A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA ALONG FLORIDA'S CENTRAL EAST COAST

ANNUAL REPORT TO MMS - YEAR 1

Contract Period July 1, 1994 through June 30, 1995
Cooperative Agreement No. 14-35-0001-330757

Ron Hoenstine and Henry Freedenberg, Principal Investigators
with laboratory analysis and field assistance by
Zi-Qiang Chen and Holly Williams

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Florida Geological Survey
Tallahassee, Florida

State of Florida
Department of Environmental Protection
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CONVERSION FACTORS AND ABBREVIATIONS

This table of the most commonly used conversion factors is provided for readers who may prefer to use metric units instead of the English units given in this report.

MULTIPLY	BY	TO OBTAIN
inch (in)	25.4	millimeter (mm)
inch (in)	2.54	centimeter (cm)
inch (in)	0.0254	meter (m)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer
sq. feet	0.0929	sq. meter
sq. mile	2.59	sq. kilometer
acre (ac)	0.4047	hectare (ha)
acre (ac)	4047	sq. meter
cubic foot	0.02832	cubic meter
cubic yard	0.7646	cubic meter
gallon (gal)	3.785	liter (L)
gallons per minute (gpm)	0.06308	liter per second (L/s)
gallons per minute (gpm)	0.0022	cubic feet/second (cfs)
gallons per minute (gpm)	0.00006309	cubic meters/second
cubic feet per second (cfs)	449	gallons per minute (gpm)
cubic feet per second (cfs)	0.02832	cubic meters/second
pound (lb)	0.4536	kilogram (kg)
ton, short (2,000 lbs)	0.9072	megagram (Mg)
ton, long (2,240 lbs)	1.016	megagram (Mg)
Fahrenheit (F)	5/9 (F-32)	Centigrade

Sea Level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929) -- a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Sea Level Datum of 1929" or "mean sea level (MSL)." Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific coasts, it does not necessarily represent local mean sea level at any particular place.

Part I Introduction and Summary

This report documents a literature review, data search and findings of the Year 1 cooperative agreement between the United States Minerals Management Service (MMS) and the Florida Geological Survey (FGS). The purpose of this agreement is to identify and characterize offshore sands suitable for potential beach restoration along the central east coast of Florida. Southern Brevard, Indian River, St. Lucie and Martin counties are included in this study. Year 1 tasks include contacting local organizations to provide a history of previous work done in the study area, conducting a thorough literature search to document past work done in the area of investigation, collecting representative onshore push cores and vibracores to characterize existing beach sediment, and determining existing zones of maximum erosion/accretion based on the literature search and local interviews.

This report, which serves as a Year 1 annual report for this MMS cooperative agreement, consists of an introduction and summary, annotated bibliography, coastal atlas and granulometric core characterization data. Selected photographs of field activities are also included. The granulometric data and core characterization data are enclosed under a separate cover. A map indicating proposed seismic coverage for future phases of this study was prepared as part of the coastal atlas. Grain size distribution summaries are included in the lithology log and granulometrics section.

In the course of preparing this report, more than 160 reprints and professional publications were examined to document work previously done in the study area. Of these publications, 40 were considered Historical Background and Regional Summary papers, 42 documents concerned Sediment and Wave Mechanics, six papers were concerned with Breakwater and Groin Design, 71 papers were case history oriented Beach and Inlet Studies and nine papers discussed Field Procedures and Techniques.

Fifteen PVC push cores and two aluminum vibracores were also collected as a part of this investigation. Fourteen of these cores were collected at arbitrarily chosen locations throughout the study area. The fifteenth core was collected at a control location on Cape Canaveral in northern Brevard county. Two hundred and nineteen samples were extracted from these cores for granulometric analysis. A subgroup of forty-nine granulometric samples was chosen for digestion in hydrochloric acid. These samples were then analyzed to determine size distribution of the carbonate grains. Median grain size for the entire sample population was found to be 0.433mm (1.2ϕ). Median size of the carbonate grains was determined to be 0.602mm (0.73ϕ) and median silica grain size was 0.366mm (1.45ϕ). The carbonate grains were locally formed and primarily biogenic in origin (shell fragments and coral debris) while the silica grains showed evidence of longshore transport. Overall sample grain size and silica grain size distributions were found to approximate log-normality while the carbonate grain size distribution was, in many cases, bimodal. Bimodality of the carbonate grains can be attributed to distinctive populations of coarse shell fragments and finer grained abrasion products. Carbonate abundance in the digested sample was highly variable ranging between 18.80 and 83.52 %. In general, carbonate abundance in beach sand increases as one moves southward along Florida's east coast. An Appendix showing the results of grain size distribution analyses has been included in this report.

A beach restoration atlas was prepared for the study area. This atlas includes information on bathymetry, information on previous geophysical surveys, location of previously collected grab samples, push cores and vibracores. Areas of eroding shoreline are also shown along with information on known hardbottom areas (where available). Areal photography was used in developing this data (photo inventories are maintained at the Division of Beaches and Shores of the Florida Department of Environmental Protection and at the Florida Department of Transportation). A preliminary coverage grid has been developed for future offshore acoustic profiling work.

Findings of this investigation indicate that the largest concentrations of offshore sand suitable for beach nourishment are found on shoals paralleling the coastline. While past generic assessments of these resources have been made, detailed studies are needed in order to characterize these sands. In view of the ever-increasing need for renourishment sand, it is important that these resources be delineated as soon as practical.

Tourism provides a significant portion of the State of Florida's industrial revenue. Recreational beach and coastal resources provide one of Florida's most attractive tourist activities. Florida's beaches are disappearing along many portions of both the east and Gulf coasts. This report provides a summary of the history of beach preservation along Florida's east coast with particular emphasis on southern Brevard, Indian River, St. Lucie and Martin counties. The evolution of beach renourishment as a discipline is examined and various nourishment schemes are discussed.

Florida's coast consists of more than 800 miles of ocean-fronting shoreline. Of this total, 140 miles are critically eroding while 304 miles are eroding in a near critical state (Clark, 1993). The restoration and maintenance of critically eroding beaches are a top priority for state environmental planners and tourist officials.

Restoration of eroding beaches was initiated in the New York-New Jersey metropolitan area around the turn of the century. Anecdotal evidence suggests that northern New Jersey beaches were renourished as early as the 1890's while a major sand replenishment project was completed along New York's Coney Island in 1923 (Dornhelm, 1995). It was not until then that economic development along the shore had progressed enough to make beach nourishment feasible. Shoreline improvement projects have been universally driven by economic considerations. Typically, these include water front structures being threatened or a resort area facing a shortfall in tourist revenues due to beach disappearance. During the early years (throughout the early 1900's) beach armoring was the preferred remedy in many protection projects (i.e., the construction of the Galveston, Texas seawall completed in 1911). The eventual fate of beach sands was considered unimportant during these early armoring projects.

Beach armoring, especially the installation of seawalls and groins, continued to be widespread through the 1960's. Beginning in the early 1950's, the scientific community began to realize that, in many cases, beach armoring was creating more problems than was subject to intensified erosional pressure. There was a profound realization that armoring would only serve to reflect impinging wave energy in contrast to the energy dispersal found on a sand beach. The reflected wave energy would carry the sand remaining in front of the structure seaward leaving nothing in its place. Beaches in front of armoring structures were often found to disappear entirely. The undermining of armoring structures became common as longshore currents outflanked their edge walls ("return walls").

As the inadequacy of beach armoring was recognized, the search was undertaken for an effective replacement. Sand replenishment gradually gained primacy as the most desirable form of erosion protection. While renourishment projects have been carried out since the turn of the century, it was not until the mid-1950's that the discipline was quantified and systematic studies began to be performed. The period from the mid-1950's through the mid-1970's saw rapid development of guiding criteria for beach nourishment efforts. Per Bruun at the University of Florida is widely recognized as leading American efforts in coastal engineering. Following Bruun came Robert G. Dean, William R. James and W. C. Krumbein with work continuing at the U.S. Army Coastal Engineering Research Center in Vicksburg, Mississippi. Each of the previously mentioned parties developed their own criteria for selecting sand sized sediment suitable for beach renourishment.

Borrow material for early nourishment efforts came from the upland and nearshore sources immediately adjacent to the area being nourished. Sand was dredged or scraped from the bottom and placed on an adjacent beach. As nearby sands became scarce, the search for borrow sand moved to more distant source areas. For the first time, borrow material was gathered from locales that did not share a common sediment budget with the area being renourished. Upland sources also became a factor in supplying borrow material for many of the more modest beach nourishment projects. Offshore, the quest for borrow sand was limited only by water depth and transportation cost. For the more ambitious nourishment projects, it was found to be far more economical to bring sands in from offshore than to transport sand by the truckload from upland sources.

Many studies have been undertaken in an effort to determine exactly what qualifies a sand as suitable borrow material for beach nourishment. In some of the early projects, borrow sand was indiscriminately chosen with little regard to the grain size distribution of sand on the eroding beach. In many early efforts an overfill ratio was calculated simply by excluding all material finer than sand size. This sometimes worked satisfactorily; but, more often, it was found that if the fine fraction of the borrow sand was finer than the native material, the borrow sand fines would wash away prematurely and the beach would be in a perpetual state of malnourishment. Borrow material coarser than the native material would remain on the beach but would be subject to depositional banding rendering the beach cosmetically unattractive and difficult to use for recreational purposes.

It is now widely recognized that, in order to compensate for erosional losses of newly placed material, the volume of borrow material must exceed the volume of the material being replaced. Several schemes have been developed for calculating the amount of overfill material required. All of these methods depend on matching the grain size distribution characteristics of the borrow material to the grain size distribution characteristics of the native material. Variances in grain size distribution between the native and borrow materials are used to calculate a factor (variously called the SPM fill factor, the Dean fill factor, the Renourishment factor or the Adjusted SPM fill factor, depending on the method of calculation) which determines the volume of borrow material needed in excess of the original sediment volume.

Krumbein (1957) briefly discusses methods for comparing the grain size distribution of native and borrow materials. The first detailed method for computing overfill ratios was developed by Krumbein and James (1965). The Krumbein and James method is predicated upon trying to predict the minimum amount of material that must be removed from each size fraction of the borrow material in order for the borrow material and native material grain size distributions to match.

The Shore Protection Manual (SPM) method, promulgated by the Corps of Engineers (1973) is basically a modification of the Krumbein and James method. Both methods assume log-normality of the borrow material and native material grain size distributions and neither technique can be applied where the native material is more poorly sorted than the borrow material. Also, the values obtained using both methods are unrealistic when the borrow material is better sorted than the native material.

Dean (1974) developed an overfill ratio calculation which depended only on the mean grain size of the distribution curve. The shape of the grain size distribution curve was not considered important. Dean's method assumes that selective removal will only occur in the fine fraction of the borrow material grain size distribution. All materials coarser than an arbitrary cutoff size are implicitly assumed to be stable (non-mobile). There is some controversy as to the validity of these assumptions. Dean's method yields lower overfill values than any of the other techniques discussed.

Closely allied to the calculation of overfill ratios is the work of James (1974) who refined the work of the above mentioned investigators. James derives a procedure for calculating the periodic renourishment needs of eroding beaches.

All of the above characterization schemes specifically address the behavior of quartz sand grains in the beach-shore system. Many of the beaches in the MMS/FGS cooperative agreement study area have substantial amounts of.carbonate sand. The carbonate sediment content increases from north to south. The carbonate grains are mainly composed of coral and shell fragments. Carbonate is much softer and much easier to degrade than silica. While various authors have made reference in passing to the silica-carbonate system, there has never been a detailed study done of grain behavior in a mixed system.

Classically, sieve analysis has been used to perform granulometric analyses. Within the past 20-30 years newer technologies have begun to displace sieve analysis in grain size measurement work. These technologies include the Rapid Sediment Analyzer (RSA) and the laser counter. Various studies have been performed comparing the validity of results obtained with different analytical methods. Sieve work is generally accepted to be repeatable and provide a universally accepted measurement tool; however, it is also time consuming and inferences about the behavior of submerged particles can't be made from sieve work. Both the RSA and the laser counter offer a rapid method for sediment analysis. Both methods measure the settling time for the sediment sample to pass through a given volume of water. Hydrodynamic equivalence, rather than true grain size, is measured with the RSA and the laser counter. While results are repeatable using the same individual instrument, results from differing instruments cannot be compared. Studies, however controversial, have also shown that settling methods tend to underestimate the presence of the finest and coarsest fractions of the sediment (Bergman, 1982).

The term mature technology carries a connotation of industry-wide adherence to a uniform set of practices. In view of the various overfill ratio calculation methods (no two of which yield identical results) and the competing techniques advocated for obtaining granulometric data, it is apparent that beach preservation technology is far from mature.

Eroding beaches are in a state of structural failure. The existing beach sand is not able to withstand the impinging wave action. Why then would one want to cure erosion problems by adding sediment of identical composition to a beach in the process of being washed away? One sometimes obtains the impression that renourishing beaches with sand of a grain size distribution known to erode is akin to throwing fodder into the breach.

Within the past few years, at least one investigator (Bruun, 1989) has developed the notion of nourishing the entire beach profile as opposed to limiting sand placement to the shoreface. This philosophy espouses the distribution of sand across the entire beach profile. With full profile renourishment, there will be less erosional pressure on the shoreface. Full profile renourishment is also attractive because sands of differing quality can be used in the nourishment activities. Finer grained sands that would be unsuitable for shoreface placement would be appropriate for utilization at the toe end of the beach profile. This type of nourishment still attempts to duplicate the conditions that exist in a system that is in a state of structural failure (the original beach). In view of this, it is easy to predict that full profile restoration will face the same obstacles as shoreface centered efforts.

Perhaps a better solution to the problem of beach nourishment would be to go into the project with a clear idea of how the final beach profile should appear. Back (hindcast) calculations could then be performed to determine the grain size distribution necessary for achieving a stable profile in the field environment. If the back calculations yield unrealistic fill requirements, the desired end profile should be adjusted to a form that is more readily obtainable.

In general, eroding beaches experience, continual natural sediment resupply. If this were not the case, the grain size of the sands on any eroding beach would become continually finer over time until they were finally reduced to silt/clay size particles. Net beach erosion and/or accretion is determined by comparing the rate of sediment resupply to the rate of sediment removal by wave action and longshore transport (drift). If the removal rate exceeds the resupply rate, the beach will erode. If the rate of resupply predominates, the beach will accrete.

All beaches undergo cyclical periods of erosion and accretion. This cyclicity may occur on a daily or monthly basis (tidal variation), annual basis (seasonal variation- many beaches erode during the winter and accrete during the summer) or it may be displayed on a multiyear "mega-cyclic" basis (storm cycle frequencies--perhaps related to el nino). The classification of a beach as to whether it is eroding or accreting depends as much on the time period chosen for measurement as it does on the local wave energy.

In the study area for this FGS/MMS cooperative agreement, two major factors, one natural and the other cultural, determine beach sediment budgets and, therefore, the rate of erosion/accretion. Severe storms are acute events capable of significantly altering the beach sediment budget over a short period of time. The Thanksgiving Day storm of 1984 and the unnamed storm of March 1993 provide outstanding examples of this. The installation of man-made inlet protection jetties also have a profound effect on beach sediment transport.

There are no non-maintained navigable inlets along the coast of the study area. The maintenance of a natural inlet through the barrier bar depends upon there being enough tidal current passing through the inlet mouth to flush out whatever sand is being moved across the inlet mouth by longshore drift. While natural inlets have sporadically formed after major storms, there is generally not enough tidal exchange between the Atlantic Ocean and the Indian River Lagoon via these inlets to overcome longshore drift. As a result, the mouths of these natural inlets will inevitably silt up due to the excess sediment supply provided by coastwise transport.

Proximity of the beach to one of the four jetty-protected inlets in the study area is the second major predictor of erosion/accretion for a given beach. Longshore flow in the study area is predominantly towards the south. Jetties designed to protect inlet mouths do an outstanding job of interrupting longshore sediment flow. Sediment accumulates updrift of the north jetty at each of the inlets and chronic sediment deficits occur downdrift of the south jetty. Various bypassing schemes have been tried to facilitate the transport of sand around the inlet mouth jetty system but, to date, none of these designs have been successful.

The extent of sediment deprivation generally extends from three to ten miles downdrift of the inlet mouth. Extremely localized areas of sediment deposition have been identified south of some inlet mouths while small erosional areas have been described to the north of other inlet openings. These anomalies may be artifacts of measurement timing or, in the case of Sailfish Point (north of St. Lucie Inlet), due to the presence of nearshore hardbottoms diverting sediment flow away from the shoreline. One of the few absolute truths in describing coastal sediment budgets states that shorelines downdrift of coastal jetties erode while shorelines updrift of coastal jetties will accrete. As long as inlet jetties continue to interrupt longshore sediment transport, as long as acute storm events alter the coastline and as long as sea levels continue to rise, beach erosion will continue to be a major concern in the state of Florida.

Clark, R. R, 1993, Beach Conditions in Florida: A Statewide Inventory and Identification of the Beach Erosion Problem Areas in Florida...Beaches and Shores Technical and Design Memorandum 89-1, Florida Department of Environmental Protection, Division of Beaches & Shores, 202 p.

> Clark summarizes DNR beach erosion monument positions and describes the locations of critically eroding state beaches. An excellent bibliography is also included in this paper. This bibliography provides an excellent starting point for those wishing to read further about beach erosion in Florida.

Dally, W. R., 1989, Quantifying Beach Surfability; *in*: Beach Preservation Technology '89, Strategies and Alternatives in Erosion Control, Florida Shore and Beach Preservation Association, p. 47-58.

> Dally writes an excellent paper describing what makes a beach surfable and quantifying what goes on while "shooting the curl." Particularly valuable insight is offered as to how beach profile affects wave surfability. A wave becomes surfable when the size and shape of the wave forefront are sufficient to propel the surfer at a speed faster than the speed at which the incipient breakpoint moves along the crest of the wave. To ride a wave, the face of the wave at the incipient breakpoint must be steep. The breakpoint speed (peel rate) is dependent upon the breaker height, H_b, and the peel angle, a_p. The speed of a plunging breaker is greater than the speed of a spilling breaker making plunging breakers easier to catch. The speed of the surfer along the wave face must be maximized to stay ahead of white water. Near an inlet, if no sediment is bypassed, the nearshore bottom slope will increase updrift of the inlet thereby increasing the likelihood of plunging breakers. There is significant economic value attached to attracting surfers and therefore it is worthwhile to try and preserve good surf breaks.

Davison, T., Nicholls, R. J., and Leatherman, S. P., 1992, Beach nourishment as a coastal management tool: an annotated bibliography on developments associated with the artificial nourishment of beaches: Journal of Coastal Research, v. 8, no. 4, p. 984-1022.

> An annotated bibliography which addresses beach restoration for the nation's coasts, much of which applies to Florida.

Department of Coastal and Oceanographic Engineering, University of Florida, 1987, Data Compilation of Historical Shorelines and Offshore Bathymetry for the Southeast Coast of Florida, an Atlas: report submitted to the Florida Department of Natural Resources Division of Beaches and Shores, September 1987.

> This publication is an inventory of historical shoreline and bathymetry data along the east coast of Florida from Brevard County (Cape Canaveral) southward to Dade County.

Data Compilation of Historical Shorelines and Offshore Bathymetry for the Southeast Coast of Florida, an Atlas: report submitted to the Florida Department of Natural Resources Division of Beaches and Shores, September 1987.

> This publication is an inventory of historical shoreline and bathymetry data along the east coast of Florida from Brevard County (Cape Canaveral) southward to Dade County.

Duane, D. B., 1968, Sand Inventory Program in Florida: Shore and Beach, v. 36, no. 1, p. 12-15.

> Duane delineates offshore resources found at Thomas Shoal, Capron Shoal and Indian River Shoal in the study area. This characterization is almost 30 years old and was made using early technology. For an accurate estimate of sand resources, these shoals should be reassessed using modern technology.

Duane, D.B. and Meisburger, E. P., 1969, Geomorphology and Sediments of the Nearshore Continental Shelf, Miami to Palm Beach, Florida: United States Army Corps of Engineers, Coastal Engineering Research Center, Technical Manual 29, 47 pages and tables, figures and appendices.

> Duane and Meisburger prepared this report as part of the original Inner Continental Shelf Sediment and Structure (ICONS) study designed to locate and evaluate sand deposits with the potential of being used for shoreline protection and restoration. Survey data covered that portion of the Continental Shelf between 15 and 100 feet in depth. Data collected included acoustic subsurface profiles and sediment cores of the seafloor and shallow bottom strata. South of Boca Raton to Miami, most of the shelf is rocky with a thin sediment veneer. Thicker sediment deposits have accumulated locally in low lying areas. From north of Boca Raton to Palm Beach, most of the shelf is overlain by a thick blanket deposit of a homogenous fine to medium grained gray sand. The sand grains are evenly divided between siliciclastic particles and carbonate shell debris.

Duane, D. B., Field, M., Meisburger, E., Swift, D., and Williams, S. J., 1972, Linear Shoals on the Atlantic Inner Continental Shelf, Florida to Long Island; *in*: Shelf Sediment Transport: Process and Pattern edited by D.J.P. Swift, D.B. Duane and O. Pilkey, p. 447-498.

> In this report, Duane describes the Atlantic Coast of the United States as being characterized by fields of linear northeast trending shoals. These shoals display both linear and arcuate morphology and their placement is not necessarily related to underlying topography as underlying basement strata is occasionally seen between the shoal ridges. Generally, shoreface shoals form in response to the action of wind and wave currents. Duane et. al. analyzed more than 200

Field, M. E. and Meisburger, E. P., 1973, Erosional Origin of Inner Shelf Sediments-Evidence from North Florida: Abstract, American Association of Petroleum Geologists Bulletin v. 57, no. 4, p. 778.

> Field and Meisburger authored this paper as an adjunct to the Inner Continental Shelf Sediment and Structure (ICONS) study. Data collected from 194 vibracores indicates that almost all sediments derive from erosion and reworking of shelf strata. Direct fluvial contributions are negligible. Most siliciclastics ultimately derive from the Piedmont or from drainage in Georgia. The last sea level rise was also a period of extensive erosion on the Atlantic shelf. The eroded material is being continually reworked into beach sediment.

Field, M.E., and Meisburger, E. P., 1976, Shallow Structural Trends of the Atlantic Inner Shelf Off Florida: Abstracts with Programs, Northeastern Section, Geological Society of America, February 1976, p. 170.

> Five regional reflectors were discovered on seismic data down to a depth of 150m. Interpretation is supported by 1000 km of high resolution data and 200 vibracores. Two of the prominent reflectors may indicate regional unconformities. Abstract also includes a brief description of what was found in the ICONS survey.

Florida Department of Natural Resources, 1984, Beach Restoration: An Historical Overview: Office of Beach Erosion Control, Division of Beaches and Shores, Florida Department of Natural Resources, 19 p.

> This paper provides a historical summary of beach restoration/nourishment projects conducted in Florida. Data tabulated includes name of project, total cost of project, state share of total cost, project length and volume of fill placed.

Garde, S.V., 1991, Historical Evolution and Migration of Shoreface Connected and Isolated Shoals off the Atlantic Coast of Cape Canaveral, Florida (M.S. Thesis): Melbourne, Florida, Florida Institute of Technology, 78 p.

> Garde examines the morphology of Florida's inner continental shelf at Cape Canaveral. The results of three different hydrographic surveys, collected form the mid-nineteenth century and 1956, were compared to determine if nearshore shoals are actively moving. Volumetric calculations were also done to estimate the amount of sand contained in each shoal. Shoreface connected shoals appear to be moving to the southeast and have grown in volume during the study period while offshore shoals appear to be moving to the west.

Gorsline, D. S., 1963, Bottom sediments of the Atlantic shelf and slope off the southern United States: Journal of Geology, v. 71, p. 422-440.

Submarine geology of the south Atlantic continental slope and shelf has been described using data from bottom sediment samples collected from the research vessel T. N. Gill in 1953 and 1954.

Jenny, C. P., 1933, The Florida East Coast (MS Thesis): New York City, New York, Columbia University, 88 p.

Jenny's thesis primarily focuses on geomorphology and coastal processes. This is an early paper that contains good background information. Paleoshoreline maps are also developed and shown.

Laplace, N. W., 1993, Holocene Stratigraphy of a Transitional Siliciclastic-Carbonate Reef (M.S. Thesis): Melbourne, Florida, Florida Institute of Technology, 143 p.

Twenty vibracores and 400 km of seismic records from the inner continental shelf off of Saint Augustine, Florida reveal a gently seaward sloping pre-Holocene carbonate surface overlain by 3.5 meters of unconsolidated Holocene sediments. The unconsolidated sediments were probably part of a transgressive wedge. Back-barrier sediments are preserved below the shelf edge and seaward of the modern barrier system. This suggests the retreat of an earlier barrier island complex over its own back-barrier sediments.

Macintyre, I. G., and Milliman, J. D., 1970, Physiographic features on the outer shelf and upper slope, Atlantic continental margin, southeastern United States: Geological Society of America Bulletin, v. 81, p. 2577-2598.

The physiography of the Atlantic continental shelf of the southeastern United States, including Florida is discussed.

Martens, J. H. C., 1931, Beaches of Florida: Twenty-First and Twenty-Second Annual Reports, 1929-1930, Florida Geological Survey, p. 67-119.

This work is the earliest comprehensive survey of Florida's beaches which inlcudes geology, physiography, sedimentology, etc. It is one of the earliest accounts noting calcium carbonate content of east coast beach sediments. It is of importance because it describes Florida's beaches prior to being subjected to cultural influences (e.g., inlet sand bypassing, inlet improvements, beach restoration, beach armoring structures, etc.).

Meisburger, E. P. and Duane, D. B., 1969, Shallow Structural Characteristics of the Florida Atlantic Shelf as Revealed by Seismic Reflection Profiles; *in*: Transactions, Gulf Coast Association of Geological Societies, v. XIX., p.207-215

2600 miles of sparker data were collected along the Florida Atlantic Shelf. Depth penetration ranged up to 500 feet. Seismic profiles range from nearshore (15 feet water depth) to 15 miles offshore. Six areas of interest were surveyed with a gridded track pattern. A 50 joule source gave 150 feet of penetration while a 100 joule source gave penetration to 500 feet. The subsurface had a predominantly eastward regional dip with local reversals. Facies analysis was based on differences in bedding character structure and general dip. Erosional surfaces are present and the top of the Floridan is locally visible. Vertical fault is identified (sic) off Cape Canaveral with 15-70 feet of throw. Several strong regional reflectors are identified.

Meisburger, E. P. and Duane, D. B., 1971, Geomorphology and Sediments of the Inner Continental Shelf, Palm Beach to Cape Kennedy, Florida: United States Army Corps of Engineers, Coastal Engineering Research Center, Technical Manual 34, 114 pages and tables, figures and appendices.

This work was done as part of the ICONS study. It includes extensive seismic profiling, delineates shoal development, and outlines potential sand source areas. Additionally, a description of coastal morphology is included. Even though the technology used is 25-30 years old, this is an outstanding reference that should be read by all investigators.

Meisburger, E. P., and Field M., 1972, Neogene Sediments of the North Florida Atlantic Inner Continental Shelf; Abstracts with Programs, Geological Society of America, v. 4, no. 7, p. 593.

This report describes a seismic program from Cape Kennedy to the Georgia border ranging from water depths of 15-40 feet seaward. Regional markers are identified including a prominent late Tertiary marker traceable from the Georgia border to Flagler Beach.

Meisburger, E. P. and Field, M. E., 1975, Geomorphology, Shallow Structure and Sediments of the Florida Inner Continental Shelf, Cape Canaveral to Georgia: US Army Corps of Engineers, Coastal Engineering Research Center, Technical Manual 54, 119 p.

This publication covers the area from False Cape north to the Georgia border. Only the southernmost portion of this study includes the area being investigated under the current cooperative agreement. This study also includes a brief discussion relating carbonate content to mean grain size and sorting. Potential borrow areas for beach nourishment are delineated.

Moe, M. A., Jr., 1963, A survey of offshore fishing in Florida: Florida State Board of Conservation Marine Laboratory, Professional Paper Series No. 4, Contribution No. 72, 117 p.

This report identifies offshore fishing areas that often coincide with bedrock outcroppings of some significant relief. These areasMoe, M. A., Jr., 1963, A survey of offshore fishing in Florida: Florida State Board of Conservation Marine Laboratory, Professional Paper Series No. 4, Contribution No. 72, 117 p.

Nelson, W. G., 1989, Beach Nourishment and Hard Bottom Habitats: The Case for Caution; *in*: Beach Preservation Technology '89, Strategies and Alternatives in Erosion Control, Florida Shore and Beach Preservation Association, p. 109-116

Nelson, working on behalf of the Sebastian Inlet Commission, presents the case for quantifying hardbottom habitats. Knowledge of basic species composition and the ecology of most hard bottom habitats in south Florida is very limited. In an effort to expand this knowledge, a qualitative biological inventory of the nearshore rock outcrops close to Sebastian inlet is carried out. 65 algal and 263 animal species were recorded in this study. Hardbottom will inevitably be damaged by dredging activity. Long-term biotic effects of beach nourishment are unknown; therefore, we should proceed with caution.

Nocita, B., Papetti, L., Grosz, A., and Campbell, K., 1991, Sand, Gravel and Heavy Mineral Resource Potential of Holocene Sediments Offshore of Florida- Cape Canaveral to the Georgia Border: Phase 1: Florida Geological Survey, Open File Report no. 39, 107 p.

This report summarizes a study designed to assess heavy mineral resources off the east coast of Florida. Sand and gravel resources were also briefly addressed. Vibracore samples were analyzed for heavy mineral content. Heavy minerals included are epidote, ilmenite, aluminosilicate, pyroboles and zircon. A RSA (Rapid Sediment Analyzer) was used for textural analysis of the sediments.

Osmond, J. K., May, J. P., and Tanner, W. F., 1970, Age of Cape Kennedy Barrier and Lagoon Complex: Journal of Geophysical Research, v. 75, no. 2, p. 469-79.

Osmond, et. al. collected mollusk shells in an attempt to determine the age of the Anastasia Formation along the coast. The methods used generally work best with corals. Evidence of groundwater leaching is a sign of unreliability. Shallow water deposition is indicated by a large number of *Donax* shells. It is presumed that the originally sharp shell fragments were abraded to where they are generally rounded and polished. Interbedded shell hash and quartz sand exhibit beach type low angle bedding.

Pilkey, O. H., 1963, Heavy minerals of the U. S. south Atlantic continental shelf and slope: Geological Society of America Bulletin, v. 74, p. 641-648.

Discusses the results of heavy mineral studies along the U. S. Atlantic continental shelf and slope.

Schlee, J., 1977, Stratigraphy and Tertiary Development of the Continental Margin East of Florida: US Geological Survey, Professional Paper 581F, 25 p.

Schlee describes results of Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) drilling off Florida. His investigation is mostly concerned with Tertiary sedimentation. Very little sediments of Quaternary age are discussed. This paper serves to document the drilling results from 6 JOIDES holes.

Sheridan, R. E., Drake, C. L., Nafe, J. E., and Hennion, J., 1966, Seismic-refraction study of continental margin east of Florida: Bulletin of the American Association of Petroleum Geologists: v. 50, no. 9, p. 1972-1991.

Interpretive results from 31 seismic-refraction profiles for the continental margin east of Florida are presented and discussed.

Tanner, W. F., 1960, Florida coastal classification: Transactions of the Gulf Coast Association of Geologic Societies, v. 10, p. 259-266.

This work on the classification of Florida's coasts includes data on wave climates and general physiography.

Walton, T. L., Jr., 1977, Beach nourishment in Florida and on the lower Atlantic and Gulf Coasts: Florida Sea Grant Technical Paper No. 2, 64 p.

This paper provides technical information concerning restoration projects in Florida, three of which are in the study area.

Wang, W. and Wang, H., 1987, Data compilation of the Historical Shorelines and Offshore Bathymetry for the Southeast Coast of Florida: Report submitted to the Florida Department of Natural Resources, Division of Beaches and Shores, 24 p.

Wang, et. al. summarizes sources for mapping historical shoreline changes from the south end of Cape Canaveral to Key Biscayne. DNR monument locations are tabulated and bathymetry is digitized at six foot intervals. The bathymetric data was tied into shore monuments. Also included are historical shoreline change maps and depth contour maps. Coastal construction control line photos from the division of Beaches and Shores are used extensively. This paper defines the upper boundary of the wetted area on beach as the Mean Highwater Line visible in photos. A useful listing of historical maps is included in this report.

Zarillo, G. A., Maul, T., La Place, N., and Civil, M. A., 1992, Sand, Gravel and Heavy Minerals Resources of Holocene Sediments of the Inner Continental Shelf, Fort Pierce to Miami Florida: Florida Geological Survey, prepared for the U.S. Minerals Management Service, 44 p.

> This work was performed under an FGS cooperative agreement. The east coast from Fort Pierce to Miami is described. The authors analyze seismic facies and heavy mineral content. Total heavy mineral content numbers may be conservative due to elutriation losses. The role of antecedent topography in determining present ocean bottom morphology is also discussed.

B. Sediment and Wave Mechanics

Balsillie, J. H., 1982, Offshore Profile Description Using the Power Curve Fit, Part I: Explanation and Discussion: Florida Department of Environmental Regulation, Division of Beaches and Shores, Technical Design Memorandum No. 82-1-I, 23 p.

> Balsillie provides the basic bathymetric data necessary to support two dimensional nearshore hydraulic transformation models. These models are used by the Division of Beaches and Shores to identify the portion of the beach that will be impacted by severe storms.

Balsillie, J. H., 1984, A multiple shore-breaking wave transformation computer model: Florida Department of Natural Resources, Beaches and Shores Technical and Design Memorandum No. 84-5, 81 p.

> Balsillie describes a computer model for multiple longshore bar formation and multiple shore-breaking accompanying extreme event (storm and/or hurricane) impact. The model predicts beach and coast erosion.

Balsillie, J. H., 1986, Beach and Coast Erosion Due to Extreme Event Impact: Shore & Beach, Journal of the American Shore and Beach Preservation Association, v. 5, no. 4, p. 22-37.

> This paper reviews methodologies for quantifying beach and coast erosion due to storm and hurricane damage. Methods of geometric profile assessment are also discussed.

Balsillie, J. H., Carlen, J. G., and Watters, T. M., 1987, Transformation of historical shorelines to current NGVD position for the Florida east coast: Florida Department of Natural Resources, Beaches and Shores Technical and Design Memorandum No. 87-1, 177 p.

In addition to providing information for proper vertical and horizontal transformation of coastal survey data, this work provides tidal datum information. Tidal datums are compiled at 1000-foot intervals along coastal Florida to include mean higher high water (MHHW), mean high water (MHW), mean sea level (MSL), mean low water (MLW), and mean lower low water (MLLW). This information is of value for identifying vertical positions for coastal and nearshore sediment sampling and surveys.

Bein, A. and Sass, E.,1978, Analysis of Log Probability Plots of Recent Atlantic Sediments and Its Analogy with Simulated Mixtures: Sedimentology, v. 25, p. 575-581

Bein and Sass discuss the probability mapping of grain size distributions. All natural grain size distributions (gsd) will approach log-normality after sufficient transport but the shape of any given gsd plot is related to its depositional environment. All gsd curves have at least two connected parts--a coarse grained steep segment and a fine grained flat segment. These plots are similar in form to widely used probability plots but the graph is smoothed rather than joined in straight line fashion. Due to the smooth nature of the cumulative plots, more significant meaning is attributed to the critical points on the curves (inflection points and points of maximum curvature) than to the intersection points of linearized line sections as suggested by Visher (1969, 1972). Smooth changes in slope of the curve are demonstrated to be the result of overlapping populations. Critical points of the curve represent properties of individual normal populations (mean and sorting) and their relative proportions while the intersection points represent hydrodynamic limits.

Bodge, K., 1993, Gross Transport Effects and Sand Management Strategy at Inlets: Journal of Coastal Research, Special Issue no.18, p. 111-124.

Bodge discusses the determination of sand management strategy at inlets. Three main aspects of inlet management involve a) quantification of sediment budget, b) determination of how, when and where sand is moving and c) development and implementation strategies to reduce littoral impacts. Inlet impact is described in terms of the magnitude of the interruption of the annual net transport rate. Bodge differentiates net and gross transport rates. Gross transport refers to the entire amount of sand being moved--both updrift and downdrift while the net transport rate refers to the net amount of sand being displaced when compared to the pre-inlet sand flow. Inlet maintenance records generally only include the sand fraction of the dredged material--no silt or clay is accounted for. This may present an inaccurate indication of sediment transport. Generally, when a sediment transport barrier is constructed, a wave shadow will develop that is one to five times the length of the barrier. This is apparent at Cape Canaveral where shoaling is evident on the downdrift side of the inlet. Bodge also briefly discusses "stochastic" (probabilistic) approaches to inlet management. Most effective inlet bypassing is achieved by placing pumps closest to shoreline and swash zone. Generally, there is a need to intercept littoral drift in the subtidal area and insure that jetties are sandtight in the intertidal area. Geotextile tubes may be used for sand tightening. Oversizing a single point bypass will not necessarily increase productivity. Navigation projects should be philosophically separated from beach erosion control projects. At inlets these two types of projects come together so separation is difficult.

