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Sediment and Phosphorus Deposition in Lake Apopka

Final Report

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Department of Fisheries and Aquatic Sciences
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EXECUTIVE SUMMARY

Sediment studies in Lake Apopka were undertaken with two major objectives. The first was characterization and determination of the origins of the flocculent and consolidated sediment layers. This objective is important because the origin of sediments is presumed to have changed abruptly in 1947 when the lake primary producer community shifted from macrophyte dominance to phytoplankton dominance. Several independent approaches were employed to characterize sediments and determine their origin. The second major objective was to estimate lake basin sedimentation of mass, organic matter, total phosphorus (TP) and non-apatite inorganic phosphorus (NAIP) after 1947 and also for shorter periods after 1947 when phytoplankton became the dominant primary producer. To meet these objectives, a high quality data set for 46 survey and 8 historic cores was collected (see Appendices B and C). Historic cores were ^{210}Pb dated to provide a chronology of historic changes in sediment and nutrient deposition. Stratigraphic features in historic and survey cores were correlated as a means of obtaining time-dependent markers in the undated survey cores. Data from the survey cores arranged on an equal area grid were equally weighted in developing basin-wide estimates.

Highly organic, flocculent sediments produced during the phytoplankton phase were hypothesized to be lower in dry weight fraction and have a lower total carbon/total nitrogen (TC/TN) ratio than sediments produced during the macrophyte phase. This difference was expected because macrophytes require structural organic carbon to grow upright. This structural carbon is degraded slowly compared to more labile forms in phytoplankton; thus a higher TC/TN ratio is found in sediments produced during the macrophyte phase. A stratigraphic marker of this type was used to determine the thickness of flocculent sediments at historic and survey stations.

Several stratigraphic markers were used to infer the change from macrophyte to phytoplankton dominance in the lake. The ratio of TC/TN, fraction dry weight, and TP concentration provided stratigraphic evidence that flocculent sediments were produced as by-products of autotrophic metabolism during the recent, 50-year period of phytoplankton dominance. These variables, which were analyzed in all cores, were used to establish the thickness of flocculent sediments. That flocculent sediments were produced during the planktonic phase was verified with additional analyses, including the chemical measurement of diatom silica and analysis of diatom microfossils.

Highly organic sediments such as those found in Lake Apopka are not common in some geographic areas, but are characteristic of many Florida lakes (Brenner and Binford 1988). Lake Apopka forms the headwaters of the Ocklawaha River and receives relatively small inputs of allochthonous organic matter from its small drainage area, headwater spring and rainfall. Lake Apopka, therefore, may differ from many Florida lakes in that a high proportion of its sedimentary organic matter has been formed historically from organic matter produced photosynthetically in the lake, either from the macrophyte community during the macrophyte phase or from phytoplankton community during the phytoplankton phase. Results presented here provide many lines of evidence for the two different sources of sedimentary organic carbon in Lake Apopka.

Data on diatom microfossils provide additional support for criteria used in stratigraphic zonation. Three distinct assemblages were present in the diatoms identified from LA9-95, a historic core collected in 1995. These included: 1) a diverse assemblage dominated by benthic taxa (*Amphora ovalis*, *Cyclotella stelligera*, *Cymbella* sp., *Pinnularia* sp., and *Nitzschia* sp.) that was found below the zone of flocculent sediments, 2) an assemblage dominated by *Aulacoseira italica*, *Pseudostaurosira brevistriata*, *Staurosirella pinnata* and *Staurosira construens* found at the bottom of the zone of flocculent sediments, and 3) an assemblage comprised of 75-80% *A. italica* in the uppermost zone of flocculent sediments. The diverse benthic assemblage also differed in that its absolute abundance was approximately an order of magnitude less than the overlying assemblage.

Data on microfossil diatoms provide evidence that water transparency changed markedly in a few decades. Water transparency inferred from the diatom assemblage present during the macrophyte phase indicates high water transparency such that benthic algae grew on the lake bottom. By contrast, the meroplanktonic diatom, *A. italica*, now is the dominant diatom in the lake because it can survive in the aphotic environment on the lake bottom. Decreased transparency is attributed to increases in phytoplankton standing crop and other factors. Increased standing crop of phytoplankton is one of the consequences of nutrient enrichment.

The ratio of planktonic to benthic (P/B) diatoms also provides evidence that the primary producer community shifted from macrophytes to phytoplankton at the time when flocculent sediments were first deposited. *A. italica* is the major phytoplankton species in the lake presently; therefore, the P/B ratio is highest in the upper 15 cm where this species is dominant (75-80% of the assemblage). The P/B ratio increases upcore as does the concentration of TP. True benthic species will be replaced by other forms if water transparency decreases as the result of increased standing crops of phytoplankton or other factors. These data indicate that the changes in the lake's primary producer community since the 1940s and earlier were driven by increased nutrient loading.

Establishing the thickness of flocculent sediments at survey stations allowed the calculation of inventories (storage) of mass, organic matter, TP and NAIP at each station. The thickness of flocculent sediments varied greatly among the 46 survey cores and ranged from 1 to 136 cm. Flocculent sediments were highly organic averaging 63% of sediment mass. Storage of sediment mass and TP also varied among stations. This variability can be illustrated by noting that <5% of the total storage of TP was found in flocculent sediments at the 10 stations with the lowest storage and that 63% of the TP storage was found at the 15 stations with the highest storage. This variability does not affect estimates of basin-wide storage which are based on equal areal weighting for each station.

Variability in sediment deposition over the lake basin is attributed to the dynamics of sedimentation that focus sediments at high sedimentation sites. Sediments that are focused at high deposition sites have in part been transported from other areas of the lake that are subject to sediment resuspension. Stations with high sedimentation rates are characterized as depositional sites. These sites preserve the paleolimnological record and must be identified to infer historical conditions in the lake. Stations with low sedimentation, transitional or non-depositional sites, were in the central part of the lake where the effects of wind action on sediment resuspension would be greatest.

Resuspension of sediments was evaluated as a potential source of phosphorus to the water column. An amount equivalent to approximately 400 μg TP/L in the water mass is present in the upper 5 cm of sediment and an amount equivalent to 1200 μg TP/L is present in the upper 10 cm. Concentrations as large as 400 μg TP/L are found very rarely during monitoring of the lake. These calculated amounts, therefore, are undoubtedly overestimates of the amount that might be resuspended at any one time, particularly because sediments are not likely to be resuspended over the entire lake bottom during most storm events and because some areas in the center of the lake which are subjected to the greatest effects of wave action have thin layers of flocculent sediments.

Conventional models of dating sediments with ^{210}Pb could not be used in Lake Apopka because the construction of dikes in the 1940s reduced the surface area of the lake. This reduction in surface area of the lake invalidates the assumption in dating models that ^{210}Pb flux to the sediments is constant over time. A hybrid model which adjusted ages so that the zone of flocculent sediments was 50 yr old was used to date flocculent sediments. During this time period, the flux of ^{210}Pb can be assumed to be constant. Ages and sedimentation rates calculated from the hybrid model indicated that sedimentation rate increased 2.1-fold and total phosphorus accumulation rate (TPAR) increased 3.3-fold in the last 50 years. These results were then used to estimate the change in TP sedimentation over time.

Flocculent sediments were highly organic, averaging 63% organic matter measured as loss on ignition (LOI); therefore, sediment accumulation and mass sedimentation rate (MSR) are determined largely by organic matter. This characteristic is important in evaluating the ^{210}Pb chronology. A mean 2.1-fold increase in MSR in 50 yr was found using the hybrid model. This 2.1-fold increase can be attributed to an increase in organic matter production by phytoplankton in 50 years because sediments are highly organic. Increased production and sedimentation of organic matter over time can then be used to partly explain the relatively flat excess ^{210}Pb profiles. An increase in phytoplankton production is one of the expected consequences of increased phosphorus loading to the system that is inferred from historic increases in TP storage in the sediments.

Several lines of evidence, including TPAR obtained from ^{210}Pb dating, indicate that whole-basin rates of TP storage increased during the planktonic phase, approximately the last 50 yr. Average rates of TP storage for the period of phytoplankton dominance were estimated to be 45,000 kg yr^{-1}. This is slightly smaller than 49,100 kg yr^{-1}, an estimate by Brezonik et al. (1978) for net TP deposition (storage) in 1977. Average rates of deposition were 61.6% larger in the last 10 years and about 50% smaller during the first 10 years of phytoplankton dominance if the annual rate of TP accumulation increased 4-fold at a logarithmic rate during the 50-yr period of phytoplankton dominance.

The high abundance of meroplanktonic algae in near-surface sediments and storage of phosphorus by this algal community may be one of the factors contributing to artificially high MSR and TPAR at the tops of sediment cores. Data from LA9-95 show that *A. italica* has the greatest relative abundance in the upper 15 cm. The uptake and storage of phosphorus by meroplankton is a biogeochemical process that may account for the relatively large storage of phosphorus in recent sediments. Polyphosphate stored in these cells may be a significant phosphorus sink.

Estimated whole-basin inventories (storage) of organic matter in the last 50 yr are reasonable compared to estimated organic matter production by phytoplankton. Data on annual phytoplankton production in the lake are limited; however, organic matter sedimented in the past 50 yr is on the order of 10% of estimated phytoplankton production. This comparison indicates that calculated storage of organic matter closely approximates storage evaluated independently. This comparison and comparable estimates of TP sedimentation by Brezonik et al. (1978) and the present investigation validate data obtained in the present investigation.

The whole basin inventory of TP in flocculent sediments was 2.25×10^6 kg (2,250 metric tons). This inventory which accumulated in approximately 50 yr is 54 times larger than the present inventory of TP in the water column. These data indicate that residence time of phosphorus in the water column is short, on the order of one year. This calculation undoubtedly underestimates recent rates of TP sedimentation in the lake which have increased historically. These data show that the sediments are a significant sink for phosphorus.

The present investigation provides data to quantify phosphorus storage in sediments and to demonstrate that phosphorus loading and sedimentation have increased since 1947 during the planktonic phase of the lake. Data from the investigation are used to show that phosphorus storage has increased at least 3-fold in the last 50 yr based on decadal comparisons and as much as 4-fold if annual rates are compared. Changes in the assemblage composition of diatom microfossils in flocculent sediments also provides additional evidence that phosphorus loading has increased markedly in the past 50 yr.

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INTRODUCTION

Sediment studies in Lake Apopka were undertaken with the goal of estimating basin-wide phosphorus sedimentation since 1947 when, according to anecdotal accounts, phytoplankton became the major primary producer after a hurricane uprooted aquatic macrophytes (Conrow et al. 1993, Schelske and Brezonik 1992). The investigation was divided into two phases. Phase I was initiated in 1995 as a feasibility study on three sediment cores (Schelske 1996). Phase II was initiated in 1996 after it was shown by the feasibility study that the history of phosphorus loading could be inferred from sediment cores. The basic approach in the investigation was to collect sediment cores so temporal changes in phosphorus sedimentation could be determined at each station. Data on phosphorus sedimentation from stations distributed on an equal area grid then could be extrapolated for lake-basin estimates of phosphorus sedimentation. Two major objectives were an essential part of these studies. The first was characterization and determination of the origins of the flocculent and consolidated sediment layers. This objective is important because the origin of sediments is presumed to have changed abruptly in 1947 when the lake primary producer community shifted from macrophyte dominance to phytoplankton dominance. Several independent approaches were employed to characterize sediments and determine their origin. The second major objective was to estimate lake basin sedimentation of mass, organic matter, total phosphorus (TP) and non-apatite inorganic phosphorus (NAIP) after 1947 and also for shorter periods after 1947 when phytoplankton became the dominant primary producer. This report provides the results of those studies.

A sediment chronology must be developed to make estimates of historical changes in sediment or nutrient accumulation. One means of developing a chronology is to age sediments with ^{210}Pb (Appleby and Oldfield 1983). This methodology has been applied widely in paleolimnological studies, but the time and expense of dating sediment cores precludes its use on the scale mandated by this study of Lake Apopka. Therefore, both historic and survey cores were collected during the investigation. Eight historic cores were aged with ^{210}Pb to develop sediment chronologies. An additional 46 survey cores were not dated with ^{210}Pb, but time-dependent markers in these cores were correlated stratigraphically with historic cores. Stratigraphic features in survey cores that were present in aged historic cores, therefore, could be dated from the known date in the historic core. The sedimentary record of the shift from macrophyte dominance to phytoplankton dominance is an example of a stratigraphic feature with a well known date that can be correlated across cores.

Collecting survey cores on an equal area grid was used so estimates of historical changes in sediment and nutrient accumulation are not biased by station selection. This design weights each station equally in the statistical sense. It is important to recognize that this design will sample variability in sediment deposition among stations. Sedimentary environments that are sampled with this design can be divided into three categories: depositional, transitional or erosional, and non-depositional. A depositional site accumulates sediments over time, transitional or erosional sites accumulate sediments which are subject to erosion periodically, and non-depositional sites accumulate negligible quantities of sediments over time. Variability in sediment accumulation among stations is attributed to sediment focusing by physical processes. Therefore, by definition depositional sites accumulate sediments at a higher rate and contribute more to lake-basin storage of sediments and nutrients than other locations in the lake and non-depositional sites will be relatively unimportant in these calculations.

The design of the investigation was based on two general premises. The first premise is that the primary producer community in Lake Apopka shifted from a macrophyte-dominated system to a phytoplankton-dominated system during the 1940s. The second premise is that the macrophyte phase can be distinguished from the phytoplankton phase by the ratio of total carbon/total nitrogen (TC/TN) in sediment samples. Because rooted macrophytes require structural carbon to grow upright, they contain a greater quantity of organic carbon per unit biomass than phytoplankton and thus a larger TC/TN ratio. It is well known that the structural carbon of macrophytes is relatively resistant to decomposition compared to the more labile organic compounds produced by phytoplankton and that the by-products of macrophytes have a higher C/N ratio than phytoplankton (Wetzel 1983), but using the C/N ratio as a proxy for source of sedimented organic matter (macrophyte or phytoplankton) has not been used frequently in paleolimnological investigations (Schelske et al. 1997).

Sediment cores from Lake Apopka were collected to test two hypotheses related to stratigraphic correlation. First, the change in TC/TN associated with the shift from macrophytes to phytoplankton can be identified and used to establish a time-dependent stratigraphic marker. If such a stratigraphic marker can be correlated across cores, then its time dependence can be used to estimate changes in historic sedimentation of phosphorus during the phytoplankton phase. Second, stratigraphic markers other than the TC/TN ratio can be defined and dated and can be stratigraphically correlated in sediment cores. For example, a smaller fraction dry weight is found in flocculent sediments deposited during the planktonic phase than in sediments deposited when macrophytes were dominant. Sediments deposited during the phytoplankton phase are considered to be unconsolidated and flocculent in nature (Reddy and Graetz 1991). Such sediments are characterized by a high water content and are highly organic.

For this report, it is assumed that the shift to the phytoplankton phase occurred by 1947 when the primary producer community was no longer dominated by macrophytes (Lowe et al. 1997). Lowe et al. (1997) show that the shift to phytoplankton was not the result of the 1947 hurricane and suggest the need to invoke other causes including nutrient enrichment for the shift to phytoplankton dominance. Recent research based on analysis of diatom microfossils and sediment chemistry provides evidence that nutrient enrichment led to the demise of macrophytes in the lake (Schelske et al. 1997). A shift from macrophyte dominance to phytoplankton dominance is an expected consequence of high nutrient levels in shallow lakes (Scheffer et al. 1993). An exact date for the shift to phytoplankton dominance is not certain at this time, but for the purposes of the report the time employed for stratigraphic correlation of the event is 1945 which is approximately 50 years before the time of core collection. Defining the event is compounded by not knowing its exact date and by the dynamics of sedimentation that preserve the event in the sediment record. Selection of any specific date, therefore, is problematic. It is possible, as discussed in the report, that additional research will show that the actual date for the stratigraphic marker may differ from 1945, but probably by no more than ± 5 years.

The report is organized into six major sections: Introduction, Methods, Paleolimnological Feasibility Study, Characterization and Origin of Sediment Layers, Sedimentation Rates and Storage, and Summary and Conclusions. The paleolimnological feasibility study summarizes results from three historic cores collected during Phase I. In the section on characterization and origin of sediment layers, linear regressions are used to show that TP, NAIP, TC/TN ratio, and fraction dry weight are correlated statistically, but that subjective criteria based on these variables are needed to establish the thickness of flocculent sediments deposited during the phytoplankton phase. Results show that thickness of flocculent sediments at 46 survey stations varied greatly over the lake basin. Analysis of diatom microfossils and biogenic diatom silica, a chemical measurement of silica in diatom frustules, at a limited number of stations also provided evidence for characterization of sediment layers. The habitat preference of diatoms and abundance of diatoms provide evidence that nutrient loading increased, particularly in the last 50 yr. This section concludes with a discussion of variables used to characterize sediments and a discussion of the origin of sedimentary organic matter. The section on sedimentation rates and storage includes results of ^{210}Pb dating and mass and TP sedimentation rates calculated from ^{210}Pb dating of historic cores. A hybrid ^{210}Pb model was used because construction of dikes in the 1940s reduced the surface area of the lake invalidating the assumption of constant flux of excess ^{210}Pb to the lake. Decadal rates of storage for the different variables are calculated from TP sedimentation rates estimated from ^{210}Pb dating and from estimates of lake-basin storage for mass, organic matter, TP, and NAIP at the 46 survey stations. This section concludes with a discussion on factors that affect rates of storage over time. The final section on summary and conclusions addresses the major findings of this investigation. Data collected during the study are presented in six appendices to the report.

METHODS

Field Collection

A total of 57 survey and historic sediment cores were collected during phase I and phase II (Fig. 1). Historic cores were collected so they could be aged using ^{210}Pb, a naturally occurring radioisotope, and survey cores so they could be used for stratigraphic correlation. Three historic cores were collected on 19 October 1995 (LA-9H-95, LA-25H-95, and LA-31H-95). These cores were used in the initial ^{210}Pb dating of lake sediments as a means of assessing depositional and historic changes. Forty-six survey cores were collected in April and May 1996 at stations located on an equal area grid (Fig. 1). The 46 survey stations included the three stations, LA9-95, LA25-95, and LA31-95, that were sampled as historic stations on 19 October 1995 during phase I of this study (Schelske 1996). During the week of 10 May 1996, five historic cores were collected for ^{210}Pb dating (LA-1H-96, LA-2H-96, LA-3H-96, LA-4H-96, and LA-6H-96). Finally, on 31 July 1996, three more historic cores were collected (LA-5H-96, LA-7H-96, and LA-8H-96). LA-5H-96 was not radiometrically analyzed because the chemical stratigraphy indicated the entire core contained flocculent sediments; thus it was assumed that the ^{210}Pb record was truncated at this high depositional site. In the field, all stations were located with a Global Positioning System and latitude and longitude were recorded (see Appendix A).

At each station, thickness of soft sediment was determined using a steel spudding rod and a Secchi disc. The steel spudding rod calibrated in 5-cm intervals was driven vertically to hard bottom and depth relative to the water surface was recorded. Depth of the water column was determined by lowering a 20-cm Secchi disk to the sediment surface and this depth was subtracted from the spudding value to yield soft-sediment depth. Sediment cores, approximately 1.5 m in length, were collected with a piston corer described by Fisher et al. (1992). Survey cores were collected using a 1.8-m clear plastic core barrel (4.2-cm inside diameter) and historic cores were collected using a 1.8-m clear plastic core barrel (6.99-cm inside diameter). Depths of stratigraphic features in sediment cores were determined visually on deck after retrieval and measured directly in the core tube when such features were distinguishable visually (see Appendix A). Reddy and Graetz (1991) described several sediment types in their study of Lake Apopka, including unconsolidated flocculent sediments (UCF) and consolidated flocculent sediments (CF). In this report, the UCF layer described by Reddy and Graetz (1991) is simply termed, flocculent sediments or floc layer.

Cores were described during sampling, but no attempt was made in the field to measure precisely the depth of sediments that would be equivalent to either unconsolidated flocculent sediments (UCF) or consolidated flocculent sediments (CF) described by Reddy and Graetz (1991). Neither the measurement in the field nor its nominal depth was essential in our study because cores were sectioned at relatively close intervals and because the nominal depth of any layer with specified characteristics can be determined from the stratigraphic patterns of measured

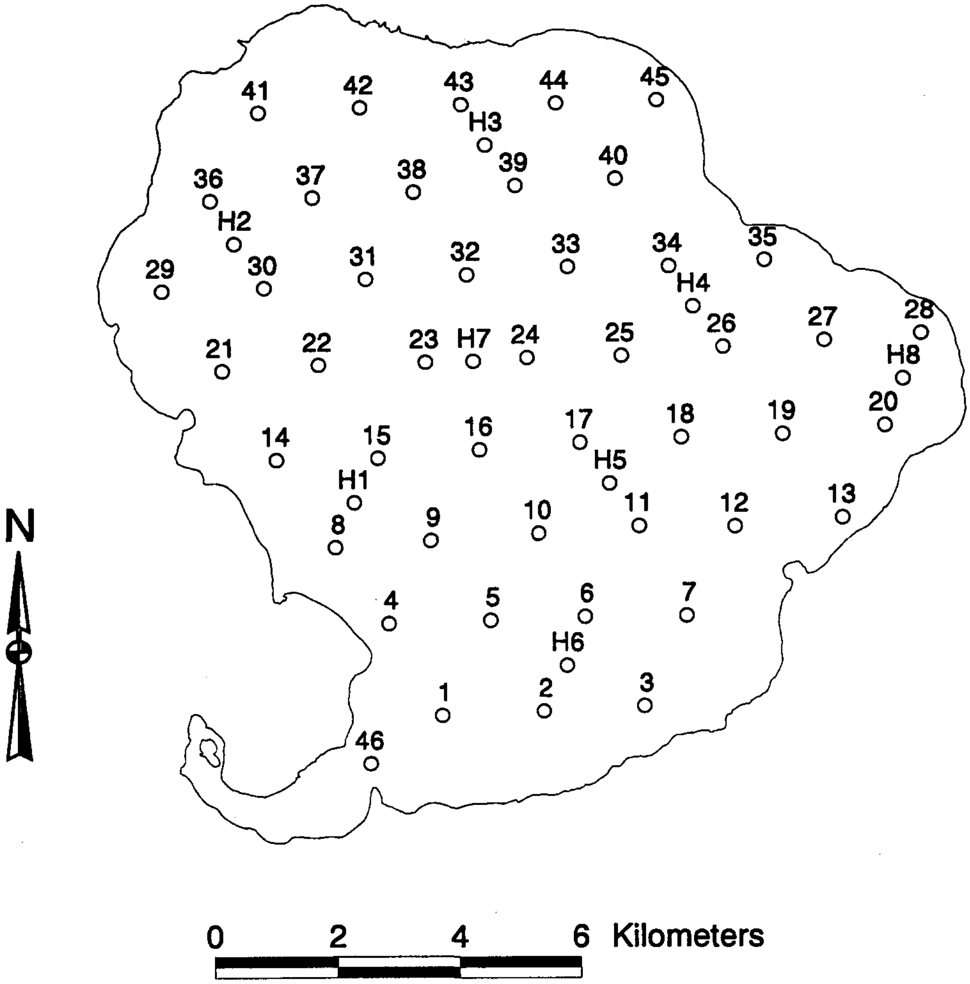


Figure 1. Map of Lake Apopka showing locations of 46 survey stations and 8 historic stations sampled in 1996. Stations 9, 25, and 31 were also sampled as historic stations in 1995. 1996 historic stations are shown with the prefix H.

variables. In addition, calculations for the report were based on mass of sediments integrated section by section, a calculation that is independent of section thickness.

The strategy employed in the field was to section cores at nominal 5-cm intervals in the zone of flocculent sediments and then at 2-cm intervals for 10 cm where the transition to more consolidated sediments could be clearly identified. The transition from flocculent sediments to more consolidated sediments was evident in most cores from texture (decrease in porosity in flocculent sediments compared to underlying sediments) and by the presence of plant fibers, shells, or both at the base of the zone of flocculent sediments or in the sediments beneath the zone of flocculent sediments. This zonation was not clearly identifiable in some cores, particularly at sites where the thickness of flocculent sediments was greatest. In addition, sampling at 2-cm intervals to define the transition from flocculent sediments to more consolidated sediments was not attempted at sites where the thickness of flocculent sediments was least (approximately 20 cm) and at some sites with large depths of flocculent sediments (>60 cm). In the shorter cores, the relatively small mass of flocculent sediments accounts for a relatively small amount of phosphorus compared to stations with a greater cumulative mass of sediments. Such sites, therefore, are relatively unimportant in estimating whole-basin storage of sediments and nutrients. With large depths of flocculent sediments in cores, finer sectioning also has a relatively small effect on estimates of TP storage. Thus, the planned strategy for obtaining finer sections was not followed for some cores in which the transition from flocculent to more consolidated sediments was difficult to discern during sectioning and for some cores with either relatively small or large zones of flocculent sediments. Because data for individual sections are available, estimates of sediment mass or storage of TP, NAIP and other sediment fractions with depth in all cores can be refined or reanalyzed using interpolation or other methods.

Cores were sectioned in the field and taken to our laboratory in Gainesville where they were stored frozen until freeze dried. After freeze drying, dry samples for gravimetric and chemical analyses were ground to fine powder using a mortar and pestle.

Gravimetric and Chemical Analyses

Gravimetric analyses were conducted by weighing each section before and after drying and calculating the dry weight fraction (% dry weight). Organic matter content of dried sediments was measured by percent loss on ignition (LOI) at 550°C for 2 hr in a Sybron Thermolyne muffle furnace (Håkanson and Jansson 1983). Inorganic or mineral sediment was considered to represent the fraction remaining after combustion. Rho (r) was calculated using an equation by Binford (1990):

$$r = \frac{D\,(2.5I_x + 1.6C_x)}{D + (1-D)\,(2.5I_x + 1.6C_x)}$$

where r is dry density (g dry cm^{-3} wet), x is depth in the sediment profile (cm), D is proportion of dry mass in wet sediment (dry mass/wet mass), I is the inorganic proportion of dry mass, with density = 2.5 g cm^{-3} dry, and C is the organic proportion of dry material with density = 1.6 g cm^{-3} dry.

Two forms of phosphorus were measured in sediment samples (Schelske et al. 1986, 1988). TP was analyzed using persulfate digestion of dried sediment samples. NAIP, a chemically determined form of phosphorus that has been shown to be biologically available (Williams et al. 1976), was measured by leaching small samples for 17 hr at 25°C in a solution of 0.1 N NaOH. After digestion or leaching, phosphate was measured with a segmented flow autoanalyzer and an electronic data acquisition system.

Three forms of silica were measured in sediment samples using procedures described in Conley and Schelske (1993). Samples were leached in 1% Na_2CO_3 at 85°C. Samples were then withdrawn at 2, 3, and 4 hr and at 12, 16, and 20 hr for analysis of dissolved silica. Regression of dissolved silica from 2-4 hr was used to estimate biogenic silica leached from diatoms (diatom silica) and regression of data from 12-20 hr was used to estimate biogenic silica leached from sponges (sponge silica). Mineral silica was obtained by subtracting diatom and sponge silica from the total silica extracted in 20 hr.

TC and TN were measured with a Carlo Erba NA1500 CNS elemental analyzer equipped with an autosampler. Analysis of sediment samples was based on methodology described by Verardo et al. (1990).

Radiometric Analyses

Radiometric measurements were made using low-background gamma counting systems with well-type intrinsic germanium detectors (Schelske et al. 1994). To prepare samples for radiometric analysis, dry sediment from each section was packed to a nominal height of 30 mm in a tared polypropylene tube (84 mm high x 14.5 mm outside diameter, 12 mm inside diameter). Sample height was recorded and tubes were weighed to obtain sample mass. Samples in the tubes were sealed with a layer of epoxy resin and polyamine hardener, capped, and stored before counting to ensure equilibrium between ^{226}Ra and ^{214}Bi. Activities for each radionuclide were calculated using empirically derived factors of variation in counting efficiency with sample mass and height (Schelske et al. 1994). Total ^{210}Pb activity was obtained from the 46.5 kev photon peak and ^{226}Ra activity was obtained from the 609.2 kev peak of ^{214}Bi. ^{226}Ra activity was assumed to represent supported ^{210}Pb activity. Excess ^{210}Pb activity was determined from the difference between total and supported ^{210}Pb activity and then corrected for decay from the coring date. The 661.7 kev photon peak was used to measure ^{137}Cs activity. The peak in ^{137}Cs activity was measured to evaluate its usefulness as an independent time marker for the peak period of fallout from nuclear weapons testing in 1962-63.

Sediments were aged using measurements of the activity of naturally occurring radioisotopes in sediment samples. The method is based on determining the activity of total ^{210}Pb (22.3 yr half-life), a decay product of ^{226}Ra (half-life 1622 yr) in the ^{238}U decay series. Total ^{210}Pb represents the sum of excess ^{210}Pb and supported ^{210}Pb activity in sediments. The ultimate source of excess ^{210}Pb is the outgassing of chemically inert ^{222}Rn (3.83 d half-life) from continents as ^{226}Ra incorporated in soils and rocks decays. In the atmosphere, ^{222}Rn decays to ^{210}Pb which is deposited at the earth's surface with atmospheric washout as unsupported or excess ^{210}Pb. Supported ^{210}Pb in lake sediments is produced by the decay of ^{226}Ra that is deposited as one fraction of erosional inputs. In the sediments gaseous ^{222}Rn produced from ^{226}Ra is trapped and decays to ^{210}Pb. By definition, supported ^{210}Pb is in secular equilibrium with sedimentary ^{226}Ra and is equal to total ^{210}Pb activity at depths where excess ^{210}Pb activity is not measurable due to decay. Because the decay of excess ^{210}Pb activity in sediments provides the basis for estimating sediment ages, it is necessary to make estimates of total and supported ^{210}Pb activities so excess ^{210}Pb activity can be determined by difference. Excess ^{210}Pb activity was calculated either by subtracting ^{226}Ra activity from total ^{210}Pb activity at each depth or by subtracting an estimate of supported ^{210}Pb activity based on measurements of total ^{210}Pb activity at depths where excess ^{210}Pb activity is negligible.

Sediment ages were calculated using a CRS model (Appleby and Oldfield 1983). This model calculates ages based on the assumption that the flux of excess ^{210}Pb to the lake was constant and therefore that variation in ^{210}Pb activity from a pattern of exponential decrease with depth was dependent on variation in rate of sedimentation. For small lakes, the assumption that sedimentation rate was not constant appears to be appropriate. The age of sediments at depth x is given by

$$t= (1/k) [\ln (A_o/A)]$$

where t is time in yr, k is 0.03114 (the ^{210}Pb decay constant), A_o is the total residual excess ^{210}Pb activity in the sediment core, and A is the integrated excess ^{210}Pb activity below depth x. Calculations for each depth provide a continuous profile of ages as a function of depth. Mass sedimentation rate (MSR) at depth x is given by

$$MSR = m/t$$

where m is dry mass of sediment (g cm^{-2}) for the sampling interval. Errors in age and mass sedimentation rate were propagated using first-order approximations and calculated according to Binford (1990).

Diatom Microfossil Analyses

Only a small number of samples were selected for analysis of siliceous microfossils due to the time and expense involved in microscopic analysis. Sediments analyzed were cleaned using the method described by Stoermer et al. (1995). Slides were prepared using chambers described by Battarbee (1973). Diatom and sponge spicule quantitative analysis was performed for every section analyzed. The number of diatoms counted was based on the efficiency ratio criteria described Pappas and Stoermer (1996). Approximately 450 diatoms per sample were counted to obtain 90% efficiency. Ratios of planktonic/benthic (P/B) taxa were determined for sediment sections by assigning habitat preferences as described in the text.

Presentation and Analysis of Data

A tabulation of field notes taken at the time of core collection for Phase I (19 October 1995) and Phase II (April to July 1996) is given in Appendix A. Gravimetric and chemical data for survey and historic cores are listed in Appendices B and C. Data presented include fraction dry weight, organic matter determined by loss on ignition (LOI) at 550°C, TP, NAIP, TC and TN. Cumulative dry mass (g cm^{-2}) was calculated by dividing the sample dry mass for each sediment section by the area of the core tube and summing the results with depth. Thus, cumulative dry mass which was used to calculate TP, NAIP and organic matter storage in each core was determined independently of nominal measurements of section thickness.

Samples were taken from survey and historic cores at most stations to depths that were much deeper than the stratigraphic zones used to analyze historic whole-basin phosphorus storage in Lake Apopka. Samples deposited before approximately 1880 are not useful in stratigraphic analysis of the last 100 years of the lake's history. Thus, an attempt was made to identify outliers that were unlikely to have been deposited in the recent history of the lake and then remove such samples from the data set used for subsequent analyses. Some of these samples are readily identified from physical and chemical characteristics. For example, the presence of large quantities of inorganic material increases the dry weight fraction and decreases LOI. Therefore, the preliminary data set was filtered by establishing the following criteria for outliers and removing a total of 141 survey samples (number for each category is shown in parentheses) from a data set of 1167 samples:

- Dry weight fraction - >0.10 (109 samples)
- TC/TN ratio - <9.3 or >14.5 (21 samples)
- LOI - <35% (7 samples)
- TC - no obvious outliers (no samples removed)
- TN - no obvious outliers (no samples removed)
- TP - >1.95 mg/g (3 samples)
- NAIP - >2.50 mg/g (1 sample)

Data from the 1995 and 1996 historic cores were filtered using the same criteria. This process eliminated 10 of 78 samples from the 1995 historic cores and 21 of 204 samples from the 1996 historic cores.

Samples deleted from these data sets have characteristics that justify their exclusion from statistical analysis, either because they are statistical outliers or because the samples are much deeper than the stratigraphic zones used to estimate basin-wide TP storage. Most of the samples eliminated are in the second category. None of the eliminated samples is in the zone of flocculent sediments.

PALEOLIMNOLOGICAL FEASIBILITY STUDY

Three historic cores were collected 19 October 1995 as part of a feasibility study to determine whether the shift from macrophyte dominance to phytoplankton dominance in the primary producer community could be resolved using paleolimnological methods (Schelske 1996). Two justifications were given for the paleolimnological approach. First, anecdotal accounts provide evidence that phytoplankton dominated the primary producer community since 1947 and replaced rooted aquatic macrophytes as the major primary producer in a span of a few years at most. This change in the primary producer community should be reflected in the sediment record as a decrease in the TC/TN ratio of sedimentary organic matter because phytoplankton require less structural carbon than rooted macrophytes. Thus, a decrease in the TC/TN ratio is a paleolimnological proxy that can be used to infer replacement of macrophytes by phytoplankton. Second, the hypothesis that the waters of Lake Apopka were enriched with phosphorus since the 1940s can be tested with paleolimnological data, either by measuring the rate of accumulation of phosphorus directly or by inferences from other paleolimnological proxies.

Results of the feasibility study showed that sediments formed in Lake Apopka during the recent phytoplankton phase were distinguishable from those formed in the earlier macrophyte phase (Schelske et al. 1997). Flocculent sediments, presumed to be characteristic of the phytoplankton phase, were readily identified by visual observation in the field when cores were collected (Appendix A). The percent dry weight (fraction dry weight) of these recent sediments increased with depth from 1 to 5% (99 to 95% water), but was much lower than the underlying sediments (Appendix C). A sharp discontinuity in percent dry weight, an increase from 5 to 7% dry weight, identified the boundary between the two zones of sediments. The depth of this discontinuity, which ranged from 15 to 50 cm among three cores, also coincided with discontinuities in the ratio of TC/TN and concentration of TP (Fig. 2). The ratio of TC/TN was lower in flocculent sediments than in the underlying sediments. With the exception of LA-31-95, the ratio changed markedly between the bottom section of the flocculent sediments and the next deeper section in each core. The more gradual transition in LA-31 was attributed to a mixture of the two types of sediments in the deepest 5-cm section identified as floc (Fig. 2). The concentration of TP was higher in the layer of flocculent sediments than in the underlying sediments with the exception of high TP at LA-9-95 in the 5-cm section immediately below the flocculent sediments. With the exception of this sample, flocculent sediments are clearly separated from underlying sediments by low TC/TN and high TP. Therefore, three paleolimnologic proxies, percent dry weight, TC/TN ratio and TP concentration, provide signals of the shift in the major form of primary producer in Lake Apopka.

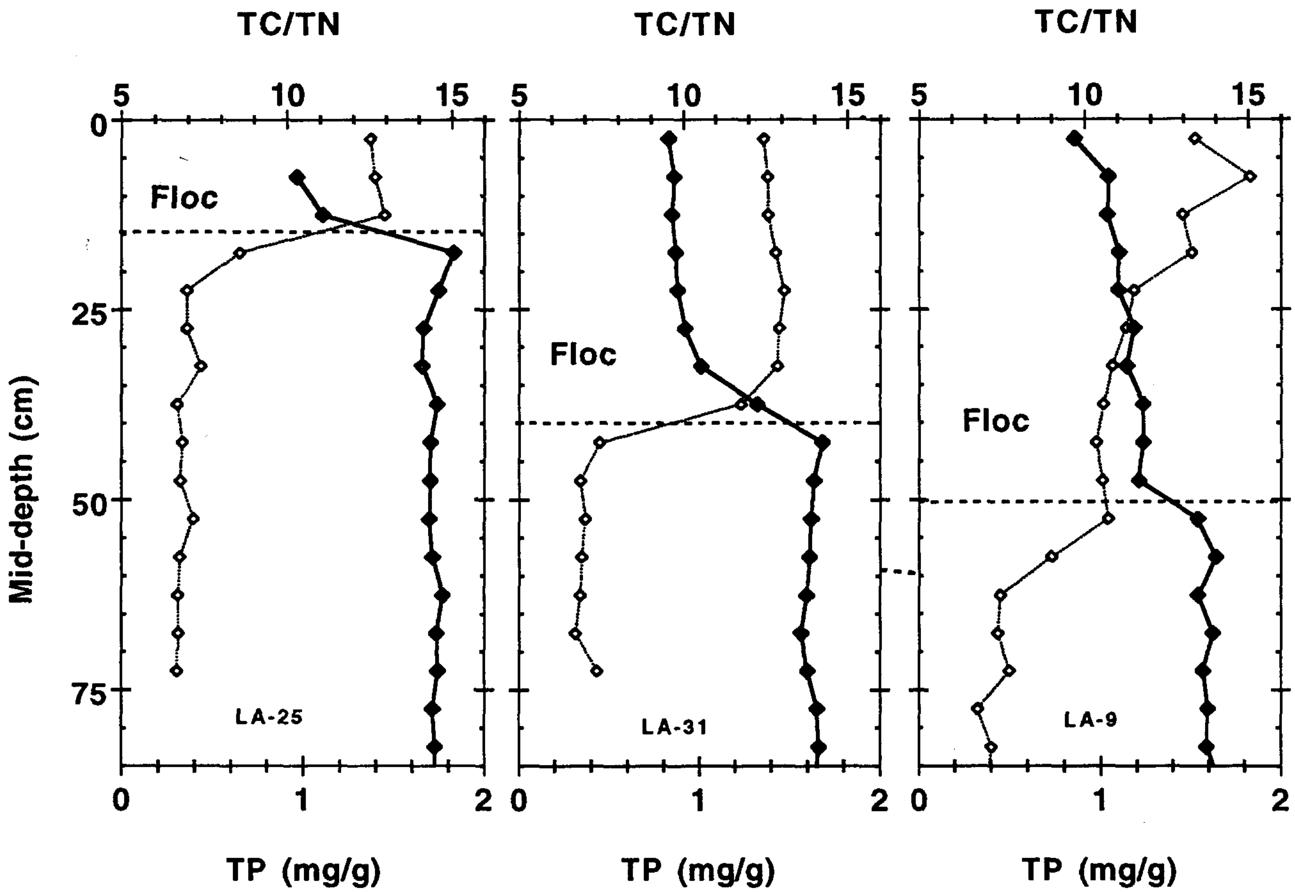


Figure 2. Selected chemical data from three historic cores collected 19 October 1995 as part of a feasibility study. Plots are TC/TN ratio and TP concentration vs. mid-depth in cores LA25-95, LA31-95 and LA9-95. The dashed horizontal line represents the boundary between flocculent sediments characteristic of the planktonic phase and deeper sediments characteristic of the macrophyte phase in Lake Apopka. See text for additional information and Appendix C for data. Open symbols are TP and solid symbols are TC/TN.

Chronologies of the three cores obtained from ^{210}Pb dating indicate that the shift from macrophyte dominance to phytoplankton dominance occurred at different times for the three cores collected during the feasibility study (Schelske 1996). This difference initially was attributed to differences in sedimentation rate among the cores and to crude temporal resolution in the coarsely sectioned cores. The large difference in sedimentation rate is shown by the large range in the depth of flocculent sediments (Fig. 2). The lack of temporal resolution was one factor in the strategy for sectioning used in phase II, i.e. to section cores at 2-cm intervals in the transition zone from flocculent to more consolidated underlying sediments (see Methods). In addition, the method of dating ^{210}Pb was changed because the assumption of constant flux of excess ^{210}Pb to the sediments is violated as discussed below (see ^{210}Pb dating of sediments). As a result, new chronologies were developed for the present report.

In summary, paleolimnological data obtained during the feasibility study support the hypothesis that the waters of Lake Apopka were enriched with phosphorus in the period of the sediment record represented by flocculent sediments, or in approximately the last 50 years (Schelske 1996). Inferences from data on either TP or NAIP concentration support the hypothesis. This period of enrichment coincides with the sedimentary record of low TC/TN ratio, a proxy for the phytoplankton phase that began approximately 50 years ago in Lake Apopka (see Introduction).

Data collected during the feasibility study will be discussed below in the appropriate sections of the present report.

CHARACTERIZATION AND ORIGIN OF SEDIMENT LAYERS

Several different approaches were used to characterize sediments so the sediments formed during the planktonic phase could be separated from those formed when rooted macrophytes dominated the primary producer community. Physical and chemical variables that were most useful for this purpose were fraction dry weight, the TC/TN ratio and TP and NAIP concentration. These variables were used to determine the thickness of flocculent sediments at the 46 survey stations (Fig. 1) and to demonstrate that thickness varied over the lake basin for the 46 survey cores. Analyses of diatoms and biogenic silica were used to verify criteria used to establish the depth of flocculent sediments at a number of stations. These results were then used to establish criteria for sediment layer characterization for historic and survey cores.

Statistical Analysis of Data

Linear regressions were calculated to determine whether TP concentration was statistically dependent on other variables that were used for stratigraphic analysis. Regressions showed that TP increased with decreasing fraction dry weight (R^2=0.856) and decreasing TC/TN (R^2=0.885) for 1995 historic cores (Fig. 3). Linear regressions also showed that TP increased with decreasing dry weight and decreasing TC/TN in the 1996 historic and survey

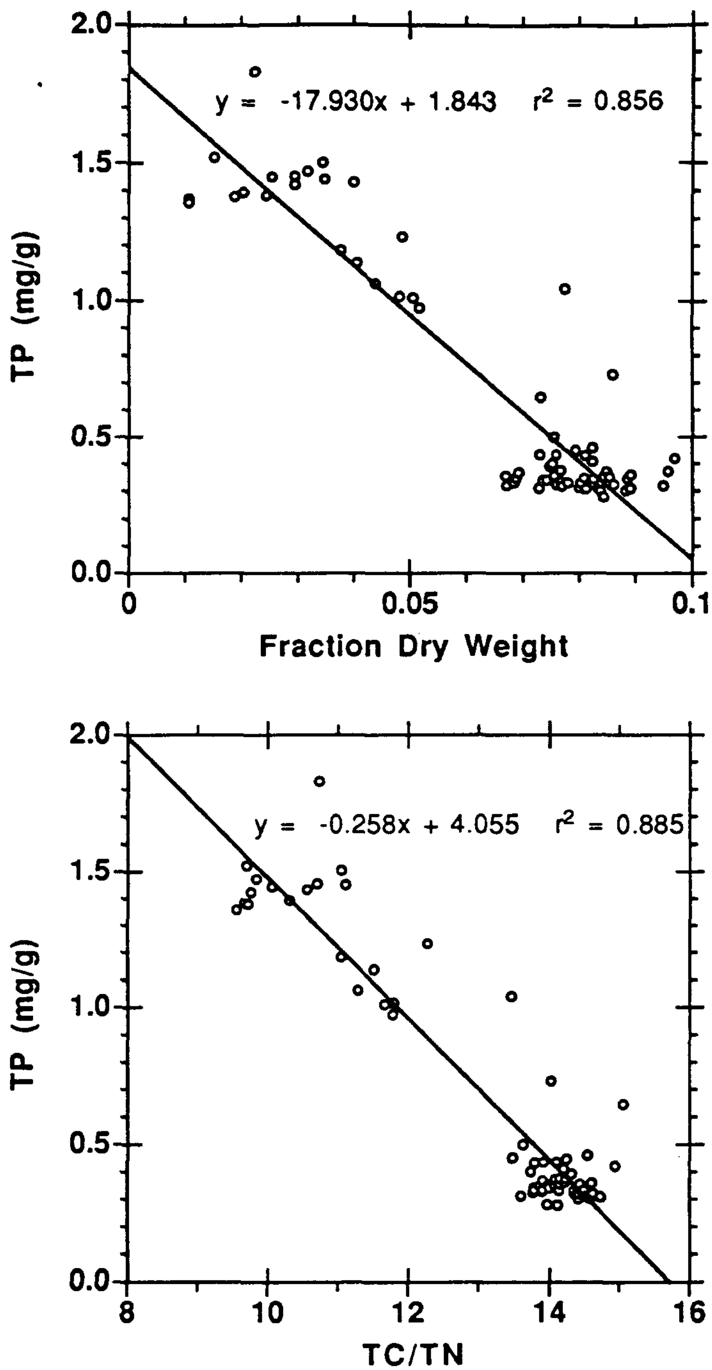


Figure 3. Linear regression of TP vs. dry weight fraction and TP vs. TC/TN ratio in Lake Apopka sediments. Filtered data for 3 historic cores collected in 1995. See text for criteria used to filter data.

cores (Figs. 4 and 5). These regressions also demonstrate that TP decreases with depth in cores and that fraction dry weight and TC/TN both increase with depth in cores. Examining the data set for the 1995 historic cores (Fig. 3) reveals two clusters of data. One set with high TP, low TC/TN and low fraction dry weight is composed of samples from the flocculent sediments; the remaining samples are from the older, underlying sediments. The two sets of data in the 1995 cores are most pronounced in the plot of TC/TN and fraction dry weight (Fig. 6). Data sets differ for the 1996 cores (Figs. 4 and 5) in that the distribution of all variables is continuous. Thus, the clear separation of flocculent sediments based on either TP concentration or the TC/TN ratio that was found in the 1995 historic cores (Figs. 2 and 3) was not found in the larger data sets from 1996 (Figs. 4 and 5).

Linear regressions also showed that the ratio of TC/TN, as expected from data in Figs. 3-5, increased with increasing fraction dry weight for the 1995 historic cores (R^2=0.906) and the 1996 historic (R^2=0.770) and survey cores (R^2=0.626) (Figs. 6-8). Both TC/TN and fraction dry weight generally increased with depth (Appendices B and C). These regressions, therefore, show that TC/TN and fraction dry weight covary with depth.

TP, TC/TN and fraction dry weight were among the most important parameters used to establish the thickness of flocculent sediments and other stratigraphic zones. Statistical analyses of these sediment variables provide evidence that characterize flocculent sediments as those with a high porosity or low dry weight fraction, low TC/TN and high TP. In addition, samples in the unfiltered data set with a dry weight fraction >0.10 have low TP (Appendices B and C). The linear regression of TP on NAIP was highly significant for 1995 historic (R^2=0.948) and 1996 historic (R^2=0.880) and survey (R^2=0.871) cores (Figs. 6-8). These highly significant regressions show that relationships described for TP with either TC/TN or fraction dry weight are confirmed from NAIP concentration, an independently measured fraction of TP in the sediments. Highly significant statistical relationships, therefore, provide evidence that high concentrations of TP are associated with low TC/TN ratios in the flocculent sediments (low dry weight fraction) deposited during the planktonic phase (Figs. 2-4).

Linear regressions were useful in inferring stratigraphic changes in TP and other variables with depth, but the variance was too large to be useful in predicting stratigraphic zonation. In addition, examination of the data revealed that the range in absolute values of variables was not constant among cores. Fraction dry weight, for example, varied among 1996 cores and in some core sections from the flocculent layer it exceeded 0.05, the largest fraction dry weight found in the 1995 cores (Appendices B and C). Therefore, it was necessary to use several criteria to determine the thickness of flocculent sediments at different stations.

Thickness of Flocculent Sediments

The thickness of flocculent sediments deposited at different stations was determined for survey and historic cores using several criteria. Criteria based initially on the 1995 historic cores

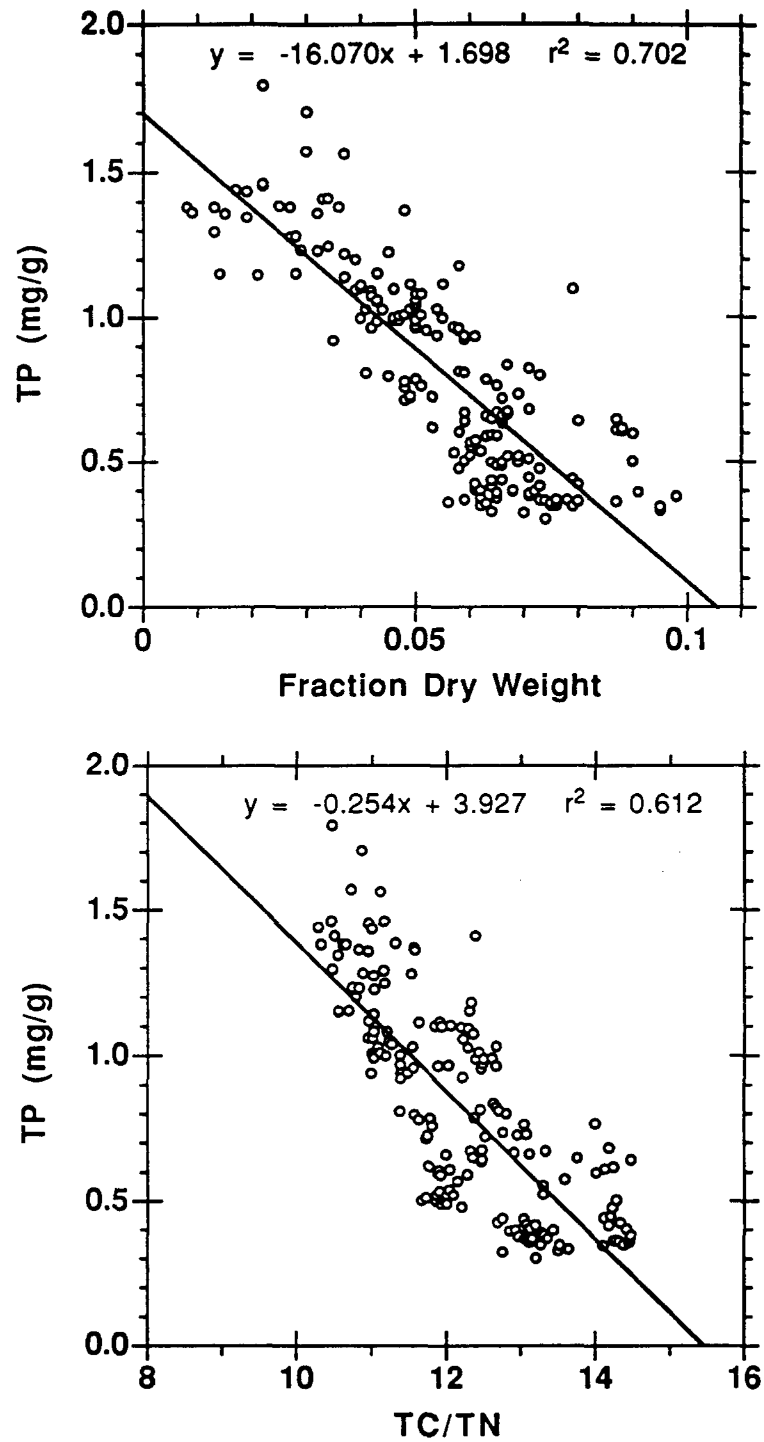


Figure 4. Linear regression of TP vs. dry weight fraction and TP vs. TC/TN ratio in Lake Apopka sediments. Filtered data for 8 historic cores collected in 1996. See text for criteria used to filter data.

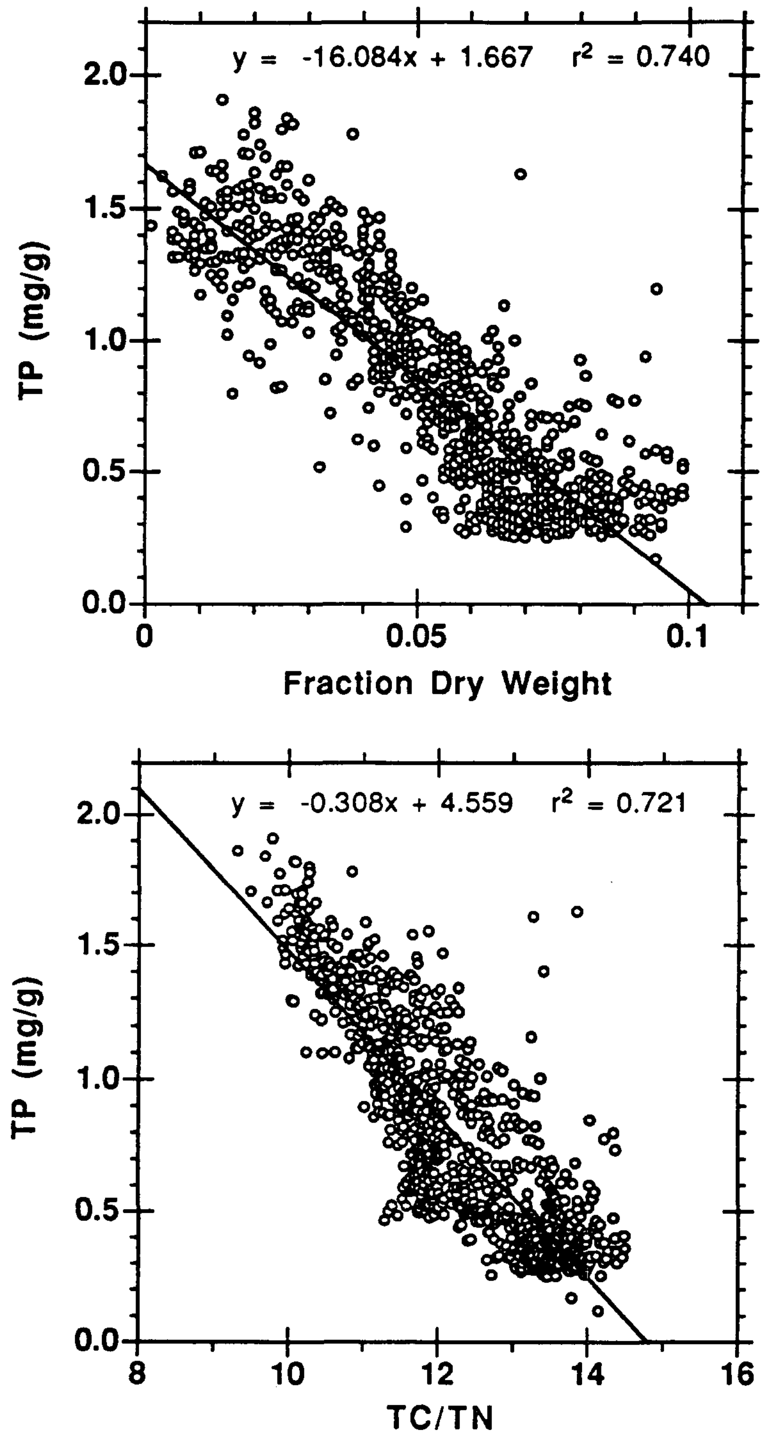


Figure 5. Linear regression of TP vs. dry weight fraction and TP vs. TC/TN ratio in Lake Apopka sediments. Filtered data for 46 survey cores collected in 1996. See text for criteria used to filter data.

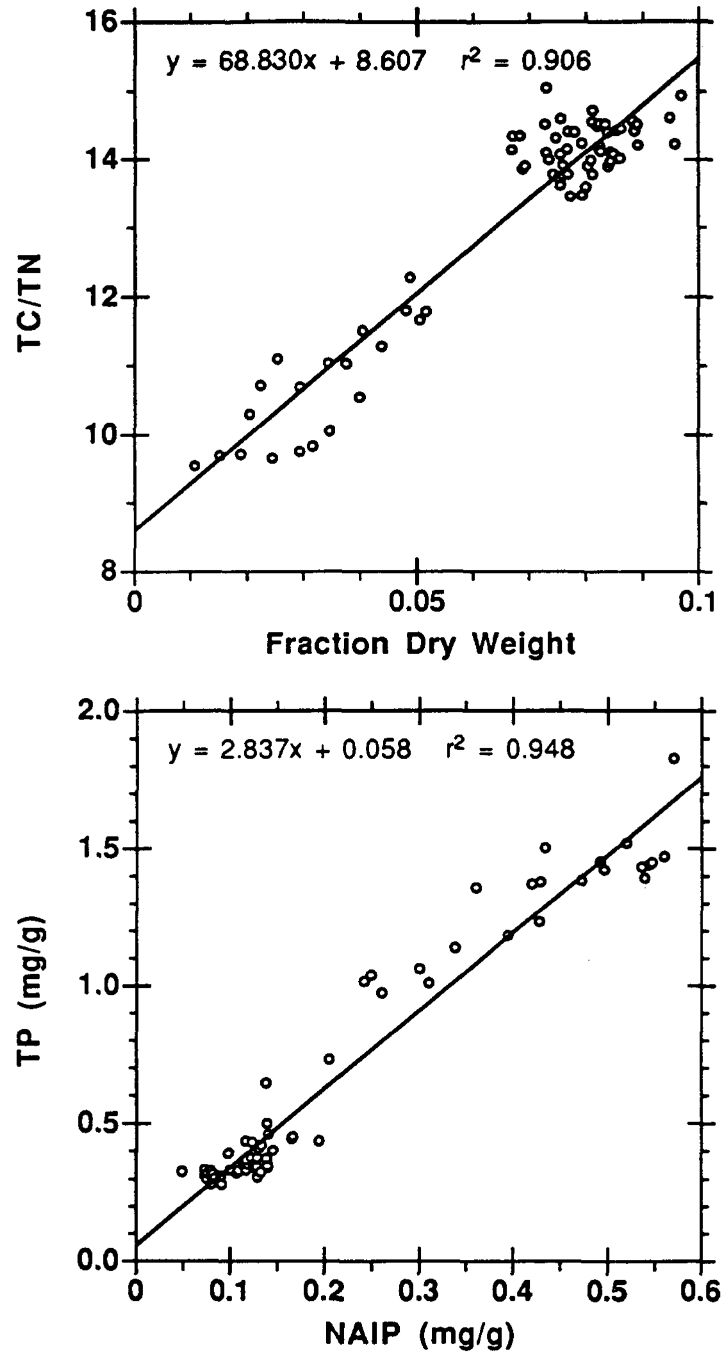


Figure 6. Linear regression of TC/TN ratio vs. dry weight fraction and TP vs. NAIP in Lake Apopka sediments. Filtered data for 3 historic cores collected in 1995. See text for criteria used to filter data.

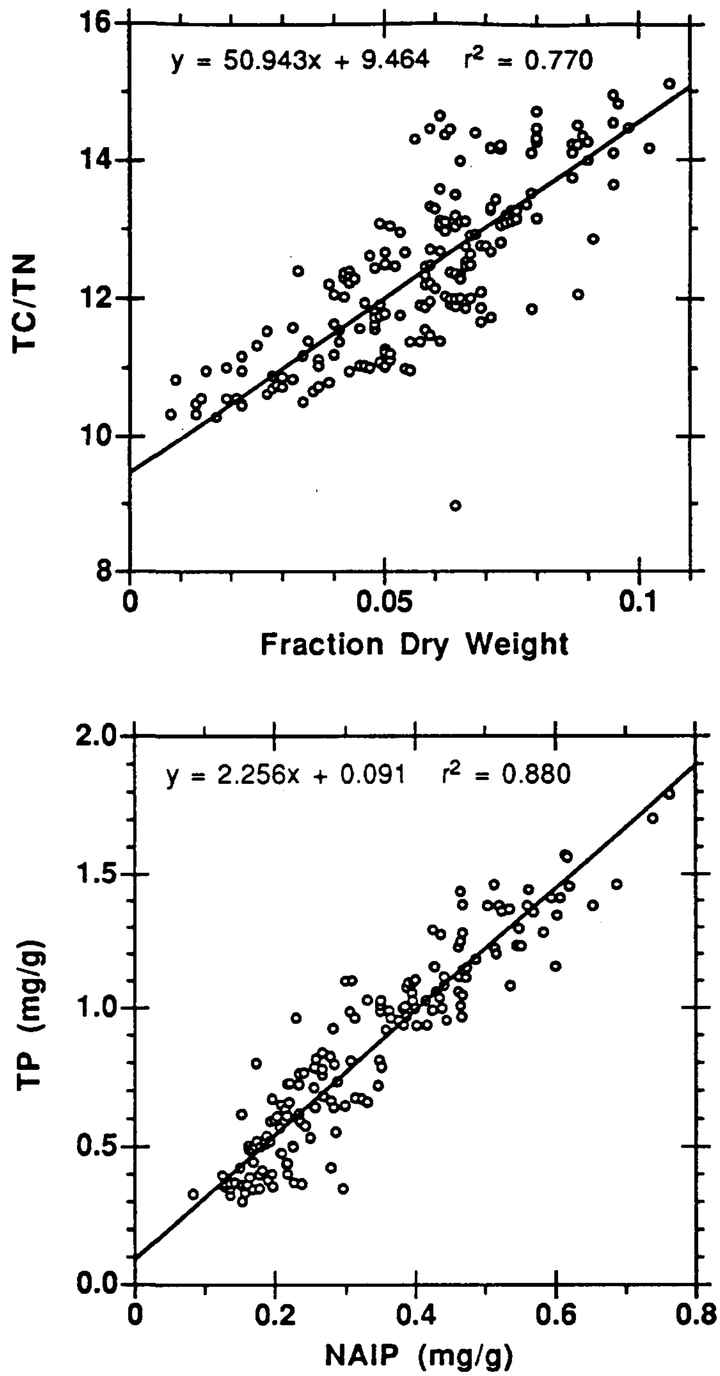


Figure 7. Linear regression of TC/TN ratio vs. dry weight fraction and TP vs. NAIP in Lake Apopka sediments. Filtered data for 8 historic cores collected in 1996. See text for criteria used to filter data.

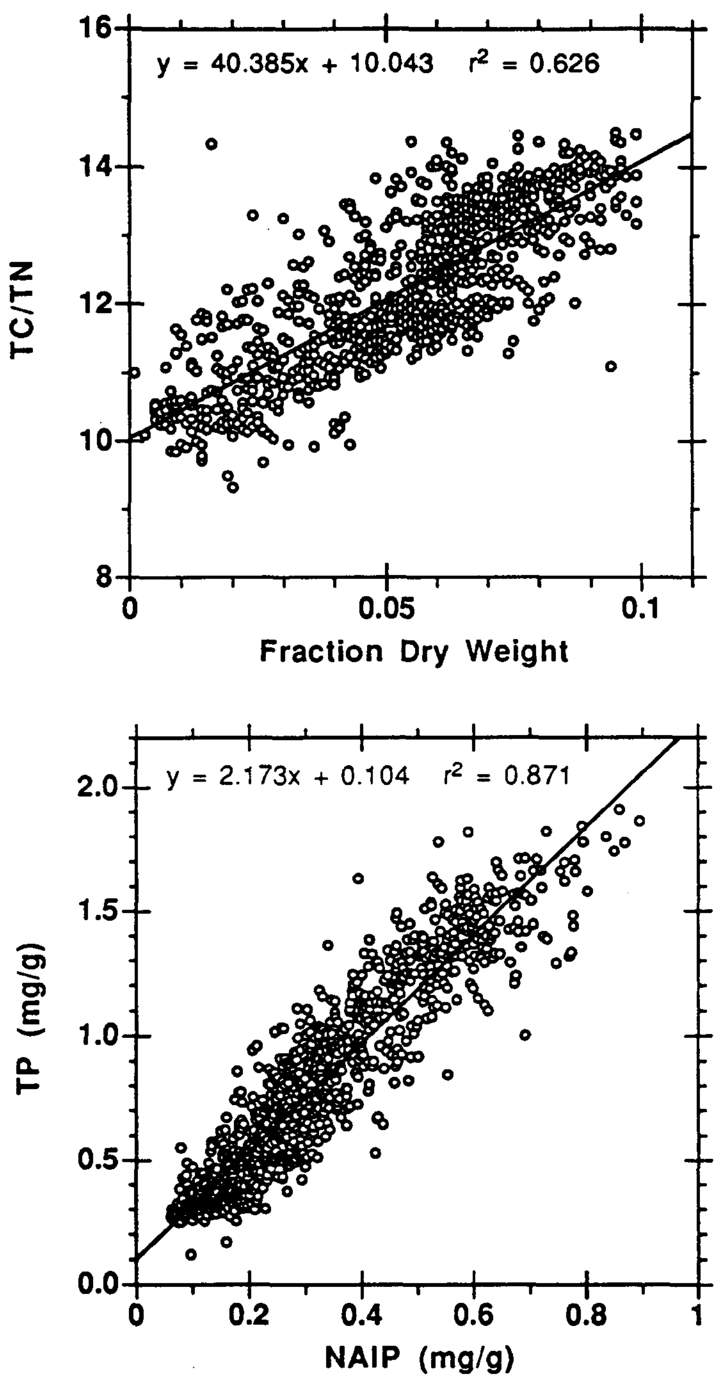


Figure 8. Linear regression of TC/TN ratio vs. dry weight fraction and TP vs. NAIP in Lake Apopka sediments. Filtered data for 46 survey cores collected in 1996. See text for criteria used to filter data.

(Fig. 2, Appendix C) were the ratio of TC/TN, fraction dry weight and TP concentration. In addition, TP profiles in ^{210}Pb dated cores collected in 1995 showed that the porosity and TP concentration of the flocculent sediments is greater than underlying sediments (Fig. 2) and that flocculent sediments were deposited primarily since the early 1940s (Schelske 1996). Criteria, therefore, are based on the premise that unconsolidated flocculent sediments with lower TC/TN ratio than those produced during the macrophyte phase were deposited in approximately 50 years during the recent planktonic phase. This premise is addressed in the section on ^{210}Pb Dating of Sediments. Criteria other than TC/TN, fraction dry weight and TP concentration were needed either to verify or to establish the thickness of flocculent sediments in some cores; other data used to determine thickness of flocculent sediments, which were not available for all cores, are discussed in the section on Sediment Layer Characterization.

Data from three cores, LA-03H, LA-02H and LA-31S are presented to substantiate criteria used to establish stratigraphic zones in the 1996 survey and historic cores. Data for historic core LA-03H illustrate discontinuities in TC/TN and % dry weight used to establish flocculent sediment depth (Fig. 9). The uppermost seven sections with low TC/TN and % dry weight clearly have characteristics of post-1947 sediments. Characteristics of the next section (24-26 cm) indicate that some flocculent material is present in this section also. The TP in the 24-26 cm section represents approximately 10% of the TP inventory to the 26-cm depth (see Appendix C). The TC/TN ratio is high at 22 and 24 cm which would be expected in the sediments deposited during the early part of the planktonic phase. A higher TC/TN ratio at 22 and 24 cm is interpreted to represent the decomposition of aquatic macrophytes after the primary producer community shifted to phytoplankton. The bottom of the zone of flocculent sediments at LA-03H, therefore, was placed at 24 cm based on the subjective criteria used in zonation.

