1/2/2002	1.14	7.18	1.84	6.89E-05	1.53E-02	7.02E-09	1.56E-06
1/3/2002	0.38	6.72	1.93	7.24E-05	1.61E-02	7.37E-09	1.64E-06
1/4/2002	0.08	6.41	1.93	7.22E-05	1.61E-02	7.36E-09	1.64E-06
1/5/2002	0.27	6.27	1.83	6.85E-05	1.52E-02	6.98E-09	1.55E-06

1/6/2002	0.71	6.32	1.71	6.40E-05	1.42E-02	6.52E-09	1.45E-06
1/7/2002	-0.19	5.62	1.77	6.63E-05	1.47E-02	6.75E-09	1.50E-06
1/8/2002	-0.32	5.23	1.69	6.33E-05	1.41E-02	6.45E-09	1.43E-06
1/9/2002	-0.40	4.96	1.63	6.12E-05	1.36E-02	6.23E-09	1.38E-06
1/10/2002	-0.14	4.73	1.48	5.56E-05	1.23E-02	5.66E-09	1.26E-06
1/11/2002	0.14	4.43	1.31	4.89E-05	1.09E-02	4.99E-09	1.11E-06
1/12/2002	0.25	4.10	1.17	4.39E-05	9.76E-03	4.47E-09	9.94E-07
1/13/2002	0.33	3.82	1.06	3.98E-05	8.85E-03	4.06E-09	9.01E-07
1/14/2002	0.61	3.80	0.97	3.64E-05	8.09E-03	3.71E-09	8.24E-07
1/15/2002	0.53	3.36	0.86	3.23E-05	7.17E-03	3.29E-09	7.31E-07
1/16/2002	0.42	3.19	0.84	3.16E-05	7.02E-03	3.22E-09	7.15E-07
1/17/2002	0.36	2.90	0.77	2.90E-05	6.44E-03	2.95E-09	6.56E-07
1/18/2002	0.38	2.75	0.72	2.70E-05	6.00E-03	2.75E-09	6.12E-07
1/19/2002	0.36	2.65	0.70	2.61E-05	5.80E-03	2.66E-09	5.91E-07
1/20/2002	0.21	2.49	0.69	2.60E-05	5.78E-03	2.65E-09	5.88E-07
1/21/2002	0.38	2.54	0.66	2.46E-05	5.47E-03	2.51E-09	5.57E-07
1/22/2002	0.19	2.15	0.60	2.23E-05	4.96E-03	2.28E-09	5.06E-07
1/23/2002	0.37	2.17	0.55	2.05E-05	4.56E-03	2.09E-09	4.64E-07
1/24/2002	0.38	2.11	0.53	1.97E-05	4.38E-03	2.01E-09	4.46E-07
1/25/2002	0.43	2.19	0.54	2.01E-05	4.46E-03	2.04E-09	4.54E-07
1/26/2002	0.46	2.16	0.52	1.94E-05	4.30E-03	1.97E-09	4.38E-07
1/27/2002	0.51	2.29	0.54	2.03E-05	4.51E-03	2.07E-09	4.59E-07
1/28/2002	0.68	2.60	0.58	2.19E-05	4.86E-03	2.23E-09	4.95E-07
1/29/2002	0.70	2.91	0.67	2.52E-05	5.60E-03	2.57E-09	5.70E-07
1/30/2002	0.83	3.18	0.72	2.68E-05	5.95E-03	2.73E-09	6.06E-07
1/31/2002	0.91	3.67	0.84	3.15E-05	6.99E-03	3.21E-09	7.12E-07
2/1/2002	0.59	4.03	1.05	3.92E-05	8.72E-03	4.00E-09	8.88E-07
2/2/2002	0.30	4.32	1.22	4.59E-05	1.02E-02	4.67E-09	1.04E-06
2/3/2002	0.11	4.58	1.36	5.10E-05	1.13E-02	5.20E-09	1.15E-06
2/4/2002	-0.08	4.66	1.44	5.41E-05	1.20E-02	5.51E-09	1.22E-06
2/5/2002	0.27	5.08	1.46	5.49E-05	1.22E-02	5.59E-09	1.24E-06
2/6/2002	1.41	5.77	1.33	4.97E-05	1.11E-02	5.07E-09	1.13E-06
2/7/2002	0.55	5.52	1.51	5.67E-05	1.26E-02	5.78E-09	1.28E-06
2/8/2002	0.40	5.73	1.62	6.08E-05	1.35E-02	6.20E-09	1.38E-06
2/9/2002	0.29	6.00	1.74	6.52E-05	1.45E-02	6.64E-09	1.48E-06
2/10/2002	0.45	6.22	1.76	6.59E-05	1.46E-02	6.71E-09	1.49E-06
2/11/2002	0.11	6.19	1.85	6.94E-05	1.54E-02	7.07E-09	1.57E-06
2/12/2002	0.04	6.29	1.90	7.13E-05	1.59E-02	7.27E-09	1.61E-06
2/13/2002	0.13	6.27	1.87	7.01E-05	1.56E-02	7.14E-09	1.59E-06