Bruun, Per, 1978, Stability of Tidal Inlets, Theory and Engineering: Amsterdam, Elsevier Scientific Publishing Company, 510 p.

Bruun exhaustively discusses sediment mechanics in tidal inlets. This is a reference work and textbook. It provides the basis for many later developed sediment models.

Bruun, Per., 1989, Beach Nourishment- Improved Economy through Better Profiling, Large Traps and Non-Conventional Equipment; *in*: Beach Preservation Technology '89, Strategies and Alternatives in Erosion Control, Florida Shore & Beach Preservation Association, p. 117-126.

Per Bruun advocates matching borrow materials to the entire beach profile rather than just the shoreface zone. Losses commonly occurring in borrow materials are due to an excess of fines, lack of consideration to profile geometry and lack of consideration to horizontal geometries of fill. Restoring the beach profile, rather than just matching beachface sand distributions, will give a more stable beach than just matching beachface grain size distributions. The rapid introductory losses associated with beach nourishment can sometimes be avoided with proper profile consideration. Inlet ebb shoals are usually capable of providing suitable nourishment material. Beach nourishment should be replaced by profile nourishment. In many instances, profile nourishment is cheaper than beach nourishment because cheaper material (more fines) may be installed as part of the project. Most fill materials smaller than 0.15mm wash out quickly. The use of split hull dredges make early consideration of desired beach profile important.

Campbell, T., Dean, R. G. , Mehta, A. J., and Wang, H., 1988, Short Course on Principles and Applications of Beach Nourishment: Florida Shore and Beach Preservation Association *and* The Department of Coastal and Oceanographic Engineering, University of Florida, Gainesville, various pagings.

The notes from this short course concentrate on engineering design principles affecting beach nourishment projects. Among the topics covered are sea conditions, cross shore response, planform evolution of beach nourishment projects and sediment storage at tidal inlets. These notes should be read along with the Shore Protection Manual in order to gain an in depth understanding of project design.

Daultrey, Stu, 1979, Principle Components Analysis: Concepts and Techniques in Modern Geography No. 8, Geo Abstracts, University of East Anglia, Norwich, 51 p.

Daultry provides a quantitative discussion of factor analysis with a direct application to principal component analysis.

Davis, R. A., Terry ,J. B., and Ryder, L., 1993, Design of Beach Monitoring Programs with Florida Example; *in*: The State of the Art of Beach Nourishment, Proceedings of the 6th National Conference on Beach Preservation Technology, p. 272-278.

Davis, et al. maintain that detailed beach renourishment monitoring should address five areas. These include 1) the borrow site, 2) induced shoreline changes, 3) sediment distribution throughout the program area, 4) coastal processes and 5) coastal impacts. When planning a monitoring program, financial considerations tend to override all other considerations. Data bases should be developed using a time series approach and offshore profiles should be surveyed at six month intervals using areal photography for shoreline mapping.

Dean, R. G., 1988, Sediment Budget, Principles and Applications; *in*: Dynamics of Sand Beaches; Short course given at the 20th International Conference on Coastal Engineering, Taipei, Republic of China, v.13, no. 3, p. 3-50.

Dean provides a mathematical framework for calculating sediment budgets. He accounts for the various components of sediment flux and changes of volume that occur within the region. A discussion of the governing equations and various ways of determining flux components is also presented.

Dean, R. G. and Abramian, J., 1991, Rational Techniques for Evaluating Potential Sands for Beach Nourishment: University of Florida, Coastal Engineering Lab Publication 91/016, 102 p. and appendix.

Dean and Abramian point out that previous methods of comparing native and borrow materials could not predict equilibrium "dry beach" width. The authors attempt to remedy this by presenting a new method for predicting cross beach profiles. The authors use Jupiter Island as an example while discussing renourishment profiles and the history of the island. Parameters to be monitored after renourishment include 3D evolution of the beach over time, "forcing" functions (waves, currents etc.) along with initial and evolving grain size distributions on the beach. The authors discuss the need to refine methods for predicting cross shore sediment distributions.

Douglas, B. D., 1989, Prediction of Shoreline Changes Near Tidal Inlets(MS Thesis): Gainesville, Florida, University of Florida, 130 p.

Douglas documents the rates of shoreline change at several tidal inlets along the east and west coasts of Florida. The rate of shoreline erosion near inlets is up to twice the rate of erosion away from the inlet. Competing forces act at the inlet mouth. Longshore sediment transport works to close inlets while tidal currents work to keep the inlets open. The maintenance of navigation channels generally creates sand deficits within the inlet. Douglas discusses the "One Line Theory" of beach profiling where the beach profile is assumed to maintain equilibrium after renourishment--the whole beach profile is assumed to be displaced horizontally. The amount of wave refraction is related to wave speed while the amount of wave diffraction controls energy transfer. Ebb tidal flows push sediment offshore while wave attack drives sediment back towards shore. Jetties tend to direct sediment offshore while a jetty combined with longshore drift will tend to cause shoaling offshore and downdrift of the jetties. Shoal size generally decreases as downdrift distance from jetty increases. The most severe erosion problems in the state are found along the Hutchinson Island shoreline south of Sebastian Inlet. It is difficult to generalize as the expression of erosion will differ at each tidal inlet depending upon the processes affecting that inlet.

Ferland, M. A. and Weishar, L. L., 1984, Interpretive Analysis of Surficial Sediments as an Aid in Transport Studies of Dredged Materials, Cape Canaveral, Florida: U.S. Army Corps of Engineers Coastal Engineering Research Center, Miscellaneous Paper 84-3, 26 p.

Dredge spoils transported to a site 4.5 miles east of Cocoa Beach are described in this paper. The sediment was disposed of in 40-55 ft of water. A definitive predisposal bathymetry of the site has never been determined. Post disposal bathymetric calculations indicate that material has been dispersed from the site however, since the original bathymetry is unknown, it is impossible to determine the degree of dispersion. Some volume reduction may also be due to sediment consolidation. In the disposal area, dredge spoils are similar to the native sediment. It is therefore difficult to determine exactly what is native and what has been introduced. Significant current activity exists at the site as evidenced by sand waves in the dredged material.

Field, M. E., 1974, Buried Strandline Deposits on the Central Florida Inner Continental Shelf: Bulletin of the Geological Society of America, v. 85, no. 1, p. 57-60.

Donax clams typically only occur within restricted depth ranges. Accumulations of *Donax* clams may therefore provide a definitive marker for a relict beach development. Depths to recovered deposits of *Donax* clams correlates well with an acoustic reflector that underlies the central Florida shelf. Shoals and ridges are also sometimes interpreted as relict features. Off Cape Kennedy, the present day morphology is the product of dynamic processes and unrelated to relict features. Evidence of this can be found in the large scale truncation and planing by the last transgression which has all but removed traces of previous strandline morphology.

Gee, H. C., 1965, Beach Nourishment From Offshore Sources: Journal of Waterways and Harbors Division, Proceedings of ASCE, v. 91, no. 3, p. 1-5.

Gee describes the history of St. Lucie inlet. This natural inlet was originally relocated 1200 feet north without protection during the period 1913-1922. The present protective jetties were constructed in 1922. With jetty construction, a sand deficit developed on beaches downdrift of the inlet mouth. A search was conducted for a borrow area that might provide sands suitable for beach renourishment. Offshore sand sources were originally delineated by divers using probe rods who were looking for a minimum 10 feet thickness for borrow sand. A suitable sand source was located 900 feet offshore and a dragline was installed to haul it ashore. The sand was spread upon the beach and the renourished beach was found to have a flatter shape than the original beach. In 1965, a storm breached the barrier bar and cut a new inlet at Peck's Lake, 2.5 miles south of the present inlet. This inlet was eventually closed off and all sediment exchange was once again conducted through the Saint Lucie Inlet.

Hall, J. V., 1952, Artificially Nourished Constructed Beaches: Beach Erosion Board, United States Army Corps of Engineers, Technical Memorandum No. 29, 25 p.

Hall outlines the criteria used in the design of artificially nourished beaches and presents a brief history of artificial beach nourishment. Among the placement methods discussed are the offshore dumping method, the stockpiling method, the continuous supply method and the direct placement method. A tabular record of a great number of artificially nourished and constructed beaches is also presented.

Hansen, Mark Eric, 1982, Evaluation of Beach Fill Models and the Effect of Carbonate Material on Beach Fill (MS Thesis): Melbourne, Florida, Florida Institute of Technology, 107 p.

Hansen discusses the development of beach fill models and how volumes of necessary fill material are calculated. Beach material consists of sediment from the intertidal zone. Borrow materials and native materials do not necessarily exhibit normal grain size distribution (gsd). The term "post nourishment fill estimate" is used to describe the volume of fill stabilized after one year. All suggested methods of calculating fill volume have shortcomings. The Corps of Engineers Shore Protection Manual (SPM) produces fill estimates by assuming coarse fractions are unstable--this is contrary to hydrodynamics. Dean's method of calculating fill volume does not allow for the loss of fine material. When the native and borrow grain size distributions are similar this may be acceptable. Hansen recommends the "Adjusted Shore Protection Manual Method" which also assumes normal grain size distribution. The d variable describing mean difference of grain size distribution should be recalculated for each project. Fill models also do not account for the presence of carbonate shells. Coarse carbonate shells are being abraded and fractured into finer sizes reducing beach fill grain size (and, presumably, stability) throughout project life. The SPM along with Krumbein and James (1965) advocate the calculation of a renourishment factor using a critical phi (ϕ) ratio defined as the maximum ratio of native to borrow material by weight. Calculation of the critical f ratio assumes normal gsd for both the native and borrow material populations. Dean's fill factor R_d is also used in calculating beach nourishment needs. Calculation of Dean's fill factor assumes that only the coarse fraction of any given distribution is stable. The adjusted SPM fill factor, R_a, is similar in concept to Dean's fill factor, R_d, but differs in the picking a grain stability cutoff. No sediment loss is assumed for fractions larger than or equal to the critical grain size. This yields a numerical result between R_d and critical ϕ (adjusted SPM values). Hobson (1981) defines a safety factor (G) to account for the dispersion of mud size particles in the borrow material. G is defined as being equal to (100% / % sand) X R_a. The adjusted SPM methods also assume normal grain size distribution.

Hobson, R. D., 1981, Beach Nourishment Techniques...Typical U.S. Beach Nourishment Projects Using Offshore Sand Deposits: Geotechnical Engineering Branch, United States Army Coastal Engineering Research Center, Fort Belvoir, Virginia, 117 p.

Hobson provides a compendium of beach nourishment characteristics for 20 projects. Data is provided as a basis for future planning. Indian River County is included as one of the sites examined. Authors use Krumbein and James (SPM) for calculation of overfill ratios. Hobson differentiates the R_a "fill factor" (overfill ratio) from R_i, "renourishment factor" (How stable is fill compared to non-native material?).

James, W. R., 1970, Development of Mathematical Models for Littoral Transport: EOS abstract v. 51, no. 4, p. 334.

James addresses development of mathematical models for littoral transport in conjunction with radioactive sand survey. The seaward limit of the zone of active sediment movement is the wave breaking point. Variation of drift in a shore normal survey is related to the portion of time that the sediment spends in the active zone.

James, William R., 1975, Techniques in Evaluating the Suitability of Borrow Material for Beach Nourishment, United States Army Corps of Engineers Technical Manual 60, 81 p.

James presents an outstanding paper discussing sediment mechanics as it relates to beach nourishment. It should be read by everyone interested in understanding the rationale for ranking borrow areas. Natural sorting processes redistribute fine material offshore while coarse grained residual sediments stay on the beach in the surf zone. The calculation of "overfill ratios" is discussed. The relative merits of the Krumbein and James, Dean and SPM methods for calculating overfill are shown. The SPM critical ratio R_ϕ is related to the relative retreat rate, r_b, of Krumbein and James along with the mean grain size, ϕ_{mean}, and sorting, $f_{sorting}$, of the sediment. d is defined as the ϕ mean difference of the grain size distribution which is numerically equal to $d= (m_b-m_n)/s_n$ where m_n = sorting of the native material, m_b =sorting of the borrow material and s_n = the phi mean difference of the sediment distribution. s is defined as $\phi_{sorting}$ and $s = s_b/s_n$ where s_b = sorting ratio of the borrow material and s_n = the sorting ratio of the native material. On a stable beach the condition of the dynamic mass transfer system has reached a steady state. Native material grain size distribution should be the product of a steady state process. The SPM and Dean calculations differ in determining the stable fraction of the borrow material. SPM calculations use the entire native material grain size distribution while Dean uses the ϕ_{mean} of the native material. Dean implicitly requires that fines be removed from the borrow materials to bring it into balance and he assumes that only fine material will be removed by sorting action. The major shortcoming of the SPM method is that it can't be used where the borrow material is better sorted than the native material. This is really an outstanding sediment mechanics paper.

Komar, Paul D., 1977, Selective Longshore Transport Rates of Different Grain-Size Fractions Within a Beach: Journal of Sedimentary Petrology, v. 47, no. 4, p. 1444-53.

Komar examines longshore transport rates for varying grain sizes. Longshore transport rates are generally higher in the surf zone than in the swash zone (energy is higher in the surf zone). Differing grain size fractions are selectively transported. When transport mechanism is primarily bedload (sediment grains travel within two grain diameters of the bed) rather than suspended load (sediment grains travel more than two grain diameters from the bed), the coarsest grain size fraction will move long shore more rapidly than finer grain sizes. As grain size decreases, suspension transport becomes more important. Finer grain sizes therefore have higher transport velocities in suspension load. Results of empirical study will vary with wave and current conditions. Waves breaking at an angle transport sediment in the surf zone rather than the swash zone. This study did not collect data from beaches with a wide surf zone. Generally, grains will naturally distribute along beach with the coarsest grains in the breaker zone and progressively finer grains closer to shore in the swash zone.

Krumbein, W. C. and James, W. R., 1965, A Lognormal Size Distribution Model for Estimating the Stability of Beach Fill Material: United States Army Coastal Engineering Research Center, Technical Memorandum No. 16, 17 p.

Krumbein and James address the "extra" amount of beach fill to be used when the borrow material is finer than the native material. The authors assume that the native sand is in equilibrium with local shore processes and that the portion of available fill material which corresponds with the native material in size distribution will remain on the beach. The only relevant factors are the native sand and borrow material grain size distributions. The assumptions are made that both native and borrow materials have lognormal grain size distribution. The authors also assume that, over time, fill material will approach native material in grain size distribution via selective sorting. Too much coarse gravel in replenishment material gives rise to stringers and zones of coarse material on beach. Too much coarse borrow material also steepens foreshore slope (good for surfing?).

Lin, P. C. P., Hansen, I., and Sasso, H., 1994, Regional Sand Movement and Performance of Successive Beach Nourishment Projects; *in*: Alternative Technologies in Beach Preservation, Florida Shore and Beach Preservation Association, p. 216-219.

Lin, et al. examine the performance of beach nourishment projects in south Florida. Examples are chosen from Port Everglades and Baker's Haulover. Sediment budgets are developed for an optimum beach/inlet management plan. It was found that, on average, 1.2 yards^3 per foot per year are lost from beaches eroding in the study area. Generally, downdrift beaches benefit from updrift nourishment projects. After renourishment, sedimentary accretion often occurs in the area between -6ft NGVD and project closure depth (the maximum depth influenced by the borrow material). End losses of up to 75% of emplaced material is found on some projects.

Marino, J. M., 1986, Inlet Ebb Shoal Volumes Related to Coastal Physical Parameters, (M.S. Thesis): University of Florida, Gainesville , 114 p.

Marino describes the evolution of ebb tidal shoals near inlets. Estimates of ebb shoal volume are given for various Florida east coast inlets. In general a trend of decreasing ebb shoal volume occurs from north to south. 83% of ebb shoal sands along the east coast of Florida are contained in shoals related to the four northernmost tidal inlets. The exact ebb shoal volume will depend on the tidal prism, the inlet width-to-depth ratio, inlet cross sectional area, and tidal amplitude. Ebb shoals can serve as an efficient mechanism for transporting sediments from the updrift to the downdrift side of the inlet. Generally, ebb shoals are a key player in preserving downdip beaches. Techniques for calculating ebb shoal parameters are also discussed. This is an outstanding thesis. .

Middleton, G. V., 1975, Hydraulic Interpretation of Sand Size Distributions: Journal of Geology, v. 84, p. 405-426.

> Middleton examines sediment grain size distribution and finds that different segments of the probability curve can be attributed to bed and suspension load fractions (the entire sediment population is a collection of truncated normal distributions). Sometimes overlapping distributions yield two line segments on a probability curve. Size breaks on the grain size distribution curve are due to the source of sediment, mechanical breakage and hydraulic sorting. The amount of fine material in a river depends upon supply--not upon local hydraulics. The bed layer is defined as being two grain layers thick . Most of the discharged sediment moves in suspension. If settling velocity is less than shear velocity, particles will be in suspension. The presence of dunes and ripples will alter the suspension criteria. Middleton discusses the boundaries of traction and suspension flow regimes and land flow velocities necessary for sediment entrainment.

O'Brien, M. P. and Dean R. G., 1971, Critical Cross Sectional Area; *in*: Proceedings, 12th Coastal Engineering Conference, ASCE, p. 21761-80.

> The authors discuss various components of sediment transport and the concept of net sediment transport. They point out that most shore maintenance records only document the sand sized sediment fraction—no silt or clay is accounted for. A sediment budget for the Cape Canaveral Inlet is calculated and it is found that erosion impact decreases exponentially with distance from the inlet.

Olsen, E. J., Bodge, K., and Creed, C., 1994, Shore Protection Design Alternatives Downdrift of an Inlet; *in*: Alternative Technologies in Beach Preservation, Florida Shore & Beach Association, p. 474-487.

> Shorelines downdrift of an inlet are often subject to high erosion stress due to inlet effects. Using Lake Worth Inlet as an example, the authors show that design alternatives can be modified by altering the balance of the nourishment project (changing the number of beach preservation structures involved and their configuration). Sensitive nearshore hardbottoms are often located along sections of shoreline requiring nourishment. At Lake Worth, 10.5 acres of hardbottom are exposed. Beach preservation structures include nearshore breakwaters, multiple T-head groins, combined nearshore breakwaters and T-

head groins. General wave impact can usually be minimized by using nearshore breakwaters with T-heads.

Parson, L. E., 1982, Immediate Response of Beach Profile Readjustment of the Indialantic/Melbourne Beach Nourishment Project (M.S. Thesis): Melbourne, Florida, Florida Institute of Technology, 106 p.

Parson monitored beach profile readjustment after the 1981 Indialantic/Melbourne Beach renourishment project. Profiles were collected immediately after installation of the beach fill. After 14 months only 46% of the emplaced materials remained. Placement of fill material results in non-equilibrium beaches (of course, if the beach were in equilibrium, you would not need to do a renourishment project in the first place). Massive amounts of material are lost as the beach attempts to regain equilibrium. Most erosion of fill material occurs immediately after the borrow material is emplaced. Generally renourishment projects do not afford increased hurricane protection though significant minor storm protection is provided.

Phlegar, W. S. and Dean, R. G., 1989, Beach Nourishment Performance Predictability; *in*: Beach Preservation Technology '89, Strategies and Alternatives in Erosion Control, Florida Shore & Beach Preservation Association, p. 75-86.

Phlegar and Dean address the need for improving capabilities of predicting beach fill performance. Phlegar develops a continuity (conservation of sediment)-linear dynamic (littoral transport) model. Jupiter Island in Martin County is modeled using a finite difference technique. Realistic parameters are developed for each specific location and as many parameters as possible are included in the numerical application. Performance of the beach fill is measured by the time-history of volumetric retention. All models work better in some circumstances than in others...the universal model has not yet been invented. A lack of standardization in monitoring and modeling techniques severely limits improvement in prediction capablilties.

Phlegar, W. Samuel, 1989, Performance Prediction of Beach Nourishment Projects: University of Florida Coastal and Oceanographic Engineering Laboratory, Publication 89/008, 93 p.

This thesis develops models for predicting fill performance and compares predicted results to results observed in actual renourishment projects. Wave height histories are emphasized as being important to predicting erosion rates. "Wave forces are the key to shoreline change." The goal of this study was to analyze and assess ability to predict fill performance based on existing technology and emphasize the need for a comprehensive post nourishment monitoring program.

Silberman, L. V., 1979, Sedimentological Study of the Gulf Beaches of Sanibel and Captiva Islands, Florida (M.S. Thesis): Tallahassee, Florida, Florida State University, 132 p.

Silberman's thesis involved statistical analysis of grain size distribution (gsd) moment measures on Gulf Coast Beaches (Sanibel and Captiva Islands). The borrow material used for replenishment on Captiva Island was finer than the native material and it has eroded. Much of the material eroded from Captiva Island has been deposited on Sanibel Island. Shells and shell fragments make up a significant portion of the beach sediments on both islands. Increases in abundance of shell material coincides with increases in the mean grain size of nearshore sediment though Silberman has not yet determined the transport mechanism. Silberman addresses the relative presence of shell material in granulometric analyses. An effort was made to minimize the effect of carbonate content though "geometric characteristics" make carbonate the most stable fraction. No overall trend in carbonate distribution with downdrift distance was observed; therefore, the carbonate is supplied by a separate system than the quartz. Quartz is littoral while carbonate is locally derived offshore. The amount of carbonate found on the beaches is determined by grain size and wave energy. The carbonate grain distribution was found to be bimodal while the quartz grain size distribution was more mature. The geometric characteristics inherent in quartz sediment size distribution makes it more valuable for evaluating deposition trends. Erratic sediment distribution in the study area is influenced by partitioning of littoral drift, erosion and intervention by man in natural coastal processes. Locally generated sea waves rather than long distance swells may be primarily responsible for beach erosion.

Stauble, D. K., Hansen, M., Hushla, R., and Parson, L., 1983, Beach Nourishment Monitoring, Florida East Coast: Physical Engineering Aspects and Management Implications; *in*: Coastal Zone '83-Proceedings of the Third Symposium on Coastal and Engineering Management, ASCE, p. 2512-2526.

According to the National Shoreline Study (1971), 210 of Florida's 782 miles of shoreline are critically eroding (these numbers are on the same order of magnitude as those advanced by Acor, 1989). Stauble et al. use selected beach nourishment projects along the east coast of Florida to assess profile readjustment and resorting of borrow material through time. The Indialantic-Melbourne Beach project is one of the projects selected. Profile and sediment grain size characteristics were collected from each beach prior to, immediately following and 1.5 years after nourishment. The fill material adjusted rapidly as evidenced by the formation of an erosional scarp along the beach. Profile stabilization took two months. Shoreline changes can be measured using areal photographs however no standard methods exist for sediment sampling, sediment analysis and photographic monitoring. Therefore, there is little information available to help evaluate the efficacy of past beach nourishment projects and provide guidance for future projects. Some generalizations, however, can be made. The volume of fill material is greatest immediately after emplacement. Beach profiling quantifies changes in profile section and changes in beach volume. Losses of up to 56% of the borrow material emplaced in some projects has been documented during the first two months after renourishment with an additional 14% of the borrow material disappearing during the next 13 months. Most losses in the study project were due to severe storm activity but longshore drift is still the dominant force in carrying sediment. Components of textural variability vary with depth and time of year. To establish a beach profile, grab samples were collected at hightide, midtide and lowtide zones along with bottom samples from one, two and three meters in depth. A foreshore composite was then developed using the high, mid and lowtide samples. The coarse material found on the beach is mainly fractured shell fragments. Within three months all fines were lost from the study area. Coastal processes actively sort and redistribute grain size distributions to approximate native sediment. After 1.5 years, less than 25% of the total fill remains. Errors in modelling originate because modellers assume a Gaussian grain size distribution while borrow materials are usually collected from offshore shoals or estuarine environments which have lower energy and poorer sorting. It is useful to draw a backshore reference line on a basemap. Areal photos at Port Canaveral demonstrate that each tripled in size immediately after nourishment and that after six years less than 40 % of the original renourishment material remains. At Indialantic/Melbourne Beach, the beach area increased by 1/3 after beach nourishment. 50% of renourished material remains one year later. Evidence supports using areal photos to support ground observations when monitoring beach nourishment.

Strock, A. V. and Associates, 1974, Town of Jupiter Island Beach Restoration Project, Follow Up Report #1, consulting report, 25 p.

This report was prepared as a follow up study after initial beach renourishment. Beach profiles were measured at 400 foot intervals and changes in sediment budget were calculated. Areas updrift of project area exhibited heavier losses than downdrift of project. To date 116,000 cubic yard of material has accreted over the project area but net longterm erosion is expected. The consulting firm recommends laying a pipeline from St. Lucie Inlet for sand replenishment.

Strock, A. V. and Associates, 1981, Town of Jupiter Island Follow Up Study, Consulting Report prepared for the Town of Jupiter Island, 10 pages and figures.

Strock and Associates surveyed 24 profile lines from back beach to a point 1500 feet offshore. Approximately 70% of renourishment fill was found to remain after eight years. Jupiter Island was found to be receding at an average rate of 13.6 ft/yr with locally observed recession rates as high as 40.7 ft/yr. It is predicted that by 1982, all of the fill added in 1977-78 will have been eroded.

Stauble, D. K. and Hoel, J., 1986, Guidelines for Beach Restoration Projects, Part II, Physical Engineering Guidelines: Report No. 77, Florida Seagrant College, 92 p.

Stauble and Hoel designed this study to provide new insight for the design and permitting of future beach renourishment projects. The authors recommend a standardized project monitoring protocol that measures effects on the borrow area and the fill placement area. The merits of various overfill ratio models are discussed.

United States Army Corps of Engineers, 1984, Shore Protection Manual: Department of the Army, Waterways Experimental Station, Corps of Engineers, Coastal Engineering Research Center, 2 v. set, various pagings.

The Shore Protection Manual serves as a standard operating procedures document for most beach protection projects. The manual examines beach erosion and renourishment needs along with providing an exhaustive treatise on sediment mechanics. It is the single most comprehensive document available addressing beach nourishment.

Venanzi, P. F., 1992, Surficial Sediment Grain-Size Distribution Patterns: A measure of Inlet Influence: (M.S. Thesis): Melbourne, Florida, Florida Institute of Technology, 183 p.

Venanzi examines the role of ebbtide currents in jetting fines offshore so that the sediment distribution in an ebbtidal delta is artificially coarse. The area of inlet influence at Sebastian is within about 3000 feet of the inlet mouth. Localized carbonate source areas reflect coral reef productivity. A brief literature review is also included in this thesis.

Visher, G. S. and Howard, J. D., 1974, Dynamic Relationship between Hydraulics and Sedimentation in the Altamaha Estuary: Journal of Sedimentary Petrology, v. 44, no. 2, p. 502-521.

Visher and Howard address the independent behavior of density driven inlet water masses. Water masses in an inlet are density driven and they behave independently. The development of sedimentary structures within the inlet are controlled by water depth, bed shear, waves, and biologic activity. Grain size distributions at any given point will change depending on whether the sample is collected at ebb or at flood flow. Grain size distribution charts for various environments are shown. During flood tide, sand waves are found in the upper flow regime with a continuous dense moving grain layer of sediment and forward facing cross-beds. These beds are truncated and scoured during ebb tide. During ebb tide traction transport of sediment occurs and is expressed as ripples and dunes on the sea floor. Avalanche deposition resulting from flow separation helps provide for the removal of coarse detritus. Tidal estuaries serve as a trap for coarse sediments and provide a mechanism for removal of fine grained sediments.

Walther, M. P., Sasso, R. H., and Lin, P., 1989, Economics of Sand Transfer; *in*: Beach Preservation Technology '89, Florida Shore & Beach Preservation Association, p.199-206.

Walther, et al. offer a method for economic calculation of alternatives to inlet sand transfer. For calculation purposes, a 50 year project life is assumed and historical maintenance of inlets is considered with regard to sand transfer and downdip beaches. Port Everglades Inlet and Sebastian Inlet are modeled for sand balance. The model calculates the sand budget for each inlet and finds that 50-80% of longshore drift can be transferred by bypassing. Shoaling rates increase in frequency and volume as sand is removed from ebb and flood tidal shoals. Dredging of the ebb shoal will, however, reduce natural bypassing. Erosion of feeder beach will increase with decreased grain size of borrow material, reduction of length of feeder beach and overall volume of material involved.

Zarillo, G. A., Liu, J., and Tsin, H., 1985, A New Method for Effective Beach-Fill Design; *in*: Coastal Zone '85, Proceedings of the Fourth Symposium on Coastal and Ocean Management, ASCE, v. 1, p. 985-1001.

Zarillo, et al. discuss the calculation of renourishment parameters (Dean vs. SPM) on a dynamic beach. When the natural supply of sediment is terminated, the beach will retreat rapidly at first and then slowly as rate of removal of fine grained material slows. The conventional approach to modelling this problem is to perform a statistical analysis of grain size distribution. The model needs to consider differential transport paths of individual grains across the beach and the shoreface. Coarser grained sediments will move onshore while finer grained sediments move offshore. In the Long Island, NY study area, coarse grain sizes are relatively rare except near inlets and glacial bluffs. Three distinct groupings (species) were classified according to grain size. In the Beach species, coarse grains form a stable intertidal beach and, to a lesser degree, nearshore bar. In the Beach-bar transfer species, intermediate size sand grains are most stable between the beach and the bar. The Offshore species is made up predominantly of fine grained sands. Coarse material is preferentially transported onshore and stored on intertidal beaches while fine sands are most stable in shoreface zone seaward of the surf zone. The beach interval will adjust to equilibrium by having portions of its mass dispersed among available transport paths as determined by grain size. Fill factors for each size class should be calculated independently. Short term behavior of the beach fill material should be reasonably predictable.

C. Breakwater and Groin Design

Balsillie, J. H. and Bruno, R.O., 1972, Groins: An annotated Bibliography: United States Army Corps of Engineers, Coastal Engineering Research Center, Miscellaneous Paper No. 1-72, 249 p.

> Balsillie and Bruno present an annotated bibliography of literature concerning groin design. The bibliography is current through 1972.

Balsillie, J. H., 1984, Wave length and wave celerity during shore-breaking: Florida Department of Natural Resources, Beaches and Shores Technical and Design Memorandum No. 84-1, 17 p.

> Based on laboratory and field data, Balsillie develops a family of useful relationships for determining wave length and wave speed in the surf zone.

Crater, R. E., Garaffa, T., and Schmidt, C., 1994, Enhancement of Beach Fill Performance by Combination With an Artificial Submerged Reef System; *in*: Alternative Technologies in Beach Preservation, Florida Shore & Beach Protection Association p. 69-89.

> This paper was designed to provide background support for the Beachsaver Reef System. The system consists of an interlocking concrete reservoir capable of perching or retaining sand fill thereby reducing the volume of borrow material required and cutting the frequency of beach nourishment.

Dalrymple, R. A., 1970, An Offshore Beach Nourishment Scheme; *in*: Twelfth Annual Coastal Engineering Conference, V. II, ASCE, p. 955-959.

> Early beach replenishment on Jupiter Island required the scraping of borrow sands from a nearshore site. This paper discusses the delineation of the scraper borrow site off Jupiter Island. Severe beach erosion has occurred due, in part, to the presence of a large inlet to the north. The scraper area was delineated by buoys 850 feet offshore and 500 feet apart. In this area, the shoreline is straight, the beach narrow and the offshore profile is shallow. Scraping has resulted in the development of "shoulder bars". Beach sand moved offshore by steep waves refills the borrow pit and is lost to the beach (under normal wave conditions, only fine grained materials return to the borrow pit).

Mitchell, Beth L., 1994, An Overview of PEP (Prefabricated Erosion Prevention) Reef Development; *in*: in Alternative Technologies in Beach Preservation, Proceedings of the 7th National Conference on Beach Preservation Technology, Florida Shore & Beach Preservation Association, p. 90-96.

> This background paper was presented in support of PEP reefs. The reefs will reduce wave energy before hitting the shoreline. Benefits include storm

protection and beach perching. The reefs are purported to be easy to fabricate, environmentally compatible, stable, and cost effective. Reefs are currently in use off of Palm Beach (175 feet from shore). There are conflicting reports about reef effectiveness and ponding has been reported behind the PEP reefs. An additional set of PEP reefs will be installed off of Vero Beach in the near future.

Zarillo, G.A. and Surak, C.S., 1995, Evaluation of Submerged Reef Performance at Vero Beach, Florida, Using a Numerical Modeling Scheme: Report 40, Indian River County, 56 p.

> Zarillo and Surak develop a combined wave, circulation and sediment transport modeling scheme to show that the presence of artificial reef segments will have a significant effect on the hydrodynamics and sediment dynamics of the upper shoreface of Vero Beach. This model shows that the artificial reef is likely to have a measurable and significant impact upon the distribution of wave energy, circulation and sedimentation patterns on the upper shoreface and that cross-shore and long-shore sediment transport both play a role in determining the shape of the shoreface profile.

D. Beach and Inlet Studies

Almasi, Mohammed, 1983, Holocene Sediments and Evolution of the Indian River Lagoon (Atlantic Coast of Florida)(Doctoral Dissertation): Miami, Florida, University of Miami, 238 p.

> Almasi examined sediment characteristics of the Indian River Lagoon. His dissertation provides a good background on sediment schemes in south Florida away from the shoreface. Several transects were made near tidal inlets. The sediment scheme was completely characterized at these locations. Almasi also discusses tidal effects and surface velocities at the inlets along with biota in brackish water environments.

Alpine Ocean Seismic Survey, Inc., 1994, Vibracore Sampling Collection and Geotechnical Testing in the Atlantic Ocean off the Coast of South Florida, Final Report Volumes 1 and 2: performed for Applied Technology and Management Inc. as part of the Martin County Shore Protection Project Borrow Area Geotechnical Investigation, various pagings.

> This paper is a summary of raw data only--no data reduction is included. It was compiled under contract for Martin county. Vibracore locations and descriptions are also provided (v. 1, v. 2).

Aubrey, D. G. and De Kimpe, N.M., 1988, Performance of Beach Nourishment at Jupiter Island, Florida; *in*: Beach Preservation Technology '88, Problems and Advancements in Beach Nourishment, Florida Shore & Beach Preservation Association, p. 409-420.

> Aubrey and De Kimpe evaluate nourishment efforts along a five mile stretch of Jupiter Island currently experiencing critical erosion. Factors contributing to erosion off of Jupiter Island include narrowness of offshore shelf, lack of ocean wave sheltering by Bahamas Bank and interruption of longshore transport by the St. Lucie inlet channel jetty. During a one year period, eight million cubic yards of sediment was placed on the beach at a cost of $11.5 million. The renourishment area has five miles of seawalls and three miles of groins. Since 1972, borrow material has come from an area 3500 feet offshore. Higher quality material suitable for borrowing exists off St. Lucie inlet (probably in the ebb shoal) but the transport cost is too high (four to six times the cost of using local material). Poorer quality local borrow materials mean higher turbididty, greater fill losses and a reduced duration of fill life. A scientific and engineering characterization of beachfill material should be undertaken.

Balsillie, J. H., 1985, Post-Storm Report: The Florida East Coast Thanksgiving Holiday Storm of 21-24 November, 1984: Florida Department fo Environmental Regulation, Division of Beaches and Shores, Post-Storm Report 85-1, 63 p. and appendix.

> This work describes the effect of a storm which struck the Florida east coast during November 1984. The role of each individual force element (wind, storm tide, waves) is examined and post-storm damage is assessed.

Bodge, K., 1992, Port Canaveral Inlet Management Plan (Draft): Olsen Associates Inc. Report prepared for Canaveral Port Authority, 266 p. and appendices.

> Bodge provides a comprehensive summary of the Port Canaveral Sediment budget. Extensive discussions of projected fill life, erosion rates and sediment volume changes near the inlet mouth are included. The phenomenon of drift reversal south of inlet due to a "sink" effect is also covered. Also examined are the possibilities of sand by passing and the delineation of potential borrow areas. Shoaling around inlet entrance should be curable with the installation of Longaard (geotextile) tubes.

Bodge, K. R., 1994, Performance of 1992 Nearshore Berm Disposal at Port Canaveral Florida: Olsen Associates, 71 p.

> Bodge reviews the performance of material dredged from the Port Canaveral channel in 1992 and placed on the nearshore berm offshore of Cocoa Beach. After one year, 1/2 to 2/3 of original fill material was still in place. The "missing" material probably migrated nearshore or landward (i.e. it has been diffused

shoreward). After six to nine months, the nearshore berm created by the fill becomes difficult to detect.

Brooks, H. K., 1976a, Borrow for Beach Restoration Maps, prepared for Brevard County Erosion Control District: Coastal Oceanographic and Engineering Laboratory, University of Florida, 4 maps.

This document consists of a collection of maps prepared in anticipation of possible beach renourishment in Brevard County. Maps include bathymetry, core, locations, depth to bedrock by seismic refraction (typically 20-30 ft) and areas of clayey bottom. Potential borrow areas have silty mud overburden. Many bottoms are also composed of fine sand overlying stiff clay.