Data for historic core LA-02H are presented because this core represents a station with a high degree of sediment focusing. Several stratigraphic features distinguish LA-02H from LA-03H. TP concentration at LA-02H is >1.0 mg/g to a depth of 82 cm (Fig. 10), exceeding the TP concentration at all depths at LA-03H except the upper 15 cm. The fraction dry weight and TC/TN were also low over a much greater depth range at LA-02H than at LA-03H. The TC/TN ratio was <13 at all depths at LA-02H, but only to a depth of 24 cm at LA-03H. The upper 30 to 35 cm at LA-02H are characterized by very loose sediments with TP >1.4 mg/g. The discontinuity in TP concentration and fraction dry weight between 82 and 84 cm can be used as an inference for the extent of flocculent sediments. Relatively high TP below 82 cm is consistent with the pattern of high TP found below the zone of flocculent sediments at LA9-95, a 1995 historic core (Schelske 1996). Microfossil analysis provides evidence that the section immediately below the identified zone of flocculent sediments at LA9-95 is clearly dominated by meroplanktonic diatoms and that an assemblage characteristic of the macrophyte dominated system is only found at deeper depths (Schelske et al. 1997). Neither the level of TP nor the TC/TN ratio at LA-02H provides a proxy that clearly represents sediments formed when the lake

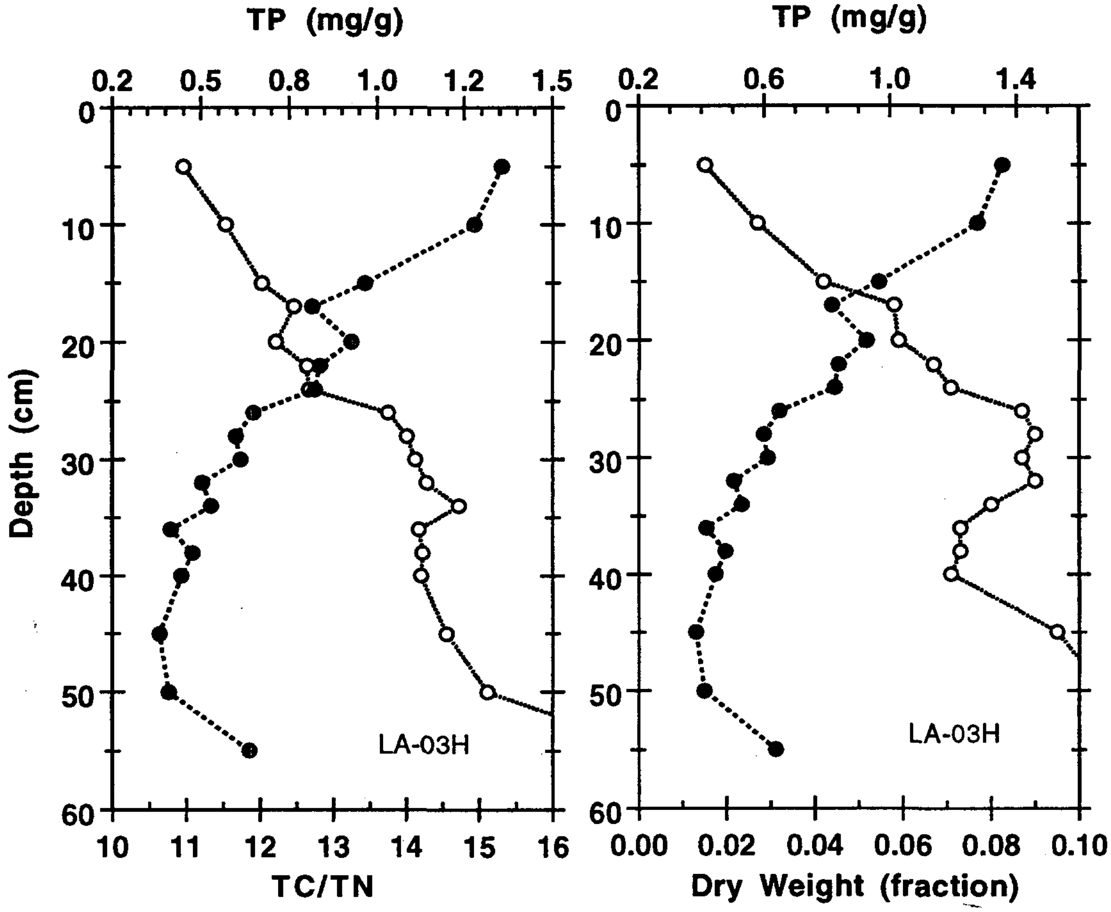


Figure 9. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-03H-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

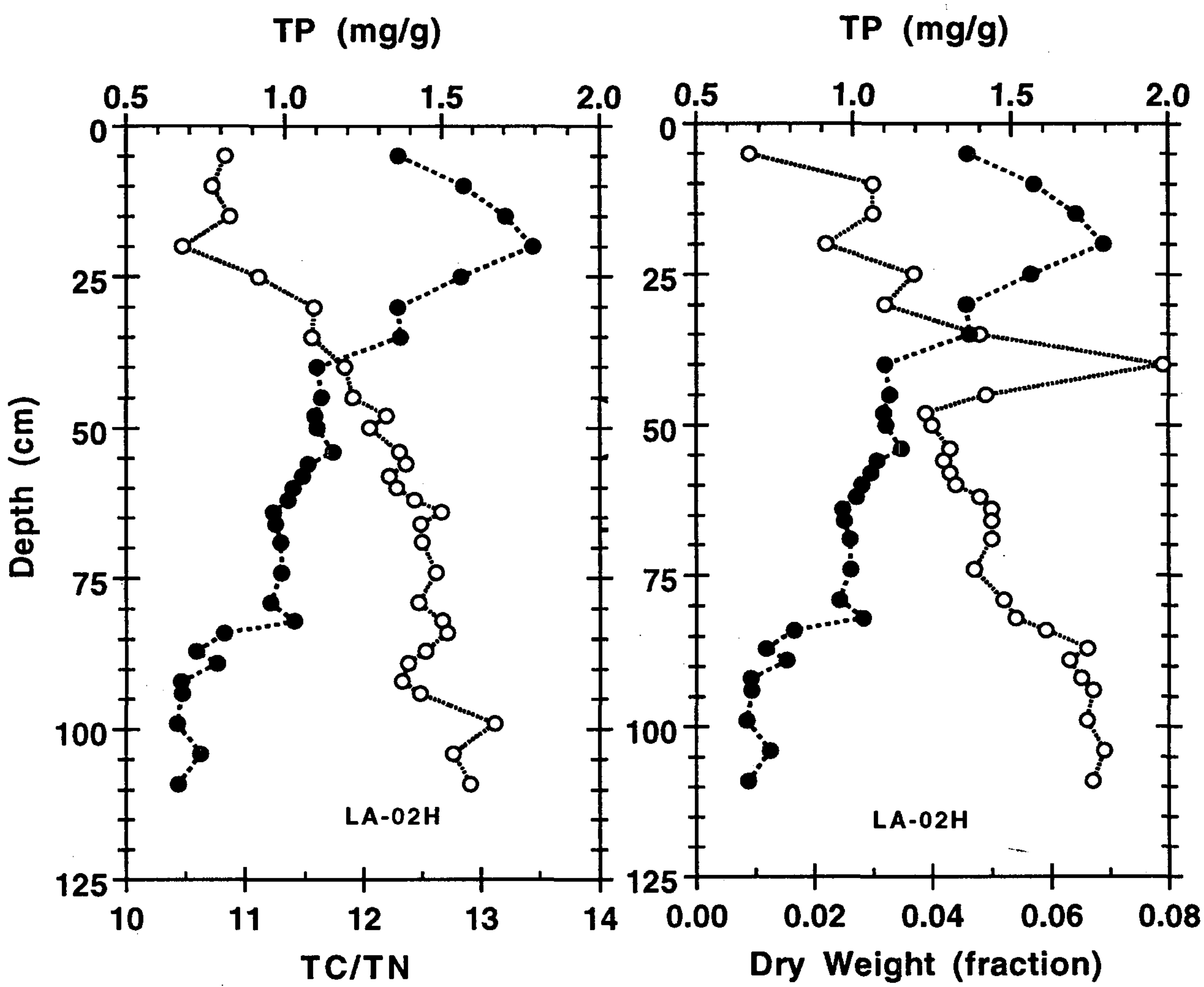


Figure 10. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-02H-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

was dominated by macrophytes. The bottom of the zone of flocculent sediments was placed at 84 cm based on the subjective criteria used in stratigraphic zonation. The stratigraphy for TP and fraction dry weight provide strong evidence for sediment focusing and high sedimentation rate.

Finally, data from survey core LA-31S are presented because approximately 40 cm of flocculent sediments were found in the 1995 historic core collected at this station (Schelske 1996). TP concentration and dry weight in the 40-cm section at LA31-95 were characteristic of flocculent sediments; but the TC/TN ratio was 12.3, an intermediate value between values for flocculent and underlying sediments (Appendix C). The zone of flocculent sediments in core LA-31S was set subjectively at 33 cm based on the low dry weight fraction to that depth where neither TC/TN was at the maximum found deeper nor was TP at the low level of deeper sediments (Fig. 11). However, high TP concentration characteristic of flocculent sediments was found to a depth of 39 cm at LA-31S, or at a similar depth to that identified in LA31-95. This pattern is similar to the one discussed in the preceding paragraph for LA-03H, LA-02H and LA9-95 in which high TP was found below the discontinuity in fraction dry weight.

Core data discussed above illustrate that TP storage is a function of sediment focusing or increasing sedimentation rate. The TP inventory in LA-02H, a station with a high degree of sediment focusing, is much greater than at either LA-03H or LA-31S (Appendices B and C).

A high degree of sediment focusing is also inferred at LA-05H based on physical and chemical characteristics of the sediment core (Fig. 12). The dry weight fraction of this core is no greater than 0.06 at the bottom, a fraction that is associated with flocculent sediments at deep depths in cores; the maximum TC/TN is 11.5 (Appendix C), much smaller than a ratio of approximately 14 that characterizes sediments deposited during the macrophyte phase at other stations (see Figs. 2, 9, 11). Finally, the TP concentration is >0.9 mg/g over the entire core. A concentration this large was commonly found in flocculent sediments of many cores. Peaks in TP between 42 and 44 cm and at 98 cm are an interesting feature of this core. Whether such peaks can be used in stratigraphic correlation is problematic, mainly because they would be masked in many cores with a lower sedimentation rate. However, peaks in TP at depth were also found in other cores as shown by data presented in Appendices B and C. A high degree of TP storage is characteristic of this core unless the bottom of the zone of flocculent sediments is set at a shallow depth (see Appendix C). Flocculent sediments, according to subjective criteria, are found to a depth >98 cm and probably occur over the entire length of the core. The subjective criteria used in zonation are difficult to apply to this core, either because no pre-1947 sediments were sampled or because some factor other than those employed is important. This core could not be aged with ^{210}Pb because of the great depth of flocculent sediments.

Five survey cores (10, 20, 21, 22 and 37) with relatively high TP, relatively small changes in TC/TN and the greatest thickness of flocculent sediments (Table 2) were identified. TP concentration in these cores was >0.6 mg/g over the length of the core and TC/TN was

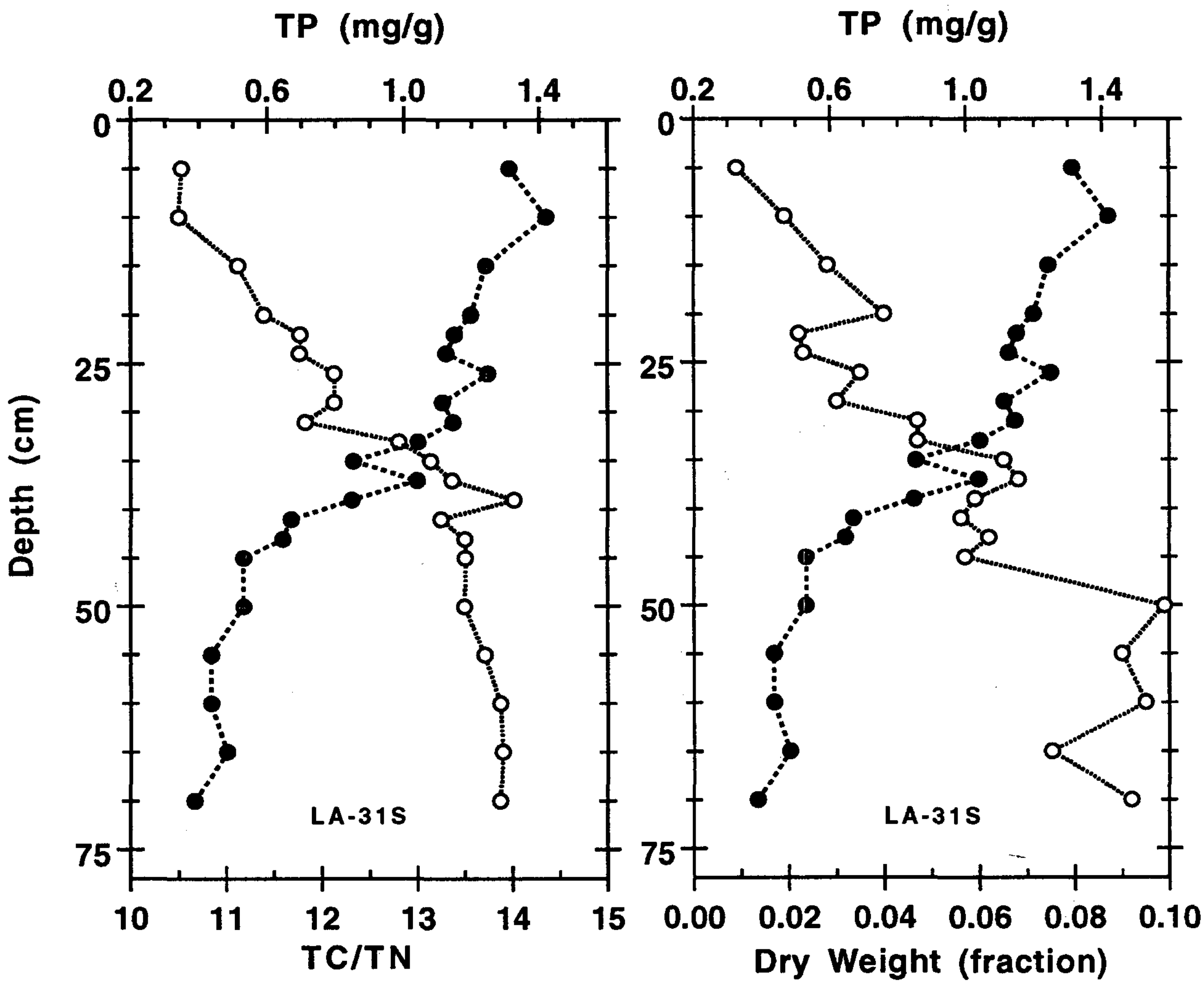


Figure 11. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-31S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

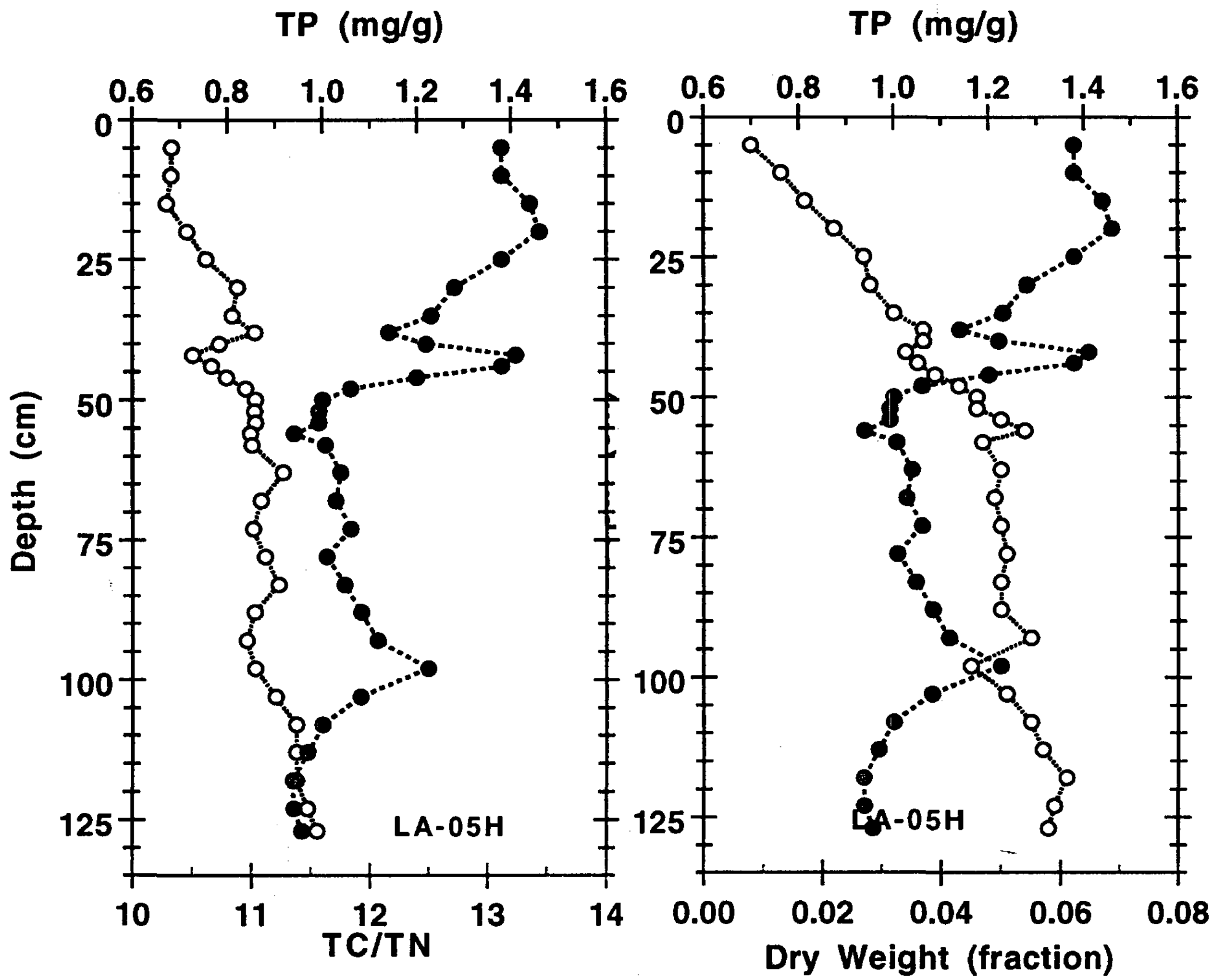


Figure 12. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-05H-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

generally <12, (Figs. 13-17) much less than a ratio of approximately 14 that characterizes sediments deposited during the macrophyte phase at other stations (see Figs. 2, 9, 11 and Appendices B and C). One noticeable exception to this pattern were ratios of TC/TN that were >13 from 50 to 72 cm at LA-20S (Fig. 14). Peaks in TP and dry weight fraction found in this zone were different from patterns characteristic of other cores. If the high TC/TN of these sediments is a proxy for macrophyte sediments, then the lower TC/TN ratio of underlying sediments is an inference for sediments characteristic of the planktonic phase. The TC/TN proxy, however, is based on a relatively small change in TC/TN ratio compared to other cores. In addition, the TC/TN ratio at LA-20S is >11.5 over the entire core; lower ratios were found in surface sediments of most cores. Only one of these five cores, LA-37S, had flocculent sediments with a TC/TN ratio of <10.5 (Fig. 17). The stratigraphy of TC/TN and TP concentration in sediments at these stations, therefore, was different from the stratigraphy found in the three historic cores collected in 1995 during this investigation (Fig. 2). Although the stratigraphy is not as clear as in most other cores, application of the subjective criteria places most of the length of these five cores in the zone of flocculent sediments (Table 2).

Survey cores were collected in 1996 at the three sites where historic cores were collected in 1995 during Phase I studies. Data for LA-31S (Fig. 11) and for LA-09S and LA-25S (Figs. 18 and 19) can be used to determine the depth of flocculent sediments by applying the subjective criteria. Each of these cores has a sharp discontinuity in TC/TN and in dry weight fraction that can be used to establish the thickness of flocculent sediments. With the exception of noisy dry weight data for LA-09S, these discontinuities are very clear. In addition, TP in each core is markedly lower at some depth below the discontinuity than in the overlying flocculent sediments. Thus, clear stratigraphic zonation is characteristic of replicate cores collected at three sites in 1995 (Fig. 2) and 1996 (Figs. 11, 18 and 19).

Thickness of flocculent sediments was similar for the duplicate cores collected at station 25 (14 cm for LA-25S and 15 cm for LA25-95) and at station 31 (33 cm for LA-31S and 35-40 cm for LA31-95). The 1995 historic cores were sectioned at 5-cm intervals so the depth of flocculent sediments could not be determined as precisely for LA31-95. The discrepancy in thickness of flocculent sediments was greatest at station LA9; 68 cm for LA-09S compared to 50 cm for LA9-95. The calculated cumulative TP in the flocculent sediments also was greater for LA-09S, 3.22 mg TP cm^{-2} compared to 2.14 mg TP cm^{-2} for LA9-95, but the calculated cumulative TP to 50 cm at LA-09S was 2.21 mg TP cm^{-2} or essentially the same as the value for LA9-95 (Appendices B and C). Examining data in Appendix B shows that sediments below 50 cm which accounted for the greater cumulative TP for LA-09S had a relatively uniform TP concentration (range from 1.01 to 1.14 mg/g) and a TC/TN ratio that increased only from 11.3 to 11.7 from 52 to 68 cm. These values for TP concentration and TC/TN ratio at LA-09S are essentially the same as values from 30 to 50 cm at LA9-95. Why the thickness of flocculent sediments should vary between the two cores is not clear other than to note that spatial variability

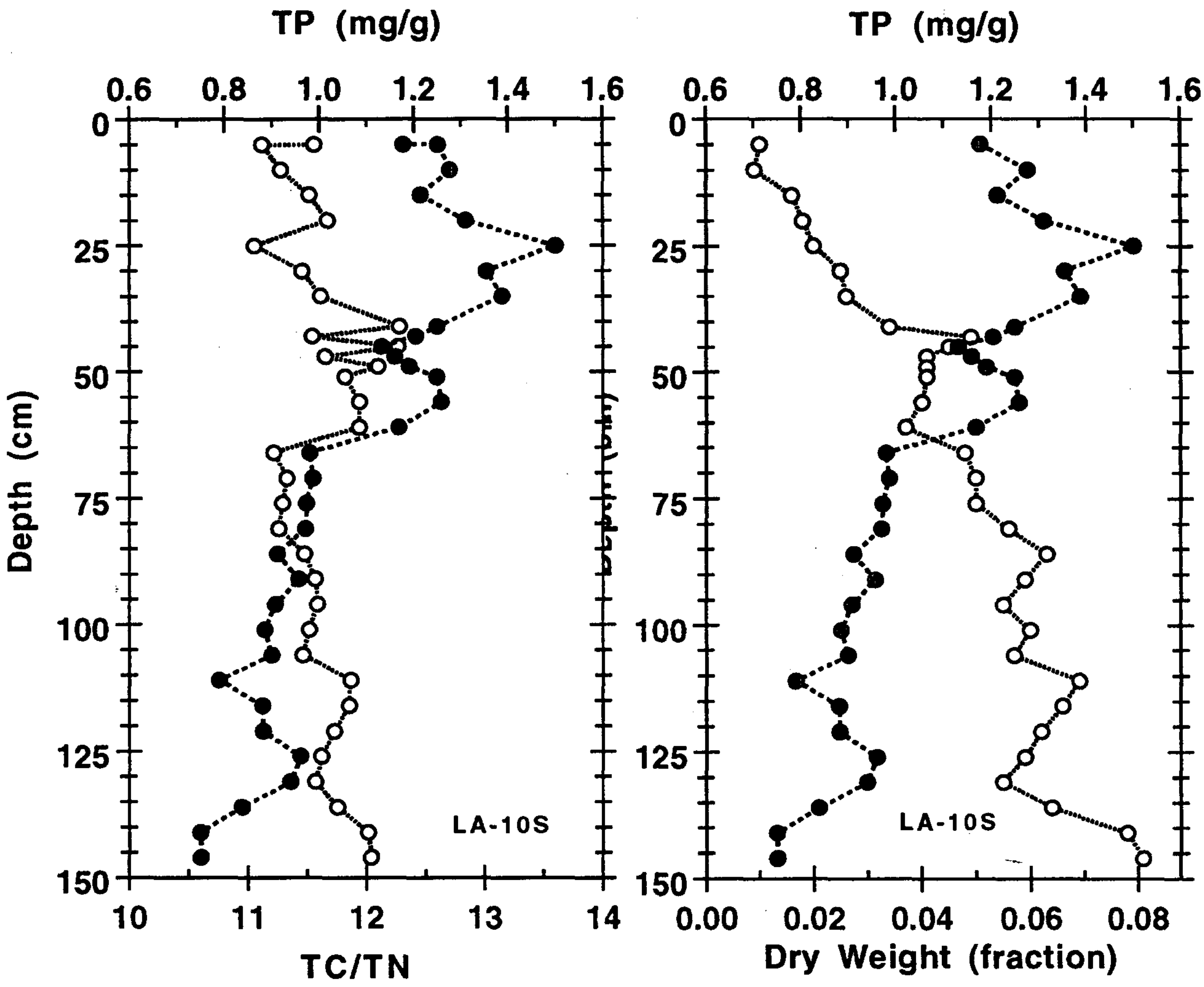


Figure 13. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-10S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

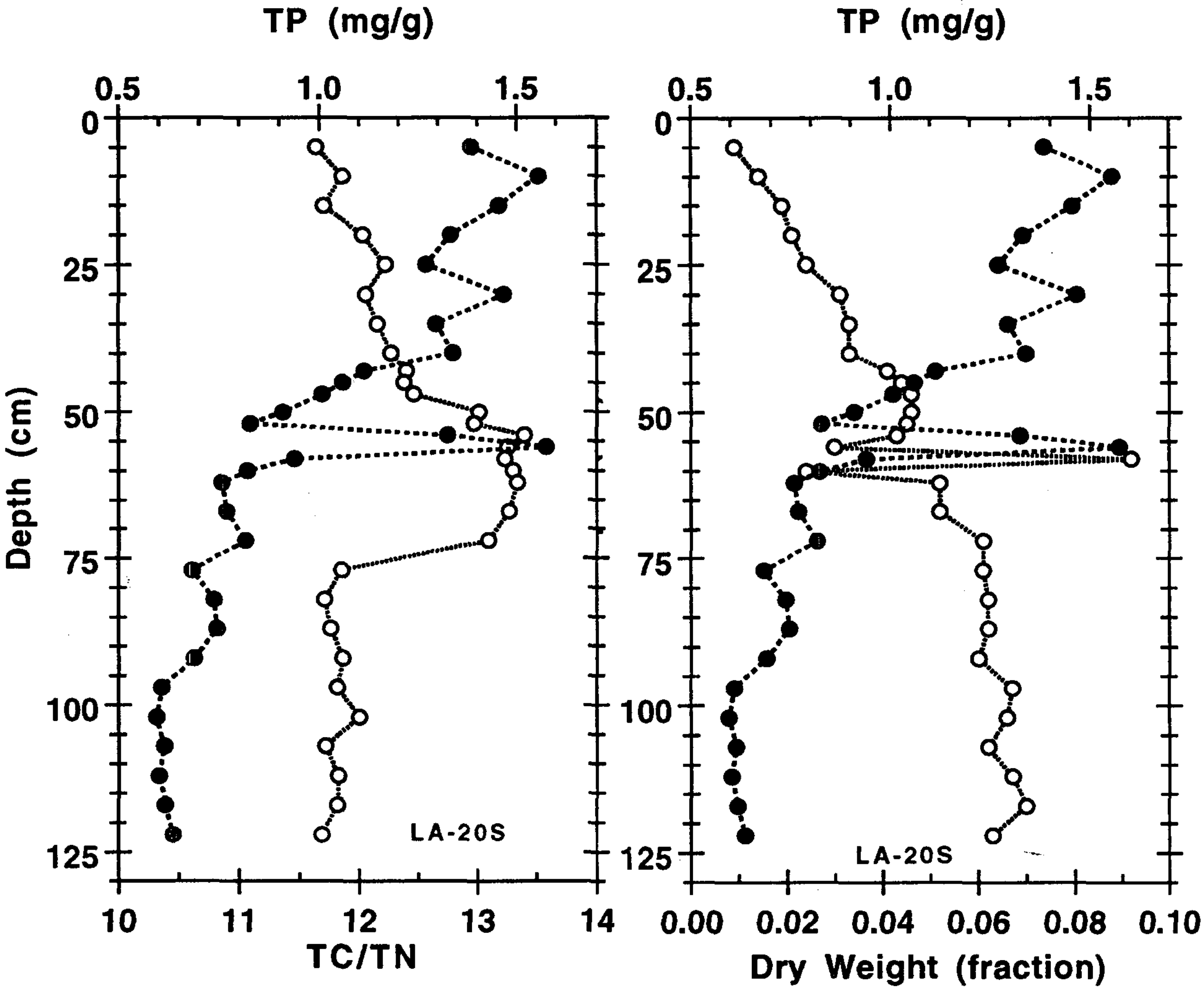


Figure 14. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-20S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

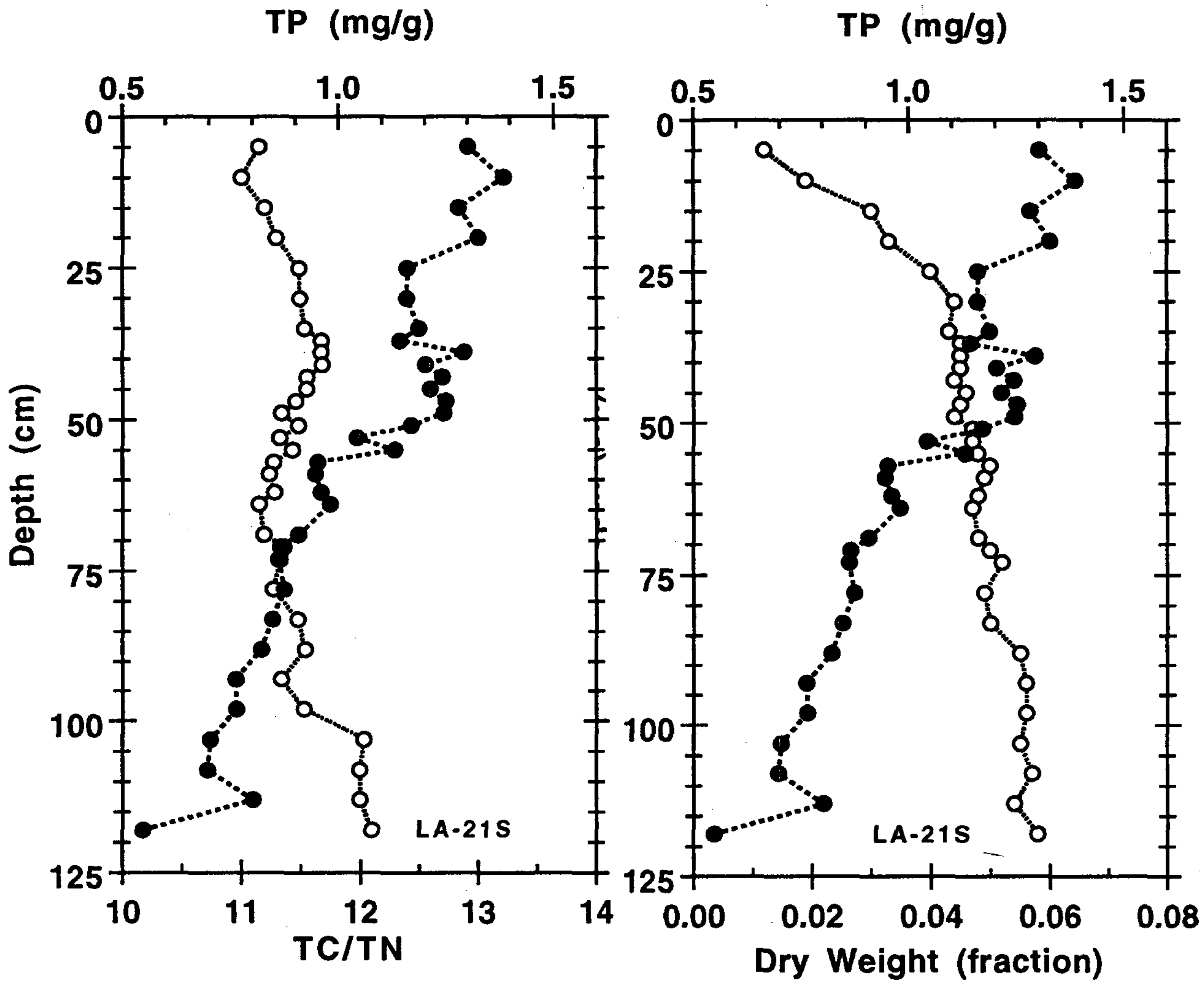


Figure 15. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-21S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

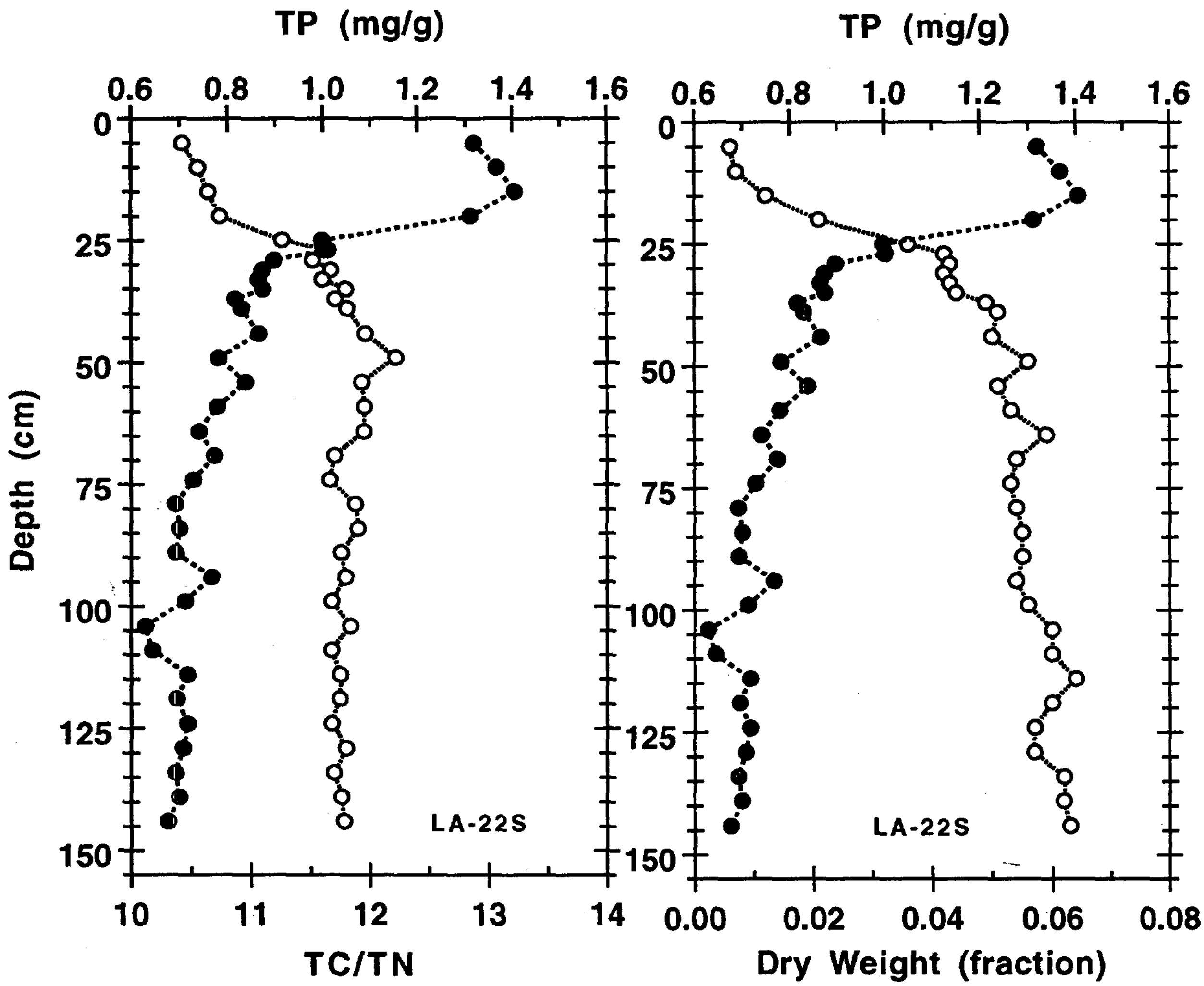


Figure 16. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-22S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

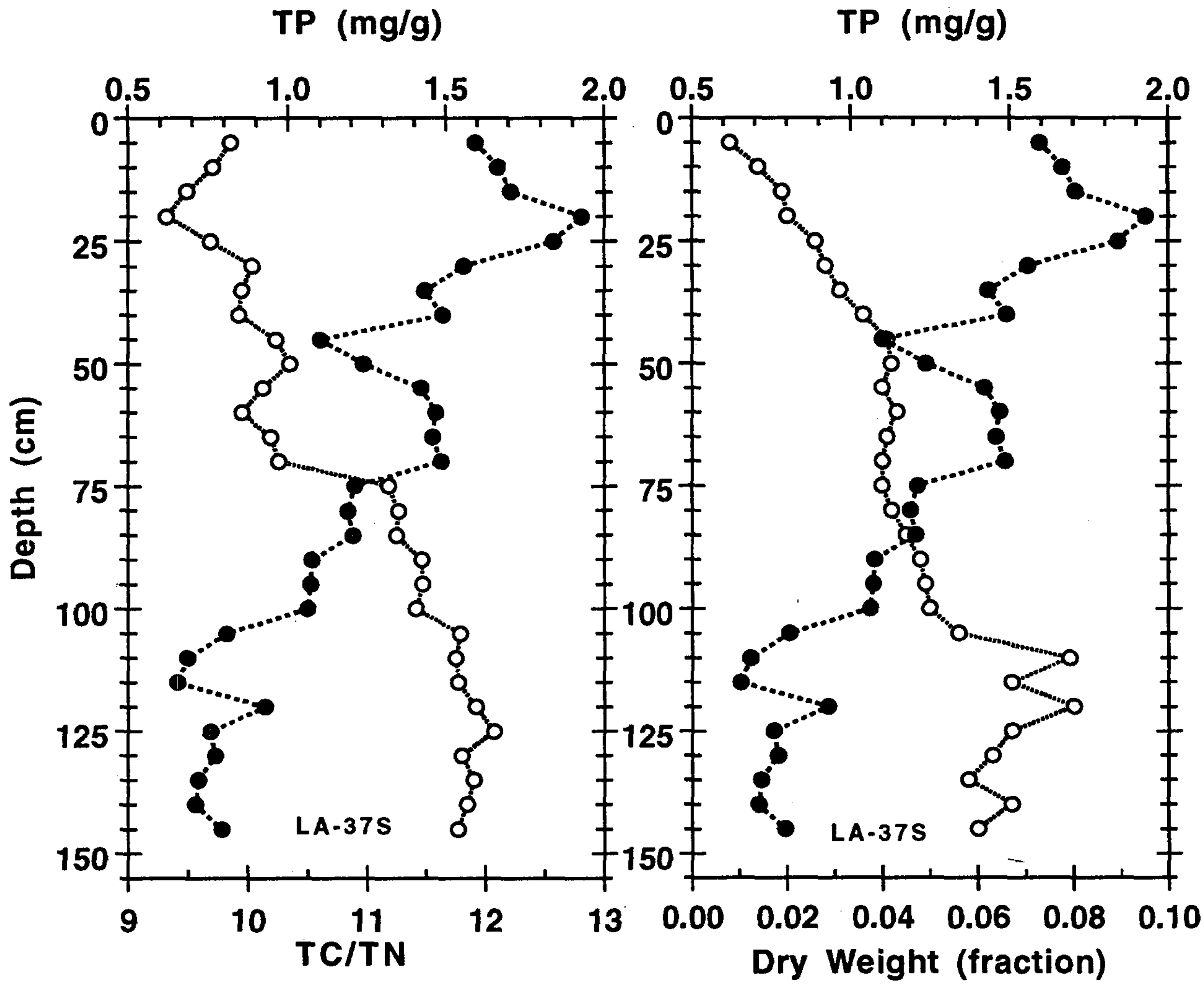


Figure 17. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-37S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

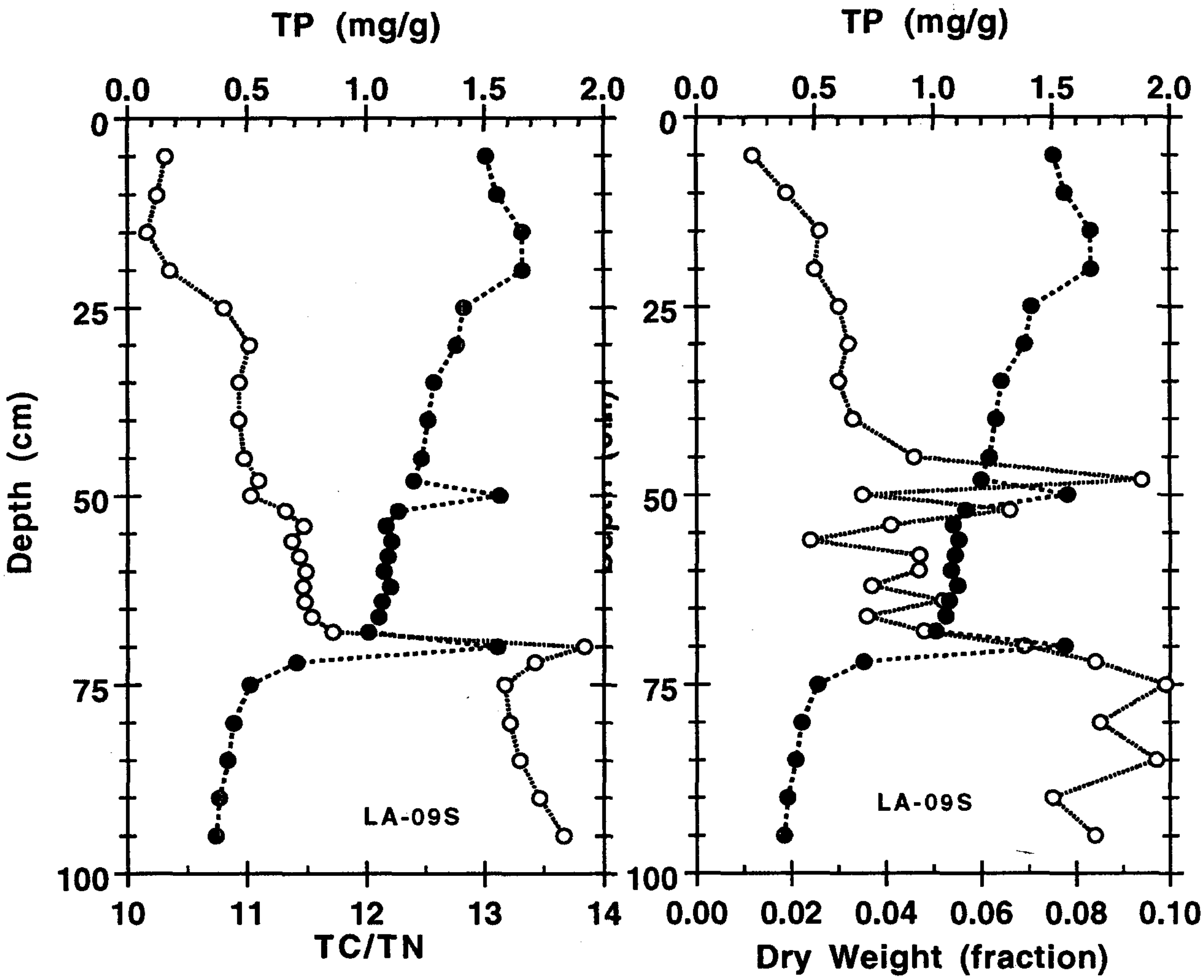


Figure 18. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-09S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

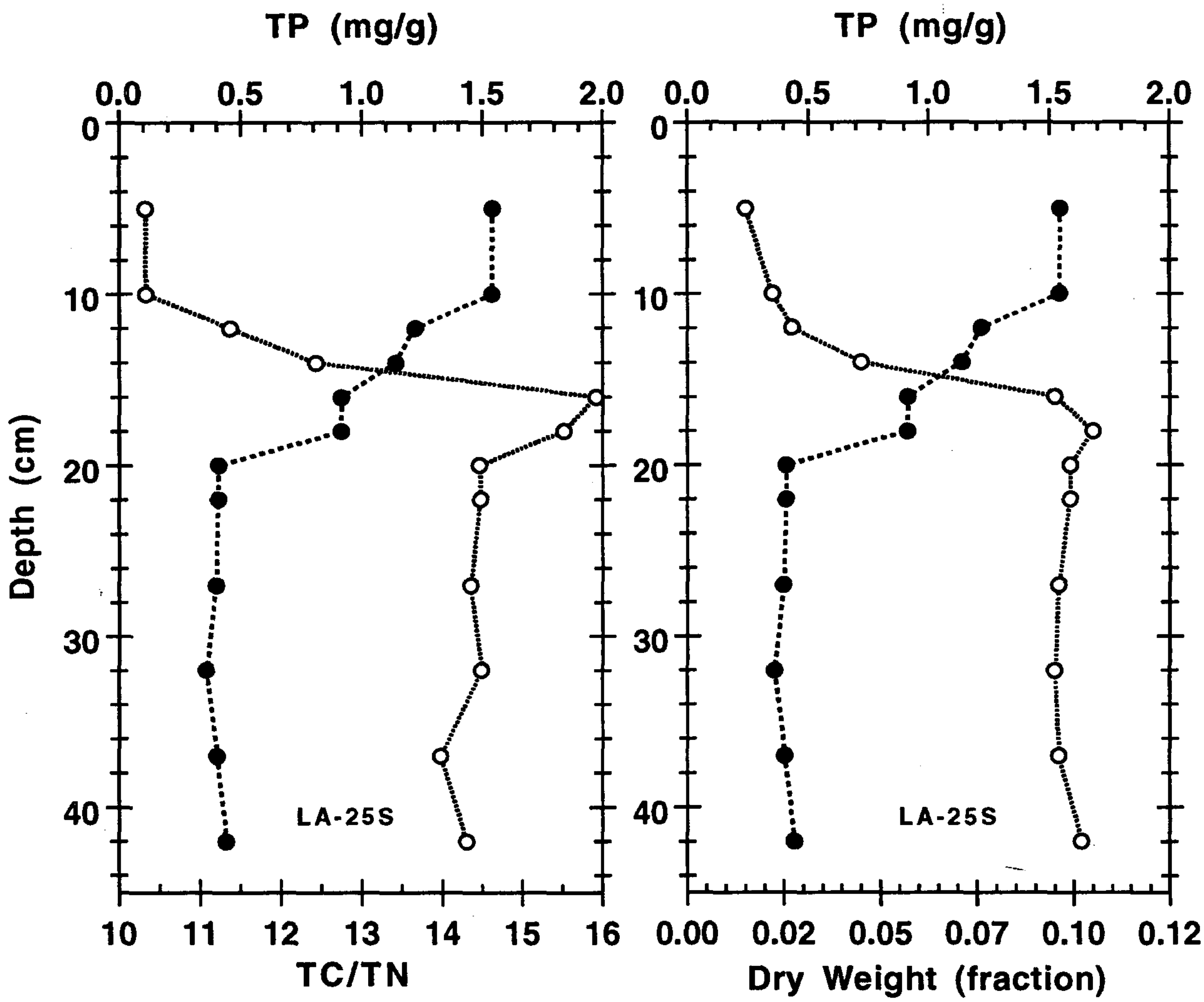


Figure 19. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-25S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

in thickness of flocculent sediments and related parameters was found among the 46 survey stations (see following section on Spatial Variability in Sediment Deposition).

Data for LA-46S are presented to illustrate that chemical profiles for this survey station located in the Gourdneck Arm differ from those in the open lake. TP was high at the surface, but decreased to approximately 0.4 mg/g below 100 cm (Fig. 20), or to a smaller concentration than found at most stations (Appendix B). A long record of flocculent sediments is supported by a low and decreasing ratio of TC/TN and by a low dry weight fraction. Sediments to a depth of 90 cm with a relatively small TP concentration were judged to be flocculent sediments deposited during the planktonic phase. The change to more consolidated sediments deposited during the macrophyte phase was inferred from the sharp increase in TC/TN at 100 cm and from the peak in dry weight fraction at 95 and 100 cm. The long record of sediments with low TP and low TC/TN distinguish this core from the remaining 56 cores collected during the present study.

One question related to thickness of flocculent sediments is: how does the inventory (storage) of TP increase with depth of flocculent sediments? This question was addressed with two analyses. First, the inventory for the 46 survey stations was calculated for depth intervals ranging from 5-20 cm (Table 1), an analysis that includes sediments at depths below the flocculent sediments at some transitional or non-depositional sites (Appendix B, survey stations 11, 16, 23, 25, 27 and 35). Second, the inventory was calculated as a function of increasing fraction dry weight for flocculent sediments <5.5% dry weight. Results show that the inventory was 25.9 mg TP cm^{-2} to a depth of 20 cm and approximately the same amount, 19.7 mg TP cm^{-2}, for sediments with <3.0% dry weight (Table 1). A much larger inventory, 52.4 mg TP cm^{-2}, was found in flocculent sediments with <5.0% dry weight. The inventory based on depth is lower because the thickness of flocculent sediments varies among stations.

Spatial Variability in Sediment Deposition

Inorganic and organic materials that are sedimented from the water mass of lakes are not deposited uniformly over lake basins. Variable sedimentation has been found by many investigators who studied sediment deposition in lake basins. Paleolimnologists working in Florida lakes have shown that certain sites in lakes provide a long record of deposited sediments that can be used to study historical patterns of sediment, nutrient and microfossil accumulation whereas other sites in the same systems cannot be used because sediment deposition is too small (Whitmore et al. 1996). Results from other studies also show that the sites of deepest sediment accumulation can be determined only by sampling at a number of stations over a lake basin (Anderson 1990). Sites of sediment deposition in lakes can be described as depositional, non-depositional or erosional, and transitional. By definition, most of the sedimentation then occurs at depositional sites or in zones where sediments accumulate to form the permanent sediment

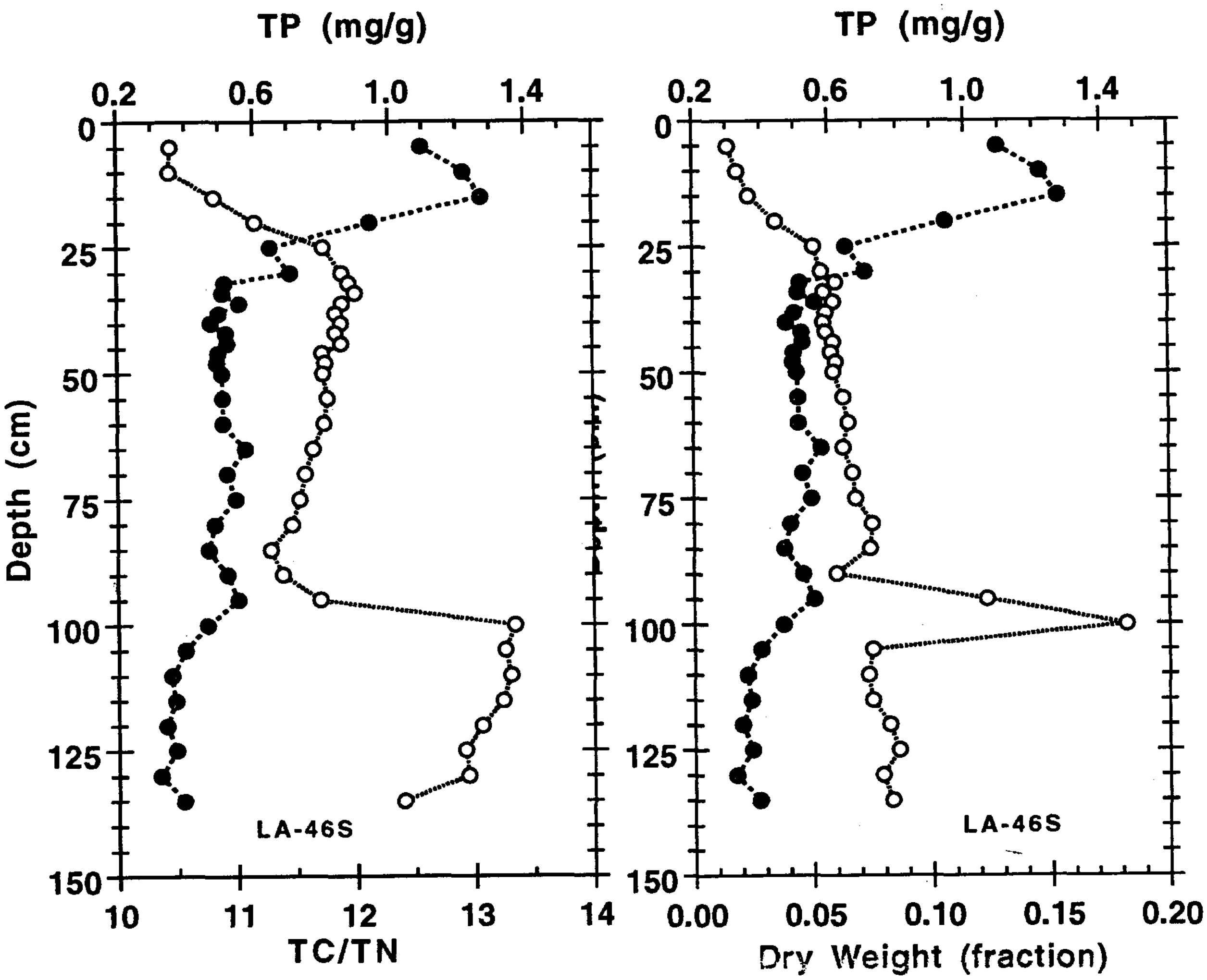


Figure 20. Plots of TP, TC/TN and fraction dry weight vs. depth, LA-46S-96, Lake Apopka. Solid circles are TP and open circles are TC/TN or dry weight.

Table 1. NAIP and TP inventory (storage) by dry weight % and by depth in sediments from 46 survey cores, Lake Apopka. Data are integrated total for each category and each type of phosphorus. If resuspended in an average 1.7-m water colum, 1.0 g cm^{-2} is equivalent to 100 µg/L.

Dry Weight %	NAIP ($mg\ cm^{-2}$)	TP ($mg\ cm^{-2}$)	Fraction NAIP
<1.0	0.61	1.49	0.407
<1.5	1.62	3.97	0.408
<2.0	3.27	7.93	0.412
<2.5	5.63	13.65	0.413
<3.0	8.09	19.72	0.410
<3.5	10.71	26.31	0.407
<4.0	12.94	32.46	0.399
<4.5	16.53	42.16	0.392
<5.0	20.73	52.41	0.396
<5.5	24.06	61.41	0.392

Depth (cm)	NAIP ($mg\ cm^{-2}$)	TP ($mg\ cm^{-2}$)	Fraction NAIP
5	1.29	3.15	0.410
10	3.86	9.43	0.409
15	6.91	16.84	0.410
20	10.41	25.86	0.402

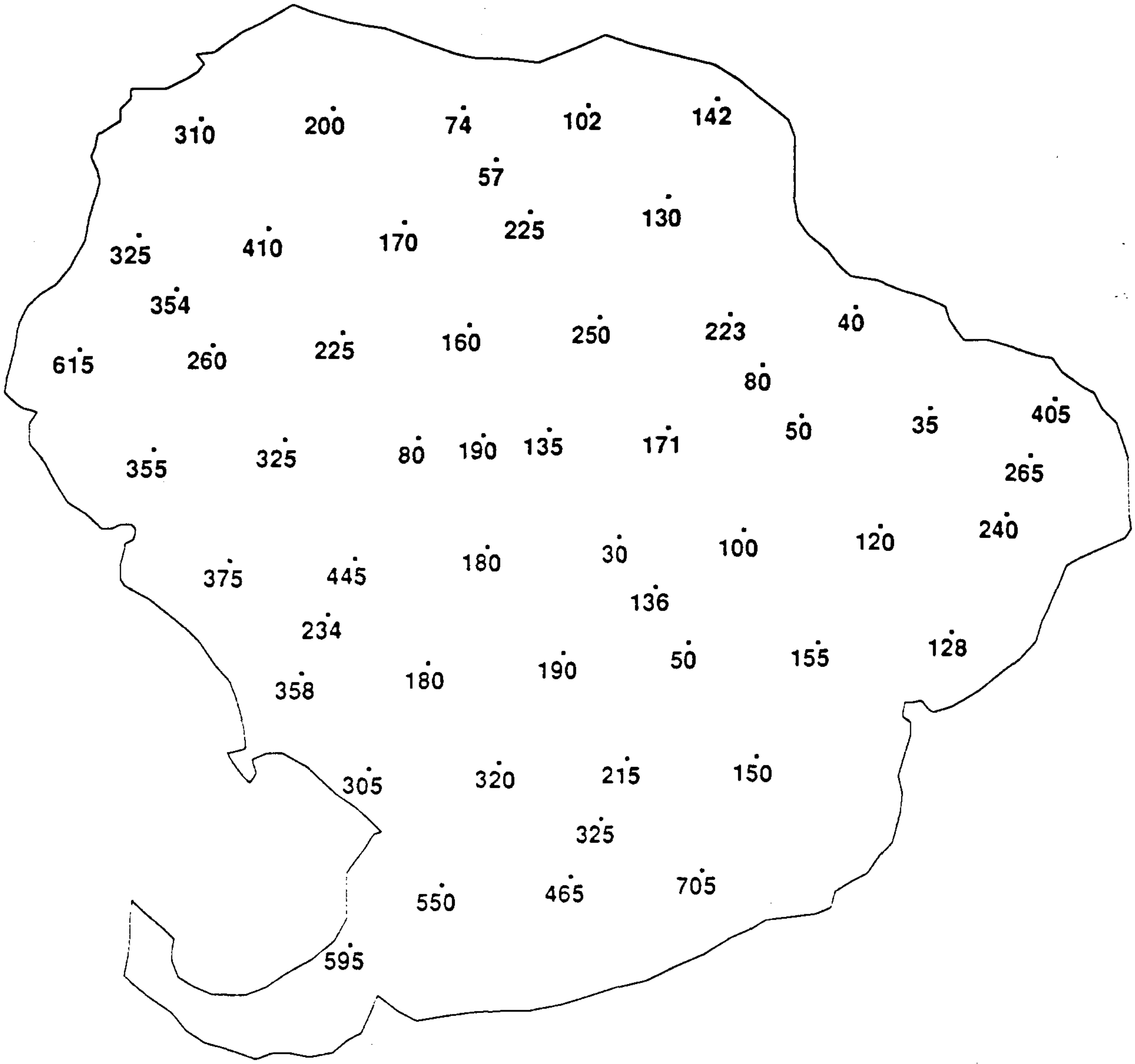
record. Transitional sites are in areas where recent sediments are found; these sediments, however, by definition are not permanently sedimented but are eventually resuspended and transported to depositional zones. Erosional zones are areas where recent sediments are either not found or only found infrequently. Understanding these distinctions in depositional patterns is important in the design of sampling and in the selection of sites for paleolimnological studies.

The historic stations sampled in 1995 (Schelske 1996) represent, as defined above, at least one depositional site (LA9-95) with 50 cm of flocculent sediments and one transitional site (LA25-95) with only 15 cm of flocculent sediments. The third station (LA31-95) is a depositional site with 35-40 cm of flocculent sediments, but the rate of sedimentation at this site is much lower than that at LA9-95.

The disproportionate accumulation of sediments in depositional areas is termed sediment focusing. Finding areas in which sediments are focused is essential in paleolimnological studies because the ability to resolve events in the sediment record is obviously a function of rate of sedimentation. In general the resolution will increase with the rate of sediment accumulation. In addition, determining the area of depositional zones is important because these zones contain the major portion of materials that have been sedimented in the lake basin over time. Transition and erosional zones, by contrast, accumulate relatively small quantities of sediments before sedimented materials are resuspended and transported to other parts of the lake. It is important to note, however, that these distinctions are not needed to obtain estimates of lake-basin storage of TP. For this purpose it is necessary to calculate the inventory (storage) of the variable of interest at sampling sites selected to represent sedimentation in the lake basin. The present study utilized an equal area grid so each station can be given equal weighting in calculations of integrated storage of sediment mass, organic matter, TP and NAIP in flocculent sediments.

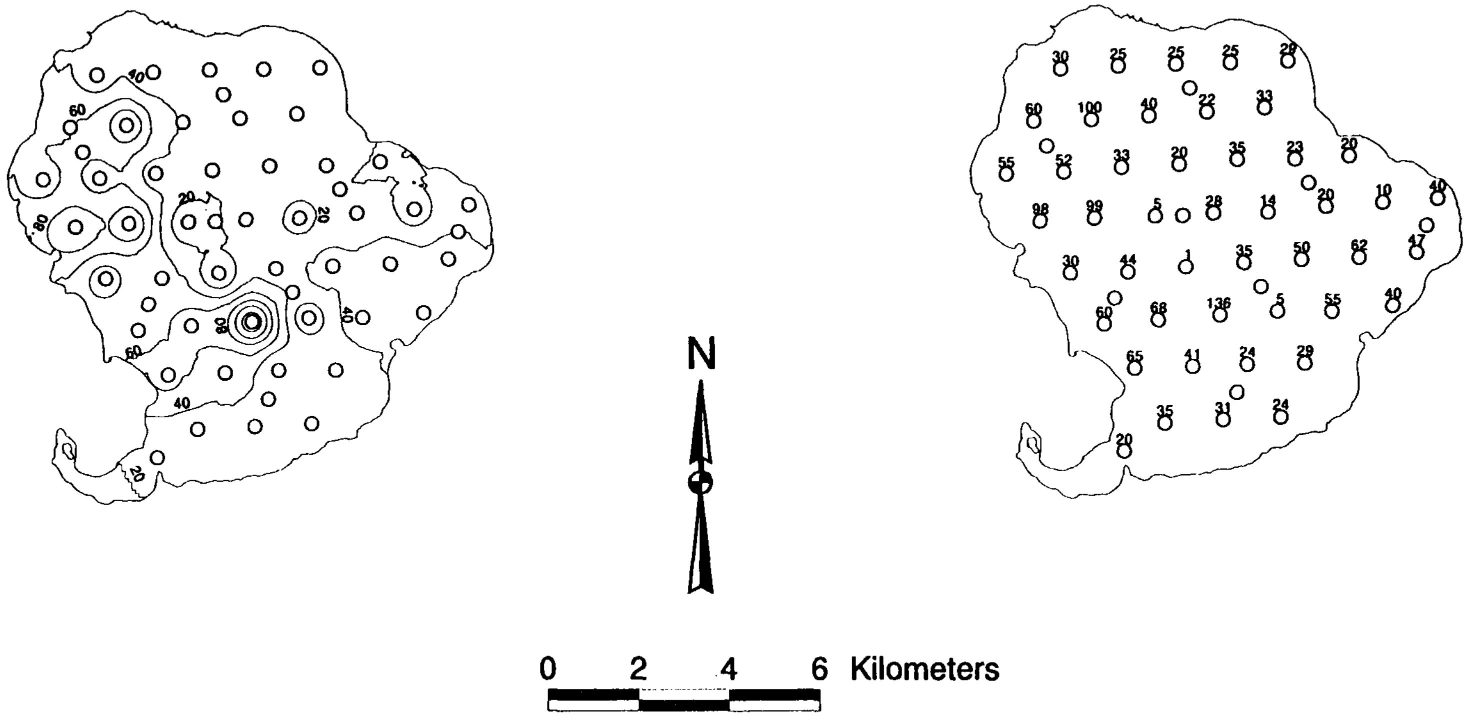
Spatial variability in sediment deposition over the Lake Apopka basin is evident from data for survey and historic cores presented earlier and from the areal distribution of both soft sediments and flocculent sediments in survey cores. The variation in depth of soft sediments and flocculent sediments is shown in Figs. 21 and 22. Soft sediment thickness measured in the field at each station by spudding with a steel rod ranged from 30 to 705 cm; flocculent sediment thickness determined from several variables measured in the laboratory ranged from 1 to 136 cm (Table 2). Variability in soft sediment and flocculent sediment thickness is shown also by statistical analysis: means and standard deviations were 245 ± 163 cm and 47 ± 32 cm, respectively.

Inventories of mass, organic matter, inorganic matter, TP and NAIP varied spatially as shown in Figs. 23-27. Statistical variation, like that for thickness of soft and flocculent sediment, was large for the means of these inventories (Table 2). Data from three stations (11, 16 and 23) with 5 cm or less of flocculent sediments contributed to the large variation. Storage at these stations was more than an order of magnitude less than the mean. In addition, storage at



Soft sediment depths in centimeters

Figure 21. Depth of soft sediments at 46 survey stations, Lake Apopka.

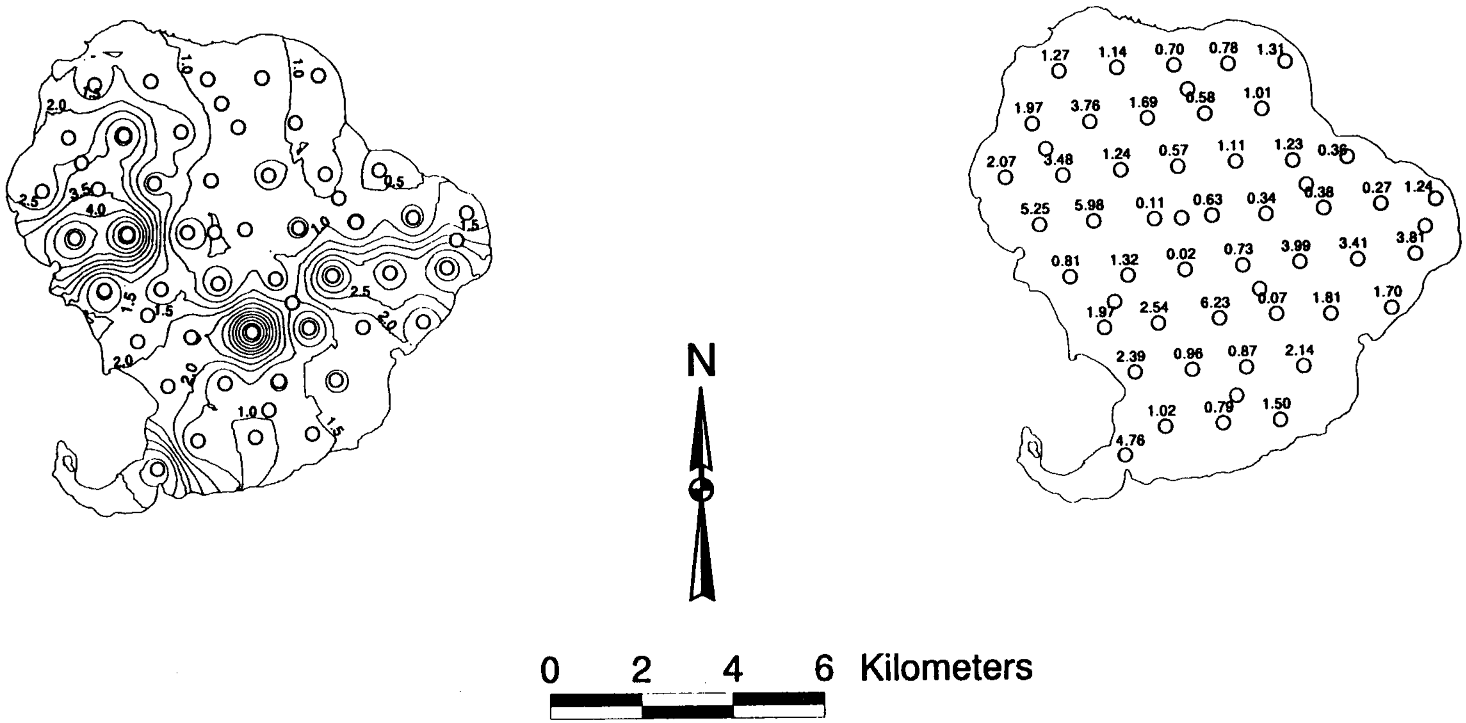


Floc thickness at 46 sampling stations in Lake Apopka.