2/14/2002	0.26	6.20	1.81	6.78E-05	1.51E-02	6.91E-09	1.53E-06
2/15/2002	0.25	6.23	1.82	6.82E-05	1.52E-02	6.95E-09	1.54E-06
2/16/2002	0.20	6.12	1.80	6.76E-05	1.50E-02	6.88E-09	1.53E-06
2/17/2002	-0.14	5.93	1.85	6.93E-05	1.54E-02	7.06E-09	1.57E-06
2/18/2002	-0.12	5.73	1.78	6.68E-05	1.48E-02	6.80E-09	1.51E-06
2/19/2002	0.62	5.52	1.49	5.59E-05	1.24E-02	5.70E-09	1.27E-06
2/20/2002	0.98	5.48	1.37	5.13E-05	1.14E-02	5.23E-09	1.16E-06
2/21/2002	0.76	5.07	1.31	4.92E-05	1.09E-02	5.01E-09	1.11E-06
2/22/2002	0.76	4.77	1.22	4.58E-05	1.02E-02	4.66E-09	1.04E-06
2/23/2002	0.54	4.48	1.20	4.50E-05	9.99E-03	4.58E-09	1.02E-06
2/24/2002	0.36	4.19	1.17	4.37E-05	9.71E-03	4.45E-09	9.89E-07
2/25/2002	0.49	4.06	1.09	4.07E-05	9.05E-03	4.15E-09	9.22E-07
2/26/2002	0.59	4.09	1.07	3.99E-05	8.87E-03	4.07E-09	9.04E-07
2/27/2002	-0.44	3.86	1.31	4.91E-05	1.09E-02	5.00E-09	1.11E-06
2/28/2002	0.15	3.78	1.11	4.14E-05	9.20E-03	4.22E-09	9.37E-07
3/1/2002	0.81	3.88	0.93	3.50E-05	7.78E-03	3.57E-09	7.93E-07
3/2/2002	1.86	4.53	0.81	3.04E-05	6.77E-03	3.10E-09	6.89E-07
3/3/2002	1.13	3.91	0.85	3.17E-05	7.05E-03	3.23E-09	7.18E-07
3/4/2002	0.16	3.15	0.91	3.41E-05	7.58E-03	3.47E-09	7.72E-07
3/5/2002	-0.41	2.58	0.91	3.41E-05	7.58E-03	3.47E-09	7.72E-07
3/6/2002	-0.17	2.48	0.81	3.02E-05	6.72E-03	3.08E-09	6.84E-07
3/7/2002	0.17	2.59	0.74	2.76E-05	6.13E-03	2.81E-09	6.25E-07
3/8/2002	0.46	2.66	0.67	2.51E-05	5.57E-03	2.55E-09	5.68E-07
3/9/2002	0.77	2.76	0.61	2.27E-05	5.04E-03	2.31E-09	5.13E-07
3/10/2002	0.59	2.80	0.67	2.52E-05	5.60E-03	2.57E-09	5.70E-07
3/11/2002	0.74	2.71	0.60	2.25E-05	4.99E-03	2.29E-09	5.08E-07
3/12/2002	0.85	2.90	0.62	2.34E-05	5.19E-03	2.38E-09	5.29E-07
3/13/2002	0.27	2.88	0.79	2.98E-05	6.61E-03	3.03E-09	6.74E-07
3/14/2002	0.64	2.93	0.70	2.61E-05	5.80E-03	2.66E-09	5.91E-07
3/15/2002	0.90	3.10	0.67	2.51E-05	5.57E-03	2.55E-09	5.68E-07
3/16/2002	0.80	3.20	0.73	2.74E-05	6.08E-03	2.79E-09	6.19E-07
3/17/2002	0.77	3.27	0.76	2.85E-05	6.33E-03	2.90E-09	6.45E-07
3/18/2002	0.75	3.40	0.81	3.02E-05	6.72E-03	3.08E-09	6.84E-07
3/19/2002	0.72	3.40	0.82	3.06E-05	6.79E-03	3.11E-09	6.92E-07
3/20/2002	0.86	3.64	0.85	3.17E-05	7.05E-03	3.23E-09	7.18E-07
3/21/2002	0.69	3.41	0.83	3.10E-05	6.89E-03	3.16E-09	7.02E-07
3/22/2002	0.49	3.55	0.93	3.49E-05	7.76E-03	3.56E-09	7.90E-07
3/23/2002	0.46	3.68	0.98	3.67E-05	8.16E-03	3.74E-09	8.31E-07
3/24/2002	0.52	4.01	1.06	3.98E-05	8.85E-03	4.06E-09	9.01E-07