Brooks, H. K., 1976b, Borrow for Beach Restoration, Indialantic-Melbourne Beach, Brevard County Florida, Final Report: Coastal Oceanographic and Engineering Laboratory, University of Florida, Gainesville, 9 p.

Brooks finds that no borrow material is available for beach restoration in the Indialantic-Melbourne Beach area. It is suggested that borrow material might be taken from the Indian River lagoon. Brooks (1976a) also produced a set of maps to support this study. Holocene surface sand in the renourishment area was found to require a 20:1 overfill ratio. Nine feet of fine grained overburden covers Pleistocene shell sand offshore which is suitable for renourishment. This report has been superseded by later work. As part of this study, a seismic refraction survey was performed. Maximum refraction penetration was 40-50 feet. Brooks divided native sand into three classes. Type A sediment consists of well sorted, very fine, silty quartz sand. Type B, is a very fine, silty, quartz sand with mud. This material is poorly sorted and contains 10-25% shell material. Type C sediments consist of shell material in a sandy matrix. Shell content is typically 25% or greater. Type A sediments are typically found in shallow inshore locations while Type B and C sediments are usually found further offshore. Beach cores were also collected as a part of this study.

Bruun, P. M., Battjes, J.A., Chiu, T.Y., and Purpura, J.A., 1966, Coastal Engineering Studies of Three Florida Coastal Inlets: University of Florida, College of Engineering, v. XX, no. 6, Bull. no. 122, 68 p.

Bruun, et al. describes how inlet shoaling, sediment budgets and littoral drift affect the Sebastian, Hillsboro and Lake Worth Inlets. Most coastal inlets subject to littoral drift will migrate in the direction of prevailing littoral drift (though some, such as the Indian River, Delaware, migrate in a direction opposite to drift). This paper discusses inlet shoaling, sediment budgets and influence of the inlet on littoral drift. Sebastian, Hillsboro and Lake Worth inlets are modeled.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1958, Coastal Engineering Study of Fort Pierce Beach: Technical Progress Report No. 7, Coastal Engineering Library Staff, Engineering and Industrial Experiment Station, University of Florida, Gainesville, 40 p. and figures.

> This report was designed to serve as a baseline study for the Fort Pierce Inlet. It makes recommendations for the technical measures necessary to prevent inlet breakthrough. The paper documents rock reef hard bottoms found at depths of 10-14 feet off the Fort Pierce Inlet mouth and examines the possibility of installing a sand bypass plant as a long-term solution for inlet shoaling.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1960, Coastal Engineering Investigation at Jupiter Island: prepared for Alton A. Register and Associates, Engineers, Fort Pierce, 6 p.

> This brief report documents early erosion over a five mile stretch of Jupiter Island beginning six miles south of St. Lucie Inlet. The authors recommend construction of a seawall to slow beach erosion

Coastal and Oceanographic Engineering Laboratory, 1960, Coastal Engineering Study at Fort Pierce, Florida--Investigations into Causes of Erosion of Sandy Beach: The Dock and Harbour Authority, March 1960, p. 342-345.

> Sediment budgets are developed through material balance. Barrier bar overwash and subsequent flooding is also accounted for as is leakage through "moles". This paper serves as a good baseline study for the Fort Pierce inlet.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1960 Report on Erosion Situation at Jupiter Island, 1962, Report on Erosion Situation at Jupiter Island, 14 p.and figures.

> This paper documents erosion problems on Jupiter Island. It describes the construction of private seawalls too close to the shore and recommends remedial action. This report advocates removing some private seawalls and adequately protecting others.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1962-1975, untitled maps.

> Various loose Sebastian Inlet maps including soundings, current measurements, and flow patterns; also, sand trap design and beach nourishment maps from 1975.

Coastal and Oceanographic Engineering Archives, University of Florida, 1965, Survey Review Report on St. Lucie Inlet, Florida,14 p. and figures.

> Collection of various correspondence and reports on St. Lucie Inlet, proposal for federal maintenance of inlet, cost projections and inlet proposal review.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1966-67, untitled maps.

> Cape Kennedy at False Cape Depth Contour Maps prepared in support of a tracer sand grain study.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1970, Tracing of Coastal Sediment Movement at Cape Canaveral: work sponsored by the United States Atomic Energy Commission, University of Florida Coastal and Oceanographic Engineering Report UF/COEL 70/12, 60 p.

> This study was designed to predict the distribution of "fusion products" from rocket launches. This study assigns longshore movement predominantly to the surf zone. In this zone, fine sediments are moved offshore while coarse sediments are moved onshore. The seaward limit of net onshore sediment movement is arbitrarily cut off at 20-30 ft water depth. Beach profile alternates between a) gentle slope, fine hard packed sands, and low dunes and b) steep slope, narrow beach, soft sand with broken shell. Individual sediment grains persist for long periods. Particles from water depths of less than 20 feet move onshore rapidly at times of greatest wave energy.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1973, Kennedy Space Center Ocean Beach Erosion: University of Florida Coastal and Oceanographic Engineering Laboratory Report 73/016, 58 p.

> Concerns about dune erosion and breakthrough due to storm and wave activity at Mosquito Lagoon are addressed in this report. No inlet has existed at the site since at least A.D. 500. There is little likelihood of a breakthrough inlet remaining permanently open because the lagoon does not have enough water to permanently maintain an inlet opening by tidal flushing. Only minimal measures (closing manmade paths across dunes) need to be implemented to insure continuation of the natural beach maintaining process. Shell content in grab samples taken in support of this project measures up to 50%. Mosquito Lagoon is in the final stages of silting up.

Coastal and Oceanographic Engineering Laboratory, University of Florida, 1976, Report on Monitoring of a Beach Fill South of Canaveral Jetties, Brevard County, Florida: UF/COEL 76/010, 59 p. and figures.

The monitoring of fill placed on a 2.1 mile stretch of beach south of Port Canaveral Jetties in Brevard County is documented in this report. Large portions of data were supplied by the Jacksonville office of the Army Corps of Engineers. Historical erosion trends at Port Canaveral are documented. The fill is moving southward and offshore to nourish beaches south of the intended fill area. From April 1975 through April 1976, all bathymetric contours moved landward. If the beaches are not renourished, a 10 year fill life is predicted. There has been no significant storm activity to affect fill. Continued monitoring of the fill area is needed.

Coastal Planning and Engineering Inc., 1989, City of Vero Beach-Beach Restoration Project Assessment Report: prepared for the City of Vero Beach, Florida, various pagings.

Hardbottoms paralleling the Vero Beach coastline in Indian River County are discussed in this report. Data collected from areal photographs was combined with 46 sediment samples collected from 21 older vibracores. Fill factors are computed using the SPM method. Potential sand sources are identified at Indian River Shoal, three miles from the study area, and at Bethel Shoal, 11 miles from the study area. Vibracores were collected during 1973, 1974, and 1984-1985. Native beach materials (grab samples) were also collected and magnetometer surveys were conducted. Orange tint (oxidation) observed in many sands is taken to be indicative of an upland source (not native beach sand). Borrow sand will diffuse to adjacent beaches after emplacement. The need for sand to replace diffused sediment diminishes with subsequent renourishment. Often beach renourishment using a dredge will stockpile sand on the dry beach portion of the profile. Selective dredging of the borrow area can improve sediment characteristics. Removal of coarse (>2") shell debris may not always be necessary as the larger carbonate fraction will self adjust to match the native size interval. When planning a nourishment project, volume should be adjusted to account for borrow source grain size and nourishment plans should be cognizant of end losses (greater losses at the physical limits of the project).

Coastal Technology, Inc., 1985, Shoreline stabilization and beach management for the City of Vero Beach: 57 p. and figures.

The impact of armoring is discussed in this report. If armoring is installed, the beaches will disappear within 20 years. Armoring will, however, protect upland structures at the expense of the beach. The beaches south of Riomar Point in Indian River County have historically accreted while the beaches north of Riomar have historically eroded. The North Sebastian Inlet Jetty contributes to Vero Beach erosion by inhibiting southward longshore drift. Historically, the State of Florida has allowed rigid beach armoring only to protect existing structures while structures designed to interrupt sand flow are generally not permitted (i.e. artificial seaweed, offshore breakwaters, groins). Revetments are typically not allowed for dune protection but are allowed for structure protection. Seawalls are permitted for major residential structures but they must be within

25 feet of the eastern portion of the building. Dune reconstruction and revegetation is the DNR preferred method for structural protection. Even though vegetation may help stabilize a dune against eolian forces, it does not protect a dune against wave attack. This is a well thought out document and very worthwhile reading.

Coastal Technology Corporation, 1988, Sebastian Inlet District Comprehensive management plan: Prepared for Sebastian Inlet District Commission, Vero Beach, Florida, 537 p.

The inlet master plan includes discussion of beach nourishment needs and potential borrow sand source areas. Overfill ratios for borrow materials are discussed. The inlet ebb tidal shoal is recommended as a source area.

Coastal Technology Corporation, 1992, Brevard County Coastal Engineering Analysis--Phase II: various pagings.

This document is a feasibility study for beach renourishment. It includes cost-benefit calculations but does not include any hard data.

Coastal Technology Corporation, 1993, Vero Beach restoration hardbottom mapping: Characterization and coastal engineering analysis for Indian River County, by Coastal Technology Corporation and Matrix Technical Services, Inc., Vero Beach, Florida: various pagings.

Indian River County conducted side scan hard bottom investigations in 1987. Coastal Technology expanded upon this hardbottom mapping. All hardbottoms within 2000 feet of shore were mapped. Video transects were made across the hardbottoms. Based on the analysis of side scan data, much of the hardbottom present in 1988 was covered by sediment in 1993. Two borrow areas were identified as suitable for renourishment. The first borrow area contained more than 50% carbonate. Upland borrow areas have also been examined. The break- even for offshore/upland borrow is 220,000 cubic yds at Vero Beach. A dewatering system, which has helped to stabilize the beach, was installed at Sailfish Point in Martin County in 1993. A dewatering system is also recommended for Indian River County. PEP reef and reef alternatives are also discussed.

Continental Shelf Associates, 1985, Ecological Assessment of Nearshore Rock Outcrops Off Jupiter Island: prepared for Gehagen and Bryant, consulting engineers 33 p.

This report provides an ecological assessment of nearshore rock outcrops located off of Jupiter Island. It reviews historical outcrop data and discusses impacts of beach nourishment on biota. Hardgrounds are also mapped.

Continental Shelf Associates, 1989, Environmental Impact Assessment for Beach Restoration, Brevard County, Florida: prepared for Olsen Associates, 69 p.

> This paper delineates hardground areas in Brevard County. It emphasizes the environmental impact of beach nourishment. Emphasis is given to effects on nesting turtles. Negative impacts are found at hardbottom outcrops near Patrick AFB and at other sea turtle nesting beaches.

Dean, R. G., and O'Brien, M. P., 1987, Florida's East Coast Inlets, Shoreline Effects and Recommended Action, Coastal Oceanographic and Engineering Department, University of Florida, prepared for Division of Beaches and Shores, Florida Department of Natural Resources, 65 p.

> Dean and O'Brien catalog 19 inlets along the east coast of Florida. These inlets extend from St. Mary's Entrance at the Georgia border to Government Cut at the south end of Miami Beach. Of these 19 inlets, six were constructed inlets, cut for navigational and/or water quality purposes. All but two of the 19 have been modified for navigational purposes. Each inlet is described and the sediment budget for each inlet is tabulated. Aerial photographs of each inlet are included in this report. Specific maintenance action is suggested for each inlet. The authors observe that a major reason for the failure of past replenishment efforts is the emplacement of good quality beach sand in water depths too great for the sand to reenter the longshore system under natural forces. Placement depths of 12 feet or less are suggested.

Dornhelm, R. B., 1995, The Coney Island Public Beach and Boardwalk Improvement of 1923: Shore & Beach, v. 63, no. 1, p. 7-24.

> Dornhelm describes one of the first fully documented beach renourishment projects in the country. He provides historical perspective along with an explanation of the considerations driving the sand renourishment project.

Erickson, K. M., Modzeleski, E. H. and Harris, L., 1987, Saint Lucie County, Comprehensive Beach Management Plan: Applied Technology and Management Incorporated, 75 p.

> This plan included a sediment investigation sampling program designed to characterize the Ft. Pierce Inlet. Most of the sediment sampled was from the flood shoal and the channel. Of 31 total samples collected, only five were collected from Ebb Shoal.

Field, M. E. and Meisburger, E. P. , 1971, Late Pleistocene-Holocene History of Cape Kennedy Inner Continental Shelf: American Association of Petroleum Geologists Abstract, v. 52, no. 2, p. 337.

Field and Meisburger summarize results of lithologic analyses of 91 cores averaging ten feet in length and 360 miles of continuous high resolution seismic data. Two prominent regional reflectors were identified and prograding beds were found between the upper and lower reflectors.

Fields, M. L., Marino, J. N., and Weisher, L., 1988, Effects of Florida Tidal Inlets on Adjacent Shorelines; *in*: Beach Preservation Technology '88, Florida Shore & Beach Preservation Association, p. 383-393.

This paper provides a comparison of tidal effects on shorelines of St. Augustine, Port Canaveral, and St. Lucie Inlets. Each inlet responds to stabilization in a distinctly different fashion. South of Port Canaveral, the shoreline retreated. The shoreline adjacent to Saint Augustine Inlet showed accretion and the shoreline adjacent to St. Lucie Inlet showed a reduced rate of shoreline retreat. Discusses "r" factor developed by Bruun and Gerritsen (1959) which is equal to the ratio of the net longshore transport m_{max} to the maximum inlet flow, Q_{max}. If an inlet has a high "r", sand will be naturally bypassed around the inlet. When the "r" of an inlet is low, tidal sand transport will predominate. Five shoreline parameters were collected from the old shoreline data—the zero crossing parameter (distance from inlet to change in accretion/erosion scheme) and the shoreline parameter which is the average net change from inlet to zero particle point. These two measurements are made updrift and downdrift for a total of four parameters. The fifth parameter to be measured is the effective length of the north jetty.

Fields, et al. conclude that no single inlet classification is available which describes both sediment transport and physical processes and that the dominant bypassing mechanism affects the downdrift tidal response. Updrift response to inlet and jetty construction is localized and not tied to bypassing mechanism. Tidal bypass inlets have more downdrift effect than bar bypass inlets. Combination inlets have relatively constant effects downdrift. Deepening of the channel through the bar can alter dominant bypass mechanism.

Gehagen and Bryant Associates, 1976, Jupiter Island Beach Renourishment Program: 47 pages and appendix.

Gehagen and Bryant show that Jupiter Island beaches have been eroding since the excavation of the St. Lucie Inlet in 1892. The erosion rate has increased since 1946 with much of the eroded material being moved offshore. 3.7 million cubic yards of material was placed on Jupiter Island beaches during 1973-74. By the time of this report (1976) 1.8 million yards had already been eroded. The borrow material was finer grained than the native material. Fill material eroded from the beach was found to flatten the nearshore slope. 300-600 thousand yards of borrow material are needed to maintain a constant beach width every third year. St. Lucie Inlet, Pecks Lake and the Intracoastal Waterway were searched as a potential source of borrow sands. St. Lucie Inlet borrow material was found to be of better quality and more expensive than offshore borrow materials.

Harris, L. E., 1983, Physical and Hydraulic Analysis of the St. Lucie Improvement Project Prior to and During Construction: Florida Academy Symposium, Florida Scientist, v. 46, nos. 3/4, p. 234-238.

Harris reports the status of the St. Lucie Inlet as of 1981. He discusses the concept of the "weir-jetty" (impoundment basin). The south inlet jetty prevents sand from entering the inlet during flood flow and southeast wind periods. This jetty also interferes with the natural tidal current flow to the inlet. The shoreline was straight before first the jetty was installed in 1892.

Humiston, K. K., 1975, Project Performance Studies, Beach Erosion Control Project, Fort Pierce, Florida: Department of the Army, Jacksonville District, U.S. Army Corps of Engineers, 7 pages and figures.

Humiston evaluates the 1.2 mile beach renourishment project performed south of the Fort Pierce Inlet entrance. During 1971, 700,000 cubic yards of sand were placed on the beach. Beach profile surveys were performed before and after sand emplacement. Erosion/accretion maps were assembled for the renourishment area. Through 1975, the project was outperforming its design parameters and losses were estimated at approximately 50,000 cubic yards per year.

Hunt, S. D., 1980, Port Canaveral Inlet Report #9: Florida Sea Grant Report #39, 50 p.

Good historical background for Port Canaveral, widely used as background for other Port Canaveral papers. Report contains a summary of dredging records and refers to continuous record of aerial photos.

Hushla, F. L., 1982, Evaluating the Performance of Beach Nourishment in Brevard County, Florida through the Use of Aerial Photography (M.S. Thesis): Melbourne Florida, Florida Institute of Technology, Melbourne, Florida, 80 p.

Hushla measures beach width and area changes from aerial photographs. The Indialantic/Melbourne beach renourishment area was found to be eroding at an accelerated rate (50% of fill gone within one year). Much of the sand added during the Indialantic/Melbourne Beach renourishment project wound up being impounded by the north jetty at Sebastian Inlet. Aerial photography was found to be a cost effective way of gathering information and is especially useful when other information is sparse. It provides a repeatable means of assessing the amount of sediment trapped in longshore flow. Aerial photos are found to be as accurate as ground surveys for beach width measurements but not sufficiently accurate for showing changes over short time periods.

Johnson, Larry D., 1976, Recent History of the Sebastian Inlet, Florida Area (M.S. Thesis): Gainesville, Florida, University of Florida, 48 p.

> Johnson documents the search for a lost paleo-inlet based on sediments recovered during an archeological dig. Sediment grab samples were collected along profile lines. Refraction seismic data was also collected with the aim of determining the depth to the Anastasia Formation. Local areas of narrow barrier island width were found not to be coincident with paleochannels but are coincident with perched beach deposits over a hardrock bottom. The study area extended from one mile north to two miles south of the inlet. The ocean tide range is 3.8 feet while the bay tide range is .23 feet. Peak flow rates in the inlet are 4.9 mph during flood tide and 6.2 mph at ebb tide. Under natural conditions, tidal inlets will self form into a long narrow "nozzle" shape. Shoaling is due to the prolongation of the inlet channel. Carbonates were abundant in the thesis area. Most of the carbonates were found to be reworked Anastasia Formation shell fragments.

Jones, Edmunds and Associates, 1978, Report of Investigation: Magnetometer Survey of Borrow Areas for Fort Pierce Beach Erosion Control Project: Florida Report #78-091-001, Prepared for Jacksonville District, U.S. Army Corps of Engineers, 22 p.

> The consultant performed a magnetometer survey supporting an archeological assessment of the borrow area. Several magnetic anomalies have been located. These may or may not be old wrecks. The borrow area for a proposed Fort Pierce beach renourishment project is mapped as a part of this study.

Lin, Paul C. P., Sasso, R. H., and Higgins, S., 1992, Prediction and Enhancement of Beach Fill Performance; *in*: New Directions in Beach Management, Proceedings of the 5th Annual Conference on Beach Preservation Technology, Florida Shore & Beach Preservation Association, p. 166-179.

> Lin, et al. examine a renourishment project in Broward County at John U. Lloyd Park. Three hydrographic surveys were performed at 8 month intervals. Twenty six percent of the fill material had been eroded from the renourished beach within two years.

Mehta, A. J., Adams, W. D., and James, C. P., 1976, Sebastian Inlet-Glossary of Inlets Report #3: Sea Grant Report #14, Coastal and Oceanographic Engineering Laboratory, University of Florida, 52 p.

> Report summarizes background information on inlet. A three hour delay in tides was found between Atlantic and Indian River sides of the inlet. A sand trap was added in 1962.

Mims, J. F., 1975, Location and Evaluation of Borrow Material for the Beach Nourishment of Melbourne Beach, Florida (M.S. Thesis): Gainesville, Florida, University of Florida, 84 p.

> Using ICONS seismic and boring data, Mims identified borrow area features 2000-8000 feet off Melbourne Beach. Most of these features are covered by a thin veneer of fine grained sediments. Mims identifies the shelf break as being 35 miles offshore at Melbourne Beach. The renourishment project comprised an area extending from four miles north of Eau Gallie to seven miles southward. Seismic refraction data was collected at most stations using an explosive source. The relative merits of the Krumbein and Dean methods for calculating overfill are discussed. Most investigators try to match replenishment material grain size distribution to the existing beach even though existing beaches are eroding. The SPM takes a more empirical approach. Fifty percent of the emplaced material from the 100 sieve will be lost within the first year. The question that should be asked is what materials will be stable on the beach. Jupiter and Cape Canaveral projects show coarser fragments (carbonates) remain while finer fractions are washed away. Carbonate shell debris effectively provides a form of armament. Strack (1975) pointed out problems with the Jupiter fill project. Among these are insufficient sampling to characterize the borrow area. Dredging losses of 90% above 200 mesh and 5% above 100 mesh occur during the beach building process with coarser material remaining on top of the beach. At Cape Canaveral, the beach surface is effectively armored by shell fragments overlying fine grained sand. The borrow material for the Melbourne Beach replenishment is a relict sediment covered with a veneer of modern sediment. The borrow site was identified based on ICONS seismic data. A seismic discontinuity was identified as a paleobeach while a hard layer was correlated with a dense clay lying on an unconformity surface.

Nocita B. W., Kophina, P., Papetti, L. W., Olivier, M.M., Grosz, A. E., Snyder, S., Campbell, K. M., Green, R. C., and Scott, T. M., Sand, Gravel and Heavy Mineral Resources Potential of the Surficial Sediments Offshore of Cape Canaveral, Florida: Florida Geological Survey, Open File Report No. 35, 55 p.

> This survey report examines 79 samples extracted from 44 vibracores. A paleostrandline is delineated based on *Donax* occurrence. The cores used were originally collected for Field and Dwayne (1974). Sediment grab samples and uniboom seismic data were also collected. Most samples are predominantly sand and gravel rich. Heavy mineral distribution is similar to the onshore occurrences at Trail Ridge and Green Cove Springs but the absolute abundance of minerals is lower.

Olsen Associates, 1989, Economic Analysis of Beach Restoration Along Brevard County, Florida: 184 pages and appendices.

> Olsen provides a cost analysis based feasibility study. No geological data or data reduction is included.

Olsen Associates, 1989, Historical Shoreline Analysis Along Brevard County, Florida: various pagings.

> Areas of erosion and accretion along the Brevard County shoreline are detailed. The report examines rates of shoreline change and shoreline change ratios.

Olsen Associates (Buckingham and Olsen), 1989, Sand Source Analysis for Beach Restoration in Brevard County, Florida: prepared for the Brevard County Florida Board of County Commissioners, various pagings.

> Buckingham and Olsen extensively detail prospective borrow areas for beach renourishment in Brevard County. Sands are characterized and boring logs are provided.

Parkinson, R.W. and Perez-Bedmar, M., Physical Attributes of a Natural (Control) and Renourished (Treatment) Beach, Sebastian Inlet, Florida--Year 2: Oceanography Program, Division of Marine and Environmental Systems, Florida Institute of Technology, Melbourne, Florida, 16 p.

> The control beach extends 3000 feet north of the inlet entrance while the treatment beach extends 4000 feet south of the inlet. The beach was renourished during the winter of 1993. Physical attributes of the beach were studied by Parkinson and White 1992. Beach tilling has been unsuccessful in reducing compaction levels. The treatment beach was found to contain consistently higher amounts of both gravel and mud.

Parkinson, R. W., 1991, Moisture and Grain Size Characteristics of a Renourished and Control Beach, Sebastian Inlet, Florida: Florida Institute of Technology, report submitted to Sebastian Inlet Tax District Commission, 12 pages and appendices.

> Parkinson's work was designed to characterize sediment grain size distribution and moisture content. It was performed as part of a turtle monitoring project. Two hundred and eighty-seven samples were collected from renourished and control beaches south of Sebastian Inlet. All samples were analyzed for moisture content. Ninety-four samples were analyzed to determine sediment grain size distribution. Parkinson was unable to distinguish between the control and renourished beaches based on the analytical results.

Parkinson, R. W., Venanzi, P. F., and White, J. R., 1993, Shoreface Sediment Distribution Patterns: A Measure of Inlet Influence?: Florida Institute of Technology, Department of Oceanography, Ocean Engineering and Environmental Science, report submitted to Sebastian Inlet Tax District, 50 p.

This study sought to find the length of shoreface affected by Sebastian Inlet. Inlet influence was determined by examining grab sample grain size distributions along the shoreline. Significantly altered grain size distributions were found for a distance of approximately 5000 feet updrift and 6000 feet downdrift of the inlet mouth.

Parkinson, R. W. and White, J. R., 1993, Characterization of Surficial Sediment, Sebastian Inlet Sand Trap: Division of Marine and Environmental Systems, Florida Institute of Technology, prepared for Sebastian Inlet Tax District, 17 pages and appendix.

Parkinson and White characterize the sediment being collected in the Sebastian Inlet sand trap. The sand trap was found to contain mostly sand sized particles with less than 5% mud content.

Raichle, A. W. and Bodge, K. R., 1994, Sedimentary Characteristics of 1992/1993 Nearshore Disposal Operation, Port Canaveral, Florida: prepared by Olsen Associates Inc. for the Canaveral Port Authority, 52 p.

Analysis of samples collected after renourishment demonstrates that the emplaced beach migrated landward. After renourishment, the level of fines increased from 10.5% of beach material to 18% of beach material. After renourishment, the seabed is itself comprised of coarser material with the amount of fines on the seabed being diminished.

St. Lucie County Engineering Department, 1982-1983, Untitled Maps .

This report describes the erosion status of restored South Beach with data collected at six month intervals starting August 1980.

Sebastian Inlet District, 1975, Beach Renourishment Project Maps.

Collection of plan view maps and cross sections pertinent to beach inlet maintenance and beach renourishment.

Secretary of the Army, 1948, Jupiter Island Florida Beach Erosion Study: a letter from the Secretary of the Army, War Department Beach Erosion Report; *in*: Congressional Record-80th Congress 2nd Session, Doc. 765 81395-49, 16 p. and illustration.

This report summarizes erosion problems facing the built-up portion of Jupiter Island (Hobe Sound). Continuous bulkheading is recommended. This document is interesting in that it provides a perspective on early solutions to eroding beaches.

Stauble, D. K., 1982, A Detailed Study of Profile Response and Sediment Textural Changes of the Indialantic/Melbourne Beach Nourishment Project; *in*: Proceedings of the 25th Meeting of the Florida Shore & Beach Preservation Association, p. 197-216.

Stauble studies the response of a beach after nourishment. Borrow material for the project came from the Canaveral Turning Basin. It was transported by truck and spread by dozer on the receding beach. Wave action initially reworked sediments with fine grain sizes being removed. Coarser shell material was broken down into finer fractions. Nine months passed from the time of initial renourishment until the beach grain size distribution was stabilized. Before the fill project, all beaches in the area had the concave profile typical of a winter beach. Profiles were altered by the fill project. The volume loss rate of fill sand emplaced above mean sea level was greatest immediately after renourishment while the central section of the fill area suffered the most rapid erosion. During spring and summer, the beach stabilized and accreted. The predominant longshore drift is to the southeast. The beaches immediately downdrift of the target area received significant amounts of fill from the project. There is a high degree of variability in measures of mean grain size and sorting. Fine grained sediment is transported away from the area while the coarser grained fraction modifies its grain size to match beach distribution. Variations in the initial amount of fill leads to non-uniform rates of fill erosion.

Stauble, D. K., 1986, Collection and Analysis of Cores for the Proposed Dredging of the channel in the Vicinity of Markers R"6"- B"5" to R"14"-B"13" of the Navigation Channel West of Sebastian Inlet, Florida: Coastal Processes Group, Department of Oceanography and Ocean Engineering, Florida Institute of Technology.

A series of cores were taken to one foot below dredge depth. Lithologic logs were compiled for the cores. Samples were collected, dry weights were noted and grain size distributions calculated. Settling rates from the fraction of sediment finer than silt was determined and the organic content was analyzed. Two basic sediment types were found. At the top of each core is a fine grained, poorly graded (SP) sand that has been deposited since the last dredging. Beneath this distinct boundary is a poorly sorted, dark colored sand with shell fragments.

Stauble, D. K., DaCosta, S. L., Monroe, K. L., Bhogal, V., and de Vassal, G., 1987, Sediment Dynamics of a Sand Bypass Inlet, Coastal Sediments; *in*: ASCE Proceedings, p. 1624-1639.

In this paper, Stauble addresses the extensive Sebastian Inlet flood delta. It should be read together with Wang's (1991) paper on the ebb delta. Volumetrically, the flood delta is dominant and shows extensive growth into the Indian River Lagoon. Sediment hindcasting (performing back calculations based on present sediment distribution) was used to predict sediment dynamics.

When inlets are stabilized with structures to maintain channels, flushing and longshore sediment movement are impaired. A "lagoonal inlet" has a highly restricted throat section and is backed by a large lagoon. Sorting processes occur as sediments are transported lagoonward with the coarser sediments dropping out first. A chart showing mean vs. sorting values of surface samples are included in the article. Sediments become finer and better sorted as one moves away from inlet and into the lagoon. The study makes reference to an extensive flood tidal delta and small or absent ebb tidal deltas. Net transport over the tidal cycle is in the flood direction due to changes in channel velocities over time. The author suggests passive sand bypassing for beach nourishment. Selective sorting occurs as sediment is transported into the delta area during flood tides.

Stone, K., 1989, "Sand Rights": A Legal System to Protect the Shores of the Sea; *in*: Beach Preservation Technology '89, Strategies and Alternatives in Erosion Control, Florida Shore & Beach Preservation Association, p. 9-20.

Using California as an example, Stone makes a case for allocating "sand rights" in a fashion similar to the one in which water rights are allocated. This paper discusses extension of public trust doctrine to include "sand rights" and it points out that there are numerous causes of shoreline erosion. Hundreds of millions of yards of sand are stored behind dams in the Los Angeles area. Erosion occurs on the downstream side of a dam and accretion on the upstream side. Before construction, the effects of each project on the supply of sand to the beach should be examined.

Stauble, D. K., 1993, Impact of Storms on Beach Nourishment Projects; *in*: The State of the Art of Beach Nourishment, Proceedings of the 6th Annual National Conference on Beach Preservation Technology, Florida Shore & Beach Preservation Association, p. 40-63.

The impact of severe storms after fill emplacement is documented in this paper. Fill provides protection to upland properties and reduces closure depth of the project. Beach nourishment is the least expensive type of shore protection. A survey of the Indialantic/Melbourne beach project was conducted after the Thanksgiving Day 1984 storm. It was found that the sand emplaced in the most recent nourishment project was severely eroded but that the dunes were protected. Upland property experienced minimal damage. The profile history of beach recovery after the storm was measured. Profiles were collected out to wading depth and sediment samples were collected at high, medium and low tide locations along with wave data and aerial photography. The occurrence of additional storm events was documented. The original fill material for the project was trucked in. Readjustment of the fill is controlled by frequency and intensity of extreme events. Sediment eroded off of subaerial beaches during storms appears to be deposited on offshore bars--it is not lost to the system. Composite samples for the project were created by combining high tide, mid tide

and low tide samples. The beach displays a finer mean particle size during quiet periods. Coarser mean particle size movement occurs during storms. Coastal processes work to make the grain size distribution of any nourished beach similar to the grain size distribution in the native sediment. Brief descriptions are also given for renourishment projects at Myrtle Beach, South Carolina and Ocean City, Maryland.

U.S. Engineers Office, Jacksonville, Florida,Bathymetric Soundings, Fort Pierce Harbor, Florida: 1939.

Bathymetric chart of Fort Pierce Harbor, Florida.

United States Army Corps of Engineers, 1962, Evaluation of Oceanographic, Hydrographic and Hydrologic Effects, Cape Canaveral, Florida, 16 pages and figures.

This document tabulates winds, tides and water levels near the Canaveral Inlet. It also evaluates waves, currents and the effects of barge traffic.

United States Army Corps of Engineers, 1967, Beach Erosion Control Study, Brevard County, Florida: 13 pages and attachments.

The Corps of Engineers provides a historical summary of beach erosion throughout Brevard county. The report includes bathymetric and historical shoreline change maps. Previous reports are summarized and areas of beach erosion/accretion are discussed.

United States Army Corps of Engineers, 1968, Beach Erosion Control Study, Martin County, Florida: U.S. Army Engineer District, Jacksonville, Office of District Engineer, Corps of Engineers, Jacksonville, 32 pages and figures and appendices.

This report recommended renourishment to protect Jupiter Island (Jensen Beach, Stuart Beach). Groins should minimize losses at Jensen Beach and Stuart Beach. At the time of this report, it was not economically viable to improve Jensen and Stuart Beaches. Jensen Island had little publicly owned land and would not qualify for major Federal participation. It was therefore recommended that the Corps of Engineers not initiate beach projects in Martin County at this time.

United States Army Corps of Engineers, Department of Army, 1972, various maps, Jacksonville District.

Assorted maps delineating Canaveral renourishment project. Plan and cross section views. Boring logs showing CH (high plasticity) clays from 15 to 30 feet below the sea floor (approximately 30-50 ft below sea level).

United States Army Corps of Engineers, 1978, General and Detail Design Memorandum, Fort Pierce Beach Erosion Control Project: Jacksonville District, U.S. Army Corps of Engineers, 60 p. and appendices.

> This report addresses periodic renourishment required for the Fort Pierce Beach renourishment project. Grab samples are collected and characterized from the proposed borrow area.

United States Army Corps of Engineers, 1980, Feasibility Report for Beach Erosion Control, Indian River County Beaches: U.S. Army Corps of Engineers, Jacksonville District, various pagings.

> This paper disscuses the renourishment history of Indian River County beaches along with previous federal studies. It includes the past history of area, archeology, and shipwrecks. History of federal and non-federal projects is also included. Longshore currents are also addressed along with determination of beach renourishment needs.

United States Army Corps of Engineers, 1994, Coast of Florida Erosion and Storm Effects Study, Region III Feasibility Report, Appendix E, Geotechnical Report, p.

> This report covers south Florida (Palm Beach, Broward and Dade) counties only. It is not directly relevant to study area but it does provide worthwhile background material.

Walker, T. D., 1966, Beach Erosion in Florida with a Case Study of Fort Pierce, South Beach: Masters Thesis (Geography), Florida State University, Tallahassee, 82 p.

> The objective of this thesis is to determine the impact of beach erosion upon man living in Florida. Florida has 1300 miles of total shoreline. Of this amount, 800 miles consist of sandy beaches. The effect of vegetation in slowing the erosion process is examined. The role of seawalls and revetment in stabilizing Jupiter Island beaches is briefly discussed as are the influence of state and federal regulations applying to erosion control. A case study is made of beach erosion at Fort Pierce. Fort Pierce Inlet is manmade. The town of Fort Pierce was established on a bluff on the mainland in 1837. A natural inlet, known as the Indian River Inlet, formerly existed in the Fort Pierce area. A manmade inlet was constructed in 1930 at a cost of $2.5MM. Maximum current velocity in the inlet is 5 ft/sec (3.5 mph). As a result of inlet activities, there has been a decline in property values on the south beach and conflicts with property owners have developed. The thesis examines various sand transfer schemes and beach renourishment. There has been little serious erosion in the area of Fort Pierce Inlet. Thesis recommendations for beach management include educating the public, cleaning up the beach, and initiating dialogue with other areas having similar problems.

Walther, M. P., Sasso, R. H., and Lin, C. P., 1988, Sediment Budget for Sebastian Inlet; *in*: Beach Preservation Technology '88, Florida Shore & Beach Preservation Association, p. 395-400.

> The authors perform an analysis of downdrift sand losses caused by the Sebastian Inlet jetties. Areas studied include the beach extending to 900 feet north of the inlet jetty, the ebb tide shoal, the sand trap and and the flood shoal. The inlet ebb shoal contains 1.5 MM yards of sand accreting at a rate of 28,500 yards per year while the sand trap and the flood shoal impound sand at the rate of 47,000-57,000 yds/yr. This report includes a summary of dredging and nourishment projects related to Sebastian Inlet. The sediment budget at the inlet consisted of 157,000 yards moved longshore, 57,000 yards moved into the inlet, 13,600 yards to the ebb shoal and 86,400 yards moved downdrift by natural bypass mechanisms. The net sediment deficit to downdrift beaches is, therefore, 48,600 yds/yr.

Wang, H., Lin, L., and Lin, P., 1991, Modeling Sebastian Inlet; *in*: Proceedings of the Fourth Annual National Conference on Beach Preservation Technology, p. 158-177.

> Wang, et al. find that simulation of current patterns yields greater validity than simulation of current strength. The channel bed at Sebastian has a rocky bottom of marine origin and the tidal prism is twice the value of the prism associated with a stable inlet. This results in very strong currents. Erosion of beaches on the south side of the inlet is caused by sands impounding against the north jetty. An ebb shoal rapidly develops to the south and encroaches upon the inlet entrance channel. A working inlet model requires bottom bathymetrics, boundary geometries, wave conditions at offshore boundary, currents at the inlet, bottom friction and lateral mixing coefficients. The wave field at the inlet differs significantly from the ambient wave field due to various influencing factors. Incoming waves shoal, refract and eventually wrap around the inlet jetty to create short crested cross waves (wave diffraction). Wave height enhancement occurs near the jetty where tidal currents meet incoming waves, amplifying wave height and creating near standing waves. A graph is provided in the paper showing differing wave regimes. During ebb flow the current serves to jet fines offshore onto the ebb shoal. Modeling of the mixing coefficient in the numerical model does not apply at a laboratory scale.