Figure 22. Depth of flocculent sediments at 46 survey stations, Lake Apopka.

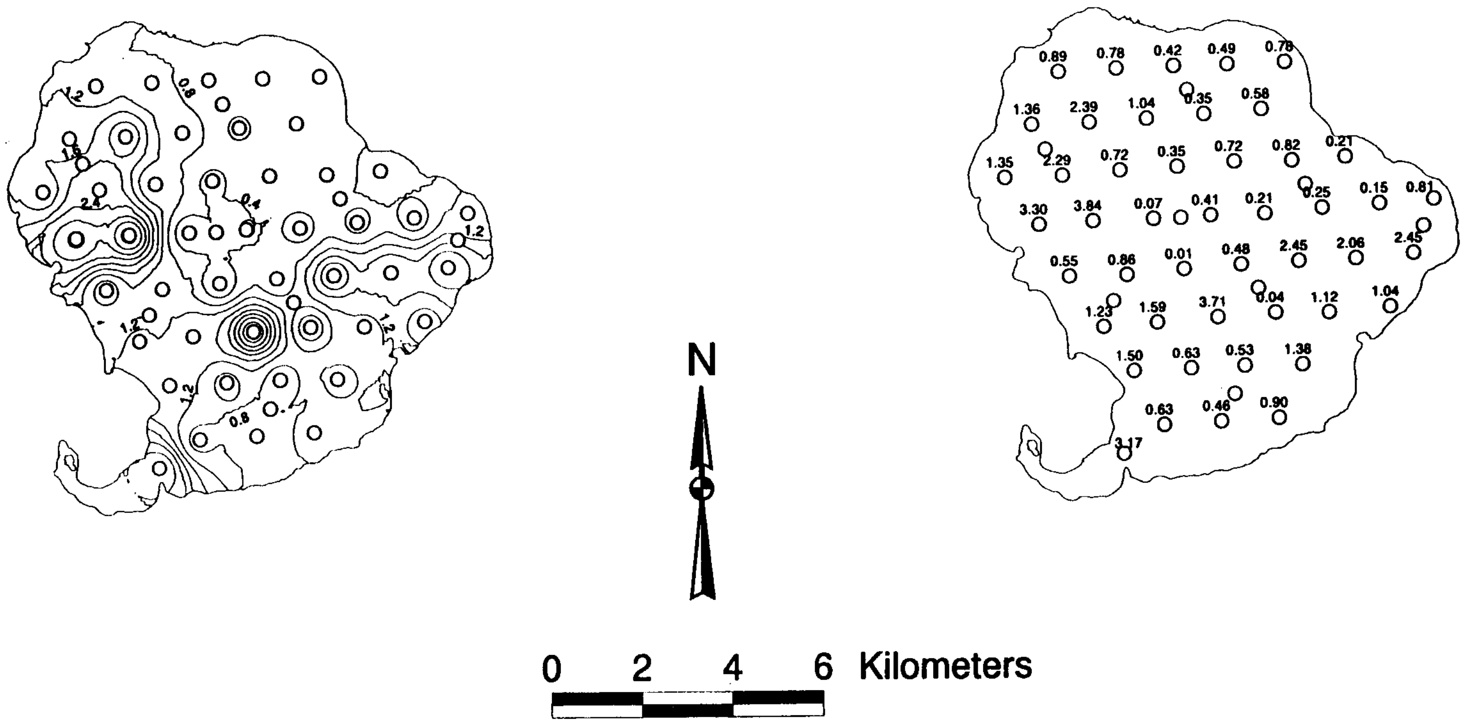
Table 2. Water depth, soft sediment thickness, flocculent sediment thickness and cumulative storage (inventories) of mass, TP, NAIP, inorganic mass and organic mass at 46 survey stations in Lake Apopka. Cumulative storage is for the zone of flocculent sediments only.

Station	Water Depth (m)	Soft Sed Depth (m)	Floc Depth (cm)	Cum Mass ($g\ cm^{-2}$)	Cum TP ($mg\ cm^{-2}$)	Cum NAIP ($mg\ cm^{-2}$)	Cum Inorganic ($g\ cm^{-2}$)	Cum Organic ($g\ cm^{-2}$)
1	1.75	5.50	35	1.016	1.157	0.412	0.391	0.625
2	1.45	4.65	33	0.793	0.820	0.346	0.329	0.464
3	1.35	7.05	35	1.496	1.278	0.561	0.599	0.897
4	2.65	3.05	75	2.392	2.857	1.207	0.894	1.498
5	1.73	3.20	41	0.962	0.889	0.264	0.287	0.631
6	1.53	2.15	26	0.874	0.958	0.337	0.348	0.526
7	1.50	1.50	52	2.143	1.511	0.652	0.760	1.382
8	1.60	3.58	60	1.966	2.161	0.757	0.735	1.231
9	1.75	1.80	68	2.540	3.221	1.275	0.955	1.585
10	1.30	1.90	136	6.229	6.272	2.630	2.520	3.709
11	2.95	0.50	5	0.066	0.082	0.032	0.024	0.041
12	1.35	1.55	55	1.807	2.110	0.815	0.687	1.120
13	1.50	1.28	50	1.700	1.781	0.750	0.661	1.039
14	1.90	3.75	30	0.809	0.872	0.292	0.263	0.546
15	1.80	4.45	44	1.317	1.698	0.570	0.456	0.861
16	3.70	1.80	1	0.023	0.018	0.007	0.014	0.009
17	1.92	0.30	35	0.734	1.090	0.396	0.254	0.480
18	1.75	1.00	75	3.989	4.119	1.434	1.544	2.445
19	1.65	1.20	77	3.408	3.442	1.512	1.355	2.061
20	1.85	2.40	92	3.807	3.753	1.395	1.358	2.449
21	2.05	3.55	113	5.245	5.096	2.070	1.949	3.295
22	2.00	3.25	129	5.976	4.660	1.982	2.137	3.839
23	2.75	0.80	5	0.108	0.069	0.028	0.038	0.070
24	1.95	1.35	28	0.634	0.769	0.261	0.228	0.405
25	2.05	1.71	14	0.340	0.466	0.188	0.132	0.208
26	1.85	0.50	20	0.377	0.480	0.208	0.132	0.245
27	2.15	0.35	10	0.269	0.256	0.116	0.115	0.154
28	1.20	4.05	40	1.241	1.209	0.451	0.427	0.814
29	1.50	6.15	55	2.072	2.078	0.667	0.723	1.349
30	1.60	2.60	82	3.477	2.993	1.180	1.187	2.290
31	1.92	2.25	33	1.244	1.480	0.692	0.520	0.724
32	2.05	1.60	20	0.565	0.621	0.247	0.212	0.352
33	1.85	2.50	37	1.110	1.188	0.417	0.393	0.717
34	2.00	2.23	29	1.232	1.064	0.374	0.410	0.822
35	2.18	0.40	15	0.361	0.429	0.192	0.156	0.205
36	1.50	3.25	65	1.973	2.230	0.859	0.616	1.357
37	1.60	4.10	105	3.755	4.859	2.056	1.361	2.394
38	1.87	1.70	45	1.692	1.785	0.657	0.648	1.044
39	1.85	2.25	22	0.581	0.816	0.323	0.234	0.347
40	1.73	1.30	35	1.011	1.005	0.418	0.427	0.584
41	1.70	3.10	34	1.269	1.498	0.438	0.379	0.890
42	1.80	2.00	35	1.144	1.253	0.488	0.364	0.780
43	2.01	0.74	25	0.697	0.852	0.433	0.278	0.419
44	1.75	1.02	25	0.779	1.181	0.544	0.292	0.487
45	1.32	1.42	37	1.307	1.614	0.639	0.525	0.782
46	1.60	5.95	90	4.756	2.794	1.261	1.589	3.167
Average	1.84	2.45	47	1.77	1.80	0.714	0.650	1.116
Std Dev	0.45	1.63	32	1.56	1.45	0.602	0.582	0.985
sum				81.3	82.8	32.8	29.9	51.3



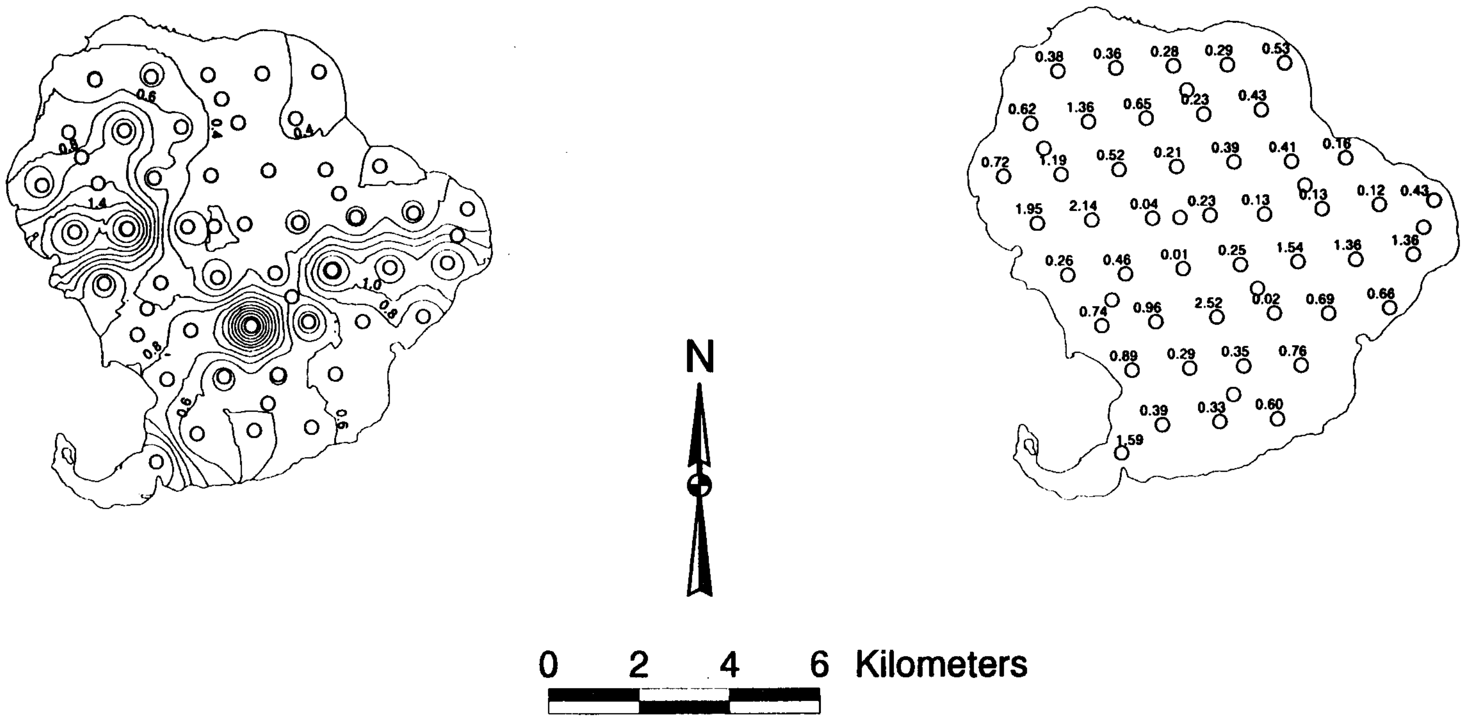
Integrated storage of mass (g/cm^2) in flocculent sediments at 46 sampling stations in Lake Apopka.

Figure 23. Inventory (storage) of sediment mass at 46 survey stations, Lake Apopka. Units are g cm^{-2}.



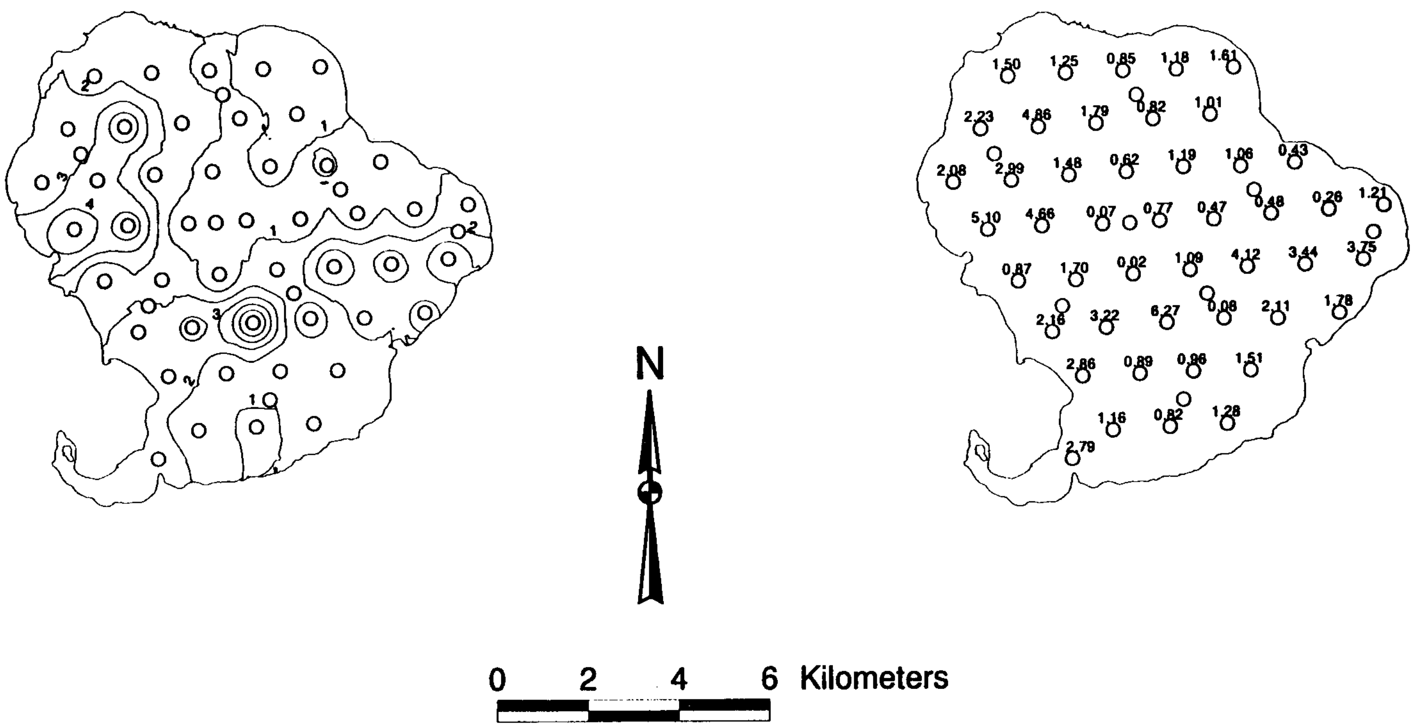
Integrated storage of organic matter (g/cm^2) in flocculent sediments at 46 sampling stations in Lake Apopka.

Figure 24. Inventory (storage) of organic matter at 46 survey stations, Lake Apopka. Units are g cm^{-2}.



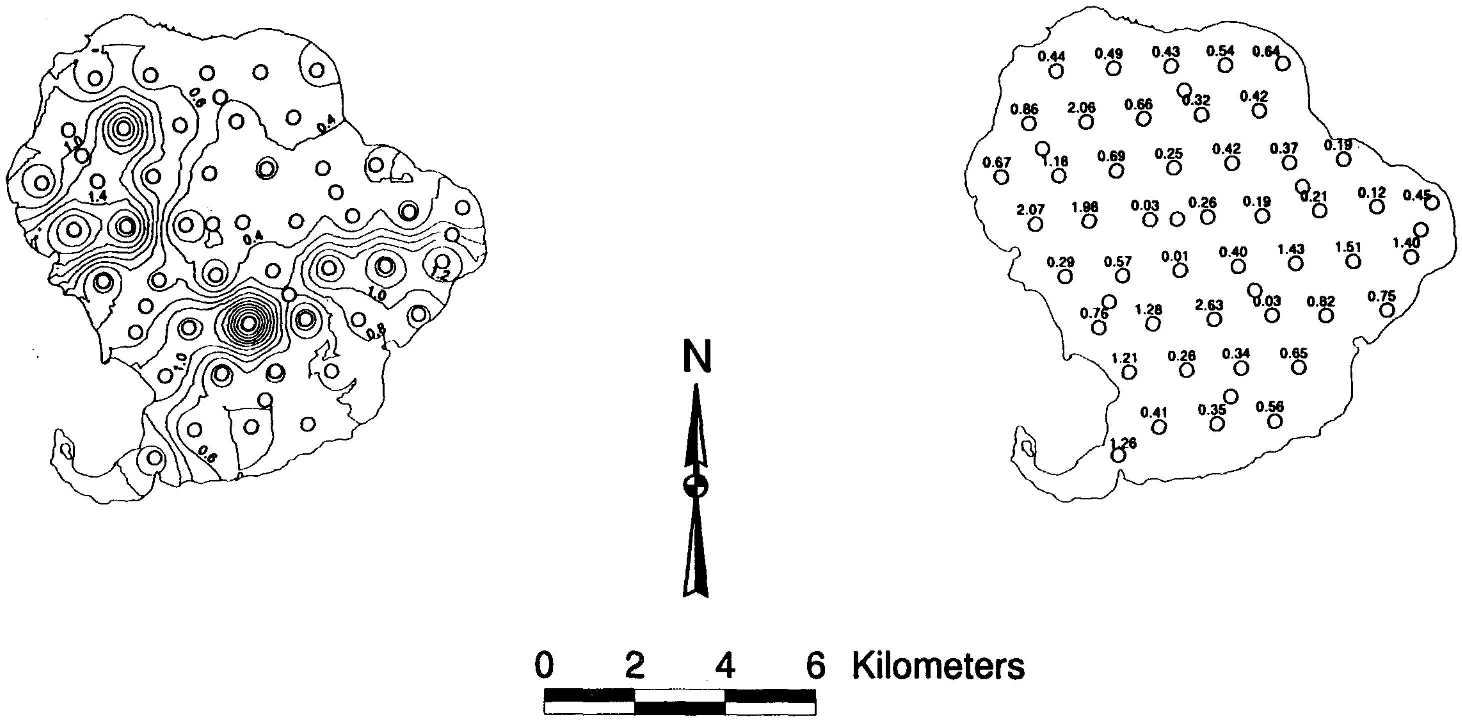
Integrated storage of inorganic matter (g/cm^2) in flocculent sediments at 46 sampling stations in Lake Apopka.

Figure 25. Inventory (storage) of inorganic matter at 46 survey stations, Lake Apopka. Units are g cm^{-2}.



Integrated storage of total phosphorus (mg TP/cm^2) in flocculent sediments at 46 sampling stations in Lake Apopka.

Figure 26. Inventory (storage) of total phosphorus (TP) at 46 survey stations, Lake Apopka. Units are mg cm^{-2}.



Integrated storage of non-apatite inorganic phosphorus (mg NAIP/cm^2) in flocculent sediments at 46 sampling stations in Lake Apopka.

Figure 27. Inventory (storage) of non-apatite inorganic phosphorus (NAIP) at 46 survey stations, Lake Apopka. Units are mg cm^{-2}.

31 stations was less than the mean for each variable, storage at only 15 stations was greater than the mean.

Patterns of low and high storage of sediments and TP were relatively consistent among stations. Fifteen stations with TP storage >2 mg cm^{-2} were found in three areas of the lake, all areas included stations adjacent to the shoreline (Fig. 28). The inventory at these 15 stations totaled 52.6 mg cm^{-2}, amounting to 63.5% of the sum for all stations (Table 2). By contrast, storage at the 10 stations with the lowest TP inventory only totaled 4.0 mg cm^{-2}, less than 5% of the sum for all stations. Stations 11, 16 and 23 with the lowest inventories for all variables are located near the center of the lake (Fig 1). Areas of low sedimentation are correlated with areas in which bottom sediments are likely to be resuspended by wind action.

The disproportional inventory of mass or nutrients is similar among stations in Lake Apopka because the flocculent sediments are highly organic. Percentage organic matter in flocculent sediments varied little among stations compared to the variability among stations in inventories of sediment mass and nutrients. The average and standard deviation for organic matter in flocculent sediments at the 46 stations were 62.4 ± 4.6%; without Station 16 (1 cm of flocculent sediments and .395 organic fraction) the average and standard deviation were 62.9 ± 3.1%. These means were very similar to 63.2%, the weighted average for organic matter in the total mass of flocculent sediments.

The extent of spatial and statistical variability in either soft sediment or flocculent sediment thickness points to potentially large errors that would result if these means are used inappropriately in calculations of mass storage in the lake basin. Standard deviations for these two variables expressed as percent of the mean were 67 and 68%. The percent standard deviations for averages of cumulative sediment and nutrient storage were even larger, ranging from 81 to 88%. Nutrient storage was estimated for each station within an equal area grid so calculations of whole-basin storage were not affected by variability in storage among stations.

Biogenic and Mineral Silica

Biogenic and mineral silica were measured for five historic cores collected in 1995 and 1996. Two forms of biogenic silica, diatom and sponge, were analyzed for all five cores. Mineral silica in these analyses represented only the silica leached in 20 hours, not all mineral silica in the sample. A complete stratigraphic record of biogenic and mineral silica was obtained only for these five cores, but data were obtained for selected depths in survey cores (Appendix D) as one means of establishing the thickness of flocculent sediments.

Diatom silica in five historic cores collected in 1995 and 1996 was correlated stratigraphically with the depth of flocculent sediments. The concentration of diatom silica was 30 mg/g or greater to 15 cm in LA25-95, 35-40 cm in LA31-95 and 50 cm in LA9-95 (Fig. 29). (The thickness of flocculent sediments for LA31-95 was uncertain because the 35-40 cm section was a mixture of flocculent and underlying sediments.) These high concentrations occurred over

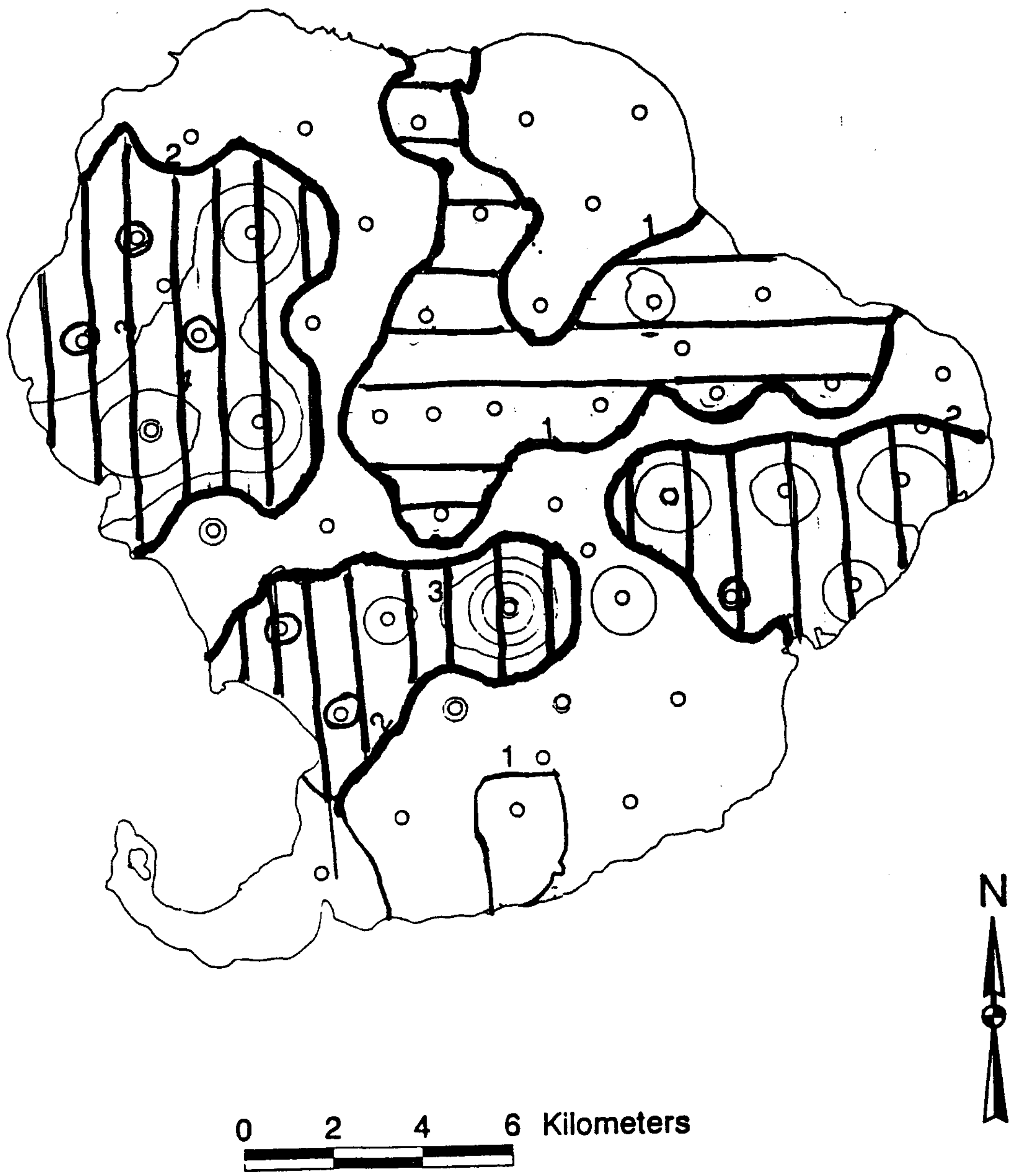


Figure 28. Areas of low (horizontal lines) and high storage (vertical lines) of sediments and phosphorus at 46 survey stations in Lake Apopka. Areas of low and high storage in this plot (adapted from Fig. 26) are defined generally by isopleths of TP storage (mg TP cm^{-2}). The area of low storage is <1 mg TP cm^{-2} and the three areas of high storage are >2 mg TP cm^{-2}.

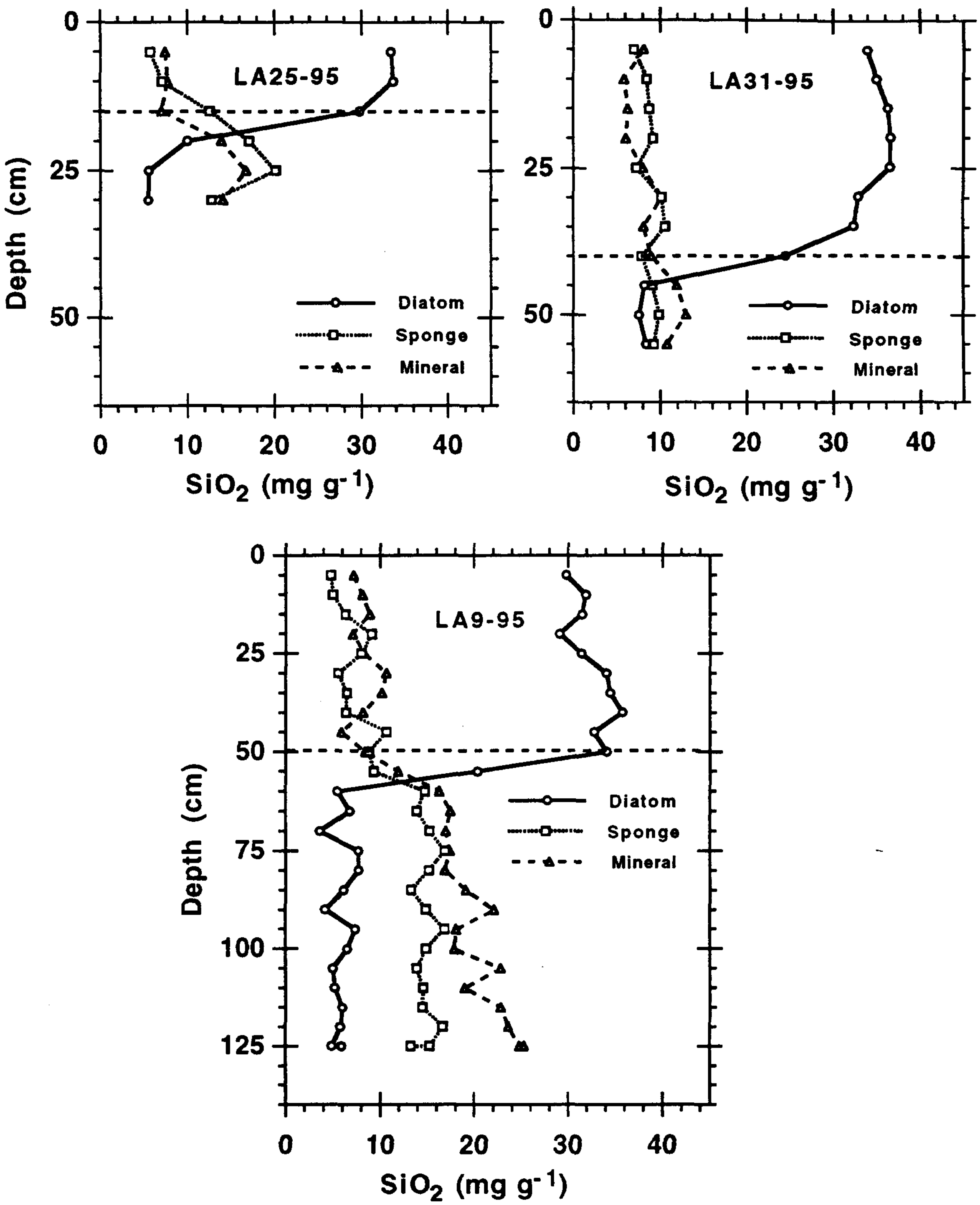


Figure 29. Diatom, sponge and mineral silica for 1995 historic cores, Lake Apopka. Dashed lines indicate depth of flocculent sediments.

the same depth intervals that were characterized previously as flocculent sediments (Fig. 2). The change in concentration below the zone of flocculent sediments was sharp, decreasing to <10 mg/g in each core. The 1996 historic cores (LA2H-96 and LA6H-96) also showed a distinct stratigraphy for diatom silica with higher concentrations in flocculent sediments than in underlying sediments (Fig. 30). The concentration of diatom silica was greater in the flocculent sediments of LA2H-96 than in any of the other historic cores, ranging from 36 mg/g in the upper 30 cm to 55 mg/g at 79 cm. Diatom silica in LA2H-96 and LA6H-96 also decreased sharply below the boundary between flocculent and underlying sediments (Fig. 30). The concentration decreased from >50 mg/g at 79 cm to 26 mg/g at 87 cm at LA2H-96 and from 39 mg/g at 45 cm to 10 mg/g at 55 cm at LA6H-96. Finer sectioning at LA2H defined the zone of transition from high concentration to low concentration better than at LA6H. The bottom depth of flocculent sediments was placed at 82 cm in LA2H and at 45 cm in LA6H based on high concentrations of diatom silica (Fig. 30). These depths compare to 84 cm for LA2H and 40 cm for LA6H based on the subjective criteria used earlier. Lower concentrations at 84 cm in LA2H and 50 cm in LA6H are probably stratigraphically correlated with intermediate concentrations found below the zone of flocculent sediments at LA9-95 (Fig. 29). Even though sedimentation rate in these cores varied considerably as shown by the difference in thickness of flocculent sediments, the stratigraphic discontinuity in diatom silica provides another stratigraphic marker for the boundary between flocculent and underlying sediments.

A secondary feature was found in the diatom silica stratigraphy of cores with the largest depth of flocculent sediments (i. e., the highest sedimentation rate). This feature was a zone of high concentration at the bottom of the flocculent sediments. It was found from 30-50 cm at LA9-95, from 33-45 cm at LA6H-96 and from 54-79 cm at LA2H-96 (Figs. 29 and 30), but not at LA31-95 nor at LA25-95 (the stations with the shallowest depth of flocculent sediments). This feature is discussed in the next section in relation to the stratigraphy of diatom microfossils.

The stratigraphy of sponge and mineral silica was not useful at all stations in distinguishing the zone of flocculent sediments from underlying sediments even though both forms of silica were greater in underlying sediments than in the overlying flocculent sediments at some stations. Sponge and mineral silica at LA9-95 and LA25-95 were correlated stratigraphically with the zone of flocculent sediments, but evidence for this pattern was weak at LA2H-96 and absent at LA31-95 and LA6H-96 (Figs. 29 and 30). Comparing the stratigraphy of different forms of silica was used as one means of establishing or verifying the boundary between flocculent and underlying sediments at some of the survey stations. Criteria based on diatom biogenic silica, however, could not be applied at all stations because data were not available for all sections of interest (see Appendix D).

A hypothesis can be advanced for the lack of a consistent stratigraphic discontinuity in sponge silica among stations. The between station variability in sponge silica concentration below the zone of flocculent sediments was not large, ranging from approximately 10 to 15 mg/g

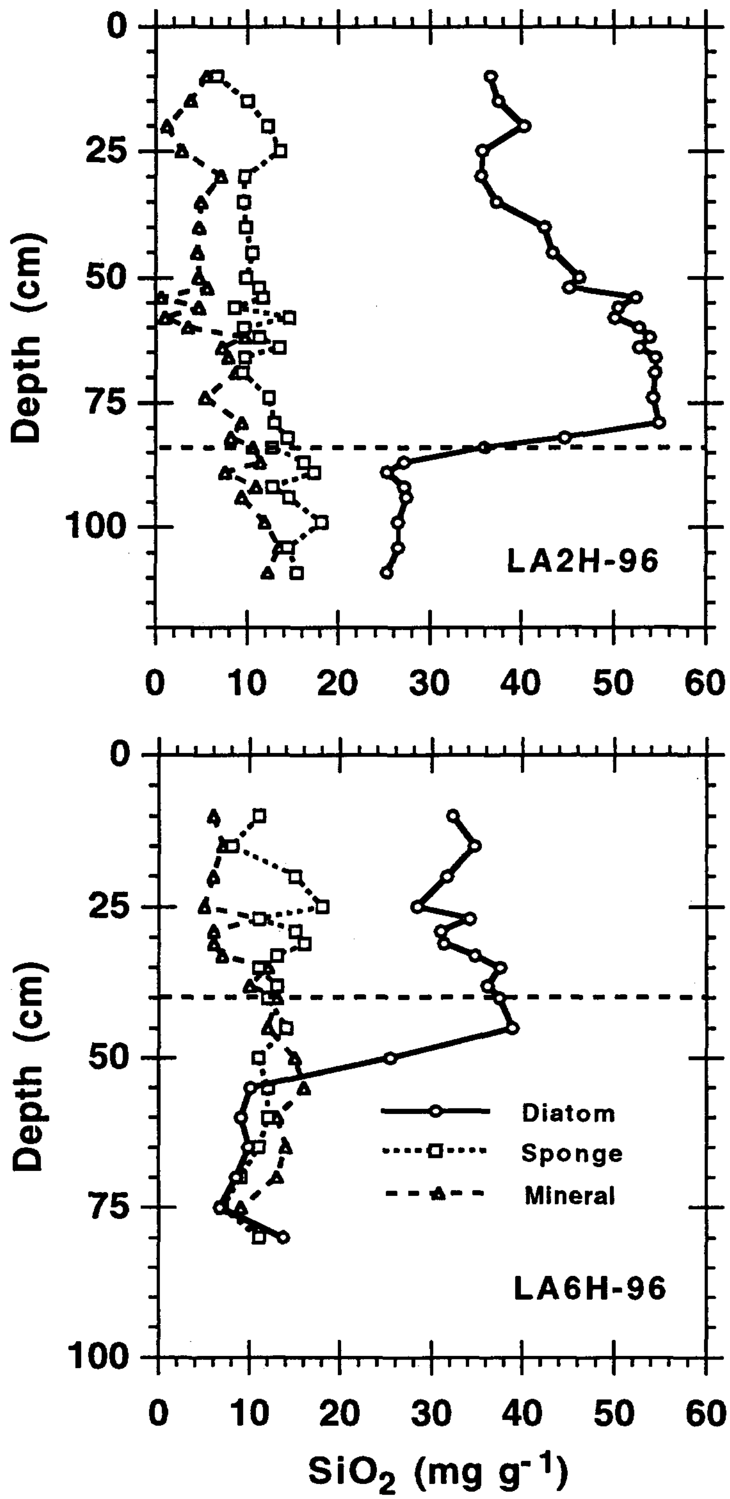


Figure 30. Diatom, sponge and mineral silica for two 1996 historic cores, Lake Apopka. Dashed lines indicate depth of flocculent sediments.

in 1995 and 1996 historic cores (Figs. 29 and 30). Therefore, the discontinuity was based on a relatively small change (see Appendix D for data on survey cores). Abundance of sponges was inferred to represent clear water and more specifically to infer whether light penetration was adequate to establish a benthic plant community at a given site (Schelske et al. 1997). Thus, it is hypothesized that the abundance of sponges among sites was controlled either by the depth of the water column or by the combined effects of depth and water transparency on the indigenous primary producer community.

Biogenic Silica and Diatom Microfossils

Data on abundance of diatom microfossils were available for the three 1995 historic cores and for a limited number of samples from one of the 1996 historic cores (LA-02H). The stratigraphy of diatom silica closely paralleled that for the absolute abundance of diatom frustules in the 1995 historic cores (upper panels in Figs. 31-33). Values for both variables were greater in flocculent sediments than in underlying sediments. The abundance of diatoms was at least an order of magnitude higher in the flocculent sediments compared to deeper depths in all cores whereas the relative decrease in diatom silica with depth was less. Discontinuities for diatom silica and diatom valves were sharp at LA9-95, the 1995 core with the best spatial resolution, even though diatoms were only counted for alternate samples. Diatom counts from LA2H-96 also can be used to infer the extent of flocculent sediments. Abundance of total valves, based on counts at five depths, was high at 69, 84 and 89 cm (>20 x10^7 valves/g), comparable to total counts at LA9-95 (Fig. 33), and higher than at 99 and 109 cm (Appendix F). In addition, the sharp decrease in concentration of diatom silica from 79 to 87 cm was used to infer the thickness (84 cm) of flocculent sediments. A sharp decrease in diatom silica below the bottom depth of flocculent sediments is stratigraphically similar to that found at LA9-95 (Figs. 29 and 30). Thus, concentration of diatom silica and abundance of diatom microfossils provide stratigraphic markers that can be used to infer the thickness of flocculent sediments.

The stratigraphy of diatom microfossils in flocculent sediments (Figs. 31-33) differed among the three historic cores collected in 1995 as follows: 1) thickness of the zone of greatest abundance of diatom valves differed among cores, but the zone of high abundance was restricted to the zone of flocculent sediments, 2) abundance of total valves and *Aulacoseira italica* (Fig. 34) was similar in the upper 15 cm of all three cores, but the maximum abundance of total valves was greater below 15 cm for LA9-95 and LA31-95, and 3) the zone of maximum abundance for total valves coincided with increased abundance of *Pseudostaurosira brevistriata*, *Staurosira construens* and *Staurosirella pinnata* at LA9-95 and to a lesser extent at LA31-95, but not at LA25-95. These differences provide evidence that LA25-95 is not a depositional site and that diatom microfossils found at this site were primarily those produced recently in the lake; whereas diatom microfossils found in the deeper, flocculent sediments at LA9-95 reflect conditions during the entire planktonic phase.

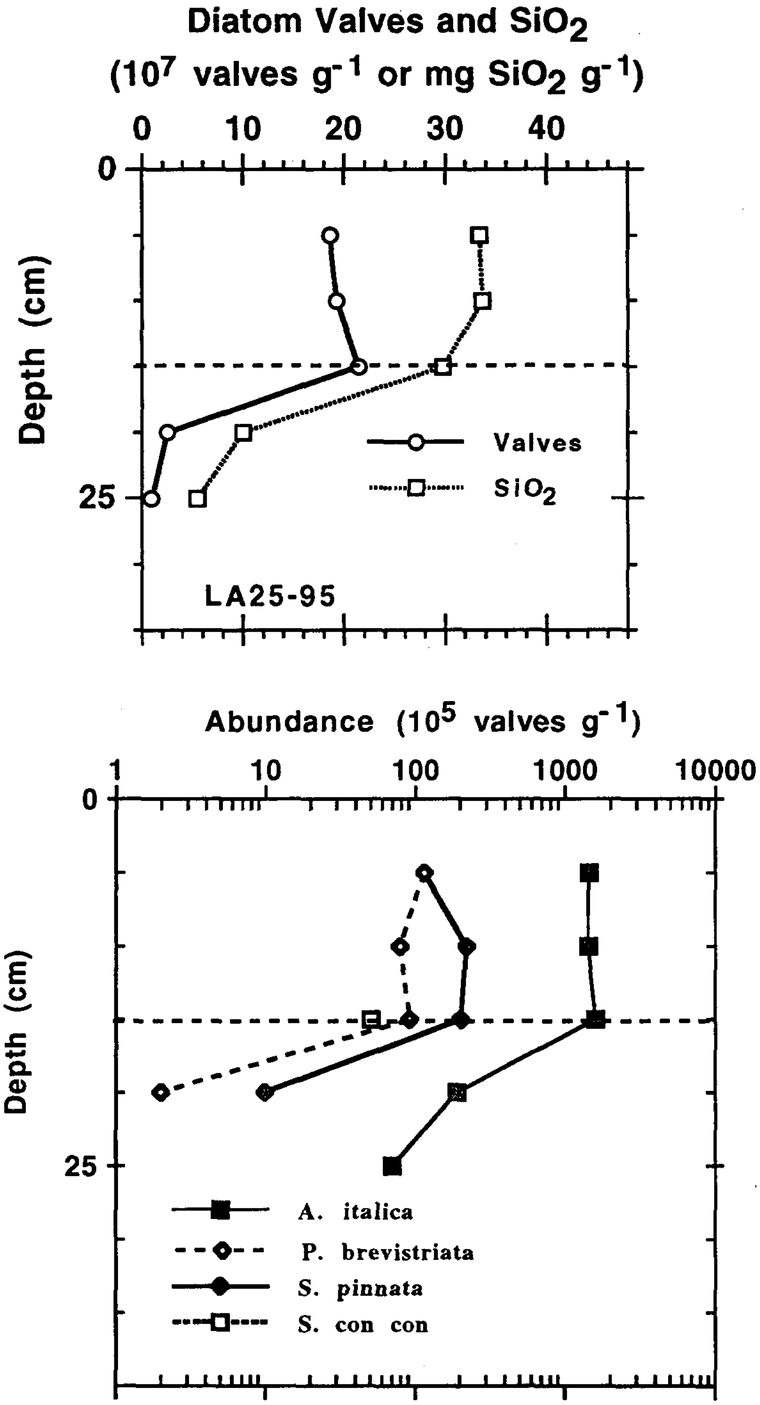


Figure 31. Diatom abundance and diatom biogenic silica at LA25-95. Upper panel: abundance of diatom valves x 10^7 g^{-1} and concentration of diatom biogenic silica. Lower panel: log abundance (10^5 valves g^{-1}) of the four major dominant microfossils in flocculent sediments. Dashed line indicates depth of flocculent sediments. See Table 3 for taxonomic names.

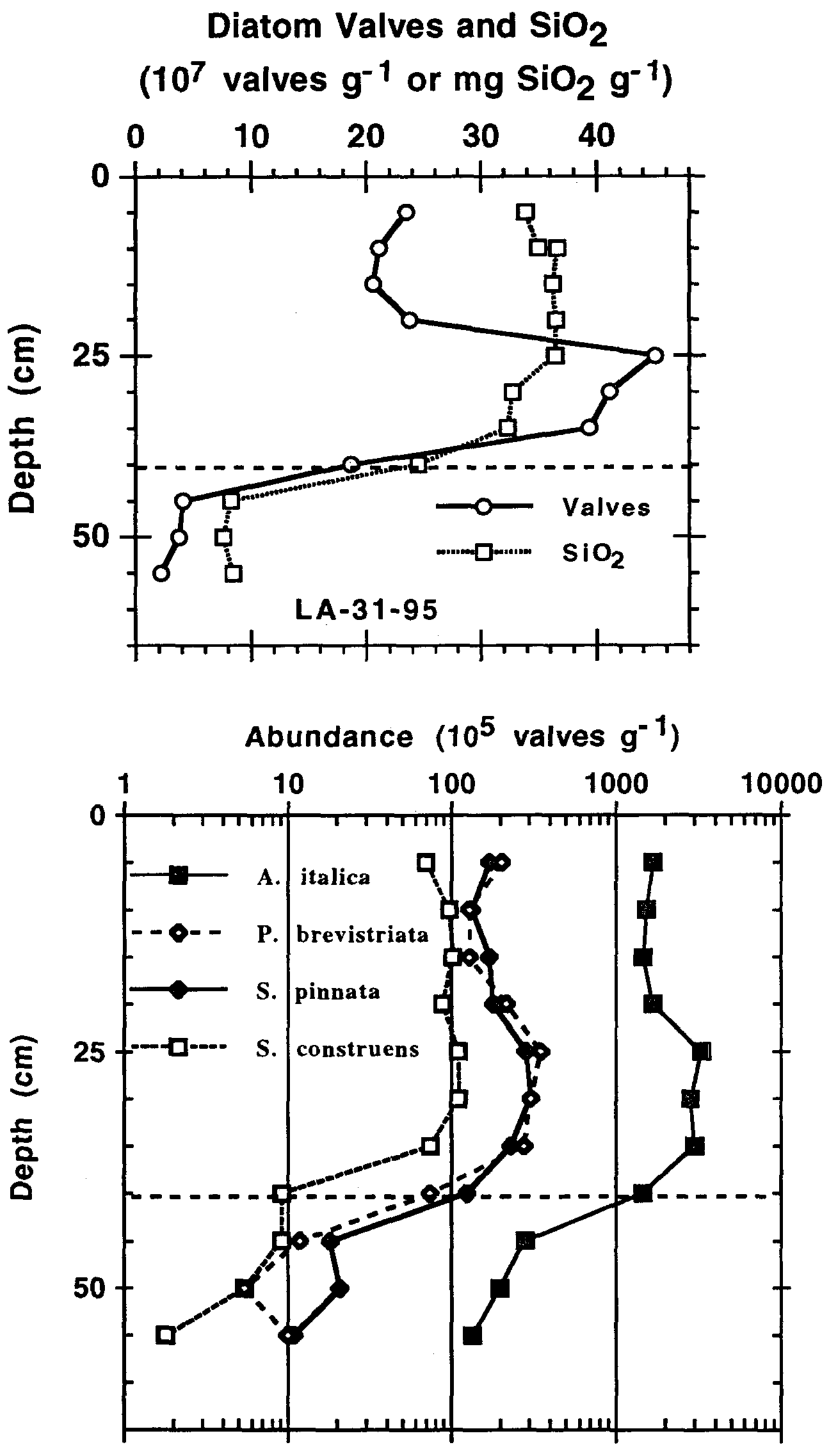


Figure 32. Diatom abundance and diatom biogenic silica at LA31-95. Upper panel: abundance of diatom valves x 10^7 g^{-1} and concentration of diatom biogenic silica. Lower panel: log abundance (10^5 valves g^{-1}) of the four major dominant microfossils in flocculent sediments. Dashed line indicates depth of flocculent sediments. See Table 3 for taxonomic names.

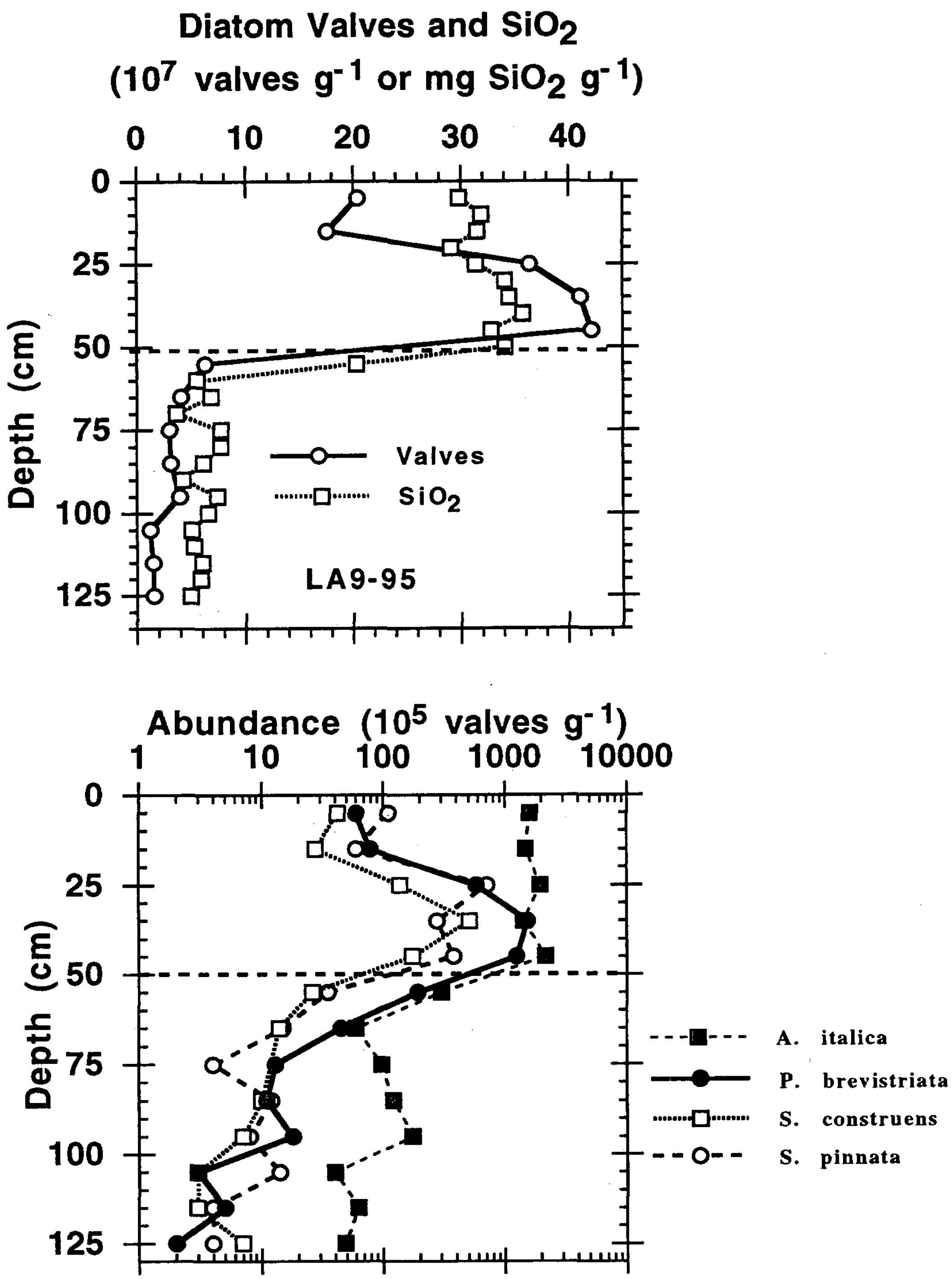


Figure 33. Diatom abundance and diatom biogenic silica at LA9-95. Upper panel: abundance of diatom valves x 10^7 g^{-1} and concentration of diatom biogenic silica. Lower panel: log abundance (10^5 valves g^{-1}) of the four major dominant microfossils in flocculent sediments. Dashed line indicates depth of flocculent sediments. See Table 3 for taxonomic names.

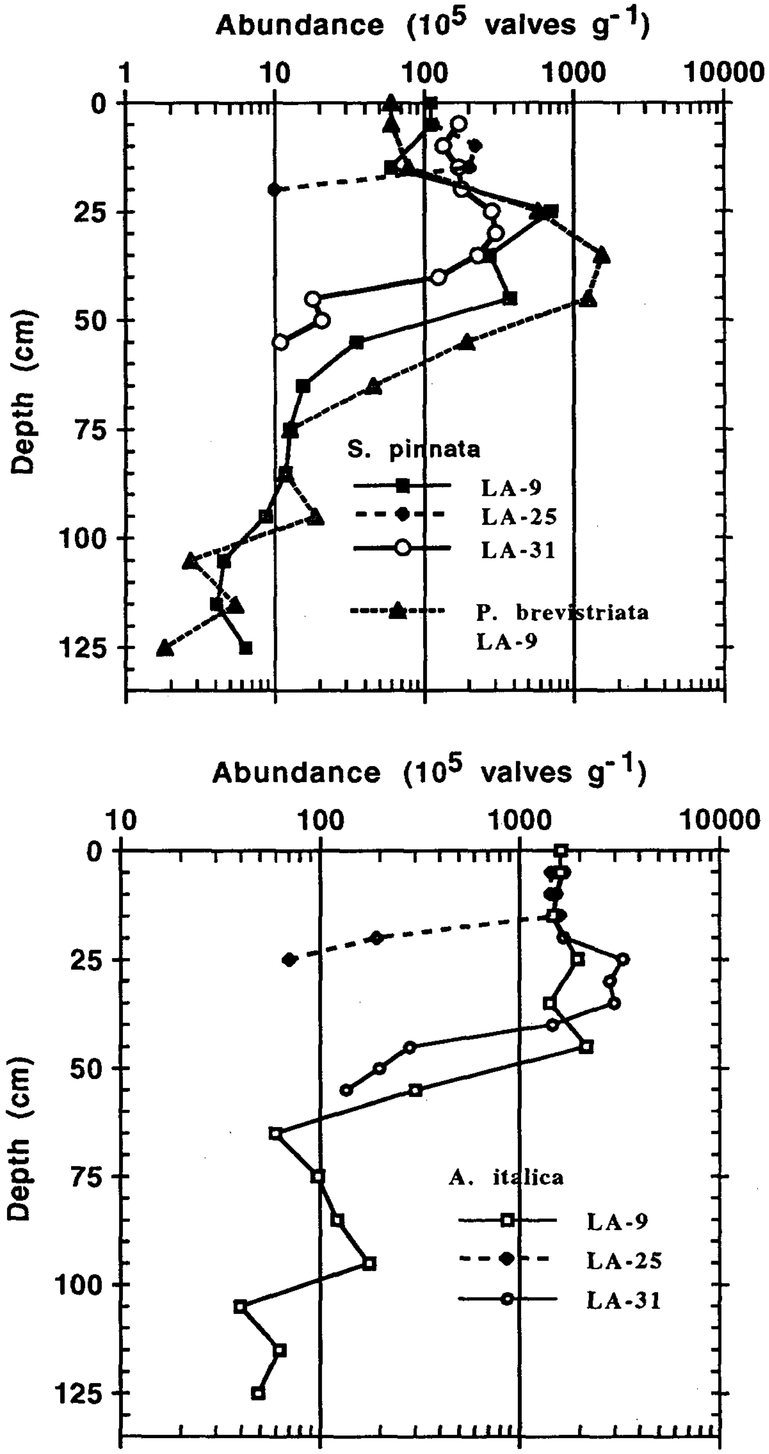
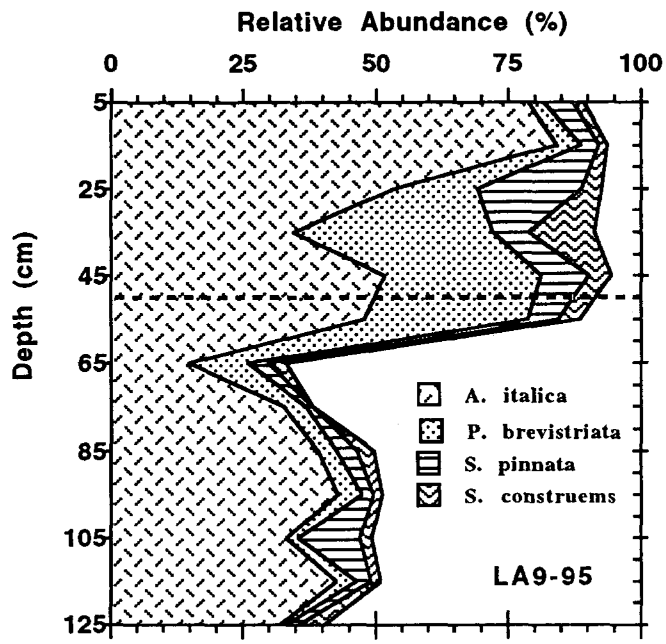


Figure 34. Diatom abundance in the three 1995 historic sediment cores, Lake Apopka. Upper panel: log abundance (10^5 valves g^{-1}) of *S. pinnata* at three stations and *P. brevistriata* at LA9-95. Lower panel: log abundance (10^5 valves g^{-1}) of *A. italica* at three stations. See Table 3 for taxonomic names.

Stratigraphic changes in relative abundance and absolute abundance of microfossil taxa were stratigraphically related to three sediment zones in LA9-95. *A. italica*, either in terms of valves g^{-1} (Fig. 34) or relative abundance (Fig. 35A), was the most abundant taxa at all depths. It alone comprised nearly 80% of the microfossil assemblage in zone 1 (upper 15 cm). The assemblage in zone 2 contained the largest relative and absolute abundance of *P. brevistriata*, *S. construens* and *S. pinnata*. The relative abundance of one species, *Navicula radiosa,* was relatively constant at all depths; but because the absolute abundance of microfossils was roughly an order of magnitude greater in flocculent sediments (Fig. 33), this taxon was relatively unimportant in terms of valves g^{-1} in the flocculent sediments. The distribution of *Cyclotella stelligera* was very different, it was quantitatively important only in zone 3, where it generally comprised <4% of the microfossil assemblage. *Amphora ovalis*, *Pinnularia* sp. and *Nitzschia* sp. were also taxa with the greatest relative abundance in zone 3. The four major taxa found in the upper two zones of flocculent sediments comprised roughly 85-95% of the microfossil assemblage, whereas the six taxonomic entities in zone 3 comprised <50% of the microfossil assemblage. Thus, data on changes in relative abundance of a number of diatom taxa provide an inference for the extent of flocculent sediments, but data on diatom abundance in terms of valves g^{-1} also provide important information for stratigraphic correlation.

Only a few of the stratigraphic changes in relative abundance of diatom microfossils at LA9-95 (Fig. 35A) were found in the other two historic cores (Figs. 35B and C). LA31-95 and LA25-95 differed from LA9-95 in that the relative abundance of *A. italica* was relatively constant with depth and in that no structure was evident in the shallower depth of flocculent sediments at LA31-95 and LA25-95. Similarities among the three cores were found in the relative abundance of microfossils below the zone of flocculent sediments. Maxima in relative abundance of *A. ovalis* and *Pinnularia* sp. were found below the zones of flocculent sediments in all three cores; *C. stelligera* was also found in this zone at LA31-95 and LA25-95. These relationships provide additional evidence that flocculent sediments can be distinguished from underlying sediments on the basis of diatom microfossils and that the temporal resolution of stratigraphic markers improves with rate of sedimentation.

The zone of high diatom silica concentration at LA9-95 found from 30-50 cm at the bottom of the zone of flocculent sediments was stratigraphically correlated with abundance of diatom microfossils. A maximum in abundance of total microfossils and maxima in *P. brevistriata*, *S. construens* and *S. pinnata* coincided with the zone of high silica (Fig. 33). The three zones of diatom silica in LA9-95 (5-25, 30-50, and 55-125 cm) can be stratigraphically related to three distinct assemblages of diatom microfossils identified previously (Schelske et al. 1997). These were: 1) an assemblage comprised of 75-80% *A. italica* in the upper most zone of flocculent sediments (5-15 cm), 2) an assemblage in the lower zone of flocculent sediments (25-55 cm) dominated by *A. italica*, *P. brevistriata*, *S. construens* and *S. pinnata* and 3) a diverse



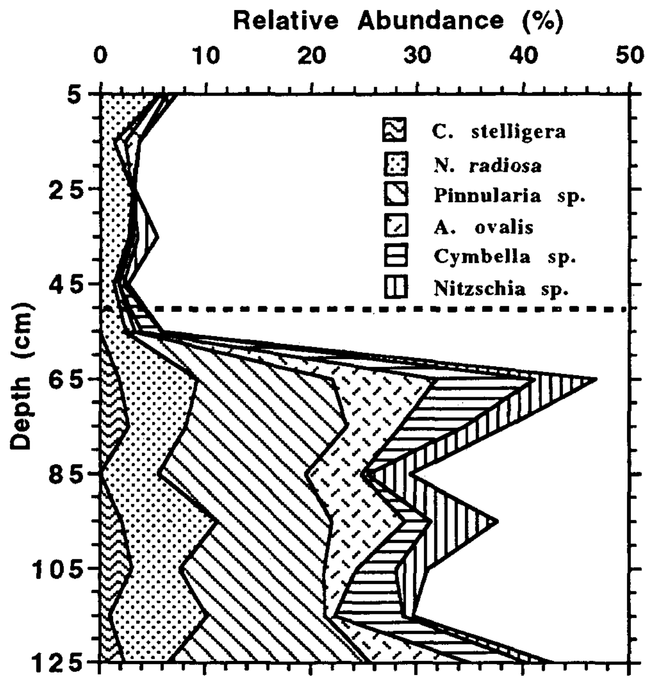
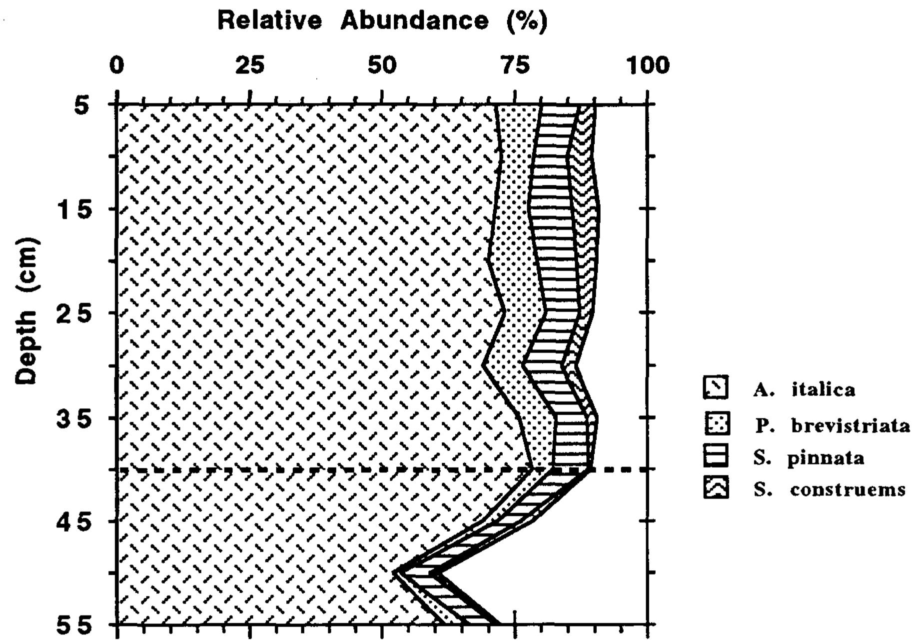


Figure 35A. Relative abundance (%) of diatom microfossils vs. depth at 1995 historic stations, Lake Apopka. A. LA9-95. The four major species in flocculent sediments are plotted in the upper panel and the five major species in deeper sediments are plotted in the lower panel. Dashed lines indicate depth of flocculent sediments. The abundance of diatom microfossils in flocculent sediments at LA9-95 ranges from 17.6 to 42.1 x 10^7 valves g^{-1}, much greater than the range of 1.20 to 6.26 x 10^7 valves g^{-1} in underlying sediments. See Table 3 for taxonomic names.



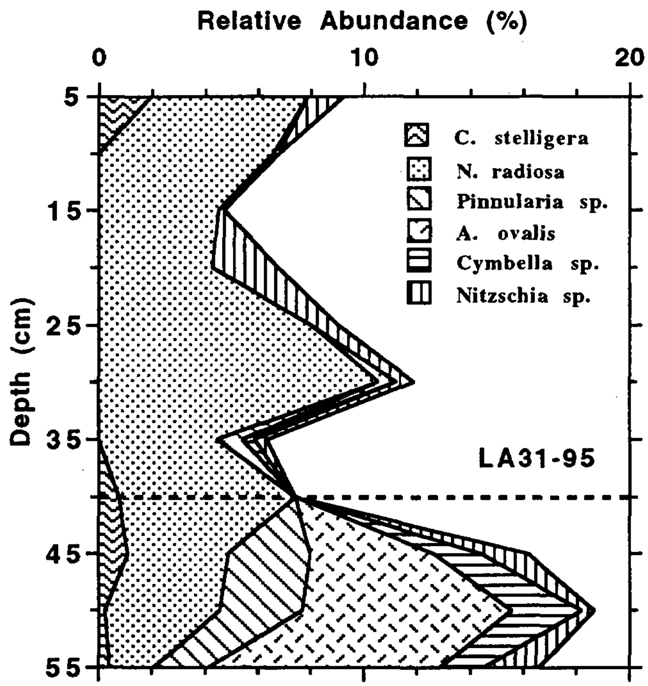


Figure 35B. Relative abundance (%) of diatom microfossils vs. depth at 1995 historic stations, Lake Apopka. B. LA31-95. See Fig. 35A for explanation of plots.

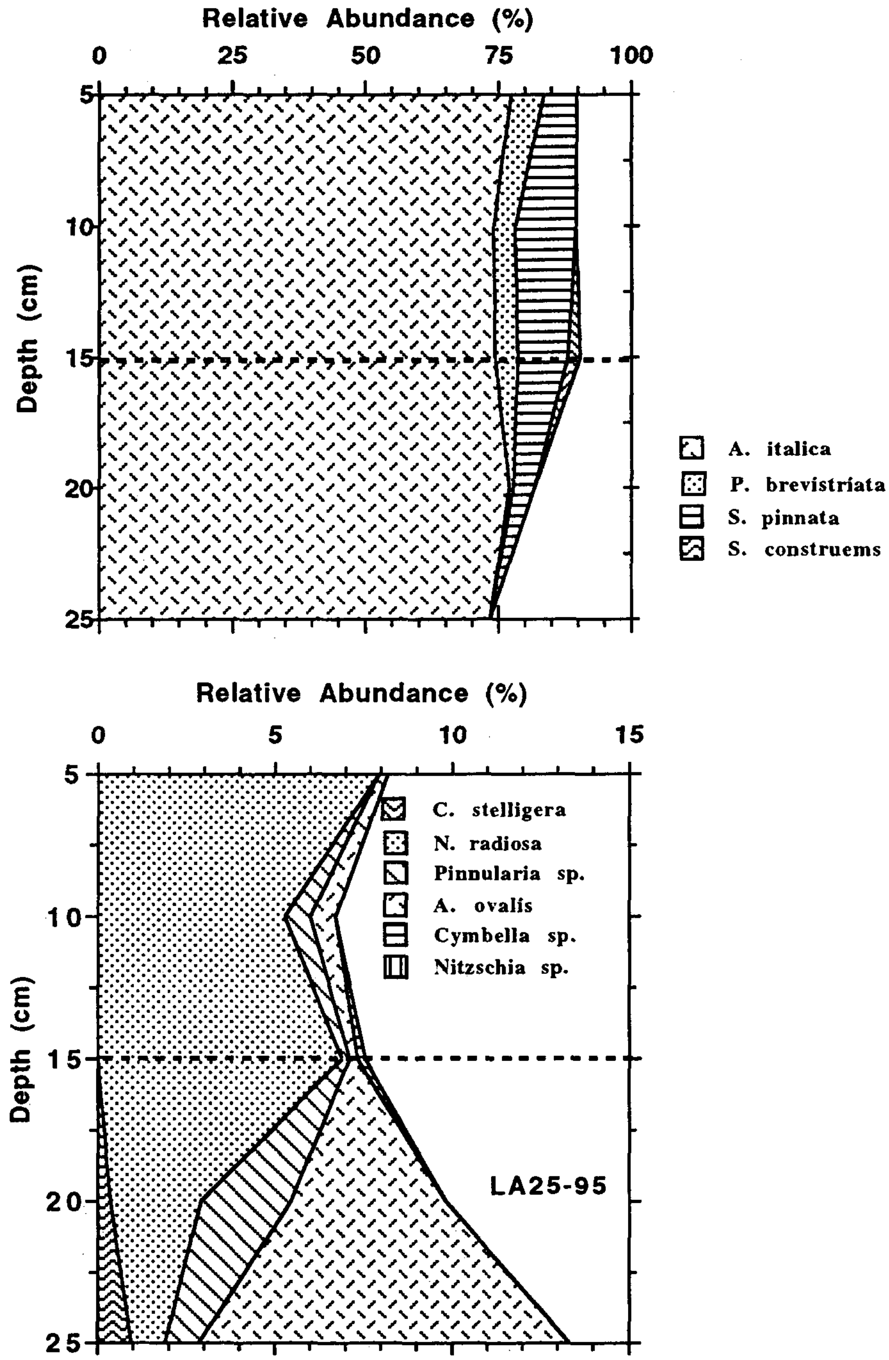


Figure 35C. Relative abundance (%) of diatom microfossils vs. depth at 1995 historic stations, Lake Apopka. C. LA25-95. See Fig. 35A for explanation of plots.

assemblage below the zone of flocculent sediments comprised of the four taxa in zone 2 and six other taxonomic entities: *Amphora ovalis* var. *affinis*, *Cymbella* sp., *Cyclotella stelligera*, *Pinnularia* sp., *Navicula radiosa* and *Nitzschia* sp. (Fig. 35A). The exception to the pattern is that relative abundance data show that 55 cm, a sample below the zone of flocculent sediments, is in zone 2. However, total abundance in terms of valves g^{-1} is nearly an order of magnitude less at 55 cm (Appendix F) and the abundance of the four major taxa are also lower at 55 cm than in overlying flocculent sediments (Fig. 33). Therefore, a combination of microfossil data expressed either as relative abundance or as valves g^{-1} was required to establish depths that were stratigraphically correlated in the sediment stratigraphy.