3/25/2002	0.92	4.66	1.14	4.27E-05	9.48E-03	4.35E-09	9.66E-07
3/26/2002	0.99	5.25	1.30	4.86E-05	1.08E-02	4.95E-09	1.10E-06
3/27/2002	0.70	5.70	1.52	5.71E-05	1.27E-02	5.81E-09	1.29E-06
3/28/2002	0.73	6.11	1.64	6.14E-05	1.36E-02	6.25E-09	1.39E-06
3/29/2002	0.76	6.42	1.72	6.46E-05	1.44E-02	6.58E-09	1.46E-06
3/30/2002	0.49	6.54	1.84	6.90E-05	1.53E-02	7.03E-09	1.56E-06
3/31/2002	0.69	6.70	1.83	6.86E-05	1.52E-02	6.99E-09	1.55E-06
4/1/2002	0.63	6.64	1.83	6.86E-05	1.52E-02	6.99E-09	1.55E-06
4/2/2002	0.63	6.77	1.87	7.01E-05	1.56E-02	7.14E-09	1.59E-06
4/3/2002	0.70	6.81	1.86	6.97E-05	1.55E-02	7.10E-09	1.58E-06
4/4/2002	0.59	6.81	1.89	7.10E-05	1.58E-02	7.23E-09	1.61E-06
4/5/2002	0.50	6.89	1.95	7.29E-05	1.62E-02	7.43E-09	1.65E-06
4/6/2002	0.50	6.98	1.97	7.40E-05	1.64E-02	7.53E-09	1.67E-06
4/7/2002	0.56	7.14	2.00	7.51E-05	1.67E-02	7.65E-09	1.70E-06
4/8/2002	1.15	7.48	1.93	7.22E-05	1.61E-02	7.36E-09	1.64E-06
4/9/2002	1.73	7.79	1.85	6.92E-05	1.54E-02	7.05E-09	1.57E-06
4/10/2002	1.46	7.60	1.87	7.01E-05	1.56E-02	7.14E-09	1.59E-06
4/11/2002	1.16	7.64	1.97	7.40E-05	1.64E-02	7.53E-09	1.67E-06
4/12/2002	1.30	7.72	1.96	7.33E-05	1.63E-02	7.46E-09	1.66E-06
4/13/2002	1.19	7.70	1.98	7.43E-05	1.65E-02	7.57E-09	1.68E-06
4/14/2002	1.18	7.72	1.99	7.46E-05	1.66E-02	7.60E-09	1.69E-06
4/15/2002	0.81	7.60	2.07	7.75E-05	1.72E-02	7.89E-09	1.75E-06
4/16/2002	0.72	7.53	2.07	7.77E-05	1.73E-02	7.92E-09	1.76E-06
4/17/2002	0.63	7.42	2.07	7.75E-05	1.72E-02	7.89E-09	1.75E-06
4/18/2002	0.53	7.29	2.06	7.72E-05	1.71E-02	7.86E-09	1.75E-06
4/19/2002	0.42	7.09	2.03	7.61E-05	1.69E-02	7.75E-09	1.72E-06
4/20/2002	0.40	6.93	1.99	7.45E-05	1.66E-02	7.59E-09	1.69E-06
4/21/2002	0.29	6.87	2.00	7.51E-05	1.67E-02	7.65E-09	1.70E-06
4/22/2002	0.16	6.73	2.00	7.50E-05	1.67E-02	7.64E-09	1.70E-06
4/23/2002	0.49	6.76	1.91	7.16E-05	1.59E-02	7.29E-09	1.62E-06
4/24/2002	0.65	6.69	1.84	6.89E-05	1.53E-02	7.02E-09	1.56E-06
4/25/2002	0.47	6.69	1.89	7.10E-05	1.58E-02	7.23E-09	1.61E-06
4/26/2002	0.85	6.72	1.79	6.70E-05	1.49E-02	6.82E-09	1.52E-06
4/27/2002	0.97	6.66	1.73	6.49E-05	1.44E-02	6.61E-09	1.47E-06
4/28/2002	0.84	6.58	1.75	6.55E-05	1.46E-02	6.67E-09	1.48E-06
4/29/2002	0.41	6.39	1.82	6.82E-05	1.52E-02	6.95E-09	1.54E-06
4/30/2002	0.26	6.37	1.86	6.97E-05	1.55E-02	7.10E-09	1.58E-06
5/1/2002	0.06	6.26	1.89	7.08E-05	1.57E-02	7.21E-09	1.60E-06
5/2/2002	0.07	6.30	1.90	7.11E-05	1.58E-02	7.24E-09	1.61E-06