Wang, H., and Lin, L., 1992, Sebastian Inlet Model Studies; *in*: New Directions in Beach Management, Proceedings of the 5th Annual National Conference on Beach Preservation Technology, Florida Shore & Beach Preservation Association, p. 274-293.

> Wang and Lin modeled sediment motion around Sebastian Inlet utilizing a movable bed physical model. Several structural alternatives were explored. Sand was generally found to bypass the inlet entrance and be deposited on the nearshore ebbshoal. The extension of the south jetty at Sebastian was found to increase the rate of sand bypassing. Sediment movement was found to be most active in the top layer of the ebb shoal. The shoal is relatively stable in all cases.

War Department, 1947, Beach Erosion Report on Cooperative Study of Jupiter Island, Florida: Report of Chief of Engineers, U.S. Army Beach Erosion Board, 27 p.

This paper provides background on beach erosion problems and historically documents Jupiter Island through 1948. This report also touches upon the shortcomings of then popular beach erosion control methods.

E. Field Procedures and Techniques

Bergmann, P. C., 1982, Comparison of Sieving, Settling and Microscopic Determination of Sand Size (M.S. Thesis): Tallahassee, Florida, Florida State University, 178 p.

Bergmann discusses results obtained from rapid sediment analyzer (RSA) analyses and how the results compare to sieve and microscopic grain size analyses. The investigator found that RSA investigations will truncate both ends of the sediment size distribution curve.

Dally, W. R., 1993, An overview of coastal surveying technology for documenting beach-inlet interaction: Journal of Coastal Research, Special Issue No. 18, p. 291-300.

Subaqueous surveying technologies are assessed as to performance and accuracy. The test site Sebastian Inlet.

Down, C., 1983, Use of aerial imagery in determining submerged features in three east-coast Florida lagoons: Florida Scientist Quarterly, Journal of the Florida Academy of Sciences Academic Symposium, v. 46, nos. 3/4, p. 355-362.

Color infra-red (IR) transparencies were found to be most effective for determining extent of submerged features. IR was found to be particularly suitable for direct detection of oyster bars and rocky areas.

Harris, W. D. and Jones, B. G., 1964, Repeat Mapping for a Record of Shore Erosion: Shore and Beach, v. 32, no. 2, p. 31.

Harris and Jones explore the use of infra-red photography to trace shore erosion. This paper discusses the mechanics of infra-red photography. Photography is tide controlled (pictures must be taken at high tide). Comparison of photos with earlier surveys confirms shoreline movement.

Lenz, R. G., 1994, Beachface Drainage, A Tool for Coastal Stabilization; *in*: Alternative Technologies in Beach Preservation, Proceedings of 7th National Conference on Beach Preservation Technology, Florida Shore & Beach Preservation Association, p. 27-52.

> Beach face drainage improves coastal stabilization as demonstrated by a project carried out in Stuart, Florida. Beach stability can be greatly improved by predrainage of the beach face. Installed systems monitor periodic beach profiles so that the effect of the system can be evaluated relative to updrift and downdrift beaches which are also monitored. At Sailfish Point in Stuart Florida, there is a worm reef located 400 yards offshore. Alternate accretionary and erosional episodes give net erosion along the shoreline. A six-hundred-foot long beach drainage system was installed in the western part of the eroding beach. Eighteen-inch collection headers were attached to the drainage system. Dewatering was begun at a rate of ten gallons per linear foot of collection system. The collection header was installed in a trench on the beachface while a gravity pumping station was installed behind the dune line.

Stronge, W. B., 1993, The Economic Analysis of Beach Restorations-The State of the Art; *in*: The State of the Art of Beach Nourishment, Proceedings of the 6th Annual National Conference on Beach Preservation Technology, Florida Shore & Beach Preservation Association, p. 9-23.

> This paper provides an overview of the economic analysis of beach restoration. It reviews standard methods of economic benefit determination. Frequently, benefits are deliberately understated to appease opponents of restorations. The best approach for determining benefits is through follow up studies when political controversy has died down.

Ulrich, Cheryl P., King, M. J., Brown, E., and Miselis, P., 1994, A Methodology for Quantifying "Hot Spot" Erosion Benefits for Shore Protection Projects; *in*: Alternative Technologies in Beach Preservation, Florida Shore & Beach Preservation Association, p. 454-473.

> This paper assigns costs to various scenarios, risked for probability, so that potential erosion damage can be prioritized. Beachfill projects provide hotspot protection. This paper also develops "expected costs" for various types of remediation.

University of Florida, Engineering and Industrial Experimental Station, 1962, Coastal Engineering Study of Current Activity, Sebastian Inlet, Florida: Coastal and Oceanographic Engineering Laboratory, University of Florida, Miscallaneous Publication 62/011, 15 p.

This study was designed to optimize bridge placement with respect to inlet currents. It examined maximum current strength in the inlet and suggested the best place for bridge pier placement.

Zarillo, G.A. and Bacchus, T.S., 1991, Application of Seismic-Profile Methods to Sand Source Studies for Beach Nourishment; *in*: Handbook of Geophysical Exploration at Sea, CRC Press, Boca Raton, Florida, p. 241-258.

The use of seismic data in locating sands suitable for beach renourishment is discussed. Studies to identify potential sand sources are the most critical part of any sand nourishment scheme and can be almost as costly as placing sand on the beach. Large sand volumes available from upland areas and back-barrier lagoons are becoming increasingly scarce. Offshore mining of sand will be the primary source of beachfill. These resources can be located economically through the use of seismic data. A study conducted of Cape Canaveral is included as a case history.

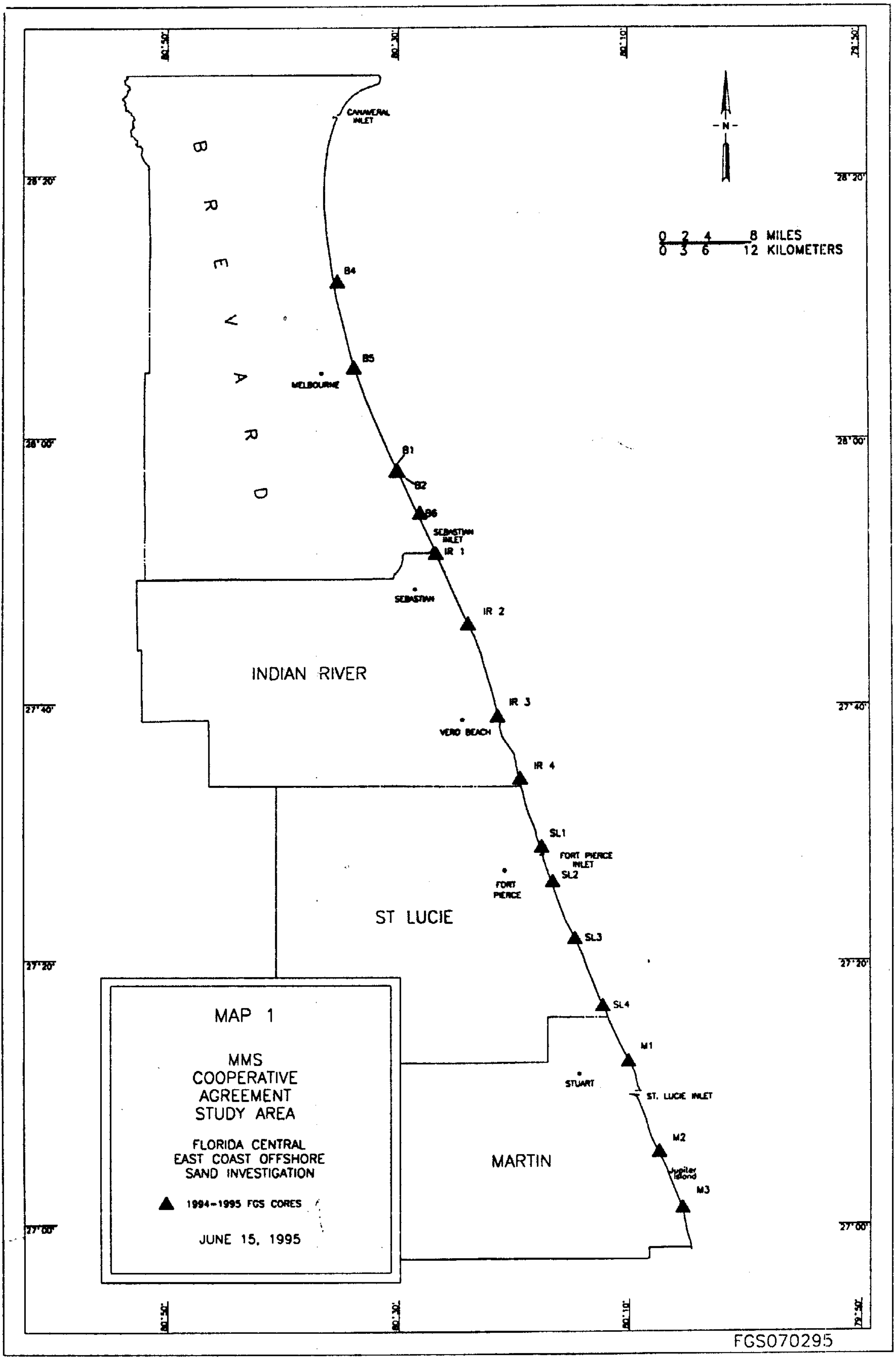
Part III COASTAL ATLAS

COASTAL ATLAS

Map Number	Title
1	MMS Cooperative Agreement Study Area
2	Detailed Map of Study Area
3A	Areas of Shoreline Erosion--Southern Brevard Co.
3B	Areas of Shoreline Erosion--Indian River Co.
3C	Areas of Shoreline Erosion--St. Lucie Co.
3D	Areas of Shoreline Erosion--Martin Co.
4A	Sediment Sample Locations--Southern Brevard Co.
4B	Sediment Sample Locations--Indian River Co.
4C	Sediment Sample Locations--St. Lucie Co.
4D	Sediment Sample Locations--Martin Co.
5A	Geophysical Data--Southern Brevard Co.
5B	Geophysical Data--Indian River Co.
5C	Geophysical Data--St. Lucie Co.
5D	Geophysical Data--Martin Co.
6A	Hardbottom Locations--Southern Brevard Co.
6B	Hardbottom Locations--Indian River Co.
6C	Hardbottom Locations--St. Lucie Co.
6D	Hardbottom Locations--Martin Co.
7	Carbonate Distribution in Surface Sediment in Study Area (% Carbonate)
8	Mean Surface Grain Size in Study Area
9	Mean Carbonate Surface Grain Size in Study Area
10	Suggested Future Seismic Program

MMS Cooperative Agreement Study Area--Description

This map illustrates the study area covered by this project. The locations of all cores installed by FGS personnel are shown on the map. Cores were numbered sequentially in the order of collection. Cores from Brevard county begin with "B", Indian River cores begin with "IR", "SL" indicates a core collected in St. Lucie county and cores beginning with the letter "M" were collected in Martin County.



MAP 1

MMS
COOPERATIVE
AGREEMENT
STUDY AREA

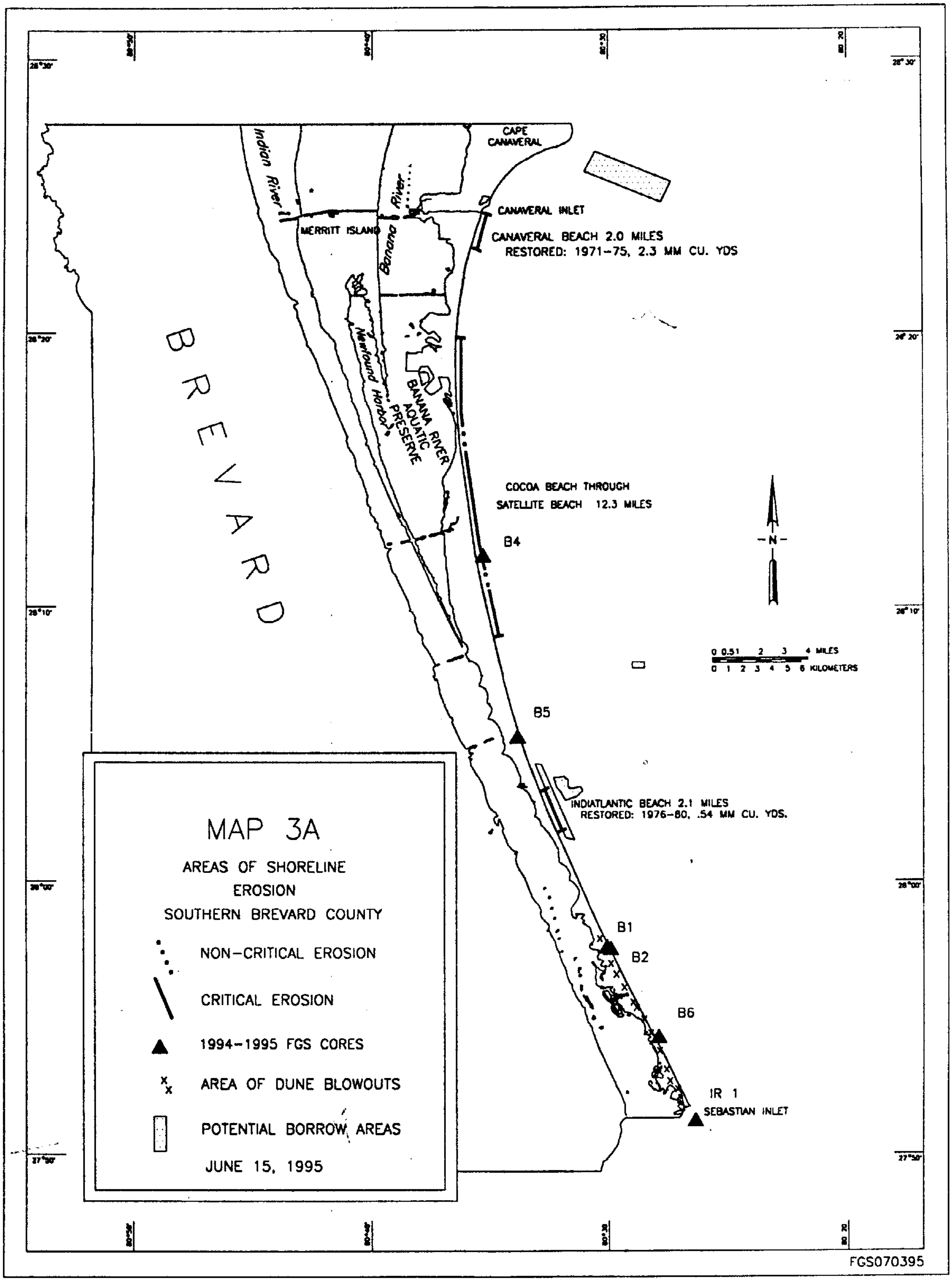
FLORIDA CENTRAL
EAST COAST OFFSHORE
SAND INVESTIGATION

▲ 1994-1995 FGS CORES

JUNE 15, 1995

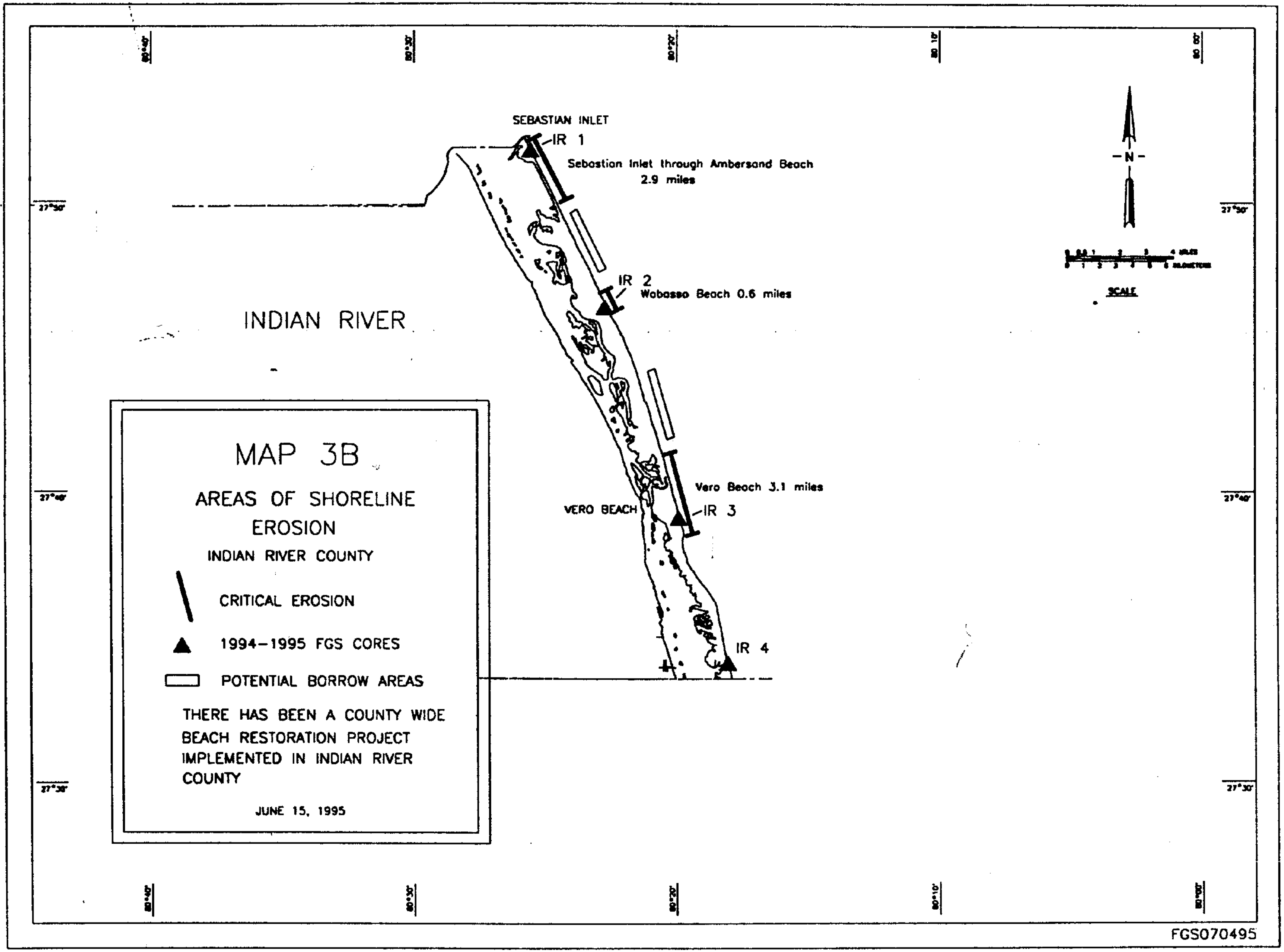
Areas of Shoreline Erosion--Description

The shoreline erosion data included in this section comes from Clark (1994) and Balsillie's modifications (unpublished) of Clark's work (verbal communication, 1995). The restoration/nourishment project histories are from the Florida Department of Natural Resources (1984) and the potential borrow area depictions are derived from Inlet Management Plans and the work of various consultants. Areas not depicted as eroding are either in equilibrium or accreting. Clark's paper and the Florida Department of Natural Resources report are discussed in the annotated bibliography.



MAP 3A

AREAS OF SHORELINE EROSION SOUTHERN BREVARD COUNTY



MAP 3B

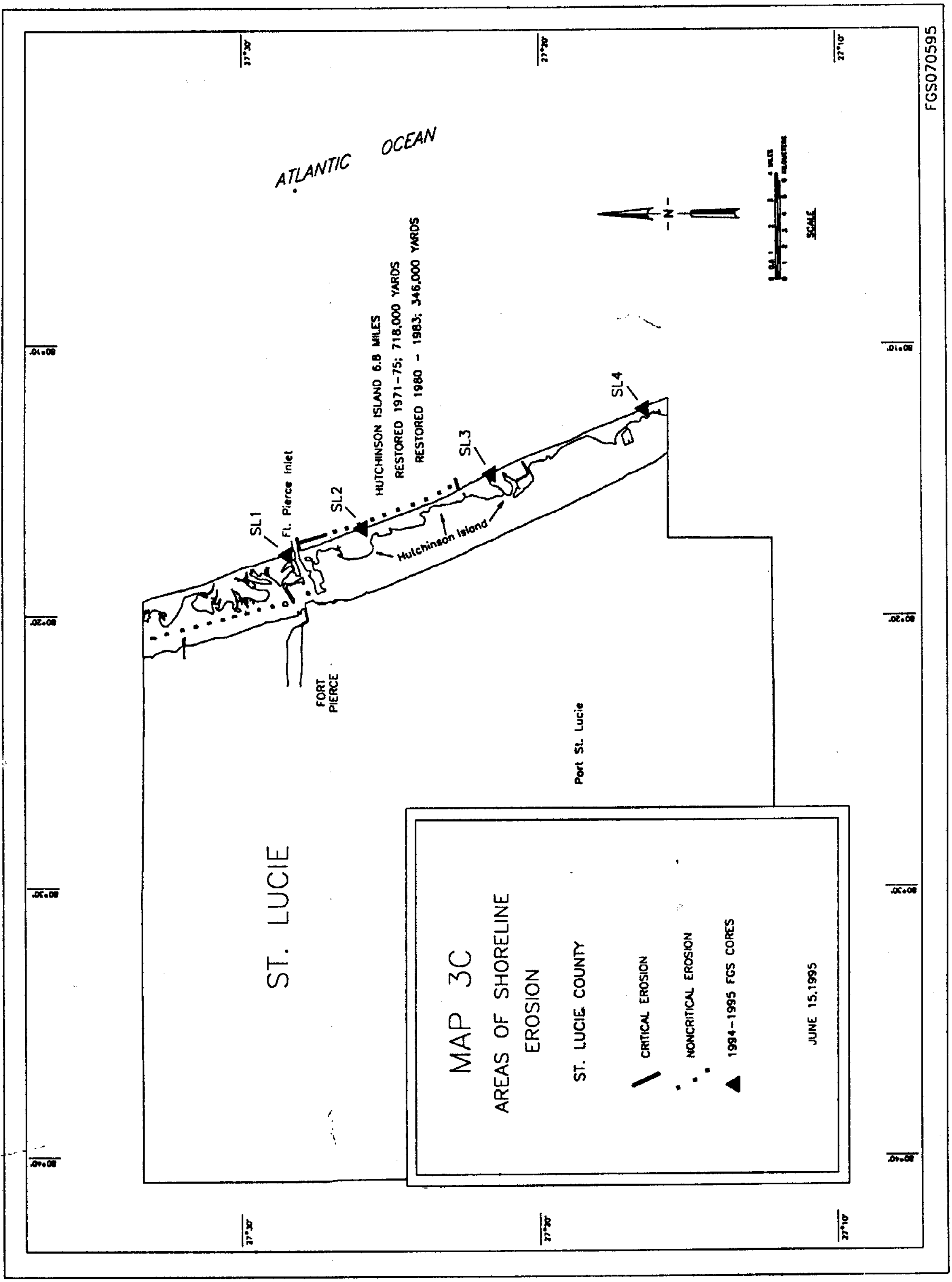
AREAS OF SHORELINE EROSION

INDIAN RIVER COUNTY

╲	CRITICAL EROSION
▲	1994–1995 FGS CORES
▭	POTENTIAL BORROW AREAS

THERE HAS BEEN A COUNTY WIDE BEACH RESTORATION PROJECT IMPLEMENTED IN INDIAN RIVER COUNTY

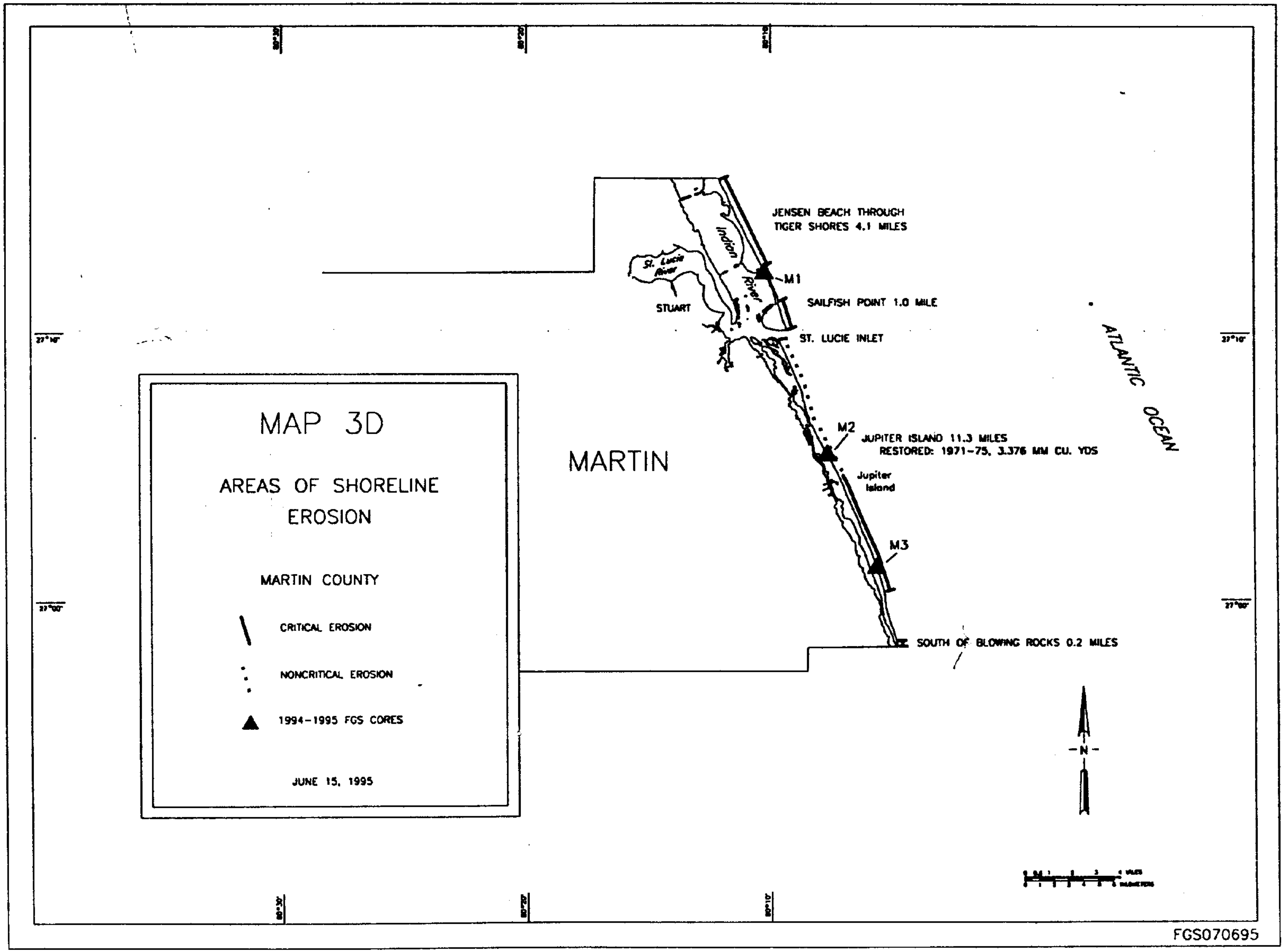
JUNE 15, 1995



MAP 3C
AREAS OF SHORELINE EROSION

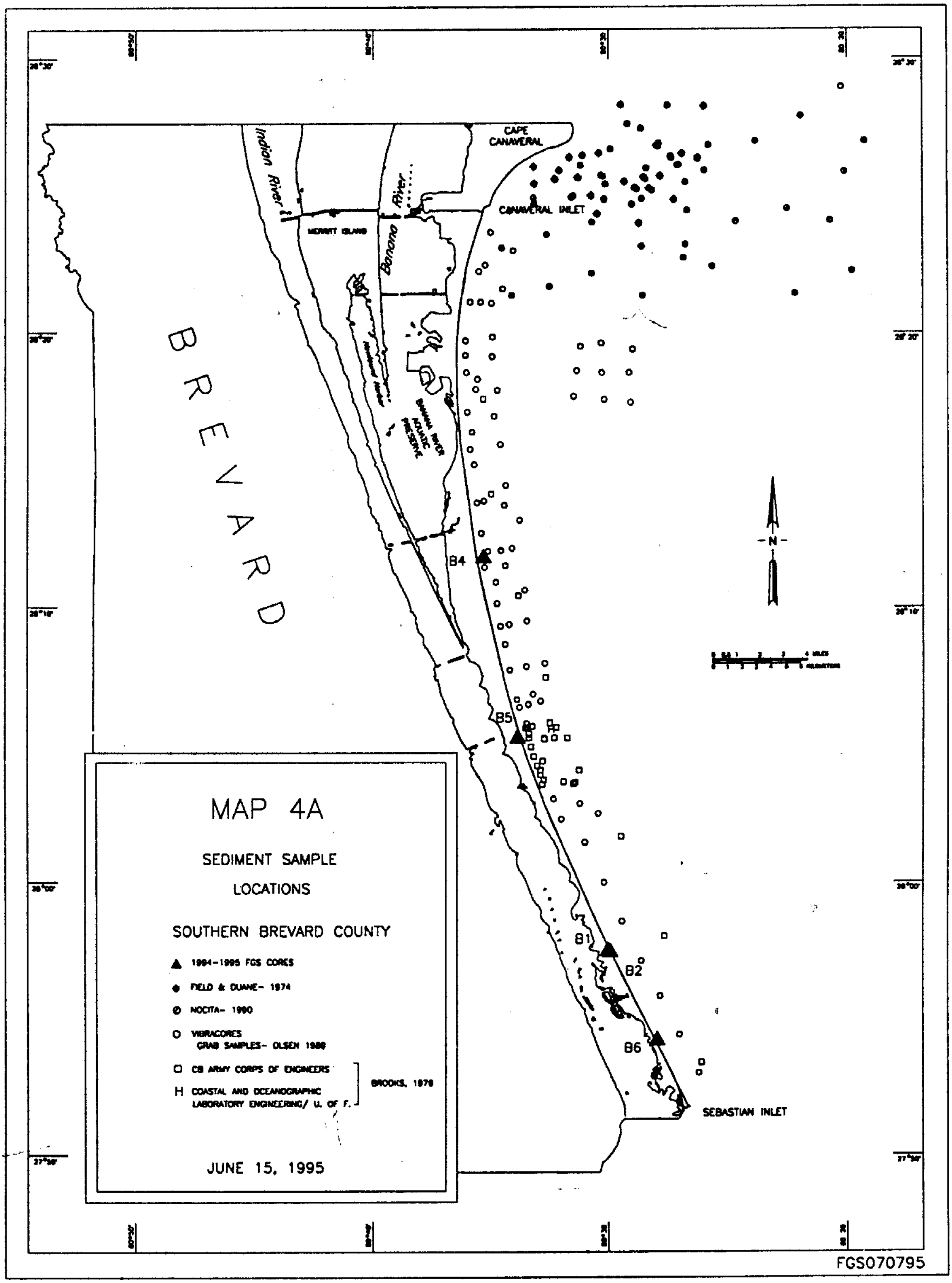
ST. LUCIE COUNTY

JUNE 15,1995


MAP 3D
AREAS OF SHORELINE EROSION
MARTIN COUNTY
CRITICAL EROSION
NONCRITICAL EROSION
1994-1995 FGS CORES
JUNE 15, 1995
MARTIN
ATLANTIC OCEAN
JENSEN BEACH THROUGH TIGER SHORES 4.1 MILES
M1
SAILFISH POINT 1.0 MILE
ST. LUCIE INLET
M2
JUPITER ISLAND 11.3 MILES
RESTORED: 1971-75, 3.376 MM CU. YDS
Jupiter Island
M3
SOUTH OF BLOWING ROCKS 0.2 MILES
Indian River
St. Lucie River
STUART
N
27°10'
27°00'
80°30'
80°20'
80°10'

Sediment Sample Locations–Description

Sediment sampling localities are derived from various sources cited on the individual county maps. Included on these maps are grab sample locations, push core locations and vibracore locations. Core material from the ICONS study (Meisburger and Duane, 1971) is available for examination though the state of preservation is uncertain. Each of the references cited appears in the annotated bibliography accompanying this report.