Zone 2 (20 to 50 cm) at LA9-95 was characterized by higher diatom silica and by an even higher abundance of microfossils compared to the other zones (Fig. 33). The increase in diatom silica was related to a shift in assemblage composition of diatom microfossils. The assemblage at depth contained a larger proportion of *P. brevistriata*, *S. construens* and *S. pinnata*, which have smaller valves with proportionately less silica per valve compared to the larger frustules of *A. italica* in the overlying assemblage. The microfossil assemblage at LA2H-96 from 69 to 84 cm also included a large proportion of these smaller, epipelic diatoms (Appendix F). The zone of high diatom silica at depth in both LA2H-96 and LA6H-96, therefore, can be inferred to reflect the distinct assemblage of diatom microfossils that first characterized the planktonic phase of the lake even though diatoms were not counted. Increased abundance of *P. brevistriata*, *S. construens* and *S. pinnata* was also found from 25 to 35 cm at LA31-95 (Fig. 32) although the increase was less pronounced than in zone 2 of LA9-95 (Fig. 33). The exception to the pattern of structure in diatom silica or diatom microfossils at depth in flocculent sediments of the 1995 historic cores was at LA25-95, the station with the smallest thickness of flocculent sediments (Fig. 31).

Resolution of temporal shifts in diatom microfossils in flocculent sediments varied with sedimentation rate among the 1995 historic cores. Temporal resolution improves with sedimentation rate because the time interval per section decreases with increasing sedimentation rate. No resolution of the two distinct microfossil assemblages was possible at LA25-95 (Fig. 31), a low sedimentation site, while resolution was better at LA9-95 (highest sedimentation rate) than at LA31-95. Peaks in epipelic species were found at three depths (25-35 cm) at LA31-95 (Fig. 32) and at three depths (25-45 cm) at LA9-95 (Fig. 33). Similar or better resolution was obtained at LA9-95 even though data are available only at 10-cm intervals compared to 5-cm intervals for LA31-95. High counts of epipelic species also would be expected in flocculent sediments at 50 cm in LA9-95 which would extend the depth interval to at least 25 cm. This difference in resolution was apparent also in absolute counts of the most abundant epipelic diatom at LA25-95 and LA31-95, *S. pinnata*. Its absolute abundance increased from LA25-95 to LA31-95 to LA9-95 (Fig. 34), the same order as sedimentation rate. In addition, the absolute abundance of *P. brevistriata*, the most abundant epipelic species at LA9-95, was four- or five-fold greater than *S. pinnata* at LA31-95 and five- or six-fold greater than *S. pinnata* at LA25-95

(Fig. 34). These data show that temporal resolution is improved by a longer record of flocculent sediments and by increased abundance of epipelic species in LA9-95, the core with the highest sedimentation rate.

Habitat Preference and Nutrient Loading

Habitat preference of diatom microfossils can be used to infer the historical trophic state of overlying waters. Terms used to describe habitat preferences of diatom microfossils (Table 3) are based primarily on specific morphological or cytological adaptive characters (Round et al. 1990) of different species. Definitions of these terms follow:

Tychoplanktonic refers to species which may grow suspended in the plankton or on the bottom of oligotrophic to mesotrophic ponds and lakes with high water transparency, but which lack the capability to withstand prolonged aphotic conditions. *C. stelligera* is the main example found in the Lake Apopka flora.

Meroplanktonic refers to species whose primary growth habitat is suspended in the water column, but which are cytologically adapted to prolonged survival in sediments (Sicko-Goad et al. 1986). The primary example in Lake Apopka is *A. italica* (see Schelske et al. 1995).

Periphytic refers to species which have specific morphological adaptations for attachment to large solid substrates, primarily rooted aquatic plants in Lake Apopka. Examples include members of the genera *Achnanthes, Amphora, Cocconeis,* and *Gomphonema.*

Sessile epipelic refers to species which are not actively motile, but which have specific morphological adaptations for attachment to small particles, usually on bottom sediments. Examples include species of *Pseudostaurosira, Staurosira* and *Staurosirella.*

Vagile epipelic refers to species which lack organelles of attachment, but which have specific morphological adaptations which allow them to move actively on surfaces or among small particles. This is the most species-rich association in many lakes and includes species of genera such as *Navicula* and *Nitzschia.* Exudates associated with motility of such species are important in stabilizing sediments in some situations (Patterson 1989).

Benthic is a term that combines periphytic and epipelic species into one category to designate species that are not planktonic. In Lake Apopka, periphytic species were present in relatively small abundance in all samples examined; therefore the major benthic species were epipelic.

The present diatom assemblage in Lake Apopka is dominated by *A. italica,* a meroplanktonic form, and other taxa indicative of elevated nutrient levels because the lake is hypereutrophic. *A. italica* comprised nearly 80% of the diatom microfossils at the top of the core and was the most abundant taxon at all depths (Figs. 33 and 35A). Its abundance in terms of frustules per unit weight of sediment was more than 10-fold greater in the zone of flocculent sediments than in sediments below 55 cm. This relative increase may be even more dramatic in terms of rate of deposition because, as shown by Schelske et al. (1997) and in the next section,

Table 3. Diatom species identified in sediment cores from station LA9-95, LA25-95, and LA31-95, Lake Apopka, Florida. Codes following names indicate primary growth habitat of the species. M = meroplanktonic, P = periphytic, S = sessile epipelic, V = vagile epipelic, T = tychoplanktonic. See text for explanation of codes. All codes except M are considered to be benthic in calculation of P/B ratios.

Achnanthes clevei var. rostrata Hustedt - **P**
Achnanthes exigua Grun. var. exigua - **P**
Achnanthidium minutissima (Kütz.) var. minutissima Czarnecki - **P**
Amphora ovalis var. affinis (Kütz.) V.H. ex DeT. - **P**
Anomoeoneis sphaerophora var. sculpta O. Müll. - **V**
Aulacoseira granulata (Ehrenb.) Simonsen - **M**
Aulacoseira granulata var. angustissima (O. Müll.) Simonsen - **M**
Aulacoseira italica (Ehrenb.) Simonsen - **M**
Caloneis sp.1 - **V**
Caloneis sp.2 - **V**
Craticula cuspidata (Kütz.) var. major Mann in Round, Crawford & Mann - **V**
Cyclotella meneghiniana Kütz. - **M**
Cyclotella stelligera Cl. & Grun. - **T**
Cymbella sp. - **P**
Diploneis pseudovalis Hustedt - **V**
Epithemia argus (Ehrenb.) Kütz. var. argus - **P**
Eunotia arcus Ehrenb. var. arcus - **P**
Gomphonema sp. - **P**
Gomphonema gracile Ehrenb. - **P**
Mastogloia smithii Thwaites ex. W. Smith var. smithii Navicula sp. - **V**
Navicula halophila (Grun.) Cl. var. halophila - **V**
Navicula lanceolata (Ag.) Kütz. var. lanceolata - **V**
Navicula radiosa Kütz. var. radiosa - **V**
Neidium iridis var. ampliatum (Ehrenb.) Cl. - **V**
Nitzschia sp. - **V**
Nitzschia amphibia Grun. var. rostrata Hustedt - **V**
Nitzschia liebetruthii var. major Grun in Cleve & Möller - **V**
Nitzschia palea (Kütz.) W. Smith - **V**
Nitzschia scalaris (Ehrenb.) Wm. Smith - **V**
Pinnularia sp. - **V**
Pinnularia microstaruon (Ehrenb.) Cleve - **V**
Pseudostaurosira brevistriata (Grun. in Van Heurck) Williams & Round - **S**
Sellaphora pupula var. rectangularis (Greg.) Czarnecki - **V**
Staurosira construens (Ehrenb.) Williams & Round - **S**
Staurosira construens var. venter (Grun.) Hamilton in Hamilton et .al. - **S**
Staurosirella leptostauron var. dubia (Grun.) Hustedt - **S**
Staurosirella leptostauron (Ehrenb.) Hustedt var. leptostauron - **S**
Staurosirella pinnata Ehrenb. - **S**
Stauroneis phonicenterion (Ehrenb.) var. gracilis Hustedt - **V**
Synedra sp. - **P**

sedimentation rate also increased upcore. Thus, the sediments with lower abundance of microfossils were deposited at a slower rate than overlying sediments, a relationship that magnifies frustule counts when expressed as rate of deposition. The resulting increase in absolute abundance of microfossil diatoms or increase in rate of diatom deposition are inferences for increased diatom production resulting from increased nutrient loading.

The habitat preference of diatom microfossils was examined to determine whether the habitat preference changed with nutrient loading (Schelske et al. 1997). The growth habits of the diatoms from LA9-95 can be considered to be meroplanktonic (planktonic) or benthic (Table 3). Most of the benthic taxa were epipelic, i. e., species that grow on the bottom. Of the periphytic species, those that grow on macrophytes or other substrates, only *A. ovalis* was among the most abundant taxa (Figs. 35A-C). It and other periphytic species were found primarily in sediments deposited during the macrophyte phase when light penetrated to the bottom sediments (Schelske et al. 1997). Epipelic species, including *P. brevistriata*, *S. construens* and *S. pinnata*, were important in flocculent sediments produced after phytoplankton became the major primary producer (Fig. 35A) . Benthic taxa, including those with a periphytic habitat preference, can be used to infer clear water; whereas *A. italica,* a meroplanktonic diatom is associated presently with highly turbid waters in Lake Apopka (Schelske et al. 1995). The P/B ratio of diatom microfossils shifted over time from benthic to planktonic forms in LA9-95, with the largest shift occurring during the planktonic phase (Fig. 36). The change in P/B ratio was associated with an increase in the TP concentration in the sediments and an increase in absolute and relative abundance of *A. italica* (Figs. 33 and 35A). These data show that major changes in historical diatom assemblages coincided with an increase in TP concentration in the sediments which also indicates increased phosphorus loading.

Major changes in species succession of diatom microfossils were found in the sediment record. *C. stelligera*, a tychoplanktonic diatom, grows attached or free living among the periphytic community, but for a portion of its life cycle it may become entrained into the planktonic community. The occurrence of C. *stelligera* primarily below the zone of flocculent sediments (Figs. 35A-C) suggests that adequate light levels were available for this diatom to grow and reproduce normally during the period of macrophyte dominance, but that the lake was too turbid for its survival during the planktonic phase. In flocculent sediments, *C. stelligera*, was replaced by *Cyclotella meneghiniana*, a meroplanktonic species (Appendix F). Clear-water epipelic forms such as *N. radiosa, Pinnularia* sp. and *Nitzschia* sp. and periphytic taxa such as *A. ovalis* and *Cymbella* sp., were replaced by epipelic diatoms tolerant of more turbid, nutrient-enriched conditions such as *P. brevistriata*, *S. construens* and *S. pinnata* soon after the primary producer community shifted from macrophyte to phytoplankton dominance (Figs. 35A and B). These epipelic species persisted for several decades after the lake became planktonic. That epipelic species persisted as major dominants in LA9-95 for a long period of time was used to infer that lake water was less turbid during the early planktonic phase than at present and that

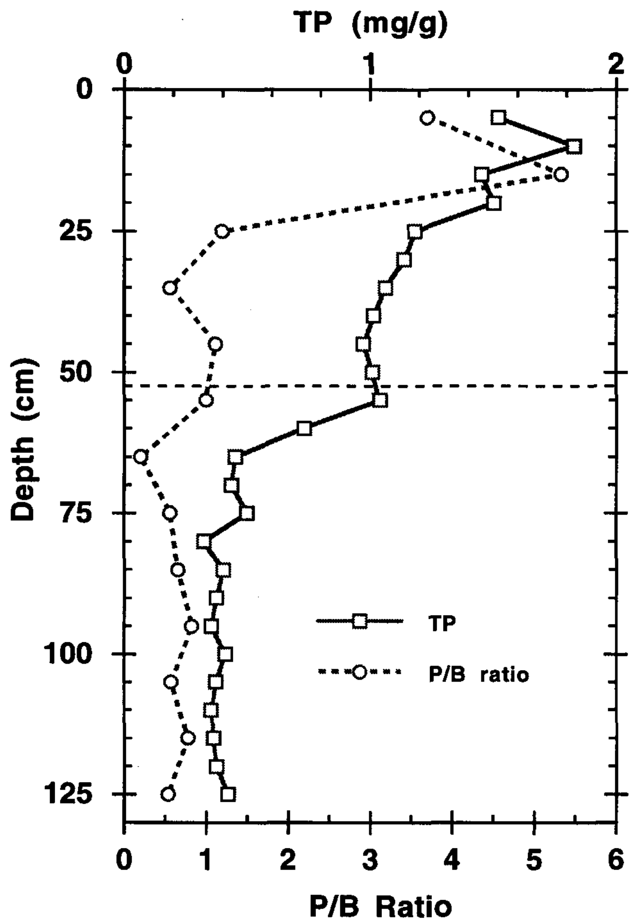


Figure 36. TP and planktonic/benthic (P/B) ratio of diatom microfossils vs. depth at LA9-95, Lake Apopka. The P/B ratio is calculated from total counts for all planktonic species divided by total counts for all benthic species. Dashed line indicates depth of flocculent sediments. See Table 3 for list of taxa and primary growth habit. Figure from Schelske et al. (1997).

nutrient loading has increased and was a major factor associated with the observed changes in microfossil diatoms (Schelske et al. 1997). The present assemblage dominated by *A. italica* has existed for approximately 10 years according to ^{210}Pb ages (Schelske et al. 1997; see next section). Therefore, the three distinct microfossil assemblages found at LA9-95 (Figs. 33 and 35A) can be related to availability of light in the water column. That epipelic taxa have declined in the most recent sediments can be used to infer that the amount of light reaching bottom sediments has decreased or that light penetration has decreased as the result of increased standing crops of phytoplankton. Because standing crops of phytoplankton generally increase with nutrient enrichment, these results provide very strong evidence that nutrient enrichment of Lake Apopka has occurred historically and to the greatest extent during the planktonic phase of the lake that began approximately 50 years ago.

Sediment Layer Characterization

Physical characteristics and chemical composition of sediments varied spatially either among stations or over depth at individual stations. This variability complicated establishing protocols to identify the zone of flocculent sediments at individual stations. In addition, stratigraphic data were analyzed to justify the assumption that flocculent sediments were deposited mainly during the last 50 yr or since the primary producer community shifted to phytoplankton dominance. The use of different variables (Table 4) for these purposes is outlined below.

Fraction dry weight. Fraction dry weight provided a useful index for characterization of flocculent sediments. Sediments with <5% dry weight were characterized as flocculent. At some stations, generally stations with a relatively long depth of flocculent sediments, the fraction dry weight was >5%. Fraction dry weight increased with depth in the flocculent sediments as the result of compaction. Data which show trends for individual cores are presented in Appendices B and C.

Plant fibers. Remains of aquatic macrophytes provided stratigraphic evidence of a macrophyte-dominated community when sediments were deposited. Plant fibers were clearly evident in sediments underlying flocculent sediments or at the transition from flocculent to more consolidated sediments at some stations as cores were being sectioned (see Appendix A). Presence of plant fibers is one proxy that can be used to identify sediments formed during the macrophyte phase. The fraction dry weight of these sediments also was generally >5%.

TC/TN. Neither TC nor TN separately was useful in establishing stratigraphic zonation (Appendices B and C). By contrast, the TC/TN ratio showed a sharp discontinuity at some stations where smaller ratios identified sediments produced during the phytoplankton phase and larger ratios identified underlying sediments produced during the macrophyte phase (see Fig. 2). TC/TN and fraction dry weight were correlated statistically (Figs. 6-8), a relationship that would be expected because the fraction dry weight increases with depth (Appendices B and C).

Table 4. A comparison of physical, chemical, and biological characteristics of flocculent and underlying sediments in Lake Apopka.

Stratigraphic Characteristic	Flocculent Sediments	Underlying Sediments
Fraction Dry weight	Low	High
TC/TN	Low	High
TP	High	Low
NAIP	High	Low
Diatom Counts	High	Low
Number of Diatom Species	Few	Many
Diatom Habitat Preference	Meroplanktonic Primarily	Benthic Primarily
Diatom Diversity	Low	High
Diatom Biogenic Si	Greater	Smaller
Stable Carbon Isotopes	Heavier Ratios	Lighter Ratios

TP. The stratigraphic pattern of TP was useful in characterizing sediments. Sediments with the largest TP concentration in the upper parts of cores were flocculent sediments produced during the phytoplankton phase (see Fig. 2). The transition to sediments deposited during the macrophyte phase with the lowest TP concentration was marked by a sharp discontinuity in TP. The sharp decrease in TP was not found at stations where flocculent sediments occurred over long sections or all of the core. TP and fraction dry weight were correlated statistically (Figs. 3-5), a relationship that would be expected because the fraction dry weight increases with depth (Appendices B and C). Greater concentrations of TP in flocculent sediments provide one line of evidence that TP loading to the lake increased in the last 50 years compared to earlier periods.

NAIP. The stratigraphic zonation for NAIP was similar to that for TP. That NAIP and TP have similar stratigraphic patterns is not unexpected because these two forms of phosphorus that are measured independently are highly correlated statistically (Figs. 7 and 8). Data for NAIP, therefore, provide independent evidence for the conclusion that TP loading to the lake increased in the last 50 years compared to earlier periods. The fraction of NAIP/TP also increased during the last 50 yr (Table 1). Because NAIP is considered to be a measure of biologically available phosphorus (Williams et al. 1976), the increasing proportion of NAIP is another indication of increased phosphorus loading over time.

Species Analysis of Diatoms. Three distinct stratigraphic zones were identified using stratigraphy based on the abundance of specific diatom microfossils. The upper zone dominated by the meroplanktonic diatom, *A. italica*, is found in flocculent sediments deposited in the last 10 yr at LA9-95 (Figs. 35A, Appendix E). The next deepest zone is also in the flocculent sediments and is also dominated by *A. italica*, but in addition contains three epipelic diatoms, *P. brevistriata*, *S. construens* and *S. pinnata*. (Figs. 35A). Diatom microfossils in the third zone deposited during the macrophyte phase differ sharply from the two zones deposited most recently. Although it also is dominated by *A. italica*, the assemblage is characterized by a diverse assemblage of benthic species, most of which are not present in the other two zones. Benthic species that are major dominants in sediments formed during the macrophyte phase are *A. ovalis*, *C. stelligera*, *Cymbella* sp., *Pinnularia* sp., and *Nitzschia* sp. (Figs. 35A-C). Changes in species composition reflect decreasing water clarity with time. During the macrophyte phase, benthic species were abundant because light penetrated to the lake bottom. Water clarity changed during the planktonic phase. Initially epipelic diatoms were abundant, but as water clarity decreased the meroplanktonic diatom *A. italica* increased in relative abundance. *A. italica* became more abundant because this species is adapted to survival in the aphotic benthic environment that now characterizes the lake. These changes in species composition can be explained by increased loading of phosphorus and its effect on phytoplankton production (Schelske et al. 1997, Scheffer et al. 1993).

Absolute Abundance of Diatoms. In addition to the stratigraphic differences associated with either relative or absolute abundance of diatom taxa, a distinct stratigraphic zonation was found in absolute abundance of total diatom valves. The absolute abundance of diatom microfossils in flocculent sediments was roughly an order of magnitude greater than in underlying sediments formed during the macrophyte phase (Figs. 31-33). Diatom abundance data and the change in species composition indicate that diatom production was low during the macrophyte phase and increased markedly after the lake became planktonic.

Biogenic Silica. Chemical measurements of biogenic silica were used to determine the amount of silica in sediments that was leached chemically from diatoms or sponges. Results from a limited data set supported the stratigraphic zonation established from microscopic counts of diatom microfossils discussed above. The concentration of diatom biogenic silica in flocculent sediments was greater than in underlying sediments at five historic stations (Figs. 29 and 30); similar patterns were found at survey stations (Appendix D). A pattern of high sponge silica in macrophyte sediments at LA9-95 was not found consistently in other cores (Figs. 29 and 30); therefore, sponge silica was not useful in identifying macrophyte sediments at all stations. The partial data set for diatom biogenic silica provides independent evidence that diatom productivity was low during the macrophyte phase and increased after the lake became planktonic.

Stable Carbon Isotopes. Unpublished data for stable carbon isotopes show a sharp stratigraphic discontinuity at the boundary between flocculent and underlying sediments. The $\delta^{13}C$ of organic carbon is approximately 6% heavier in the flocculent sediments than in underlying sediments. Based on data presented by Gu et al. (1996), this isotopic signature of organic matter in sediments is attributed to phytoplankton being a major source of organic carbon. Lighter carbon isotope ratios found in underlying sediments would be expected if macrophytes were a major source of sedimented organic carbon.

Origin of Sedimentary Organic Matter. The preceding discussion is based on the premise that flocculent sediments are being formed primarily from organic matter produced by phytoplankton production in the lake with some unknown, but small, contribution from allochthonous sources. Sedimentary organic matter deposited for some period after 1947, during the transition from a primary producer community dominated by macrophytes to one dominated by phytoplankton, may have included some contribution from organic matter of macrophyte origin. This contribution should have decreased as more and more sedimentary organic matter originated from phytoplankton production.

Heterotrophic metabolism of historic macrophyte sediments has been invoked as a unique mechanism to produce highly flocculent sediments now being sedimented in Lake Apopka (R. W. Bachmann and D. E. Canfield, Abstracts of 1996 meeting, North American Lake Management Society, Minneapolis MN). This unique mechanism can be evaluated using data presented in Table 4 . Diatom counts and biogenic silica content are higher in flocculent sediments than in underlying sediments. An increased concentration of inorganic materials in sediments (including the siliceous frustule of diatom microfossils) would be expected if the organic fraction of underlying sediments was being metabolized to form flocculent sediments.

However, very different microfossil assemblages are found in the two layers and the species composition and diversity of the two layers are distinctly different. The underlying sediments contain a more diverse assemblage than the flocculent sediments and species within this diverse benthic assemblage are either not found or are present in much lower densities in flocculent sediments than in underlying sediments. This comparison alone provides evidence that flocculent sediments were not formed in the manner postulated. Higher concentrations of TP and NAIP in flocculent sediments could also theoretically result from heterotrophic metabolism of underlying sediments. However, given the different diatom assemblages in the two layers, a more parsimonious explanation would be higher and increasing TP and NAIP concentrations in flocculent sediments result from increased phosphorus loading in recent years.

Although chemical characteristics of the flocculent sediment layer could be derived theoretically by combining different fractions of flocculent and underlying sediments, microfossil data from three cores provide evidence that the exercise of making the necessary calculations is not warranted. Variables required for such a modeling effort must include the fraction of flocculent sediments derived from underlying sediments and the fraction of sedimentary organic matter supplied from phytoplankton production. In addition, the calculation must consider the fraction of TP or NAIP that is supplied from underlying sediments and the fraction from external loading. Modeling the difference in either TC or TN between the two layers would appear to be more complex, because conditions must be specified about the metabolism of some fraction of each of these components. Given that a complex model is needed to describe the formation of a layer with the given chemistry of the flocculent sediments from a given input of underlying sediments, it is concluded that sedimentary organic matter is not formed uniquely in Lake Apopka. The mechanism to sustain the supply of macrophyte organic matter that would be required to produce flocculent sediments for 50 yr is also not readily apparent.

Highly organic sediments such as those found in Lake Apopka are not common in some geographic areas, but are characteristic of many Florida lakes (Brenner and Binford 1988). Lake Apopka forms the headwaters of the Ocklawaha River and receives relatively small inputs of allochthonous organic matter from its small drainage area, headwater spring and rainfall. Lake Apopka, therefore, may differ from many Florida lakes in that a high proportion of its sedimentary organic matter has been formed historically from organic matter produced photosynthetically in the lake, either from the macrophyte community during the macrophyte phase or from phytoplankton community during the phytoplankton phase. Results presented here provide many lines of evidence for the two different sources of sedimentary organic carbon in Lake Apopka.

SEDIMENTATION RATES AND STORAGE

A CRS model was used to develop ^{210}Pb chronologies and sedimentation rates for historic cores. The sedimentation rates were then used to calculate rates of organic matter and nutrient accumulation for historic cores. Data from survey cores were used to estimate lake-basin rates of sediment and nutrient storage.

^{210}Pb Dating of Sediments

The surface area of Lake Apopka was reduced from approximately 190 km^2 to 125 km^2 by constructing dikes in the early 1940s so wetlands along the lake shore could be drained and the rich muck soils could be utilized for agriculture. In addition to reducing the surface area of the lake including contiguous wetlands, construction of the dike also affected some aspects of lake dynamics. Two important effects that bear on estimates of historic TP storage are changes in currents and water movements and their effects on sediment deposition and possible changes in the delivery of excess ^{210}Pb to the lake basin.

Changes in the deposition of sediments in Lake Apopka as the result of dike construction complicate the application of ^{210}Pb dating used to age sediments because the underlying assumption of constant excess ^{210}Pb flux to depositional sites in the lake basin is violated. Some of the factors involved and how they have changed with the reduction in surface area by dike construction in the early 1940s are listed below:

- ^{210}Pb, if trapped in muck farms, is not delivered to lake
- ^{210}Pb delivered to lake no longer trapped in wetlands
- ^{210}Pb deposition is not affected greatly by macrophytes
- ^{210}Pb deposition is now influenced more by currents
- ^{210}Pb may now be deposited (focused) at different sites
- ^{210}Pb inventory may have been affected for a limited period of time by erosion and redistribution of sediments after 1947 by dike construction and reduction in abundance of macrophytes.

These factors do not preclude dating sediments deposited during the planktonic phase. However, ^{210}Pb ages of these sediments may be older than expected based on the presumed 1947 shift in the primary producer community. Erosion of older sediments and decomposition of macrophytes produced before 1947 may have contributed to the ^{210}Pb inventory now being measured in flocculent sediments and thus affected calculated ages.

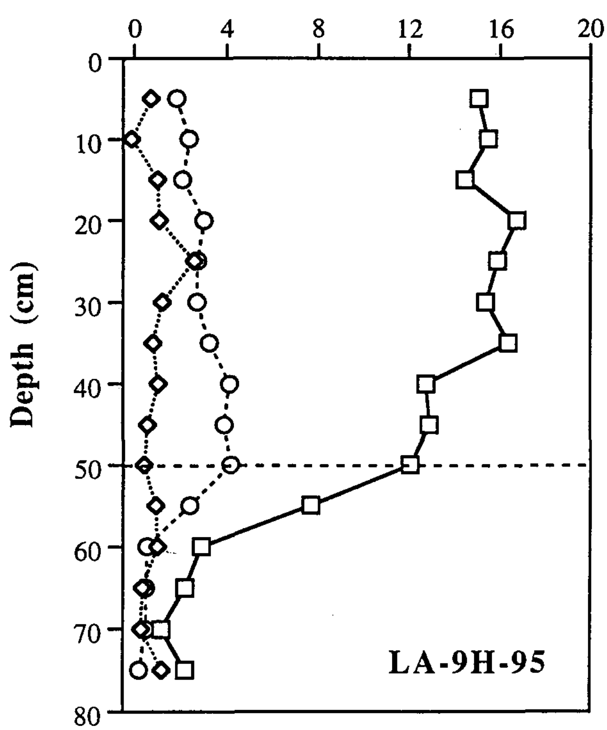
A hybrid CRS model was adapted to age sediments because the assumption of constant flux was violated by the 1940s changes in lake morphometry. Only flocculent sediments presumed to have been deposited since approximately 1945 were aged by assigning a date of 1945 for the bottom of flocculent sediments. Excess ^{210}Pb inventories were adjusted in succession from the bottom of the sediment record toward the surface to force the model to yield an age at the base of the flocculent layer of 1945. Forcing the model with this time dependent stratigraphic boundary allowed calculation of ages and MSR for the zone of flocculent sediments. The model was run assuming the date for the boundary was 1945 ± 5 years. Age and MSR error estimates are based on the propagated analytical error from counting which is less than or equal to 10%. The variability about the 1945 forcing date is comparable to these error estimates (Appendix E). The bottom of the flocculent sediment layer should be a time-dependent stratigraphic marker in each core based on chemical and physical changes in sediments.

Activity profiles show that total ^{210}Pb activity is greater than supported (^{226}Ra) activity below the zone of flocculent sediments for each historic core location (Fig. 37). The depth of the flocculent sediments which varied among cores (Table 5) is shown as a dashed line in each activity profile. In most sediment cores, ^{137}Cs (circles) activities were usually uniform with depth and less than 2 dpm g^{-1}. However, LA-1H-96 and LA-8H-96 demonstrated significant excursions from uniform activities with depth (Figs. 37D and 37J, respectively). In LA-1H-96, ^{137}Cs activities reached a maximum at 8.4 dpm g^{-1} just below the zone of flocculent sediments. The maximum ^{137}Cs activity of 6.5 dpm g^{-1} in LA-8H-96 appeared at 33 cm depth. Profiles of ^{137}Cs activity in these cores, however, lacked sharp peaks that must be present to use ^{137}Cs profiles as a stratigraphic marker for 1950s or 1960s peaks in radioactive fallout. Profiles of ^{137}Cs activity, therefore, were not useful as an independent time marker. Surface sediments of the historic cores yielded total ^{210}Pb (squares) activities between 10 and 20 dpm g^{-1} and activity patterns varied with depth among cores. No core demonstrated generally decreasing activities with depth that would be expected with a constant sedimentation rate. Radium (diamonds) activities were low and fairly constant with depth; they ranged from 4.0 dpm g^{-1} at the surface of LA-2H-96 to 1.3 dpm g^{-1} at the base of LA-4H-96 (Figs. 37E and 37G).

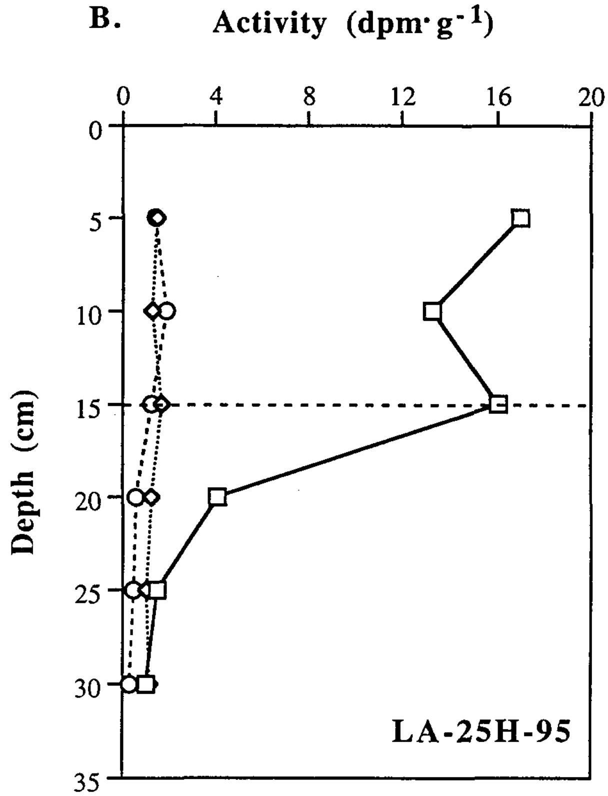
Three cores were identified as unique in terms of depositional character. LA-2H-96 is defined as a high depositional site, because supported levels of ^{210}Pb were not found within a 1.1-m column of sediments (Fig. 37E) and because the thickness of flocculent sediments was 84 cm (Table 5). A high rate of sedimentation and a large ^{210}Pb inventory at this site are attributed to sediment focusing as water currents redistributed sediments across the lake bottom. Short ^{210}Pb records (Figs. 37B and 37G), low ^{210}Pb inventories, and shallow depths of flocculent sediments (Table 5) indicate LA-4H-96 and LA25-95 are transitional sites. These cores were not considered in the analysis of historical deposition within the lake because of the truncated ^{210}Pb records in flocculent sediments.

Sediment accumulation rates were estimated using two scenarios for the eight cores considered to have complete records of total ^{210}Pb: 1) the conventional CRS age model without forcing a uniform age in the cores (squares); and 2) an hybrid CRS age model which forced 1945 to occur at the base of the flocculent layer (diamonds). MSR is plotted versus sediment ages in Fig. 38. Conventional CRS age model results were calculated using the entire length of unsupported ^{210}Pb; only data for flocculent sediments are shown for ease in comparison to the hybrid CRS 1945 ages. All cores demonstrated increasing mass sedimentation in more recent

A.



B.



C.

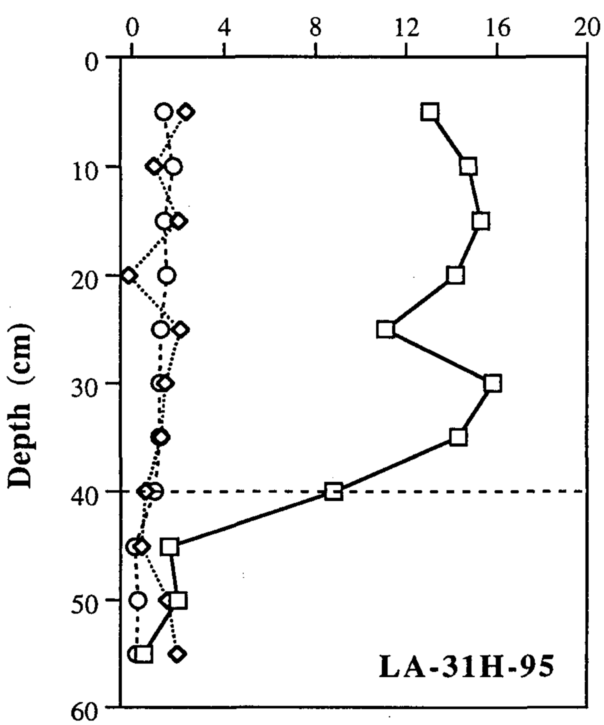


Figure 37.

Activities for total ^{210}Pb (squares), ^{226}Ra (diamonds), and ^{137}Cs (circles) are shown versus depth for ten historic cores collected in Lake Apopka: (A) LA-9H-95; (B) LA-25H-95; (C) LA-31H-95; (D) LA-1H-96; (E) LA-2H-96; (F) LA-3H-96; (G) LA-4H-96; (H) LA-6H-96; (I) LA-7H-96; and (J) LA-8H--96. The depth to the base of the flocculent sediment layer is given by the dashed line on each activity profile.

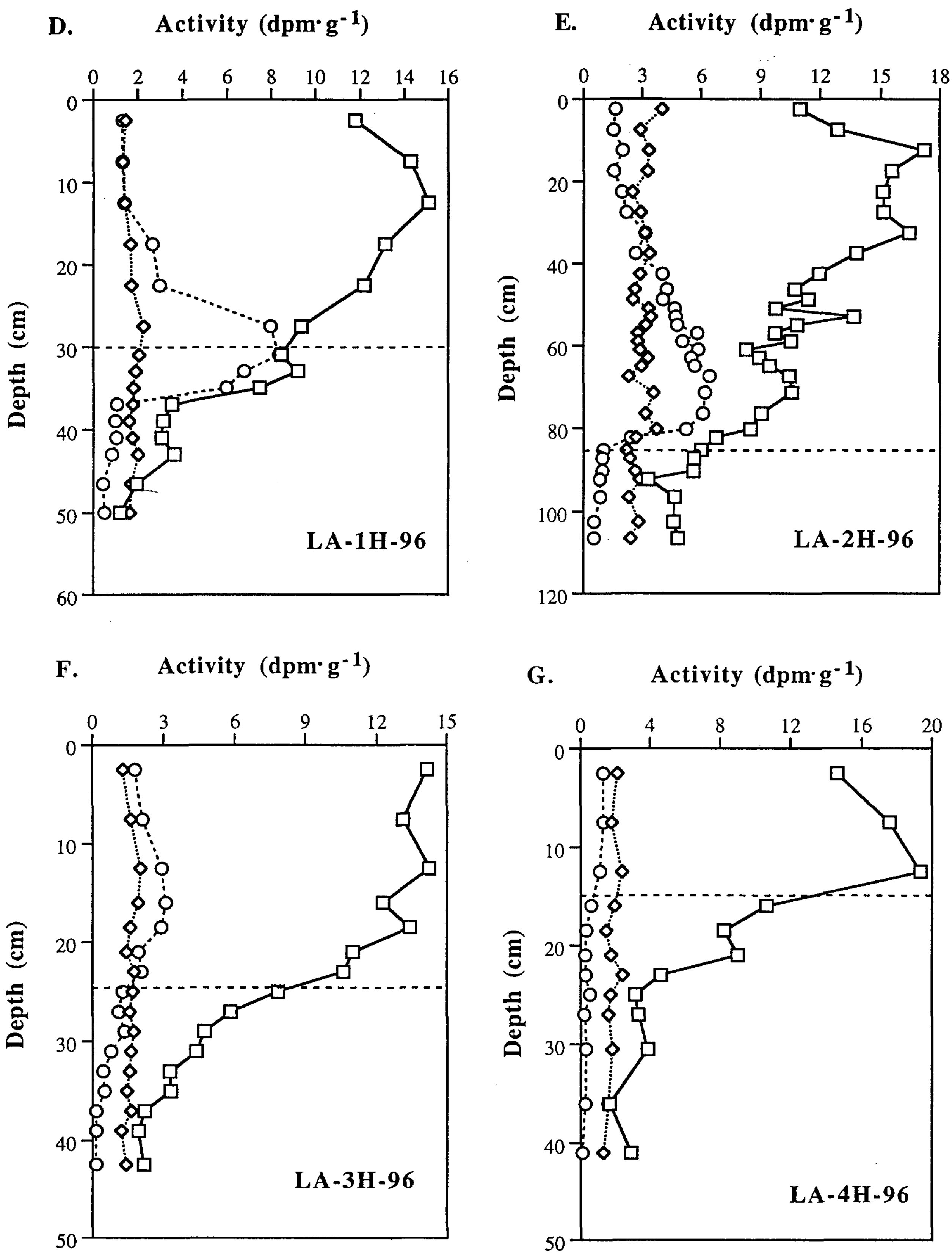


Fig. 37: Continued.

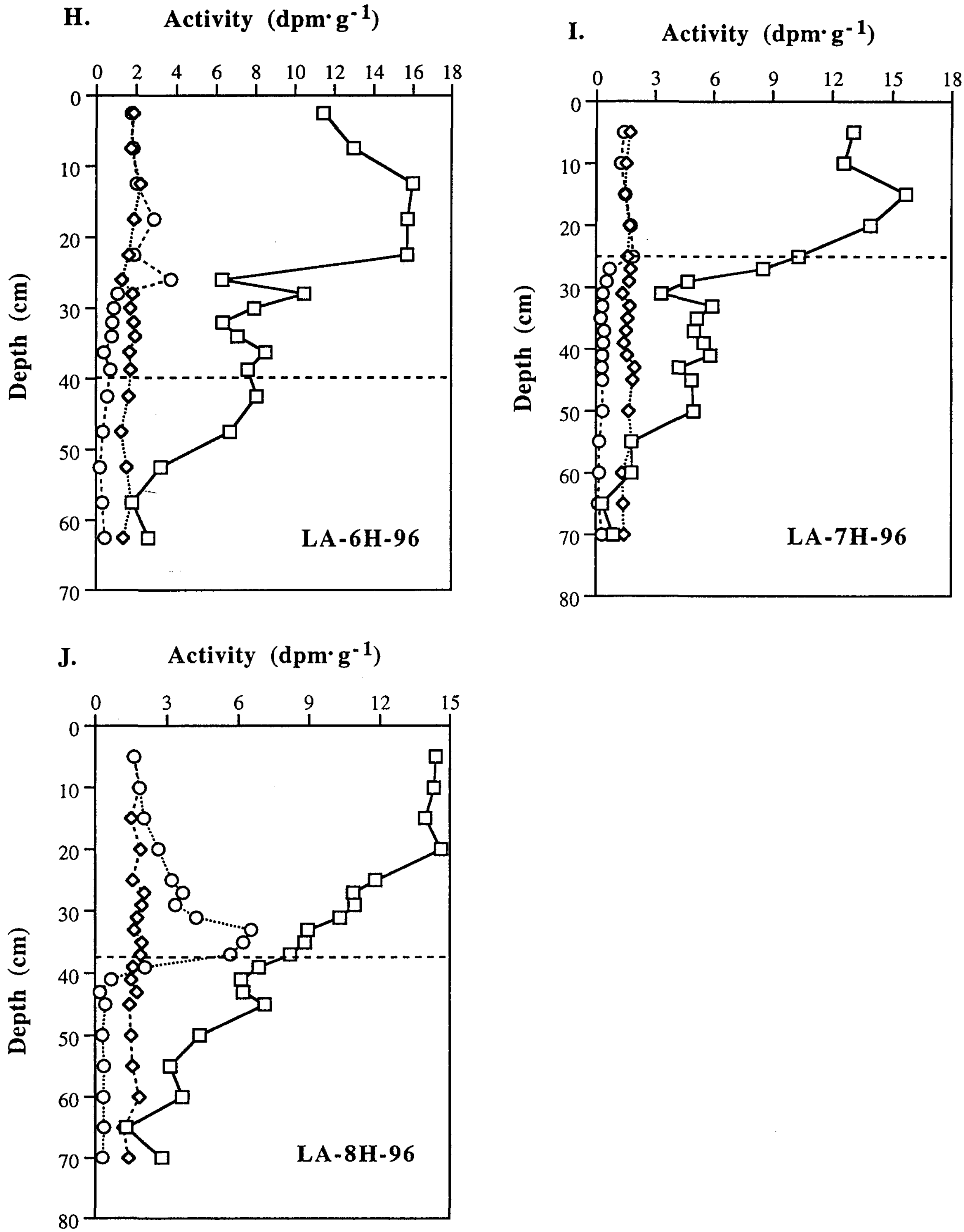


Fig. 37: Continued.

Table 5. Excess ^{210}Pb inventories for historic cores in Lake Apopka are presented for three scenarios: (1) total inventory using conventional CRS model; (2) inventory associated with the flocculent sediments in the conventional CRS model; and (3) inventory of flocculent sediments using 1945 hybrid model. Depth and cumulative mass to the base of flocculent sediments are given at each station.

Station ID	Flocculent Sediments Depth (cm)	Flocculent Sediments Cumulative Mass ($g \cdot cm^{-2}$)	Total ex ^{210}Pb Inventory ($dpm \cdot cm^{-2}$)	Floc. Sediment ex ^{210}Pb Inventory ($dpm \cdot cm^{-2}$)	1945 ex ^{210}Pb Inventory ($dpm \cdot cm^{-2}$)
LA-09H-95	50	1.802	31.27	25.44	32.24
LA-25H-95	15	0.255	4.75	3.48	----
LA-31H-95	40	1.124	25.99	25.44	32.24
LA-01H-96	30	1.030	13.28	10.39	13.05
LA-02H-96	84	3.493	35.24*	31.27	39.27
LA-03H-96	24	0.983	14.92	10.91	13.71
LA-04H-96	15	0.540	15.70	8.53	----
LA-06H-96	40	1.749	23.01	16.51	20.74
LA-07H-96	25	0.750	14.21	8.43	10.62
LA-08H-96	37	1.200	14.66	11.46	14.45

*Supported ^{210}Pb was not reached in LA-02H-96, so the total ex ^{210}Pb inventory represents the measurable depth of activity.

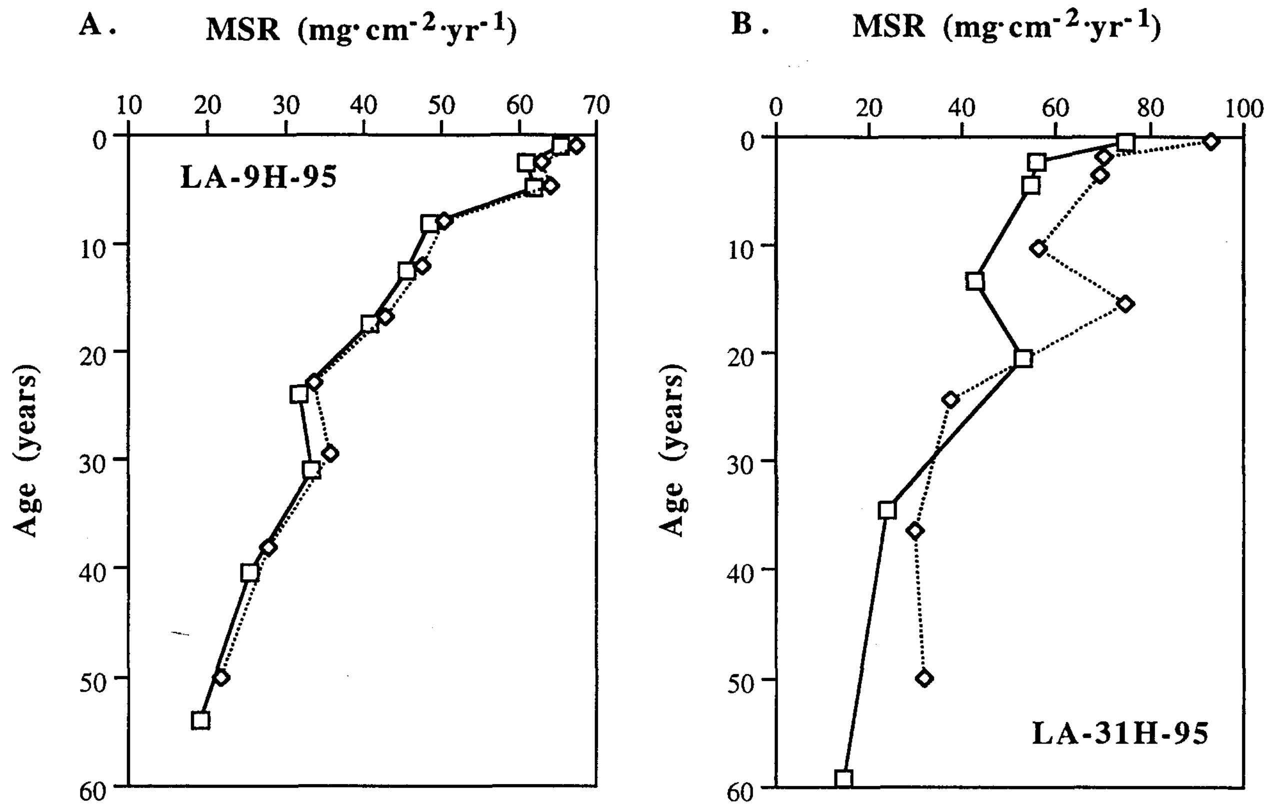


Figure 38. Mass sedimentation rate (MSR; $mg \cdot cm^{-2} \cdot yr^{-1}$) is shown versus sediment age (years) for both the conventional CRS model results (squares) and the 1945 hybrid CRS model results (diamonds) in eight historic cores: (A) LA-9H-95; (B) LA-31H-95; (C) LA-1H-96; (D) LA-2H-96; (E) LA-3H-96; (F) LA-6H-96; (G) LA-7H-96; and (H) LA-8H-96 where MSR appears to increase with decreasing age in the sediments for most cores.

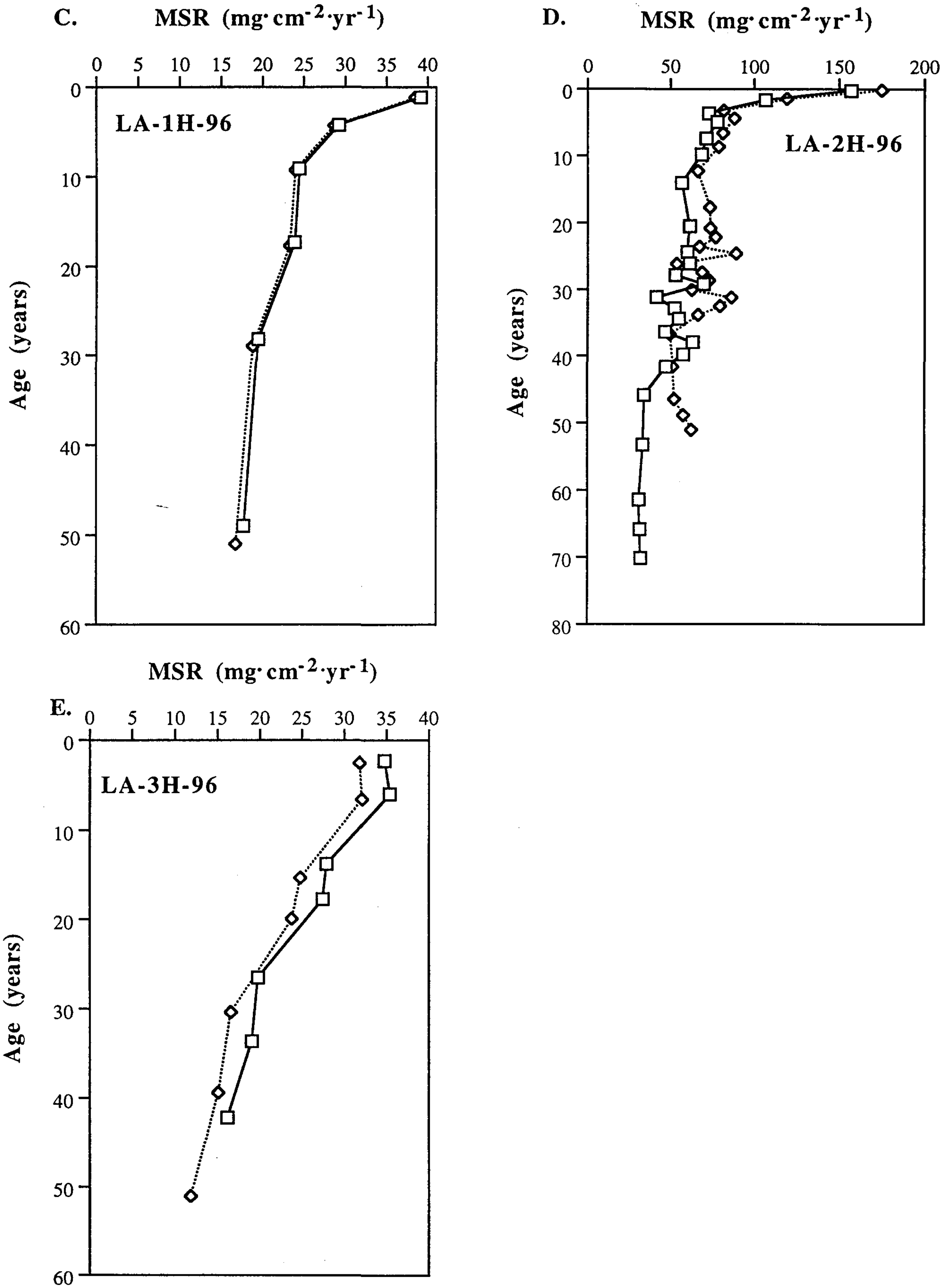
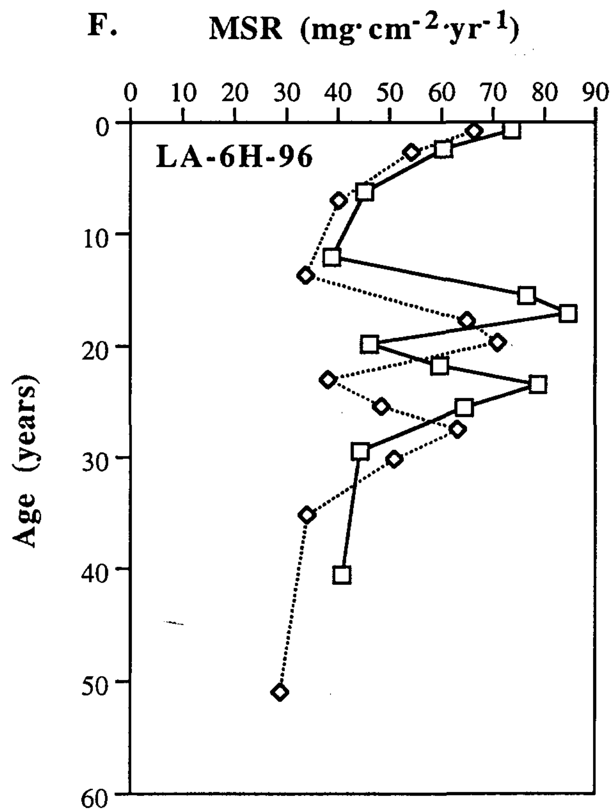
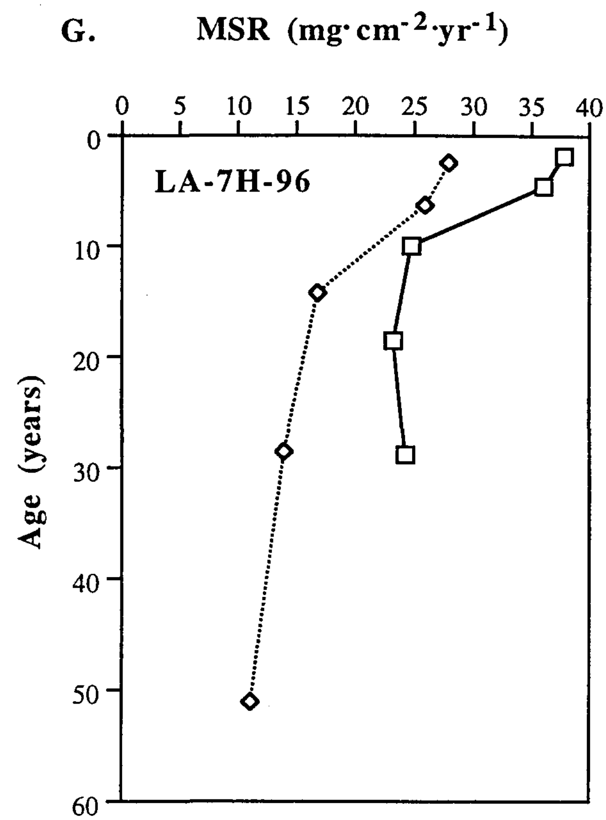


Fig. 38: Continued.

F.



G.



H.

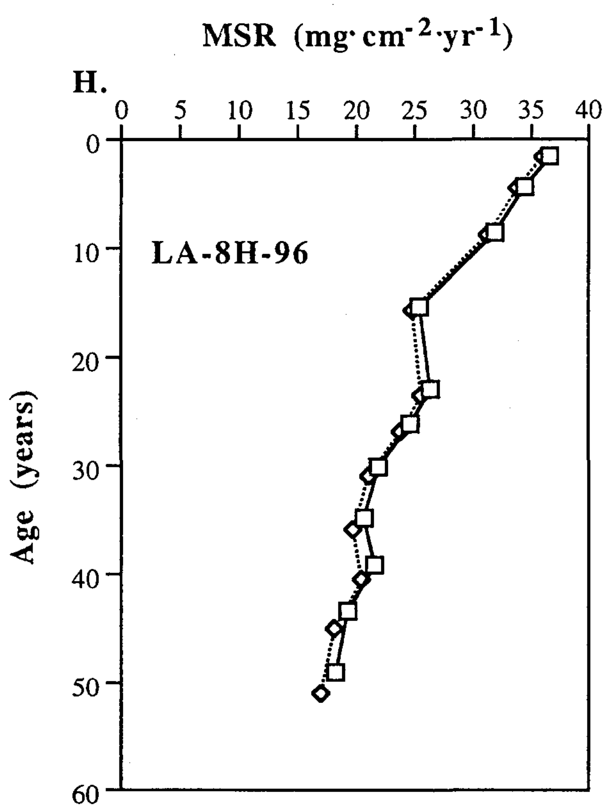


Fig. 38: Continued.

sediments for both models. Results in ages for the two models differed by <5 % difference for LA-1H-96 (Fig. 38C) and LA-8H-96 (Fig. 38H). LA-9H-95 (Fig. 38A) showed <8% change between the conventional and hybrid model results. Conventional model ages were much older at the base of the post-1940s flocculent sediments than those yielded by the 1945 hybrid model for LA-2H-96 (Fig. 38D); the difference between the models was ~35%. The difference in results for LA-2H-96 is accentuated because the excess ^{210}Pb record is truncated at this high deposition site. The age difference between models for the bottom depth of flocculent sediments demonstrates the magnitude of potential errors in using the conventional model.

Forcing the CRS model to yield a uniform age of 1945 at the base of the flocculent sediments made it possible to date Lake Apopka sediments even though the constant flux assumption was violated by the 1940s changes in lake basin morphometry. The implicit assumption in this approach is that the bottom of the flocculent sediment layer is a clearly identifiable, time-dependent feature. Without forcing the conventional CRS age model based on the entire ^{210}Pb record, widely variable ages are calculated for this horizon in the sediments. Results from the 1945 hybrid CRS age were used to estimate changes in MSR, and consequently nutrient accumulation, over time within the lake basin.

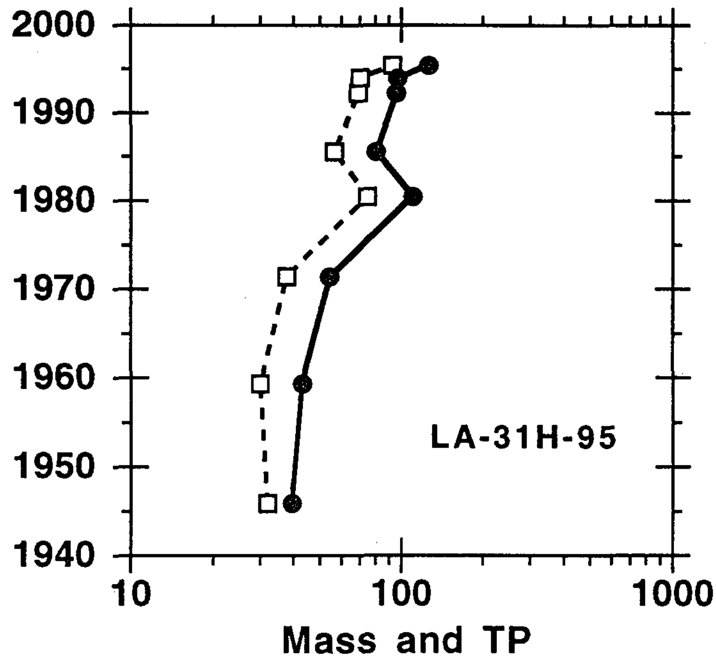
Mass and TP Sedimentation Rate

Mass sedimentation rate (MSR) calculated from ages established by hybrid ^{210}Pb dating varied considerably among the 1996 historic cores. MSR was greatest at LA2H-96 and lowest at LA7H-96 (Appendix E, Table 6). Minimum rates at these stations ranged from 11 mg cm^{-2} yr^{-1} at LA7H to 56 mg cm^{-2} yr^{-1} at LA2H and the maximum rates ranged from 27 mg cm^{-2} yr^{-1} at LA7H to 104 mg cm^{-2} yr^{-1} at LA2H. Although the range in absolute rates varied from 5- to 6-fold among cores, the range in the ratio of maximum/minimum MSR for each core was only 1.82 to 2.80. These data and plots of MSR vs. date (Figs. 39A and B) show that the increase in MSR among the 1995 and 1996 historic stations was relatively constant, at least doubling in the approximately 50 yr of the planktonic phase of primary production.

TP accumulation rate (TPAR) increased at a faster rate than the MSR at each station, with the exception of LA31-95 (Figs. 39A and B), because TP concentration increased upcore (Appendix C). In general the more rapid increase in TPAR with time was evident after 1980 in most cores. TPAR was greatest at LA2H-96 and lowest at LA7H-96, the same as the relationship found for MSR (Tables 6 and 7). Minimum rates at these stations ranged from 8.7 µg TP cm^{-2} yr^{-1} at LA7H to 53 µg TP cm^{-2} yr^{-1} at LA2H and the maximum rates ranged from 31 at LA7H to 159 µg TP cm^{-2} yr^{-1} at LA2H. The range in absolute rates for minimum and maximum TPAR varied from 6- to 5-fold, respectively, among cores; whereas the range in the ratio of maximum/minimum TPAR for each core was 2 fold. These data and plots of TPAR

Table 6. Decadal mass sedimentation rates (MSR; mg cm^{-2} yr^{-1}) and organic matter sedimentation rates (OMSR; mg cm^{-2} yr^{-1}) calculated from the 1945 hybrid CRS model are presented for each core dated using ^{210}Pb geochronology. The decadal ratio represents the MSR (or OMSR) in each decade divided by the MSR (or OMSR) for the 40-51.1 year interval. Accumulation rates since 1945 have increased 2.1-fold and 2.4-fold respectively, based on the decadal MSR and OMSR ratios.

	Decade (years before present)	Mean of All Historic Cores	LA-09H 1995	LA-31H 1995	LA-01H 1996	LA-02H 1996	LA-03H 1996	LA-06H 1996	LA-07H 1996	LA-08H 1996
MSR	**0-9.9**	52.36	61.13	77.49	30.37	103.93	31.93	53.49	26.86	33.66
	10-19.9	40.77	45.15	65.57	23.28	69.77	24.27	56.48	16.78	24.83
	20-29.9	35.89	34.66	37.63	18.78	71.70		49.87	13.91	24.68
	30-39.9	34.17	27.73	29.95		68.77	15.78	42.44		20.38
	40-51.1	24.55	21.70	31.92	16.71	55.90	11.82	28.72	11.10	18.50
Ratio	**0-9.9**	2.13	2.82	2.43	1.82	1.86	2.70	1.86	2.42	1.92
	10-19.9	1.66	2.08	2.05	1.39	1.25	2.05	1.97	1.51	1.42
	20-29.9	1.46	1.60	1.18	1.12	1.28		1.74	1.25	1.33
	30-39.9	1.39	1.28	0.94		1.23	1.33	1.48		1.10
	40-51.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
OMSR	**0-9.9**	35.24	41.25	52.49	20.97	72.62	18.68	36.38	17.13	22.44
	10-19.9	25.98	28.60	43.87	16.55	46.11	12.70	33.59	10.60	15.79
	20-29.9	22.87	21.36	24.83	12.75	46.16		30.38	8.86	15.74
	30-39.9	21.29	17.51	18.49		43.38	8.03	27.17		13.14
	40-51.1	14.63	13.30	16.75	10.48	34.23	6.06	17.20	6.97	12.04
Ratio	**0-9.9**	2.41	3.10	3.13	2.00	2.12	3.08	2.11	2.46	1.86
	10-19.9	1.78	2.15	2.62	1.58	1.35	2.09	1.95	1.52	1.31
	20-29.9	1.56	1.61	1.48	1.22	1.35		1.77	1.27	1.31
	30-39.9	1.46	1.32	1.10		1.27	1.32	1.58		1.09
	40-51.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00



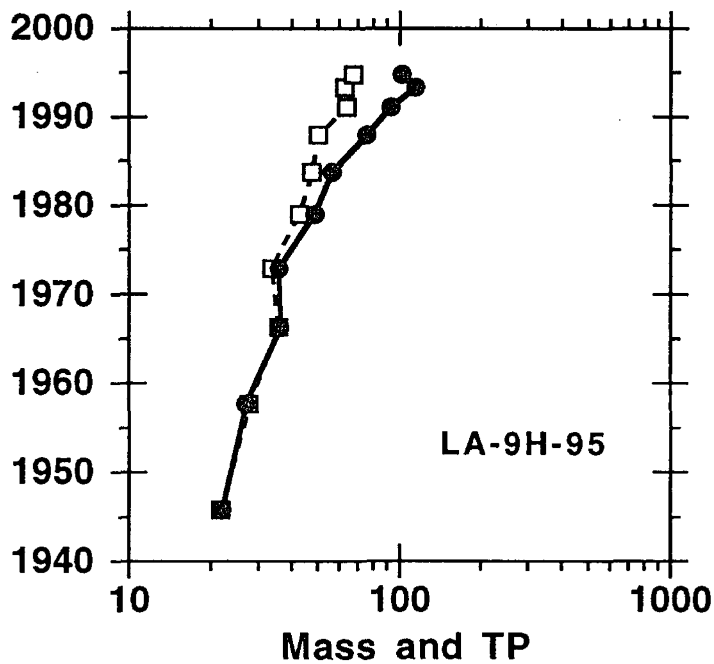
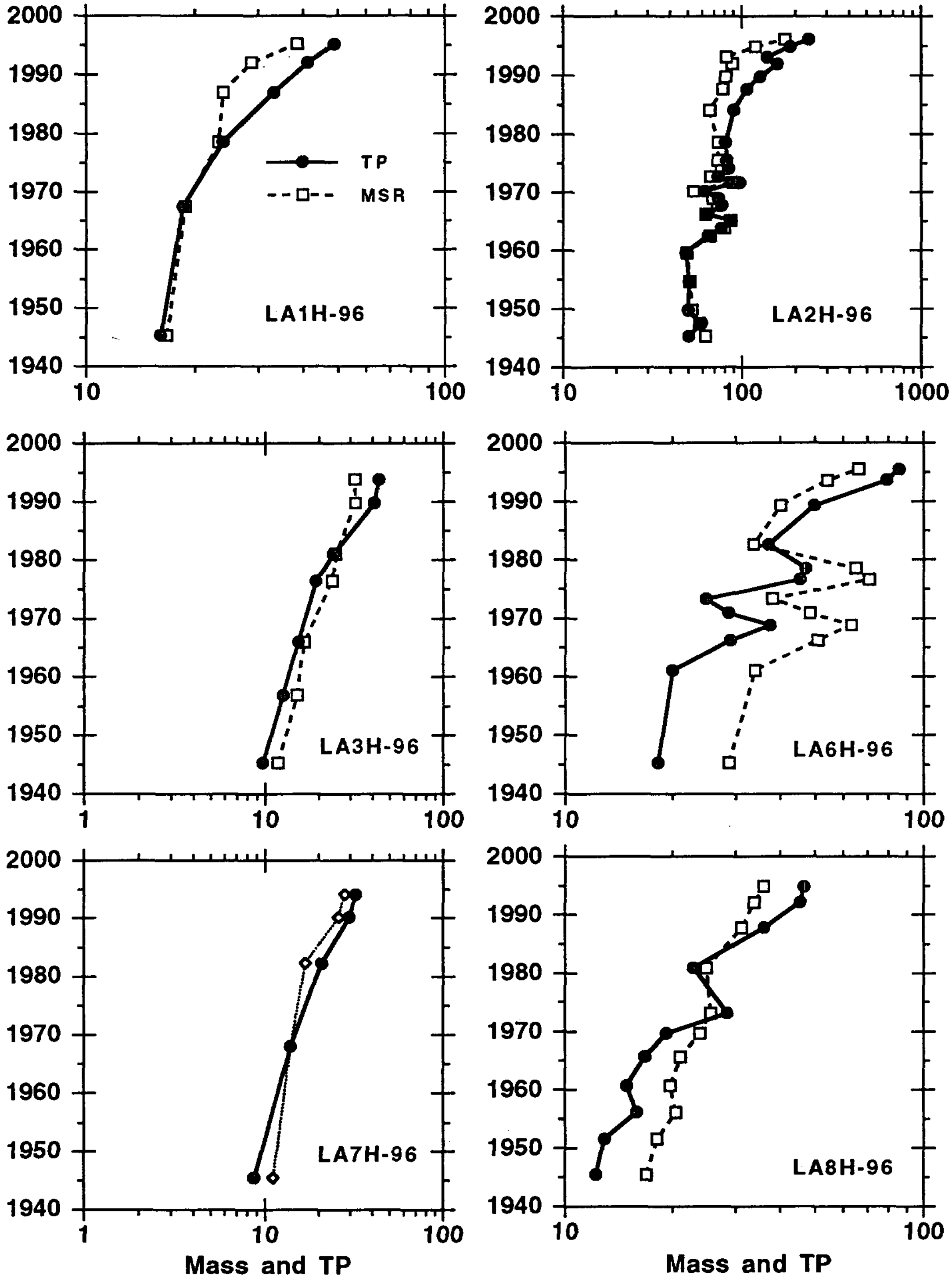


Figure 39A. Sediment mass and total phosphorus (TP) accumulation rate for eight historic cores, Lake Apopka. Solid circles are TP, open symbols are mass. Units for mass are mg cm^{-2} yr^{-1} and for TP are μg cm^{-2} yr^{-1}. (A) data for LA-31-95 and LA-9-95; (B) data for LA-1H-96, LA-2H-96, LA-3H-96, LA-6H-96, LA-7H-96 and LA-8H--96.