5/3/2002	0.20	6.26	1.85	6.92E-05	1.54E-02	7.05E-09	1.57E-06
5/4/2002	0.16	6.21	1.84	6.90E-05	1.53E-02	7.03E-09	1.56E-06
5/5/2002	0.10	6.21	1.86	6.97E-05	1.55E-02	7.10E-09	1.58E-06
5/6/2002	0.41	6.35	1.81	6.78E-05	1.51E-02	6.91E-09	1.53E-06
5/7/2002	0.54	6.48	1.81	6.78E-05	1.51E-02	6.91E-09	1.53E-06
5/8/2002	0.72	6.69	1.82	6.81E-05	1.51E-02	6.94E-09	1.54E-06
5/9/2002	0.69	6.72	1.84	6.88E-05	1.53E-02	7.01E-09	1.56E-06
5/10/2002	0.73	6.67	1.81	6.78E-05	1.51E-02	6.91E-09	1.53E-06
5/11/2002	0.89	6.70	1.77	6.63E-05	1.47E-02	6.75E-09	1.50E-06
5/12/2002	0.94	6.75	1.77	6.63E-05	1.47E-02	6.75E-09	1.50E-06
5/13/2002	0.80	6.69	1.79	6.72E-05	1.49E-02	6.85E-09	1.52E-06
5/14/2002	0.60	6.61	1.83	6.86E-05	1.52E-02	6.99E-09	1.55E-06
5/15/2002	0.90	6.71	1.77	6.63E-05	1.47E-02	6.75E-09	1.50E-06
5/16/2002	0.92	6.65	1.75	6.54E-05	1.45E-02	6.66E-09	1.48E-06
5/17/2002	0.85	6.61	1.75	6.57E-05	1.46E-02	6.70E-09	1.49E-06
5/18/2002	0.68	6.66	1.82	6.82E-05	1.52E-02	6.95E-09	1.54E-06
5/19/2002	0.90	6.77	1.79	6.70E-05	1.49E-02	6.82E-09	1.52E-06
5/20/2002	0.98	6.90	1.80	6.76E-05	1.50E-02	6.88E-09	1.53E-06
5/21/2002	0.85	6.96	1.86	6.97E-05	1.55E-02	7.10E-09	1.58E-06
5/22/2002	0.83	6.96	1.87	7.00E-05	1.55E-02	7.13E-09	1.58E-06
5/23/2002	0.88	7.12	1.90	7.12E-05	1.58E-02	7.25E-09	1.61E-06
5/24/2002	1.11	7.33	1.89	7.10E-05	1.58E-02	7.23E-09	1.61E-06
5/25/2002	1.16	7.42	1.91	7.14E-05	1.59E-02	7.28E-09	1.62E-06
5/26/2002	1.10	7.50	1.95	7.30E-05	1.62E-02	7.44E-09	1.65E-06
5/27/2002	1.04	7.59	2.00	7.48E-05	1.66E-02	7.62E-09	1.69E-06
5/28/2002	0.94	7.60	2.03	7.60E-05	1.69E-02	7.74E-09	1.72E-06
5/29/2002	0.99	7.67	2.03	7.62E-05	1.69E-02	7.77E-09	1.73E-06
5/30/2002	1.00	7.72	2.05	7.67E-05	1.70E-02	7.81E-09	1.74E-06
5/31/2002	1.05	7.77	2.05	7.67E-05	1.70E-02	7.81E-09	1.74E-06
6/1/2002	0.82	7.85	2.14	8.02E-05	1.78E-02	8.17E-09	1.82E-06
6/2/2002	0.57	7.96	2.25	8.44E-05	1.87E-02	8.59E-09	1.91E-06
6/3/2002	0.45	7.99	2.30	8.61E-05	1.91E-02	8.77E-09	1.95E-06
6/4/2002	0.45	8.03	2.31	8.65E-05	1.92E-02	8.81E-09	1.96E-06
6/5/2002	0.67	8.17	2.28	8.56E-05	1.90E-02	8.72E-09	1.94E-06
6/6/2002	0.86	8.22	2.24	8.40E-05	1.87E-02	8.56E-09	1.90E-06
6/7/2002	0.79	8.20	2.26	8.46E-05	1.88E-02	8.62E-09	1.91E-06
6/8/2002	0.71	8.21	2.28	8.56E-05	1.90E-02	8.72E-09	1.94E-06
6/9/2002	0.81	8.16	2.24	8.39E-05	1.86E-02	8.55E-09	1.90E-06
6/10/2002	1.11	8.21	2.16	8.10E-05	1.80E-02	8.26E-09	1.83E-06

6/11/2002	1.07	8.04	2.12	7.96E-05	1.77E-02	8.10E-09	1.80E-06
6/12/2002	1.01	7.90	2.10	7.86E-05	1.75E-02	8.01E-09	1.78E-06
6/13/2002	0.78	7.70	2.11	7.90E-05	1.76E-02	8.05E-09	1.79E-06
6/14/2002	0.58	7.50	2.11	7.90E-05	1.76E-02	8.05E-09	1.79E-06
6/15/2002	0.47	7.31	2.08	7.81E-05	1.73E-02	7.95E-09	1.77E-06
6/16/2002	0.62	7.10	1.97	7.40E-05	1.64E-02	7.53E-09	1.67E-06
6/17/2002	0.75	6.91	1.88	7.03E-05	1.56E-02	7.16E-09	1.59E-06
6/18/2002	1.19	6.84	1.72	6.45E-05	1.43E-02	6.57E-09	1.46E-06
6/19/2002	1.51	6.77	1.60	6.00E-05	1.33E-02	6.11E-09	1.36E-06
6/20/2002	1.68	6.69	1.53	5.72E-05	1.27E-02	5.82E-09	1.29E-06
6/21/2002	1.74	6.61	1.48	5.56E-05	1.23E-02	5.66E-09	1.26E-06
6/22/2002	2.11	6.72	1.40	5.26E-05	1.17E-02	5.36E-09	1.19E-06
6/23/2002	2.22	6.52	1.31	4.91E-05	1.09E-02	5.00E-09	1.11E-06
6/24/2002	0.77	6.32	1.69	6.33E-05	1.41E-02	6.45E-09	1.43E-06
6/25/2002	0.77	6.06	1.61	6.04E-05	1.34E-02	6.15E-09	1.37E-06
6/26/2002	0.76	5.86	1.55	5.82E-05	1.29E-02	5.93E-09	1.32E-06
6/27/2002	0.75	5.59	1.47	5.52E-05	1.23E-02	5.62E-09	1.25E-06
6/28/2002	0.75	5.34	1.40	5.24E-05	1.16E-02	5.34E-09	1.19E-06
6/29/2002	0.74	5.13	1.34	5.01E-05	1.11E-02	5.10E-09	1.13E-06
6/30/2002	0.73	4.93	1.28	4.79E-05	1.06E-02	4.88E-09	1.08E-06
7/1/2002	0.73	4.64	1.19	4.46E-05	9.92E-03	4.55E-09	1.01E-06
7/2/2002	0.72	4.34	1.10	4.13E-05	9.18E-03	4.21E-09	9.35E-07
7/3/2002	0.63	3.96	1.01	3.80E-05	8.44E-03	3.87E-09	8.60E-07
7/4/2002	0.58	3.68	0.94	3.54E-05	7.86E-03	3.60E-09	8.00E-07
7/5/2002	0.56	3.39	0.86	3.23E-05	7.17E-03	3.29E-09	7.31E-07
7/6/2002	0.69	3.28	0.79	2.95E-05	6.56E-03	3.01E-09	6.69E-07
7/7/2002	0.87	3.34	0.75	2.82E-05	6.26E-03	2.87E-09	6.38E-07
7/8/2002	0.93	3.29	0.72	2.69E-05	5.98E-03	2.74E-09	6.09E-07
7/9/2002	1.06	3.33	0.69	2.59E-05	5.75E-03	2.64E-09	5.86E-07
7/10/2002	1.11	3.37	0.69	2.58E-05	5.73E-03	2.62E-09	5.83E-07
7/11/2002	1.25	3.26	0.61	2.29E-05	5.09E-03	2.33E-09	5.19E-07
7/12/2002	1.15	3.09	0.59	2.21E-05	4.91E-03	2.25E-09	5.00E-07
7/13/2002	1.04	2.91	0.57	2.13E-05	4.74E-03	2.17E-09	4.82E-07
7/14/2002	0.73	2.66	0.59	2.20E-05	4.89E-03	2.24E-09	4.98E-07
7/15/2002	0.47	2.45	0.60	2.26E-05	5.01E-03	2.30E-09	5.11E-07
7/16/2002	0.40	2.35	0.59	2.22E-05	4.94E-03	2.26E-09	5.03E-07
7/17/2002	0.49	2.41	0.58	2.19E-05	4.86E-03	2.23E-09	4.95E-07
7/18/2002	0.49	2.43	0.59	2.21E-05	4.91E-03	2.25E-09	5.00E-07
7/19/2002	0.63	2.63	0.61	2.28E-05	5.07E-03	2.32E-09	5.16E-07