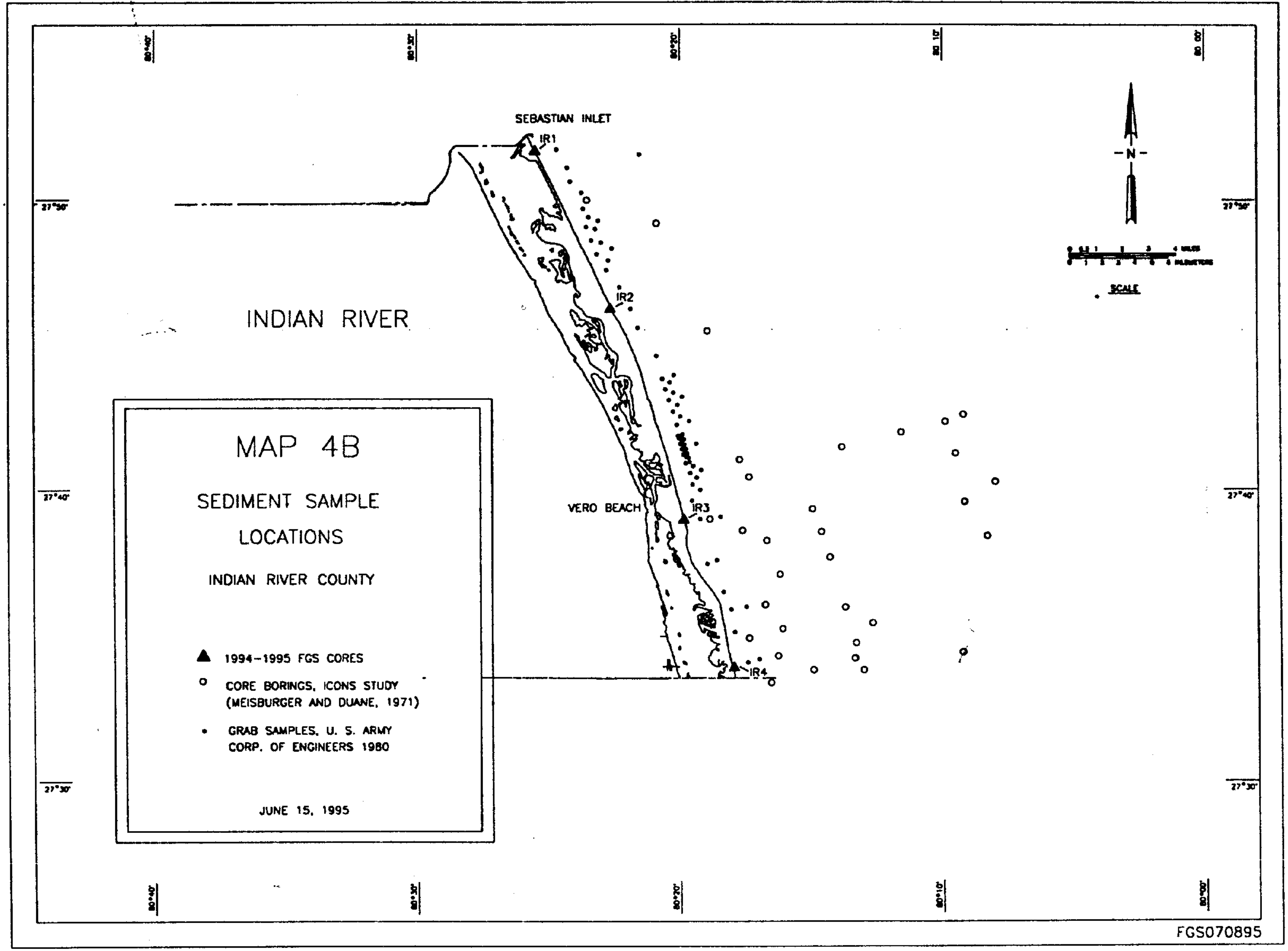


MAP 4A

SEDIMENT SAMPLE LOCATIONS

SOUTHERN BREVARD COUNTY

JUNE 15, 1995



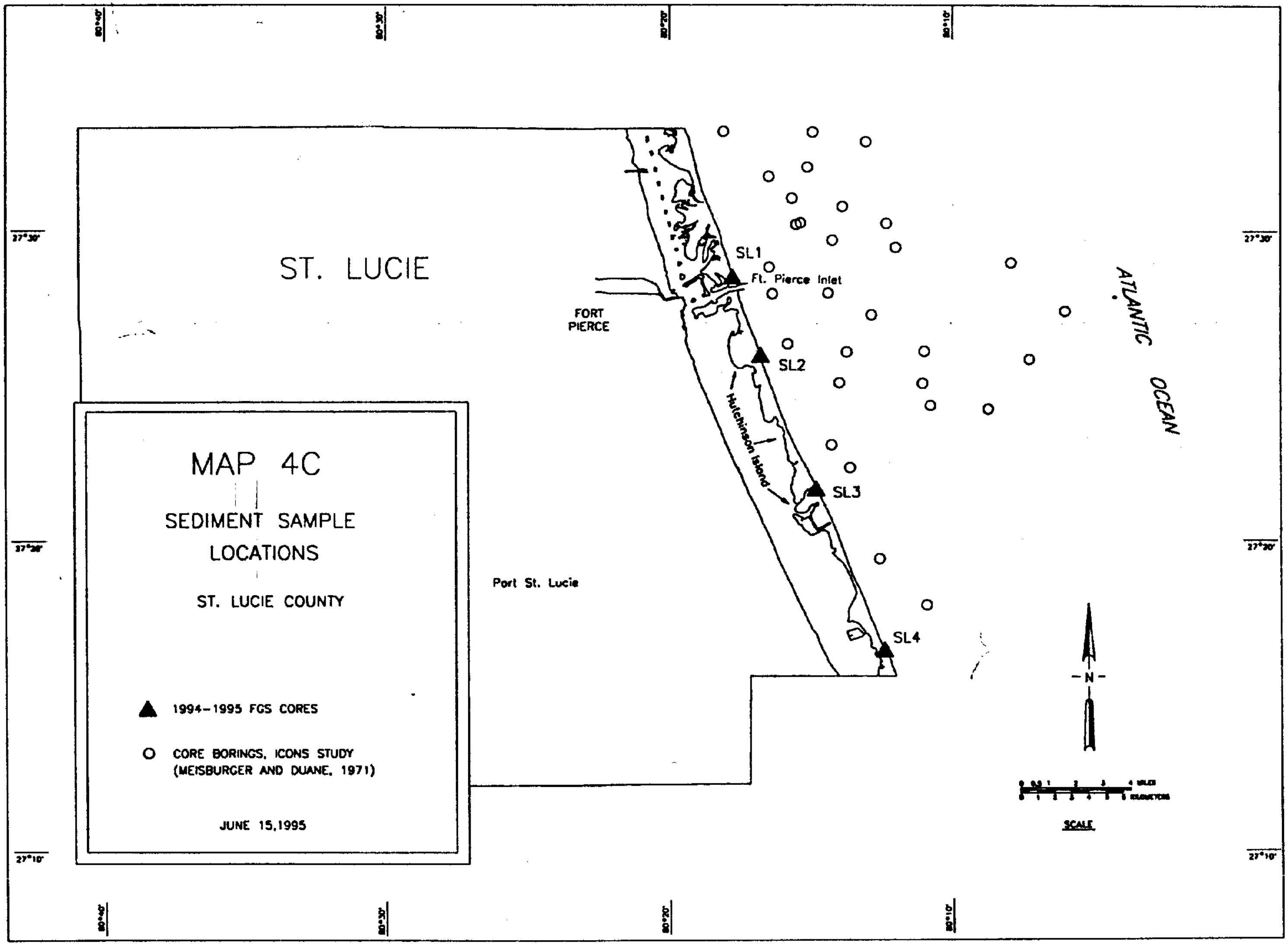
MAP 4B

SEDIMENT SAMPLE LOCATIONS

INDIAN RIVER COUNTY

JUNE 15, 1995

FGS070895



MAP 4C

SEDIMENT SAMPLE LOCATIONS

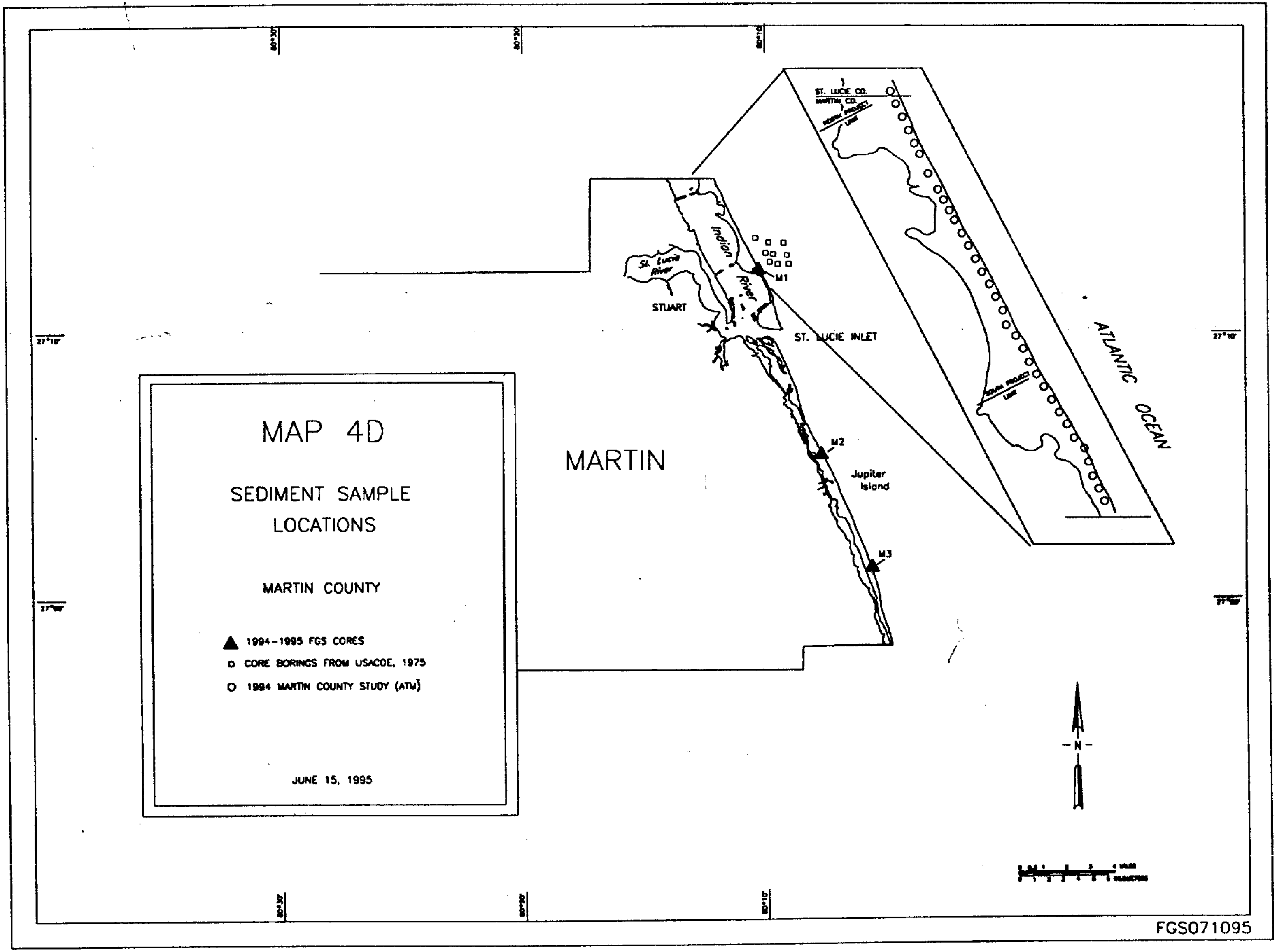
ST. LUCIE COUNTY

▲ 1994–1995 FGS CORES

○ CORE BORINGS, ICONS STUDY (MEISBURGER AND DUANE, 1971)

JUNE 15,1995

FGS070995



MAP 4D

SEDIMENT SAMPLE LOCATIONS

MARTIN COUNTY

- ▲ 1994-1995 FGS CORES
- □ CORE BORINGS FROM USACOE, 1975
- ○ 1994 MARTIN COUNTY STUDY (ATM)

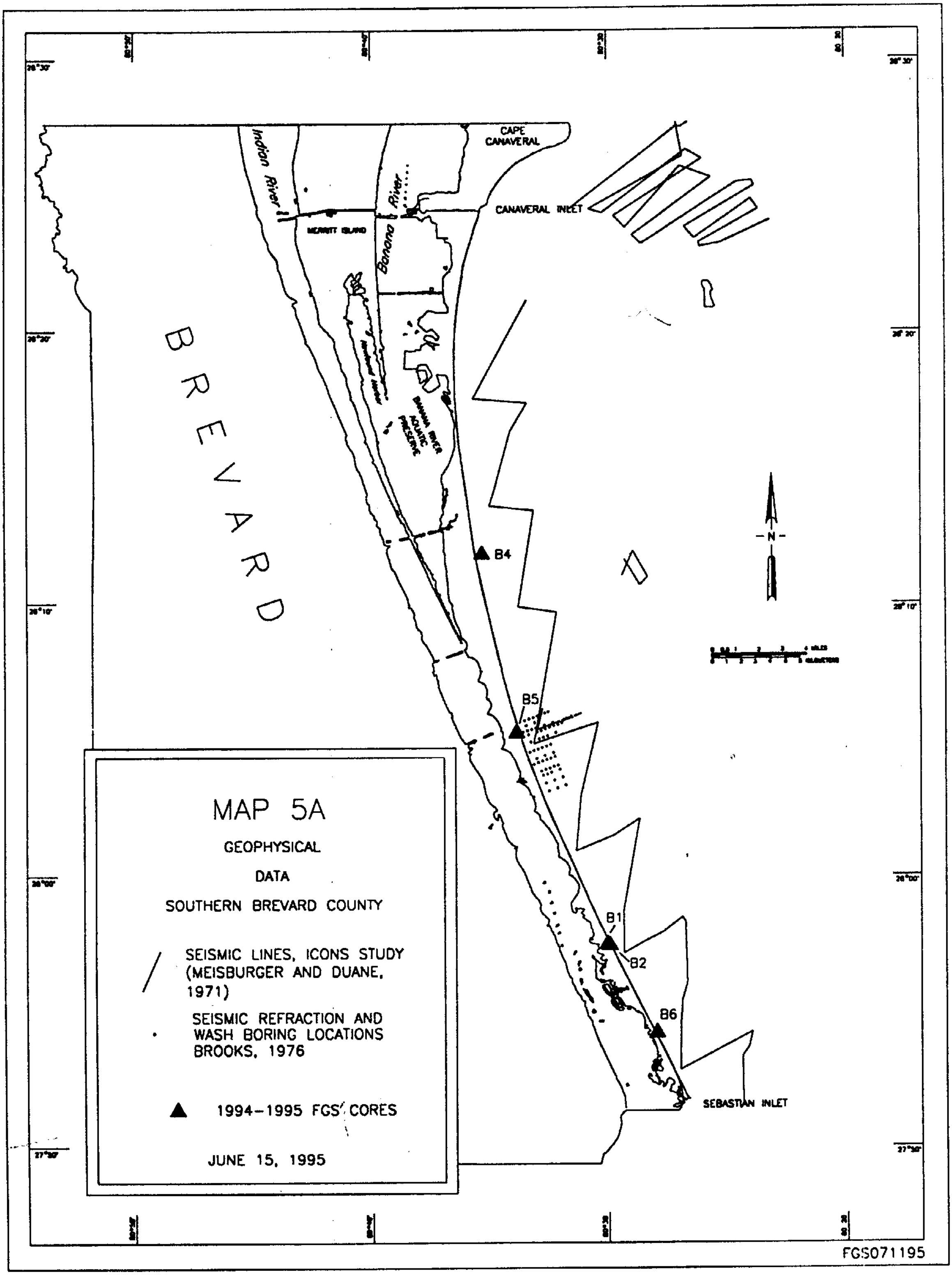
JUNE 15, 1995

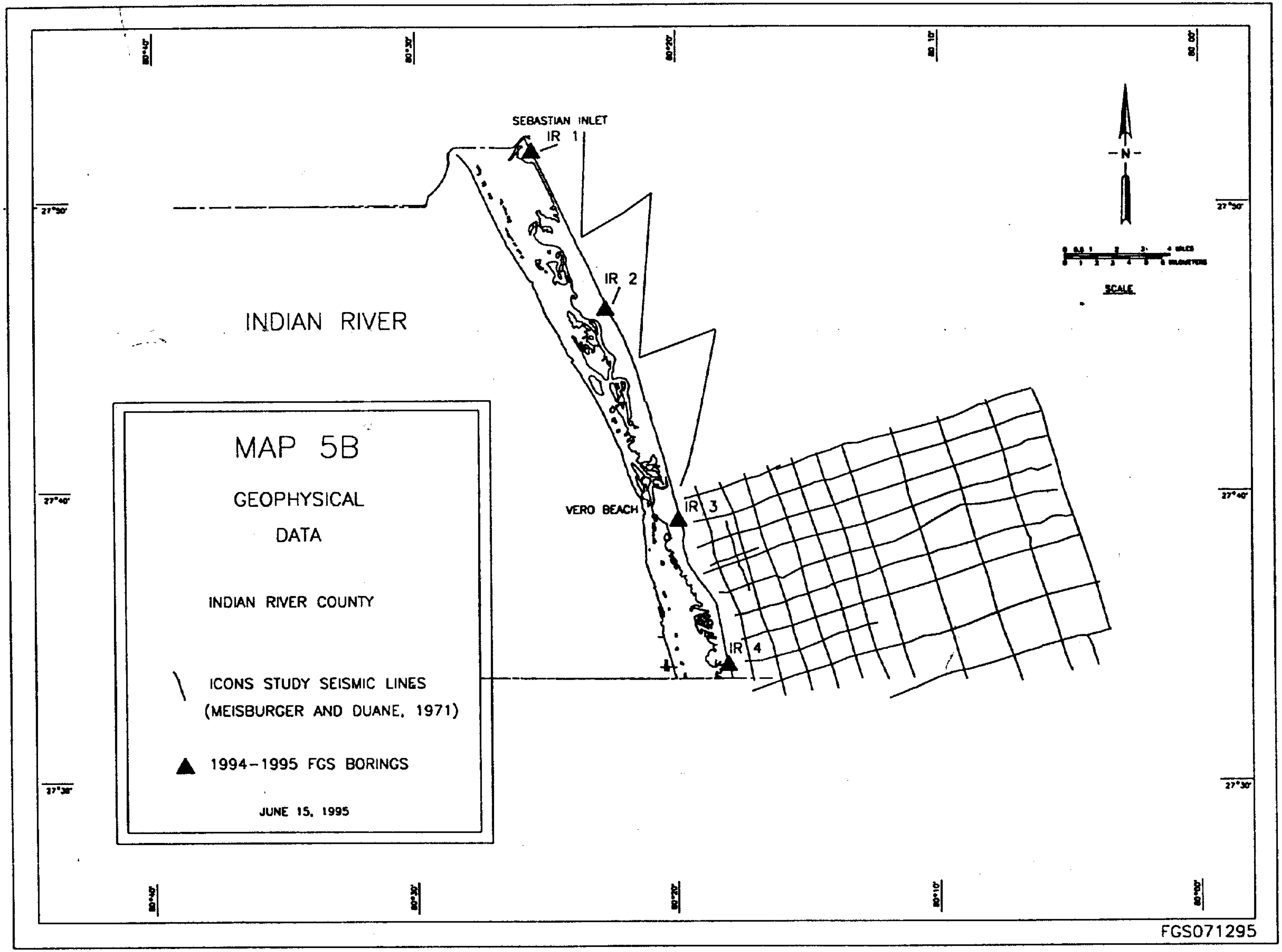
FGS071095

]

Geophysical Data–Description

This tabulation of Geophysical data includes acoustic subbottom profile data obtained during the ICONS study (Meisburger and Duane, 1971) along with other data (seismic refraction stations, etc.) collected during various local investigations. Emphasis is placed on locating offshore data (collected beyond the 3 mile limit). Additional subsurface acoustic profiles have been shot in connection with various inlet studies. These are inshore profiles and are all located within one mile of the shoreline. Data records from the ICONS profile are available for study. These data are reported to be of poor quality and extremely difficult to interpret. All sources referenced appear in the annotated bibliography.


MAP 5A
GEOPHYSICAL
DATA
SOUTHERN BREVARD COUNTY
SEISMIC LINES, ICONS STUDY (MEISBURGER AND DUANE, 1971)
SEISMIC REFRACTION AND WASH BORING LOCATIONS BROOKS, 1976
1994-1995 FGS CORES
JUNE 15, 1995
CAPE CANAVERAL
CANAVERAL INLET
Indian River
Banana River
MERRITT ISLAND
BANANA RIVER AQUATIC PRESERVE
BREVARD
B4
B5
B1
B2
B6
SEBASTIAN INLET
N
28°30'
28°20'
28°10'
28°00'
27°50'
FGS071195



MAP 5B

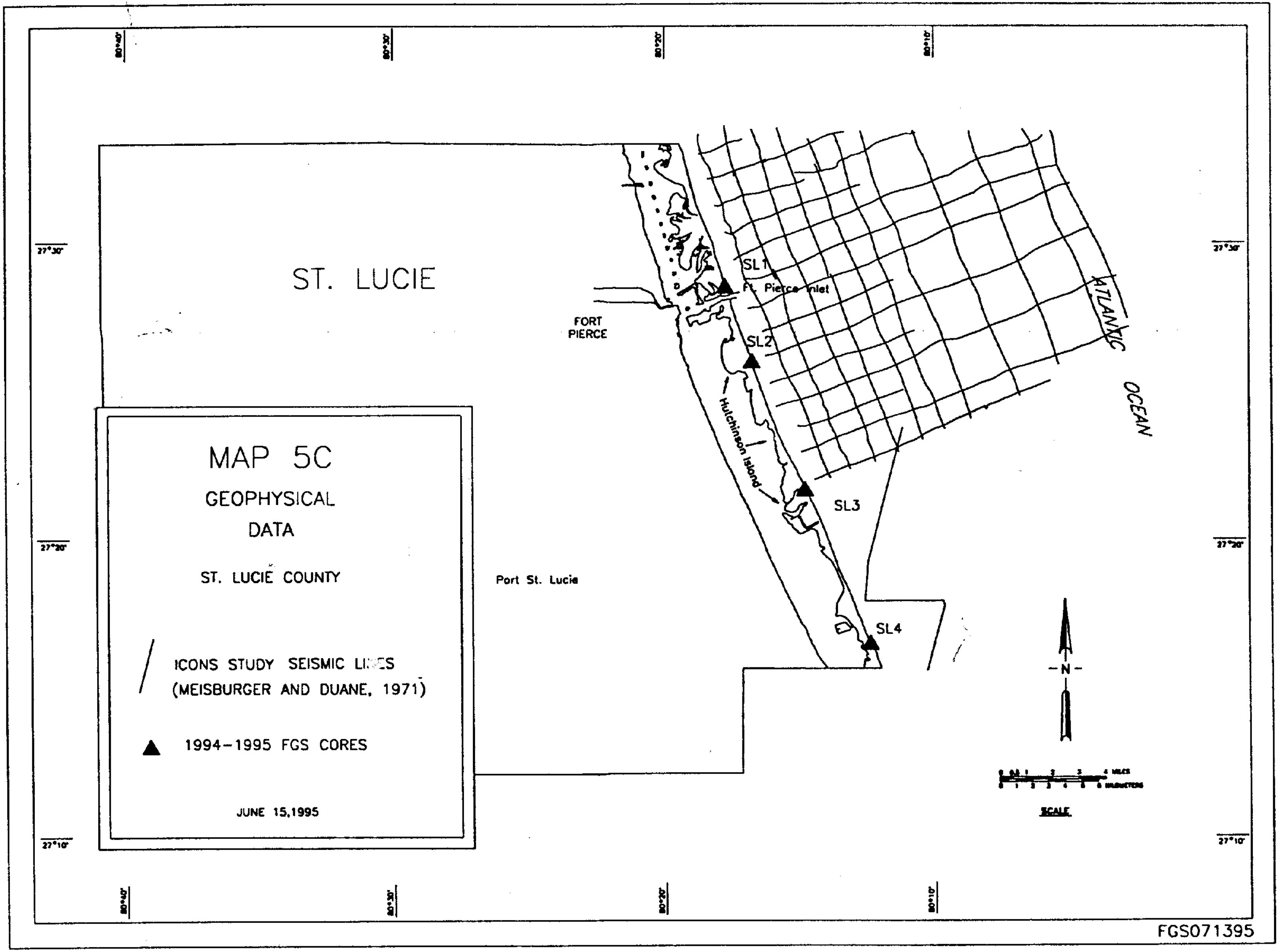
GEOPHYSICAL
DATA

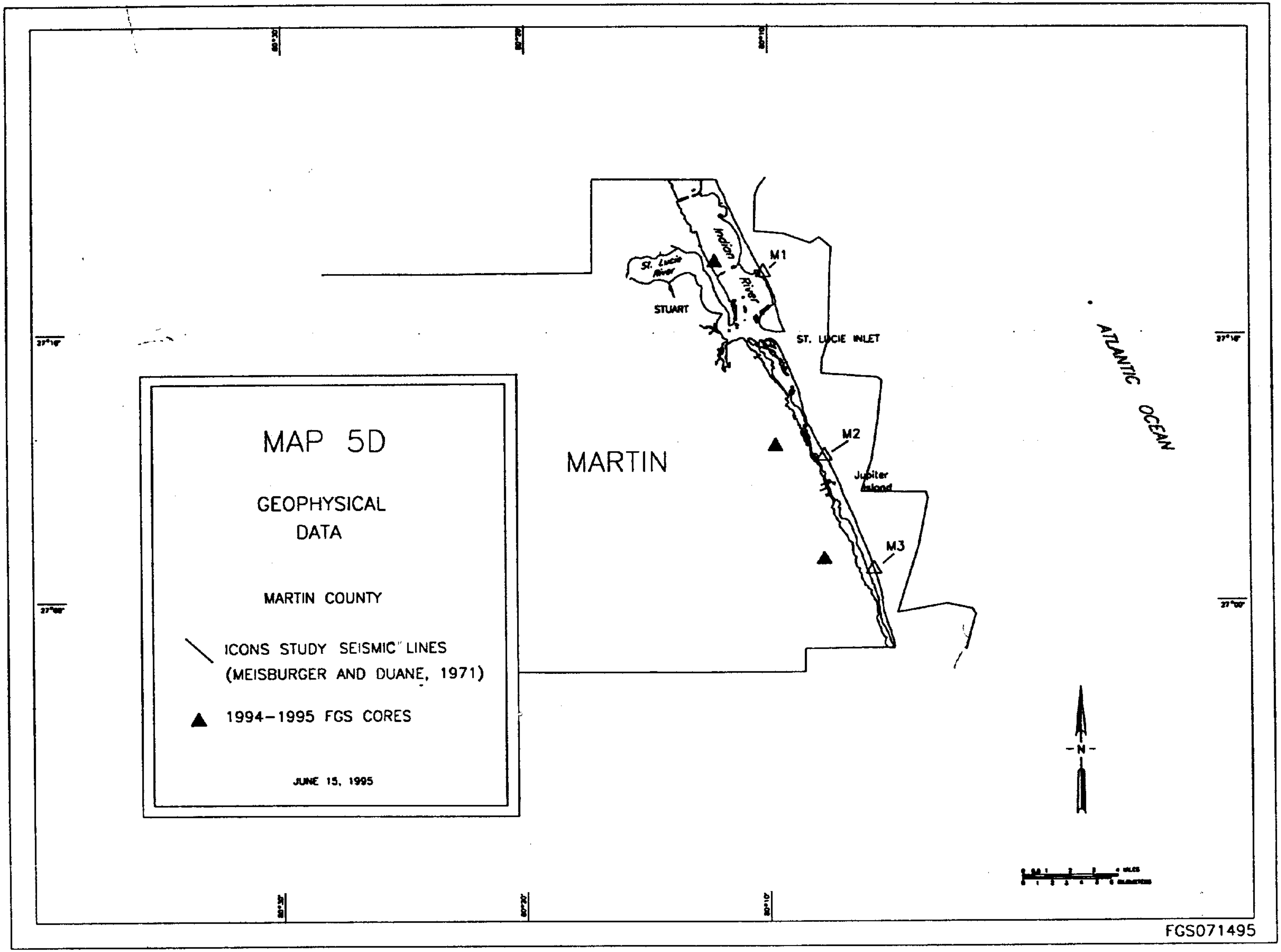
INDIAN RIVER COUNTY

\ ICONS STUDY SEISMIC LINES
(MEISBURGER AND DUANE, 1971)

▲ 1994-1995 FGS BORINGS

JUNE 15, 1995


80°40'
80°30'
80°20'
80°10'
27°30'
27°20'
27°10'
ST. LUCIE
FORT PIERCE
Port St. Lucie
SL1
Ft. Pierce Inlet
SL2
Hutchinson Island
SL3
SL4
ATLANTIC
OCEAN
N
SCALE
0 0.5 1 2 3 4 MILES
0 1 2 3 4 5 6 KILOMETERS
MAP 5C
GEOPHYSICAL
DATA
ST. LUCIE COUNTY
ICONS STUDY SEISMIC LINES
(MEISBURGER AND DUANE, 1971)
▲ 1994-1995 FGS CORES
JUNE 15,1995
FGS071395



MAP 5D

GEOPHYSICAL DATA

MARTIN COUNTY

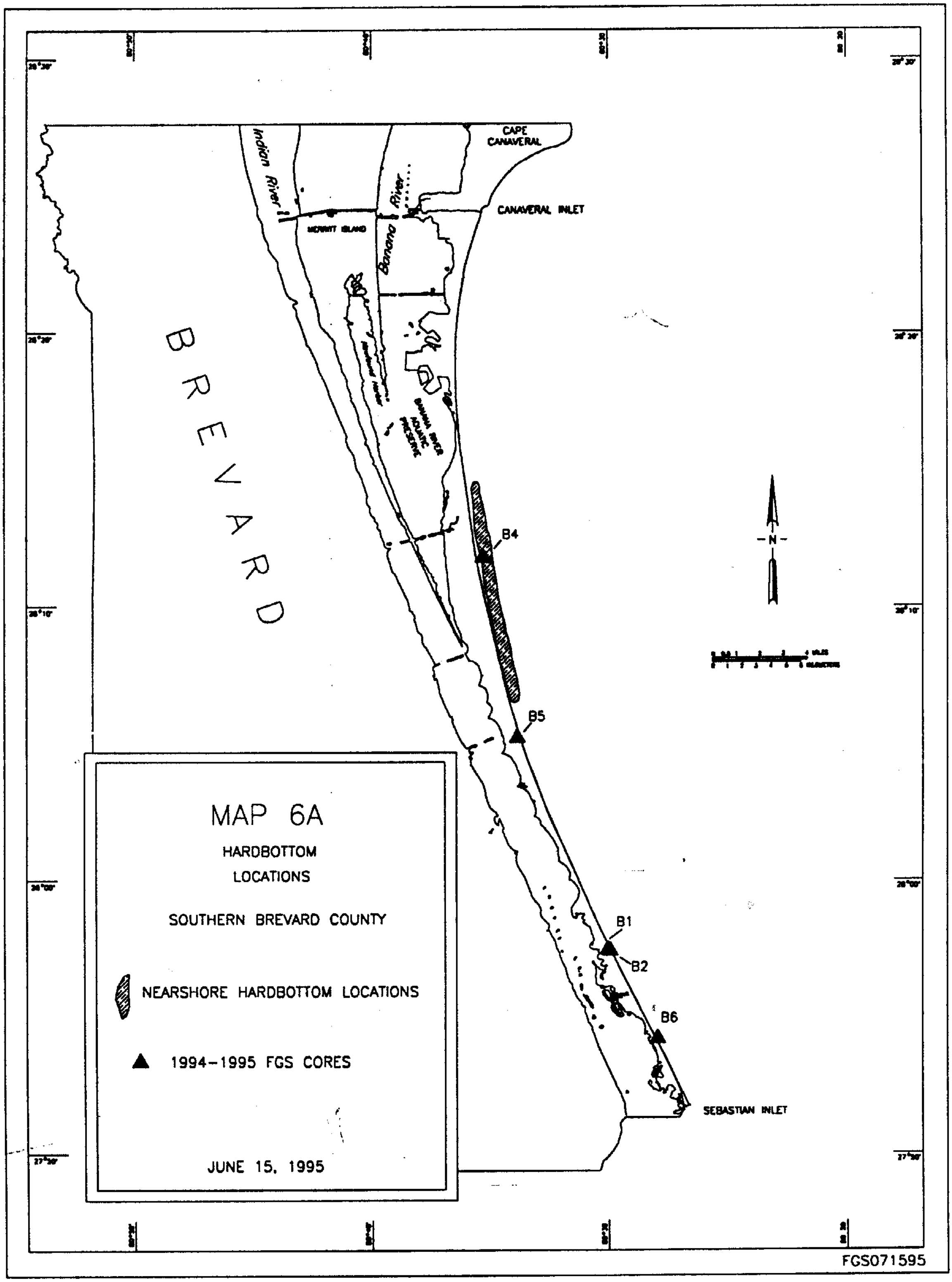
ICONS STUDY SEISMIC LINES (MEISBURGER AND DUANE, 1971)

▲ 1994–1995 FGS CORES

JUNE 15, 1995

Hardbottom Locations--Description

In the study area, hardbottom evaluations have primarily been performed as part of specific local studies. Identified hardbottoms in Brevard county are limited to the area around Patrick Air Force Base. South of Sebastian Inlet, almost the entire study area is protected by hardbottoms. Comprehensive studies of hardbottom development along the east coast of central Florida have never been performed. The maps included in this report indicate confirmed hardbottoms. Portions of the shoreline which have never been surveyed are indicated as "no data" areas on the accompanying maps.