TP
MSR
LA1H-96
LA2H-96
LA3H-96
LA6H-96
LA7H-96
LA8H-96
Mass and TP
Mass and TP

Figure 39B.

Table 7. Decadal total phosphorus accumulation rates (TPAR; µg cm^{-2} yr^{-1}) and non-apatite inorganic phosphorus accumulation rates (NAIPAR; µg cm^{-2} yr^{-1}) calculated from the hybrid CRS model MSRs are presented for each core dated using ^{210}Pb geochronology. The decadal ratio represents the TPAR (or NAIPAR) in each decade divided by the TPAR (or NAIPAR) for the 40-51.1 year interval. Total phosphorus accumulation rates since 1945 have increased about 3.3-fold based on TPAR decadal ratios, while NAIP accumulation rates since 1945 have increased about 3.6-fold based on NAIPAR decadal ratios.

	Decade (years before present)	Mean of All Historic Cores	LA-09H 1995	LA-31H 1995	LA-01H 1996	LA-02H 1996	LA-03H 1996	LA-06H 1996	LA-07H 1996	LA-08H 1996
TPAR	**0-9.9**	73.78	96.53	106.27	41.08	159.32	42.05	71.47	30.89	42.66
	10-19.9	45.69	52.45	95.14	23.93	85.61	21.63	43.18	20.67	22.87
	20-29.9	36.49	35.97	54.29	18.54	78.61		30.29	13.88	23.83
	30-39.9	32.06	26.98	42.93		68.20	13.92	24.46		15.85
	40-51.1	22.54	21.92	39.36	16.06	52.65	9.74	18.24	8.71	13.69
Ratio	**0-9.9**	3.27	4.40	2.70	2.56	3.03	4.32	3.92	3.54	3.12
	10-19.9	2.03	2.39	2.42	1.49	1.63	2.22	2.37	2.37	1.67
	20-29.9	1.62	1.64	1.38	1.15	1.49		1.66	1.59	1.74
	30-39.9	1.42	1.23	1.09		1.30	1.43	1.34		1.16
	40-51.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NAIPAR	**0-9.9**	26.68	29.52	30.95	13.79	66.12	16.55	24.86	12.09	19.59
	10-19.9	15.73	16.62	34.91	8.15	26.44	6.94	14.77	9.15	8.86
	20-29.9	12.79	9.36	20.47	5.75	28.70		10.25	5.31	9.70
	30-39.9	11.25	7.21	16.06		25.01	4.34	9.28		5.62
	40-51.1	7.48	6.73	13.66	2.89	19.56	3.29	6.17	2.84	4.68
Ratio	**0-9.9**	3.57	4.39	2.27	4.77	3.38	5.04	4.03	4.25	4.19
	10-19.9	2.10	2.47	2.56	2.82	1.35	2.11	2.39	3.22	1.89
	20-29.9	1.71	1.39	1.50	1.99	1.47		1.66	1.87	2.07
	30-39.9	1.50	1.07	1.18		1.28	1.32	1.50		1.20
	40-51.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

vs. date (Figs 39A and B, Table 7) indicate that TPAR increased at least 3-fold and possibly as much as 4-fold in the approximately 50 yr of the planktonic phase of primary production.

The inventory or storage of TP in flocculent sediments varied greatly among the 46 survey cores as shown earlier (Table 2), even if transitional or non-depositional states are excluded. TP storage at each station is a function of TPAR because flocculent sediments were formed and deposited since the beginning of the planktonic phase of primary production, approximately 50 yr ago. Therefore, an average TPAR can be determined by dividing TP storage by the time interval over which sediments were deposited.

Estimates of Lake-Basin Nutrient Storage

Lake-basin storage of mass, organic matter, TP and NAIP in flocculent sediments was calculated from station inventories (Table 2) based on the following assumptions:

- Lake Apopka surface area is 125 km^2 or 125 x 10^6 m^2
- Each of 46 survey stations represents an equal area of the lake or 2.72 x 10^6 m^2
- Whole basin storage for each variable is the product of average storage for the 46 stations and lake bottom surface area.

Units for storage are g m^{-2} for sediment mass and organic matter and mg m^{-2} for TP and NAIP. Data for the 46 stations including averages, standard deviations and totals (sums) are presented in Table 2. Whole-basin storage of sediment mass and some of its components including TP and NAIP for flocculent sediments are presented in Table 8.

The whole-lake inventory of flocculent sediment mass is 2.21 million metric tons (10^6 g is one metric ton), of which 1.40 million tons is organic matter (Table 8). Average annual rates of storage are 44.2 x 10^6 kg of flocculent sediment mass and 27.9 x 10^6 kg of organic matter (Table 9). To evaluate their ecological significance, such large numbers must be normalized to surface area (125 x 10^6 m^2). On this basis, the average rate for accumulation of sediment mass amounts to 354 g m^{-2} yr^{-1} and organic matter amounts to 223 g m^{-2} yr^{-1}. The average rate of organic matter accumulation can be compared to estimates of organic matter produced by photosynthesis in Lake Apopka. Estimates range from 1 g C m^{-2} d^{-1} (Gale and Reddy 1994) to much higher values based on other data (Schelske et al. 1992). Primary production in subtropical hypereutrophic lakes might be expected to range as high as 3-5 g C m^{-2} d^{-1} (Wetzel 1983). If primary production averages 3 g C m^{-2} d^{-1} and organic matter is 40% carbon, then the annual production of organic matter is 2740 g m^{-2} yr^{-1}. The average sedimentation rate of organic matter, therefore, is 8.1% of this estimated rate of primary production. It may be more realistic, however, to compare recent estimates of primary production with organic matter sedimentation estimated for 1986-1995 (Table 9). Estimated organic matter sedimentation based on the relative increase for this decade is 326 g m^{-2} yr^{-1}, 46% larger than the average. If annual production of organic matter is only 913 g m^{-2} yr^{-1} (1 g C m^{-2} d^{-1}), then the estimated high rate of organic matter sedimentation (326 g m^{-2} yr^{-1}) is 36% of primary production. These comparisons indicate

Table 8. Storage of sediments and nutrients in flocculent sediments of Lake Apopka. Calculations are based on data from 46 stations distributed on an equal area grid. The area of the lake used in the calculations was 125 x 10^6 m^2. Sediment storage is presented for total mass, inorganic mass and organic mass and nutrient storage is presented for total phosphorus (TP) and non-apatitie inorganic phosphorus (NAIP). Units are 10^3 larger for mass than for nutrients.

	Mass	Inorganic	Organic	TP	NAIP
Sum (g cm^{-2}) or (mg cm^{-2})	81.3	29.9	51.3	82.8	32.8
Average/station (kg m^{-2}) or (g m^{-2})	17.7	6.50	11.2	18.0	7.14
Whole Basin Storage (10^6 kg) or (10^6 g)	2210	813	1390	2250	892
Average Storage/year (10^6 kg) or (10^6 g)	44.2	16.3	27.9	45.0	17.8

Table 9. Whole-basin storage by decades for mass, organic matter, TP and NAIP. Data are four estimates: 1 is based on averages for the 50-yr period, 2 is based on a 4-fold increase, 3 is based on a 3-fold increase, and 4 is based on a relative increase. The 3-fold and 4-fold increases are based on logarithmic increases in annual rates of storage. Relative increase is based on data in Tables 6 and 7. Units are 10^6 kg/decade for mass and organic matter storage and 10^6 g/decade for TP and NAIP storage. See text for additional explanation.

Mass Storage

Decades	Average	4-fold Increase	3-fold Increase	Relative Increase
1986-1995	442	713	654	616
1976-1985	442	540	525	480
1966-1975	442	410	421	422
1956-1965	442	310	338	402
1946-1955	442	235	271	289

Organic Matter Storage

Decades	Average	4-fold Increase	3-fold Increase	Relative Increase
1986-1995	279	450	413	408
1976-1985	279	341	331	301
1966-1975	279	259	266	264
1956-1965	279	196	214	247
1946-1955	279	149	171	169

TP Storage

Decades	Average	4-fold Increase	3-fold Increase	Relative Increase
1986-1995	450	727	666	788
1976-1985	450	551	535	489
1966-1975	450	417	429	390
1956-1965	450	316	345	342
1946-1955	450	240	277	241

NAIP Storage

Decades	Average	4-fold Increase	3-fold Increase	Relative Increase
1986-1995	178	288	264	322
1976-1985	178	218	212	190
1966-1975	178	165	170	154
1956-1965	178	125	137	135
1946-1955	178	95	110	90

that the estimated inventory of organic matter in Lake Apopka sediments (Table 8) is not unreasonable, particularly if the rate of primary production averages at least 3 g C m^{-2} d^{-1}.

The whole-lake inventory of TP in flocculent sediments is 2.25 x 10^6 kg, of which 0.892 x 10^6 kg is NAIP (Table 8). Average annual rates of TP and NAIP storage are 45.0 and 17.8 x 10^6 g. These average rates of storage must be normalized to surface area so they can be related to the concentration of TP in the water column. The average rates of TP and NAIP accumulation in sediments are 360 and 142 mg m^{-2} yr^{-1}, respectively. If the average concentration of TP in the water column is 194 mg m^3 and the mean depth of the lake is 1.7 m (Conrow et al. 1993), then the average inventory of TP in the water column is 330 mg m^{-2}. These data based on averages indicate that the residence time of TP in the water column is approximately one yr and suggest a high rate of TP sedimentation. If the TP concentration in lake water has increased over the last 50 yr, these calculated average rates of TP or NAIP accumulation undoubtedly underestimate the most recent rates of phosphorus accumulation. TPAR calculated for the most recent decade of the present study averaged 3.26 times greater than TPAR for the first period of the planktonic phase (Table 7).

Rates of whole-lake TP storage for the phytoplankton phase were calculated for 10-yr intervals using the assumption that TP storage in flocculent sediments occurred in a period of 50 yr and then using four different assumptions about changes in rates of lake-basin TP storage (Table 9). First, it was assumed that the rate of TP storage was constant over 50 yr and could be expressed, therefore, as an average rate. Second, it was assumed that TPAR quadrupled at a logarithmic rate in 50 yr; this assumption produces a factor of three increase in TP storage for the most recent decade relative to the first decade. Third, it was assumed that TPAR tripled at a logarithmic rate in 50 yr; this assumption produces more than a factor of two increase in TP storage for the most recent decade relative to the first decade. Fourth, it was assumed that TPAR changed over the 50 yr relative to the proportional increase in mean TPAR for each decade (Table 8). The proportion was based on mean ratio of increase in TPAR for the 8 historic cores. Storage by decade calculated assuming that TPAR increased proportionately to the mean of historic cores is similar to storage by decade calculated assuming that TPAR increased 4-fold in 50 yr, but differs mainly in that it is greater for 1986-1995 and lower for 1966-1975 than storage by decade calculated assuming that TPAR increased 4-fold in 50 yr. Storage by decade calculated from the mean MSR of historic cores differed little from storage calculated assuming that MSR increased 3-fold in 50 yr; the largest difference was found for 1956-1965.

TP storage estimates for the four assumptions were compared to evaluate which provide realistic changes over time. The first estimate (45,000 kg yr^{-1}), based on an average rate, undoubtedly overestimates storage for the early part and underestimates storage for the latter part of the phytoplankton phase (Table 9). Phosphorus loading to the lake from agricultural sources undoubtedly increased historically. For example, P fertilizer applied to vegetables in the Lake Apopka basin in 1991 amounted to 124 metric tons (Crnko et al. 1993). Many lines of evidence in this investigation point to increases in sediment and nutrient accumulation during the planktonic phase; therefore, using an average rate for the 50-yr period is based on an invalid assumption. The second and third estimates provide more realistic estimates of TP storage, especially in recent decades, because TP concentration (Appendix C) and TPAR (Figs 39A and B) increased historically. An independent check on TP storage can be obtained from a 1977 phosphorus budget for Lake Apopka compiled by Brezonik et al. (1978). In this budget, TP storage in the sediments (termed net sedimentation) amounted to 49,130 kg yr^{-1}. Annual averages from estimates two and three for 1976-1985 are 55,100 and 53,500 kg yr^{-1}, respectively (Table 9). Storage estimated by Brezonik et al. (1978) is smaller than either of these average annual rates, but this value for storage in 1977 should be compared to the early part of this 10-yr period instead of the decadal average. Storage for the preceding 10-yr period (1966-1975) was 41,700 and 42,900 kg yr^{-1}, respectively, smaller than that estimated by Brezonik et al. (1978). Storage from the fourth estimate based on the decadal increase in TPAR (Table 7) provides an annual storage rate (48,900 kg yr^{-1}) similar to estimate two or three for 1976-1985 and closest to the estimate for 1977 (49,130 kg yr^{-1}) by Brezonik et al. (1978). Estimates two and four provide an approximately 3-fold increase in TPAR from the first (1946-1955) to the last decade (1986-1995), a relative increase that is consistent with changes in TPAR at historic stations (see Table 7). Changes in storage differ in that the rate of increase is constant for estimate 2, but increases most rapidly in the last 20 years (1976-1995) for estimate 4. The recent rapid increase in the fourth estimate matches the mean increase in TPAR at the historic stations (see Table 7; Figs. 39A and B) and also reflects the general increase in TP concentration that was found upcore at all survey and historic stations (see Appendices B and C).

Discussion

A CRS model was used to develop ^{210}Pb chronologies for a number of cores. The model was run without consideration for sediment mixing, a commonly used approach (Appleby and Oldfield 1983). Profiles of excess ^{210}Pb are relatively flat which might be interpreted as mixing; but, as discussed below, an increase in primary production of organic matter could account for the deviation from an exponential profile that would be expected if the sedimentation rate were constant. The degree of resuspension and sediment mixing, however, are factors in that affect temporal resolution in sediment chronologies. Sedimentary materials that are resuspended are mixed with overlying materials which is one process that affects temporal resolution. Establishing the time constant for this process in Lake Apopka will require additional research on ^{210}Pb dating of highly organic sediments in shallow lakes.

Resuspension of sediments is invoked as a source of nutrients in some lakes, but in Lake Apopka it is mainly a source of particulate phosphorus because the concentration of soluble phosphorus in the upper 8 cm of flocculent sediments is essentially the same as in the overlying water (Reddy et al. 1996). By contrast the TP concentration of near surface sediments is >1.0

mg/g (Appendices B and C). Resuspension is thus not likely to be a direct source of soluble phosphorus. Data in Table 1 can be used to calculate the amount of TP that might be injected into overlying waters if sediments are resuspended. An amount equivalent to approximately 400 µg TP/L in the water mass is present in the upper 5 cm of sediment and an amount equivalent to 1200 µg TP/L is present in the upper 10 cm. Concentrations as large as 400 µg TP/L are found very rarely during monitoring of the lake (Conrow et al. 1993). These calculated amounts, therefore, are undoubtedly overestimates of the amount that might be resuspended at any one time because sediments are not likely to be resuspended over the entire lake bottom during most storm events (Sucsy 1997). In addition, some areas in the center of the lake which are subjected to the greatest effects of wave action (Sucsy 1997) have thin layers of flocculent sediments (Fig. 28). Resuspended sediments are focused to depositional sites where the time constant for mixing would be expected to decrease as some function of sedimentation rate.

Several lines of evidence, including increased TPAR and NAIPAR and a shift in microfossil species composition, indicate that primary production has increased in the last 50 years. Because the sediments are highly organic, the increase in MSR calculated from the CRS ^{210}Pb age model provides an estimate of the rate of increase in primary production, but this increase is overestimated in recent sediments undergoing diagenesis. Data indicate the increase is in the range of 2- to 3-fold averaged over the past 50 years. The magnitude of this overestimate should be investigated in greater detail, but it is probably relatively small compared to a 2- or 3-fold increase in organic matter accumulation in 50 years.

In sediment cores, the activity of excess ^{210}Pb in the upper parts of cores is diluted by sedimentary organic matter that is undergoing diagenesis compared to deeper sections that have undergone diagenesis. This results in an overestimate of mass sedimentation rate (MSR) at the top of the core compared to deeper sections. However, in calculating nutrient accumulation rates, the higher MSR in sediments undergoing diagenesis is compensated for by the dilution of nutrient concentration in these sections. (The nutrient concentration and ^{210}Pb activity increase during diagenesis as organic matter is mineralized; the CRS model calculation yields a decrease in MSR with an increase in ^{210}Pb activity). Thus, an artificially high MSR will be generated by the CRS model for the zone of diagenesis compared to deeper sediments, but the nutrient accumulation rates will not be affected to the same extent. In this study, an artificially high MSR is accentuated by the small amount of mass in near-surface samples of these flocculent sediments. For example, an age of 1.5 yr was calculated for the top 10 cm of LA2H-96 (Appendix E).

Organic matter deposited at the sediment-water interface is degraded during diagenesis. During diagenesis, organic matter is mineralized and the accompanying reduction in organic mass increases the proportion of inorganic materials and effectively concentrates other sedimentary constituents including ^{210}Pb, TP, NAIP, TN, and TC. A zone of diagenesis of unknown thickness exists in the flocculent sediments of Lake Apopka. Detecting the depth of the diagenetic zone is complicated by the highly organic sediments. A sharp decrease in organic matter from the sediment-water interface to depth was not obvious in Lake Apopka cores. A clear demarcation of the zone of diagenesis may not be apparent in plots of organic matter content in sediment cores if a large fraction of sedimented organic matter at depth is refractory. At sediment depths well below the zone of diagenesis organic matter amounts to approximately 60% of sediment dry weight. Refractory materials are assumed to comprise most of this material because it was subjected to diagenesis during burial.

Both chemical and biogeochemical processes must be considered in interpreting the dynamics of sedimentation, nutrient sequestering, and nutrient release in the near-surface sediments. Pore-water profiles of soluble phosphorus (phosphate) and soluble nitrogen (ammonium) at depths >8 cm are those attributed to geochemical processes (Reddy et al. 1996). However, these authors conclude that the presence of a large algal mass (dominated by the meroplanktonic diatom, *Aulacoseira*) in the upper 5-10 cm of the sediment column may be an active sink for phosphate released from deeper sediments (see Van Luijn et al. 1995), adding a biological component to these dynamics. Meroplanktonic diatoms assimilate and store luxury phosphorus uptake, effectively altering the release of soluble phosphorus from the sediments (see Schelske et al. 1995). Nutrients stored by meroplanktonic algae while below the photic depth in the lake can be used to support photosynthesis and growth when the organisms are resuspended in the water column during wind events that occur with relatively high frequency during the passage of meteorological frontal systems (Carrick et al. 1993). Meroplanktonic algae, therefore, are an important component of the biogeochemical cycle of phosphorus in Lake Apopka.

The high abundance of meroplanktonic algae in near-surface sediments and storage of phosphorus by this algal community may be one of the factors contributing to artificially high MSR and TPAR at the tops of sediment cores. Data from LA9-95 show that *A. italica* has the greatest relative abundance in the upper 15 cm. The uptake and storage of phosphorus by meroplankton is a biogeochemical process that may account for the relatively large storage of phosphorus in recent sediments. Polyphosphate stored in these cells may be a significant phosphorus sink.

SUMMARY AND CONCLUSIONS

Sediment studies in Lake Apopka were undertaken with the major goal of estimating basin-wide sediment and nutrient accumulation since 1947 when phytoplankton replaced macrophytes as the dominant primary producer. To meet this goal, a high quality data set for 46 survey and 8 historic cores was collected (see Appendices B and C) and analyzed to estimate lake-basin sedimentation of mass, organic matter, TP and NAIP. Historic cores were ^{210}Pb dated to provide a chronology of historic changes in sediment and nutrient deposition. Stratigraphic features in historic and survey cores arranged on an equal area grid were correlated as a means of obtaining time-dependent markers in the undated survey cores.

Flocculent sediments produced during the phytoplankton phase were hypothesized to be lower in dry weight fraction and with a lower TC/TN ratio than sediments produced during the macrophyte phase. This difference was expected because macrophytes require structural organic carbon to grow upright. This structural carbon is degraded slowly compared to more labile forms in phytoplankton; thus a higher TC/TN ratio is found in sediments produced during the macrophyte phase.

Several stratigraphic markers were used to infer the change from macrophyte to phytoplankton dominance in the lake. The ratio of TC/TN, fraction dry weight, and TP concentration provided stratigraphic evidence that flocculent sediments were produced as by products of autotrophic metabolism during the recent, 50-year period of phytoplankton dominance. These variables, which were analyzed in all cores, were used to establish the thickness of flocculent sediments. That flocculent sediments were produced during the planktonic phase was verified with additional analyses, including the chemical measurement of diatom silica and analysis of diatom microfossils.

Data on diatom microfossils provide additional support for criteria used in stratigraphic zonation. Three distinct assemblages were present in the diatoms identified from LA9-95, a historic core collected in 1995. These included: 1) a diverse assemblage dominated by benthic taxa (*Amphora ovalis*, *Cyclotella stelligera*, *Cymbella* sp., *Pinnularia* sp., and *Nitzschia* sp.) that was found below the zone of flocculent sediments, 2) an assemblage dominated by *Aulacoseira italica* , *Pseudostaurosira brevistriata*, *Staurosirella pinnata* and *Staurosira construens* found at the bottom of the zone of flocculent sediments, and 3) an assemblage comprised of 75-80% *A. italica* in the upper most zone of flocculent sediments. The diverse benthic assemblage also differed in that its absolute abundance was approximately an order of magnitude less than the overlying assemblage.

Data on microfossil diatoms provide evidence that water transparency changed markedly in a few decades. Water transparency inferred from the diatom assemblage present during the macrophyte phase indicates high water transparency such that benthic algae grew on the lake bottom. By contrast, the meroplanktonic diatom, *A. italica* now is the dominant diatom in the lake because it can survive in the aphotic environment on the lake bottom. Decreased transparency is attributed to increases in phytoplankton standing crop and other factors. Increased standing crop of phytoplankton is one of the consequences of nutrient enrichment.

The ratio of planktonic to benthic (P/B) diatoms also provides evidence that the primary producer community shifted from macrophytes to phytoplankton at the time when flocculent sediments were first deposited. *A. italica* is the major phytoplankton species in the lake presently; therefore, the P/B ratio is highest in the upper 15 cm where this species is dominant (75-80% of the assemblage). The P/B ratio increases upcore as does the concentration of TP. These data indicate that the changes in the lake's primary producer community since the 1940s or earlier are driven by increased nutrient loading.

Highly organic sediments such as those found in Lake Apopka are not common in some geographic areas, but are characteristic of many Florida lakes (Brenner and Binford 1988). Lake Apopka forms the headwaters of the Ocklawaha River and receives relatively small inputs of allochthonous organic matter from its small drainage area, headwater spring and rainfall. Lake Apopka, therefore, may differ from many Florida lakes in that a high proportion of its sedimentary organic matter has been formed historically from organic matter produced photosynthetically in the lake, either from the macrophyte community during the macrophyte phase or from the phytoplankton community during the phytoplankton phase. Results presented here provide many lines of evidence for the two different sources of sedimentary organic carbon in Lake Apopka.

Establishing the thickness of flocculent sediments at survey stations allowed the calculation of inventories (storage) of mass and nutrients at each station. The thickness of flocculent sediments varied greatly among the 46 survey cores and ranged from 1 to 136 cm. Flocculent sediments were highly organic averaging 63% of sediment mass. Storage of sediment mass and TP also varied among stations. This variability can be illustrated by noting that <5% of the total storage of TP was found at the 10 stations with the lowest storage and that 63% of the TP storage was found at the 15 stations with the highest storage.

Variability in sediment deposition over the lake basin is attributed to the dynamics of sedimentation that focus sediments in high sedimentation sites. Sediments that are focused have in part been transported from other areas of the lake that are subject to sediment resuspension. Stations with low sedimentation were in the central part of the lake where the effects of wind action on sediment resuspension would be greatest (Fig. 28).

Resuspension of sediments is invoked as a source of nutrients in some lakes, but in Lake Apopka it is mainly a source of particulate phosphorus because the concentration of soluble phosphorus in the upper 8 cm of flocculent sediments is essentially the same as in the overlying water (Reddy et al. 1996). By contrast the TP concentration of near surface sediments is >1.0 mg/g (Appendices B and C). Resuspension is thus not likely to be a direct source of soluble phosphorus. Data in Table 1 can be used to calculate the amount of TP that might be injected into overlying waters if sediments are resuspended. An amount equivalent to approximately 400 μg

TP/L in the water mass is present in the upper 5 cm of sediment and an amount equivalent to 1200 μg TP/L is present in the upper 10 cm. Concentrations as large as 400 μg TP/L are found very rarely during monitoring of the lake (Conrow et al. 1993). These calculated amounts, therefore, are undoubtedly overestimates of the amount that might be resuspended at any one time because sediments are not likely to be resuspended over the entire lake bottom during most storm events (Suscy 1997). In addition, some areas in the center of the lake which are subjected to the greatest effects of wave action (Sucsy 1997) have thin layers of flocculent sediments. Resuspended sediments are focused to depositional sites where the time constant for mixing would be expected to decrease as some function of sedimentation rate.

Conventional models of dating sediments with ^{210}Pb could not be used in Lake Apopka because the construction of dikes in the 1940s reduced the area of the lake basin. This reduction in surface area of the lake invalidates the assumption in models that ^{210}Pb flux to the sediments is constant over time. A hybrid model which adjusted ages so that the zone of flocculent sediments was 50 yr old was used to date flocculent sediments. During this time period, the flux of ^{210}Pb can be assumed to be constant. Ages and sedimentation rates calculated from the hybrid model indicated that sedimentation rate increased at least 2-fold and TPAR increased from 3- to 4-fold in the last 50 years. These results were then used to obtain different estimates for TP sedimentation over time.

Flocculent sediments were highly organic, averaging 63% organic matter measured as LOI; therefore, sedimentation accumulation and MSR are determined largely by organic matter. This characteristic is important in evaluating the ^{210}Pb chronology. A mean 2-fold increase in MSR in 50 yr was found using the hybrid model. This 2-fold increase can be attributed to a comparable increase in organic matter production by phytoplankton in 50 years because sediments are highly organic. Increased production and sedimentation of organic matter over time can then be used to partly explain the relatively flat excess ^{210}Pb profiles. An increase in phytoplankton production is one of the expected consequences of increased phosphorus loading to the system that is inferred from historic increases in TP storage in the sediments.

Several lines of evidence, including TPAR obtained from ^{210}Pb dating, indicate that whole-basin rates of TP storage increased during the planktonic phase, approximately the last 50 yr. Average rates of TP storage for the period of phytoplankton dominance were estimated to be 45,000 kg yr^{-1}. This is slightly smaller than 49,100 kg yr^{-1}, an estimate by Brezonik et al. (1978) for net TP deposition (storage) in 1977. Average rates of deposition were 61.6% larger in the last 10 years and about 50% smaller during the first 10 years of phytoplankton dominance if the rate of TP accumulation increased 4-fold at a logarithmic rate during the 50-yr period of phytoplankton dominance.

The high abundance of meroplanktonic algae in near-surface sediments and storage of phosphorus by this algal community may be one of the factors contributing to artificially high MSR and TPAR at the tops of sediment cores. Data from LA9-95 show that *A. italica* has the greatest relative abundance in the upper 15 cm. The uptake and storage of phosphorus by meroplankton is a biogeochemical process that may account for the relatively large storage of phosphorus in recent sediments. Polyphosphate stored in these cells may be a significant phosphorus sink.

Estimated whole-basin inventories (storage) of organic matter in the last 50 yr are reasonable compared to estimated organic matter production by phytoplankton. Data on annual phytoplankton production in the lake are limited; however, organic matter sedimented in the past 50 yr is on the order of 10% of estimated phytoplankton production. This comparison indicates that calculated storage of organic matter closely approximates storage evaluated independently. This comparison and comparable estimates of TP sedimentation by Brezonik et al. (1978) and the present investigation validate data obtained in the present investigation.

The whole basin inventory of TP in flocculent sediments was 2.25 x 10^6 kg (2,250 metric tons). This inventory accumulated in 50 yr is 54 times larger than the present inventory of TP in the water column. These data indicate that residence time of phosphorus in the water column is short, on the order of one year. This calculation undoubtedly underestimates recent rates of TP sedimentation in the lake which have increased historically. These data show that the sediments are a significant sink for phosphorus.

The present investigation provides data to quantify phosphorus storage in sediments and to demonstrate that phosphorus loading and sedimentation have increased during the plankton phase of the lake. Data from the investigation are used to show that phosphorus storage has increased at least 3-fold in the last 50 yr based on decadal comparisons and as much as 4-fold if annual rates are compared. Changes in the assemblage composition of diatom microfossils in flocculent sediments also provides additional evidence that phosphorus loading has increased markedly in the past 50 yr.

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APPENDICES

Appendix A	**Station Locations and Core Descriptions**
Appendix B	**Survey Cores**
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APPENDIX A

STATION LOCATIONS
AND
CORE DESCRIPTIONS

Key to Field Notes

Station Location Data for stations are latitude and longitude values obtained from a Trimble Navigation Global Positioning System Pathfinder. Station locations were stored as waypoint values on the system. An initial reading was taken after anchoring on station and a second reading was taken when work was completed. Both readings are listed for the 1995 stations; but only one is listed for 1996 stations.

Sediment Survey Data include information on water depth, sediment thickness, and descriptions of the sediment cores retrieved.

Depth of the water column was determined by sounding with a Secchi disc on a metered line.

Depth to hard bottom was measured by inserting metered electrical conduit rods into the sediment until they bottomed on hard, sandy deposits.

Soft sediment thickness was estimated by subtracting the depth of the water column from the depth to hard bottom.

Sediment core length was determined by measuring the retrieved core with a meter stick.

Sediment core descriptions were made before sediment cores were extruded. Additional descriptions were made as the cores were sectioned.

Station 9 October 19, 1995

Station Location Data:

#1. initial reading:

Lat.: 28° 36' 06.3" N Long.: 81° 38' 19.6" W

#2. second reading:

Lat.: 28° 36' 06.7" N Long.: 81° 38' 19.6" W

Sediment Survey Data:

Depth of water column:	193 cm
Depth to hard bottom:	355 cm
Soft sediment thickness (by difference):	162 cm

Sediment core length:	133 cm
Sectioned to:	125 cm

Sediment core description:

0-15 cm	olive-green, unconsolidated, flocculent organic sediments
15-52 cm	consolidated flocculent sediments
52-92 cm	darker to black organic sediments with shell fragments and dense plant fibers
92-133 cm	dark, organic sediments with few shell fragments
Notes:	Unconsolidated floc is restricted to the upper 15 cm. Whole snail shells are present in the 20-25 cm section. Plant fibers are evident in the 55-60 cm section.

Station 25 19 October, 1995

Station Location Data:

#1. initial reading:

Lat.: 28° 37' 47.7" N Long.: 81° 36' 26.0" W

#2. second reading:

reading not taken

Sediment Survey Data:

Depth of water column:	210 cm
Depth to hard bottom:	405 cm
Soft sediment thickness (by difference):	195 cm

Sediment core length:	147 cm
Sectioned to:	140 cm

Sediment core description:

0-16 cm	light, greenish-gray, unconsolidated flocculent-organic sediments
16-47 cm	brown, sediments containing abundant gastropod shell fragments
47-130 cm	brown sediments containing fewer shells down section
130-147 cm	clay containing some shell fragments, may contain some sand though not confirmed on sectioning
Notes:	Shells are more abundant from 60-70 cm then in adjacent sections. The 100-105 cm section contained a peaty sediment.

Station 31 19 October, 1995

Station Location Data:

#1. initial reading:

Lat.: 28° 38' 25.3" N Long.: 81° 39' 03.1" W

#2. second reading:

Lat.: 28° 38' 25.8" N Long.: 81° 39' 02.9" W

Sediment Survey Data:

Depth of water column:	230 cm
Depth to hard bottom:	385 cm
Soft sediment thickness (by difference):	155 cm

Sediment core length:	134 cm
Sectioned to:	125 cm

Sediment core description:

0-40 cm	light-green, organic sediments; difficult to determine horizon between unconsolidated and consolidated flocculent layers
40-55 cm	abrupt change to shell layer
55-129 cm	consolidated, organic sediments containing shell fragments
129-134 cm	marked increase in shell abundance and transition to clay sediments
Notes:	The bottom of the loose floc layer was determined during sectioning to be 35 cm.

LA-01-96 **April 10, 1996**

Station Location:

Lat.: 28°34'30.6" N
Long.: 81°38'12.8" W

Sediment Survey Data:

> Depth of water column: 1.85 m
> Depth to hard bottom: 7.35 m
> Soft sediment thickness: 5.50 m
> Sediment core length: 110 cm

Sediment core description: Soft sediment thickness difficult to determine. Depth depends on pressure applied to spudding rod. Floc more consolidated at 35 cm. Small shells at 50 cm. Plant fibers at 85 cm. Bottom 10 cm not sectioned, peat and plant fibers at 110 cm.

LA-02-96 **April 11, 1996**

Station Location:

Lat.: 28°34'35.1" N
Long.: 81°37'10.4" W

Sediment Survey Data:

> Depth of water column: 1.60 m
> Depth to hard bottom: 6.25 m
> Soft sediment thickness: 4.65 m
> Sediment core length: 156 cm

Sediment core description: Approximately 25 cm of floc. Only visible stratigraphy other than floc is abundant shells from 31 to 47 cm. Soft sediment entire length of core.

LA-03-96 **April 11, 1996**

Station Location:

Lat.: 28°34'37.6" N
Long.: 81°36'09.4" W

Sediment Survey Data:

> Depth of water column: 1.50 m
> Depth to hard bottom: 8.55 m
> Soft sediment thickness: 7.05 m*
> Sediment core length: 145 cm

Sediment core description: No visible stratigraphy. Some shells but fewer than previous stations. Floc for about 305 cm. Consolidated sediment with shells at 22 to 28 cm. *Greater depth of soft sediment could have been obtained by somewhat greater force on spudding rod. Resistance encountered for some depth.

LA-04-96 **April 10, 1996**

Station Location:

Lat.: 28°35'22.6" N
Long.: 81°38'48.2" W

Sediment Survey Data:

Depth of water column: 2.75 m
Depth to hard bottom: 5.80 m
Soft sediment thickness: 3.05 m
Sediment core length: 144 cm

Sediment core description: A long core, approximately 1.5 m; very little difference visually over length of core, no distinct stratigraphy, soft sediments to 124 cm. Sediments more consolidated at 52 cm. Plant fibers from 129 cm to 134 cm. Soft floc from 139 to 144 cm.

LA-05-96 **April 9, 1996**

Station Location:

Lat.: 28°35'25.9" N
Long.: 81°37'46.8" W

Sediment Survey Data:

Depth of water column: 1.95 m
Depth to hard bottom: 5.15 m
Soft sediment thickness: 3.20 m
Sediment core length: 150 cm

Sediment core description: Bottom of floc layer at 41 cm with small amount of plant fibers. Soft sediments over the length of core.

LA-06-96 **April 11, 1996**

Station Location:

Lat.: 28°35'28.7" N
Long.: 81°36'44.8" W

Sediment Survey Data:

Depth of water column: 1.65 m
Depth to hard bottom: 3.80 m
Soft sediment thickness: 2.15 m
Sediment core length: 140 cm

Sediment core description: Floc depth to 25 to 30 cm. Core has uniform soft sediment otherwise a few shells. Floc to 20 cm. Plant fiber and shell at 24 cm grading to less abundant shells and fiber at 50 cm.

LA-07-96 **April 11, 1996**

Station Location:

Lat.: 28°35'26.6" N
Long.: 81°35'41.2" W

Sediment Survey Data:

Depth of water column: 1.55 m
Depth to hard bottom: 3.05 m
Soft sediment thickness: 1.50 m
Sediment core length: 117 cm

Sediment core description: Core all soft sediment. Some shells obvious below 25 cm. Large plant fibers evident at 47 to 67 cm, less abundant from 72 to 77 cm.

LA-08-96 **April 10, 1996**

Station Location:

Lat.: 28°36'02.5" N
Long.: 81°39'20.2" W

Sediment Survey Data:

Depth of water column: 1.80 m
Depth to hard bottom: 5.38 m
Soft sediment thickness: 3.58 m
Sediment core length: 145 cm

Sediment core description: Stratigraphy similar to LA-04-96-04. A few shells at 50 to 55 cm. Plant material and shell at 60 cm. Plant material at 65 cm. Fewer plant fibers at 80 cm.

LA-09-96 **May 1, 1996**

Station Location:

Lat.: 28°36'06.8" N
Long.: 81°38'19.9" W

Sediment Survey Data:

Depth of water column: 1.85 m
Depth to hard bottom: 3.65 m
Soft sediment thickness: 1.80 m
Sediment core length: 95 cm

Sediment core description: Floc at 5 cm, becoming lumpy at 10-15 cm and firmer with white specs at 20 cm. Sparse shells at 45 cm and 54-56 cm. Few plant fibers at 58-64 cm. Few fine shells at 66-68 cm. Plant material with shells from 70-80 cm.

LA-10-96 **April 10, 1996**

Station Location:

Lat.: 28°36'10.6" N
Long.: 81°37'16.1" W

Sediment Survey Data:

> Depth of water column: 1.40 m
> Depth to hard bottom: 3.30 m
> Soft sediment thickness: 1.90 m
> Sediment core length: 146 cm

Sediment core description: Bottom of floc layer at 41 cm; soft sediment to bottom of core.

LA-11-96 **April 9, 1996**

Station Location:

Lat.: 28°36'12.9"N
Long.: 81°36'15.4" W

Sediment Survey Data:

> Depth of water column: 3.15 m
> Depth to hard bottom: 3.65 m
> Soft sediment thickness: 0.50 m
> Sediment core length: 45 cm

Sediment core description: Hard clayey material with shells on the spudding rod. Beginning of shell layer at 10 cm. Shells continuing with plant fragments to 20 cm. Peat starting at 30 cm, continuing to 45 cm.

LA-12-96 **April 9, 1996**

Station Location:

Lat.: 28°36'15.2" N
Long.: 81°35"13.0" W

Sediment Survey Data:

> Depth of water column: 1.40 m
> Depth to hard bottom: 2.95 m
> Soft sediment thickness: 1.55 m
> Sediment core length: 120 cm

Sediment core description: Large glob of algae at 5 cm. Bottom of floc layer at 40 cm. Sediment less consolidated at 60 cm, becoming consolidated at 70 to 80 cm.

LA-13-96 **April 9, 1996**

Station Location:

Lat.: 28°36'19.2" N
Long.: 81°34'14.0" W

Sediment Survey Data:

Depth of water column: 1.52 m
Depth to hard bottom: 2.80 m
Soft sediment thickness: 1.28 m
Sediment core length: 120 cm

Sediment core description: Floc at 5 cm. Clumpy at 25 cm. Shells at 30 cm. Consolidated floc and plant fibers at 42-48 cm. Gelatinous material at 55-60 cm. Gelatinous with clumps of plant fibers at 70 cm. Plant fibers at 75-80 cm. Muck from 95-105 cm, grading to peat at 110 cm and entirely peat from 112-120 cm.

LA-14-96 **April 10, 1996**

Station Location:

Lat.: 28°36'50.7" N
Long.: 81°39'54.5" W

Sediment Survey Data:

Depth of water column: 1.90 m
Depth to hard bottom: 5.65 m
Soft sediment thickness: 3.75 m
Sediment core length: 135 cm

Sediment core description: Stratigraphy similar to LA-08-96. Small shells at 20 cm. Shells at 32 cm. Shells and plant fibers from 34 cm to 45 cm. Shells at 65 cm. Soft sediments to bottom of core.

LA-15-96 **April 11, 1996**

Station Location:

Lat.: 28°36'54.1" N
Long.: 81°38'55.5" W

Sediment Survey Data:

Depth of water column: 1.90 m
Depth to hard bottom: 6.35 m
Soft sediment thickness: 4.45 m
Sediment core length: 144 cm

Sediment core description: Approximately 15 cm of floc. Some shells at 45 cm obvious through the tube. Fewer shells than at some stations. Soft sediments over length of core. Fibers at 44 cm. Shells and fibers at 49 to 54 cm. Fewer shells at 59 to 64 cm.

LA-16-96 **April 9, 1996**

Station Location:

Lat.: 28 °37' 00.1" N
Long.: 81°37'50.5" W

Sediment Survey Data:

Depth of water column: 3.70 m
Depth to hard bottom: 5.50 m
Soft sediment thickness: 1.80 m
Sediment core length: 126 cm

Sediment core description: Floc to only 2 cm. Shells at 6 cm. Shells and plant fibers at 31 cm. Layer of plant fibers and shells, and perhaps sand at 38 to 48 cm. Small bead-like shells at 71 to 76 cm. Shell fragments and sand at 82 cm. Clay material at 106 cm.

LA-17-96 **April 11, 1996**

Station Location:

Lat.: 28°36'58.3" N
Long.: 81°36'50.9" W

Sediment Survey Data:

Depth of water column: 2.05 m
Depth to hard bottom: 2.35 m
Soft sediment thickness: 0.30 m
Sediment core length: 35 cm

Sediment core description: Short core, appears to be uniform soft sediment with overlying floc layer with loose consolidated floc at bottom.

LA-18-96 **April 11, 1996**

Station Location:

Lat.: 28°37'04.1" N
Long.: 81°35'50.6" W

Sediment Survey Data:

Depth of water column: 1.98 m
Depth to hard bottom: 2.98 m
Soft sediment thickness: 1.00 m
Sediment core length: 80 cm

Sediment core description: Chunks of plant material at 60 cm. Clay at bottom of core with shell layer above clay. Bottom few sections were not retrieved because an air pocket at bottom eroded part of core during sectioning.

LA-19-96 **April 9, 1996**

Station Location:

Lat.: 28°37'05.5" N
Long.: 81°34'48.0" W

Sediment Survey Data:

> Depth of water column: 1.70 m
> Depth to hard bottom: 2.90 m
> Soft sediment thickness: 1.20 m
> Sediment core length: 112 cm

Sediment core description: Soft sediment over approximately top 100 cm. Plant fibers at 41 cm and at 52-72 cm. Soupy material at 87-92 cm. Shells and plant fibers at 102 cm. Shells at 107 cm. Thick, black, clayey material at 112 cm.

LA-20-96 **April 9, 1996**

Station Location:

Lat.: 28°37'09.0" N
Long.: 81°33'45.4" W

Sediment Survey Data:

> Depth of water column: 2.05 m
> Depth to hard bottom: 4.45 m
> Soft sediment thickness: 2.40 m
> Sediment core length: 122 cm

Sediment core description: Soft sediment over length of core. Bottom of floc layer at 43 cm. Shell fragments at 92 cm.

LA-21-96 **April 10, 1996**

Station Location:

Lat.: 28°37'39.4" N
Long.: 81°40'29.1" W

Sediment Survey Data:

> Depth of water column: 2.20 m
> Depth to hard bottom: 5.75 m
> Soft sediment thickness: 3.55 m
> Sediment core length: 118 cm

Sediment core description: Soft sediment, little visible stratigraphy. Loose floc from 5 to 20 cm. Firmer floc at 25 cm. Bottom of floc at 32 cm.

LA-22-96 **April 10, 1996**

Station Location:

Lat.: 28°37'39.4" N
Long.: 81°39'25.9" W

Sediment Survey Data:

Depth of water column: 2.10 m
Depth to hard bottom: 5.35 m
Soft sediment thickness: 3.25 m
Sediment core length: 144 cm

Sediment core description: Soft sediments over length of core.

LA-23-96 **April 9, 1996**

Station Location:

Lat.: 28°37'42.5" N
Long.: 81°38'26.0" W

Sediment Survey Data:

Depth of water column: 2.90 m
Depth to hard bottom: 3.70 m
Soft sediment thickness: 0.80 m
Sediment core length: 85 cm

Sediment core description: Floc at 5 cm. Consolidated floc to 25 cm. Heavy shell layer at 25 cm. Shells to the bottom of the core. Marl (carbonate) at 60-65 cm.

LA-24-96 **April 11, 1996**

Station Location:

Lat.: 28°37'46" N
Long.: 81°37'23" W

Sediment Survey Data:

Depth of water column: 2.00 m
Depth to hard bottom: 3.35 m
Soft sediment thickness: 1.35 m
Sediment core length: 121 cm

Sediment core description: Floc to 30 cm. Soft sediment for most of core with a thick shell layer at bottom. Plant fibers 30-36 cm. Abundant shells 66 to 81 cm grading to few shells at 91 cm. Shells abundant again at 106 cm. Large gastropods and some plant fibers at bottom of core.

LA-25-96 **April 11, 1996**

Station Location:

Lat.: 28°37'44.8" N
Long.: 81°36'20.4" W

Sediment Survey Data:

Depth of water column: 2.17 m
Depth to hard bottom: 3.88 m
Soft sediment thickness: 1.71 m
Sediment core length: 42 cm

Sediment core description: Some plant fiber at 12 cm. Abundant shells at 16 to 18 cm. Plant fibers at 20 cm. Distinct shell layer at 17 to 21 cm. Soft sediment below 37 cm.

LA-26-96 **April 11, 1996**

Station Location:

Lat.: 28°37'51.5" N
Long.: 81°35'24.9" W

Sediment Survey Data:

Depth of water column: 2.00 m
Depth to hard bottom: 2.50 m
Soft sediment thickness: 0.50 m
Sediment core length: 57 cm

Sediment core description: Short core; hard bottom of shell or sand and clay mixture. Floc to 15 cm. Soft sediment with relatively few shells below 20 cm.

LA-27-96 **April 9, 1996**

Station Location:

Lat.: 28°37'52.8" N
Long.: 81°34'19.2" W

Sediment Survey Data:

Depth of water column: 2.25 m
Depth to hard bottom: 2.60 m
Soft sediment thickness: 0.35 m
Sediment core length: 36 cm

Sediment core description: Flocculent sediment from 5 to 16 cm where it was more consolidated. Sand lens at 36 cm.

LA-28-96 **April 9, 1996**

Station Location:

Lat.: 28°38'00.8" N
Long.: 81°33'22.1" W

Sediment Survey Data:

> Depth of water column: 1.35 m
> Depth to hard bottom: 5.40 m
> Soft sediment thickness: 4.05 m
> Sediment core length: 122 cm

Sediment core description: Floc material to 46 cm where a reddish layer occurs. Loose sediment at 52 cm. Peat from 107 cm to 122 cm.

LA-29-96 **April 10, 1996**

Station Location:

Lat.: 28°38'22.5" N
Long.: 81°40'58.4" W

Sediment Survey Data:

> Depth of water column: 1.50 m
> Depth to hard bottom: 7.65 m
> Soft sediment thickness: 6.15 m
> Sediment core length: 135 cm

Sediment core description: Stratigraphy similar to cores along this shore. No obvious stratigraphy usually, except loose floc at the surface. Loose floc from 20 to 30 cm and a few shells at 30 cm. Plant fibers and shell fragments from 55 to 57 cm. Plant fibers from 61 to 63 cm.

LA-30-96 **April 10, 1996**

Station Location:

Lat.: 28°38'22.5" N
Long.: 81°39'57.9" W

Sediment Survey Data:

> Depth of water column: 1.65 m
> Depth to hard bottom: 4.25 m
> Soft sediment thickness: 2.60 m
> Sediment core length: 152 cm

Sediment core description: Floc to 39 cm. Soft sediments over most of core. Obvious shell deposits from 142 to 152 cm.

LA-31-96 **May 1, 1996**

Station Location:

Lat.: 28°38'29.8" N
Long.: 81°38'59.8" W

Sediment Survey Data:

Depth of water column: 2.00 m
Depth to hard bottom: 4.25 m
Soft sediment thickness: 2.25 m
Sediment core length: 70 cm

Sediment core description: Soft organic sediment entire length of core. Floc from 5-35 cm becoming firm at 20 cm with fine flecks of white from 26-35 cm. Shells and plant fibers from 37-70 cm with firm plant fibers becoming larger from 41-43 cm.

LA-32-96 **April 9, 1996**

Station Location:

Lat.: 28°38'32.6" N
Long.: 81°38'00.2" W

Sediment Survey Data:

Depth of water column: 2.20 m
Depth to hard bottom: 3.80 m
Soft sediment thickness: 1.60 m
Sediment core length: 115 cm

Sediment core description: Soft sediments to bottom of core. Consolidated floc and few plant fibers and shell at 22-28 cm. Few shells at 65 cm and more abundant shells at 70 cm. Softer sediment and shells at 100 cm. Plant fibers and abundant shells at 105 cm.

LA-33-96 **April 11, 1996**

Station Location:

Lat.: 28°38'32.5" N
Long.: 81°36'55.0" W

Sediment Survey Data:

Depth of water column: 1.90 m,
Depth to hard bottom: 4.40 m
Soft sediment thickness: 2.50 m
Sediment core length: 132 cm

Sediment core description: Loose floc at 35-40 cm with shells and fibers. Remainder of core is soft sediment. Finer black sediment with either small shells or shell fragments from 102-132 cm.

LA-34-96 **May 1, 1996**

Station Location:

Lat.: 28°38'35.7" N
Long.: 81°34'57.1" W

Sediment Survey Data:

Depth of water column: 2.07 m
Depth to hard bottom: 4.30 m
Soft sediment thickness: 2.23 m
Sediment core length: 76 cm

Sediment core description: Floc at 5 cm with white specs at 10 cm. Floc becoming clumpy at 15 cm and firming at 17-31 cm. Abundant plant material at 25-29 cm with shells and shell fragments at 31 cm. Loose sediment at 51 cm. Some shells and fine organic material from 56-67 cm. Reddish peat at bottom of core at 76 cm.

LA-35-96 **May 1, 1996**

Station Location:

Lat.: 28°38'39.0" N
Long.: 81°34'56.8" W

Sediment Survey Data:

Depth of water column: 2.39 m
Depth to hard bottom: 2.70 m
Soft sediment thickness 0.40 m:
Sediment core length: 40 cm

Sediment core description: Floc from 5-10 cm. Becoming lumpy at 15 cm with plant fibers at 20 cm. Sediment becoming more consolidated at 25 cm with shells and plant fibers continuing to 35 cm. Peat at bottom of core at 40 cm.

LA-36-96 **April 10, 1996**

Station Location:

Lat.: 28°39'09.9" N
Long.: 80°40'32.0" W

Sediment Survey Data:

Depth of water column: 1.55 m
Depth to hard bottom: 4.80 m
Soft sediment thickness: 3.25 m
Sediment core length: 140 cm

Sediment core description: Stratigraphy similar to LA-29-96 except shells appear at about 50 cm. Not very different from other stations along this transect. Shells and plant fibers at 52 to 60 cm. Plant fibers and fewer shells from 60 to 65 cm. Plant fibers and no shells from 70 to 75 cm, grading to fewer and fewer plant fibers from 75 to 85 cm.

LA-37-96 **April 10, 1996**

Station Location:

Lat.: 28°39'15.4" N
Long.: 81°39'31.0" W

Sediment Survey Data:

Depth of water column: 1.70 m
Depth to hard bottom: 5.80 m
Soft sediment thickness: 4.10 m
Sediment core length: 140 cm

Sediment core description: Visible stratigraphy. Loose floc to 23 cm becoming more consolidated at 25 cm. Shells appeared to be present below 61 cm when core was described, but were not obvious during sectioning.

LA-38-96 **May 1, 1996**

Station Location:

Lat.: 28°39'15.1" N
Long.: 81°38'29.8" W

Sediment Survey Data:

Depth of water column: 1.95 m
Depth to hard bottom: 3.65 m
Soft sediment thickness: 1.70 m
Sediment core length: 125 cm

Sediment core description: Floc from 5-20 cm becoming lumpy at 15 cm, then lightly consolidated and becoming brown at 22 cm. Few shells at 24-26 cm. Scattered shells and plant fibers at 40-50 cm. Soupy material with large shells at 35 cm becoming more consolidated with plant fibers and shells at 60 cm. Sediment becomes brown and consolidated from 65-90 cm. Entire core was organic sediments with scattered shells until pronounced shell layer from 105-120 cm. Core became firm at 115 cm.

LA-39-96 **April 11, 1996**

Station Location:

Lat.: 28°39'19.8" N
Long.: 81°37'30.3" W

Sediment Survey Data:

Depth of water column: 1.90 m
Depth to hard bottom: 4.15 m
Soft sediment thickness: 2.25 m
Sediment core length: 127 cm

Sediment core description: Floc to 25 cm. Remainder of core is soft sediment. Few plant fiber and shells from 22-24 cm. Large shell fragments at 26 cm. Few shells from 30-32 cm. Fine particles in black mud at 42 cm. Stringy plant fibers at 72 cm. Softer black sediment at 112 cm. Peat from 117-127 cm with shells and clayey black sediment at bottom of core.

LA-40-96 **May 1, 1996**

Station Location:

Lat.: 28°39'22.9" N
Long.: 81°36'30.2" W

Sediment Survey Data:

Depth of water column: 1.85 m
Depth to hard bottom: 3.15 m
Soft sediment thickness: 1.30 m
Sediment core length: 86 cm

Sediment core description: Floc from 5-15 cm becoming lumpy from 20-25 cm and firmer at 27-31 cm. Shells at 29-31 cm becoming more abundant at 33-39 cm. Plant fibers at 37-51 cm with shells at 46-51 cm. Black sediment at 56 cm with plant fibers at 61 cm. Sediment looser with a few shells at 66 cm, large plant fibers at 71 cm and less red peat from 76-86 cm.

LA-41-96 **April 10, 1996**

Station Location:

Lat.: 28°39'57.2" N
Long.: 81°40'05.6" W

Sediment Survey Data:

Depth of water column: 1.80 m
Depth to hard bottom: 4.90 m
Soft sediment thickness: 3.10 m
Sediment core length: 145 cm

Sediment core description: Little visible stratigraphy. Some shells at 30 cm and an H_2S odor. Very few shells and plant fibers at 40 cm. Shells at 100 cm and a few more at 105 cm. Plant fibers at 110 cm. Plant fibers at 135 to 140 cm.

LA-42 96 **April 10, 1996**

Station Location:

Lat.: 28°39'58.6" N
Long.: 81°39'14.6" W

Sediment Survey Data:

Depth of water column: 1.90 m
Depth to hard bottom: 3.90 m
Soft sediment thickness: 2.00 m
Sediment core length: 150 cm

Sediment core description: No visible stratigraphy. Shells and a few plant fibers at 27 to 33 cm. No shells or plant fibers to 35 cm. Shells at 40 cm and shells and plant fibers from 45 to 60 cm. Plant fibers from 55 to 60 cm. Very small shells at 75 to 80 cm. Shells increase at 145 cm with large gastropod at bottom of core.

LA-43-96 **May 1, 1996**

Station Location:

Lat.: 28°40'01.5" N
Long.: 81°38'01.3" W

Sediment Survey Data:

Depth of water column: 2.11 m
Depth to hard bottom: 2.85 m
Soft sediment thickness: 0.74 m
Sediment core length: 48 cm

Sediment core description: Floc from 5-21 cm becoming lumpy at 15 cm and nearly firm at 23 cm. Few shells at 25 cm. Sediment firm with plant fibers standing upright at 27 cm. Nearly solid sediment with shell at bottom of section at 38 cm. Fine shell material at 43 cm. Clay at bottom of core at 48 cm.

LA-44-96 **May 1, 1996**

Station Location:

Lat.: 28°40'02.2" N
Long.: 81°37'02.1" W

Sediment Survey Data:

Depth of water column: 1.85 m
Depth to hard bottom: 2.87 m
Soft sediment thickness: 1.02 m
Sediment core length: 40 cm

Sediment core description: Lumpy and watery floc at 5 cm. Plant fibers in lumpy floc at 10-15 cm. Sediment consolidated from 20-30 cm. A few shells over peaty material at 35 cm. Core ends in peat at 40 cm.

LA-45-96 **May 1, 1996**

Station Location:

Lat.: 28°40'3.8" N
Long.: 81°36'3.5" W

Sediment Survey Data:

Depth of water column: 1.38 m
Depth to hard bottom: 2.80 m
Soft sediment thickness: 1.42 m
Sediment core length: 87 cm

Sediment core description: Loose floc at 5 cm becoming lumpy from 10-25 cm. Fine plant fibers at 25-37 cm and fine shells at 29 cm. Stringy plant fibers at 42 cm. Plant fibers and looser sediments starting at 52 cm after air bubble at 47 cm. Sediments becoming firmer at 57-62 cm. Black mud at 62 cm with water and plant fibers at 67 cm. Looser sediment with bubbles and water at 72 cm. Spongy peat at 77 cm continuing to bottom of core at 87 cm.

LA-46-96 **July 31, 1996**

Station Location:

Lat.: 28°34'06.1" N
Long.: 81°38'57.7" W

Sediment Survey Data:

Depth of water column: 1.60 m
Depth to hard bottom: 7.55m
Soft sediment thickness: 5.95 m
Sediment core length: 135 cm

Sediment core description: Unconsolidated soupy floc from 5-30 cm becoming consolidated at 30-141 cm. Macrophyte remains at 15 cm. Small snails from 20-30 cm. Snail shells and H_2S smell from 32-40 cm. Sediment becoming dark at 36 cm. Few fibers at 42-44 cm. Sediment consolidated enough to stand free from 46-135 cm. Few fibers at 60-65 cm. Few shells and fibers at 70-75 cm. Plant fibers from 90-130 cm with sand lens at 90-100 cm. Soupy at bottom of core.

LA-1H-96 **May 2, 1996**

Station Location:

Lat.: 28°36'27.9"
Long.: 81°39'09.2"

Sediment Survey Data:

Depth of water column: 1.71 m
Depth to hard bottom: 4.05 m
Soft sediment thickness: 2.34 m
Sediment core length: 79 cm

Sediment core description: Loose floc from 5-10 cm becoming clumpy from 15-20 cm, firmer at 25 cm and more firm at 30 cm. Shells and plant material from 34-36 cm and plant material becoming more abundant from 38-40 cm. Firmer, larger plant fibers at 51-53 cm, consolidated floc from 55-79 cm.

LA-2H-96 **May 2, 1996**

Station Location:

Lat.: 28°38'45.7" N
Long.: 81°40'18.0" W

Sediment Survey Data:

Depth of water column: 1.56 m
Depth to hard bottom: 5.10 m
Soft sediment thickness: 3.54 m
Sediment core length: 109 cm

Sediment core description: Loose floc from 5-20 cm with clumping from 20-52 cm. Few fibers at 45 cm and few shells at 52 cm. Strong fibers at 54 cm. Organic material from 56-60 cm. Few shells at 60 cm and again at 66 cm. More shells and fibers at 69 cm becoming scattered through 79 cm. More and chunky fibers with abundant shells from 81.5-85 cm.

LA-3H-96 **May 2, 1996**

Station Location:

Lat.: 28°39'44.2" N
Long.: 81°37'51.2" W

Sediment Survey Data:

Depth of water column: 1.98 m
Depth to hard bottom: 2.55 m
Soft sediment thickness: 0.57 m
Sediment core length: 55 cm

Sediment core description: Loose floc at 5 cm becoming clumpy from 10-17 cm. Some fine fibers from 20-24 cm. Fibers and few shells from 26-30 cm. Sediment becoming consolidated from 34-55 cm with a few more fibers and shells at the bottom of the core.

LA-4H-96 **May 2, 1996**

Station Location:

Lat.: 28°38'11.6" N
Long.: 81°35'36.4" W

Sediment Survey Data:

Depth of water column: 2.25 m
Depth to hard bottom: 3.05 m
Soft sediment thickness: 0.80 m
Sediment core length: 48 cm

Sediment core description: Loose floc from 5-20 cm with plant fibers starting at 15-22 cm. Floc becoming compact with a layer of shells at 24 cm. Floc firm at 26 cm. Small shells at 38-48 cm and sand in a layer at 48 cm.

LA-5H-96 **July 31, 1996**

Station Location:

Lat.: 28°36'40.0" N
Long.: 81°36'33.4" W

Sediment Survey Data:

Depth of water column: 1.37 m
Depth to hard bottom: 2.73 m
Soft sediment thickness: 1.36 m
Sediment core length: 127 cm

Sediment core description: Unconsolidated floc from 5-38 cm becoming consolidated from 40-127 cm. Floc soupy at the top with a green algal cast to it at 15 cm. Smell of H_2S and green cast phasing to chunky consistency from 30-38 cm. Firm at 40 cm with more odor at 52 cm. Fibrous material and few shells from 58-73 cm. Very small amounts of fiber from 88-108 cm with a few shells at 108 cm.

LA-6H-96 **May 2, 1996**

Station Location:

Lat.: 28°35'00.7"
Long.: 81°36'58.6"

Sediment Survey Data:

Depth of water column: 1.50 m
Depth to hard bottom: 5.35 m
Soft sediment thickness: 3.85 m
Sediment core length: 85 cm

Sediment Core Description: Unconsolidated floc from 0-20 cm. Plant material and shells from 25-45 cm. Plant material and layer shells at 70 cm. Abundant shells and plant material at 75 cm. Strings of roots and fewer shells at bottom of core.

LA-7H-96 **July 31, 1996**

Station Location:

Lat.: 28°37'43.3"
Long.: 81°37'51.9"

Sediment Survey Data:

Depth of water column: 1.75 m
Depth to hard bottom: 3.65 m
Soft sediment thickness: 1.90 m
Sediment core length: 145 cm

Sediment Core Description: Unconsolidated floc from 0-27 cm. Consolidated flocculent sediment with sporadic shell fragments from 27-125 cm. Abundant shell fragments from 125-130 cm. More concentrated shells from 130-140 cm. Organic sediment with a few shells from 140-151 cm.

LA-8H-96 **July 31, 1996**

Station Location:

Lat.: 28°37'34.1" N
Long.: 81°33'33.1" W

Sediment Survey Data:

Depth of water column: 1.25 m
Depth to hard bottom: 3.90 m
Soft sediment thickness: 2.65 m
Sediment core length: 130 cm

Sediment Core Description: Unconsolidated floc from 5-25 cm. Consolidated floc from 25-130 cm. H_2S odor and greenish cast at 5-20 cm. Small snails at 20 cm. Small amount of shell material at 37 cm. Fine fiber material and shells from 48-55 cm. Large snail at 80 cm. Sediment sticky from 90-100 cm.