7/20/2002	0.64	2.76	0.64	2.42E-05	5.37E-03	2.46E-09	5.47E-07
7/21/2002	0.59	2.74	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/22/2002	0.65	2.71	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/23/2002	0.59	2.69	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/24/2002	0.46	2.67	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/25/2002	0.45	2.65	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/26/2002	0.61	2.62	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/27/2002	0.62	2.60	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/28/2002	0.55	2.58	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/29/2002	0.68	2.55	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/30/2002	0.71	2.53	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
7/31/2002	0.79	2.51	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
8/1/2002	0.63	2.49	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
8/2/2002	0.66	2.46	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
8/3/2002	1.07	2.44	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
8/4/2002	1.46	2.42	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
8/5/2002	1.85	2.40	0.65	2.45E-05	5.45E-03	2.50E-09	5.55E-07
8/6/2002	1.36	2.40	0.32	1.18E-05	2.63E-03	1.21E-09	2.68E-07
8/7/2002	1.22	2.74	0.46	1.73E-05	3.85E-03	1.76E-09	3.92E-07
8/8/2002	0.95	2.32	0.42	1.56E-05	3.47E-03	1.59E-09	3.53E-07
8/9/2002	1.50	2.48	0.30	1.11E-05	2.48E-03	1.14E-09	2.52E-07
8/10/2002	1.79	2.37	0.18	6.58E-06	1.46E-03	6.70E-10	1.49E-07
8/11/2002	1.95	2.66	0.22	8.06E-06	1.79E-03	8.21E-10	1.83E-07
8/12/2002	1.74	2.49	0.23	8.52E-06	1.89E-03	8.68E-10	1.93E-07
8/13/2002	1.50	2.58	0.33	1.23E-05	2.73E-03	1.25E-09	2.78E-07
8/14/2002	1.34	2.64	0.40	1.48E-05	3.29E-03	1.51E-09	3.35E-07
8/15/2002	1.38	2.89	0.46	1.72E-05	3.82E-03	1.75E-09	3.89E-07
8/16/2002	1.46	2.83	0.42	1.56E-05	3.47E-03	1.59E-09	3.53E-07
8/17/2002	1.50	3.05	0.47	1.77E-05	3.92E-03	1.80E-09	4.00E-07
8/18/2002	1.42	2.98	0.47	1.78E-05	3.95E-03	1.81E-09	4.02E-07
8/19/2002	1.32	2.92	0.49	1.82E-05	4.05E-03	1.86E-09	4.13E-07
8/20/2002	1.30	2.71	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
8/21/2002	1.18	2.50	0.40	1.50E-05	3.34E-03	1.53E-09	3.40E-07
8/22/2002	1.15	2.27	0.34	1.27E-05	2.83E-03	1.30E-09	2.89E-07
8/23/2002	1.07	2.07	0.30	1.14E-05	2.53E-03	1.16E-09	2.57E-07
8/24/2002	0.97	2.13	0.35	1.32E-05	2.93E-03	1.34E-09	2.99E-07
8/25/2002	0.86	2.13	0.39	1.45E-05	3.21E-03	1.47E-09	3.27E-07
8/26/2002	0.99	2.21	0.37	1.39E-05	3.09E-03	1.41E-09	3.14E-07
8/27/2002	0.83	2.22	0.42	1.58E-05	3.52E-03	1.61E-09	3.58E-07