MAP 6A

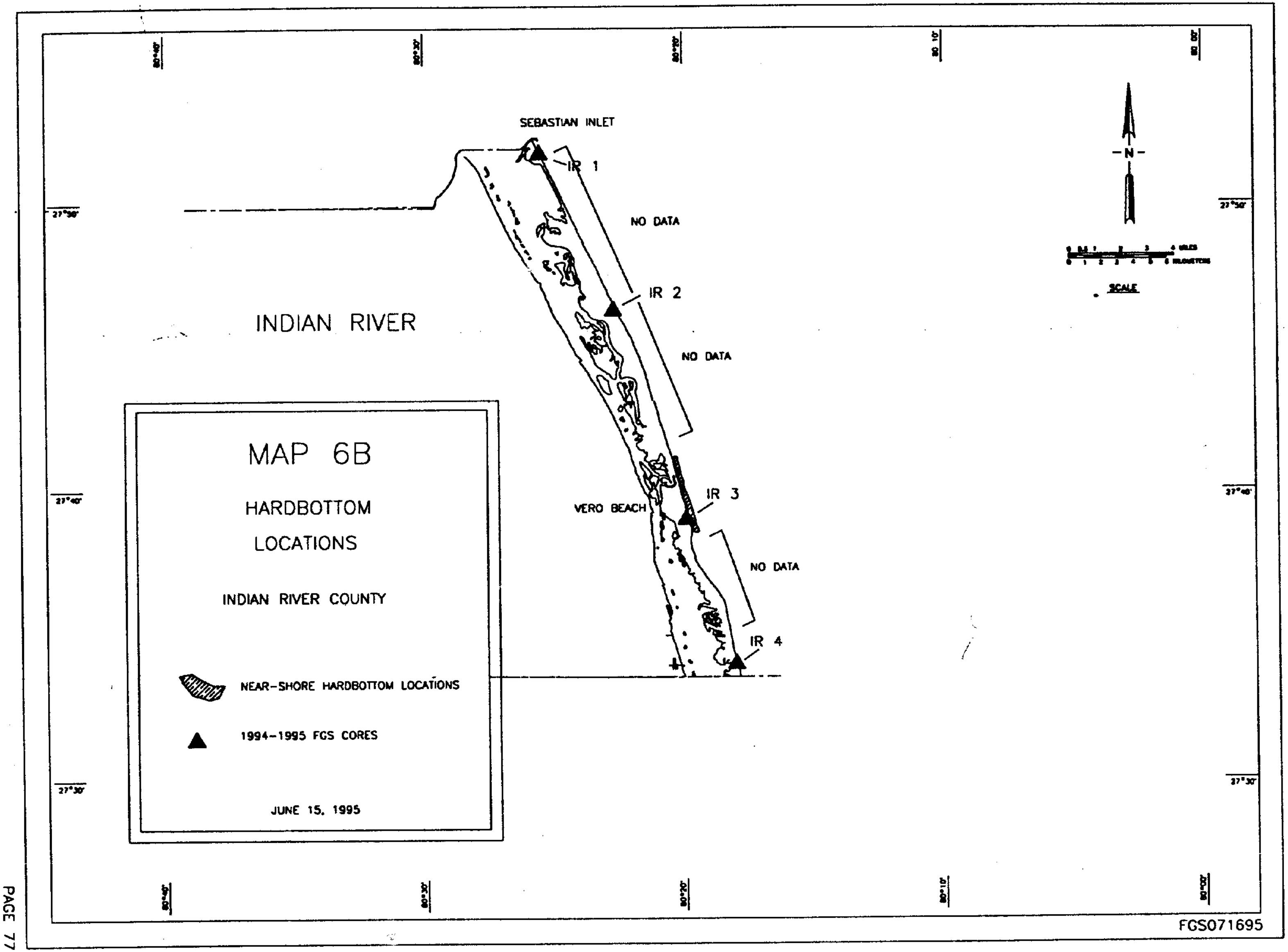
HARDBOTTOM
LOCATIONS

SOUTHERN BREVARD COUNTY

▨ NEARSHORE HARDBOTTOM LOCATIONS

▲ 1994-1995 FGS CORES

JUNE 15, 1995



MAP 6B

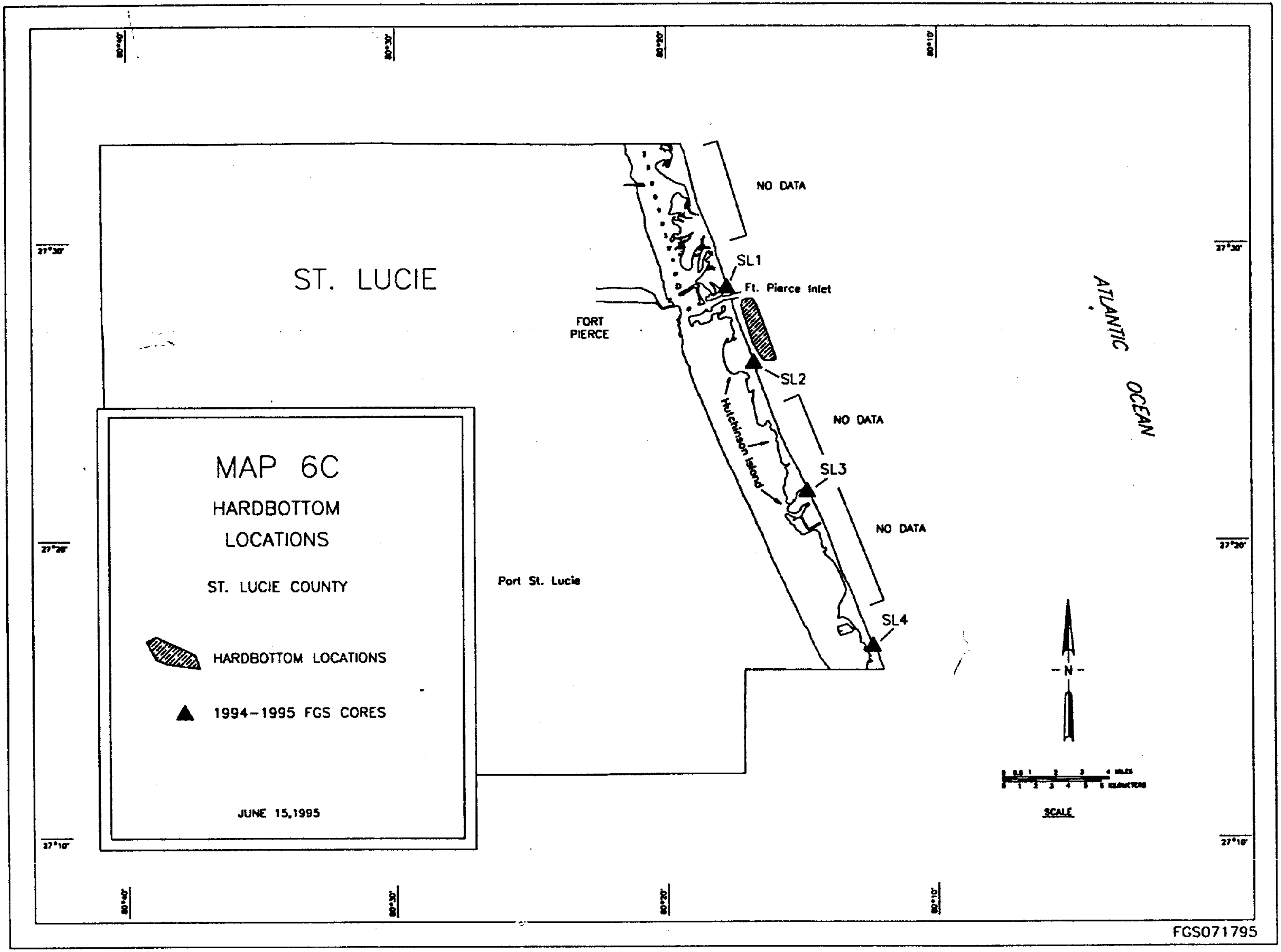
HARDBOTTOM LOCATIONS

INDIAN RIVER COUNTY

▨ NEAR-SHORE HARDBOTTOM LOCATIONS

▲ 1994-1995 FGS CORES

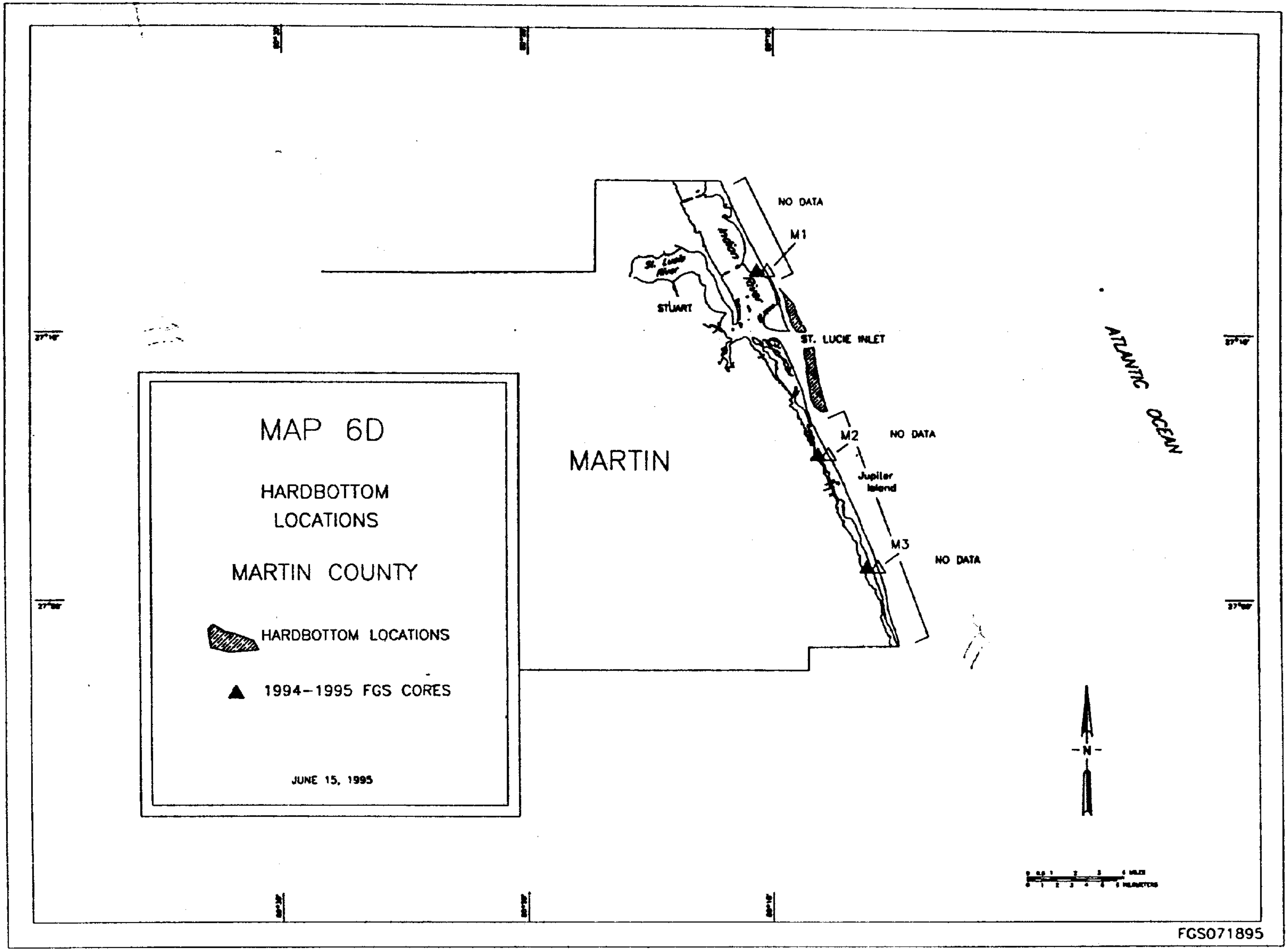
JUNE 15, 1995



MAP 6C
HARDBOTTOM LOCATIONS

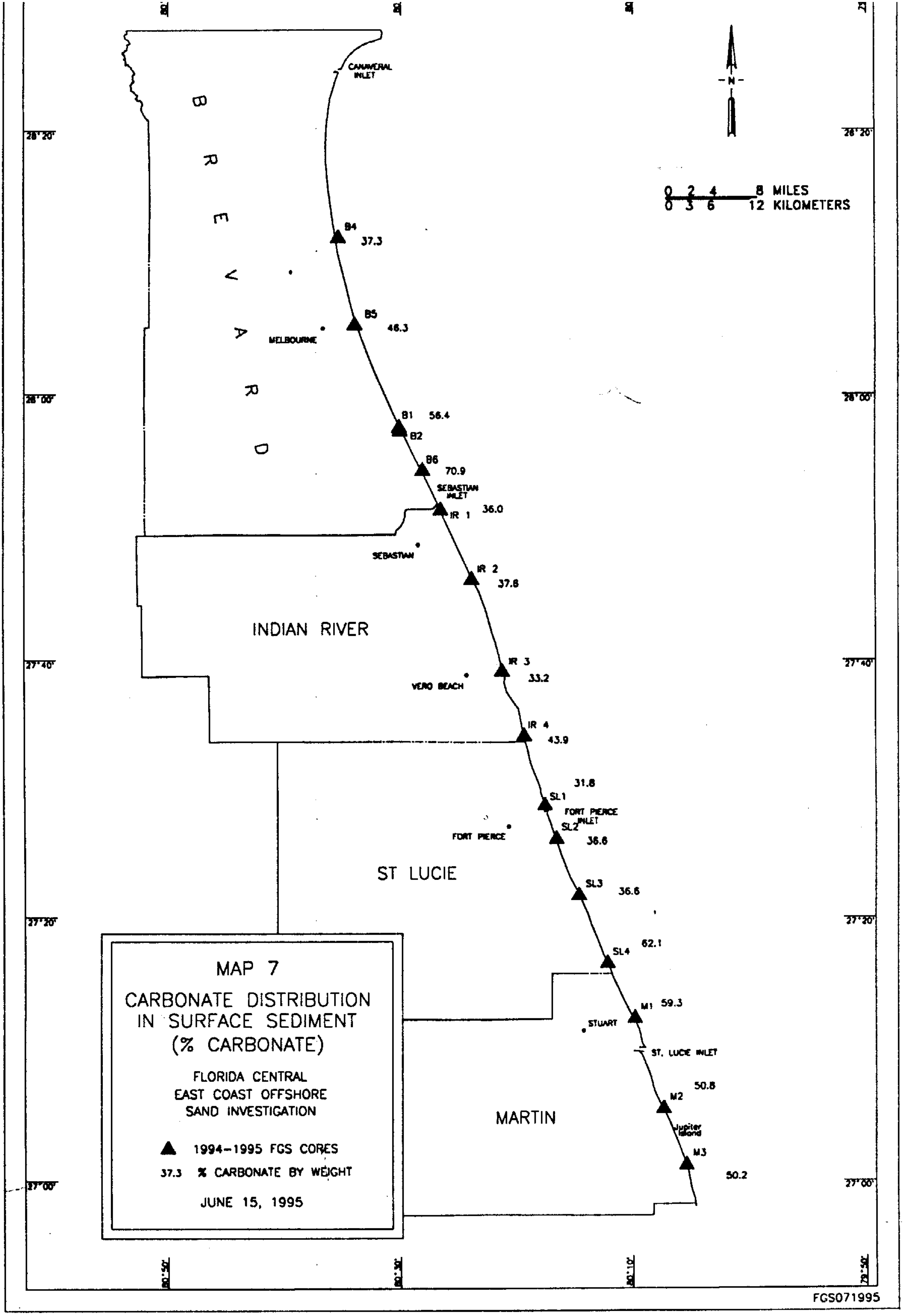
ST. LUCIE COUNTY

JUNE 15,1995


MAP 6D
HARDBOTTOM LOCATIONS
MARTIN COUNTY
HARDBOTTOM LOCATIONS
1994-1995 FGS CORES
JUNE 15, 1995
MARTIN
ATLANTIC OCEAN
NO DATA
M1
M2
M3
NO DATA
NO DATA
ST. LUCIE INLET
Indian River
St. Lucie River
STUART
Jupiter Island
N
FGS071895

Carbonate Distribution in Surface Sediment (% Carbonate)–Description

The information displayed on this map is derived from core sampling data. Surface samples were collected and weighed from each push core and vibracore collected during this project. Hydrochloric acid was then used to dissolve the carbonate fraction in each sample. Samples were weighed again after carbonate digestion. The weight of the sample portion dissolved by the hydrochloric acid is assumed to equal the weight of the carbonate fraction of the sample.



MAP 7

CARBONATE DISTRIBUTION IN SURFACE SEDIMENT (% CARBONATE)

FLORIDA CENTRAL
EAST COAST OFFSHORE
SAND INVESTIGATION

▲ 1994-1995 FGS CORES

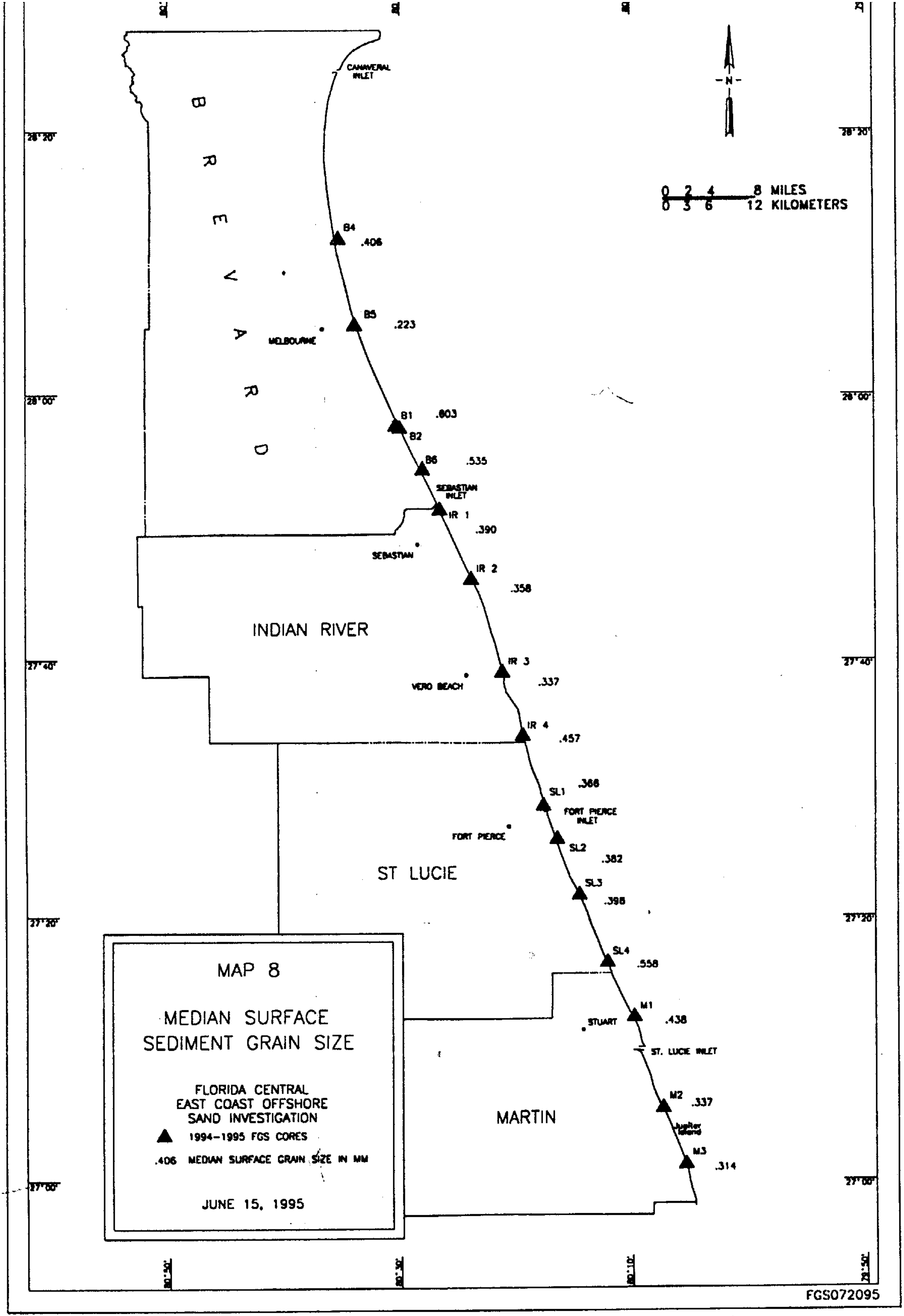
37.3 % CARBONATE BY WEIGHT

JUNE 15, 1995

FGS071995

Median Surface Sediment Grain Size–Description

Grain size distribution was determined for the topmost sample collected from each core in the study area. Cumulative frequency curves were prepared from the grain size distribution data. Median grain size was obtained by finding the grain size value corresponding to the 50% point on the cumulative frequency curve. These data were then posted. There is insufficient data control to draw conclusive results about grain size distribution in the study area.



MAP 8

MEDIAN SURFACE SEDIMENT GRAIN SIZE

FLORIDA CENTRAL EAST COAST OFFSHORE SAND INVESTIGATION

▲ 1994–1995 FGS CORES

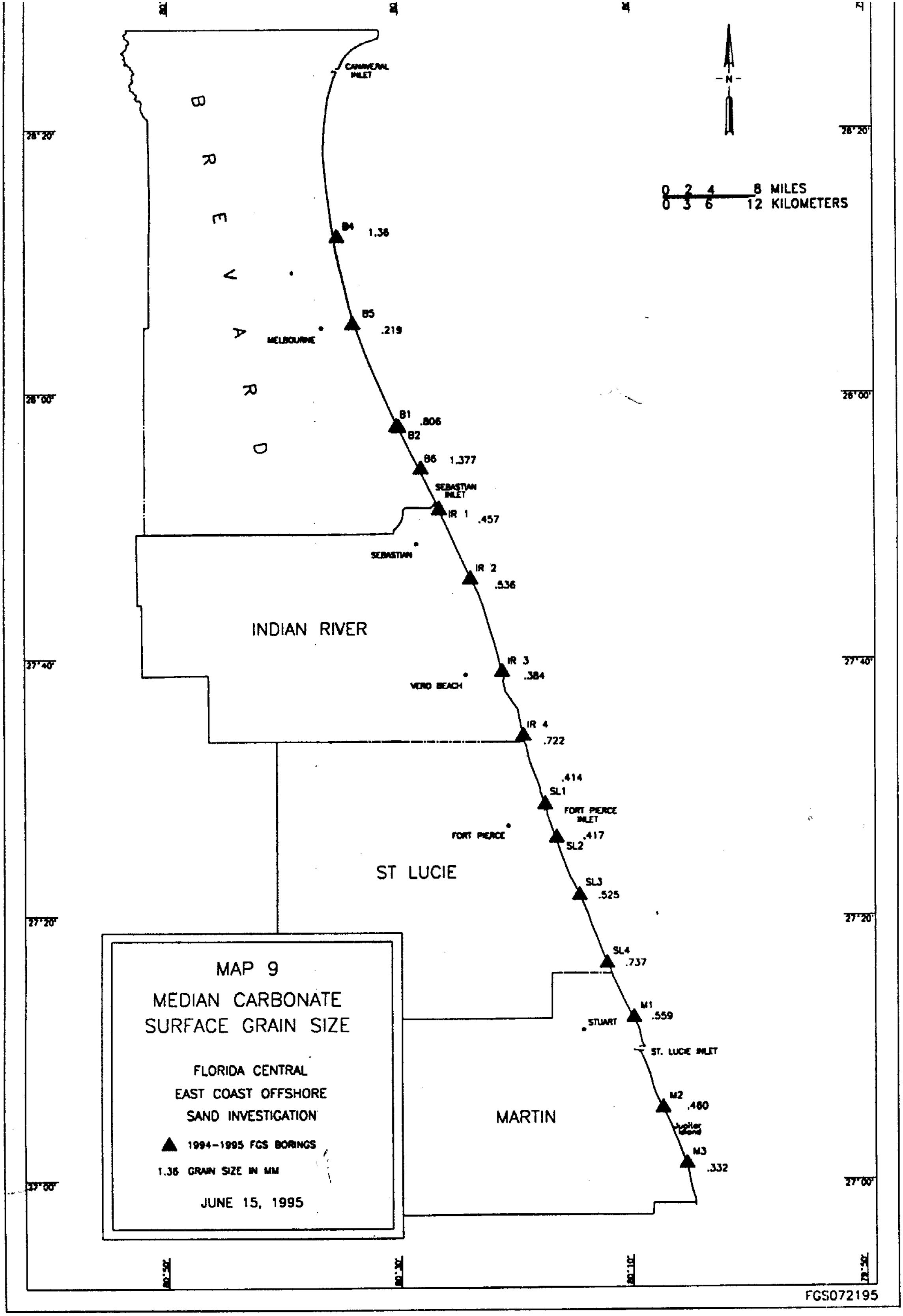
.406 MEDIAN SURFACE GRAIN SIZE IN MM

JUNE 15, 1995

FGS072095

Median Carbonate Surface Grain Size–Description

Grain size distribution of the carbonate fraction for the topmost sample collected from each core in the study area was determined by comparing the original sample weight with the sample weight obtained after carbonate digestion. Cumulative frequency curves were prepared for each carbonate fraction. The grain size found at the 50% point on each cumulative frequency curve corresponds to the median grain size of the carbonate fraction in that sample.



MAP 9
MEDIAN CARBONATE
SURFACE GRAIN SIZE

FLORIDA CENTRAL
EAST COAST OFFSHORE
SAND INVESTIGATION

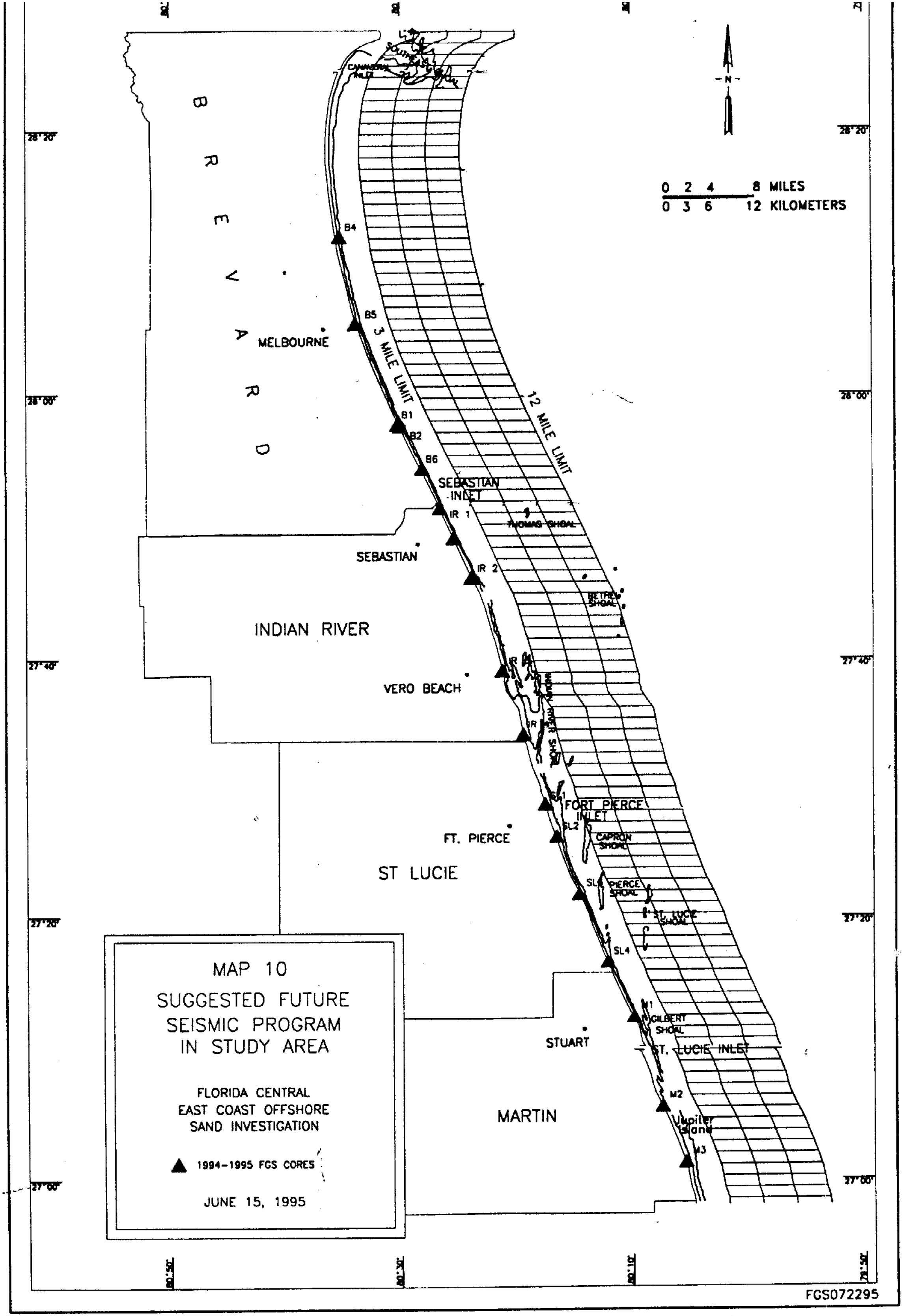
▲ 1994-1995 FGS BORINGS

1.36 GRAIN SIZE IN MM

JUNE 15, 1995

Suggested Future Seismic Program--Description

In order to fully delineate potential offshore borrow areas, it is recommended that a complete seismic program be conducted along the central east coast of Florida. East-west lines should be run at 1 mile intervals along the coast. Each line should extend from 3-10 miles offshore. Two north-south (approximate) lines should be shot paralleling the coast 5 miles offshore and 8 miles offshore. These lines will tie the east-west lines together. An extensive seismic program was conducted in this area during the late 1960's and early 1970's. Since that time, better quality seismic equipment has become available offering higher resolution and better data quality. A comprehensive seismic survey using modem techniques has never been performed.



MAP 10

SUGGESTED FUTURE
SEISMIC PROGRAM
IN STUDY AREA

FLORIDA CENTRAL
EAST COAST OFFSHORE
SAND INVESTIGATION

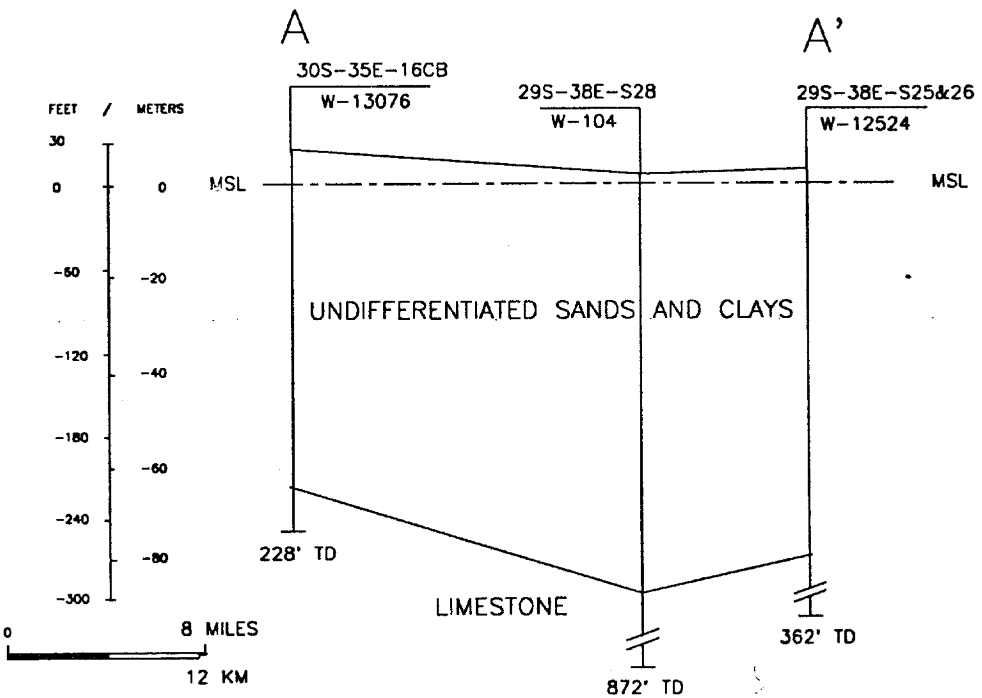
▲ 1994-1995 FGS CORES

JUNE 15, 1995

Part IV GEOLOGICAL CROSS SECTIONS

GEOLOGICAL CROSS SECTIONS -- DESCRIPTION

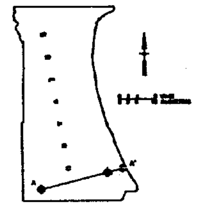
Five geological cross sections have been prepared to show depth to limestone "basement" in the study area. Locally occurring Anastasia Formation equivalent stringers have not been depicted on the cross sections. Geological cross sections A-A', B-B', C-C', and D-D' are oriented approximately east-west and are located in Brevard, Indian River, St. Lucie and Martin Counties respectively. Geological cross section E-E' is oriented north-south and runs along the shoreline over the length of the study area. Each well is identified by "W" number (FGS identification number) and location. The information shown on these sections is obtained from FGS records.

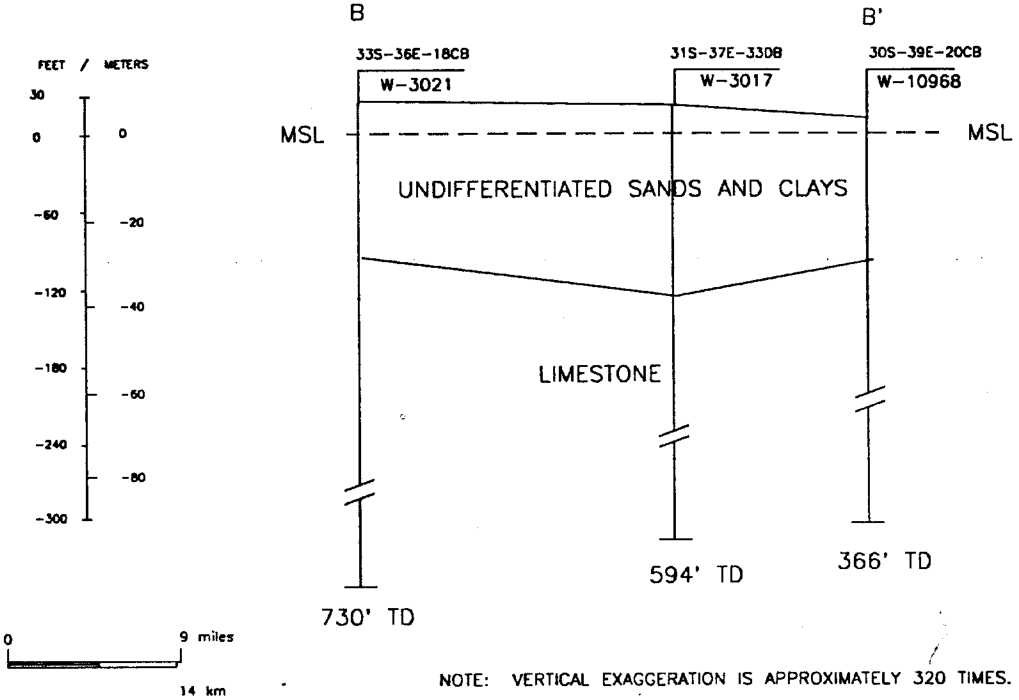


NOTE: VERTICAL EXAGGERATION IS APPROXIMATELY 280 TIMES.

GEOLOGICAL CROSS SECTION
A – A'
BREVARD COUNTY, FLORIDA

A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA
ALONG FLORIDA'S CENTRAL EAST COAST
JUNE, 1995

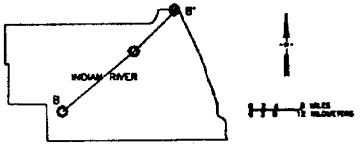




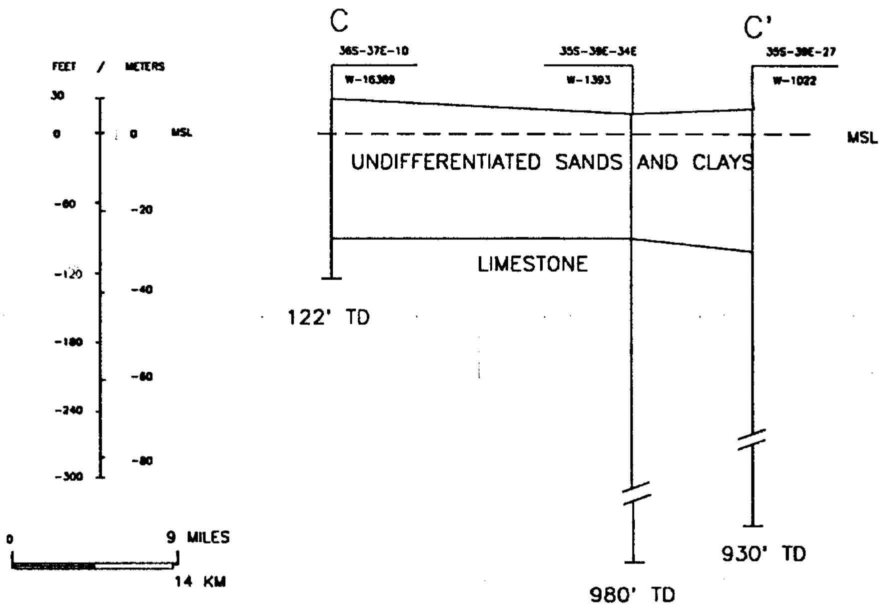
NOTE: VERTICAL EXAGGERATION IS APPROXIMATELY 320 TIMES.

GEOLOGICAL CROSS SECTION
B–B'
INDIAN RIVER COUNTY, FLORIDA

A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA
ALONG FLORIDA'S CENTRAL EAST COAST
JUNE, 1995



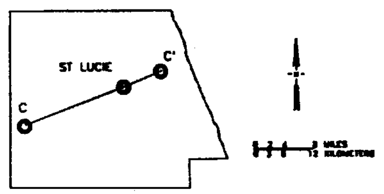
FGS072495



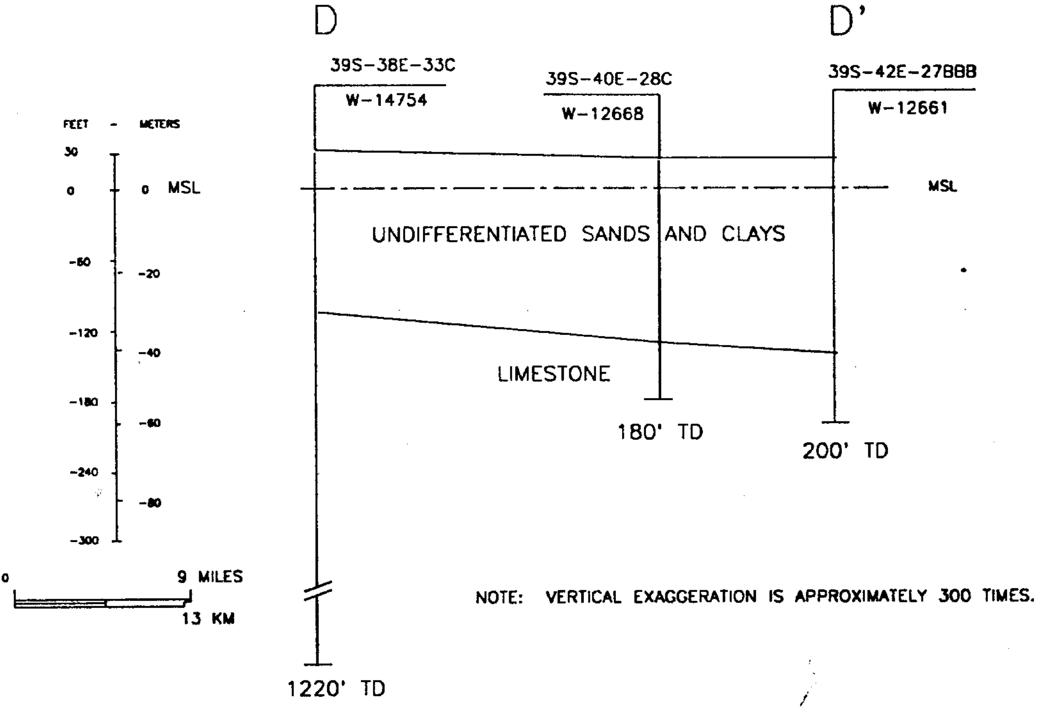
NOTE: VERTICAL EXAGGERATION IS APPROXIMATELY 310 TIMES.

GEOLOGICAL CROSS SECTION
C – C'
ST. LUCIE COUNTY, FLORIDA

A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA
ALONG FLORIDA'S CENTRAL EAST COAST
JUNE, 1995



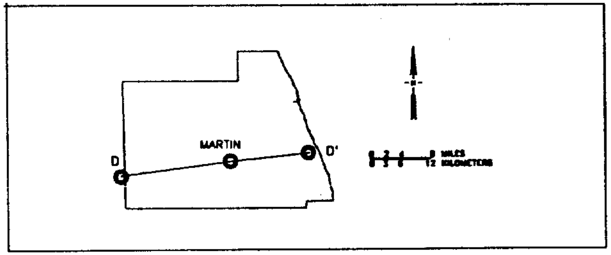
FGS0725

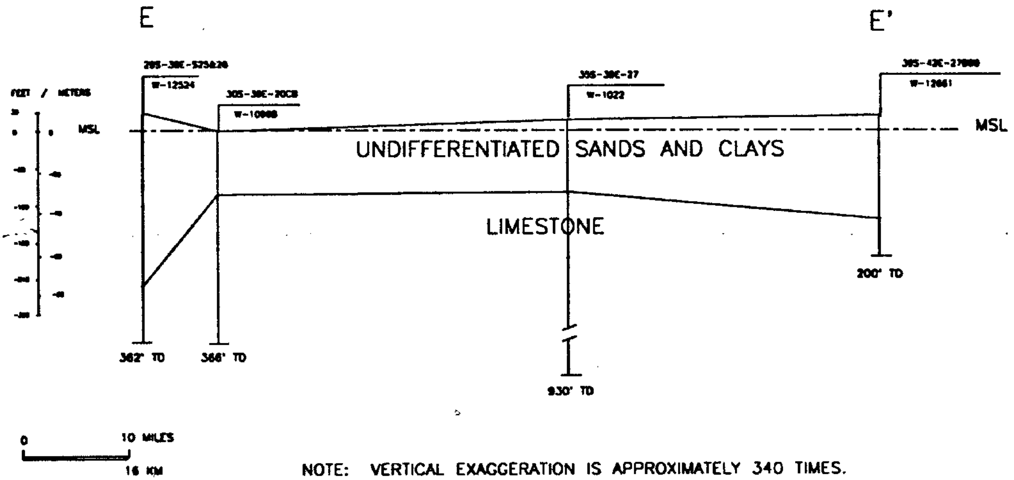


NOTE: VERTICAL EXAGGERATION IS APPROXIMATELY 300 TIMES.

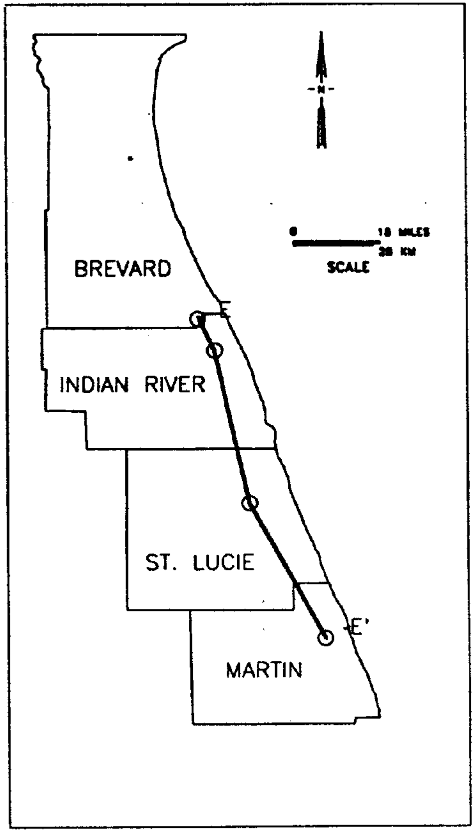
GEOLOGICAL CROSS SECTION
D – D'
MARTIN COUNTY, FLORIDA

A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA
ALONG FLORIDA'S CENTRAL EAST COAST
JUNE, 1995





NOTE: VERTICAL EXAGGERATION IS APPROXIMATELY 340 TIMES.