APPENDIX B

SURVEY CORES

CODES:

- Depth is depth (cm)
- Rho is dry weight density (g dry/g cc wet)
- Frac Dry is fraction dry weight
- Frac Org is fraction loss on ignition
- TN is total nitrogen (%)
- TC is total carbon (%)
- TC/TN is TC/TN mass ratio
- Cum Mass is cumulative mass (g cm^{-2})
- NAIP is non-apatite inorganic phosphorus (mg g^{-1}),
- Cum NAIP is cumulative NAIP (mg cm^{-2})
- TP is total phosphorus (mg g^{-1})
- Cum TP is cumulative TP (mg cm^{-2})
- Bold face numbers are interpolated values for missing data

Survey Core, LA-1

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.012	0.012	0.701	2.91	32.3	11.1	0.043	0.509	0.022	1.374	0.059
10	0.017	0.017	0.667	2.88	32.4	11.2	0.125	0.532	0.066	1.334	0.169
15	0.022	0.021	0.661	2.90	32.3	11.2	0.233	0.633	0.134	1.403	0.320
20	0.029	0.029	0.619	2.61	31.0	11.9	0.368	0.457	0.195	1.206	0.483
25	0.040	0.039	0.599	2.45	29.0	11.9	0.555	0.357	0.262	1.054	0.680
30	0.045	0.044	0.586	2.60	31.3	12.0	0.776	0.344	0.338	1.055	0.913
35	0.046	0.045	0.600	2.58	31.6	12.3	1.016	0.308	0.412	1.016	1.157
40	0.059	0.057	0.525	2.24	28.9	12.9	1.292	0.249	0.481	0.823	1.384
45	0.064	0.062	0.627	2.30	33.1	14.4	1.599	0.187	0.538	0.735	1.610
50	0.065	0.063	0.652	2.58	35.4	13.7	1.939	0.202	0.607	0.478	1.772
55	0.067	0.065	0.677	2.59	36.6	14.1	2.269	0.175	0.665	0.411	1.908
60	0.065	0.063	0.692	2.63	36.6	13.9	2.581	0.164	0.716	0.405	2.034
65	0.066	0.064	0.706	2.81	35.8	12.8	2.898	0.214	0.784	0.395	2.159
70	0.075	0.072	0.694	2.69	36.4	13.5	3.303	0.216	0.871	0.354	2.303
75	0.072	0.070	0.722	2.74	37.6	13.7	3.662	0.179	0.936	0.329	2.421
80	0.079	0.076	0.692	2.55	36.4	14.3	4.067	0.183	1.010	0.350	2.563
85	0.068	0.066	0.730	2.81	38.3	13.6	4.415	0.212	1.083	0.333	2.679
90	0.068	0.066	0.736	2.78	38.1	13.7	4.747	0.229	1.160	0.305	2.780
95	0.073	0.070	0.732	2.77	38.1	13.7	5.089	0.214	1.233	0.338	2.895
100	0.076	0.073	0.732	2.81	38.1	13.5	5.421	0.163	1.287	0.308	2.998
105	0.075	0.073	0.721	2.79	38.2	13.7	5.772	0.172	1.347	0.309	3.106
110	0.072	0.069	0.722	2.75	37.6	13.7	6.105	0.191	1.411	0.316	3.211

Survey Core, LA-2

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.009	0.009	0.707	3.04	32.0	10.5	0.050	0.622	0.031	1.400	0.070
10	0.009	0.009	0.711	3.02	32.0	10.6	0.093	0.638	0.059	1.330	0.128
15	0.008	0.008	0.699	3.02	32.0	10.6	0.138	0.640	0.087	1.571	0.198
20	0.011	0.010	0.699	3.03	32.1	10.6	0.192	0.619	0.120	1.295	0.267
25	0.025	0.024	0.666	3.05	32.3	10.6	0.303	0.646	0.192	1.328	0.415
27	0.043	0.042	0.527	2.37	27.7	11.7	0.498	0.393	0.269	0.959	0.602
29	0.052	0.051	0.511	.	.	.	0.594	0.251	0.293	0.800	0.679
31	0.053	0.051	0.526	2.34	29.1	12.4	0.708	0.268	0.324	0.717	0.761
33	0.062	0.060	0.511	2.18	27.6	12.7	0.793	0.259	0.346	0.705	0.820
35	0.068	0.065	0.495	2.05	26.7	13.0	0.921	0.395	0.396	0.978	0.945
37	0.071	0.068	0.499	1.97	27.0	13.7	1.057	0.278	0.434	0.643	1.033
39	0.064	0.062	0.589	2.29	30.6	13.4	1.158	0.202	0.454	0.616	1.095
44	0.082	0.079	0.648	2.16	29.6	13.7	1.549	0.173	0.522	0.413	1.257
47	0.089	0.085	0.491	2.03	27.2	13.4	1.883	0.308	0.625	2.159	1.977
49	0.076	0.073	0.620	2.34	30.9	13.2	1.973	0.164	0.640	0.464	2.019
51	0.074	0.071	0.613	2.41	31.9	13.2	2.128	0.188	0.669	0.359	2.075
56	0.071	0.068	0.676	2.70	35.7	13.2	2.466	0.181	0.730	0.401	2.211
61	0.074	0.071	0.706	2.84	37.9	13.3	2.844	0.164	0.792	0.354	2.344
66	0.073	0.071	0.704	2.78	37.7	13.6	3.184	0.138	0.839	0.362	2.467
71	0.076	0.073	0.696	2.83	38.1	13.5	3.593	0.161	0.905	0.430	2.643
76	0.074	0.072	0.718	2.87	38.7	13.5	3.944	0.185	0.970	0.399	2.783
81	0.077	0.074	0.729	2.86	38.5	13.5	4.308	0.152	1.025	0.315	2.898
86	0.069	0.067	0.726	2.90	39.4	13.6	4.661	0.170	1.085	0.328	3.014
91	0.087	0.084	0.735	2.79	37.7	13.5	5.070	0.184	1.160	0.325	3.147
96	0.075	0.073	0.736	2.92	39.9	13.7	5.462	0.197	1.237	0.317	3.271
101	0.081	0.078	0.735	2.78	38.1	13.7	5.865	0.173	1.307	0.309	3.396
106	0.079	0.077	0.726	2.84	39.0	13.7	6.257	0.167	1.373	0.344	3.530
111	0.081	0.078	0.727	2.87	39.4	13.7	6.601	0.150	1.424	0.329	3.644
116	0.083	0.080	0.734	2.79	38.3	13.7	7.033	0.165	1.496	0.340	3.790
121	0.085	0.082	0.708	2.79	38.6	13.8	7.433	0.127	1.546	0.326	3.921
126	0.086	0.083	0.715	2.78	38.4	13.8	7.893	0.143	1.612	0.334	4.074
131	0.085	0.082	0.691	2.69	36.7	13.6	8.290	0.106	1.654	0.324	4.203
136	0.091	0.087	0.726	2.82	39.1	13.8	8.713	0.142	1.714	0.323	4.340
141	0.084	0.081	0.727	2.79	38.4	13.7	9.133	0.151	1.778	0.308	4.469
146	0.079	0.077	0.735	2.87	39.6	13.8	9.511	0.153	1.836	0.308	4.585
151	0.081	0.079	0.747	2.88	39.6	13.8	9.887	0.139	1.888	0.296	4.697
156	0.077	0.074	0.738	2.87	39.3	13.7	10.259	0.180	1.955	0.335	4.821

Survey Core, LA-3

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.018	0.017	0.639	2.81	30.1	10.7	0.086	0.672	0.058	1.209	0.104
10	0.028	0.028	0.574	2.64	29.2	11.1	0.230	0.619	0.147	1.121	0.265
15	0.038	0.037	0.618	2.78	30.0	10.8	0.401	0.468	0.227	1.078	0.450
20	0.046	0.045	0.579	2.59	29.9	11.5	0.612	0.385	0.308	0.897	0.639
22	0.050	0.049	0.606	2.52	29.9	11.9	0.726	0.345	0.348	0.817	0.732
24	0.052	0.050	0.599	2.55	30.1	11.8	0.816	0.298	0.374	0.783	0.802
26	0.091	0.087	0.602	2.50	30.0	12.0	1.003	0.328	0.436	0.767	0.946
28	0.057	0.055	0.601	2.49	30.1	12.1	1.106	0.283	0.465	0.750	1.023
30	0.058	0.057	0.603	2.49	30.4	12.2	1.209	0.218	0.487	0.671	1.092
35	0.056	0.055	0.601	2.54	31.0	12.2	1.496	0.256	0.561	0.647	1.278
40	0.082	0.079	0.503	2.21	28.9	13.1	1.938	0.297	0.692	0.690	1.583
45	0.070	0.068	0.655	2.71	36.0	13.3	2.273	0.300	0.793	0.474	1.742
50	0.064	0.062	0.719	2.79	37.8	13.6	2.588	0.268	0.877	0.375	1.860
55	0.062	0.060	0.699	2.83	37.7	13.3	2.869	0.171	0.925	0.456	1.988
60	0.065	0.063	0.729	2.87	38.8	13.5	3.212	0.165	0.981	0.382	2.119
65	0.069	0.066	0.724	2.85	38.5	13.5	3.567	0.225	1.061	0.388	2.257
70	0.069	0.066	0.731	2.90	39.4	13.6	3.900	0.194	1.126	0.525	2.432
75	0.066	0.064	0.745	2.94	39.8	13.5	4.207	0.181	1.182	0.533	2.596
80	0.070	0.068	0.737	2.93	39.7	13.6	4.562	0.180	1.246	0.365	2.725
85	0.069	0.067	0.743	2.95	39.9	13.5	4.911	0.143	1.295	0.372	2.855
90	0.067	0.065	0.748	2.95	39.9	13.5	5.252	0.183	1.358	0.377	2.983
95	0.067	0.065	0.752	2.94	39.7	13.5	5.571	0.177	1.414	0.360	3.098
100	0.068	0.066	0.741	2.91	39.4	13.5	5.891	0.208	1.481	0.495	3.256
105	0.070	0.068	0.744	2.93	39.7	13.6	6.240	0.169	1.540	0.376	3.388
110	0.070	0.068	0.760	2.91	39.4	13.5	6.590	0.158	1.595	0.367	3.516
115	0.412	0.347	0.742	2.93	39.8	13.6	6.933	0.132	1.640	0.382	3.647
120	0.389	0.331	0.751	2.96	40.3	13.6	7.310	0.145	1.695	0.392	3.795
125	0.469	0.386	0.721	2.87	39.7	13.8	7.688	0.155	1.754	0.380	3.939
130	0.455	0.377	0.726	2.84	39.1	13.8	8.081	0.135	1.807	0.370	4.084
135	0.437	0.364	0.733	2.96	40.2	13.6	8.429	0.154	1.860	0.399	4.223
140	0.421	0.354	0.738	2.92	40.0	13.7	8.793	0.124	1.905	0.369	4.357
145	0.421	0.353	0.738	2.90	39.5	13.6	9.083	0.149	1.949	0.367	4.464

Survey Core, LA-4

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.013	0.013	0.675	2.95	32.6	11.0	0.065	0.519	0.034	1.226	0.079
10	0.019	0.018	0.679	2.99	32.9	11.0	0.150	0.552	0.081	1.279	0.189
15	0.019	0.019	0.679	3.04	33.1	10.9	0.237	0.592	0.132	1.300	0.302
20	0.023	0.023	0.682	3.03	33.1	10.9	0.358	0.547	0.198	1.356	0.465
25	0.025	0.025	0.674	3.02	33.0	10.9	0.467	0.615	0.265	1.381	0.616
30	0.028	0.028	0.672	2.84	31.9	11.2	0.595	0.631	0.346	1.386	0.793
35	0.032	0.031	0.640	2.65	31.4	11.9	0.725	0.593	0.423	1.207	0.950
40	0.033	0.032	0.637	2.67	31.9	12.0	0.892	0.599	0.523	1.267	1.162
45	0.032	0.032	0.633	2.64	31.6	12.0	1.040	0.612	0.614	1.316	1.357
50	0.036	0.035	0.634	2.71	31.8	11.7	1.191	0.581	0.701	1.431	1.572
52	0.042	0.041	0.636	2.61	31.5	12.0	1.275	0.509	0.744	1.246	1.677
54	0.042	0.041	0.642	2.71	31.3	11.6	1.355	0.523	0.786	1.220	1.775
56	0.041	0.041	0.662	2.70	31.7	11.7	1.430	0.536	0.826	1.283	1.871
58	0.041	0.040	0.658	2.77	32.3	11.7	1.518	0.567	0.876	1.368	1.991
60	0.055	0.054	0.518	2.21	27.2	12.3	1.629	0.450	0.926	1.016	2.104
65	0.045	0.044	0.589	2.44	30.6	12.5	1.834	0.412	1.011	1.055	2.321
70	0.053	0.051	0.570	2.30	30.5	13.2	2.116	0.330	1.104	1.157	2.647
75	0.053	0.052	0.598	2.51	29.9	11.9	2.392	0.373	1.207	0.760	2.857
77	0.056	0.055	0.648	2.57	31.8	12.4	2.484	0.339	1.238	0.653	2.917
79	0.057	0.055	0.647	2.64	32.2	12.2	2.616	0.363	1.286	0.675	3.006
84	0.057	0.056	0.622	2.63	31.9	12.1	2.915	0.379	1.399	0.719	3.221
89	0.056	0.055	0.606	2.63	30.8	11.7	3.216	0.357	1.506	0.735	3.442
94	0.054	0.053	0.630	2.67	31.4	11.7	3.441	0.376	1.591	0.712	3.602
99	0.060	0.058	0.627	2.69	31.6	11.7	3.714	0.392	1.698	0.727	3.801
104	0.063	0.061	0.607	2.69	31.3	11.6	4.040	0.343	1.810	0.625	4.005
109	0.069	0.067	0.597	2.61	30.7	11.7	4.383	0.314	1.918	0.614	4.215
114	0.064	0.062	0.628	2.77	32.4	11.7	4.680	0.336	2.017	0.597	4.392
119	0.062	0.060	0.645	2.77	32.3	11.7	4.997	0.292	2.110	0.588	4.579
124	0.067	0.065	0.685	2.95	34.6	11.7	5.297	0.314	2.204	0.638	4.770
129	0.069	0.067	0.657	2.84	33.8	11.9	5.670	0.322	2.324	0.579	4.986
134	0.071	0.068	0.647	2.73	32.2	11.8	6.010	0.293	2.424	0.563	5.178
139	0.062	0.060	0.688	2.94	34.6	11.8	6.334	0.296	2.520	0.528	5.349
144	0.066	0.064	0.679	2.93	34.6	11.8	6.669	0.312	2.624	0.526	5.525

Survey Core, LA-5

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	.	.	.	2.86	33.3	11.6	0.044	0.308	0.014	1.062	0.047
10	0.014	0.014	0.664	2.92	33.5	11.5	0.120	0.385	0.043	1.204	0.138
15	0.015	0.015	0.662	2.85	33.7	11.8	0.186	0.412	0.070	1.024	0.206
20	0.019	0.019	0.727	2.77	33.8	12.2	0.288	0.401	0.111	0.943	0.302
25	0.023	0.023	0.629	2.78	33.9	12.2	0.404	0.374	0.154	0.988	0.417
30	0.025	0.025	0.660	2.88	35.2	12.2	0.544	0.359	0.204	1.959	0.690
35	0.032	0.032	0.703	2.97	37.3	12.6	0.718	0.173	0.235	0.518	0.780
41	0.044	0.043	0.718	2.87	38.6	13.5	0.962	0.119	0.264	0.446	0.889
43	0.057	0.055	0.738	2.66	38.2	14.4	1.100	0.125	0.281	0.344	0.937
45	0.062	0.060	0.744	2.71	38.2	14.1	1.192	0.130	0.293	0.330	0.967
47.5	0.065	0.063	0.728	2.78	39.5	14.2	1.370	0.142	0.318	0.381	1.035
49	0.064	0.063	0.736	2.73	38.1	14.0	1.466	0.184	0.336	0.380	1.071
51	0.054	0.053	0.738	2.79	38.2	13.7	1.602	0.091	0.348	0.401	1.126
56	0.062	0.060	0.737	2.81	39.3	14.0	1.899	0.110	0.381	0.303	1.216
61	0.064	0.062	0.737	2.79	39.1	14.0	2.184	0.137	0.420	0.326	1.309
66	0.061	0.059	0.741	2.94	38.6	13.1	2.518	0.087	0.449	0.266	1.397
71	0.060	0.058	0.726	3.01	39.3	13.0	2.841	0.091	0.478	0.282	1.489
76	0.063	0.061	0.723	2.94	38.6	13.1	3.151	0.079	0.503	0.280	1.575
81	0.067	0.065	0.747	2.91	38.1	13.1	3.487	0.083	0.531	0.284	1.671
86	0.066	0.064	0.748	2.93	38.2	13.0	3.819	0.083	0.558	0.294	1.768
91	0.069	0.067	0.751	2.94	38.3	13.0	4.158	0.092	0.589	0.303	1.871
96	0.070	0.068	0.744	2.86	37.7	13.2	4.533	0.118	0.634	0.314	1.989
101	0.070	0.068	0.798	2.89	38.1	13.2	4.869	0.096	0.666	0.334	2.101
106	0.073	0.071	0.793	2.89	38.0	13.1	5.213	0.215	0.740	0.678	2.334
111	0.074	0.072	0.811	2.88	38.3	13.3	5.601	0.094	0.776	0.306	2.453
116	0.071	0.069	0.810	2.89	38.7	13.4	5.964	0.132	0.824	0.300	2.562
121	0.069	0.067	0.743	2.91	38.9	13.4	6.324	0.174	0.887	0.296	2.668
126	0.070	0.068	0.742	2.84	38.4	13.5	6.661	0.141	0.934	0.289	2.766
1361	0.079	0.076	0.738	2.82	38.3	13.6	7.061	0.181	1.007	0.320	2.894
136	0.084	0.081	0.715	2.74	37.7	13.8	7.478	0.104	1.050	0.309	3.022
141	0.081	0.078	0.733	2.79	38.3	13.7	7.889	0.148	1.111	0.339	3.162
146	0.079	0.077	0.741	2.82	38.1	13.5	8.264	0.148	1.167	0.319	3.281

Survey Core, LA-6

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.018	0.018	0.687	3.02	32.0	10.6	0.082	0.773	0.064	1.334	0.110
10	0.028	0.027	0.650	2.97	32.2	10.8	0.214	0.509	0.131	1.328	0.285
15	0.033	0.033	0.635	2.85	31.5	11.1	0.374	0.401	0.195	1.143	0.468
20	0.041	0.041	0.587	2.61	29.9	11.5	0.577	0.346	0.265	1.143	0.700
22	0.051	0.049	0.545	2.32	27.8	12.0	0.656	0.255	0.285	0.911	0.771
24	0.052	0.051	0.562	2.36	28.6	12.1	0.756	0.217	0.307	0.876	0.859
26	0.061	0.059	0.539	2.23	27.8	12.4	0.874	0.252	0.337	0.836	0.958
28	0.071	0.068	0.556	2.23	28.8	12.9	0.982	0.179	0.356	0.606	1.023
30	0.083	0.080	0.577	2.33	30.6	13.1	1.179	0.157	0.387	0.467	1.116
35	0.086	0.082	0.570	2.45	31.9	13.0	1.613	0.136	0.446	0.448	1.310
40	0.102	0.096	0.464	1.86	26.2	14.1	2.080	0.132	0.508	0.575	1.578
45	0.076	0.073	0.596	2.46	33.2	13.5	2.492	0.129	0.561	0.431	1.756
50	0.066	0.064	0.731	2.95	39.3	13.3	2.807	0.113	0.596	0.394	1.880
55	0.062	0.060	0.731	2.89	38.4	13.3	3.108	0.078	0.620	0.309	1.973
60	0.065	0.064	0.720	2.89	38.4	13.3	3.438	0.069	0.643	0.302	2.073
65	0.066	0.064	0.725	2.88	38.7	13.4	3.760	0.067	0.664	0.274	2.161
70	0.068	0.066	0.729	2.87	37.9	13.2	4.120	0.062	0.687	0.280	2.262
75	0.072	0.070	0.715	2.80	37.5	13.4	4.486	0.063	0.710	0.264	2.358
80	0.069	0.067	0.723	2.87	38.5	13.4	4.819	0.070	0.733	0.258	2.444
85	0.068	0.066	0.729	2.91	39.0	13.4	5.163	0.075	0.759	0.261	2.534
90	0.072	0.070	0.733	2.89	38.9	13.4	5.528	0.075	0.786	0.250	2.625
95	0.077	0.074	0.732	2.83	38.1	13.5	5.905	0.077	0.815	0.250	2.720
100	0.079	0.076	0.735	2.91	39.2	13.5	6.296	0.067	0.841	0.264	2.823
105	0.079	0.076	0.739	2.93	39.4	13.5	6.704	0.072	0.871	0.264	2.930
110	0.078	0.075	0.742	2.89	38.8	13.4	7.056	0.069	0.895	0.266	3.024
115	0.080	0.077	0.748	2.90	38.8	13.4	7.452	0.064	0.920	0.269	3.131
120	0.076	0.074	0.739	2.98	40.0	13.4	7.817	0.067	0.945	0.286	3.235
125	0.074	0.072	0.743	2.90	39.0	13.4	8.214	0.061	0.969	0.272	3.343
130	0.077	0.074	0.746	2.85	38.3	13.4	8.588	0.075	0.997	0.265	3.442
135	0.070	0.068	0.734	2.87	39.0	13.6	8.913	0.080	1.023	0.252	3.524
140	0.074	0.071	0.750	2.94	39.4	13.4	9.294	0.100	1.061	0.302	3.639

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.008	0.008	0.677	2.97	31.4	10.6	0.041	0.602	0.025	1.320	0.055
10	0.012	0.012	0.684	3.03	31.9	10.5	0.101	0.684	0.065	1.355	0.135
15	0.005	0.005	0.669	3.02	31.8	10.5	0.124	0.769	0.083	1.318	0.165
20	0.029	0.029	0.619	2.81	31.2	11.1	0.270	0.460	0.150	1.114	0.328
22	0.045	0.044	0.590	2.57	30.1	11.7	0.358	0.285	0.175	0.907	0.408
24	0.043	0.042	0.611	2.53	29.9	11.8	0.443	0.325	0.203	0.854	0.480
29	0.049	0.048	0.611	2.59	31.3	12.1	0.662	0.287	0.266	0.720	0.638
31	0.060	0.059	0.639	2.71	32.4	12.0	0.802	0.286	0.306	0.627	0.726
33	0.064	0.062	0.663	2.84	33.5	11.8	0.929	0.304	0.344	0.652	0.809
35	0.068	0.066	0.645	2.87	33.5	11.7	1.108	0.254	0.390	0.615	0.919
37	0.069	0.067	0.650	2.83	33.0	11.6	1.256	0.246	0.427	0.578	1.005
42	0.063	0.061	0.662	2.95	34.2	11.6	1.572	0.290	0.518	0.612	1.198
47	0.060	0.058	0.670	2.95	34.2	11.6	1.843	0.278	0.593	0.604	1.362
52	0.061	0.059	0.648	2.90	32.9	11.3	2.143	0.197	0.652	0.498	1.511
57	0.084	0.080	0.511	2.17	27.8	12.8	2.577	0.269	0.769	0.764	1.843
62	0.073	0.070	0.672	2.83	36.7	13.0	2.956	0.119	0.814	0.402	1.995
67	0.077	0.074	0.669	2.84	37.1	13.1	3.371	0.138	0.872	0.468	2.189
72	0.081	0.078	0.655	2.75	36.0	13.1	3.779	0.095	0.910	0.375	2.342
77	0.088	0.085	0.582	2.48	32.2	13.0	4.182	0.080	0.943	0.320	2.471
82	0.079	0.076	0.662	2.64	34.3	13.0	4.580	0.073	0.972	0.326	2.601
87	0.081	0.078	0.682	2.71	35.7	13.2	4.989	0.087	1.007	0.323	2.733
92	0.092	0.088	0.634	2.58	34.2	13.2	5.424	0.075	1.040	0.308	2.867
97	0.097	0.092	0.623	2.51	33.2	13.2	5.916	0.071	1.075	0.313	3.021
102	0.100	0.095	0.577	2.45	32.9	13.4	6.408	0.063	1.106	0.302	3.170
107	0.091	0.087	0.623	2.51	33.7	13.4	6.907	0.077	1.144	0.383	3.361
112	0.100	0.096	0.610	2.48	33.6	13.6	7.363	0.078	1.180	0.552	3.612
117	0.099	0.095	0.543	2.26	30.5	13.5	7.822	0.068	1.211	0.289	3.745

Survey Core, LA-8

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.007	0.007	0.718	2.93	32.5	11.1	0.046	0.485	0.023	1.450	0.067
10	0.017	0.017	0.691	2.98	32.9	11.1	0.140	0.512	0.070	1.510	0.208
15	0.023	0.022	0.683	3.01	32.9	10.9	0.259	0.562	0.137	1.466	0.383
20	0.024	0.023	0.683	3.02	32.5	10.8	0.362	0.635	0.203	1.543	0.542
25	0.024	0.024	0.682	2.94	32.7	11.1	0.474	0.507	0.260	1.372	0.696
30	0.031	0.031	0.643	2.83	32.4	11.4	0.660	0.528	0.358	1.379	0.952
35	0.030	0.030	0.662	2.85	32.8	11.5	0.804	0.327	0.405	1.032	1.101
40	0.041	0.040	0.565	2.57	30.6	11.9	1.014	0.245	0.456	1.018	1.315
45	0.043	0.042	0.569	2.36	29.3	12.4	1.234	0.270	0.516	0.884	1.509
50	0.044	0.043	0.578	2.36	29.9	12.7	1.448	0.264	0.572	0.805	1.682
55	0.050	0.049	0.592	2.38	30.1	12.6	1.698	0.458	0.687	0.813	1.884
60	0.054	0.053	0.651	2.53	32.5	12.9	1.966	0.261	0.757	1.031	2.161
65	0.065	0.063	0.609	2.72	32.5	12.0	2.276	0.190	0.815	0.646	2.362
70	0.068	0.066	0.638	2.55	32.7	12.8	2.621	0.212	0.889	0.377	2.492
75	0.076	0.073	0.724	2.96	38.5	13.0	2.987	0.127	0.935	0.362	2.624
80	0.239	0.215	0.690	2.77	35.9	13.0	4.056	0.126	1.070	0.375	3.025
85	0.064	0.062	0.705	2.80	37.0	13.2	4.393	0.104	1.105	0.330	3.136
90	0.065	0.063	0.727	2.83	37.5	13.2	4.717	0.110	1.140	0.318	3.239
95	0.066	0.064	0.728	2.86	37.8	13.2	5.060	0.120	1.182	0.310	3.345
100	0.067	0.065	0.737	2.84	37.3	13.1	5.387	0.113	1.219	0.301	3.444
105	0.068	0.066	0.726	2.81	37.3	13.3	5.735	0.107	1.256	0.329	3.558
110	0.068	0.066	0.733	2.82	37.6	13.3	6.064	0.123	1.296	0.325	3.665
115	0.068	0.066	0.740	2.88	38.1	13.2	6.418	0.113	1.336	0.303	3.773
120	0.070	0.068	0.742	2.78	37.4	13.4	6.781	0.126	1.382	0.279	3.874
125	0.072	0.069	0.732	2.83	37.8	13.3	7.080	0.166	1.432	0.276	3.956
130	0.070	0.068	0.738	2.85	38.4	13.5	7.418	0.154	1.484	0.289	4.054
135	0.070	0.068	0.741	2.85	37.9	13.3	7.741	0.140	1.529	0.287	4.147
140	0.071	0.069	0.734	2.82	38.0	13.5	8.163	0.142	1.589	0.285	4.267
145	0.068	0.066	0.739	2.79	37.4	13.4	8.513	0.137	1.637	0.284	4.366

Survey Core, LA-9

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.012	0.012	0.676	3.14	32.4	10.3	0.063	0.590	0.037	1.507	0.095
10	0.019	0.019	0.678	3.21	32.9	10.2	0.168	0.625	0.103	1.552	0.258
15	0.026	0.026	0.663	3.30	33.5	10.2	0.283	0.753	0.189	1.661	0.449
20	0.026	0.025	0.646	3.23	33.5	10.4	0.421	0.706	0.287	1.662	0.678
25	0.031	0.030	0.636	3.02	32.6	10.8	0.574	0.638	0.384	1.412	0.894
30	0.032	0.032	0.632	2.98	32.8	11.0	0.751	0.598	0.490	1.383	1.139
35	0.031	0.030	0.582	2.95	32.3	10.9	0.918	0.462	0.568	1.286	1.354
40	0.034	0.033	0.637	2.90	31.7	10.9	1.108	0.459	0.655	1.260	1.593
45	0.047	0.046	0.625	2.84	31.2	11.0	1.352	0.474	0.770	1.234	1.894
47.5	0.098	0.094	0.623	2.76	30.6	11.1	1.497	0.462	0.838	1.201	2.069
50	0.036	0.035	0.637	2.77	30.6	11.0	1.596	0.508	0.888	1.379	2.205
52	0.069	0.066	0.599	2.70	30.6	11.3	1.697	0.425	0.930	1.135	2.319
54	0.042	0.041	0.601	2.67	30.6	11.5	1.801	0.409	0.973	1.082	2.433
56	0.024	0.024	0.601	2.69	30.6	11.4	1.861	0.414	0.998	1.107	2.499
58	0.048	0.047	0.602	2.67	30.5	11.4	1.968	0.474	1.049	1.089	2.615
60	0.048	0.047	0.602	2.67	30.7	11.5	2.090	0.430	1.101	1.075	2.746
62	0.038	0.037	0.609	2.71	31.1	11.5	2.179	0.402	1.137	1.102	2.844
64	0.054	0.052	0.620	2.68	30.8	11.5	2.313	0.398	1.190	1.066	2.987
66	0.036	0.036	0.610	2.69	31.0	11.5	2.407	0.405	1.228	1.052	3.086
68	0.049	0.048	0.612	2.61	30.6	11.7	2.540	0.347	1.275	1.009	3.221
70	0.071	0.069	0.387	1.56	21.6	13.8	2.727	0.393	1.348	1.630	3.525
72	0.088	0.084	0.555	2.30	30.9	13.4	2.958	0.246	1.405	0.643	3.673
75	0.104	0.099	0.648	2.53	33.3	13.2	3.189	0.257	1.464	0.512	3.791
80	0.088	0.085	0.676	2.73	36.1	13.2	3.621	0.233	1.565	0.443	3.983
85	0.102	0.097	0.660	2.65	35.2	13.3	4.111	0.232	1.678	0.418	4.187
90	0.078	0.075	0.647	2.54	34.2	13.5	4.495	0.192	1.752	0.385	4.335
95	0.087	0.084	0.647	2.50	34.2	13.7	4.930	0.185	1.833	0.370	4.496

Survey Core, LA-10

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.010	0.010	0.687	2.83	32.7	11.6	0.050	0.383	0.019	1.177	0.059
10	0.009	0.009	0.685	2.87	32.4	11.3	0.097	0.411	0.038	1.276	0.119
15	0.016	0.016	0.663	2.81	32.4	11.5	0.171	0.418	0.070	1.158	0.205
20	0.018	0.018	0.670	2.82	32.9	11.7	0.259	0.514	0.115	1.310	0.320
25	0.020	0.020	0.660	3.02	33.4	11.0	0.375	0.576	0.182	1.500	0.494
30	0.025	0.025	0.652	2.88	32.9	11.5	0.492	0.616	0.253	1.354	0.652
35	0.027	0.026	0.644	2.81	32.6	11.6	0.625	0.606	0.334	1.388	0.837
41	0.035	0.034	0.595	2.63	32.3	12.3	0.822	0.494	0.431	1.249	1.082
43	0.051	0.049	0.533	2.53	29.2	11.5	0.935	0.467	0.484	1.203	1.219
45	0.046	0.045	0.565	2.30	28.2	12.3	1.032	0.447	0.527	1.131	1.328
47	0.042	0.041	0.630	2.72	31.7	11.6	1.129	0.511	0.577	1.160	1.441
49	0.042	0.041	0.639	2.66	32.1	12.1	1.208	0.552	0.621	1.190	1.535
51	0.042	0.041	0.645	2.71	32.0	11.8	1.297	0.490	0.664	1.249	1.647
56	0.041	0.040	0.606	2.70	32.2	11.9	1.501	0.566	0.780	1.258	1.903
61	0.038	0.037	0.610	2.66	31.8	11.9	1.722	0.468	0.883	1.168	2.161
66	0.049	0.048	0.626	2.75	30.8	11.2	1.973	0.377	0.978	0.980	2.407
71	0.051	0.050	0.614	2.71	30.7	11.3	2.218	0.388	1.073	0.986	2.648
76	0.051	0.050	0.591	2.73	30.8	11.3	2.460	0.348	1.157	0.972	2.884
81	0.058	0.056	0.557	2.58	29.1	11.3	2.759	0.366	1.266	0.971	3.174
86	0.065	0.063	0.535	2.47	28.3	11.5	3.060	0.341	1.369	0.911	3.448
91	0.061	0.059	0.555	2.53	29.3	11.6	3.396	0.354	1.488	0.956	3.770
96	0.057	0.055	0.595	2.59	30.0	11.6	3.691	0.395	1.605	0.908	4.038
101	0.062	0.060	0.614	2.64	30.4	11.5	4.019	0.362	1.723	0.885	4.328
106	0.058	0.057	0.614	2.71	31.1	11.5	4.327	0.421	1.853	0.899	4.604
111	0.071	0.069	0.539	2.37	28.1	11.9	4.705	0.373	1.994	0.789	4.903
116	0.068	0.066	0.559	2.44	28.9	11.9	5.028	0.403	2.124	0.880	5.187
121	0.064	0.062	0.592	2.57	30.1	11.7	5.329	0.419	2.250	0.881	5.452
126	0.060	0.059	0.601	2.64	30.7	11.6	5.643	0.432	2.386	0.960	5.754
131	0.057	0.055	0.623	2.70	31.2	11.6	5.913	0.444	2.506	0.940	6.007
136	0.066	0.064	0.590	2.57	30.2	11.8	6.229	0.393	2.630	0.838	6.272
141	0.081	0.078	0.506	2.25	27.0	12.0	6.614	0.361	2.769	0.750	6.561
146	0.084	0.081	0.483	2.08	25.0	12.0	7.043	0.320	2.906	0.751	6.883

Survey Core, LA-11

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.012	0.012	0.630	2.55	28.4	11.1	0.066	0.487	0.032	1.251	0.082
10	0.105	0.099	0.154	1.07	10.0	9.3	0.552	0.171	0.115	0.471	0.311
15	0.546	0.412	0.037	0.21	5.4	25.4	3.059	0.064	0.276	0.240	0.913
20	0.488	0.378	0.057	0.23	7.2	31.9	5.347	0.058	0.408	0.205	1.382
25	0.403	0.326	0.091	0.26	7.4	28.2	7.513	0.049	0.514	0.273	1.973
30	0.523	0.401	0.111	0.31	6.1	19.5	10.041	0.081	0.719	0.184	2.438
35	0.239	0.214	0.601	1.99	33.9	17.1	11.250	0.167	0.921	0.177	2.652
40	0.439	0.353	0.265	1.04	14.2	13.7	13.626	0.176	1.339	0.193	3.111
45	0.551	0.418	0.164	0.66	8.0	12.0	16.433	0.191	1.875	0.197	3.664

Survey Core, LA-12

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.009	0.009	0.687	2.86	32.3	11.3	0.050	0.460	0.023	1.267	0.064
10	0.023	0.023	0.651	2.82	32.0	11.4	0.164	0.404	0.069	1.158	0.195
15	0.028	0.028	0.649	2.82	31.9	11.3	0.306	0.454	0.134	1.144	0.358
20	0.024	0.024	0.654	2.99	32.1	10.7	0.420	0.597	0.202	1.438	0.522
25	0.028	0.027	0.644	2.87	32.2	11.2	0.557	0.646	0.290	1.456	0.721
30	0.037	0.036	0.640	2.73	33.0	12.1	0.717	0.508	0.371	1.138	0.903
35	0.040	0.039	0.602	2.67	31.3	11.7	0.902	0.523	0.468	1.245	1.133
40	0.036	0.036	0.634	2.85	32.5	11.4	1.096	0.510	0.567	1.395	1.404
42	0.042	0.041	0.630	2.69	31.0	11.5	1.199	0.538	0.622	1.342	1.542
44	0.047	0.046	0.584	2.53	29.8	11.8	1.288	0.404	0.658	1.122	1.642
46	0.047	0.046	0.598	2.49	30.8	12.3	1.386	0.347	0.692	0.976	1.738
48	0.047	0.046	0.596	2.41	30.4	12.6	1.471	0.322	0.720	0.916	1.816
50	0.047	0.046	0.601	2.45	30.3	12.4	1.556	0.312	0.746	0.922	1.894
55	0.049	0.048	0.568	2.41	29.9	12.4	1.807	0.274	0.815	0.860	2.110
60	0.057	0.055	0.573	2.46	31.3	12.7	2.094	0.277	0.895	0.777	2.333
65	0.064	0.062	0.601	2.56	30.4	11.9	2.449	0.304	1.002	0.574	2.537
70	0.074	0.071	0.556	2.41	28.9	12.0	2.802	0.261	1.095	0.516	2.719
75	0.074	0.071	0.573	2.49	29.7	11.9	3.174	0.247	1.187	0.528	2.916
80	0.070	0.068	0.605	2.60	31.0	11.9	3.492	0.275	1.274	0.558	3.093
85	0.069	0.067	0.597	2.60	30.9	11.9	3.863	0.230	1.359	0.541	3.293
90	0.069	0.066	0.612	2.70	31.9	11.8	4.205	0.214	1.433	0.529	3.475
95	0.069	0.067	0.644	2.71	32.2	11.9	4.562	0.240	1.518	0.515	3.658
100	0.075	0.072	0.621	2.68	32.0	11.9	4.906	0.227	1.596	0.570	3.855
105	0.072	0.070	0.653	2.77	33.1	11.9	5.237	0.212	1.666	0.532	4.030
110	0.073	0.070	0.636	2.77	33.4	12.1	5.587	0.205	1.738	0.529	4.216
115	0.074	0.071	0.643	2.75	32.9	12.0	5.982	0.217	1.824	0.486	4.408
120	0.070	0.068	0.611	2.66	32.2	12.1	6.279	0.208	1.886	0.487	4.552

Survey Core, LA-13

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.007	0.007	0.705	3.01	31.5	10.5	0.037	0.679	0.025	1.458	0.054
10	0.014	0.014	0.640	3.08	32.2	10.5	0.102	0.520	0.059	1.322	0.140
15	0.020	0.020	0.641	3.09	32.0	10.4	0.204	0.724	0.133	1.400	0.283
20	0.021	0.021	0.656	3.17	32.5	10.3	0.302	0.849	0.216	1.742	0.453
25	0.028	0.028	0.641	2.98	32.3	10.9	0.436	0.601	0.296	1.464	0.649
30	0.036	0.035	0.608	2.76	31.3	11.4	0.604	0.534	0.386	1.122	0.838
35	0.039	0.038	0.582	2.70	31.0	11.5	0.810	0.440	0.477	1.075	1.060
40	0.044	0.043	0.591	2.58	31.2	12.1	1.025	0.364	0.555	1.015	1.277
42	0.053	0.052	0.594	2.46	30.6	12.5	1.156	0.317	0.596	0.864	1.390
44	0.062	0.060	0.581	2.41	30.4	12.6	1.293	0.374	0.648	0.789	1.499
46	0.060	0.058	0.602	2.51	31.1	12.4	1.426	0.273	0.684	0.743	1.597
48	0.063	0.061	0.616	2.56	31.9	12.5	1.572	0.254	0.721	0.693	1.699
50	0.065	0.063	0.621	2.49	31.1	12.5	1.700	0.228	0.750	0.648	1.781
55	0.062	0.060	0.607	2.46	32.1	13.1	1.997	0.211	0.813	0.667	1.980
60	0.059	0.058	0.617	2.46	32.5	13.2	2.293	0.202	0.873	0.566	2.147
65	0.063	0.061	0.619	2.64	31.5	11.9	2.606	0.247	0.950	0.539	2.316
70	0.077	0.074	0.503	2.12	26.1	12.3	2.938	0.187	1.012	0.451	2.466
75	0.133	0.124	0.388	1.46	19.2	13.2	3.589	0.127	1.095	0.358	2.699
80	0.120	0.113	0.537	1.99	27.7	13.9	4.218	0.161	1.196	0.326	2.904
85	0.091	0.087	0.546	2.01	27.6	13.7	4.576	0.176	1.259	0.365	3.034
90	0.218	0.195	0.265	1.20	16.8	14.0	5.773	0.152	1.441	0.291	3.383
95	0.203	0.183	0.368	1.47	20.4	13.9	6.860	0.101	1.551	0.330	3.742
100	0.167	0.154	0.436	1.68	23.6	14.0	7.643	0.172	1.685	0.360	4.023
105	0.126	0.118	0.599	2.15	31.5	14.7	8.193	0.143	1.764	0.252	4.162
110	0.145	0.135	0.547	2.01	29.8	14.8	9.010	0.133	1.873	0.207	4.331
115	0.352	0.293	0.216	1.02	15.4	15.1	10.956	0.081	2.030	0.176	4.674
120	0.151	0.141	0.631	2.41	34.9	14.5	11.761	0.065	2.083	0.108	4.761

Survey Core, LA-14

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.014	0.014	0.720	3.11	32.2	10.3	0.075	0.522	0.039	1.535	0.114
10	0.020	0.020	0.710	3.18	32.7	10.3	0.182	0.525	0.095	1.637	0.290
15	0.019	0.019	0.712	3.15	32.2	10.2	0.269	0.542	0.142	1.593	0.428
20	0.025	0.025	0.644	2.79	30.5	10.9	0.399	0.473	0.204	1.270	0.594
25	0.041	0.041	0.672	2.63	31.1	11.8	0.586	0.224	0.246	0.743	0.733
30	0.040	0.039	0.648	2.61	31.5	12.1	0.809	0.208	0.292	0.622	0.872
32	0.060	0.058	0.615	2.33	30.2	12.9	0.892	0.173	0.307	0.502	0.913
34	0.067	0.065	0.652	2.37	31.4	13.2	1.031	0.201	0.335	0.487	0.981
36	0.068	0.066	0.662	2.41	31.6	13.1	1.205	0.142	0.359	0.406	1.052
38	0.070	0.067	0.659	2.34	30.9	13.2	1.337	0.121	0.375	0.424	1.108
40	0.065	0.063	0.679	2.48	32.5	13.1	1.441	0.127	0.389	0.376	1.147
45	0.062	0.060	0.676	2.74	35.1	12.8	1.791	0.155	0.443	0.330	1.262
50	0.070	0.068	0.650	2.62	33.5	12.8	2.110	0.173	0.498	0.322	1.365
55	0.062	0.061	0.709	2.84	35.9	12.7	2.430	0.142	0.543	0.314	1.465
60	0.068	0.066	0.722	2.81	36.8	13.1	2.781	0.119	0.585	0.329	1.581
65	0.066	0.064	0.697	2.82	37.6	13.3	3.094	0.106	0.618	0.334	1.685
70	0.070	0.068	0.684	2.73	36.7	13.4	3.445	0.115	0.659	0.321	1.798
75	0.068	0.066	0.695	2.80	37.3	13.3	3.818	0.112	0.700	0.363	1.934
80	0.068	0.066	0.710	2.95	38.9	13.2	4.129	0.109	0.734	0.338	2.039
85	0.074	0.072	0.722	2.81	37.0	13.2	4.546	0.097	0.775	0.323	2.173
90	0.071	0.069	0.719	2.86	37.7	13.2	4.844	0.115	0.809	0.322	2.269
95	0.068	0.066	0.705	2.89	38.2	13.2	5.180	0.115	0.848	0.315	2.375
100	0.070	0.068	0.731	2.94	38.6	13.1	5.544	0.123	0.892	0.291	2.481
105	0.094	0.090	0.754	2.57	34.1	13.3	6.017	0.109	0.944	0.276	2.612
110	0.085	0.082	0.713	2.67	35.4	13.2	6.414	0.142	1.000	0.314	2.736
115	0.091	0.087	0.754	2.55	34.4	13.5	6.962	0.107	1.059	0.286	2.893
120	0.073	0.071	0.736	2.83	38.3	13.5	7.327	0.114	1.101	0.304	3.004
125	0.071	0.068	0.718	2.86	38.6	13.5	7.668	0.118	1.141	0.333	3.118
130	0.096	0.092	0.785	2.38	31.9	13.4	8.152	0.087	1.183	0.268	3.247
135	0.068	0.066	0.733	2.80	37.1	13.3	8.473	0.103	1.216	0.313	3.348

Survey Core, LA-15

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.006	0.006	0.703	3.12	32.1	10.3	0.032	0.491	0.016	1.388	0.044
10	0.014	0.014	0.703	3.21	32.8	10.2	0.098	0.607	0.056	1.535	0.146
15	0.020	0.019	0.690	3.13	32.3	10.3	0.196	0.549	0.110	1.527	0.295
20	0.027	0.026	0.670	3.08	32.5	10.6	0.323	0.627	0.189	1.592	0.497
22	0.033	0.033	0.680	3.06	32.6	10.6	0.387	0.548	0.224	1.492	0.593
24	0.032	0.031	0.673	2.98	32.2	10.8	0.454	0.479	0.257	1.319	0.682
26	0.038	0.037	0.672	2.92	31.6	10.8	0.515	0.446	0.284	1.342	0.763
28	0.039	0.039	0.664	2.92	31.9	10.9	0.601	0.418	0.320	1.326	0.877
30	0.041	0.041	0.647	2.84	31.4	11.1	0.687	0.428	0.357	1.295	0.989
35	0.043	0.043	0.633	2.78	31.2	11.2	0.894	0.461	0.452	1.360	1.270
37	0.046	0.045	0.650	2.71	31.1	11.5	0.979	0.440	0.489	1.224	1.374
39	0.048	0.047	0.641	2.71	31.3	11.5	1.081	0.317	0.522	0.994	1.476
44	0.051	0.050	0.616	2.70	31.7	11.7	1.317	0.206	0.570	0.944	1.698
49	0.057	0.056	0.596	2.52	30.3	12.0	1.617	0.270	0.651	0.816	1.943
54	0.067	0.065	0.618	2.76	32.4	11.7	1.949	0.284	0.745	0.930	2.252
59	0.068	0.066	0.671	3.09	35.7	11.5	2.294	0.284	0.843	0.672	2.484
64	0.064	0.062	0.687	2.88	35.2	12.2	2.603	0.257	0.923	0.591	2.666
69	0.065	0.063	0.705	2.91	37.4	12.9	2.963	0.273	1.021	0.479	2.839
74	0.073	0.070	0.691	2.98	36.9	12.4	3.313	0.263	1.113	0.591	3.046
79	0.073	0.071	0.688	2.91	36.3	12.5	3.662	0.272	1.208	0.563	3.242
84	0.072	0.069	0.691	2.90	36.5	12.6	4.046	0.262	1.309	0.524	3.443
89	0.071	0.068	0.690	2.90	36.5	12.6	4.390	0.256	1.397	0.517	3.621
94	0.069	0.067	0.699	2.99	36.9	12.3	4.772	0.248	1.491	0.540	3.827
99	0.068	0.065	0.707	2.99	37.2	12.4	5.136	0.273	1.591	0.533	4.021
104	0.064	0.062	0.714	2.99	37.3	12.5	5.442	0.275	1.675	0.506	4.176
109	0.067	0.065	0.730	3.06	38.1	12.5	5.758	0.278	1.763	0.507	4.337
114	0.066	0.064	0.724	3.07	38.1	12.4	6.095	0.259	1.850	0.500	4.505
119	0.066	0.064	0.747	2.94	36.4	12.4	6.430	0.277	1.943	0.491	4.669
124	0.064	0.062	0.731	3.10	38.8	12.5	6.740	0.243	2.018	0.512	4.829
129	0.065	0.063	0.730	3.08	38.5	12.5	7.044	0.263	2.098	0.515	4.985
134	0.063	0.061	0.730	3.08	38.5	12.5	7.354	0.285	2.187	0.535	5.151
139	0.065	0.063	0.737	3.05	38.4	12.6	7.702	0.303	2.292	0.515	5.330
144	0.063	0.061	0.734	3.05	38.0	12.5	8.022	0.265	2.377	0.512	5.494

Survey Core, LA-16

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
1	0.016	0.016	0.395	1.43	20.5	14.3	0.023	0.328	0.007	0.799	0.018
6	0.325	0.273	0.093	0.34	13.9	40.8	1.783	0.104	0.191	0.243	0.446
11	0.176	0.161	0.384	0.98	20.0	20.4	2.693	0.067	0.252	0.208	0.635
16	0.170	0.156	0.397	1.18	21.4	18.1	3.535	0.078	0.317	0.262	0.856
21	0.209	0.188	0.388	1.19	21.6	18.1	4.591	0.082	0.404	0.242	1.112
26	0.176	0.162	0.475	1.33	22.6	17.0	5.383	0.103	0.485	0.250	1.309
31	0.123	0.115	0.491	1.58	25.7	16.3	6.000	0.115	0.556	0.340	1.519
36	0.183	0.167	0.329	1.16	21.7	18.7	6.970	0.078	0.632	0.369	1.877
41	0.179	0.163	0.328	1.04	20.6	19.8	7.849	0.075	0.698	0.325	2.163
46	0.226	0.201	0.302	0.85	19.2	22.6	9.038	0.078	0.791	0.270	2.484
51	0.185	0.168	0.387	1.12	23.1	20.6	9.965	0.102	0.885	0.265	2.729
56	0.151	0.140	0.401	1.51	25.1	16.6	10.699	0.101	0.959	0.345	2.983
61	0.203	0.183	0.360	1.10	19.0	17.3	11.678	0.111	1.068	0.322	3.298
66	0.230	0.204	0.296	0.93	17.3	18.6	12.859	0.129	1.220	0.406	3.777
71	0.220	0.196	0.307	0.95	17.9	18.9	14.037	0.086	1.322	0.374	4.218
76	0.207	0.186	0.304	1.04	19.6	18.9	15.065	0.112	1.437	0.428	4.658
81	0.165	0.151	0.348	1.32	22.4	17.0	15.857	0.137	1.545	0.288	4.886
86	0.262	0.229	0.289	0.90	17.5	19.4	17.048	0.212	1.798	0.448	5.420
91	0.349	0.290	0.134	0.53	13.2	24.9	18.827	0.168	2.097	0.337	6.019
96	0.228	0.203	0.311	0.93	16.8	18.1	20.016	0.098	2.213	0.170	6.221
101	0.260	0.227	0.224	0.81	15.6	19.3	21.261	0.089	2.324	0.164	6.426
106	0.412	0.332	0.131	0.49	11.2	22.8	23.447	0.081	2.501	0.153	6.760
111	0.286	0.246	0.204	0.61	14.4	23.6	24.839	0.083	2.617	0.153	6.973
116	0.297	0.254	0.180	0.60	14.1	23.4	26.464	0.073	2.735	0.180	7.266
121	0.330	0.277	0.147	0.48	11.8	24.7	27.962	0.097	2.880	0.166	7.514
126	0.585	0.435	0.082	0.34	8.7	25.5	30.815	0.084	3.120	0.157	7.962

Survey Core, LA-17

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.005	0.005	0.711	3.01	31.6	10.5	0.030	0.564	0.017	1.414	0.042
10	0.006	0.006	0.728	3.00	31.3	10.4	0.054	0.564	0.031	1.390	0.076
15	0.009	0.009	0.703	3.07	32.0	10.4	0.092	0.584	0.053	1.367	0.128
20	0.022	0.022	0.671	3.01	31.8	10.6	0.204	0.540	0.113	1.419	0.287
25	0.034	0.033	0.656	3.07	32.8	10.7	0.385	0.507	0.205	1.401	0.541
30	0.040	0.040	0.643	2.94	31.9	10.8	0.573	0.556	0.309	1.402	0.804
35	0.038	0.038	0.619	2.78	30.1	10.8	0.734	0.536	0.396	1.780	1.090

Survey Core, LA-18

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.006	0.006	0.653	3.15	32.2	10.2	0.051	0.593	0.030	1.488	0.076
10	0.015	0.015	0.666	3.20	32.5	10.2	0.152	0.613	0.092	1.510	0.228
15	0.025	0.024	0.650	3.12	31.8	10.2	0.341	0.588	0.203	1.630	0.537
20	0.030	0.030	0.630	2.90	31.6	10.9	0.535	0.439	0.288	1.218	0.773
22	0.042	0.042	0.727	2.75	30.7	11.2	0.583	0.377	0.307	1.042	0.823
24	0.040	0.039	0.611	2.77	30.7	11.1	0.699	0.420	0.355	1.044	0.944
26	0.046	0.045	0.627	2.68	30.7	11.4	0.816	0.287	0.389	0.993	1.060
28	0.049	0.048	0.624	2.67	30.6	11.5	0.951	0.302	0.430	1.002	1.196
30	0.048	0.047	0.617	2.68	30.5	11.4	1.058	0.323	0.464	1.038	1.307
35	0.051	0.049	0.617	2.78	31.9	11.5	1.305	0.312	0.541	0.968	1.545
40	0.052	0.051	0.603	2.73	31.5	11.5	1.621	0.303	0.637	0.954	1.847
45	0.059	0.057	0.599	2.73	31.2	11.4	1.975	0.337	0.756	1.014	2.206
50	0.058	0.057	0.601	2.68	30.9	11.5	2.330	0.327	0.872	0.938	2.539
55	0.058	0.056	0.604	2.64	30.9	11.7	2.640	0.358	0.983	0.992	2.846
60	0.056	0.055	0.607	2.60	31.0	11.9	3.006	0.349	1.111	0.956	3.197
65	0.058	0.057	0.601	2.60	31.1	12.0	3.331	0.337	1.221	0.969	3.511
70	0.055	0.053	0.599	2.59	30.8	11.9	3.677	0.332	1.336	0.964	3.845
75	0.060	0.059	0.607	2.58	30.9	12.0	3.989	0.318	1.434	0.881	4.119
80	0.117	0.110	0.283	1.81	22.3	12.3	4.580	0.184	1.543	0.465	4.394

Survey Core, LA-19

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.001	0.001	0.720	2.88	31.7	11.0	0.009	0.470	0.004	1.437	0.013
10	0.018	0.018	0.669	2.95	32.4	11.0	0.097	0.600	0.057	1.587	0.153
15	0.024	0.024	0.648	2.84	32.2	11.3	0.210	0.586	0.123	1.362	0.307
20	0.026	0.025	0.647	2.78	32.4	11.6	0.369	0.577	0.215	1.541	0.552
25	0.034	0.033	0.628	2.70	31.8	11.7	0.527	0.528	0.298	1.316	0.760
30	0.041	0.040	0.600	2.57	31.0	12.1	0.721	0.378	0.372	1.106	0.974
33	0.048	0.047	0.581	2.42	30.1	12.4	0.888	0.447	0.446	0.979	1.137
35	0.050	0.049	0.573	2.34	29.7	12.6	0.983	0.487	0.493	0.917	1.225
37	0.047	0.046	0.581	2.35	29.5	12.6	1.090	0.500	0.546	0.919	1.323
39	0.047	0.046	0.610	2.47	31.4	12.7	1.197	0.471	0.597	0.928	1.422
41	0.048	0.047	0.624	2.48	31.9	12.9	1.318	0.453	0.651	0.923	1.534
43	0.050	0.049	0.612	2.46	31.4	12.7	1.437	0.462	0.706	0.919	1.644
45	0.050	0.048	0.599	2.45	31.0	12.7	1.563	0.492	0.768	1.010	1.771
47	0.051	0.050	0.595	2.39	31.3	13.1	1.670	0.463	0.818	0.947	1.872
52	0.049	0.048	0.597	2.69	31.4	11.7	1.919	0.479	0.937	0.982	2.117
57	0.055	0.053	0.574	2.57	30.7	11.9	2.200	0.460	1.066	0.880	2.363
62	0.055	0.053	0.588	2.61	31.5	12.1	2.472	0.463	1.192	0.896	2.607
67	0.060	0.058	0.596	2.56	30.9	12.1	2.775	0.320	1.289	0.736	2.830
72	0.059	0.057	0.605	2.54	31.1	12.2	3.084	0.375	1.405	0.976	3.132
77	0.060	0.059	0.602	2.52	31.0	12.3	3.417	0.322	1.512	0.932	3.442
82	0.077	0.074	0.592	2.43	30.4	12.5	3.758	0.240	1.594	0.618	3.653
87	0.074	0.071	0.621	2.65	32.5	12.3	4.112	0.229	1.675	0.529	3.840
92	0.076	0.073	0.627	2.62	32.6	12.4	4.477	0.199	1.748	0.508	4.026
97	0.093	0.089	0.545	2.24	28.5	12.7	4.963	0.231	1.860	0.502	4.270
102	0.111	0.105	0.500	2.13	27.2	12.8	5.486	0.260	1.996	0.543	4.554
107	0.141	0.131	0.425	1.76	23.3	13.2	6.269	0.150	2.114	0.376	4.848
112	0.771	0.531	0.094	0.42	3.9	9.4	10.160	0.113	2.553	0.147	5.420

Survey Core, LA-20

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.009	0.009	0.659	2.75	32.0	11.6	0.047	0.413	0.019	1.384	0.064
10	0.014	0.014	0.662	2.80	33.2	11.9	0.136	0.602	0.073	1.555	0.204
15	0.019	0.019	0.658	2.72	31.9	11.7	0.234	0.580	0.130	1.455	0.346
20	0.021	0.021	0.652	2.71	32.6	12.0	0.342	0.479	0.182	1.332	0.490
25	0.025	0.024	0.646	2.65	32.4	12.2	0.495	0.431	0.247	1.270	0.684
30	0.031	0.031	0.648	2.72	32.8	12.1	0.646	0.460	0.317	1.466	0.906
35	0.034	0.033	0.654	2.72	33.1	12.2	0.815	0.471	0.396	1.295	1.124
40	0.034	0.033	0.660	2.65	32.5	12.3	1.008	0.485	0.490	1.338	1.383
43	0.042	0.041	0.638	2.53	31.4	12.4	1.120	0.407	0.536	1.113	1.507
45	0.045	0.044	0.597	2.42	30.0	12.4	1.192	0.412	0.566	1.059	1.584
47	0.047	0.046	0.597	2.41	30.0	12.5	1.307	0.338	0.604	1.007	1.699
50	0.047	0.046	0.638	2.45	31.9	13.0	1.411	0.335	0.639	0.908	1.794
52	0.046	0.045	0.651	2.48	32.1	13.0	1.508	0.354	0.673	0.827	1.874
54	0.044	0.043	0.654	2.38	31.9	13.4	1.605	0.494	0.722	1.402	2.011
56	0.030	0.030	0.639	2.40	31.8	13.3	1.693	0.535	0.768	1.609	2.151
58	0.096	0.092	0.628	2.35	31.1	13.2	1.856	0.328	0.822	0.939	2.304
60	0.025	0.024	0.642	2.40	31.9	13.3	1.919	0.285	0.840	0.822	2.357
62	0.054	0.052	0.644	2.36	31.5	13.3	1.985	0.296	0.859	0.758	2.406
67	0.053	0.052	0.634	2.46	32.6	13.3	2.274	0.297	0.945	0.769	2.629
72	0.062	0.061	0.643	2.50	32.7	13.1	2.553	0.294	1.027	0.816	2.857
77	0.062	0.061	0.642	2.74	32.5	11.9	2.835	0.284	1.107	0.683	3.049
82	0.064	0.062	0.640	2.76	32.3	11.7	3.123	0.297	1.193	0.737	3.261
87	0.064	0.062	0.658	2.89	34.0	11.8	3.485	0.310	1.305	0.745	3.531
92	0.062	0.060	0.640	2.78	33.0	11.9	3.807	0.278	1.395	0.688	3.753
97	0.069	0.067	0.601	2.78	32.9	11.8	4.243	0.248	1.503	0.608	4.017
102	0.068	0.066	0.622	2.72	32.7	12.0	4.501	0.267	1.572	0.595	4.171
107	0.064	0.062	0.621	2.81	32.9	11.7	4.814	0.297	1.665	0.613	4.363
112	0.069	0.067	0.619	2.79	33.0	11.8	5.154	0.258	1.752	0.601	4.567
117	0.072	0.070	0.630	2.78	32.9	11.8	5.495	0.250	1.838	0.617	4.778
122	0.065	0.063	0.631	2.89	33.8	11.7	5.834	0.296	1.938	0.636	4.993

Survey Core, LA-21

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.012	0.012	0.723	2.81	31.3	11.1	0.056	0.450	0.025	1.301	0.073
10	0.019	0.019	0.623	2.85	31.4	11.0	0.145	0.481	0.068	1.386	0.196
15	0.030	0.030	0.677	2.77	31.0	11.2	0.293	0.434	0.132	1.132	0.364
20	0.034	0.033	0.663	2.82	31.8	11.3	0.465	0.477	0.214	1.326	0.592
25	0.040	0.040	0.636	2.64	30.3	11.5	0.689	0.384	0.300	1.160	0.851
30	0.045	0.044	0.624	2.63	30.2	11.5	0.892	0.407	0.383	1.159	1.086
35	0.044	0.043	0.648	2.71	31.3	11.5	1.111	0.453	0.482	1.186	1.347
37	0.046	0.045	0.665	2.65	30.9	11.7	1.196	0.453	0.521	1.141	1.443
39	0.046	0.045	0.652	2.65	30.9	11.7	1.265	0.424	0.550	1.292	1.532
41	0.046	0.045	0.638	2.64	30.8	11.7	1.357	0.451	0.592	1.203	1.644
43	0.045	0.044	0.622	2.67	30.9	11.6	1.461	0.400	0.633	1.242	1.772
45	0.047	0.046	0.627	2.66	30.7	11.5	1.553	0.391	0.669	1.213	1.884
47	0.046	0.045	0.620	2.66	30.5	11.5	1.669	0.480	0.725	1.250	2.029
49	0.045	0.044	0.632	2.74	31.1	11.3	1.791	0.384	0.771	1.244	2.180
51	0.049	0.047	0.620	2.63	30.2	11.5	1.862	0.396	0.800	1.169	2.264
53	0.048	0.047	0.646	2.70	30.6	11.3	1.945	0.422	0.835	1.042	2.351
55	0.050	0.048	0.636	2.68	30.6	11.4	2.026	0.379	0.865	1.131	2.442
57	0.051	0.050	0.639	2.72	30.7	11.3	2.153	0.310	0.905	0.952	2.563
59	0.050	0.049	0.625	2.74	30.8	11.2	2.277	0.367	0.950	0.946	2.680
62	0.050	0.048	0.619	2.77	31.2	11.3	2.416	0.361	1.000	0.960	2.813
64	0.048	0.047	0.621	2.81	31.3	11.1	2.512	3.219	1.310	0.980	2.908
69	0.049	0.048	0.601	2.76	30.9	11.2	2.762	0.332	1.393	0.906	3.134
71	0.051	0.050	0.615	2.73	31.0	11.4	2.918	0.320	1.443	0.866	3.270
73	0.053	0.052	0.616	2.72	30.8	11.3	3.055	0.313	1.486	0.862	3.387
78	0.051	0.049	0.617	2.80	31.6	11.3	3.291	0.306	1.558	0.873	3.594
83	0.052	0.050	0.608	2.69	30.9	11.5	3.551	0.289	1.633	0.846	3.814
88	0.056	0.055	0.604	2.66	30.7	11.5	3.827	0.259	1.705	0.821	4.040
93	0.058	0.056	0.633	2.80	31.7	11.3	4.099	0.248	1.772	0.762	4.247
98	0.058	0.056	0.619	2.71	31.2	11.5	4.397	0.239	1.844	0.764	4.475
103	0.057	0.055	0.624	2.61	31.4	12.0	4.665	0.268	1.915	0.704	4.664
108	0.058	0.057	0.623	2.59	31.1	12.0	4.971	0.243	1.990	0.697	4.877
113	0.055	0.054	0.635	2.66	31.9	12.0	5.245	0.292	2.070	0.802	5.096
118	0.059	0.058	0.710	2.90	35.1	12.1	5.503	0.218	2.126	0.548	5.238

Survey Core, LA-22

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.006	0.006	0.728	3.07	32.0	10.4	0.031	0.579	0.018	1.319	0.040
10	0.007	0.007	0.717	3.04	32.1	10.6	0.067	0.599	0.040	1.368	0.090
15	0.012	0.012	0.718	3.06	32.6	10.6	0.130	0.613	0.078	1.406	0.179
20	0.021	0.021	0.646	3.03	32.6	10.7	0.242	0.613	0.147	1.312	0.325
25	0.037	0.036	0.641	2.80	31.5	11.3	0.434	0.338	0.212	0.998	0.517
27	0.043	0.042	0.630	2.71	31.6	11.6	0.513	0.324	0.237	1.003	0.597
29	0.044	0.043	0.696	2.73	31.4	11.5	0.597	0.305	0.263	0.898	0.672
31	0.043	0.042	0.706	2.71	31.6	11.7	0.669	0.349	0.288	0.874	0.735
33	0.043	0.043	0.605	2.72	31.5	11.6	0.763	0.365	0.322	0.865	0.816
35	0.045	0.044	0.632	2.67	31.5	11.8	0.837	0.353	0.349	0.875	0.881
37	0.050	0.049	0.604	2.67	31.2	11.7	0.934	0.337	0.381	0.816	0.960
39	0.052	0.051	0.613	2.62	30.9	11.8	1.016	0.330	0.408	0.831	1.028
44	0.052	0.050	0.622	2.64	31.6	12.0	1.223	0.344	0.479	0.866	1.207
49	0.057	0.056	0.631	2.53	30.9	12.2	1.500	0.325	0.569	0.782	1.424
54	0.052	0.051	0.639	2.63	31.4	11.9	1.749	0.319	0.649	0.839	1.633
59	0.055	0.053	0.639	2.66	31.8	12.0	2.024	0.311	0.734	0.779	1.847
64	0.061	0.059	0.601	2.58	30.8	11.9	2.324	0.316	0.829	0.741	2.069
69	0.055	0.054	0.648	2.79	32.6	11.7	2.610	0.333	0.924	0.774	2.291
74	0.055	0.053	0.661	2.77	32.3	11.7	2.867	0.295	1.000	0.790	2.494
79	0.056	0.054	0.641	2.73	32.4	11.9	3.143	0.294	1.081	0.692	2.685
84	0.056	0.055	0.644	2.74	32.6	11.9	3.414	0.274	1.156	0.701	2.875
89	0.057	0.055	0.651	2.76	32.4	11.8	3.711	0.313	1.249	0.693	3.081
94	0.056	0.054	0.659	2.76	32.5	11.8	3.965	0.318	1.329	0.768	3.276
99	0.058	0.056	0.644	2.75	32.1	11.7	4.234	0.342	1.421	0.713	3.467
104	0.062	0.060	0.644	2.67	31.6	11.8	4.535	0.297	1.511	0.629	3.657
109	0.062	0.060	0.646	2.77	32.3	11.7	4.827	0.274	1.591	0.644	3.845
114	0.066	0.064	0.642	2.79	32.8	11.7	5.158	0.323	1.697	0.717	4.082
119	0.061	0.060	0.649	2.68	31.5	11.7	5.461	0.333	1.799	0.695	4.293
124	0.058	0.057	0.637	2.77	32.3	11.7	5.734	0.357	1.896	0.717	4.489
129	0.059	0.057	0.637	2.72	32.1	11.8	5.976	0.355	1.982	0.708	4.660
134	0.064	0.062	0.641	2.77	32.4	11.7	6.359	0.314	2.102	0.691	4.924
139	0.064	0.062	0.638	2.74	32.2	11.8	6.718	0.320	2.217	0.700	5.176
144	0.065	0.063	0.614	2.72	32.0	11.8	7.007	0.332	2.313	0.676	5.371

Survey Core, LA-23

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.024	0.023	0.651	2.28	33.8	14.8	0.108	0.255	0.028	0.639	0.069
10	0.077	0.075	0.677	2.50	37.1	14.9	0.428	0.136	0.071	0.369	0.187
15	0.085	0.082	0.690	2.33	35.7	15.3	0.822	0.144	0.128	0.318	0.312
20	0.079	0.076	0.715	2.58	37.3	14.5	1.186	0.134	0.177	0.325	0.431
25	0.096	0.092	0.536	1.89	31.5	16.7	1.616	0.110	0.224	0.462	0.630
30	0.221	0.196	0.127	.	.	.	2.730	0.063	0.294	0.248	0.906
35	0.183	0.166	0.203	0.69	18.8	27.0	3.662	0.151	0.435	0.459	1.333
40	0.207	0.186	0.237	0.98	19.9	20.3	4.703	0.182	0.624	0.634	1.994
45	0.339	0.284	0.154	0.64	16.5	25.8	6.399	0.192	0.950	0.869	3.468
50	0.517	0.396	0.061	0.28	13.5	48.3	8.803	0.086	1.157	0.363	4.340
55	0.453	0.357	0.064	0.34	13.9	40.9	11.213	0.072	1.330	0.285	5.027
60	0.397	0.322	0.070	0.36	14.1	39.3	13.350	0.075	1.490	0.284	5.634
65	0.378	0.309	0.070	0.37	13.3	35.9	15.125	0.064	1.604	0.324	6.209
70	0.393	0.319	0.065	0.32	12.6	39.3	17.131	0.066	1.736	0.302	6.815
75	0.416	0.334	0.065	0.35	13.2	37.8	19.362	0.058	1.866	0.303	7.491
80	0.519	0.397	0.051	0.30	12.2	40.6	21.924	0.059	2.017	0.329	8.334
85	0.548	0.414	0.051	0.32	12.0	37.5	24.617	0.053	2.160	0.301	9.144

Survey Core, LA-24

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.005	0.005	0.690	2.97	31.0	10.4	0.024	0.552	0.013	1.387	0.033
10	0.007	0.007	0.690	3.08	31.5	10.2	0.060	0.560	0.034	1.478	0.087
15	0.018	0.018	0.687	3.16	32.3	10.2	0.138	0.577	0.078	1.430	0.198
20	0.029	0.029	0.654	3.06	32.0	10.5	0.280	0.607	0.165	1.533	0.416
22	0.040	0.039	0.628	2.78	31.2	11.2	0.372	0.257	0.188	1.033	0.511
24	0.046	0.045	0.630	2.68	30.5	11.4	0.456	0.325	0.216	1.181	0.610
26	0.049	0.048	0.598	2.62	30.7	11.7	0.526	0.281	0.235	0.934	0.675
28	0.054	0.052	0.602	2.55	30.8	12.1	0.634	0.236	0.261	0.869	0.769
30	0.063	0.061	0.638	2.67	32.9	12.3	0.727	0.186	0.278	0.663	0.831
32	0.072	0.069	0.637	2.70	33.3	12.3	0.866	0.171	0.302	0.588	0.912
34	0.071	0.069	0.630	2.71	33.6	12.4	1.041	0.149	0.328	0.575	1.013
36	0.074	0.072	0.658	2.73	33.8	12.4	1.172	0.162	0.349	0.546	1.085
41	0.080	0.077	0.639	2.82	34.6	12.3	1.603	0.154	0.415	0.567	1.329
46	0.085	0.081	0.605	2.65	33.8	12.8	2.039	0.133	0.473	0.561	1.574
51	0.092	0.088	0.546	2.20	30.7	14.0	2.552	0.136	0.543	0.418	1.788
56	0.076	0.074	0.662	2.64	34.8	13.2	2.914	0.139	0.594	0.378	1.925
61	0.083	0.080	0.621	2.50	33.2	13.3	3.381	0.109	0.644	0.361	2.094
66	0.095	0.091	0.560	2.21	31.3	14.2	3.876	0.111	0.699	0.381	2.282
71	0.094	0.090	0.575	2.35	32.3	13.7	4.331	0.089	0.740	0.277	2.408
76	0.138	0.128	0.377	1.56	24.5	15.7	5.067	0.062	0.785	0.201	2.556
81	0.121	0.113	0.380	2.23	31.8	14.3	5.745	0.077	0.838	0.282	2.747
86	0.126	0.118	0.488	2.19	31.2	14.3	6.441	0.076	0.891	0.224	2.903
91	0.113	0.107	0.585	2.44	34.1	14.0	7.084	0.072	0.937	0.272	3.078
96	0.089	0.086	0.678	2.68	37.1	13.8	7.515	0.071	0.967	0.282	3.200
101	0.098	0.093	0.633	2.59	36.1	13.9	8.071	0.100	1.023	0.259	3.344
106	0.128	0.120	0.500	1.95	29.4	15.1	8.636	0.080	1.068	0.255	3.488
111	0.167	0.154	0.356	1.40	23.6	16.9	9.570	0.073	1.036	0.211	3.685
116	0.116	0.109	0.443	1.66	26.1	15.7	10.115	0.106	1.194	0.242	3.817
121	0.287	0.246	0.173	0.70	15.3	21.9	11.742	0.089	1.339	0.265	4.248