8/28/2002	0.92	2.37	0.44	1.65E-05	3.67E-03	1.68E-09	3.74E-07
8/29/2002	1.03	2.43	0.43	1.59E-05	3.54E-03	1.62E-09	3.61E-07
8/30/2002	1.28	2.59	0.40	1.49E-05	3.31E-03	1.52E-09	3.38E-07
8/31/2002	1.55	2.78	0.37	1.40E-05	3.11E-03	1.43E-09	3.17E-07
9/1/2002	1.90	3.06	0.35	1.32E-05	2.93E-03	1.34E-09	2.99E-07
9/2/2002	1.95	3.21	0.38	1.43E-05	3.19E-03	1.46E-09	3.25E-07
9/3/2002	1.85	3.30	0.44	1.65E-05	3.67E-03	1.68E-09	3.74E-07
9/4/2002	1.77	3.20	0.43	1.63E-05	3.62E-03	1.66E-09	3.69E-07
9/5/2002	1.66	2.93	0.39	1.45E-05	3.21E-03	1.47E-09	3.27E-07
9/6/2002	1.59	2.89	0.40	1.48E-05	3.29E-03	1.51E-09	3.35E-07
9/7/2002	2.36	3.22	0.26	9.78E-06	2.17E-03	9.96E-10	2.21E-07
9/8/2002	2.53	3.15	0.19	7.04E-06	1.56E-03	7.17E-10	1.59E-07
9/9/2002	2.27	2.92	0.20	7.38E-06	1.64E-03	7.52E-10	1.67E-07
9/10/2002	2.09	2.90	0.25	9.20E-06	2.05E-03	9.38E-10	2.08E-07
9/11/2002	1.79	2.90	0.34	1.26E-05	2.81E-03	1.29E-09	2.86E-07
9/12/2002	1.67	3.08	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
9/13/2002	2.15	3.63	0.45	1.69E-05	3.75E-03	1.72E-09	3.82E-07
9/14/2002	2.53	4.05	0.46	1.73E-05	3.85E-03	1.76E-09	3.92E-07
9/15/2002	1.78	3.10	0.40	1.50E-05	3.34E-03	1.53E-09	3.40E-07
9/16/2002	1.38	2.95	0.48	1.79E-05	3.97E-03	1.82E-09	4.05E-07
9/17/2002	1.20	2.61	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
9/18/2002	1.06	2.50	0.44	1.64E-05	3.64E-03	1.67E-09	3.71E-07
9/19/2002	1.02	2.33	0.40	1.49E-05	3.31E-03	1.52E-09	3.38E-07
9/20/2002	1.22	2.24	0.31	1.16E-05	2.58E-03	1.18E-09	2.63E-07
9/21/2002	1.29	2.17	0.27	1.00E-05	2.22E-03	1.02E-09	2.26E-07
9/22/2002	1.87	2.58	0.22	8.06E-06	1.79E-03	8.21E-10	1.83E-07
9/23/2002	2.69	3.31	0.19	7.04E-06	1.56E-03	7.17E-10	1.59E-07
9/24/2002	3.30	3.70	0.12	4.52E-06	1.01E-03	4.61E-10	1.02E-07
9/25/2002	4.66	4.58	-0.03	-9.59E-07	-2.13E-04	-9.77E-11	-2.17E-08
9/26/2002	5.12	5.55	0.13	4.87E-06	1.08E-03	4.96E-10	1.10E-07
9/27/2002	3.46	3.43	-0.01	-3.88E-07	-8.63E-05	-3.96E-11	-8.79E-09
9/28/2002	2.60	3.30	0.21	7.95E-06	1.77E-03	8.10E-10	1.80E-07
9/29/2002	2.13	3.07	0.29	1.07E-05	2.38E-03	1.09E-09	2.42E-07
9/30/2002	1.93	3.18	0.38	1.42E-05	3.16E-03	1.45E-09	3.22E-07
10/1/2002	1.83	3.04	0.37	1.38E-05	3.06E-03	1.40E-09	3.12E-07
10/2/2002	2.19	3.44	0.38	1.42E-05	3.16E-03	1.45E-09	3.22E-07
10/3/2002	5.26	5.85	0.18	6.69E-06	1.49E-03	6.82E-10	1.51E-07
10/4/2002	3.40	3.55	0.04	1.67E-06	3.71E-04	1.70E-10	3.77E-08
10/5/2002	2.30	2.98	0.21	7.72E-06	1.72E-03	7.86E-10	1.75E-07