GEOLOGICAL CROSS SECTION
E — E'
CENTRAL EAST COAST, FLORIDA

A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA
ALONG FLORIDA'S CENTRAL EAST COAST

JUNE, 1995

FGS072

Part V PHOTOGRAPHS

Photo 1- Erosional scarp developed after storm at Patrick AFB beach in Brevard County.

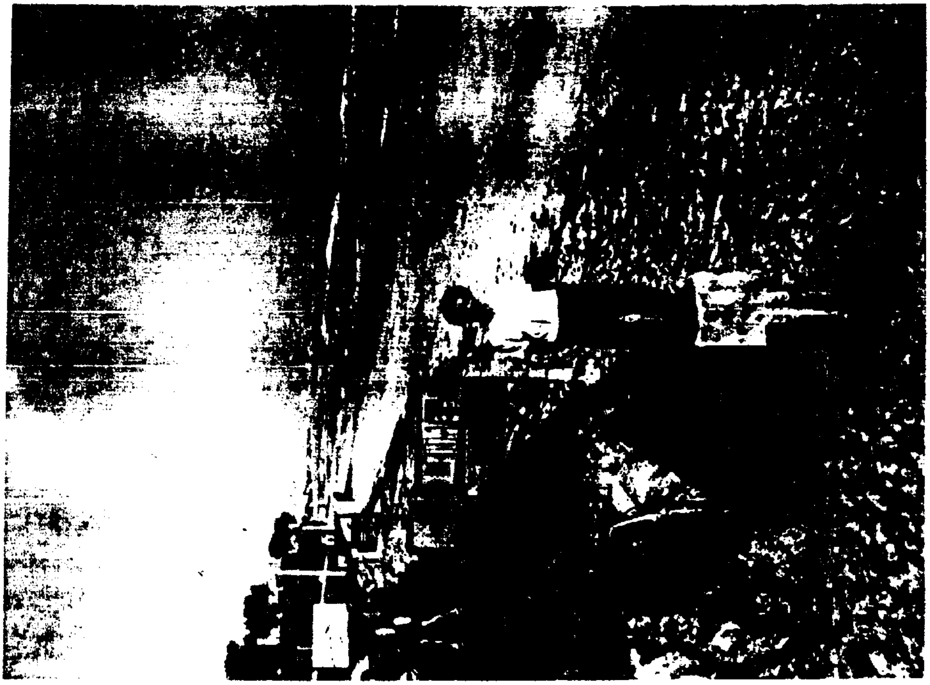


Photo 2- Incipient undermining of beach armoring structure at Patrick AFB. Brevard County

Photo 3- View of erosional dune "blowout" created by pedestrian traffic near Patrick AFB, Brevard County.

Photo 4- Partial view of dune "blowout" at Mark's Landing in southern Brevard County

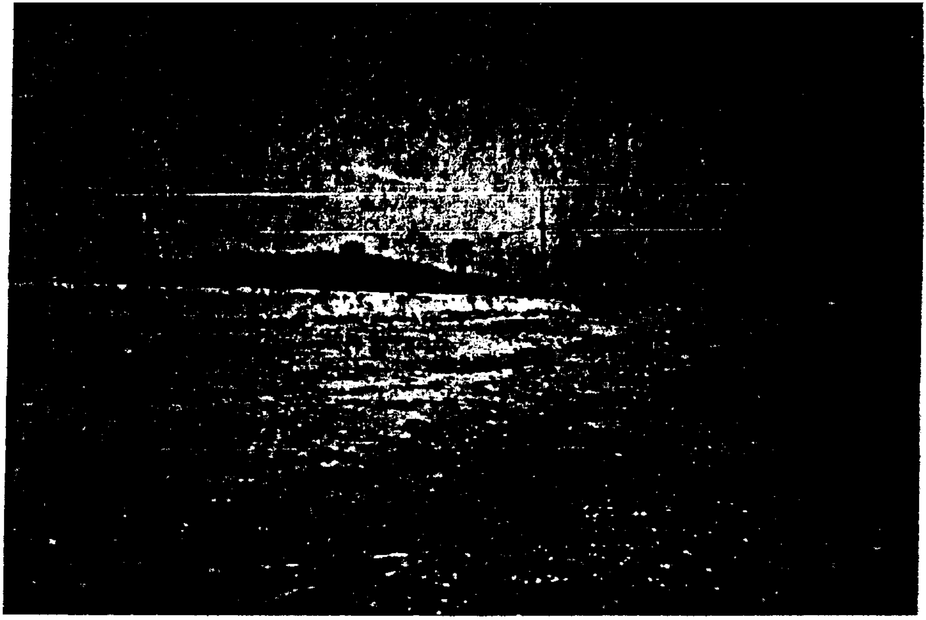


Photo 5- View of Patrick AFB beach (after storm) looking northward in Brevard County. Note position of erosion scarp and location of vegetation indicating most recent high water. Also note distribution of coarse shell debris immediately below high water mark with finer grained sediments nearshore.

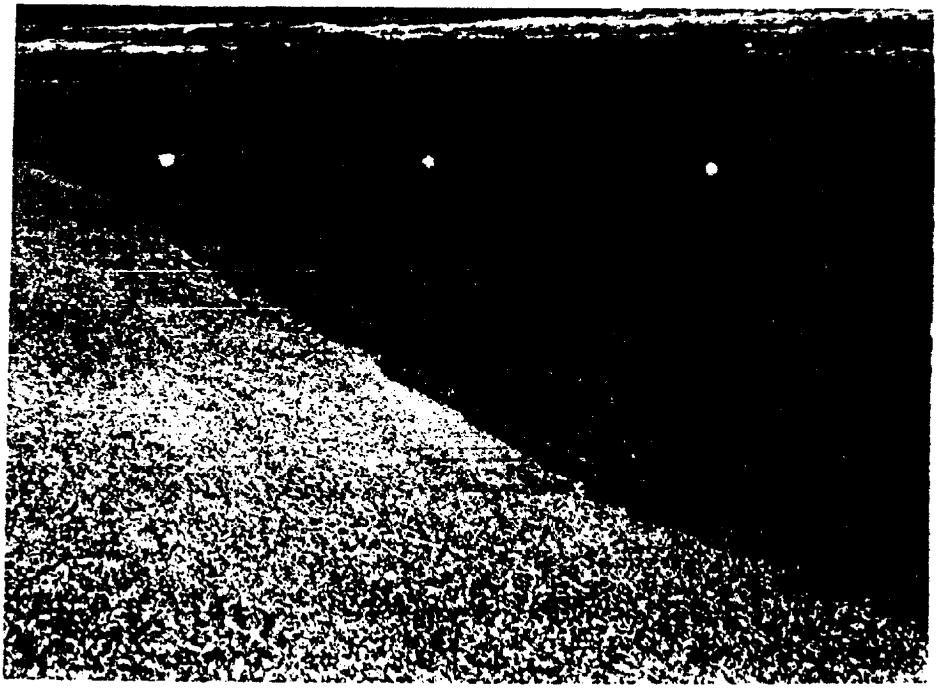


Photo 6- Anastasia Formation hardgrounds visible at low tide near Patrick AFB. Age of hardground formation is unknown. Also note coarse shell debris covering seashore

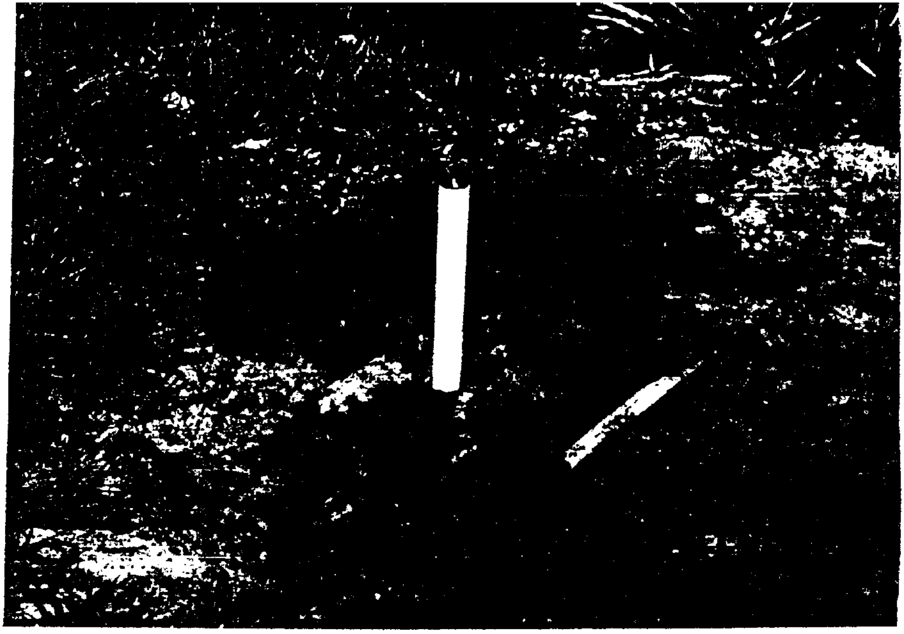


Photo 7- View of installed core boring at Mark's Landing in southern Brevard county.

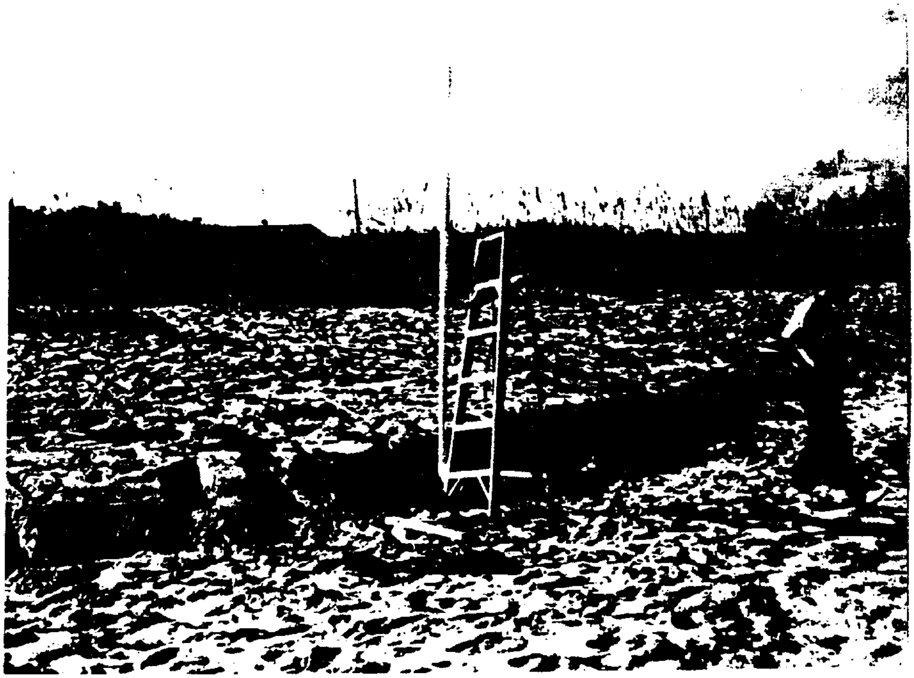


Photo 8- Core barrel being prepared for installation at site near dune "blowout" at Mark's Landing in southern Brevard County.

Part VI

LITHOLOGY LOGS AND GRANULOMETRIC DATA

A GEOLOGICAL INVESTIGATION OF THE OFFSHORE AREA ALONG FLORIDA'S CENTRAL EAST COAST

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Florida Geological Survey

LITHOLOGIC LOGS

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: B1

INSTALLATION DATE: 11/28/94

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 8.2 FEET

GEOLOGISTS: HENRY FREEDENBERG
ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-8.2') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO ANGULAR, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-1.0') ACCESSORY MINERALS: 5% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR SHELL DEBRIS.
1				(1.0-1.6') ACCESSORY MINERALS: 2% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR SHELL DEBRIS, ROOT MATERIAL PRESENT.
2	(1.6-2.6') ANGULAR, AS ABOVE.			(1.6-2.6') ACCESSORY MINERALS: 5% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR SHELL DEBRIS.
3	(2.6-8.2') SUBANGULAR TO SUBROUNDED, AS ABOVE.			(2.6-3.3') ACCESSORY MINERALS: 3% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR SHELL DEBRIS.
				(3.3-3.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
4				(3.9-4.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
5				(4.6-5.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 30% SUBANGULAR TO SUBROUNDED SHELL DEBRIS, QUARTZ IS MORE ROUNDED THAN ABOVE.
6				(5.6-6.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
7				(6.6-8.2') ACCESSORY MINERALS: 1% HEAVY MINERALS, 20% COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
8				
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: B2

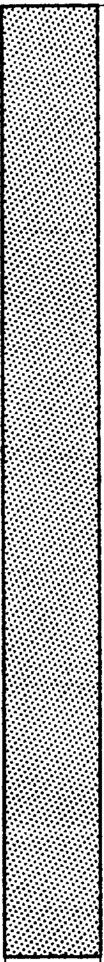
INSTALLATION DATE: 11/28/94

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 6.6 FEET

GEOLOGISTS: HENRY FREEDENBERG
ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
1 2 3 4 5 6 7 8 9	(0-6.6') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO ANGULAR, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.		SW	(0-1.6') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% ANGULAR TO SUBROUNDED COARSE GRAVEL SIZED SHELL DEBRIS. (1.6-3.0') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% ANGULAR TO SUBROUNDED COARSE GRAVEL SIZED SHELL DEBRIS. (3.0-3.3') ACCESSORY MINERALS: 30% HEAVY MINERALS, BROWN ANHYDRITE CRYSTALS, HEAVY MINERAL BANDING, 20% FINE TO MEDIUM GRAINED SUBANGULAR TO SUBROUNDED SHELL DEBRIS. (3.3-3.6') ACCESSORY MINERALS: 10% HEAVY MINERALS, 30% COARSE GRAVEL ANGULAR TO SUBANGULAR SHELL DEBRIS. (3.6-4.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS. (4.9-5.9') ACCESSORY MINERALS: 15% HEAVY MINERALS, BROWN ANHYDRITE CRYSTALS, 25% COARSE GRAINED ANGUALR TO SUBANGULAR SHELL DEBRIS. (5.9-6.6') ACCESSORY MINERALS: 10% HEAVY MINERALS, BROWN ANHYDRITE CRYSTALS, 30% COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID:B3

INSTALLATION DATE: 1/4/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER:
4" PVC SCHEDULE 40

TOTAL DEPTH:
9.8 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-9.8') FINE TO COARSE GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, ANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-1.0') ACCESSORY MINERALS: 2% HEAVY MINERALS, 20% ANGULAR SHELL FRAGMENTS.
1				(1.0-2.0') ACCESSORY MINERALS: 15% HEAVY MINERALS, FINER GRAINED SHELL DEBRIS.
2	(2.0-2.6') FINE TO MEDIUM GRAINED SAND, SUBANGULAR TO ANGULAR, AS ABOVE.			(2.0-2.6') ACCESSORY MINERALS: 2% HEAVY MINERALS, MUCH FINER GRAINED SHELL DEBRIS.
3	(2.6-4.9') SUBANGULAR TO ANGULAR, AS ABOVE.			(2.6-3.9') ACCESSORY MINERALS: 5% HEAVY MINERALS, ABUNDANT SHELL DEBRIS.
4				(3.9-4.6') ACCESSORY MINERALS: 5% HEAVY MINERALS, 15% SHELL DEBRIS, COARSER SHELL DEBRIS.
				(4.6-4.9') ACCESSORY MINERALS: 5% HEAVY MINERALS, 25% SHELL DEBRIS.
5 6	(4.9-8.5') FINE TO MEDIUM GRAINED SANG, SUBANGULAR TO ANGULAR, AS ABOVE.			(4.9-7.2') ACCESSORY MINERALS: 2% HEAVY MINERALS, 10% VERY FINE GRAINED SHELL DEBRIS.
7 8				(7.2-8.5') ACCESSORY MINERALS: 2% HEAVY MINERALS, 10% VERY FINE GRAINED SHELL DEBRIS.
9	(8.5-9.8') ANGULAR TO SUBANGULAR, AS ABOVE.			(8.5-9.8') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% TO 50% OF GRAINS ARE COARSE SHELL DEBRIS, ALMOST ALL LARGE GRAINS IN CORE ARE MADE UP OF ANGULAR SHELL DEBRIS, MOST OF INTERVAL VARIATION IN CORE DUE TO VARYING SHELL DEBRIS CONTENT, NO BEDDING OF HEAVY MINERALS PRESENT.

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: B4

INSTALLATION DATE: 1/4/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 8.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-8.9') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.		SW	(0-1.3') ACCESSORY MINERALS: 5% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED ANGULAR TO SUBROUNDED SHELL DEBRIS.
				(1.3-2.0') ACCESSORY MINERALS: 2% HEAVY MINERALS, 30% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBROUNDED SHELL DEBRIS, SOME INDURATED CLASTS.
				(2.0-3.3') ACCESSORY MINERALS: 7% HEAVY MINERALS, HEAVY MINERAL BANDING AT 2.8 FEET, 3.2 FEET, AND 3.3 FEET, 10% COARSE SUBANGULAR TO SUBROUNDED SHELL DEBRIS.
				(3.3-3.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 10% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED SHELL DEBRIS.
				(3.9-7.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 10% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED SHELL DEBRIS, LARGE, WELL INDURATED NODULES PRESENT-INDICATIVE OF ACTIVE CEMENTATION.
				(7.9-8.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 10% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED SHELL DEBRIS, MOST OF INTERVAL IS WELL INDURATED.

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: B5

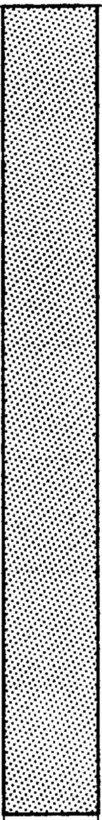
INSTALLATION DATE: 2/6/95

DRILLING METHOD: VIBRACORE

CORE DIAMETER: 3" ALUMINUM

TOTAL DEPTH: 5.6 FEET

GEOLOGISTS: HENRY FREEDENBERG
JIM LADNER, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
1 2 3 4 5 6 7 8 9	(0-5.6') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.		SW	(0-5.6') ACCESSORY MINERALS: 4% HEAVY MINERALS, 15% MEDIUM TO COARSE GRAINED ANGULAR TO SUBROUNDED SHELL DEBRIS. ENTIRE CORE IS HOMOGENEOUS-NO BEDDING OBSERVED.

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: B6

INSTALLATION DATE: 2/6/95

DRILLING METHOD: VIBRACORE

CORE DIAMETER: 3" ALUMINUM

TOTAL DEPTH: 4.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
JIM LADNER, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
(0-4.9')	FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-2.0') ACCESSORY MINERALS: 3% HEAVY MINERALS, 40% COARSE TO GRAVEL SIZED ANGULAR TO SUBANGULAR SHELL DEBRIS.
				(2.0-3.0') ACCESSORY MINERALS: 2% HEAVY MINERALS, HEAVY MINERAL BANDING AT 2.2 FEET, 40% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED SHELL DEBRIS.
				(3.0-3.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% COARSE TO GRAVEL SIZED ANGULAR TO SUBANGULAR SHELL DEBRIS.
				(3.9-4.3') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED SHELL DEBRIS.
				(4.3-4.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% COARSE TO GRAVEL SIZED ANGULAR TO SUBANGULAR SHELL DEBRIS, ISOLATED COARSE GRAVEL.

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: IR1

INSTALLATION DATE: 1/5/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 5.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-5.9') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY.		SW	(0-0.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED CALCAREOUS DEBRIS.
1	(0.9-3.0') ANGULAR TO SUBROUNDED, AS ABOVE.			(0.9-1.3') ACCESSORY MINERALS: 2% HEAVY MINERALS, 10% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED CALCAREOUS DEBRIS. (1.3-3.0') ACCESSORY MINERALS: 2% HEAVY MINERALS, 15% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
2				
3	(3.0-3.6') MEDIUM TO FINE GRAINED SAND, AS ABOVE.			(3.0-3.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, HEAVY MINERALS VERY SCARCE, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBROUNDED CARBONATE DEBRIS. (3.6-4.3') ACCESSORY MINERALS: 2% HEAVY MINERALS, 40% MEDIUM TO VERY COARSE GRAINED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
4	(4.3-5.9') MEDIUM TO FINE GRAINED SAND, AS ABOVE.			(4.3-5.9') ACCESSORY MINERALS: 3% HEAVY MINERALS, 15% SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
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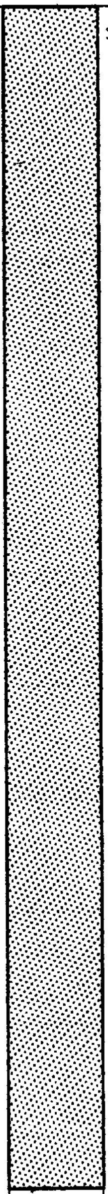
PROJECT: MMS COOPERATIVE STUDY CENTRAL FLORIDA EAST COAST		BORING ID: IR2
INSTALLATION DATE: 1/5/95		DRILLING METHOD: HAND DRIVEN
CORE DIAMETER: 4" PVC SCHEDULE 40	TOTAL DEPTH: 8.2 FEET	GEOLOGISTS: HENRY FREEDENBERG BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-8.2') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY.		SW	(0-1.3') ACCESSORY MINERALS: 2% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED CARBONATE DEBRIS.
1				
	(1.3-1.6') FOSSIL FRAGMENTS, AS ABOVE.			(1.3-1.6') ACCESSORY MINERALS: 3% HEAVY MINERALS, 40% MEDIUM TO GRAVEL SIZED SUBANGULAR TO SUBROUNDED SHELL DEBRIS. (1.6-2.3') ACCESSORY MINERALS: 5% HEAVY MINERALS, 40% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBROUNDED CARBONATE DEBRIS.
2				(2.3-2.6') ACCESSORY MINERALS: 40% HEAVY MINERALS, DISTINCTIVE HEAVY MINERAL BANDING, 10% CARBONATE DEBRIS.
	(2.6-3.3') MEDIUM TO FINE GRAINED SAND, AS ABOVE.			(2.6-3.3') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% COARSE TO MEDIUM GRAINED ANGULAR TO SUBROUNDED CARBONATE DEBRIS. (3.3-8.2') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% COARSE TO GRAVEL SIZED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
3				
4				
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6				
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8				
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: IR3

INSTALLATION DATE: 1/5/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 4.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
0	(0-4.9') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY.	▨	SW	(0-0.7') ACCESSORY MINERALS: 2% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED CARBONATE DEBRIS.
1	(0.7-2.0') FOSSIL FRAGMENTS, AS ABOVE.	▨		(0.7-2.0') ACCESSORY, MINERALS: 1% HEAVY MINERALS, 35% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED SHELL DEBRIS.
2		▨		(2.0-3.0') ACCESSORY MINERALS: 5% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
3		▨		(3.0-3.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBROUNDED CARBONATE DEBRIS.
4	(3.9-4.6') MEDIUM TO FINE GRAINED SAND, AS ABOVE.	▨		(3.9-4.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% MEDIUM TO GRAVEL SIZED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS. (4.6-4.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% MEDIUM TO GRAVEL SIZED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
5				
6				
7				
8				
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: IR4

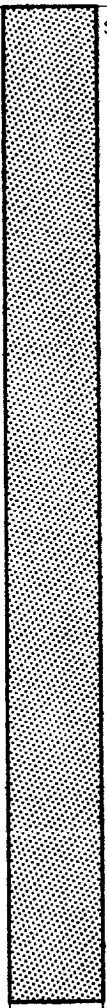
INSTALLATION DATE: 1/5/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 6.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
1	(0-6.9') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, ANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.		SW	(0-1.3') ACCESSORY MINERALS: 1% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED SUBANGULAR TO SUBROUNDED SHELL DEBRIS.
	(1.3-6.9') SUBANGULAR TO SUBROUNDED, AS ABOVE.			(1.3-2.0') ACCESSORY MINERALS: 1% HEAVY MINERALS, 60% COARSE TO GRAVEL SIZED ANGULAR TO SUBROUNDED SHELL DEBRIS.
2 3	(2.0-6.9') NO FOSSIL FRAGMENTS, AS ABOVE.			(2.0-3.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 30% MEDIUM TO COARSE SIZED SUBANGULAR TO SUBROUNDED CARBONATE DEBRIS.
4 5				(3.9-5.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% COARSE TO GRAVEL SIZED SUBANGULAR TO SUBROUNDED SHELL DEBRIS.
6 7 8 9	(5.9-6.9') MEDIUM TO FINE GRAINED SAND, AS ABOVE.			(5.9-6.9') ACCESSORY MINERALS: 2% HEAVY MINERALS, 35% MEDIUM TO COARSE SIZED ANGULAR TO SUBROUNDED SHELL DEBRIS.

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: M1

INSTALLATION DATE: 1/6/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER:
4" PVC SCHEDULE 40

TOTAL DEPTH:
7.5 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-7.5') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-1.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 35% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
1		▨		(1.6-3.3') ACCESSORY MINERALS: 1% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
2		▨		
3		▨		(3.3-5.2') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
4		▨		
5		▨		(5.2-6.2') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
6		▨		(6.2-7.5') ACCESSORY MINERALS: 1% HEAVY MINERALS, 35% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
7		▨		
8				
9				

PROJECT: MMS COOPERATIVE STUDY CENTRAL FLORIDA EAST COAST	BORING ID: M2
INSTALLATION DATE: 1/6/95	DRILLING METHOD: HAND DRIVEN
CORE DIAMETER: 4" PVC SCHEDULE 40 / TOTAL DEPTH: 7.5 FEET	GEOLOGISTS: HENRY FREEDENBERG BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-7.5') FINE TO MEDIUM GRAINED SAND, GRAYISH BROWN TO LIGHT BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-2.0') ACCESSORY MINERALS: 1% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
1		▨		
2		▨		(2.0-2.6') ACCESSORY MINERALS: 3% HEAVY MINERALS, 40% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBANGULAR SHELL DEBRIS. (2.6-4.3') ACCESSORY MINERALS: 1% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
3		▨		
4		▨		(4.3-5.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 45% MEDIUM TO GRAVEL SIZED SHELL DEBRIS, ISOLATED LARGE FRAGMENTS.
5	(5.6-7.5') GREYISH ORANGE TO LIGHT ORANGE.	▨		(5.6-7.5') ACCESSORY MINERALS: 1% HEAVY MINERALS, 15% FINE TO MEDIUM GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
6		▨		
7		▨		
8				
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: M3

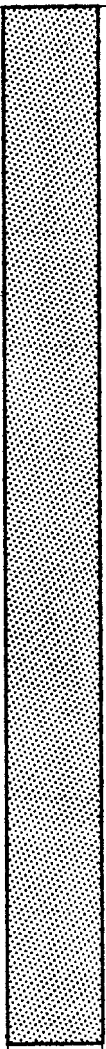
INSTALLATION DATE: 1/6/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 7.2 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-7.2') FINE TO MEDIUM GRAINED SAND, DARK YELLOWISH BROWN TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.		SW	(0-3.0') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% MEDIUM TO COARSE GRAINED SUBANGULAR TO ROUNDED SHELL DEBRIS.
1				
2				
3				(3.0-3.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS. (3.6-5.2') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% MEDIUM TO COARSE GRAINED SUBANGULAR TO ANGULAR SHELL DEBRIS.
4				
5				(5.2-7.2') ACCESSORY MINERALS: 1% HEAVY MINERALS, 60% MEDIUM TO COARSE GRAVEL SIZED ANGULAR TO SUBROUNDED SHELL DEBRIS, ABUNDANT LARGE SHELL CLASTS.
6				
7				
8				
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: SL1

INSTALLATION DATE: 1/5/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 8.5 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
1	(0-8.5') FINE TO MEDIUM GRAINED SAND, GRAYISH BROWN TO MODERATE BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-1.3') ACCESSORY MINERALS: 1% HEAVY MINERALS, 35% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL FRAGMENTS.
2	(1.3-8.5') GRAYISH BROWN TO LIGHT ORANGE, AS ABOVE.	▨		(1.3-2.0') ACCESSORY MINERALS: 3% HEAVY MINERALS, 50% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
		▨		(2.0-2.6') ACCESSORY MINERALS: 5% HEAVY MINERALS, 10% FINE TO MEDIUM GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
3		▨		(2.6-3.0') ACCESSORY MINERALS: 3% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
		▨		(3.0-3.3') ACCESSORY MINERALS: 5% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
4		▨		(3.3-4.6') ACCESSORY MINERALS: 2% HEAVY MINERALS, MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
		▨		(4.6-4.9') ACCESSORY MINERALS: 5% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
5		▨		(4.9-5.6) ACCESSORY MINERALS: 7% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
6 7		▨		(5.6-7.5') ACCESSORY MINERALS: 5% HEAVY MINERALS, 70% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBANGULAR SHELL FRAGMENTS, A LOT OF CORAL DEBRIS.
8		▨		(7.5-8.5') ACCESSORY MINERALS: 5% HEAVY MINERALS, 20% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL FRAGMENTS.
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: SL2

INSTALLATION DATE: 1/6/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 7.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-7.9') FINE TO MEDIUM GRAINED SAND, GRAYISH BROWN TO LIGHT GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-2.0') ACCESSORY MINERALS: 4% HEAVY MINERALS, 30% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL MASH.
	(2.0-3.3') GRAYISH BROWN TO LIGHT ORANGE. NO FOSSIL FRAGMENTS, AS ABOVE.	▨		(2.0-3.3') ACCESSORY MINERALS: 2% HEAVY MINERALS, 60% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBANGULAR CARBONATE DEBRIS.
	(3.3-3.6') GRAYISH BROWN TO LIGHT ORANGE, NO FOSSIL FRAGMENTS, AS ABOVE.	▨		(3.3-3.6') ACCESSORY MINERALS: 2% HEAVY MINERALS, 60% COARSE TO GRAVEL SIZED CARBONATE DEBRIS, LARGE SHELL FRAGMENTS.
	(3.6-4.6') VERY FINE TO FINE GRAINED SAND, DARK YELLOWISH BROWN TO DARK BROWN, NO FOSSIL FRAGMENTS, AS ABOVE.	▨		(3.6-4.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% ORGANIC MATTER, DARK COLOR, NO CARBONATES, LAGOONAL ENVIRONMENT.
	(4.6-5.9') VERY FINE TO FINE GRAINED SAND, GRAYISH BROWN TO GRAYISH ORANGE, FOSSIL FRAGMENTS, AS ABOVE.	▨		(4.6-5.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 15% MEDIUM TO COARSE ANGULAR TO SUBROUNDED SHELL MASH.
	(5.9-7.9') LIGHT ORANGE TO GRAYISH BROWN, AS ABOVE.	▨		(5.9-7.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% FINE TO MEDIUM GRAINED ANGULAR TO SUBANGULAR SHELL MASH, 20% WOOD MATERIAL (ROOTS), DOES NOT APPEAR TO BE HEAVILY OXIDIZED.
1 2 3 4 5 6 7 8 9				

PROJECT: MMS COOPERATIVE STUDY CENTRAL FLORIDA EAST COAST

BORING ID: SL3

INSTALLATION DATE: 1/6/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 7.9 FEET

GEOLOGISTS: HENRY FREEDENBERG BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
	(0-7.9') FINE TO MEDIUM GRAINED SAND, GRAYISH BROWN TO LIGHT ORANGE, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS.	▨	SW	(0-2.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 40% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
1				
2				
				(2.6-3.6') ACCESSORY MINERALS: 1% HEAVY MINERALS, 50% MEDIUM TO GRAVEL SIZED (AT 3.0 FEET) ANGULAR TO SUBANGULAR SHELL DEBRIS., RARE NEARLY INTACT PELYCOPOD VALVES.
3				
	(3.6-7.9') GRAYISH BROWN TO LIGHT BROWN, AS ABOVE.			(3.6-5.9') ACCESSORY MINERALS: 5% HEAVY MINERALS, 40% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS.
4				
5				
				(5.9-7.9') ACCESSORY MINERALS: 5% HEAVY MINERALS, HEAVY MINERAL BANDING AT 6.2 FEET AND 6.9 FEET, 50% MEDIUM TO GRAVEL SIZED ANGULAR TO SUBANGULAR SHELL DEBRIS, LARGE SHELL FRAGMENTS AT 5.9 FEET AND 7.2 FEET.
6				
7				
8				
9				

PROJECT: MMS COOPERATIVE STUDY
CENTRAL FLORIDA EAST COAST

BORING ID: SL4

INSTALLATION DATE: 1/6/95

DRILLING METHOD: HAND DRIVEN

CORE DIAMETER: 4" PVC SCHEDULE 40

TOTAL DEPTH: 7.9 FEET

GEOLOGISTS: HENRY FREEDENBERG
BRAD HIGHLEY, ZIQIANG CHEN

DEPTH (FT)	GEOLOGIC DESCRIPTION	LITH. SYMBOL	USCS CLASS	COMMENTS
0–7.9	(0-7.9') FINE TO MEDIUM GRAINED SAND, LIGHT ORANGE TO GRAYISH BROWN, UNCONSOLIDATED, 30% INTERGRANULAR POROSITY, HIGH PERMEABILITY, SUBANGULAR TO SUBROUNDED, MEDIUM SPHERICITY, FOSSIL FRAGMENTS. (0.7-7.9') NO FOSSIL FRAGMENTS, AS ABOVE.	▨	SW	(0-0.7') ACCESSORY MINERALS: 1% HEAVY MINERALS, 35% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR SHELL DEBRIS. (0.7-3.0') ACCESSORY MINERALS: 1% HEAVY MINERALS, 25% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR CARBONATE DEBRIS. (3.0-3.3') ACCESSORY MINERALS: 4% HEAVY MINERALS, 15% MEDIUM GRAINED ANGULAR TO SUBANGULAR CARBONATE DEBRIS. (3.3-4.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 45% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR CARBONATE DEBRIS. (4.9-7.9') ACCESSORY MINERALS: 1% HEAVY MINERALS, 60% MEDIUM TO COARSE GRAINED ANGULAR TO SUBANGULAR CARBONATE DEBRIS.

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SUMMARY OF MEDIAN GRAIN SIZES

GRANULOMETRICS

Fifteen push cores and two vibracores were collected from locations along the east coast of central Florida. Samples were taken from these cores and analyzed for grain size distribution (gsd) using a set of nested sieves which were arranged in quarter ϕ intervals. After 20 minutes of sieving, the contents of each sieve were separated and weighed. The grain size distribution was then plotted as a histogram while a cumulative frequency curve was plotted overlaying the histogram. In order to determine carbonate content, the uppermost two samples from each core were also digested in hydrochloric acid. The portion of the sample remaining after acid digestion (assumed to be the silica fraction of the sample) was then weighed and grain size distributions were plotted. Finally, for each size fraction, the post digestion weight of the sample was subtracted from the original sample weight to give the weight of the sample carbonate content. The carbonate gsd was also plotted. Results of the grain size analyses are summarized in the accompanying table. The outcome of each individual analysis is displayed on the accompanying grain size distribution charts.

Median grain size for sands along the central Atlantic coast of Florida was found to be 0.470 mm (1.09ϕ). Median silica grain size of surface sand (the topmost sand from each core) was found to be 0.388 mm (0.30ϕ). While median grain size of the carbonate fraction of the surface sands is 0.580 mm (0.79ϕ). Median grain size of individual samples for the entire population ranged between 1.69 mm (-0.76ϕ). and 0.224 mm (2.16ϕ). Carbonate median grain size distribution was found to be 0.580 mm (0.79ϕ). Carbonate content by weight of the surface and near-surface samples (samples collected within two feet of the surface) analyzed ranged from 23.28% to 62.45%. Bimodal grain size distributions were observed in many of the carbonate samples. This bimodality can be attributed to a primary population of relatively young large shell fragments intermixed with a secondary population of older abraded fragments.

In general, carbonate content of the surface samples increases to the south. This can be attributed to the creation of a more favorable growth environment by warmer water temperaturesand to increasing distance from the silica source area.

Maps showing carbonate content and median grain size have been prepared and are included as a part of the atlas accompanying this report.