Survey Core, LA-25

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.015	0.015	0.676	3.11	32.1	10.3	0.081	0.640	0.052	1.339	0.124
10	0.022	0.022	0.675	3.13	32.3	10.3	0.188	0.702	0.127	1.541	0.290
12	0.027	0.027	0.624	2.73	31.0	11.4	0.230	0.523	0.149	1.218	0.341
14	0.046	0.045	0.501	2.21	27.5	12.4	0.340	0.353	0.188	1.138	0.466
16	0.100	0.095	0.309	1.31	20.9	15.9	0.531	0.246	0.235	0.912	0.640
18	0.112	0.105	0.393	1.60	24.8	15.5	0.757	0.352	0.314	0.914	0.847
20	0.104	0.099	0.559	2.19	31.7	14.5	0.942	0.155	0.343	0.408	0.922
22	0.104	0.099	0.592	2.26	32.7	14.5	1.138	0.146	0.372	0.408	1.002
27	0.101	0.096	0.593	2.37	34.0	14.4	1.604	0.161	0.447	0.399	1.188
32	0.100	0.095	0.630	2.50	36.2	14.5	2.120	0.153	0.526	0.360	1.374
37	0.101	0.096	0.620	2.49	34.8	14.0	2.604	0.166	0.606	0.403	1.569
42	0.107	0.102	0.578	2.31	33.1	14.3	3.117	0.128	0.672	0.443	1.796

Survey Core, LA-26

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.005	0.005	0.692	2.88	30.4	10.6	0.028	0.568	0.016	1.321	0.037
10	0.015	0.015	0.672	3.02	31.2	10.3	0.105	0.679	0.068	1.417	0.146
15	0.025	0.024	0.655	3.01	31.9	10.6	0.219	0.615	0.138	1.361	0.301
20	0.035	0.034	0.626	2.73	31.0	11.4	0.377	0.442	0.208	1.129	0.480
22	0.052	0.051	0.198	2.60	30.4	11.7	0.483	0.337	0.244	0.955	0.580
24	0.059	0.057	0.603	2.50	30.0	12.0	0.596	0.304	0.278	0.902	0.683
26	0.065	0.063	0.611	2.56	30.3	11.8	0.689	0.301	0.306	1.008	0.777
28	0.066	0.064	0.595	2.47	29.7	12.0	0.788	0.282	0.334	0.847	0.860
30	0.064	0.062	0.581	2.41	29.5	12.3	0.956	0.254	0.377	0.765	0.989
32	0.065	0.063	0.584	2.41	29.5	12.2	1.106	0.256	0.415	0.763	1.103
37	0.075	0.073	0.565	2.46	29.6	12.0	1.454	0.250	0.502	0.711	1.351
42	0.077	0.074	0.583	2.56	30.8	12.0	1.762	0.233	0.574	0.707	1.568
47	0.077	0.074	0.603	2.63	31.5	12.0	2.205	0.216	0.670	0.599	1.834
52	0.086	0.082	0.593	2.56	31.0	12.1	2.671	0.206	0.766	0.549	2.090
57	0.081	0.078	0.580	2.57	31.3	12.2	3.108	0.168	0.839	0.527	2.320

Survey Core, LA-27

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.014	0.014	0.670	2.75	31.6	11.5	0.067	0.561	0.037	1.256	0.084
10	0.033	0.033	0.542	2.21	28.8	13.0	0.269	0.389	0.116	0.853	0.256
14	0.079	0.076	0.513	2.02	30.6	15.2	0.644	0.165	0.178	0.374	0.396
16	0.074	0.072	0.695	2.42	36.5	15.1	0.871	0.131	0.208	0.348	0.475
21	0.090	0.086	0.654	2.26	34.4	15.2	1.369	0.144	0.279	0.465	0.707
26	0.095	0.090	0.633	2.53	35.2	13.9	1.916	0.105	0.337	0.280	0.860
31	0.134	0.125	0.407	1.39	22.0	15.8	2.655	0.105	0.414	0.255	1.049
36	1.148	0.681	0.025	0.08	1.0	13.8	9.653	0.043	0.715	0.375	3.673

Survey Core, LA-28

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.013	0.013	0.665	2.80	33.0	11.8	0.082	0.486	0.040	1.304	0.107
10	0.018	0.018	0.670	2.80	33.1	11.8	0.177	0.543	0.092	1.331	0.234
15	0.022	0.022	0.674	2.75	33.1	12.0	0.285	0.521	0.148	1.190	0.362
20	0.027	0.027	0.665	2.71	33.3	12.3	0.447	0.392	0.211	1.072	0.536
25	0.036	0.035	0.657	2.60	32.8	12.6	0.620	0.338	0.270	0.946	0.699
30	0.039	0.039	0.638	2.54	32.9	12.9	0.833	0.289	0.331	0.854	0.881
35	0.039	0.038	0.644	2.54	33.2	13.1	1.039	0.300	0.393	0.832	1.053
40	0.047	0.046	0.660	2.56	33.8	13.2	1.241	0.287	0.451	0.772	1.209
42	0.057	0.056	0.667	2.45	33.1	13.5	1.346	0.227	0.475	0.693	1.281
44	0.058	0.056	0.664	2.49	33.7	13.5	1.482	0.241	0.508	0.668	1.372
46	0.053	0.052	0.667	2.43	33.6	13.8	1.610	0.211	0.535	0.686	1.460
48	0.064	0.062	0.660	2.41	33.8	14.0	1.738	0.226	0.564	0.600	1.537
50	0.062	0.060	0.689	2.57	34.7	13.5	1.882	0.231	0.597	0.584	1.621
52	0.053	0.051	0.696	2.60	35.5	13.6	2.008	0.219	0.624	0.610	1.697
57	0.052	0.051	0.712	2.73	37.2	13.6	2.269	0.186	0.673	0.466	1.819
62	0.043	0.042	0.722	2.77	37.3	13.5	2.498	0.243	0.729	0.599	1.957
67	0.058	0.056	0.728	3.13	37.7	12.1	2.821	0.232	0.804	0.550	2.134
72	0.049	0.048	0.728	3.06	38.1	12.4	3.058	0.180	0.846	0.394	2.227
77	0.064	0.062	0.703	2.85	37.0	13.0	3.409	0.171	0.906	0.349	2.350
82	0.061	0.059	0.741	2.87	38.0	13.2	3.720	0.182	0.963	0.393	2.472
87	0.060	0.058	0.744	2.93	38.5	13.1	3.946	0.193	1.007	0.358	2.553
92	0.056	0.054	0.744	2.93	38.7	13.2	4.218	0.176	1.054	0.346	2.647
97	0.056	0.055	0.762	2.82	39.3	13.9	4.492	0.204	1.110	0.323	2.736
102	0.073	0.071	0.724	2.74	38.5	14.1	4.843	0.284	1.210	0.548	2.928
107	0.082	0.079	0.651	2.82	38.5	13.7	5.252	0.302	1.333	6.331	5.513
112	0.087	0.084	0.917	3.55	45.2	12.7	5.681	0.177	1.409	0.256	5.623
117	0.114	0.109	0.952	3.67	47.9	13.1	6.260	0.078	1.455	0.135	5.701
122	0.132	0.126	0.959	3.96	47.3	11.9	6.927	0.069	1.501	0.107	5.772

Survey Core, LA-29

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.011	0.011	0.693	3.27	32.4	9.9	0.041	0.584	0.024	1.521	0.062
10	0.018	0.017	0.700	3.21	32.8	10.2	0.130	0.678	0.084	1.573	0.203
15	0.023	0.022	0.692	3.10	32.5	10.5	0.252	0.586	0.156	1.541	0.391
20	0.027	0.027	0.661	2.94	32.0	10.9	0.410	0.413	0.221	1.117	0.567
25	0.035	0.035	0.651	2.86	32.3	11.3	0.624	0.292	0.284	0.946	0.770
30	0.046	0.045	0.605	2.88	31.7	11.0	0.839	0.266	0.341	0.894	0.961
35	0.045	0.044	0.631	2.84	31.6	11.1	1.072	0.246	0.398	0.857	1.161
40	0.046	0.045	0.637	2.81	31.7	11.3	1.287	0.281	0.459	0.936	1.363
45	0.050	0.049	0.645	2.92	32.3	11.1	1.544	0.290	0.533	1.049	1.632
50	0.053	0.051	0.651	3.02	34.3	11.4	1.789	0.233	0.590	0.809	1.830
55	0.056	0.055	0.674	3.01	33.7	11.2	2.072	0.272	0.667	0.876	2.078
57	0.062	0.060	0.607	2.55	31.9	12.5	2.177	0.253	0.694	0.655	2.147
59	0.063	0.061	0.681	2.84	34.8	12.3	2.349	0.206	0.729	0.592	2.249
61	0.061	0.059	0.694	2.93	36.0	12.3	2.434	0.193	0.746	0.514	2.292
63	0.060	0.059	0.699	2.91	35.8	12.3	2.551	0.184	0.767	0.517	2.353
65	0.065	0.063	0.681	2.90	35.6	12.3	2.718	0.220	0.804	0.439	2.426
70	0.079	0.076	0.622	2.83	34.9	12.3	3.113	0.240	0.899	0.706	2.706
75	0.066	0.064	0.715	2.95	36.5	12.4	3.441	0.497	1.062	1.039	3.046
80	0.067	0.065	0.728	3.02	37.2	12.3	3.760	0.211	1.129	0.448	3.189
85	0.068	0.066	0.727	3.04	37.4	12.3	4.130	0.232	1.215	0.527	3.384
90	0.069	0.067	0.728	3.12	39.0	12.5	4.430	0.214	1.279	0.507	3.536
95	0.067	0.065	0.735	3.08	38.7	12.6	4.761	0.207	1.347	0.465	3.690
100	0.067	0.065	0.742	2.98	37.4	12.6	5.071	0.238	1.421	0.476	3.837
105	0.066	0.064	0.746	3.11	39.0	12.5	5.382	0.247	1.498	0.505	3.995
110	0.065	0.063	0.745	3.09	38.9	12.6	5.733	0.228	1.578	0.502	4.171
115	0.074	0.072	0.722	2.99	37.4	12.5	6.149	0.206	1.664	0.463	4.364
120	0.064	0.062	0.730	3.07	38.9	12.7	6.430	0.246	1.733	0.496	4.503
125	0.070	0.068	0.745	2.99	37.7	12.6	6.764	0.229	1.809	0.483	4.664
130	0.084	0.081	0.753	2.69	34.3	12.8	7.191	0.221	1.904	0.454	4.858
135	0.064	0.062	0.718	2.92	37.6	12.9	7.513	0.231	1.978	0.471	5.010

Survey Core, LA-30

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.010	0.010	0.745	3.14	32.5	10.3	0.047	0.672	0.032	1.431	0.068
10	0.009	0.009	0.725	3.13	32.3	10.3	0.090	0.706	0.062	1.446	0.129
15	0.014	0.014	0.717	3.16	32.7	10.3	0.161	0.776	0.117	1.481	0.234
20	0.028	0.027	0.675	2.96	31.6	10.7	0.272	0.730	0.198	1.389	0.389
25	0.035	0.034	0.677	2.88	31.8	11.0	0.429	0.673	0.304	1.237	0.583
30	0.046	0.045	0.474	2.86	31.3	10.9	0.666	0.404	0.399	1.329	0.898
35	0.059	0.058	0.736	2.29	26.3	11.5	0.976	0.249	0.477	0.751	1.131
37	0.043	0.042	0.656	2.77	32.1	11.6	1.043	0.377	0.502	0.925	1.192
39	0.043	0.042	0.647	2.75	31.8	11.6	1.147	0.403	0.544	0.925	1.289
41	0.045	0.044	0.656	2.72	31.5	11.6	1.212	0.411	0.571	0.896	1.347
43	0.046	0.045	0.652	2.70	31.4	11.6	1.303	0.329	0.600	0.878	1.427
45	0.049	0.048	0.609	2.71	31.7	11.7	1.401	0.384	0.638	0.904	1.516
47	0.049	0.048	0.637	2.70	32.4	12.0	1.502	0.257	0.664	0.794	1.596
52	0.053	0.052	0.644	2.60	31.4	12.1	1.769	0.207	0.719	0.757	1.798
57	0.058	0.056	0.668	2.69	31.9	11.9	2.043	0.325	0.808	0.827	2.024
62	0.060	0.058	0.683	2.63	31.3	11.9	2.343	0.339	0.910	0.801	2.264
67	0.054	0.052	0.661	2.83	33.9	12.0	2.603	0.248	0.975	0.735	2.456
72	0.054	0.053	0.672	2.86	34.2	12.0	2.882	0.257	1.046	0.704	2.652
77	0.057	0.056	0.667	2.80	33.4	11.9	3.143	0.226	1.105	0.584	2.805
82	0.062	0.061	0.659	2.81	34.2	12.2	3.477	0.225	1.180	0.564	2.993
87	0.068	0.066	0.699	2.84	36.1	12.7	3.826	0.210	1.254	0.513	3.172
92	0.073	0.071	0.678	2.83	36.0	12.7	4.171	0.189	1.319	0.528	3.354
97	0.074	0.072	0.685	2.65	33.6	12.7	4.545	0.172	1.383	0.462	3.527
102	0.069	0.067	0.720	2.82	35.7	12.7	4.879	0.184	1.445	0.421	3.668
107	0.076	0.073	0.681	2.77	35.7	12.9	5.288	0.182	1.519	0.479	3.864
112	0.096	0.092	0.668	2.75	35.2	12.8	5.727	0.239	1.624	0.569	4.113
117	0.086	0.083	0.658	2.70	35.4	13.1	6.129	0.172	1.693	0.432	4.287
122	0.085	0.081	0.704	2.82	36.9	13.1	6.565	0.170	1.767	0.440	4.479
127	0.086	0.083	0.681	2.70	36.3	13.4	6.913	0.187	1.832	0.479	4.646
132	0.078	0.075	0.714	2.77	37.3	13.5	7.223	0.206	1.896	0.481	4.794
137	0.082	0.079	0.723	2.79	37.4	13.4	7.649	0.189	1.977	0.442	4.983
142	0.097	0.093	0.663	2.54	34.8	13.7	8.173	0.168	2.065	0.410	5.198
147	0.123	0.116	0.618	2.40	33.3	13.9	8.780	0.172	2.169	0.391	5.435
152	0.102	0.097	0.661	2.56	35.5	13.9	9.247	0.167	2.247	0.389	5.617

Survey Core, LA-31

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.009	0.009	0.672	2.94	31.0	10.5	0.049	0.634	0.031	1.311	0.064
10	0.019	0.019	0.667	3.05	32.0	10.5	0.151	0.693	0.101	1.419	0.208
15	0.028	0.028	0.644	2.85	31.7	11.1	0.275	0.675	0.185	1.241	0.362
20	0.040	0.040	0.620	2.77	31.7	11.4	0.501	0.510	0.300	1.198	0.633
22	0.022	0.022	0.636	2.62	30.8	11.8	0.608	0.607	0.365	1.149	0.756
24	0.023	0.023	0.596	2.51	29.5	11.8	0.706	0.398	0.405	1.125	0.867
26	0.035	0.035	0.538	2.34	28.4	12.1	0.842	0.524	0.476	1.248	1.037
29	0.031	0.030	0.536	2.34	28.4	12.1	0.968	0.549	0.545	1.113	1.177
31	0.049	0.047	0.519	2.39	28.3	11.8	1.121	0.569	0.632	1.144	1.352
33	0.048	0.047	0.460	1.98	25.4	12.8	1.244	0.487	0.692	1.041	1.480
35	0.067	0.065	0.463	1.84	24.2	13.1	1.409	0.483	0.772	0.825	1.616
37	0.071	0.068	0.438	1.76	23.5	13.4	1.580	0.691	0.889	1.002	1.787
39	0.060	0.059	0.433	1.72	24.1	14.0	1.813	0.553	1.019	0.847	1.985
41	0.058	0.056	0.595	2.33	30.9	13.2	1.977	0.426	1.088	0.668	2.094
43	0.064	0.062	0.609	2.34	31.6	13.5	2.151	0.437	1.164	0.646	2.207
45	0.059	0.057	0.613	2.39	32.3	13.5	2.318	0.423	1.235	0.530	2.295
50	0.104	0.099	0.621	2.52	34.0	13.5	2.759	0.197	1.322	0.530	2.529
55	0.094	0.090	0.653	2.55	35.0	13.7	3.201	0.260	1.437	0.435	2.721
60	0.099	0.095	0.652	2.37	32.9	13.9	3.670	0.252	1.555	0.435	2.925
65	0.078	0.075	0.655	2.56	35.6	13.9	4.079	0.205	1.639	0.482	3.122
70	0.096	0.092	0.700	2.58	35.8	13.9	4.589	0.162	1.722	0.388	3.320

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.011	0.011	0.687	2.84	32.3	11.4	0.059	0.508	0.030	1.352	0.079
10	0.015	0.015	0.656	2.73	32.0	11.8	0.150	0.560	0.081	1.315	0.200
15	0.033	0.033	0.635	2.71	32.4	12.0	0.310	0.525	0.165	1.142	0.383
20	0.045	0.044	0.591	2.35	31.2	13.3	0.565	0.322	0.247	0.936	0.621
22	0.058	0.057	0.626	2.31	31.9	13.8	0.675	0.183	0.267	0.606	0.688
24	0.063	0.062	0.621	2.34	31.7	13.6	0.803	0.198	0.293	0.564	0.760
26	0.072	0.070	0.613	2.24	31.0	13.9	0.968	0.153	0.318	0.509	0.844
28	0.075	0.073	0.606	2.26	31.4	13.9	1.087	0.173	0.338	0.541	0.908
31	0.079	0.076	0.607	2.24	31.4	14.0	1.300	0.199	0.381	0.516	1.018
33	0.076	0.074	0.627	2.42	32.5	13.4	1.455	0.163	0.406	0.526	1.100
35	0.078	0.075	0.637	2.46	33.4	13.6	1.633	0.191	0.440	0.529	1.194
40	0.085	0.082	0.619	2.50	34.0	13.6	2.034	0.160	0.504	0.495	1.392
42	0.089	0.085	0.558	2.19	31.4	14.3	2.309	0.159	0.548	0.476	1.523
45	0.094	0.090	0.668	1.85	29.1	15.7	2.505	0.165	0.580	0.558	1.633
48	0.088	0.084	0.647	2.33	34.1	14.6	2.734	0.165	0.618	0.453	1.736
50	0.075	0.073	0.669	2.33	35.1	15.0	2.947	0.121	0.644	0.407	1.823
55	0.082	0.079	0.630	2.47	33.0	13.4	3.344	0.186	0.718	0.372	1.971
61	0.094	0.090	0.573	2.29	31.1	13.6	3.863	0.168	0.805	0.427	2.192
65	0.110	0.104	0.494	2.01	28.6	14.2	4.319	0.185	0.889	0.425	2.386
70	0.162	0.149	0.316	1.37	22.6	16.5	5.184	0.200	1.062	0.484	2.805
75	0.140	0.131	0.458	1.86	28.3	15.2	5.908	0.165	1.182	0.394	3.090
80	0.118	0.111	0.555	2.19	31.9	14.6	6.504	0.133	1.261	0.314	3.277
85	0.090	0.086	0.644	2.62	36.4	13.9	6.965	0.157	1.333	0.318	3.424
90	0.095	0.091	0.642	2.50	35.0	14.0	7.429	0.155	1.405	0.293	3.560
95	0.120	0.113	0.479	1.82	27.6	15.2	8.033	0.168	1.507	1.191	4.278
100	0.239	0.211	0.240	0.87	18.9	21.7	9.298	0.100	1.633	0.408	4.795
105	0.234	0.207	0.252	0.91	19.4	21.3	10.420	0.086	1.730	0.563	5.426
110	0.160	0.147	0.340	1.29	23.7	18.4	11.235	0.071	1.788	0.301	5.672
115	0.143	0.133	0.379	1.43	24.8	17.4	11.998	0.077	1.846	0.263	5.872

Survey Core, LA-33

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.005	0.005	0.725	3.07	31.7	10.3	0.023	0.590	0.014	1.566	0.036
10	0.012	0.012	0.713	3.23	32.7	10.1	0.082	0.650	0.052	1.643	0.132
15	0.023	0.023	0.690	3.28	33.3	10.1	0.201	0.688	0.134	1.566	0.319
20	0.027	0.026	0.679	3.25	32.9	10.1	0.322	0.663	0.214	1.426	0.492
22	0.036	0.035	0.667	3.06	32.3	10.6	0.372	0.568	0.242	1.506	0.567
25	0.039	0.038	0.645	2.88	32.0	11.1	0.493	0.352	0.285	1.093	0.699
27	0.046	0.045	0.611	2.70	31.2	11.6	0.596	0.214	0.307	0.961	0.798
29	0.048	0.047	0.622	2.65	30.5	11.5	0.680	0.238	0.327	0.807	0.866
31	0.051	0.050	0.624	2.68	31.7	11.8	0.814	0.241	0.359	0.850	0.980
33	0.052	0.051	0.615	2.57	30.5	11.8	0.887	0.240	0.377	0.734	1.034
35	0.056	0.054	0.618	2.65	31.4	11.9	1.003	0.174	0.397	0.745	1.120
37	0.065	0.063	0.626	2.60	31.5	12.1	1.110	0.182	0.417	0.632	1.188
42	0.065	0.063	0.600	2.66	32.9	12.4	1.466	0.187	0.483	0.629	1.412
47	0.066	0.064	0.647	2.69	35.2	13.1	1.779	0.287	0.573	0.833	1.672
52	0.075	0.072	0.627	2.66	35.2	13.2	2.142	0.141	0.624	0.442	1.832
57	0.074	0.071	0.660	2.58	34.2	13.3	2.497	0.096	0.658	0.287	1.934
62	0.079	0.077	0.678	2.65	35.2	13.3	2.926	0.110	0.705	0.276	2.053
67	0.090	0.086	0.645	2.52	33.7	13.4	3.378	0.098	0.750	0.284	2.181
72	0.085	0.082	0.651	2.53	34.3	13.5	3.799	0.088	0.787	0.297	2.306
77	0.085	0.082	0.682	2.67	36.4	13.6	4.200	0.112	0.831	0.297	2.425
82	0.081	0.078	0.704	2.70	36.6	13.5	4.598	0.097	0.870	0.269	2.532
87	0.080	0.077	0.708	2.70	36.6	13.6	5.026	0.090	0.909	0.280	2.652
92	0.081	0.078	0.699	2.68	36.4	13.6	5.421	0.100	0.948	0.288	2.766
97	0.087	0.084	0.652	2.50	34.4	13.8	5.874	0.098	0.993	0.270	2.888
102	0.085	0.082	0.653	2.50	34.5	13.8	6.293	0.097	1.033	0.276	3.004
107	0.086	0.083	0.752	2.81	39.3	14.0	6.728	0.106	1.079	0.279	3.125
112	0.089	0.086	0.766	2.87	40.1	14.0	7.205	0.113	1.133	0.280	3.259
117	0.090	0.086	0.744	2.79	39.0	14.0	7.620	0.114	1.181	0.274	3.373
122	0.090	0.087	0.740	2.76	38.7	14.0	8.097	0.119	1.237	0.333	3.531
127	0.118	0.111	0.568	2.27	31.7	14.0	8.563	0.146	1.305	0.469	3.750
132	0.092	0.088	0.680	2.45	34.9	14.2	9.020	0.126	1.363	0.315	3.894

Survey Core, LA-34

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.011	0.011	0.683	3.05	31.3	10.3	0.055	0.605	0.033	1.477	0.081
10	0.021	0.021	0.651	3.13	32.1	10.3	0.159	0.651	0.101	1.578	0.246
15	0.035	0.035	0.645	2.94	33.1	11.3	0.330	0.421	0.173	1.037	0.423
17	0.050	0.049	0.658	2.87	33.3	11.6	0.472	0.311	0.217	0.897	0.550
19	0.054	0.053	0.644	2.85	33.1	11.6	0.582	0.268	0.247	0.859	0.645
21	0.059	0.057	0.684	2.91	33.9	11.6	0.686	0.235	0.271	0.719	0.720
23	0.057	0.056	0.659	2.87	33.4	11.6	0.795	0.260	0.300	0.882	0.816
25	0.062	0.060	0.645	2.83	33.8	11.9	0.959	0.182	0.329	0.650	0.922
27	0.065	0.063	0.712	3.05	36.1	11.8	1.091	0.154	0.350	0.511	0.990
29	0.063	0.061	0.707	3.07	36.3	11.8	1.232	0.172	0.374	0.529	1.064
31	0.074	0.071	0.661	2.86	34.4	12.0	1.375	0.170	0.398	0.568	1.145
36	0.094	0.090	0.612	2.46	31.7	12.9	1.907	0.181	0.494	0.775	1.558
41	0.085	0.082	0.714	2.83	39.4	13.9	2.295	0.160	0.557	0.380	1.705
46	0.089	0.085	0.720	2.82	39.4	14.0	2.656	0.203	0.630	0.401	1.850
51	0.059	0.058	0.695	2.80	38.5	13.8	2.947	0.209	0.691	0.449	1.981
56	0.083	0.080	0.741	2.81	39.1	13.9	3.345	0.158	0.754	0.327	2.111
61	0.088	0.085	0.735	2.80	39.8	14.2	3.781	0.187	0.835	0.305	2.244
66	0.083	0.080	0.636	2.60	37.4	14.4	4.190	0.171	0.905	0.350	2.387
67	0.054	0.053	0.533	2.06	30.2	14.6	4.455	0.222	0.964	0.538	2.529
71	0.087	0.083	0.448	2.81	38.5	13.7	4.881	0.156	1.030	0.542	2.760
76	0.110	0.105	0.844	3.36	48.3	14.4	5.450	0.127	1.103	0.286	2.923

Survey Core, LA-35

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	.	.	0.595	2.53	27.4	10.8	0.050	0.502	0.025	1.166	0.059
10	.	.	0.585	2.62	27.8	10.6	0.226	0.544	0.121	1.249	0.279
15	.	.	0.534	2.54	27.8	10.9	0.361	0.527	0.192	1.114	0.429
20	.	.	0.359	1.57	19.0	12.1	0.654	0.337	0.291	0.783	0.658
25	.	.	0.236	1.16	15.3	13.2	1.332	0.237	0.451	0.527	1.015
30	.	.	0.137	0.59	8.6	14.5	3.066	0.229	0.849	0.985	2.723
35	.	.	0.366	1.49	21.1	14.2	3.972	0.121	0.958	0.254	2.953
40	.	.	0.529	2.68	37.9	14.1	4.828	0.096	1.040	0.121	3.057

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.003	0.003	0.734	3.16	31.9	10.1	0.015	0.576	0.008	1.623	0.024
10	0.009	0.009	0.743	3.43	33.8	9.8	0.058	0.680	0.038	1.710	0.098
15	0.014	0.014	0.719	3.42	34.0	9.9	0.129	0.761	0.092	1.621	0.213
20	0.018	0.018	0.706	3.35	34.4	10.3	0.215	0.794	0.160	1.779	0.366
25	0.023	0.023	0.694	3.24	33.7	10.4	0.347	0.692	0.251	1.563	0.572
30	0.026	0.026	0.679	3.13	33.1	10.6	0.472	0.508	0.315	1.373	0.744
35	0.034	0.033	0.667	3.07	32.9	10.7	0.623	0.504	0.391	1.327	0.944
40	0.037	0.036	0.653	3.05	33.0	10.8	0.797	0.470	0.473	1.220	1.156
45	0.040	0.040	0.643	3.00	32.8	10.9	1.008	0.420	0.561	1.160	1.401
50	0.043	0.042	0.636	2.92	32.5	11.1	1.228	0.353	0.639	1.072	1.638
52	0.046	0.045	0.659	2.82	32.9	11.7	1.324	0.317	0.670	0.915	1.725
54	0.050	0.049	0.699	2.99	34.5	11.5	1.423	0.457	0.715	1.144	1.838
56	0.047	0.046	0.728	3.20	35.9	11.2	1.500	0.303	0.738	1.105	1.923
58	0.047	0.046	0.744	3.21	36.6	11.4	1.588	0.400	0.773	0.919	2.004
60	0.050	0.048	0.741	3.17	36.6	11.5	1.671	0.254	0.794	0.591	2.053
65	0.055	0.053	0.730	3.18	37.4	11.8	1.973	0.214	0.859	0.586	2.230
70	0.062	0.060	0.693	3.06	36.4	11.9	2.286	0.232	0.931	0.648	2.433
75	0.063	0.061	0.705	3.02	36.3	12.0	2.625	0.162	0.987	0.516	2.608
80	0.060	0.058	0.708	2.96	37.5	12.7	2.905	0.143	1.027	0.579	2.770
85	0.059	0.058	0.721	2.96	37.2	12.6	3.197	0.167	1.075	0.461	2.904
90	0.061	0.059	0.722	3.02	37.9	12.5	3.508	0.176	1.130	0.483	3.055
95	0.058	0.057	0.737	2.95	36.5	12.4	3.804	0.183	1.184	0.537	3.214
100	0.059	0.057	0.727	3.09	38.2	12.3	4.108	0.235	1.256	0.488	3.362
105	0.058	0.057	0.731	3.06	38.1	12.4	4.372	0.227	1.316	0.493	3.492
110	0.059	0.057	0.734	3.09	38.3	12.4	4.674	0.176	1.369	0.518	3.648
115	0.058	0.057	0.733	2.95	37.4	12.7	4.964	0.197	1.426	0.469	3.785
120	0.060	0.058	0.731	3.04	38.5	12.6	5.293	0.201	1.492	0.483	3.943
125	0.059	0.058	0.720	3.02	37.9	12.6	5.575	0.446	1.618	1.179	4.276
130	0.060	0.058	0.720	3.02	37.7	12.5	5.854	0.253	1.688	0.504	4.416
135	0.062	0.060	0.718	3.00	38.0	12.7	6.150	0.243	1.760	0.634	4.604
140	0.064	0.062	0.720	3.04	38.6	12.7	6.502	0.282	1.860	0.793	4.884

Survey Core, LA-37

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.008	0.008	0.735	3.27	32.2	9.9	0.037	0.575	0.022	1.594	0.060
10	0.014	0.014	0.715	3.38	32.8	9.7	0.102	0.643	0.063	1.665	0.168
15	0.019	0.019	0.696	3.48	33.0	9.5	0.190	0.779	0.132	1.706	0.318
20	0.020	0.020	0.699	3.53	32.9	9.3	0.285	0.895	0.217	1.861	0.495
25	0.026	0.026	0.684	3.41	33.0	9.7	0.427	0.792	0.329	1.841	0.756
30	0.028	0.028	0.668	3.23	32.4	10.0	0.561	0.573	0.406	1.555	0.963
35	0.031	0.031	0.644	3.20	31.8	9.9	0.719	0.627	0.505	1.433	1.190
40	0.037	0.036	0.641	3.20	31.8	9.9	0.890	0.462	0.584	1.490	1.445
45	0.042	0.041	0.625	3.11	31.8	10.2	1.097	0.427	0.672	1.101	1.673
50	0.043	0.042	0.611	2.94	30.4	10.4	1.275	0.446	0.752	1.239	1.893
55	0.041	0.040	0.628	3.10	31.4	10.1	1.483	0.587	0.874	1.421	2.190
60	0.044	0.043	0.630	3.17	31.5	9.9	1.706	0.531	0.993	1.466	2.517
65	0.042	0.041	0.621	3.04	31.0	10.2	1.913	0.568	1.110	1.457	2.818
70	0.041	0.040	0.623	3.02	31.0	10.3	2.097	0.554	1.212	1.484	3.091
75	0.041	0.040	0.634	2.82	31.5	11.2	2.289	0.546	1.317	1.211	3.323
80	0.043	0.042	0.631	2.79	31.4	11.3	2.479	0.598	1.430	1.189	3.549
85	0.046	0.045	0.627	2.82	31.7	11.2	2.711	0.533	1.554	1.204	3.829
90	0.049	0.048	0.632	2.76	31.6	11.5	2.935	0.524	1.671	1.076	4.070
95	0.050	0.049	0.620	2.72	31.2	11.5	3.173	0.515	1.794	1.071	4.324
100	0.051	0.050	0.630	2.79	31.8	11.4	3.429	0.499	1.921	1.062	4.596
105	0.058	0.056	0.628	2.73	32.2	11.8	3.755	0.413	2.056	0.807	4.859
110	0.082	0.079	0.725	2.60	30.6	11.8	4.196	0.299	2.188	0.694	5.165
115	0.070	0.067	0.657	2.94	34.6	11.8	4.530	0.319	2.295	0.709	5.402
120	0.083	0.080	0.691	2.80	33.4	11.9	4.909	0.385	2.441	0.928	5.754
125	0.069	0.067	0.656	2.85	34.4	12.1	5.345	0.344	2.591	0.757	6.084
130	0.065	0.063	0.685	3.08	36.4	11.8	5.671	0.354	2.706	0.772	6.335
135	0.059	0.058	0.673	2.97	35.3	11.9	5.923	0.335	2.790	0.718	6.516
140	0.069	0.067	0.688	3.01	35.7	11.8	6.285	0.324	2.908	0.711	6.774
145	0.062	0.060	0.695	3.11	36.6	11.8	6.588	0.373	3.021	0.793	7.015

Survey Core, LA-38

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	.	.	0.678	3.15	32.0	10.2	0.060	0.618	0.037	1.490	0.089
10	.	.	0.687	3.26	33.1	10.1	0.158	0.719	0.108	1.665	0.253
15	.	.	0.668	3.06	32.2	10.5	0.271	0.588	0.174	1.435	0.414
20	.	.	0.639	2.92	32.1	11.0	0.449	0.415	0.248	1.133	0.616
22	.	.	0.640	2.84	31.6	11.1	0.537	0.432	0.286	1.071	0.711
24	.	.	0.634	2.79	31.1	11.2	0.616	0.400	0.317	0.975	0.788
26	.	.	0.638	2.79	31.3	11.2	0.697	0.466	0.355	1.021	0.871
28	.	.	0.631	2.83	31.8	11.2	0.800	0.331	0.389	1.025	0.976
30	.	.	0.627	2.67	30.7	11.5	0.891	0.358	0.422	0.931	1.060
35	.	.	0.604	2.73	31.6	11.6	1.121	0.346	0.502	0.949	1.279
40	.	.	0.585	2.63	30.9	11.8	1.383	0.264	0.571	0.912	1.518
45	.	.	0.565	2.44	30.6	12.5	1.692	0.279	0.657	0.865	1.785
50	.	.	0.573	2.32	32.6	14.1	2.141	0.207	0.750	0.556	2.035
55	.	.	0.582	2.35	31.4	13.3	2.464	0.219	0.821	0.694	2.259
60	.	.	0.568	2.34	31.4	13.4	2.863	0.244	0.918	0.686	2.533
65	.	.	0.710	2.78	38.4	13.8	3.291	0.239	1.020	0.467	2.732
70	.	.	0.766	2.98	40.2	13.5	3.670	0.139	1.073	0.349	2.865
75	.	.	0.758	2.88	39.3	13.6	4.079	0.151	1.135	0.340	3.004
80	.	.	0.747	2.78	38.3	13.8	4.468	0.137	1.188	0.330	3.132
85	.	.	0.713	2.74	37.9	13.8	4.889	0.150	1.251	0.311	3.263
90	.	.	0.707	2.69	37.2	13.8	5.308	0.127	1.304	0.308	3.392
95	.	.	0.706	2.68	37.5	14.0	5.757	0.137	1.366	0.313	3.533
100	.	.	0.706	2.68	37.6	14.0	6.180	0.137	1.424	0.326	3.671
105	.	.	0.609	2.21	32.2	14.6	6.704	0.142	1.498	0.420	3.891
110	.	.	0.281	1.08	21.1	19.6	7.539	0.112	1.592	0.683	4.461
115	.	.	0.318	1.14	21.2	18.6	8.659	0.287	1.913	0.696	5.240
120	.	.	0.517	1.89	28.8	15.2	9.321	0.167	2.024	0.365	5.482
125	.	.	0.495	1.69	26.8	15.9	10.117	0.173	2.161	0.372	5.778

Survey Core, LA-39

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.015	0.015	0.691	3.13	31.8	10.2	0.065	0.670	0.044	1.566	0.102
10	0.022	0.022	0.619	3.05	31.0	10.2	0.192	0.640	0.125	1.697	0.317
15	0.028	0.028	0.616	3.01	31.7	10.5	0.322	0.606	0.204	1.420	0.502
20	0.031	0.030	0.605	2.89	30.9	10.7	0.472	0.527	0.283	1.349	0.704
22	0.049	0.048	0.484	2.27	25.3	11.1	0.581	0.370	0.323	1.027	0.816
24	0.074	0.071	0.398	1.75	21.1	12.0	0.732	0.228	0.357	0.716	0.924
26	0.084	0.081	0.430	2.05	25.3	12.3	0.949	0.344	0.432	0.868	1.112
28	0.072	0.069	0.570	2.44	31.5	12.9	1.121	0.217	0.469	0.573	1.211
30	0.067	0.065	0.636	2.61	33.4	12.8	1.293	0.233	0.509	0.481	1.294
32	0.066	0.064	0.663	2.70	34.9	12.9	1.460	0.207	0.544	0.484	1.374
37	0.068	0.065	0.673	2.78	36.2	13.0	1.842	0.199	0.620	0.454	1.548
42	0.066	0.064	0.685	2.83	36.7	13.0	2.191	0.172	0.680	0.437	1.700
47	0.067	0.065	0.679	2.86	37.4	13.1	2.541	0.198	0.749	0.433	1.852
52	0.072	0.069	0.684	2.72	35.8	13.2	2.894	0.134	0.797	0.390	1.990
57	0.073	0.071	0.681	2.73	36.0	13.2	3.265	0.138	0.848	0.385	2.133
62	0.074	0.071	0.678	2.71	35.8	13.2	3.638	0.133	0.897	0.395	2.280
67	0.075	0.073	0.679	2.70	35.7	13.2	4.036	0.142	0.954	0.398	2.438
72	0.077	0.074	0.675	2.64	35.1	13.3	4.408	0.133	1.003	0.376	2.578
77	0.109	0.103	0.515	1.99	26.9	13.5	4.955	0.113	1.065	0.326	2.756
82	0.106	0.101	0.649	2.42	33.9	14.0	5.490	0.124	1.132	0.357	2.947
87	0.105	0.100	0.686	2.59	36.2	14.0	6.041	0.117	1.196	0.303	3.114
92	0.104	0.099	0.701	2.63	36.5	13.9	6.555	0.133	1.264	0.435	3.338
97	0.095	0.091	0.700	2.70	37.6	13.9	7.036	0.126	1.325	0.324	3.494
102	0.049	0.048	0.709	2.64	36.5	13.8	7.289	0.111	1.353	0.289	3.567
107	0.098	0.093	0.695	2.57	35.7	13.9	7.733	0.116	1.405	0.318	3.708
112	0.092	0.088	0.685	2.57	35.7	13.9	8.161	0.097	1.446	0.320	3.845
117	0.209	0.188	0.355	1.37	19.2	14.0	9.258	0.086	1.540	0.332	4.209
122	0.251	0.220	0.323	1.83	25.4	13.9	10.498	0.134	1.707	0.358	4.653
127	0.817	0.553	0.108	0.40	7.1	17.7	14.850	0.332	3.152	0.542	7.012

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.008	0.008	0.724	2.93	31.5	10.7	0.028	0.510	0.014	1.338	0.037
10	0.016	0.016	0.687	2.93	31.5	10.7	0.061	0.554	0.033	1.318	0.081
15	0.015	0.015	0.680	2.94	31.5	10.7	0.100	0.502	0.052	1.321	0.132
20	0.017	0.017	0.665	3.07	32.1	10.5	0.189	0.628	0.108	1.439	0.260
25	0.036	0.035	0.597	2.77	30.2	10.9	0.366	0.506	0.198	1.271	0.486
27	0.025	0.025	0.573	2.52	28.4	11.3	0.467	0.406	0.239	1.075	0.594
29	0.021	0.021	0.539	2.27	26.6	11.7	0.576	0.336	0.275	0.917	0.694
31	0.026	0.025	0.531	2.22	26.7	12.0	0.682	0.329	0.310	0.827	0.782
33	0.034	0.034	0.524	2.07	26.0	12.5	0.819	0.335	0.356	0.722	0.881
35	0.057	0.055	0.547	2.36	29.6	12.6	1.011	0.325	0.418	0.647	1.005
37	0.061	0.059	0.639	2.55	33.0	12.9	1.139	0.373	0.466	0.642	1.087
39	0.065	0.063	0.612	2.48	31.6	12.8	1.282	0.297	0.509	0.506	1.159
41	0.065	0.063	0.655	2.68	34.3	12.8	1.419	0.428	0.567	0.675	1.252
46	0.064	0.062	0.632	2.71	35.1	13.0	1.794	0.321	0.688	0.513	1.444
51	0.070	0.068	0.675	2.76	36.6	13.3	2.166	0.294	0.797	0.422	1.601
56	0.067	0.065	0.686	2.81	37.6	13.4	2.501	0.260	0.884	0.426	1.744
61	0.076	0.073	0.669	2.74	36.6	13.4	2.858	0.183	0.949	0.368	1.875
66	0.064	0.062	0.902	2.68	37.1	13.8	3.168	0.201	1.012	0.358	1.986
71	0.096	0.092	0.673	2.67	39.6	14.8	3.655	0.215	1.117	0.521	2.240
76	0.188	0.174	0.882	2.79	43.1	15.5	4.583	0.203	1.305	0.205	2.430
81	0.174	0.163	0.899	3.23	49.4	15.3	5.431	0.106	1.395	0.134	2.544
86	0.165	0.154	0.900	3.32	50.4	15.2	6.183	0.088	1.461	0.106	2.624

Survey Core, LA-41

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.013	0.013	0.721	3.37	33.7	10.0	0.068	0.683	0.047	1.641	0.112
10	0.028	0.027	0.679	3.24	32.7	10.1	0.235	0.590	0.145	1.819	0.415
15	0.020	0.020	0.689	3.38	34.0	10.1	0.333	0.729	0.217	1.822	0.595
20	0.035	0.035	0.675	3.06	32.9	10.8	0.542	0.340	0.288	1.363	0.879
25	0.038	0.037	0.676	2.87	32.0	11.2	0.729	0.285	0.341	1.109	1.086
30	0.059	0.057	0.761	2.15	24.7	11.5	1.054	0.179	0.399	0.861	1.366
32	0.053	0.052	0.651	2.64	33.1	12.5	1.161	0.208	0.421	0.602	1.431
34	0.053	0.052	0.700	2.78	35.4	12.7	1.269	0.157	0.438	0.624	1.498
36	0.059	0.057	0.703	2.80	35.7	12.8	1.390	0.176	0.460	0.513	1.560
38	0.061	0.059	0.692	2.83	35.9	12.7	1.533	0.164	0.483	0.482	1.629
40	0.062	0.060	0.717	2.78	35.5	12.8	1.654	0.163	0.503	0.469	1.686
45	0.077	0.075	0.758	2.60	33.0	12.7	2.046	0.137	0.556	0.420	1.850
50	0.098	0.094	0.708	2.96	37.9	12.8	2.547	0.150	0.632	0.583	2.143
55	0.068	0.066	0.699	2.76	35.5	12.9	2.862	0.187	0.690	0.496	2.299
60	0.067	0.065	0.702	2.81	36.7	13.1	3.218	0.158	0.747	0.475	2.468
65	0.073	0.071	0.679	2.67	35.2	13.2	3.596	0.153	0.805	0.526	2.667
70	0.067	0.065	0.704	2.88	37.7	13.1	3.907	0.159	0.854	0.354	2.777
75	0.069	0.067	0.703	2.86	37.5	13.1	4.148	0.126	0.884	0.381	2.869
80	0.071	0.068	0.709	2.79	36.6	13.1	4.522	0.094	0.920	0.374	3.008
85	0.074	0.072	0.705	2.78	36.7	13.2	4.882	0.091	0.952	0.320	3.124
90	0.073	0.071	0.725	2.77	36.7	13.3	5.251	0.079	0.981	0.291	3.231
95	0.081	0.078	0.688	2.66	36.0	13.5	5.629	0.147	1.037	0.571	3.447
100	0.090	0.086	0.612	2.26	32.1	14.2	6.091	0.185	1.122	0.777	3.806
105	0.086	0.082	0.721	2.52	35.0	13.9	6.485	0.108	1.165	0.417	3.970
110	0.081	0.078	0.708	2.73	37.2	13.6	6.907	0.131	1.220	0.537	4.196
115	0.077	0.074	0.738	2.85	39.2	13.7	7.346	0.082	1.256	0.429	4.385
120	0.078	0.075	0.734	2.91	39.4	13.5	7.777	0.099	1.299	0.474	4.589
125	0.077	0.075	0.753	2.87	39.1	13.6	8.127	0.082	1.328	0.346	4.710
130	0.078	0.075	0.753	2.91	39.8	13.7	8.525	0.085	1.361	0.416	4.876
135	0.080	0.078	0.766	2.84	38.6	13.6	8.813	0.089	1.387	0.440	5.002
140	0.082	0.079	0.754	2.95	40.2	13.6	9.208	0.086	1.421	0.427	5.171
145	0.085	0.082	0.757	2.90	39.5	13.6	9.641	0.089	1.460	0.490	5.383

Survey Core, LA-42

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.010	0.010	0.732	3.28	32.6	10.0	0.060	0.691	0.041	1.712	0.102
10	0.014	0.014	0.726	3.41	33.4	9.8	0.138	0.859	0.108	1.909	0.251
15	0.021	0.021	0.683	3.22	33.0	10.2	0.246	0.801	0.195	1.579	0.422
20	0.030	0.029	0.667	3.08	32.6	10.6	0.404	0.458	0.267	1.338	0.634
25	0.036	0.036	0.653	2.91	31.9	11.0	0.592	0.427	0.348	1.177	0.855
27	0.056	0.055	0.644	2.77	32.1	11.6	0.701	0.359	0.387	0.975	0.961
29	0.063	0.061	0.686	2.88	33.6	11.7	0.801	0.281	0.415	0.680	1.029
31	0.064	0.062	0.685	2.85	33.8	11.9	0.904	0.224	0.438	0.645	1.096
33	0.057	0.055	0.695	2.96	34.5	11.6	1.038	0.204	0.465	0.717	1.191
35	0.060	0.058	0.710	2.99	35.3	11.8	1.144	0.214	0.488	0.578	1.253
40	0.072	0.070	0.627	2.74	32.6	11.9	1.482	0.223	0.563	0.618	1.462
45	0.093	0.089	0.693	2.45	31.8	13.0	1.941	0.149	0.632	0.619	1.746
50	0.080	0.077	0.678	2.82	36.4	12.9	2.357	0.159	0.698	0.674	2.026
55	0.078	0.076	0.690	2.65	36.0	13.6	2.742	0.122	0.745	0.408	2.183
60	0.086	0.083	0.666	2.57	34.7	13.5	3.191	0.147	0.811	0.421	2.373
65	0.090	0.086	0.651	2.53	34.9	13.8	3.648	0.123	0.867	0.402	2.556
70	0.082	0.079	0.727	2.87	38.5	13.4	4.037	0.141	0.922	0.331	2.685
75	0.082	0.079	0.722	2.76	37.4	13.6	4.450	0.122	0.972	0.325	2.819
80	0.082	0.079	0.695	2.65	36.3	13.7	4.877	0.113	1.021	0.379	2.981
85	0.088	0.084	0.667	2.54	34.9	13.8	5.338	0.128	1.080	0.490	3.207
90	0.092	0.088	0.630	2.40	33.8	14.1	5.794	0.143	1.145	0.465	3.419
95	0.093	0.089	0.659	2.42	34.3	14.2	6.269	0.131	1.207	0.451	3.633
100	0.081	0.078	0.736	2.80	38.8	13.9	6.653	0.129	1.257	0.367	3.774
105	0.088	0.085	0.718	2.74	38.0	13.9	6.991	0.106	1.292	0.334	3.887
110	0.098	0.094	0.707	2.58	36.0	13.9	7.460	0.092	1.336	0.375	4.063
115	0.087	0.084	0.710	2.60	36.2	13.9	7.892	0.100	1.379	0.326	4.204
120	0.090	0.087	0.696	2.61	36.3	13.9	8.359	0.098	1.425	0.379	4.381
125	0.096	0.092	0.628	2.41	33.9	14.1	8.884	0.114	1.484	0.448	4.616
130	0.106	0.101	0.600	2.26	32.2	14.2	9.393	0.103	1.537	0.338	4.788
135	0.110	0.104	0.586	2.23	31.6	14.2	9.926	0.091	1.585	0.322	4.960
140	0.113	0.107	0.579	2.13	30.9	14.5	10.492	0.114	1.650	0.346	5.155
145	0.122	0.115	0.544	2.01	29.8	14.8	11.144	0.089	1.708	0.302	5.352
150	0.131	0.123	0.481	1.75	27.1	15.5	11.780	0.092	1.766	0.270	5.524

Survey Core, LA-43

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	.	.	0.687	3.14	31.5	10.0	0.036	0.665	0.024	1.294	0.047
10	.	.	0.673	3.16	31.8	10.1	0.103	0.674	0.069	1.520	0.149
15	.	.	0.640	3.13	31.6	10.1	0.224	0.761	0.161	1.697	0.354
17	.	.	0.633	2.95	30.0	10.2	0.304	0.777	0.224	1.443	0.470
19	.	.	0.593	2.88	29.0	10.1	0.379	0.746	0.280	1.287	0.566
21	.	.	0.571	2.62	27.8	10.6	0.476	0.625	0.340	1.098	0.672
23	.	.	0.592	2.48	29.0	11.7	0.567	0.439	0.380	0.866	0.751
25	.	.	0.517	2.18	25.8	11.8	0.697	0.411	0.433	0.777	0.852
27	.	.	0.360	1.46	20.0	13.7	0.942	0.207	0.484	0.483	0.971
29	.	.	0.507	2.05	28.1	13.7	1.138	0.184	0.520	0.366	1.042
31	.	.	0.624	2.41	33.0	13.7	1.341	0.206	0.562	0.382	1.120
33	.	.	0.557	2.23	30.5	13.7	1.555	0.197	0.604	0.306	1.185
38	.	.	0.066	0.38	4.9	12.8	4.945	0.060	0.807	0.138	1.653
43	.	.	0.030	0.22	2.3	10.5	11.644	0.066	1.250	0.108	2.376
48	.	.	0.073	0.21	5.1	24.4	17.155	0.165	2.159	0.226	3.622

Survey Core, LA-44

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	.	.	0.686	3.16	32.0	10.1	0.069	0.720	0.050	1.595	0.110
10	.	.	0.675	3.21	31.7	9.9	0.174	0.868	0.141	1.775	0.297
15	.	.	0.659	3.17	32.3	10.2	0.350	0.780	0.278	1.660	0.588
20	.	.	0.609	2.89	30.9	10.7	0.539	0.614	0.394	1.421	0.857
25	.	.	0.572	2.76	29.5	10.7	0.779	0.623	0.544	1.349	1.181
30	.	.	0.227	1.08	13.2	12.2	1.681	0.188	0.713	0.501	1.633
35	.	.	0.371	1.41	21.2	15.0	2.612	0.186	0.886	0.489	2.088
40	.	.	0.652	2.25	39.7	17.6	3.479	0.202	1.061	0.225	2.283

Survey Core, LA-45

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	Cum Mass	NAIP	Cum NAIP	TP	Cum TP
5	0.008	0.008	0.690	3.04	31.0	10.2	0.042	0.630	0.026	1.567	0.065
10	0.018	0.018	0.688	3.21	32.7	10.2	0.148	0.712	0.102	1.708	0.247
15	0.026	0.025	0.656	3.17	32.6	10.3	0.275	0.835	0.208	1.799	0.475
20	0.032	0.032	0.619	2.97	32.4	10.9	0.415	0.599	0.292	1.457	0.680
25	0.034	0.034	0.626	2.95	32.9	11.1	0.591	0.524	0.384	1.523	0.947
27	0.042	0.041	0.611	2.73	31.2	11.4	0.662	0.470	0.417	1.229	1.034
29	0.056	0.055	0.568	2.38	28.7	12.1	0.767	0.393	0.459	1.005	1.140
31	0.065	0.063	0.536	2.33	28.7	12.3	0.933	0.324	0.513	0.911	1.291
33	0.062	0.060	0.582	2.41	30.0	12.5	1.044	0.336	0.550	0.901	1.392
35	0.074	0.071	0.535	2.23	28.3	12.7	1.187	0.353	0.600	0.839	1.511
37	0.067	0.064	0.557	2.29	29.0	12.7	1.307	0.327	0.639	0.858	1.614
42	0.078	0.075	0.604	2.52	32.5	12.9	1.683	0.259	0.737	0.643	1.856
47	0.065	0.063	0.670	2.73	35.8	13.1	1.994	0.207	0.801	0.461	2.000
52	0.060	0.058	0.688	2.71	36.0	13.3	2.313	0.215	0.870	0.455	2.145
57	0.082	0.079	0.682	2.64	36.1	13.7	2.674	0.208	0.945	0.408	2.292
62	0.079	0.076	0.704	2.79	38.4	13.8	3.066	0.192	1.020	0.339	2.425
67	0.076	0.073	0.713	2.81	38.9	13.9	3.429	0.186	1.088	0.332	2.545
72	0.099	0.095	0.771	2.99	43.0	14.4	3.905	0.210	1.188	0.302	2.689
77	0.098	0.094	0.809	3.33	45.9	13.8	4.401	0.159	1.266	0.169	2.773
82	0.106	0.102	0.932	3.49	48.6	13.9	4.940	0.089	1.314	0.088	2.820
87	0.111	0.106	0.938	3.17	50.3	15.9	5.509	0.059	1.348	0.076	2.864

Survey Core, LA-46

Depth	Rho	Frac dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.015	0.015	0.674	3.09	32.3	10.4	0.066	0.378	0.073	1.097	0.211
10	0.019	0.019	0.675	3.15	32.9	10.4	0.094	0.486	0.205	1.221	0.545
15	0.024	0.024	0.673	3.07	33.2	10.8	0.111	0.522	0.374	1.276	0.957
20	0.035	0.035	0.564	2.55	28.5	11.2	0.168	0.377	0.558	0.946	1.419
25	0.053	0.051	0.517	2.41	28.3	11.7	0.242	0.254	0.737	0.652	1.878
30	0.055	0.054	0.598	2.63	31.3	11.9	0.285	0.263	0.955	0.709	2.465
32	0.061	0.060	0.585	2.45	29.3	11.9	0.109	0.253	1.035	0.515	2.627
34	0.057	0.055	0.627	2.69	32.3	12.0	0.111	0.283	1.126	0.508	2.791
36	0.060	0.059	0.621	2.68	31.9	11.9	0.111	0.290	1.219	0.559	2.971
38	0.057	0.056	0.658	2.79	33.0	11.8	0.104	0.293	1.308	0.498	3.122
40	0.057	0.055	0.661	2.81	33.4	11.9	0.112	0.268	1.395	0.476	3.277
42	0.058	0.056	0.656	2.80	33.1	11.8	0.111	0.292	1.490	0.520	3.445
44	0.061	0.059	0.654	2.82	33.5	11.9	0.126	0.288	1.595	0.524	3.636
46	0.060	0.058	0.676	2.92	34.2	11.7	0.109	0.298	1.689	0.497	3.794
48	0.062	0.060	0.672	2.87	33.7	11.7	0.129	0.282	1.795	0.494	3.979
50	0.061	0.059	0.680	2.93	34.4	11.7	0.111	0.302	1.893	0.506	4.143
55	0.065	0.063	0.692	2.89	34.0	11.8	0.299	0.270	2.127	0.509	4.585
60	0.067	0.065	0.697	2.89	33.9	11.7	0.327	0.265	2.379	0.509	5.069
65	0.065	0.063	0.675	2.98	34.7	11.6	0.326	0.279	2.644	0.577	5.616
70	0.069	0.067	0.691	3.07	35.5	11.6	0.353	0.255	2.906	0.521	6.151
75	0.070	0.068	0.699	3.07	35.4	11.5	0.314	0.228	3.114	0.547	6.650
80	0.078	0.075	0.728	2.78	31.9	11.5	0.367	0.180	3.306	0.484	7.167
85	0.077	0.074	0.733	2.69	30.3	11.3	0.386	0.180	3.508	0.466	7.689
90	0.062	0.060	0.667	3.01	34.3	11.4	0.283	0.188	3.662	0.522	8.118
95	0.132	0.123	0.284	1.76	20.6	11.7	0.683	0.142	3.944	0.553	9.216
100	0.204	0.182	0.204	1.97	26.3	13.3	0.998	0.184	4.477	0.462	10.556
105	0.078	0.075	0.678	2.76	36.6	13.3	0.361	0.192	4.679	0.396	10.971
110	0.076	0.073	0.698	2.87	38.2	13.3	0.394	0.151	4.852	0.355	11.377
115	0.078	0.075	0.692	2.84	37.6	13.2	0.356	0.168	5.025	0.367	11.756
120	0.085	0.082	0.703	2.74	35.8	13.1	0.407	0.156	5.210	0.341	12.159
125	0.090	0.086	0.691	2.46	31.8	12.9	0.437	0.101	5.338	0.369	12.628
130	0.082	0.079	0.671	2.76	35.7	12.9	0.339	0.090	5.427	0.322	12.945
135	0.086	0.083	0.663	2.69	33.4	12.4	0.380	0.108	5.546	0.390	13.376

APPENDIX C

HISTORIC CORES

CODES:

Depth is depth (cm)
Rho is dry weight density (g dry/g cc wet)
Frac Dry is fraction dry weight
Frac Org is fraction loss on ignition
TN is total nitrogen (%)
TC is total carbon (%)
TC/TN is TC/TN mass ratio
Cum Mass is cumulative mass (g cm^{-2})
NAIP is non-apatite inorganic phosphorus (mg g^{-1}),
Cum NAIP is cumulative NAIP (mg cm^{-2})
TP is total phosphorus (mg g^{-1})
Cum TP is cumulative TP (mg cm^{-2})
Bold face numbers are interpolated values for missing data

1995 HISTORIC CORES, LA9-95

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.015	0.015	0.690	3.75	36.3	9.7	0.067	0.484	0.033	1.521	0.102
10	0.023	0.022	0.678	3.25	34.9	10.7	0.161	0.550	0.084	1.829	0.274
15	0.030	0.029	0.670	3.31	35.4	10.7	0.303	0.454	0.149	1.454	0.481
20	0.035	0.034	0.656	3.17	35.0	11.0	0.463	0.434	0.218	1.504	0.722
25	0.038	0.038	0.633	3.13	34.6	11.0	0.661	0.395	0.296	1.183	0.955
30	0.041	0.040	0.633	2.99	34.4	11.5	0.863	0.338	0.365	1.138	1.185
35	0.045	0.044	0.619	3.01	34.0	11.3	1.069	0.300	0.426	1.062	1.404
40	0.049	0.048	0.614	2.88	34.0	11.8	1.305	0.242	0.483	1.015	1.643
45	0.053	0.052	0.631	2.80	32.9	11.8	1.544	0.260	0.545	0.973	1.876
50	0.052	0.050	0.613	2.88	33.6	11.7	1.802	0.310	0.625	1.010	2.136
55	0.081	0.077	0.474	1.96	26.4	13.5	2.179	0.249	0.719	1.039	2.528
60	0.090	0.086	0.540	2.16	30.4	14.0	2.614	0.205	0.809	0.731	2.846
65	0.083	0.079	0.631	2.53	34.1	13.5	3.007	0.166	0.874	0.451	3.024
70	0.079	0.076	0.661	2.61	36.3	13.9	3.372	0.194	0.945	0.435	3.183
75	0.078	0.076	0.679	2.70	36.8	13.6	3.762	0.139	0.999	0.499	3.377
80	0.079	0.076	0.685	2.70	37.2	13.8	4.125	0.133	1.047	0.324	3.495
85	0.078	0.075	0.674	2.71	37.3	13.7	4.496	0.145	1.101	0.401	3.643
90	0.080	0.077	0.665	2.71	38.4	14.2	4.872	0.129	1.150	0.375	3.784
95	0.088	0.084	0.679	2.61	36.5	14.0	5.284	0.118	1.198	0.353	3.930
100	0.086	0.082	0.655	2.54	36.1	14.2	5.676	0.130	1.249	0.410	4.090
105	0.088	0.085	0.663	2.68	37.7	14.1	6.072	0.139	1.304	0.373	4.238
110	0.089	0.085	0.660	2.42	34.9	14.4	6.496	0.126	1.357	0.354	4.388
115	0.093	0.089	0.639	2.41	34.2	14.2	6.892	0.136	1.411	0.361	4.531
120	0.101	0.096	0.580	2.33	33.1	14.2	7.364	0.123	1.469	0.374	4.708
125	0.102	0.097	0.582	2.18	32.6	14.9	8.139	0.133	1.572	0.421	5.034

1995 HISTORIC CORES, LA25-95

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.011	0.011	0.692				0.035	0.394	0.014	1.371	0.049
10	0.021	0.020	0.685	3.33	34.3	10.3	0.139	0.511	0.067	1.393	0.192
15	0.026	0.025	0.661	3.13	34.8	11.1	0.255	0.521	0.127	1.450	0.361
20	0.076	0.073	0.479	1.81	27.3	15.1	0.635	0.138	0.180	0.646	0.607
25	0.079	0.076	0.524	2.17	31.6	14.6	1.015	0.115	0.224	0.358	0.743
30	0.069	0.067	0.702	2.79	39.4	14.1	1.354	0.126	0.266	0.356	0.863
35	0.076	0.073	0.703	2.65	37.3	14.1	1.716	0.116	0.308	0.435	1.021
40	0.084	0.081	0.627	2.59	37.6	14.6	2.147	0.129	0.364	0.306	1.153
45	0.071	0.068	0.738	2.88	41.4	14.4	2.478	0.129	0.406	0.331	1.262
50	0.069	0.067	0.731	2.87	41.1	14.4	2.807	0.107	0.442	0.321	1.368
55	0.077	0.075	0.716	2.73	39.0	14.3	3.193	0.098	0.480	0.392	1.520
60	0.080	0.077	0.692	2.76	39.9	14.4	3.582	0.082	0.512	0.318	1.643
65	0.084	0.081	0.701	2.66	39.2	14.7	3.990	0.090	0.548	0.308	1.769
70	0.087	0.083	0.700	2.67	38.8	14.5	4.426	0.080	0.583	0.310	1.904
75	0.092	0.088	0.728	2.62	38.2	14.6	4.874	0.084	0.621	0.303	2.040
80	0.081	0.078	0.717	2.74	39.4	14.4	5.245	0.109	0.661	0.330	2.162
85	0.085	0.082	0.707	2.73	39.6	14.5	5.675	0.100	0.704	0.332	2.305
90	0.090	0.086	0.718	2.63	38.1	14.5	6.113	0.049	0.726	0.326	2.448
95	0.080	0.077	0.715	2.86	39.4	13.8	6.491	0.073	0.753	0.333	2.574
100	0.087	0.084	0.703	2.72	37.8	13.9	6.904	0.100	0.794	0.333	2.711
105	0.088	0.084	0.717	2.67	37.6	14.1	7.354	0.080	0.830	0.279	2.837
110	0.087	0.084	0.726	2.72	39.3	14.4	7.756	0.075	0.860	0.301	2.958
115	0.088	0.084	0.706	2.71	37.9	14.0	8.176	0.091	0.899	0.280	3.075
120	0.075	0.073	0.673	2.57	37.3	14.5	8.532	0.073	0.924	0.311	3.186
125	0.099	0.095	0.628	2.41	35.2	14.6	8.985	0.076	0.959	0.320	3.331
130	0.134	0.125	0.399	1.48	25.2	17.0	9.580	0.069	1.000	0.413	3.577
135	0.380	0.311	0.113	0.40	12.1	30.1	11.412	0.039	1.071	0.208	3.958
140	0.198	0.178	0.224	0.71	18.2	25.8	13.244	0.032	1.129	0.181	4.289

1995 HISTORIC CORES, LA31-95

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.011	0.011	0.684	3.45	32.9	9.6	0.609	0.358	0.218	1.357	0.827
10	0.019	0.019	0.669	3.44	33.4	9.7	1.312	0.408	0.505	1.379	1.796
15	0.025	0.024	0.676	3.41	33.0	9.7	2.107	0.446	0.859	1.383	2.895
20	0.030	0.029	0.674	3.32	32.4	9.8	3.009	0.496	1.307	1.423	4.179
25	0.032	0.032	0.665	3.35	32.9	9.8	3.840	0.560	1.772	1.472	5.402
30	0.035	0.035	0.660	3.30	33.1	10.1	4.737	0.544	2.260	1.443	6.696
35	0.041	0.040	0.617	3.14	33.1	10.5	5.883	0.536	2.874	1.433	8.339
40	0.050	0.049	0.525	2.44	29.9	12.3	7.004	0.428	3.354	1.233	9.721
45	0.083	0.079	0.611	2.53	36.0	14.2	8.663	0.165	3.628	0.445	10.459
50	0.076	0.073	0.743	2.85	39.8	14.0	10.152	0.140	3.836	0.341	10.967
55	0.072	0.069	0.736	2.90	40.3	13.9	11.617	0.118	4.009	0.368	11.506
60	0.071	0.069	0.737	2.91	40.3	13.9	13.183	0.125	4.205	0.348	12.051
65	0.077	0.074	0.734	2.96	40.8	13.8	14.747	0.129	4.407	0.341	12.584
70	0.083	0.080	0.761	2.91	39.5	13.6	16.407	0.090	4.556	0.312	13.102
75	0.084	0.081	0.727	2.82	38.9	13.8	18.068	0.123	4.760	0.432	13.820
80	0.078	0.076	0.723	2.83	39.8	14.1	19.640	0.114	4.940	0.348	14.367
85	0.086	0.082	0.724	2.72	38.4	14.1	21.333	0.117	5.138	0.331	14.927
90	0.084	0.081	0.730	2.87	40.1	14.0	23.006	0.108	5.318	0.347	15.508
95	0.086	0.083	0.710	2.82	39.8	14.1	24.726	0.127	5.537	0.344	16.099
100	0.092	0.089	0.683	2.58	37.3	14.4	26.671	0.140	5.809	0.346	16.772
105	0.083	0.080	0.719	2.84	39.5	13.9	28.310	0.080	5.940	0.329	17.312
110	0.093	0.089	0.740	2.65	38.5	14.5	29.869	0.090	6.081	0.311	17.796
115	0.086	0.082	0.656	2.56	37.3	14.5	31.503	0.140	6.309	0.460	18.548
120	0.131	0.122	0.346	1.48	26.8	18.1	33.878	0.120	6.594	0.594	19.959
125	0.192	0.174	0.338	1.35	23.5	17.5	37.514	0.140	7.103	0.660	22.359

1996 HISTORIC CORES, LA-1H

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.013	0.013	0.709	2.99	32.9	11.0	0.045	0.437	0.020	1.272	0.057
10	0.019	0.019	0.689	3.10	34.1	11.0	0.135	0.465	0.062	1.434	0.187
15	0.025	0.025	0.662	2.96	33.5	11.3	0.255	0.468	0.118	1.384	0.352
20	0.042	0.041	0.711	2.45	28.2	11.5	0.451	0.350	0.186	1.028	0.553
25	0.043	0.043	0.679	2.44	30.2	12.4	0.662	0.306	0.251	0.987	0.762
30	0.076	0.073	0.627	2.56	32.8	12.8	1.030	0.173	0.315	0.961	1.116
32	0.051	0.049	0.632	2.47	32.3	13.1	1.122	0.221	0.335	0.728	1.183
34	0.052	0.051	0.599	2.44	31.8	13.0	1.225	0.235	0.359	0.763	1.262
36	0.060	0.059	0.609	2.42	32.2	13.3	1.343	0.196	0.382	0.671	1.341
38	0.067	0.065	0.575	2.28	31.9	14.0	1.471	0.241	0.413	0.765	1.439
40	0.062	0.060	0.677	2.72	36.2	13.3	1.591	0.286	0.447	0.553	1.505
42	0.062	0.060	0.677	2.73	36.3	13.3	1.710	0.186	0.469	0.522	1.567
44	0.063	0.061	0.667	2.64	35.9	13.6	1.834	0.243	0.500	0.575	1.638
49	0.082	0.079	0.669	2.58	36.4	14.1	2.237	0.218	0.587	0.441	1.816
51	0.070	0.068	0.648	2.51	36.2	14.4	2.385	0.218	0.620	0.402	1.876
53	0.060	0.059	0.704	2.63	38.0	14.5	2.494	0.227	0.644	0.370	1.916
55	0.058	0.056	0.721	2.73	39.1	14.3	2.617	0.154	0.663	0.360	1.960
57	0.064	0.062	0.708	2.63	37.8	14.4	2.740	0.296	0.700	0.349	2.003
59	0.065	0.063	0.707	2.63	38.0	14.5	2.875	0.197	0.726	0.357	2.051
64	0.083	0.080	0.710	2.60	37.1	14.3	3.248	0.238	0.815	0.366	2.188
69	0.099	0.095	0.726	2.73	38.6	14.1	3.739	0.169	0.898	0.346	2.358
74	0.091	0.087	0.731	2.76	39.3	14.2	4.187	0.161	0.970	0.364	2.521
79	0.062	0.061	0.749	2.73	40.0	14.7	4.484	0.190	1.027	0.347	2.624