10/6/2002	1.77	2.68	0.28	1.03E-05	2.30E-03	1.05E-09	2.34E-07
10/7/2002	1.43	2.79	0.41	1.55E-05	3.44E-03	1.58E-09	3.51E-07
10/8/2002	1.71	3.05	0.41	1.53E-05	3.39E-03	1.55E-09	3.45E-07
10/9/2002	1.85	3.28	0.43	1.63E-05	3.62E-03	1.66E-09	3.69E-07
10/10/2002	2.05	3.62	0.48	1.79E-05	3.97E-03	1.82E-09	4.05E-07
10/11/2002	1.83	3.67	0.56	2.10E-05	4.66E-03	2.14E-09	4.75E-07
10/12/2002	1.76	3.75	0.61	2.27E-05	5.04E-03	2.31E-09	5.13E-07
10/13/2002	1.62	3.53	0.58	2.18E-05	4.84E-03	2.22E-09	4.93E-07
10/14/2002	1.68	3.90	0.68	2.53E-05	5.62E-03	2.58E-09	5.73E-07
10/15/2002	1.71	3.81	0.64	2.39E-05	5.32E-03	2.44E-09	5.42E-07
10/16/2002	1.38	3.57	0.67	2.50E-05	5.55E-03	2.54E-09	5.65E-07
10/17/2002	1.38	3.24	0.57	2.12E-05	4.71E-03	2.16E-09	4.80E-07
10/18/2002	1.03	2.66	0.50	1.86E-05	4.13E-03	1.89E-09	4.20E-07
10/19/2002	1.22	2.75	0.47	1.74E-05	3.87E-03	1.78E-09	3.95E-07
10/20/2002	1.16	2.55	0.42	1.58E-05	3.52E-03	1.61E-09	3.58E-07
10/21/2002	1.22	2.63	0.43	1.61E-05	3.57E-03	1.64E-09	3.63E-07
10/22/2002	1.41	2.67	0.38	1.43E-05	3.19E-03	1.46E-09	3.25E-07
10/23/2002	1.58	2.93	0.41	1.54E-05	3.42E-03	1.57E-09	3.48E-07
10/24/2002	1.59	3.01	0.43	1.62E-05	3.59E-03	1.65E-09	3.66E-07
10/25/2002	1.79	3.31	0.46	1.73E-05	3.85E-03	1.76E-09	3.92E-07
10/26/2002	1.68	3.41	0.53	1.97E-05	4.38E-03	2.01E-09	4.46E-07
10/27/2002	1.77	3.47	0.52	1.94E-05	4.30E-03	1.97E-09	4.38E-07
10/28/2002	1.63	3.51	0.57	2.14E-05	4.76E-03	2.18E-09	4.85E-07
10/29/2002	1.52	3.59	0.63	2.36E-05	5.24E-03	2.40E-09	5.34E-07
10/30/2002	1.45	3.73	0.69	2.60E-05	5.78E-03	2.65E-09	5.88E-07
10/31/2002	1.56	3.58	0.61	2.30E-05	5.12E-03	2.35E-09	5.21E-07
11/1/2002	1.70	3.37	0.51	1.90E-05	4.23E-03	1.94E-09	4.31E-07
11/2/2002	1.67	3.09	0.43	1.62E-05	3.59E-03	1.65E-09	3.66E-07
11/3/2002	1.48	2.88	0.43	1.59E-05	3.54E-03	1.62E-09	3.61E-07
11/4/2002	1.36	2.87	0.46	1.72E-05	3.82E-03	1.75E-09	3.89E-07
11/5/2002	1.68	3.36	0.51	1.91E-05	4.25E-03	1.95E-09	4.33E-07
11/6/2002	0.80	3.33	0.77	2.88E-05	6.41E-03	2.94E-09	6.53E-07
11/7/2002	1.07	3.49	0.74	2.76E-05	6.13E-03	2.81E-09	6.25E-07
11/8/2002	0.96	3.52	0.78	2.92E-05	6.49E-03	2.97E-09	6.61E-07
11/9/2002	1.20	3.66	0.75	2.80E-05	6.23E-03	2.86E-09	6.35E-07
11/10/2002	1.31	3.84	0.77	2.88E-05	6.41E-03	2.94E-09	6.53E-07
11/11/2002	1.23	3.80	0.78	2.93E-05	6.51E-03	2.99E-09	6.63E-07
11/12/2002	1.30	3.76	0.75	2.80E-05	6.23E-03	2.86E-09	6.35E-07
11/13/2002	0.65	3.36	0.82	3.09E-05	6.87E-03	3.15E-09	7.00E-07