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.009	0.009	0.722	3.06	33.2	10.8	0.037			1.362	0.050
10	0.030	0.030	0.688	3.22	34.5	10.7	0.188	0.614	0.092	1.570	0.287
15	0.031	0.030	0.694	3.20	34.7	10.9	0.332	0.739	0.199	1.704	0.533
20	0.022	0.022	0.699	3.30	34.5	10.5	0.434	0.763	0.277	1.792	0.715
25	0.037	0.037	0.681	3.14	34.9	11.1	0.611	0.617	0.386	1.562	0.992
30	0.032	0.032	0.686	2.99	34.6	11.6	0.773	0.524	0.471	1.359	1.212
35	0.049	0.048	0.662	2.94	34.0	11.6	1.011	0.535	0.599	1.367	1.538
40	0.082	0.079	0.660	2.68	31.8	11.8	1.412	0.309	0.722	1.101	1.979
45	0.051	0.049	0.638	2.83	33.7	11.9	1.642	0.442	0.824	1.115	2.236
47.5	0.040	0.039	0.655	2.73	33.3	12.2	1.748	0.397	0.866	1.096	2.351
50	0.041	0.040	0.647	2.73	32.9	12.1	1.842	0.400	0.904	1.103	2.456
52	0.042	0.041	0.632	2.66	32.7	12.3	1.935	0.390	0.940	1.092	2.557
54	0.044	0.043	0.636	2.63	32.3	12.3	2.017	0.427	0.975	1.153	2.651
56	0.043	0.042	0.652	2.66	32.9	12.4	2.106	0.387	1.009	1.075	2.747
58	0.044	0.043	0.648	2.68	32.7	12.2	2.192	0.395	1.044	1.056	2.838
60	0.045	0.044	0.639	2.63	32.3	12.3	2.284	0.396	1.080	1.027	2.933
62	0.049	0.048	0.622	2.57	31.9	12.4	2.381	0.349	1.114	1.010	3.031
64	0.051	0.050	0.630	2.57	32.5	12.7	2.484	0.364	1.151	0.964	3.130
66	0.051	0.050	0.635	2.61	32.6	12.5	2.572	0.388	1.185	0.971	3.216
69	0.051	0.050	0.632	2.63	32.9	12.5	2.716	0.349	1.236	0.988	3.358
74	0.049	0.047	0.597	2.57	32.4	12.6	2.964	0.362	1.325	0.990	3.603
79	0.053	0.052	0.595	2.63	32.8	12.5	3.218	0.376	1.421	0.955	3.846
81.5	0.055	0.054	0.600	2.64	33.4	12.7	3.355	0.331	1.466	1.030	3.987
84	0.061	0.059	0.651	2.74	34.8	12.7	3.493	0.348	1.514	0.810	4.099
86.5	0.068	0.066	0.665	2.87	36.0	12.5	3.672	0.346	1.576	0.720	4.227
89	0.064	0.063	0.698	3.02	37.4	12.4	3.836	0.351	1.634	0.786	4.356
91.5	0.067	0.065	0.700	3.03	37.3	12.3	3.987	0.323	1.682	0.672	4.458
94	0.069	0.067	0.679	3.00	37.5	12.5	4.152	0.314	1.734	0.675	4.569
99	0.068	0.066	0.664	2.82	37.0	13.1	4.488	0.331	1.846	0.661	4.791
104	0.071	0.069	0.653	2.86	36.5	12.8	4.811	0.288	1.939	0.735	5.029
109	0.070	0.067	0.670	2.85	36.8	12.9	5.142	0.279	2.031	0.665	5.249

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5.0	0.015	0.015	0.563	2.78	30.5	11.0	0.081	0.569	0.046	1.356	0.109
10.0	0.028	0.027	0.607	2.70	31.1	11.5	0.210	0.468	0.107	1.278	0.275
15.0	0.043	0.042	0.569	2.44	29.3	12.0	0.428	0.313	0.175	0.965	0.485
17.0	0.059	0.058	0.475	2.26	28.1	12.5	0.537	0.258	0.203	0.814	0.574
20.0	0.061	0.059	0.507	2.38	29.1	12.2	0.709	0.282	0.251	0.925	0.733
22.0	0.069	0.067	0.511	2.19	27.6	12.6	0.845	0.267	0.288	0.836	0.846
24.0	0.074	0.071	0.513	2.26	28.7	12.7	0.983	0.278	0.326	0.824	0.960
26.0	0.091	0.087	0.441	1.89	26.0	13.8	1.161	0.299	0.379	0.648	1.076
28.0	0.095	0.090	0.454	1.88	26.4	14.0	1.351	0.199	0.417	0.598	1.189
30.0	0.091	0.087	0.521	1.93	27.3	14.1	1.513	0.217	0.452	0.611	1.288
32.0	0.095	0.090	0.540	2.21	31.5	14.3	1.705	0.162	0.483	0.503	1.385
34.0	0.083	0.080	0.613	2.21	32.6	14.7	1.850	0.176	0.509	0.529	1.462
36.0	0.076	0.073	0.669	2.53	35.9	14.2	2.006	0.182	0.537	0.415	1.526
38.0	0.076	0.073	0.668	2.52	35.9	14.2	2.149	0.210	0.567	0.476	1.594
40.0	0.074	0.071	0.658	2.50	35.4	14.2	2.298	0.169	0.592	0.446	1.661
45.0	0.100	0.095	0.676	2.44	35.6	14.6	2.775	0.139	0.659	0.383	1.844
50.0	0.112	0.106	0.620	2.28	34.4	15.1	3.300	0.165	0.745	0.409	2.058
55.0	0.190	0.172	0.341	1.37	23.9	17.4	4.201	0.022	0.765	0.637	2.632

1996 HISTORIC CORES, LA-4H

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5.0	0.022	0.022	0.673	3.00	32.9	11.0	0.105	0.620	0.065	1.453	0.153
10.0	0.034	0.033	0.656	2.69	33.3	12.4	0.267	0.607	0.163	1.409	0.381
15.0	0.060	0.058	0.584	2.53	31.1	12.3	0.540	0.487	0.296	1.180	0.703
17.0	0.074	0.071	0.560	2.21	31.3	14.2	0.692	0.268	0.337	0.682	0.806
20.0	0.083	0.080	0.569	2.18	31.6	14.5	0.927	0.257	0.398	0.642	0.958
22.0	0.092	0.088	0.541	2.14	31.1	14.5	1.124	0.224	0.441	0.688	1.093
24.0	0.101	0.096	0.504	2.11	31.3	14.8	1.298	0.183	0.473	0.648	1.206
26.0	0.093	0.089	0.574	2.29	32.9	14.4	1.499	0.248	0.523	1.527	1.513
28.0	0.083	0.080	0.648	2.37	33.9	14.3	1.647	0.150	0.545	0.424	1.575
33.0	0.091	0.088	0.617	2.36	33.7	14.2	2.199	0.152	0.629	0.617	1.916
38.0	0.126	0.119	0.601	2.27	34.4	15.2	2.772	0.145	0.712	0.406	2.148
43.0	0.100	0.095	0.710	2.64	39.5	15.0	3.234	0.096	0.757	0.347	2.309
48.0	0.391	0.319	0.116	0.59	9.1	15.6	5.145	0.058	0.868	0.180	2.653

1996 HISTORIC CORES, LA-5H

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.008	0.008	0.682	3.12	32.2	10.3	0.039	0.504	0.020	1.376	0.053
10	0.013	0.013	0.682	3.14	32.4	10.3	0.103	0.520	0.053	1.384	0.142
15	0.017	0.017	0.675	3.17	32.6	10.3	0.180	0.562	0.096	1.440	0.253
20	0.023	0.022	0.664	3.10	32.4	10.5	0.288	0.687	0.171	1.460	0.411
25	0.027	0.027	0.661	3.04	32.3	10.6	0.412	0.653	0.251	1.384	0.582
30	0.028	0.028	0.652	2.96	32.2	10.9	0.543	0.583	0.328	1.281	0.750
35	0.032	0.032	0.651	3.02	32.7	10.8	0.701	0.551	0.415	1.229	0.944
38	0.038	0.037	0.641	2.88	31.8	11.0	0.811	0.468	0.466	1.136	1.069
40	0.038	0.037	0.627	2.91	31.2	10.7	0.889	0.514	0.507	1.220	1.165
42	0.035	0.034	0.647	3.07	32.3	10.5	0.958	0.594	0.547	1.410	1.261
44	0.037	0.036	0.667	2.97	31.7	10.7	1.027	0.560	0.586	1.376	1.357
46	0.040	0.039	0.647	2.90	31.3	10.8	1.108	0.516	0.627	1.195	1.453
48	0.044	0.043	0.637	2.79	30.6	11.0	1.188	0.462	0.665	1.055	1.538
50	0.047	0.046	0.608	2.71	29.9	11.0	1.278	0.439	0.704	0.995	1.627
52	0.047	0.046	0.617	2.77	30.5	11.0	1.367	0.424	0.742	0.992	1.716
54	0.051	0.050	0.619	2.67	29.5	11.0	1.469	0.425	0.785	0.992	1.817
56	0.055	0.054	0.609	2.63	28.9	11.0	1.577	0.383	0.827	0.939	1.918
58	0.048	0.047	0.617	2.78	30.6	11.0	1.665	0.385	0.860	1.006	2.006
63	0.051	0.050	0.602	2.72	30.7	11.3	1.912	0.435	0.968	1.038	2.263
68	0.050	0.049	0.605	2.73	30.3	11.1	2.159	0.415	1.071	1.028	2.517
73	0.051	0.050	0.617	2.77	30.5	11.0	2.392	0.430	1.171	1.060	2.764
78	0.053	0.051	0.617	2.81	31.2	11.1	2.649	0.465	1.290	1.008	3.023
83	0.051	0.050	0.608	2.72	30.5	11.2	2.904	0.468	1.409	1.047	3.290
88	0.051	0.050	0.610	2.76	30.4	11.0	3.139	0.442	1.513	1.082	3.544
93	0.057	0.055	0.616	2.78	30.5	11.0	3.411	0.463	1.639	1.117	3.848
98	0.046	0.045	0.635	2.86	31.6	11.0	3.629	0.462	1.740	1.225	4.115
103	0.053	0.051	0.619	2.75	30.8	11.2	3.873	0.536	1.871	1.081	4.379
108	0.056	0.055	0.583	2.55	29.0	11.4	4.138	0.400	1.977	1.000	4.644
113	0.059	0.057	0.582	2.62	29.8	11.4	4.432	0.467	2.114	0.968	4.929
118	0.063	0.061	0.591	2.66	30.3	11.4	4.747	0.402	2.241	0.937	5.224
123	0.061	0.059	0.578	2.55	29.3	11.5	5.050	0.417	2.367	0.939	5.508
127	0.059	0.058	0.576	2.52	29.1	11.6	5.233	0.445	2.449	0.956	5.684

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5.0	0.013	0.013	0.687	2.93	32.7	11.2	0.056	0.425	0.024	1.290	0.072
10.0	0.023	0.022	0.656	2.97	33.2	11.2	0.158	0.513	0.076	1.459	0.221
15.0	0.035	0.034	0.701	2.42	27.0	11.2	0.332	0.465	0.157	1.246	0.438
20.0	0.047	0.046	0.603	2.71	32.4	11.9	0.558	0.300	0.225	1.099	0.686
25.0	0.054	0.053	0.578	2.18	28.2	13.0	0.821	0.218	0.282	0.726	0.877
27.0	0.061	0.059	0.606	2.59	32.4	12.5	0.935	0.283	0.314	0.641	0.950
29.0	0.066	0.064	0.594	2.67	33.0	12.4	1.071	0.209	0.343	0.650	1.038
31.0	0.067	0.065	0.568	2.73	33.5	12.3	1.195	0.193	0.367	0.591	1.112
33.0	0.066	0.064	0.650	2.86	33.9	11.9	1.312	0.213	0.392	0.594	1.181
35.0	0.062	0.060	0.647	2.79	33.9	12.1	1.442	0.207	0.419	0.568	1.255
37.5	0.065	0.063	0.630	2.80	33.3	11.9	1.578	0.236	0.451	0.589	1.335
40.0	0.068	0.066	0.599	2.60	32.4	12.5	1.749	0.215	0.487	0.635	1.444
45.0	0.092	0.088	0.621	2.16	26.0	12.0	2.202	0.203	0.579	0.608	1.720
50.0	0.094	0.091	0.716	2.21	28.4	12.8	2.658	0.125	0.636	0.396	1.900
55.0	0.077	0.075	0.738	3.00	39.9	13.3	3.039	0.178	0.704	0.349	2.033
60.0	0.099	0.095	0.742	2.92	39.9	13.6	3.547	0.157	0.784	0.333	2.202
65.0	0.066	0.064	0.751	3.02	40.8	13.5	3.902	0.083	0.813	0.328	2.318
70.0	0.108	0.102	0.528	2.07	29.3	14.2	4.324	0.192	0.894	0.453	2.510
75.0	0.128	0.120	0.369	1.81	26.4	14.6	4.924	0.457	1.169	0.957	3.084
80.0	0.073	0.070	0.700	3.13	39.9	12.8	5.299	0.136	1.220	0.324	3.206

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.014	0.014	0.636	2.97	31.4	10.6	0.068	0.428	0.029	1.152	0.078
10	0.021	0.021	0.640	2.99	31.6	10.6	0.168	0.474	0.077	1.148	0.194
15	0.029	0.029	0.632	2.96	31.8	10.8	0.301	0.545	0.149	1.232	0.357
20	0.041	0.040	0.637	2.91	32.6	11.2	0.500	0.382	0.225	0.998	0.556
25	0.051	0.050	0.628	2.73	32.2	11.8	0.750	0.256	0.289	0.785	0.752
27	0.065	0.063	0.646	2.81	33.7	12.0	0.879	0.220	0.318	0.659	0.837
29	0.064	0.062	0.673	2.85	34.3	12.0	1.003	0.188	0.341	0.538	0.904
31	0.066	0.064	0.683	2.94	35.3	12.0	1.131	0.179	0.364	0.499	0.968
33	0.067	0.065	0.686	2.92	35.1	12.0	1.263	0.163	0.385	0.486	1.032
35	0.068	0.066	0.687	2.94	35.1	11.9	1.398	0.168	0.408	0.487	1.097
37	0.068	0.066	0.705	2.92	34.6	11.9	1.527	0.172	0.430	0.499	1.162
39	0.069	0.067	0.681	2.93	35.2	12.0	1.654	0.174	0.452	0.515	1.227
41	0.072	0.069	0.666	2.84	34.3	12.1	1.773	0.135	0.468	0.522	1.289
43	0.071	0.069	0.665	2.88	34.2	11.9	1.919	0.193	0.496	0.517	1.365
45	0.073	0.071	0.669	2.94	34.5	11.7	2.065	0.186	0.524	0.505	1.439
50	0.072	0.069	0.671	3.00	35.0	11.7	2.394	0.226	0.598	0.499	1.603
55	0.118	0.111	0.425	1.83	26.4	14.4	2.968	0.172	0.697	0.414	1.840
60	0.074	0.071	0.692	2.72	36.1	13.3	3.327	0.164	0.756	0.388	1.980
65	0.081	0.078	0.653	2.53	33.8	13.4	3.716	0.143	0.811	0.370	2.124
70	0.103	0.098	0.506	2.02	29.2	14.5	4.235	0.190	0.910	0.379	2.320
75	0.077	0.074	0.697	2.73	36.1	13.2	4.602	0.153	0.966	0.303	2.431
80	0.079	0.076	0.719	2.81	37.0	13.2	4.970	0.129	1.013	0.370	2.568
85	0.076	0.073	0.721	2.86	37.4	13.1	5.350	0.136	1.065	0.368	2.707
90	0.077	0.075	0.724	2.88	37.8	13.1	5.727	0.128	1.113	0.357	2.842
95	0.079	0.076	0.729	2.86	37.6	13.1	6.091	0.159	1.171	0.359	2.973
100	0.083	0.080	0.731	2.78	36.6	13.2	6.508	0.152	1.235	0.363	3.124
105	0.077	0.074	0.734	2.89	37.8	13.1	6.890	0.130	1.284	0.366	3.264
110	0.078	0.076	0.734	2.88	38.2	13.3	7.264	0.136	1.335	0.348	3.394
115	0.082	0.079	0.695	2.64	35.7	13.5	7.692	0.135	1.393	0.347	3.543
120	0.199	0.179	0.218	0.84	18.4	21.9	8.668	0.148	1.537	0.561	4.090
125	0.204	0.183	0.264	1.10	21.1	19.2	9.586	0.164	1.688	0.442	4.496
130	0.332	0.279	0.150	0.57	15.7	27.5	11.113	0.175	1.955	0.680	5.535
135	0.394	0.321	0.117	0.47	14.6	31.0	13.023	0.148	2.238	0.433	6.361
140	0.298	0.254	0.146	0.63	15.5	24.6	14.509	0.140	2.446	0.352	6.885
145	0.135	0.126	0.429	1.62	25.2	15.5	15.233	0.084	2.507	0.233	7.053

Depth	Rho	Frac Dry	Frac Org	TN	TC	TC/TN	cum mass	NAIP	cum NAIP	TP	cum TP
5	0.013	0.013	0.674	3.10	32.5	10.5	0.058	0.548	0.032	1.295	0.075
10	0.019	0.019	0.664	3.09	32.6	10.6	0.154	0.602	0.090	1.344	0.204
15	0.028	0.028	0.661	3.06	32.7	10.7	0.288	0.600	0.170	1.153	0.359
20	0.035	0.035	0.636	2.83	32.2	11.4	0.459	0.357	0.231	0.921	0.516
25	0.041	0.040	0.635	2.73	31.8	11.6	0.659	0.473	0.326	1.112	0.738
27	0.042	0.041	0.641	2.76	31.4	11.4	0.738	0.307	0.350	0.808	0.803
29	0.046	0.045	0.643	2.72	31.5	11.6	0.825	0.284	0.375	0.796	0.872
31	0.049	0.048	0.649	2.71	32.0	11.8	0.922	0.267	0.400	0.758	0.945
33	0.049	0.048	0.654	2.75	32.0	11.6	1.016	0.267	0.426	0.778	1.018
35	0.049	0.048	0.658	2.73	32.0	11.7	1.098	0.255	0.447	0.713	1.077
37	0.050	0.049	0.640	2.72	32.0	11.7	1.200	0.234	0.470	0.723	1.150
39	0.054	0.053	0.664	2.84	33.4	11.8	1.301	0.234	0.494	0.619	1.213
41	0.058	0.057	0.681	2.90	34.5	11.9	1.415	0.250	0.523	0.532	1.274
43	0.060	0.059	0.679	2.87	34.3	12.0	1.537	0.225	0.550	0.504	1.335
45	0.060	0.058	0.679	2.91	34.6	11.9	1.653	0.232	0.577	0.604	1.405
50	0.060	0.058	0.697	3.03	36.0	11.9	1.917	0.230	0.638	0.964	1.660
55	0.060	0.058	0.713	3.08	37.6	12.2	2.210	0.208	0.699	0.478	1.800
60	0.063	0.061	0.731	2.96	37.6	12.7	2.533	0.279	0.789	0.425	1.937
65	0.066	0.064	0.735	3.28	29.5	9.0	2.841	.	0.789	0.392	2.058
70	0.068	0.066	0.718	2.93	37.4	12.8	3.175	0.216	0.861	0.438	2.204
75	0.070	0.068	0.718	2.90	37.5	12.9	3.514	0.178	0.921	0.399	2.340
80	0.065	0.064	0.744	2.94	38.3	13.0	3.823	0.217	0.989	0.437	2.475
85	0.064	0.062	0.755	2.98	39.1	13.1	4.126	0.196	1.048	0.402	2.596
90	0.067	0.065	0.751	2.94	38.6	13.1	4.447	0.136	1.091	0.375	2.717
95	0.063	0.062	0.748	3.01	39.1	13.0	4.738	0.139	1.132	0.376	2.826
100	0.062	0.061	0.752	3.01	39.5	13.1	5.050	0.142	1.176	0.404	2.952
105	0.063	0.061	0.750	2.99	39.0	13.0	5.353	0.137	1.218	0.408	3.076
110	0.063	0.061	0.744	3.00	39.2	13.1	5.643	0.141	1.259	0.418	3.197
115	0.067	0.065	0.746	2.98	39.1	13.1	5.971	0.128	1.301	0.393	3.326
120	0.066	0.064	0.751	3.00	39.6	13.2	6.257	0.143	1.342	0.416	3.445
125	0.074	0.072	0.735	2.87	38.6	13.4	6.604	0.137	1.389	0.399	3.583
130	0.074	0.071	0.721	2.87	38.2	13.3	6.955	0.079	1.417	0.382	3.717

APPENDIX D

Biogenic Silica in for selected samples in Lake Apopka sediments. Data are presented in units of SiO_2/g sediment. Codes for abbreviations are: DSi is diatom silica, SSi is sponge silica, BSi is biogenic silica (includes both diatom and sponge silica), and Min-Si is mineral silica. Data were obtained using methodology described by Conley and Schelske (1993).

CODES:
- DSi is the intercept of the 2,3,4 hour concentrations
- SSi is the intercept of 12,16,20 hour concentration minus DSi
- BSi is the intercept of the 12,16,20 hour concentrations
- Min-Si is the maximum of all of the concentrations minus BSi

1996 Survey Stations

Station	Depth (cm)	DSi (mg/g)	SSi (mg/g)	BSi (mg/g)	Min-Si (mg/g)
LA-01-96	30	40.5	3.3	43.7	12.9
LA-01-96	35	36.5	6.6	43.0	12.1
LA-01-96	40	26.3	6.6	32.9	13.8
LA-01-96	45	15.0	9.8	24.8	25.9
LA-01-96	50	17.7	8.5	26.2	28.3
LA-01-96	55	13.8	6.5	20.3	28.9
LA-02-96	25	36.6	4.2	40.8	13.2
LA-02-96	27	28.7	3.1	31.8	16.5
LA-02-96	31	24.6	4.0	28.5	21.1
LA-02-96	33	21.8	5.9	27.7	20.3
LA-03-96	20	34.2	8.3	42.5	14.3
LA-03-96	22	37.5	7.8	45.3	14.0
LA-03-96	24	41.1	7.2	48.3	12.1
LA-03-96	26	38.8	9.7	48.5	14.3
LA-03-96	28	35.6	10.2	45.8	16.0
LA-03-96	30	32.3	10.2	42.5	18.0
LA-03-96	35	31.7	21.0	52.8	5.3
LA-03-96	40	17.2	0.9	18.1	51.0
LA-03-96	45	9.3	2.7	12.0	33.4
LA-06-96	28	9.9	26.5	36.3	14.7
LA-06-96	30	1.2	27.2	28.4	18.9
LA-07-96	22	30.2	25.2	55.4	3.9
LA-07-96	24	29.7	23.9	53.6	6.4
LA-07-96	29	25.7	27.0	52.7	6.1
LA-07-96	31	29.3	22.3	51.7	7.5
LA-07-96	33	33.7	27.4	61.0	1.4
LA-07-96	35	40.6	27.2	67.8	0.6
LA-08-96	40	39.4	17.3	56.7	3.7
LA-08-96	45	44.3	15.8	60.0	4.0
LA-08-96	50	40.8	22.6	63.4	0.7
LA-08-96	55	43.1	23.7	66.8	2.0
LA-08-96	60	39.6	21.1	60.7	3.4
LA-08-96	65	24.7	30.6	55.2	3.3
LA-09-96	64	42.6	22.2	64.9	0.7
LA-09-96	66	40.2	23.4	63.6	0.5
LA-09-96	68	40.0	21.2	61.2	3.2
LA-09-96	70	14.2	19.3	33.6	9.3
LA-09-96	72	7.9	26.3	34.2	14.8
LA-09-96	75	4.1	29.8	34.0	18.7
LA-10-96	66	35.1	27.2	62.2	0.8
LA-10-96	71	36.6	26.8	63.4	1.7
LA-10-96	76	38.5	12.9	51.3	16.9
LA-10-96	86	35.4	13.6	49.0	17.4
LA-10-96	96	38.3	18.8	57.1	16.0
LA-10-96	106	42.5	17.2	59.7	14.0
LA-10-96	116	37.2	13.2	50.4	17.7
LA-10-96	126	48.8	16.0	64.8	6.9
LA-10-96	131	43.7	26.5	70.3	2.4
LA-10-96	136	38.0	19.5	57.6	14.7
LA-10-96	141	31.0	15.4	46.4	15.3
LA-10-96	146	28.2	16.5	44.7	16.0

Station	Depth (cm)	DSi (mg/g)	SSi (mg/g)	BSi (mg/g)	Min-Si (mg/g)
LA-13-96	40	42.2	12.8	54.9	14.2
LA-13-96	42	39.0	15.6	54.6	14.6
LA-13-96	44	34.1	19.2	53.4	13.8
LA-15-96	37	34.8	15.0	49.7	13.4
LA-15-96	39	33.6	13.4	47.0	17.3
LA-15-96	44	33.9	29.8	63.7	3.3
LA-15-96	49	28.4	21.1	49.5	13.3
LA-15-96	54	23.3	26.6	49.9	14.8
LA-15-96	59	24.4	27.3	51.7	15.8
LA-17-96	25	38.8	10.6	49.3	13.2
LA-17-96	30	30.8	14.1	44.9	14.8
LA-17-96	35	30.0	19.6	49.7	13.6
LA-18-96	30	40.4	15.6	55.9	11.0
LA-18-96	35	36.9	19.7	56.6	10.9
LA-18-96	40	34.5	19.6	54.1	13.6
LA-18-96	45	41.2	16.3	57.6	16.6
LA-18-96	50	43.6	15.2	58.8	18.6
LA-18-96	55	43.2	15.6	58.8	18.4
LA-18-96	60	38.4	13.4	51.8	17.4
LA-18-96	65	40.6	17.2	57.7	12.8
LA-18-96	70	48.3	8.9	57.1	8.7
LA-18-96	75	47.8	9.5	57.4	12.2
LA-19-96	57	40.0	17.5	57.5	6.1
LA-19-96	62	44.5	17.4	61.9	5.6
LA-19-96	67	41.5	19.7	61.2	5.3
LA-19-96	72	37.5	17.1	54.6	9.0
LA-19-96	77	39.1	14.4	53.5	5.9
LA-19-96	82	30.3	16.2	46.5	8.7
LA-19-96	87	28.3	20.0	48.3	12.1
LA-20-96	45	49.0	14.9	63.9	1.1
LA-20-96	47	42.6	16.0	58.6	4.8
LA-20-96	50	42.3	18.4	60.7	4.9
LA-20-96	52	44.1	16.0	60.0	5.8
LA-20-96	67	50.7	14.5	65.2	5.1
LA-20-96	72	52.5	16.1	68.6	0.6
LA-20-96	77	47.5	15.0	62.6	0.8
LA-20-96	82	46.8	16.5	63.2	0.8
LA-21-96	25	49.6	14.8	64.3	0.4
LA-21-96	41	58.7	8.0	66.8	0.9
LA-21-96	51	58.6	12.4	71.0	1.4
LA-21-96	62	58.2	15.0	73.2	1.3
LA-21-96	78	60.0	13.3	73.3	1.2
LA-21-96	98	62.6	9.3	71.8	0.7

1995 Historic Stations

Station	Depth (cm)	DSi (mg/g)	SSi (mg/g)	BSi (mg/g)	Min-Si (mg/g)	Station	Depth (cm)	DSi (mg/g)	SSi (mg/g)	BSi (mg/g)	Min-Si (mg/g)
LA-09-95	5	29.8	4.8	34.6	7.2	LA-25-95	5	33.4	5.7	39.1	7.4
LA-09-95	10	31.9	5.0	36.9	8.1	LA-25-95	10	33.7	7.1	40.8	7.7
LA-09-95	15	31.5	6.3	37.8	8.9	LA-25-95	15	29.8	12.6	42.4	7.0
LA-09-95	20	29.1	9.1	38.2	7.1	LA-25-95	20	10.0	17.1	27.1	13.9
LA-09-95	25	31.4	8.0	39.5	8.3	LA-25-95	25	5.5	20.1	25.6	16.7
LA-09-95	30	34.1	5.6	39.7	10.7	LA-25-95	30	5.5	12.8	18.4	14.1
LA-09-95	35	34.5	6.5	41.0	10.2	LA-31-95	5	33.9	7.0	40.9	8.1
LA-09-95	40	35.8	6.4	42.1	8.2	LA-31-95	10	35.0	8.5	43.4	5.9
LA-09-95	45	32.8	10.7	43.5	5.9	LA-31-95	15	36.2	8.8	45.1	6.3
LA-09-95	50	34.1	8.8	42.9	8.4	LA-31-95	20	36.5	9.2	45.7	6.1
LA-09-95	55	20.3	9.3	29.7	11.9	LA-31-95	25	36.4	7.3	43.7	8.0
LA-09-95	60	5.5	14.8	20.2	16.3	LA-31-95	30	32.8	10.2	43.0	10.2
LA-09-95	65	6.8	13.9	20.7	17.5	LA-31-95	35	32.3	10.6	42.9	8.1
LA-09-95	70	3.6	15.3	18.8	17.0	LA-31-95	40	24.5	7.9	32.4	9.0
LA-09-95	75	7.7	16.9	24.6	17.4	LA-31-95	45	8.2	9.1	17.3	11.9
LA-09-95	80	7.7	15.2	22.9	16.9	LA-31-95	50	7.6	9.9	17.4	13.0
LA-09-95	85	6.1	13.3	19.4	19.1	LA-31-95	55	8.4	9.3	17.7	10.8
LA-09-95	90	4.2	14.9	19.1	22.1						
LA-09-95	95	7.4	16.9	24.3	18.1						
LA-09-95	100	6.5	14.9	21.4	17.9						
LA-09-95	105	5.0	13.9	18.9	22.8						
LA-09-95	110	5.2	14.6	19.8	19.0						
LA-09-95	115	6.0	14.5	20.5	22.8						
LA-09-95	120	5.8	16.7	22.4	23.6						
LA-09-95	125	5.9	13.3	19.3	25.3						

1996 Historic Stations

Station	Depth (cm)	DSi (mg/g)	SSi (mg/g)	BSi (mg/g)	Min-Si (mg/g)	Station	Depth (cm)	DSi (mg/g)	SSi (mg/g)	BSi (mg/g)	Min-Si (mg/g)
LA-01H-96	15	43.9	9.9	53.8	8.5	LA-03H-96	15	41.6	11.8	53.4	10.5
LA-01H-96	25	40.4	8.4	48.7	13.0	LA-03H-96	17	41.4	11.8	53.2	9.5
LA-01H-96	30	39.7	10.2	49.9	13.1	LA-03H-96	20	39.4	10.6	50.0	11.5
LA-01H-96	32	37.8	11.8	49.5	12.0	LA-03H-96	22	31.9	10.4	42.3	15.2
LA-01H-96	34	40.1	11.8	51.9	13.0	LA-03H-96	24	28.3	12.1	40.4	13.0
LA-01H-96	36	36.8	11.7	48.5	13.1	LA-03H-96	26	21.1	10.2	31.4	19.4
LA-02H-96	10	36.6	6.6	43.2	5.5	LA-06H-96	27	34.2	11.4	45.6	11.4
LA-02H-96	15	37.5	10.0	47.5	3.8	LA-06H-96	29	31.0	15.1	46.2	6.2
LA-02H-96	20	40.3	12.2	52.5	1.2	LA-06H-96	31	31.3	15.7	47.0	6.2
LA-02H-96	25	35.7	13.6	49.3	2.8	LA-06H-96	33	34.8	13.1	47.9	6.6
LA-02H-96	30	35.6	9.7	45.4	7.1	LA-06H-96	35	37.6	11.1	48.7	11.7
LA-02H-96	35	37.3	9.6	46.8	4.9	LA-06H-96	38	36.2	13.3	49.5	10.0
LA-02H-96	40	42.5	9.8	52.3	4.7	LA-06H-96	40	37.5	11.9	49.4	12.6
LA-02H-96	45	43.4	10.5	53.9	4.5	LA-06H-96	45	38.9	14.4	53.4	11.9
LA-02H-96	50	46.3	9.9	56.2	4.7	LA-06H-96	50	25.5	10.5	36.0	15.5
LA-02H-96	52	45.2	11.3	56.5	5.6	LA-06H-96	55	10.1	12.4	22.5	15.6
LA-02H-96	54	52.4	11.7	64.1	0.6	LA-06H-96	60	9.0	12.1	21.1	12.6
LA-02H-96	56	50.5	8.6	59.1	4.7	LA-06H-96	65	9.9	11.5	21.4	14.4
LA-02H-96	58	50.1	14.6	64.7	1.0	LA-06H-96	70	8.5	9.1	17.6	13.4
LA-02H-96	60	52.7	9.6	62.2	3.5	LA-06H-96	75	6.7	7.4	14.1	9.0
LA-02H-96	62	53.9	11.3	65.3	9.7	LA-06H-96	80	13.7	11.3	25.0	10.7
LA-02H-96	64	52.7	13.5	66.2	7.2	LA-07H-96	25	31.4	9.3	40.7	20.5
LA-02H-96	66	54.5	9.7	64.2	7.9	LA-07H-96	27	25.9	6.8	32.7	23.2
LA-02H-96	69	54.5	9.5	64.1	8.8	LA-07H-96	29	24.5	11.3	35.7	17.9
LA-02H-96	74	54.3	12.4	66.8	5.4	LA-07H-96	31	31.5	4.1	35.6	17.9
LA-02H-96	79	54.9	13.0	67.9	9.4	LA-08H-96	33	45.7	10.8	56.5	10.4
LA-02H-96	82	44.7	14.4	59.1	8.2	LA-08H-96	35	47.0	8.6	55.7	9.6
LA-02H-96	84	36.0	12.7	48.6	10.6	LA-08H-96	37	44.3	13.1	57.5	9.6
LA-02H-96	87	27.1	16.2	43.3	11.4	LA-08H-96	39	33.6	9.2	42.9	12.7
LA-02H-96	89	25.3	17.4	42.7	7.6	LA-08H-96	41	31.4	10.2	41.6	12.1
LA-02H-96	92	27.2	12.8	39.9	11.0	LA-08H-96	43	34.4	9.2	43.6	11.8
LA-02H-96	94	27.4	14.6	42.0	9.4						
LA-02H-96	99	26.5	18.2	44.7	11.9						
LA-02H-96	104	26.5	14.4	40.9	13.5						
LA-02H-96	109	25.3	15.5	41.8	12.3						

APPENDIX E

Tables of Radiometric Analyses
Activities (dpm·g^{-1}; ± 1σ analytical error) are reported for total ^{210}Pb, ^{226}Ra (i.e., supported ^{210}Pb), ^{137}Cs, and excess (or unsupported) ^{210}Pb with depth in each historic core (LA-09H-95, LA-25H-95, LA-31H-95, LA-01H-96, LA-02H-96, LA-03H-96, LA-04H-96, LA-06H-96, LA-07H-96, LA-08H-96). Age (years), date, and the mass sedimentation rates (MSR; mg·cm^{-2}·yr^{-1}; ± 1σ propagated analytical error) obtained from the hybrid 1945 CRS model are given for each dated core.

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-09H	0-5	15.036	1.017	0.708	0.400	1.825	0.171	14.666	0.730	1994.8	1.00	67.37	3.94
1995	5-10	15.464	1.086	-0.129	0.374	2.365	0.192	15.127	0.232	1993.3	2.49	62.83	2.30
	10-15	14.429	1.159	0.978	0.437	2.062	0.186	14.025	0.998	1991.1	4.71	63.97	4.93
	15-20	16.728	0.984	1.055	0.383	2.990	0.165	16.387	1.070	1987.9	7.90	50.34	3.65
	20-25	15.880	0.975	2.577	0.429	2.736	0.171	15.488	2.589	1983.8	12.05	47.53	7.66
	25-30	15.371	1.049	1.196	0.420	2.691	0.220	14.991	1.219	1979.0	16.78	42.77	3.66
	30-35	16.363	0.738	0.800	0.277	3.234	0.143	16.127	0.814	1972.9	22.89	33.60	2.20
	35-40	12.729	0.732	1.011	0.311	4.115	0.127	12.447	1.021	1966.3	29.50	35.72	3.29
	40-45	12.890	0.664	0.566	0.254	3.893	0.120	12.663	0.579	1957.7	38.12	27.73	2.17
	45-50	12.037	0.709	0.407	0.274	4.149	0.119	11.790	0.425	1945.8	50.01	21.70	2.09
	50-55	7.674	0.505	0.915	0.210	2.391	0.083	7.508	0.924				
	55-60	2.896	0.497	0.991	0.228	0.537	0.084	2.674	0.997				
	60-65	2.193	0.629	0.346	0.261	0.496	0.083	1.936	0.356				
	65-70	1.165	0.540	0.272	0.263	0.487	0.092	0.905	0.288				
	70-75	2.183	0.593	1.179	0.279	0.215	0.093	1.910	1.186				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error
LA-25H	0-5	16.969	1.153	1.460	0.379	1.392	0.142	15.570	1.219
1995	5-10	13.274	1.215	1.265	0.348	1.875	0.143	12.057	1.268
	10-15	16.050	1.153	1.677	0.322	1.242	0.172	14.432	1.202
	15-20	4.103	0.722	1.223	0.252	0.557	0.091	2.893	0.768
	20-25	1.476	0.905	1.015	0.340	0.459	0.124	0.463	0.971
	25-30	1.006	0.692	1.140	0.258	0.284	0.092	0.000	0.743
	30-35	1.643	0.597	0.849	0.217	0.305	0.063		
	35-40	-0.336	0.640	1.054	0.257	0.359	0.082		
	40-45	1.510	0.663	1.534	0.274	0.275	0.081		
	45-50	0.761	0.611	1.305	0.233	0.271	0.069		
	50-55	0.053	0.572	0.526	0.226	0.065	0.080		
	55-60	2.238	0.557	1.194	0.224	0.201	0.055		
	60-65	1.811	0.553	0.250	0.209	0.285	0.062		
	65-70	0.789	0.502	0.534	0.182	0.214	0.070		

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-31H	0-5	13.053	1.181	2.349	0.491	1.392	0.190	10.746	1.284	1995.4	0.38	92.91	11.34
1995	5-10	14.732	1.150	0.968	0.520	1.787	0.165	13.820	1.267	1993.9	1.85	70.20	6.62
	10-15	15.272	1.473	2.010	0.555	1.390	0.187	13.317	1.581	1992.3	3.53	69.37	8.28
	15-20	14.177	1.066	-0.139	0.404	1.511	0.171	14.375	1.144	1985.5	10.26	56.47	4.50
	20-25	11.089	1.194	2.095	0.503	1.243	0.216	9.035	1.301	1980.5	15.35	74.68	10.26
	25-30	15.820	1.087	1.452	0.407	1.218	0.173	14.434	1.166	1971.5	24.35	37.63	2.97
	30-35	14.308	0.774	1.282	0.306	1.227	0.117	13.084	0.836	1959.3	36.46	29.95	2.00
	35-40	8.798	0.530	0.579	0.211	0.983	0.085	8.253	0.573	1945.8	49.95	31.92	2.39
	40-45	1.633	0.522	0.414	0.246	0.122	0.073	1.223	0.579				
	45-50	1.988	0.552	1.545	0.318	0.257	0.104	0.444	0.640				
	50-55	0.504	0.492	1.962	0.242	0.205	0.075	0.000	0.550				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-01H	0-5	11.802	0.528	1.458	0.081	1.317	0.067	10.382	0.536	1995.2	1.17	38.47	2.50
1996	5-10	14.311	0.774	1.342	0.522	1.321	0.102	13.016	0.937	1992.0	4.32	28.69	2.33
	10-15	15.108	0.548	1.418	0.510	1.386	0.079	13.742	0.751	1987.0	9.30	23.96	1.68
	15-20	13.136	0.862	1.678	0.353	2.660	0.067	11.503	0.935	1978.6	17.72	23.28	2.15
	20-25	12.200	0.608	1.726	0.139	2.984	0.057	10.515	0.626	1967.4	28.99	18.78	1.68
	25-30	9.385	0.772	2.271	0.378	7.974	0.090	7.143	0.863	1945.3	51.01	16.71	2.43
	30-32	8.467	0.554	2.070	0.508	8.351	0.061	6.422	0.755				
	32-34	9.214	0.455	1.928	0.260	6.780	0.075	7.325	0.527				
	34-36	7.468	0.473	1.799	0.341	5.965	0.068	5.700	0.586				
	36-38	3.522	0.417	1.781	0.093	1.053	0.051	1.752	0.429				
	38-40	3.136	0.407	1.615	0.127	0.998	0.049	1.530	0.429				
	40-42	3.069	0.440	1.757	0.186	1.032	0.049	1.320	0.481				
	42-44	3.633	0.441	2.011	0.201	0.834	0.050	1.632	0.488				
	44-49	1.949	0.446	1.705	0.206	0.441	0.059	0.245	0.494				
	49-51	1.212	0.433	1.652	0.578	0.507	0.056	0.000	0.000				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-02H	0-5	10.972	0.929	4.022	0.391	1.631	0.041	6.979	1.012	1996.1	0.21	174.71	25.48
1996	5-10	12.870	0.593	2.918	0.262	1.544	0.048	9.993	0.651	1994.9	1.47	119.26	7.98
	10-15	17.209	0.959	3.350	0.416	2.012	0.051	13.917	1.049	1993.1	3.24	81.68	6.23
	15-20	15.566	0.694	3.282	0.288	1.558	0.081	12.335	0.755	1991.9	4.40	88.05	5.61
	20-25	15.132	0.911	2.497	0.383	1.962	0.104	12.692	0.993	1989.8	6.58	81.25	6.40
	25-30	15.141	0.606	2.919	0.274	2.198	0.093	12.277	0.668	1987.7	8.64	78.63	4.52
	30-35	16.447	0.635	3.134	0.290	3.171	0.040	13.374	0.701	1984.1	12.24	66.11	3.67
	35-40	13.799	0.910	3.385	0.455	2.669	0.100	10.463	1.022	1978.6	17.70	73.43	6.89
	40-45	11.951	0.575	2.895	0.248	4.042	0.062	9.119	0.631	1975.5	20.83	73.65	5.21
	45-47.5	10.718	0.631	2.633	0.295	4.272	0.074	8.143	0.702	1974.1	22.20	76.87	6.80
	47.5-50	11.401	0.650	2.528	0.318	4.054	0.077	8.936	0.729	1972.7	23.61	67.08	5.66
	50-52	9.761	0.599	3.333	0.282	4.670	0.070	6.477	0.667	1971.7	24.65	89.08	9.38
	52-54	13.684	0.720	3.437	0.383	4.701	0.154	10.326	0.822	1970.2	26.17	53.69	4.46
	54-56	10.840	0.639	3.175	0.299	4.775	0.077	7.721	0.711	1968.9	27.47	68.72	6.54
	56-58	9.718	0.669	2.782	0.318	5.819	0.039	7.013	0.749	1967.7	28.66	72.78	7.97
	58-60	10.536	0.552	2.800	0.284	5.066	0.065	7.823	0.628	1966.2	30.12	62.61	5.32
	60-62	8.284	0.608	2.888	0.294	5.856	0.062	5.458	0.683	1965.1	31.25	86.19	10.99
	62-64	8.938	0.604	3.291	0.291	5.498	0.072	5.711	0.678	1963.8	32.55	79.31	9.63
	64-66	9.450	0.588	2.966	0.291	5.690	0.069	6.560	0.664	1962.5	33.88	66.28	6.98
	66-69	10.461	0.665	2.322	0.314	6.436	0.133	8.235	0.744	1959.6	36.79	49.44	4.66
	69-74	10.542	0.649	3.572	0.327	6.174	0.063	7.052	0.735	1954.7	41.63	51.20	5.39
	74-79	9.029	0.603	3.153	0.307	6.080	0.069	5.946	0.685	1949.8	46.49	52.21	6.04
	79-81.5	8.474	0.646	3.727	0.312	5.246	0.084	4.805	0.726	1947.5	48.87	57.68	8.82
	81.5-84	6.764	0.471	2.686	0.240	2.402	0.030	4.129	0.535	1945.3	51.07	62.50	8.39
	84-86.5	6.016	0.714	2.193	0.349	1.009	0.097	3.879	0.807				
	86.5-89	5.626	0.604	2.372	0.297	0.959	0.080	3.302	0.683				
	89-91.5	5.607	0.464	2.634	0.260	0.966	0.066	3.021	0.540				
	91.5-94	3.308	0.486	2.870	0.249	0.839	0.062	0.445	0.555				
	94-99	4.660	0.508	2.318	0.265	0.860	0.074	2.377	0.582				
	99-104	4.610	0.530	2.815	0.264	0.530	0.072	1.824	0.601				
	104-109	4.840	0.446	2.423	0.264	0.550	0.070	2.454	0.527				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-03H	0-5	14.155	0.581	1.296	0.081	1.793	0.083	12.905	0.588	1993.8	2.530	31.79	1.77
1996	5-10	13.121	0.842	1.611	0.627	2.106	0.104	11.552	1.054	1989.8	6.580	32.07	3.00
	10-15	14.249	0.522	2.028	0.372	2.917	0.070	12.268	0.643	1981.0	15.350	24.80	1.57
	15-17	12.267	0.633	1.929	0.143	3.083	0.083	10.379	0.651	1976.4	19.940	23.75	1.85
	17-20	13.412	0.795	1.601	0.676	2.909	0.120	11.858	1.048	1966.0	30.370	16.51	1.62
	20-22	10.999	0.568	1.439	0.303	1.956	0.072	9.599	0.647	1956.9	39.400	15.05	1.46
	22-24	10.605	0.704	1.769	0.209	2.082	0.082	8.872	0.737	1945.3	51.060	11.82	1.47
	24-26	7.841	0.450	1.708	0.408	1.285	0.053	6.158	0.610				
	26-28	5.822	0.455	1.577	0.147	1.112	0.075	4.267	0.480				
	28-30	4.686	0.408	1.732	0.283	1.335	0.063	2.970	0.499				
	30-32	4.365	0.441	1.621	0.320	0.788	0.073	2.760	0.548				
	32-34	3.263	0.488	1.564	0.102	0.440	0.075	1.709	0.501				
	34-36	3.292	0.460	1.456	0.047	0.514	0.062	1.851	0.466				
	36-38	2.207	0.387	1.635	0.068	0.156	0.066	0.577	0.396				
	38-40	1.945	0.371	1.223	0.394	0.158	0.058	0.730	0.547				
	40-45	2.177	0.406	1.428	0.246	0.151	0.066	0.756	0.479				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error
LA-04H	0-5	14.639	0.833	2.129	0.651	1.320	0.114	12.569	1.063
1996	5-10	17.571	0.639	1.782	0.342	1.299	0.085	15.865	0.728
	10-15	19.324	0.736	2.380	1.079	1.104	0.090	17.027	1.312
	15-17	10.622	0.453	1.960	0.250	0.612	0.058	8.707	0.520
	17-20	8.215	0.475	1.487	0.665	0.317	0.063	6.764	0.821
	20-22	9.007	0.423	1.770	0.181	0.260	0.056	7.283	0.463
	22-24	4.629	0.453	2.423	0.254	0.302	0.058	2.220	0.522
	24-26	3.152	0.438	1.739	0.432	0.549	0.054	1.423	0.620
	26-28	3.341	0.472	1.608	0.236	0.227	0.060	1.748	0.533
	28-33	3.849	0.392	1.816	0.169	0.311	0.056	2.051	0.430
	33-38	1.677	0.393	1.599	0.286	0.259	0.056	0.078	0.491
	38-43	2.918	0.607	1.320	0.253	0.094	0.086	1.613	0.664
	43-48	1.825	0.238	1.939	0.091	-0.018	0.028	0.000	0.257

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-06H	0-5	11.442	0.699	1.857	0.254	1.740	0.077	9.625	0.747	1995.5	0.85	66.24	9.11
1996	5-10	12.985	0.512	1.743	0.249	1.857	0.073	11.289	0.572	1993.6	2.72	54.14	6.98
	10-15	15.999	0.894	2.216	0.106	2.027	0.153	13.846	0.904	1989.3	7.07	40.09	5.80
	15-20	15.725	0.549	1.894	0.131	2.891	0.080	13.894	0.567	1982.6	13.79	33.67	5.38
	20-25	15.714	0.454	1.631	0.075	1.908	0.089	14.148	0.462	1978.5	17.84	64.91	5.20
	25-27	6.331	0.532	1.278	0.898	3.745	0.149	5.076	1.049	1976.6	19.76	70.87	20.15
	27-29	10.494	0.745	1.822	0.237	1.084	0.064	8.722	0.787	1973.3	23.03	38.06	8.92
	29-31	7.937	0.437	1.706	0.483	0.866	0.056	6.268	0.655	1970.9	25.44	48.47	12.53
	31-33	6.345	0.418	1.882	0.393	0.806	0.066	4.491	0.577	1968.8	27.51	63.09	17.92
	33-35	7.092	0.440	1.954	0.136	0.782	0.069	5.170	0.464	1966.2	30.17	50.91	14.65
	35-37.5	8.507	0.439	1.674	0.028	0.381	0.074	6.877	0.443	1961.1	35.22	33.97	10.70
	37.5-40	7.616	0.456	1.720	0.081	0.690	0.066	5.934	0.466	1945.3	50.99	28.72	12.30
	40-45	8.081	0.447	1.622	0.238	0.551	0.071	6.502	0.509				
	45-50	6.723	0.449	1.247	0.047	0.336	0.069	5.513	0.455				
	50-55	3.240	0.450	1.523	0.157	0.188	0.071	1.729	0.480				
	55-60	1.806	0.424	1.766	0.486	0.308	0.075	0.040	0.649				
	60-65	2.634	0.464	1.359	0.239	0.417	0.061	1.285	0.526				
	65-70	0.876	0.394	1.256	0.160	0.228	0.065	0.000	0.429				
	70-75	1.415	0.419	1.463	0.163	0.003	0.056	0.000	0.455				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-07H	0-5	13.065	0.430	1.727	0.193	1.408	0.050	11.392	0.473	1994.1	2.44	27.86	1.89
1996	5-10	12.600	0.431	1.526	0.373	1.261	0.054	11.129	0.573	1990.2	6.31	25.86	2.00
	10-15	15.694	0.407	1.467	0.323	1.485	0.062	14.301	0.522	1982.3	14.23	16.78	1.33
	15-20	13.921	0.475	1.715	0.232	1.759	0.070	12.271	0.531	1968.0	28.54	13.91	1.48
	20-25	10.323	0.383	1.598	0.076	1.887	0.052	8.775	0.392	1945.5	51.06	11.10	1.95
	25-27	8.520	0.466	1.751	0.026	0.677	0.057	5.804	0.470				
	27-29	4.683	0.484	1.679	0.188	0.526	0.066	3.021	0.523				
	29-31	3.344	0.488	1.346	0.294	0.332	0.056	2.010	0.573				
	31-33	5.936	0.554	1.710	0.309	0.314	0.067	4.254	0.638				
	33-35	5.150	0.378	1.599	0.315	0.230	0.045	3.574	0.495				
	35-37	5.013	0.501	1.524	0.321	0.401	0.059	3.513	0.599				
	37-39	5.496	0.494	1.421	0.117	0.355	0.061	4.103	0.511				
	39-41	5.839	0.353	1.576	0.116	0.322	0.044	4.292	0.374				
	41-43	4.240	0.466	1.970	0.374	0.282	0.063	2.286	0.602				
	43-45	4.881	0.411	1.865	0.537	0.312	0.049	3.040	0.681				
	45-50	4.979	0.422	1.658	0.378	0.324	0.052	3.347	0.571				
	50-55	1.817	0.355	1.828	0.369	0.149	0.043	0.000	0.517				
	55-60	1.813	0.443	1.332	0.192	0.160	0.053	0.000	0.487				
	60-65	0.302	0.413	1.385	0.193	0.110	0.058	0.000	0.460				
	65-70	0.879	0.366	1.424	0.154	0.322	0.044	0.000	0.400				

Station ID	Depth Interval (cm)	Total 210Pb (dpm/g)	Total 210Pb error	226Ra (dpm/g)	226Ra error	137Cs (dpm/g)	137Cs error	Excess 210Pb (dpm/g)	Excess 210Pb error	Date	Age (years)	Mass Sed. Rate	MSR error
LA-08H	0-5	14.380	0.435	1.601	0.095	1.629	0.068	12.149	0.448	1994.9	1.61	35.97	2.04
1996	5-10	14.302	0.391	1.833	0.539	1.860	0.056	12.073	0.669	1992.1	4.45	33.78	2.39
	10-15	13.928	0.426	1.506	0.221	2.042	0.041	11.698	0.482	1987.8	8.75	31.22	2.02
	15-20	14.603	0.448	1.890	0.309	2.643	0.054	12.379	0.547	1980.9	15.63	24.83	1.82
	20-25	11.808	0.475	1.561	0.043	3.198	0.077	9.571	0.480	1973.1	23.46	25.56	2.26
	25-27	10.868	0.479	2.048	0.365	3.658	0.070	8.627	0.606	1969.7	26.78	23.80	2.66
	27-29	10.933	0.454	1.939	0.420	3.358	0.076	8.694	0.622	1965.6	30.91	21.04	2.54
	29-31	10.301	0.511	1.743	0.291	4.232	0.088	8.061	0.592	1960.7	35.83	19.72	2.64
	31-33	8.960	0.513	1.622	0.230	6.543	0.049	6.712	0.565	1956.1	40.43	20.43	3.15
	33-35	8.817	0.470	1.938	0.268	6.201	0.105	6.569	0.544	1951.6	44.96	18.11	3.09
	35-37	8.211	0.535	1.888	0.354	5.657	0.092	5.961	0.646	1945.5	50.98	16.95	3.46
	37-39	6.877	0.351	1.575	0.230	2.080	0.059	4.619	0.422				
	39-41	6.126	0.337	1.492	0.231	0.663	0.054	3.864	0.412				
	41-43	6.205	0.606	1.738	0.637	0.183	0.108	3.945	0.885				
	43-45	7.110	0.544	1.430	0.194	0.419	0.081	4.856	0.581				
	45-50	4.370	0.461	1.493	0.285	0.293	0.072	2.097	0.546				
	50-55	3.141	0.364	1.554	0.242	0.360	0.059	0.859	0.440				
	55-60	3.653	0.391	1.842	0.326	0.342	0.061	1.375	0.513				
	60-65	1.296	0.500	1.177	0.446	0.349	0.075	0.000	0.674				
	65-70	2.788	0.427	1.388	0.118	0.304	0.069	0.000	0.447				
	70-75	2.219	0.417	2.085	0.172	0.266	0.067	0.000	0.456				
	75-80	2.448	0.598	1.894	0.425	0.151	0.095	0.000	0.741				
	80-85	3.119	0.523	1.805	0.312	0.174	0.087	0.000	0.616				
	85-90	1.454	0.562	2.204	0.354	0.279	0.096	0.000	0.672				
	90-95	2.691	0.488	2.222	0.239	0.201	0.073	0.000	0.550				

APPENDIX F

Diatom Counts for Cores LA9-95, LA25-95, LA31-95, and LA2H-96

Diatom Counts at LA9-95, Lake Apopka. Units are 10^5 valves g^{-1} dry weight of sediment.

Depth (cm)	5	15	25	35	45	55	65	75	85	95	105	115	125
Entity													
Achnanthes clevei var. rostrata	5	0	0	0	0	0	0	1	3	0	0	0	0
Achnanthes exigua	0	0	0	0	0	3	2	2	5	5	0	3	0
Achnanthidium minutissima	0	0	0	0	0	0	0	0	0	0	0	0	0
Amphora ovalis var. affinis	14	23	0	9	0	4	40	15	16	27	4	1	14
Anomoeoneis sphaerophora var. sculpta	5	0	0	0	0	0	7	0	0	0	4	0	5
Aulacoseira granulata	0	0	0	0	0	8	0	0	0	0	0	0	0
Aulacoseira granulata var. angustissima	0	0	0	0	0	0	0	0	0	0	0	0	0
Aulacoseira italica	1607	1478	1941	1423	2172	299	60	98	122	167	40	62	49
Caloneis sp. 1	0	0	0	0	0	0	5	0	0	3	4	1	0
Caloneis sp. 2	0	0	0	0	0	0	1	0	0	0	0	0	0
Craticula cuspidata	14	37	46	37	0	3	0	5	5	0	4	0	0
Cyclotella meneghiniana	0	0	37	46	46	4	1	2	0	0	0	0	0
Cyclotella stelligera	0	0	0	0	0	0	7	8	0	8	4	1	4
Cymbella sp.	0	0	0	18	18	12	37	18	2	10	5	10	8
Diploneis pseudovalis	0	0	0	0	0	0	0	0	0	0	0	0	1
Epithemia argus	5	0	9	0	0	0	0	1	3	0	0	0	0
Eunotia arcus	0	0	0	9	18	3	7	13	4	3	4	10	5
Gomphonema gracile	0	0	0	0	0	0	2	0	0	0	0	0	0
Gomphonema sp.	0	9	0	0	0	0	3	1	1	3	2	3	0
Mastogloia smithii	18	0	0	9	18	3	8	5	4	0	0	4	6
Navicula halophila	0	0	0	0	0	0	0	0	0	0	0	0	0
Navicula lanceolata	14	0	0	0	0	0	0	0	0	0	0	0	0
Navicula radiosa	115	23	111	111	55	15	30	16	17	35	5	14	6
Neidium iridis var. ampliatum	0	0	0	0	0	0	7	5	6	0	0	0	0
Nitzschia amphibia var. rostrata	0	0	0	46	0	0	14	9	13	24	4	1	4
Nitzschia liebtruthii var. major	0	0	0	28	18	0	0	0	0	0	0	0	0
Nitzschia palea	18	0	0	0	0	0	0	0	0	0	0	0	0
Nitzschia scalaris	0	0	9	0	0	0	8	3	0	0	0	0	0
Nitzschia sp.	0	0	0	0	0	0	2	0	0	0	0	0	0
Pinnularia microstauron	0	0	0	0	0	0	0	0	0	0	0	1	0
Pinnularia sp.	0	18	0	9	18	5	52	45	43	42	16	16	29
Pseudostaurosira brevistriata	60	79	582	1543	1248	194	45	13	11	18	3	5	2
Sellophora pupula var. rectangularis	0	0	0	0	0	0	6	5	6	5	0	0	0
Stauroneis phonicenterion var. gracilis	0	0	0	0	0	0	0	3	4	4	0	0	0
Staurosira construens	42	28	139	508	176	26	14	0	10	7	3	3	7
Staurosira construens var. venter	14	0	37	37	46	12	17	10	15	10	2	4	4
Staurosirella leptostauron	0	0	0	0	0	0	2	8	4	0	0	0	0
Staurosirella leptostauron var. dubia	0	0	18	0	0	0	7	7	0	7	5	0	0
Staurosirella pinnata	111	60	712	277	379	35	15	4	12	8	14	4	4
Synedra sp.	0	0	0	0	0	0	5	4	7	4	0	3	4
Total	2042	1755	3641	4113	4214	626	404	299	311	390	120	147	152

Diatom Counts at LA25-95, Lake Apopka. Units are 10^5 valves g^{-1} dry weight of sediment.

Depth (cm)	5	10	15	20	25
Entity					
Achnanthes clevei var. rostrata	0	0	0	0	0
Achnanthes exigua	0	0	0	1	0
Achnanthidium minutissima	0	0	0	0	0
Amphora ovalis var. affinis	5	14	5	11	10
Anomoeoneis sphaerophora var. sculpta	0	0	0	3	0
Aulacoseira granulata	0	0	0	0	0
Aulacoseira granulata var. angustissima	0	0	0	0	0
Aulacoseira italica	1441	1427	1594	192	70
Caloneis sp. 1	0	0	0	0	0
Caloneis sp. 2	0	0	0	0	0
Craticula cuspidata	14	5	0	2	2
Cyclotella meneghiniana	5	28	0	0	0
Cyclotella stelligera	0	0	0	1	1
Cymbella sp.	0	0	5	0	0
Diploneis pseudovalis	0	0	0	0	1
Epithemia argus	0	5	5	4	0
Eunotia arcus	0	0	0	0	3
Gomphonema gracile	0	0	0	0	0
Gomphonema sp.	0	0	0	0	0
Mastogloia smithii	14	5	14	7	7
Navicula lanceolata	0	0	0	0	0
Navicula radiosa	148	102	148	6	1
Neidium iridis var. ampliatum	0	0	0	3	0
Nitzschia amphibia var. rostrata	0	0	0	0	0
Nitzschia liebtruthii var. major	0	0	0	0	0
Nitzschia palea	0	0	0	0	0
Nitzschia scalaris	0	0	0	0	0
Nitzschia sp.	0	0	0	0	0
Pinnularia microstauron	0	0	0	0	0
Pinnularia sp.	0	14	5	6	1
Pseudostaurosira brevistriata	115	79	92	2	0
Sellophora pupula var. rectangularis	0	0	0	0	0
Stauroneis phonicenterion var. gracilis	0	0	0	0	0
Staurosira construens	0	0	51	0	0
Staurosira construens var. venter	5	28	23	0	0
Staurosirella leptostauron	0	0	0	1	0
Staurosirella leptostauron var. dubia	0	0	0	1	0
Staurosirella pinnata	115	222	203	10	0
Synedra sp.	0	0	0	0	0
Total	1861	1926	2143	249	95

Diatom Counts at LA31-95, Lake Apopka. Units are 10^5 valves g^{-1} dry weight of sediment.

Depth (cm)	5	10	15	20	25	30	35	40	45	50	55
Entity											
Achnanthes clevei var. rostrata	0	0	0	0	0	0	0	0	0	0	0
Achnanthes exigua	0	0	0	0	0	0	0	0	5	0	0
Achnanthidium minutissima	5	0	0	0	0	5	0	0	0	0	0
Amphora ovalis var. affinis	0	5	0	0	0	14	0	0	97	152	97
Anomoeoneis sphaerophora var. sculpta	0	0	0	0	0	0	5	5	32	65	18
Aulacoseira granulata	0	0	0	0	0	0	0	0	0	0	0
Aulacoseira granulata var. angustissima	5	0	5	0	0	0	0	0	0	0	0
Aulacoseira italica	1677	1529	1464	1667	1644	1418	1492	1464	1436	1007	688
Caloneis sp. 1	0	0	0	0	0	0	0	0	0	0	0
Caloneis sp. 2	0	0	0	0	0	0	0	0	0	0	0
Craticula cuspidata	0	0	0	0	0	0	0	0	0	0	5
Cyclotella meneghiniana	0	23	5	9	0	9	0	5	23	0	0
Cyclotella stelligera	46	0	0	0	0	0	0	14	23	5	5
Cymbella sp.	0	0	0	0	0	0	9	0	37	51	18
Diploneis pseudovalis	0	0	0	0	0	0	0	0	0	0	0
Epithemia argus	0	5	0	0	0	5	5	0	0	5	18
Eunotia arcus	0	5	0	0	0	0	0	0	0	14	0
Gomphonema gracile	0	0	0	0	0	0	0	0	0	23	0
Gomphonema sp.	0	0	0	0	0	0	0	0	0	0	0
Mastogloia smithii	0	0	5	0	5	0	5	0	0	60	9
Navicula halophila	0	46	14	9	23	14	23	18	28	23	14
Navicula radiosa	139	139	92	102	180	217	88	125	79	83	18
Neidium iridis var. ampliatum	0	0	0	0	0	0	0	0	0	23	0
Nitzschia amphibia var. rostrata	5	0	0	0	0	0	0	0	18	0	9
Nitzschia liebtruthii var. major	0	0	0	0	0	0	0	0	0	0	0
Nitzschia palea	0	0	0	55	23	14	9	0	0	0	0
Nitzschia scalaris	28	0	0	0	0	0	0	0	14	9	14
Nitzschia sp.	0	0	5	5	0	0	0	0	5	0	0
Pinnularia microstauron	0	0	0	0	0	0	0	0	0	0	0
Pinnularia sp.	0	0	0	0	0	0	18	0	65	60	23
Pseudostaurosira brevistriata	203	129	129	217	176	152	139	74	60	28	51
Sellophora pupula var. rectangularis	0	0	0	0	0	0	0	0	0	0	0
Stauroneis phonicenterion var. gracilis	0	0	0	0	0	0	0	0	0	0	0
Staurosira construens	69	97	102	88	55	55	37	9	46	28	9
Staurosira construens var. venter	0	0	0	23	0	0	23	14	9	152	51
Staurosirella leptostauron	0	0	0	0	0	0	0	0	0	0	0
Staurosirella leptostauron var. dubia	0	0	0	0	0	0	0	18	0	0	0
Staurosirella pinnata	171	134	171	180	143	152	115	125	92	106	55
Synedra sp.	0	0	65	23	0	0	0	0	14	37	9
Total	2346	2111	2055	2379	2249	2055	1968	1871	2083	1931	1113

Diatom Counts at LA2H-96, Lake Apopka. Units are 10^5 valves g^{-1} dry weight of sediment.

Depth (cm)	69	82	89	99	109
Entity					
Achnanthes clevei var. rostrata	0	0	0	0	0
Achnanthes exigua	0	5	9	0	0
Achnanthidium minutissima	0	0	0	0	0
Amphora ovalis var. affinis	0	0	9	12	12
Anomoeoneis sphaerophora var. sculpta	23	23	51	4	8
Aulacoseira granulata	0	0	0	0	0
Aulacoseira granulata var. angustissima	0	0	0	0	0
Aulacoseira italica	587	988	1095	261	407
Caloneis sp. 1	0	0	0	3	0
Caloneis sp. 2	0	0	0	0	0
Craticula cuspidata	0	0	14	11	0
Cyclotella meneghiniana	69	42	14	0	0
Cyclotella stelligera	0	0	14	5	8
Cymbella sp.	0	0	14	0	0
Diploneis pseudovalis	0	0	0	0	0
Epithemia argus	0	0	14	4	5
Eunotia arcus	0	0	0	0	5
Gomphonema sp.	0	0	0	0	0
Gomphonema gracile	0	0	0	0	0
Mastogloia smithii	0	14	83	15	14
Navicula halophila	0	0	0	0	0
Navicula lanceolata	0	0	0	0	0
Navicula radiosa	176	37	32	0	18
Neidium iridis var. ampliatum	0	5	0	1	3
Nitzschia sp.	0	0	0	0	0
Nitzschia amphibia var. rostrata	0	0	9	5	1
Nitzschia liebtruthii var. major	0	0	18	0	0
Nitzschia palea	0	0	0	0	0
Nitzschia scalaris	0	0	0	0	0
Pinnularia sp.	0	0	51	0	8
Pinnularia microstauron	0	0	0	0	0
Pseudostaurosira brevistriata	577	240	217	11	7
Sellophora pupula var. rectangularis	0	0	0	1	0
Staurosira construens	1164	1141	222	14	16
Staurosira construens var. venter	134	102	88	15	19
Staurosirella leptostauron var. dubia	0	0	23	0	12
Staurosirella leptostauron	0	0	0	0	0
Staurosirella pinnata	0	65	0	0	60
Stauroneis phonicenterion var. gracilis	0	0	0	0	3
Synedra sp.	0	0	0	0	0
Total	2730	2661	1977	363	607