11/14/2002	0.66	3.05	0.73	2.72E-05	6.06E-03	2.78E-09	6.17E-07
11/15/2002	0.80	2.92	0.64	2.42E-05	5.37E-03	2.46E-09	5.47E-07
11/16/2002	0.66	3.01	0.72	2.68E-05	5.95E-03	2.73E-09	6.06E-07
11/17/2002	-0.23	2.80	0.92	3.46E-05	7.68E-03	3.52E-09	7.82E-07
11/18/2002	-0.11	2.57	0.82	3.06E-05	6.79E-03	3.11E-09	6.92E-07
11/19/2002	0.04	2.49	0.75	2.79E-05	6.21E-03	2.85E-09	6.32E-07
11/20/2002	0.28	2.75	0.75	2.82E-05	6.26E-03	2.87E-09	6.38E-07
11/21/2002	0.71	3.26	0.78	2.91E-05	6.46E-03	2.96E-09	6.58E-07
11/22/2002	0.72	3.45	0.83	3.11E-05	6.92E-03	3.17E-09	7.05E-07
11/23/2002	0.69	3.33	0.80	3.01E-05	6.69E-03	3.07E-09	6.81E-07
11/24/2002	0.64	3.34	0.82	3.08E-05	6.84E-03	3.14E-09	6.97E-07
11/25/2002	0.87	3.39	0.77	2.87E-05	6.39E-03	2.93E-09	6.50E-07
11/26/2002	0.94	3.34	0.73	2.74E-05	6.08E-03	2.79E-09	6.19E-07
11/27/2002	0.88	3.19	0.70	2.63E-05	5.85E-03	2.68E-09	5.96E-07
11/28/2002	0.95	3.03	0.63	2.37E-05	5.27E-03	2.42E-09	5.37E-07
11/29/2002	0.39	2.64	0.68	2.57E-05	5.70E-03	2.61E-09	5.81E-07
11/30/2002	0.24	2.61	0.72	2.70E-05	6.00E-03	2.75E-09	6.12E-07
12/1/2002	0.24	2.29	0.62	2.34E-05	5.19E-03	2.38E-09	5.29E-07
12/2/2002	0.41	2.17	0.54	2.01E-05	4.46E-03	2.04E-09	4.54E-07
12/3/2002	0.47	2.16	0.51	1.93E-05	4.28E-03	1.96E-09	4.36E-07
12/4/2002	0.79	2.41	0.49	1.85E-05	4.10E-03	1.88E-09	4.18E-07
12/5/2002	0.83	2.72	0.57	2.15E-05	4.79E-03	2.19E-09	4.88E-07
12/6/2002	0.74	2.99	0.68	2.57E-05	5.70E-03	2.61E-09	5.81E-07
12/7/2002	0.71	2.87	0.66	2.46E-05	5.47E-03	2.51E-09	5.57E-07
12/8/2002	0.58	2.69	0.64	2.41E-05	5.34E-03	2.45E-09	5.44E-07
12/9/2002	0.98	2.97	0.61	2.27E-05	5.04E-03	2.31E-09	5.13E-07
12/10/2002	1.47	3.80	0.71	2.66E-05	5.90E-03	2.71E-09	6.01E-07
12/11/2002	0.92	2.94	0.61	2.30E-05	5.12E-03	2.35E-09	5.21E-07
12/12/2002	0.68	2.42	0.53	1.98E-05	4.41E-03	2.02E-09	4.49E-07
12/13/2002	1.30	3.13	0.56	2.09E-05	4.63E-03	2.12E-09	4.72E-07
12/14/2002	-0.13	1.89	0.61	2.30E-05	5.12E-03	2.35E-09	5.21E-07
12/15/2002	-0.03	1.90	0.59	2.20E-05	4.89E-03	2.24E-09	4.98E-07
12/16/2002	0.19	1.81	0.49	1.85E-05	4.10E-03	1.88E-09	4.18E-07
12/17/2002	0.26	1.85	0.48	1.81E-05	4.03E-03	1.85E-09	4.10E-07
12/18/2002	0.70	2.18	0.45	1.69E-05	3.75E-03	1.72E-09	3.82E-07
12/19/2002	1.05	2.45	0.43	1.59E-05	3.54E-03	1.62E-09	3.61E-07
12/20/2002	0.67	2.59	0.58	2.19E-05	4.86E-03	2.23E-09	4.95E-07
12/21/2002	0.55	2.57	0.61	2.30E-05	5.12E-03	2.35E-09	5.21E-07
12/22/2002	0.68	2.84	0.66	2.46E-05	5.47E-03	2.51E-09	5.57E-07

12/23/2002	0.90	3.14	0.68	2.55E-05	5.67E-03	2.60E-09	5.78E-07
12/24/2002	1.41	4.27	0.87	3.26E-05	7.25E-03	3.32E-09	7.38E-07
12/25/2002	-0.14	3.96	1.25	4.68E-05	1.04E-02	4.77E-09	1.06E-06
12/26/2002	0.29	4.25	1.21	4.52E-05	1.00E-02	4.60E-09	1.02E-06
12/27/2002	0.24	4.52	1.30	4.88E-05	1.09E-02	4.97E-09	1.11E-06
12/28/2002	0.00	4.81	1.46	5.49E-05	1.22E-02	5.59E-09	1.24E-06
12/29/2002	0.00	4.98	1.52	5.68E-05	1.26E-02	5.79E-09	1.29E-06
12/30/2002	0.24	5.16	1.50	5.61E-05	1.25E-02	5.72E-09	1.27E-06
12/31/2002	1.20	5.62	1.35	5.04E-05	1.12E-02	5.14E-09	1.14E-06

APPENDIX V- NUTRIENT INPUT

Wet Atmospheric Deposition data was acquired from the National Atmospheric Deposition Program (<http://nadp.sws.uiuc.edu>). The data was obtained from station LA-12, the Iberia Research Station.

	mg/l	mg/l	mg/l	mg/l
Year	NH4	NO3	NH4-N	NO3-N
2000	0.12	0.75	0.093	0.169
2001	0.12	0.68	0.093	0.154
2002	0.11	0.75	0.086	0.169

Wet Atmospheric Deposition data collected at a meteorological station in Cocodrie, Louisiana by Drs. J. Cable, R. Powell and R.E. Turner.

	TN	TN	TP	TP
Year	umol/l	mg/l	umol/l	mg/l
2000	27.8	0.389	0.96	0.02968
2001	27.4	0.384	0.25	0.00760
2002	15.5	0.217	0.06	0.00197

Annual Mississippi River concentrations collected by the USACE at the Luling water plant (latitude = 29.5608, longitude= -90.21602) upstream of the diversion structure.

	mg/l	mg/l	mg/l	mg/l
Year	TN	TP	NH4-N	NO3-N
2000	1.95	0.182	0.0692	1.20
2001	2.34	0.258	0.0442	1.82
2002	1.85	0.235	0.0336	1.27

VITAE

Emily Hyfield is a native of Baton Rouge, Louisiana. She was born June 5, 1979 and is the youngest of three. She graduated from Baton Rouge Magnet High School in May 1997. She began working at the Coastal Ecology Institute at Louisiana State University in March 1997 for Drs. John Day and Enrique Reyes. She continued her education at Louisiana State University graduating with a Bachelor of Science degree in Zoology and a minor in Fish and Wildlife Conservation in May 2001. She started working full time as a Research Associate in the Coastal Ecology Institute in July 2001 and continues to work there. She began her Masters curriculum under Dr. Day in August 2001 and concluded her degree in December 2004.