SUMMARY OF MEDIAN GRAIN SIZES

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
	Brevard Co. (Core B-1)		
0	–	–	0.3535534
1	0.3438855		
1.5	0.2773924		
2	0.3511112	0.4413515	0.289172
2.5	0.3660214		
3	0.392292		
3.5	0.3486859		
4	0.3609823		
4.5	0.3763117		
5	0.3344813		
6	0.3275984		
7	0.3056601	0.2448551	0.3230882
8	0.2679434	0.2448551	0.2793218
8.5	0.3099269	0.3842188	0.2698071
	Brevard Co. (Core B-2)		
0	0.6029039	0.8066418	0.4796321
0.5	0.4931164	0.659754	0.4569157
1	0.5703819	0.9460576	0.4931164
1.5	0.4146598	0.5703819	0.3842188
2	0.4233727	0.6973718	0.3815648
2.5	0.283221	0.2932087	0.2773924
3	0.5176325	0.8888427	0.3486859
3.5	0.3230882	0.2851909	0.329877
4	0.3511112	0.4033209	0.3391511
4.5	0.2973018	0.2606164	0.3099269
5	0.3486859	0.3763117	0.3368084
5.5	0.3486859	0.3711309	0.3368084
6	0.3584888	0.3763117	0.3511112
	Brevard Co. (Core B-3)		
0	0.3634931	1.1172871	0.2588162
0.5	0.3842188		
1	0.420482		
1.5	0.3368084		

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
2	0.4117955	0.9592641	0.3099269
2.5	0.3208565		
3	0.4829687		
3.5	0.4352753		
4	0.4005349		
4.5	0.2754763		
5	0.3711309		
6	0.3486859		
7	0.408951		
8	0.3344819		
9	0.5176325		
	Brevard Co. (Core B-4)		
0	0.4061262		
0.5	0.4413515	1.3660403	0.3737123
1	0.5		
1.5	0.6070974		
2	0.5625292	1.7900501	0.3634931
2.5	0.3609823		
3	0.4033209		
3.5	0.3368084		
4	0.3609823		
4.5	0.3737123		
5	0.3737123		
6	0.4600938		
6.9	0.2482731		
	Brevard Co. (Core B-5)		
0	0.2237563		
0.5	0.2642545	0.2191514	0.3208565
1	0.2871746		
1.5	0.2698071		
2	0.283221	0.3711309	0.2660925
2.5	0.2642545		
3	0.3275984		
3.5	0.231647		
4	0.2952482		
4.5	0.289172		
5.3	0.2570285		

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
	Brevard Co. (Core B-6)		
0	0.5358867	1.3755418	0.3486859
0.5	0.5743492		
1	0.8783441		
1.5	0.5176325		
2	0.3035487	0.3685673	0.2773924
2.5	0.3462774		
3	0.6241653		
3.5	1.6934906		
4	0.5547847		
4.9	0.9794203		

Ave. Median Sed. Grain Size (mm)	Ave Median CO3 Grain Size (mm)	Ave Median Silica Grain Size (mm)
	Brevard Co.	
0.404545088	0.600432508	0.340735669

	Indian River Co. (Core IR-1)		
0	0.3895823	0.4569157	0.3711309
1	0.3230882		
1.5	0.2973018		
2	0.2698071	0.2570285	0.2735734
2.5	0.2606164		
3	0.283321		
3.5	0.329877		
4	0.3950207		
4.5	0.3208565		
5	0.3584888		
5.9	0.4569157		

	Indian River Co. (Core IR-2)		
0	0.4263174	0.5358867	0.3511112
0.5	0.3584888		
1	0.4537596		
1.5	0.4730288		

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
2	0.476319	0.8950251	0.3868912
2.5	0.2381595		
3	0.3344819		
3.5	0.3815648		
4	0.4146598		
4.5	0.3056601		
5	0.4263174		
6	0.4061262		
7	0.3895823		
8.2	0.4005349		

Indian River Co. (Core IR-3)

0	0.3391511	0.3842188	0.329877
0.5	0.3895823		
1	0.463294		
1.5	0.4506252		
2	0.3415101	0.3842188	0.329877
2.5	0.3789291		
3	0.9138315		
3.5	0.4730288		
4	0.4413515		
4.5	0.2624292		
5	0.6417129		

Indian River Co. (Core IR-4)

0	0.4569157	0.7219646	0.3763117
0.5	0.3321715		
1	0.4204482		
1.5	0.4061262		
2	0.2851909	0.3275984	0.2716837
2.5	0.2793218		
3	0.3763117		
3.5	0.3685673		
4	0.4292827		
4.5	1.1407637		
5	0.6461764		
6	0.3056601		
6.95	0.1395755		

Ave. Median Sed. Grain Size (mm)	Ave Median CO3 Grain Size (mm)	Ave Median Silica Grain Size (mm)
	Indian River Co.	
0.405139457	0.495357075	0.336307013

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
	St. Lucie Co. (Core SL-1)		
0	0.3660214	0.4146598	0.3535534
0.5	0.3895823		
1	0.3344819		
1.5	0.4475125		
2	0.3815648	0.7631296	0.3950207
2.5	0.2642545		
3	0.2465582		
3.5	0.5743492		
4	0.3868912		
4.5	0.5105061		
5	0.7219646		
6	1.5157166		
7	0.659754		
8	0.8645372		
8.6	0.1496848		
	St. Lucie Co. (Core SL-2)		
0	0.3815648	0.417544	0.3634931
0.5	0.3977682		
1	0.4204482		
1.5	0.4413515		
2	0.5	0.6070974	0.3977682
2.5	0.6198538		
3	0.6736168		
3.5	0.5396141		
4	0.2431637		
4.5	0.2665582		
5	0.25		
6	0.2146414		
7	0.232582		

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
	St. Lucie Co. (Core SL-3)		
0	0.3977682	0.5248583	0.3634931
0.5	0.3763117		
1	0.3535534		
1.5	0.4005349		
2	0.4033209	0.4600938	0.3711309
2.5	0.3511112		
3	0.4413515		
3.5	0.3868912		
4	0.3415101		
4.5	0.4600938		
5	0.3868912		
6	0.4569157		
7	0.7022224		
	St. Lucie Co. (Core SL-4)		
0	0.5586436	0.7371346	0.4413515
0.5	0.5248583		
1	0.408951		
1.5	0.4292827		
2	0.3763117	0.4537596	0.342774
2.5	0.3077861		
3	0.5212329		
3.5	0.3486859		
4	0.4292827		
4.5	0.4005349		
5	0.2237563		
6	0.3415101		
7	0.3321715		
8	0.5212329		

Ave. Median Sed. Grain Size (mm)	Ave Median CO3 Grain Size (mm)	Ave Median Silica Grain Size (mm)
	St. Lucie Co.	
0.439586524	0.547284638	0.378573113

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
	Martin Co. (Core M-1)		
0	0.4383029	0.5586436	0.3560125
0.5	0.4569157		
1	0.5034778		
1.5	0.5987394		
2	0.6461764	0.8467453	0.2895823
2.5	0.417544		
3	0.3208565		
3.5	0.5		
4	0.4829682		
4.5	0.4292827		
5	0.5069797		
6	0.5586436		
7	0.6372803		
7.7	0.4829682		
	Martin Co. (Core M-2)		
0	0.3368084	0.4600938	0.2851909
0.5	0.3609823		
1	0.417544		
1.5	0.5140569		
2	0.2606164	0.2044755	0.3868912
2.5	1.0281138	1.2397077	0.3368084
3	0.3977682		
3.5	0.5034778		
4	0.4233723		
4.5	0.5625292		
5	0.8408964		
6	0.3077861		
7.2	0.3511112		
	Martin Co. (Core M-3)		
0	0.3142533	0.3321715	0.301452
0.5	0.3535534		
1	0.5547847		
1.5	0.4475125		
2	0.3035487	0.2754763	0.3344819
2.5	0.392292		
3	0.5358867		

Depth (Feet BLS)	Median Total Sed. Grain Size (mm)	Median CO3 Grain Size (mm)	Median Silica Grain Size (mm)
3.5	0.6506709		
4	0.4697614		
4.5	0.4352753		
5	0.4506252		
6	0.4730288		
7.2	0.5987394		

Ave. Median Sed. Grain Size (mm)	Ave Median CO3 Grain Size (mm)	Ave Median Silica Grain Size (mm)
	Martin Co.	
2.752161529	0.559616243	0.327202743

Ave. Median Sed. Grain Size (mm)	Ave Median CO3 Grain Size (mm)	Ave Median Silica Grain Size (mm)
	All Counties	
0.433261989	0.602340298	0.365800069

SAMPLE CARBONATE CONTENT BY WEIGHT

SAMPLE CARBONATE CONTENT BY WEIGHT

DEPTH (FEET BLS)	TOTAL WT. (g)	SILICA WT. (g)	CO3 WT. (g)	% CO3
		Brevard County (Core B-1)		
2.0	108.6464	66.4618	42.1846	38.827425
7.0	98.7623	78.0119	20.7504	21.010446
8.0	63.1325	51.2644	11.8681	18.798717
8.5	64.4408	42.9731	21.4677	33.313832
		Brevard County (Core B-2)		
0.0	100.335	43.7236	56.6114	56.422385
0.5	82.1692	47.9111	34.2581	41.692143
1.0	93.1708	44.2406	48.9302	52.516668
1.5	91.2448	55.1174	36.1274	39.593928
2.0	85.141	50.7438	34.3972	40.400042
2.5	99.2308	75.2824	23.9484	24.134039
3.0	81.6899	42.5378	39.1521	47.927712
3.5	87.0177	63.5486	23.4691	26.97049
4.0	88.6473	60.0791	28.5682	32.226813
4.5	87.5303	64.3839	23.1464	26.443871
5.0	82.3516	56.6699	25.6817	31.185429
5.5	94.2854	64.4892	29.7962	31.602136
6.0	61.8897	36.0162	25.8735	41.805826
		Brevard County (Core B-3)		
0.0	79.4006	41.5947	37.5089	47.240071
2.0	97.774	60.2621	37.5119	47.24385
		Brevard County (Core B-4)		
0.5	71.1733	43.2212	27.9521	39.273295
2.0	61.2877	30.4991	30.7886	50.236181
		Brevard County (Core B-5)		
0.5	79.3699	42.5873	36.7826	46.343261
2.0	64.3726	49.3863	14.9863	23.280557
		Brevard County (Core B-6)		
0.0	62.4199	18.1792	44.2407	70.875955
2.0	68.91	42.76	26.15	37.948048

DEPTH (FEET BLS)	TOTAL WT. (g)	SILICA WT. (g)	CO3 WT. (g)	% CO3
Indian River Co. (Core IR-1)				
0.0	68.2239	43.68	24.5439	35.975516
2.0	64.9658	49.9072	15.0586	23.179273
Indian River Co. (Core IR-2)				
0.0	50.7867	30.5762	20.2105	39.794868
2.0	75.4332	42.3064	33.1268	43.915411
Indian River Co. (Core IR-3)				
0.0	49.7188	33.2318	16.487	33.160495
2.0	62.6184	43.0277	19.5907	31.285852
Indian River Co. (Core IR-4)				
0.0	37.4491	20.9971	16.452	43.93163
2.0	52.9822	36.98629	15.99591	30.191102
St. Lucie Co. (Core SL-1)				
0.0	53.2412	36.2785	16.9627	31.860101
2.0	56.1458	28.0155	28.1303	50.102234
St. Lucie Co. (Core SL-2)				
0.0	52.9037	33.5177	19.386	36.64394
2.0	47.7673	17.9371	29.8302	62.448998
St. Lucie Co. (Core SL-3)				
0.0	36.6161	23.2198	13.3963	36.585819
2.0	45.4986	23.3251	22.1735	48.734467
St. Lucie Co. (Core SL-4)				
0.0	67.8016	25.7058	42.0958	62.086735
2.0	88.0254	47.8572	40.1682	45.632511

DEPTH (FEET BLS)	TOTAL WT. (g)	SILICA WT. (g)	CO3 WT. (g)	% CO3
Martin Co. (Core M-1)				
0.0	56.6376	23.0677	33.5699	59.271403
2.0	38.6855	11.7159	26.9696	69.715009
Martin Co. (Core M-2)				
0.0	49.5855	24.5171	25.0684	50.555908
2.0	72.8622	34.2408	38.6214	53.006085
2.5	72.2039	11.9014	60.3025	83.516957
Martin Co. (Core M-3)				
0.0	43.2712	21.5582	21.713	50.178872
2.0	61.437	26.8256	34.6114	56.33641

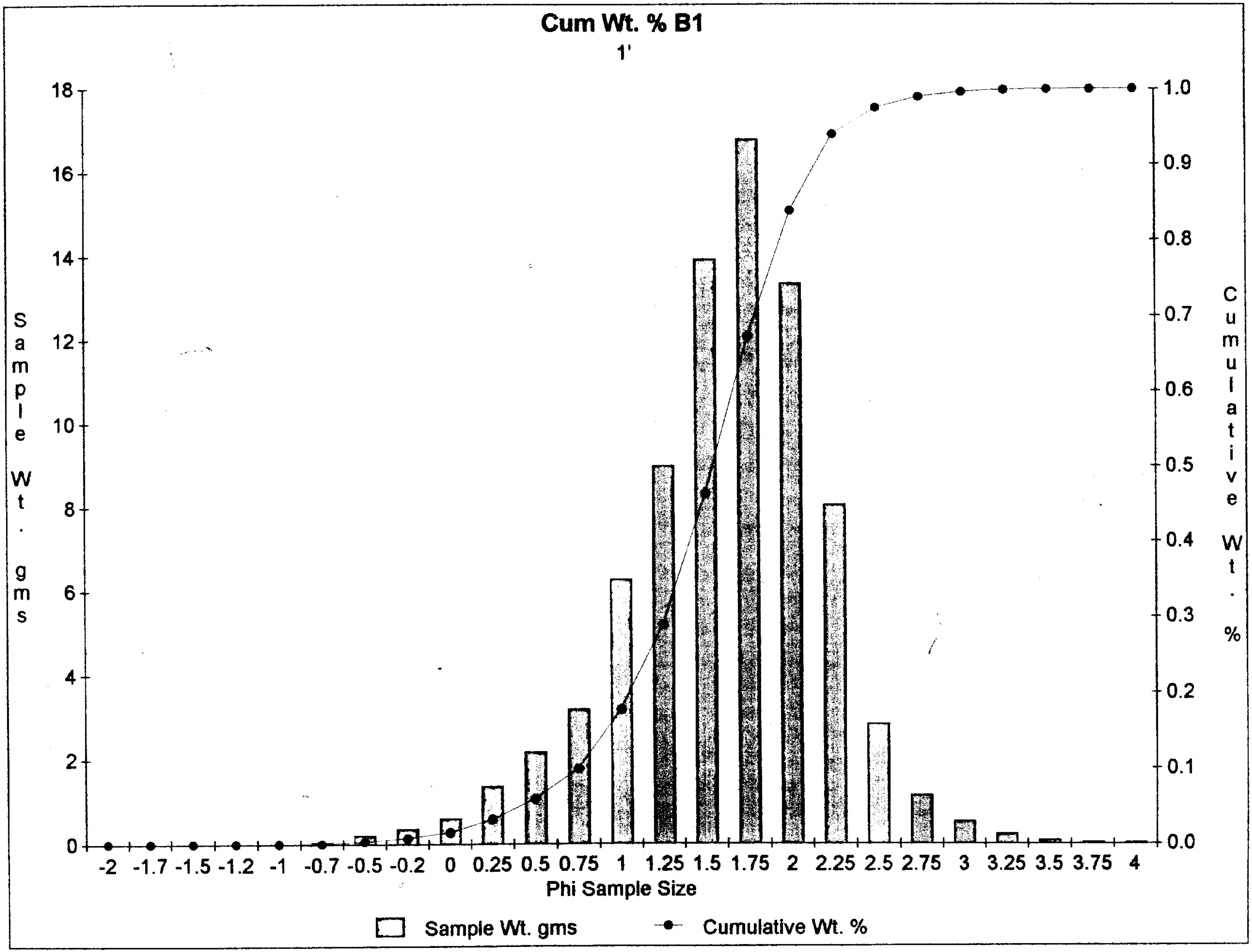
GRAIN SIZE DISTRIBUTION OF TOTAL SAMPLE

Grain Size Distribution Chart

CORE (B-1)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0403	0.0403	0.0005019	0.0005019
-0.5	0.2106	0.2509	0.0026231	0.003125
-0.25	0.3562	0.6071	0.0044366	0.0075616
0	0.5976	1.2047	0.0074433	0.0150049
0.25	1.3694	2.5741	0.0170563	0.0320612
0.5	2.1872	4.7613	0.0272422	0.0593034
0.75	3.1997	7.961	0.0398532	0.0991565
1	6.2819	14.2429	0.0782429	0.1773994
1.25	8.9985	23.2414	0.1120789	0.2894783
1.5	13.9491	37.1905	0.17374	0.4632183
1.75	16.7873	53.9778	0.2090906	0.6723089
2	13.3649	67.3427	0.1664636	0.8387726
2.25	8.0649	75.4076	0.1004506	0.9392232
2.5	2.8421	78.2497	0.0353992	0.9746224
2.75	1.1511	79.4008	0.0143373	0.9889596
3	0.5319	79.9327	0.006625	0.9955846
3.25	0.2253	80.158	0.0028062	0.9983908
3.5	0.0755	80.2335	0.0009404	0.9993312
3.75	0.0326	80.2661	0.000406	0.9997372
4	0.0211	80.2872	0.0002628	1

Total Wt. 80.2872 gms
Median Weight 40.1436 gms
Mean Grain Size 1.54 phi 0.3438855 mm

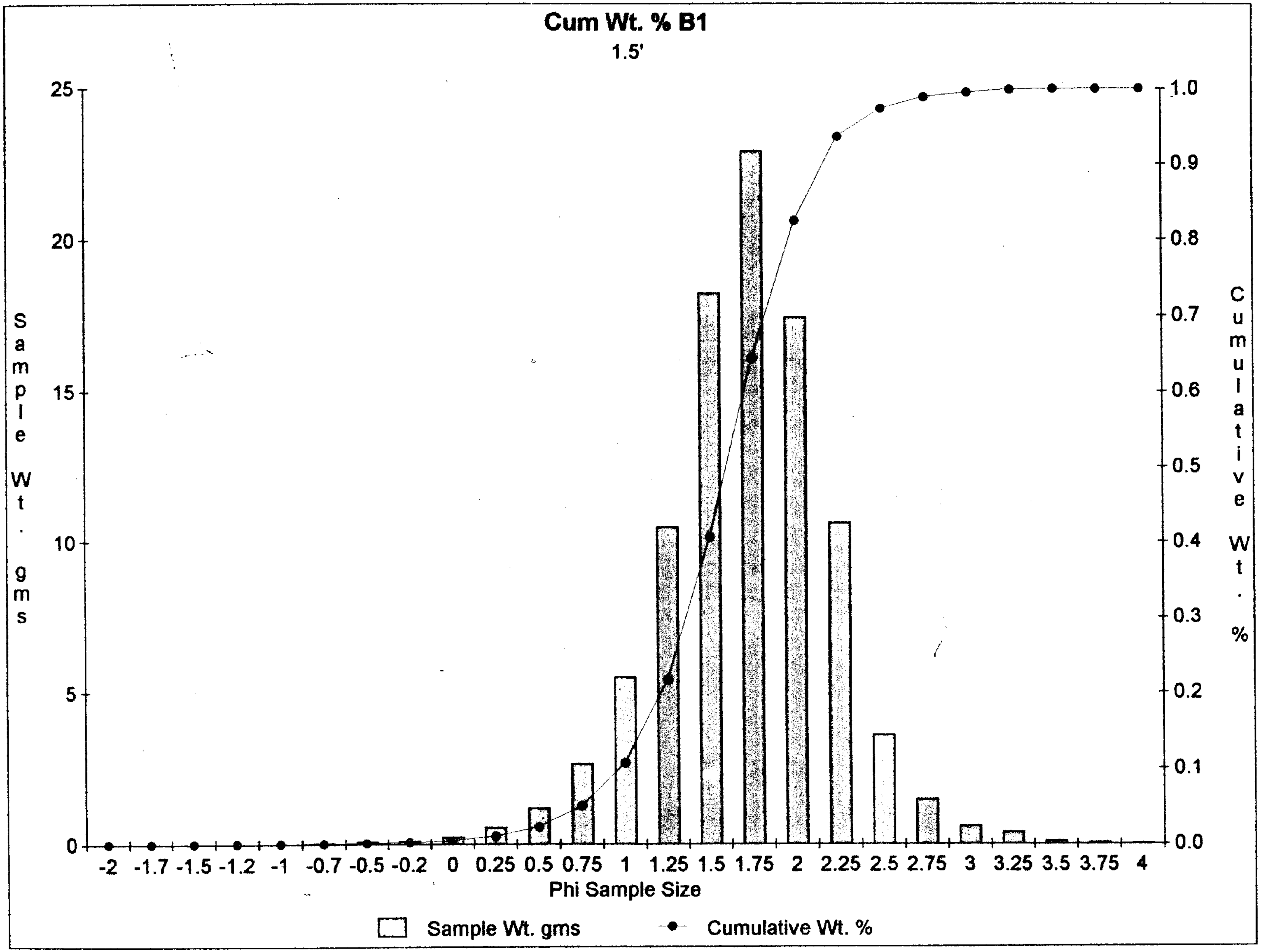

Cum Wt. % B1
1'
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-1)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0331	0.0331	0.000344	0.000344
-0.5	0.0704	0.1035	0.0007316	0.0010756
-0.25	0.0997	0.2032	0.0010361	0.0021116
0	0.2166	0.4198	0.0022509	0.0043625
0.25	0.5398	0.9596	0.0056096	0.0099721
0.5	1.1859	2.1455	0.0123238	0.0222959
0.75	2.6563	4.8018	0.0276041	0.0499001
1	5.4971	10.2989	0.0571256	0.1070257
1.25	10.4971	20.796	0.1090854	0.2161111
1.5	18.2538	39.0498	0.1896926	0.4058037
1.75	22.918	61.9678	0.2381628	0.6439665
2	17.4421	79.4099	0.1812575	0.825224
2.25	10.6355	90.0454	0.1105236	0.9357476
2.5	3.5924	93.6378	0.0373321	0.9730796
2.75	1.4734	95.1112	0.0153115	0.9883911
3	0.5895	95.7007	0.0061261	0.9945172
3.25	0.381	96.0817	0.0039593	0.9984765
3.5	0.0869	96.1686	0.0009031	0.9993796
3.75	0.0407	96.2093	0.000423	0.9998026
4	0.019	96.2283	0.0001974	1

Total Wt.	96.2283 gms	
Median Weight	48.11415 gms	
Mean Grain Size	1.85 phi	0.2773924 mm



Cum Wt. % B1

1.5'

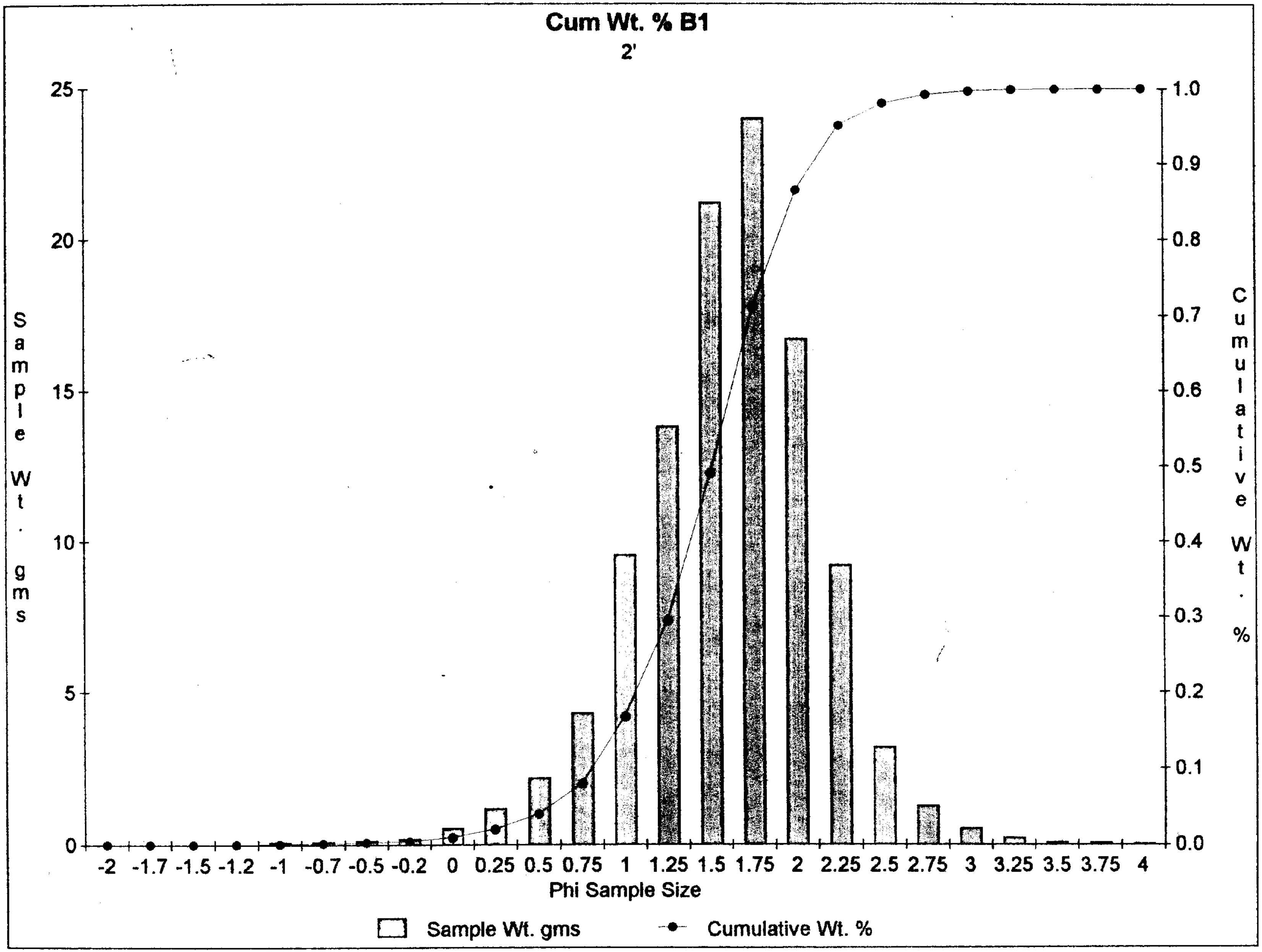
Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-1)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0014	0.0014	1.289E-05	1.289E-05
-1	0.0701	0.0715	0.0006452	0.0006581
-0.75	0.0881	0.1596	0.0008109	0.001469
-0.5	0.1318	0.2914	0.0012131	0.0026821
-0.25	0.1849	0.4763	0.0017019	0.0043839
0	0.5348	1.0111	0.0049224	0.0093063
0.25	1.1759	2.187	0.0108232	0.0201295
0.5	2.1838	4.3708	0.0201001	0.0402296
0.75	4.3208	8.6916	0.0397694	0.079999
1	9.5579	18.2495	0.0879725	0.1679715
1.25	13.8366	32.0861	0.1273544	0.2953259
1.5	21.2438	53.3299	0.1955316	0.4908575
1.75	24.0138	77.3437	0.2210271	0.7118846
2	16.7462	94.0899	0.1541349	0.8660195
2.25	9.2292	103.3191	0.0849471	0.9509666
2.5	3.1739	106.493	0.0292131	0.9801797
2.75	1.2599	107.7529	0.0115963	0.9917761
3	0.5187	108.2716	0.0047742	0.9965503
3.25	0.223	108.4946	0.0020525	0.9986028
3.5	0.0742	108.5688	0.0006829	0.9992858
3.75	0.0561	108.6249	0.0005164	0.9998021
4	0.0215	108.6464	0.0001979	1

Total Wt.	108.6464 gms	
Median Weight	54.3232 gms	
Mean Grain Size	1.51 phi	0.3511112 mm

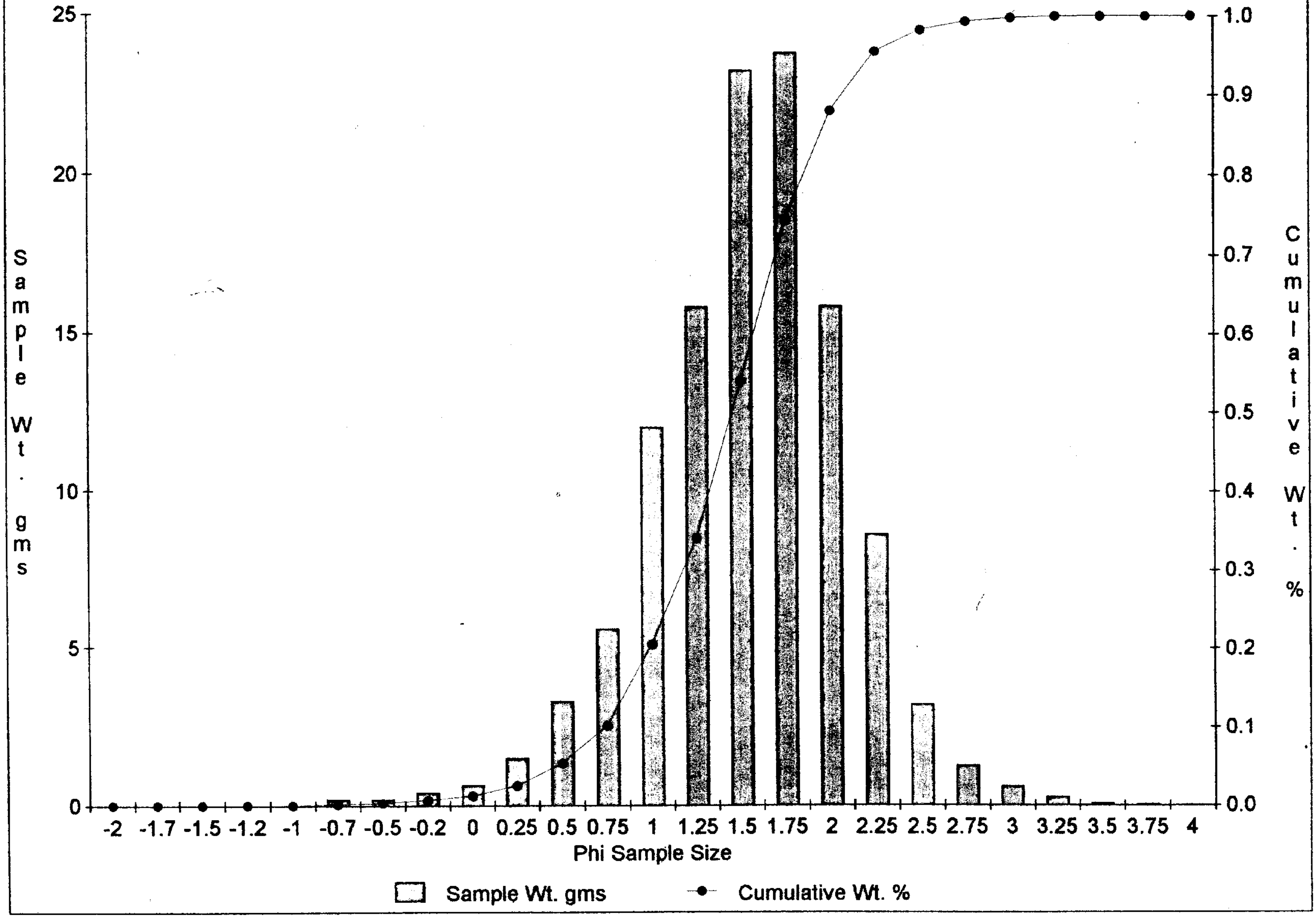

Cum Wt. % B1
2'
Sample Wt. gms
Cumulative Wt. %
25
20
15
10
5
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-1)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.191	0.191	0.0016386	0.0016386
-0.5	0.1804	0.3714	0.0015477	0.0031863
-0.25	0.4032	0.7746	0.0034591	0.0066454
0	0.635	1.4096	0.0054477	0.0120931
0.25	1.4854	2.895	0.0127434	0.0248366
0.5	3.287	6.182	0.0281996	0.0530362
0.75	5.5837	11.7657	0.0479033	0.1009394
1	12.0043	23.77	0.1029864	0.2039258
1.25	15.8385	39.6085	0.1358805	0.3398063
1.5	23.2413	62.8498	0.19939	0.5391963
1.75	23.8057	86.6555	0.2042321	0.7434284
2	15.8832	102.5387	0.136264	0.8796924
2.25	8.6374	111.1761	0.0741013	0.9537937
2.5	3.1955	114.3716	0.0274146	0.9812083
2.75	1.2524	115.624	0.0107445	0.9919528
3	0.5961	116.2201	0.005114	0.9970668
3.25	0.2512	116.4713	0.0021551	0.9992219
3.5	0.0593	116.5306	0.0005087	0.9997306
3.75	0.0204	116.551	0.000175	0.9999056
4	0.011	116.562	9.437E-05	1

Total Wt.	116.562	gms	
Median Weight	58.281	gms	
Mean Grain Size	1.45	phi	0.3660214 mm



Cum Wt. % B1

2.5'

Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

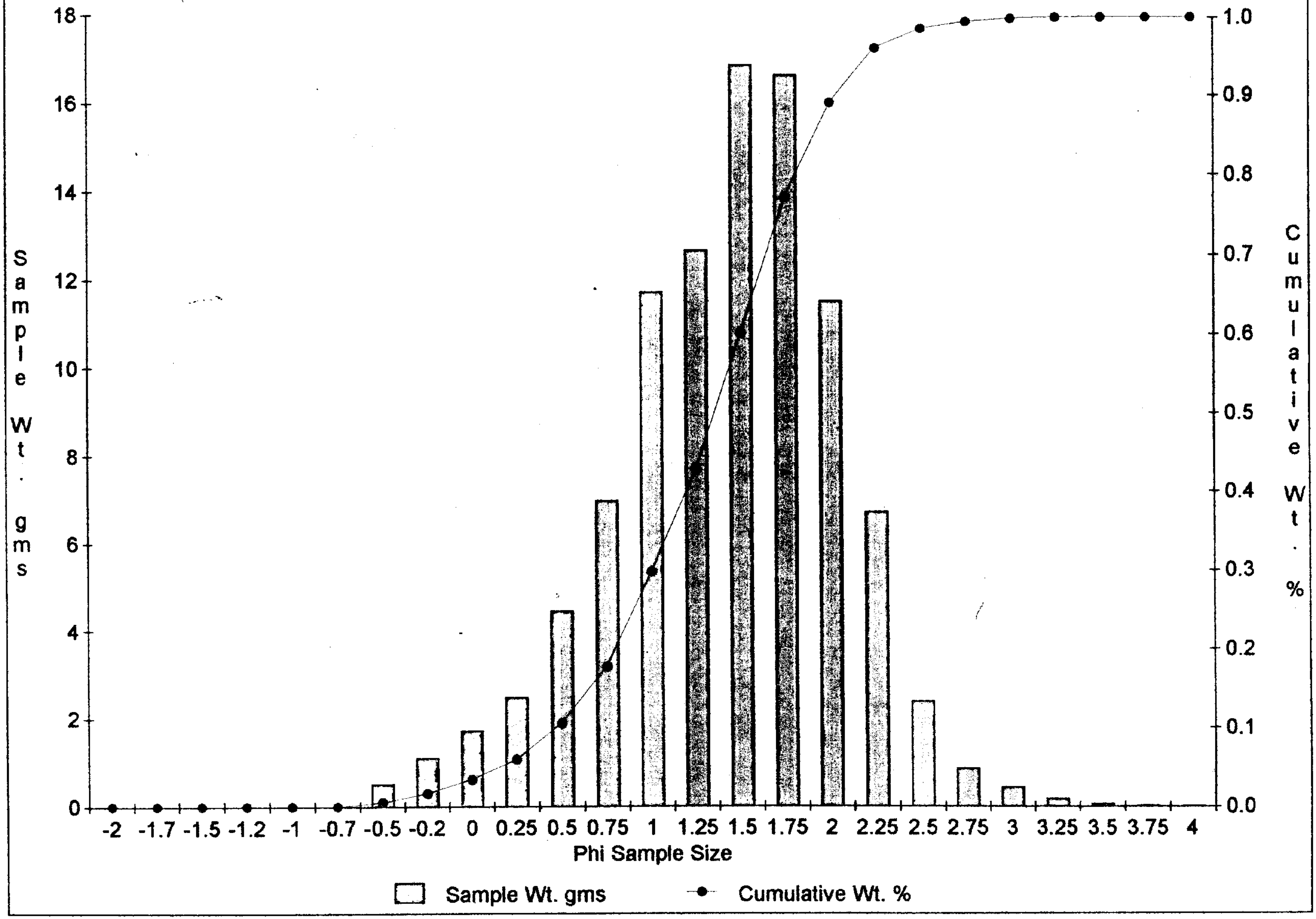
CORE (B-1)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.501	0.501	0.0051431	0.0051431
-0.25	1.1004	1.6014	0.0112963	0.0164394
0	1.7281	3.3295	0.0177401	0.0341795
0.25	2.482	5.8115	0.0254794	0.0596589
0.5	4.4509	10.2624	0.0456914	0.1053503
0.75	6.9738	17.2362	0.0715906	0.1769409
1	11.7386	28.9748	0.1205044	0.2974453
1.25	12.6894	41.6642	0.130265	0.4277103
1.5	16.8774	58.5416	0.1732576	0.6009678
1.75	16.6557	75.1973	0.1709817	0.7719495
2	11.5392	86.7365	0.1184574	0.890407
2.25	6.723	93.4595	0.069016	0.9594229
2.5	2.3896	95.8491	0.0245308	0.9839538
2.75	0.8632	96.7123	0.0088613	0.9928151
3	0.4387	97.151	0.0045035	0.9973186
3.25	0.1692	97.3202	0.0017369	0.9990556
3.5	0.0575	97.3777	0.0005903	0.9996458
3.75	0.0224	97.4001	0.00023	0.9998758
4	0.0121	97.4122	0.0001242	1

Total Wt.	97.4122 gms		
Median Weight	48.7061 gms		
Mean Grain Size	1.35 phi	0.392292 mm	

Cum Wt. % B1

3'

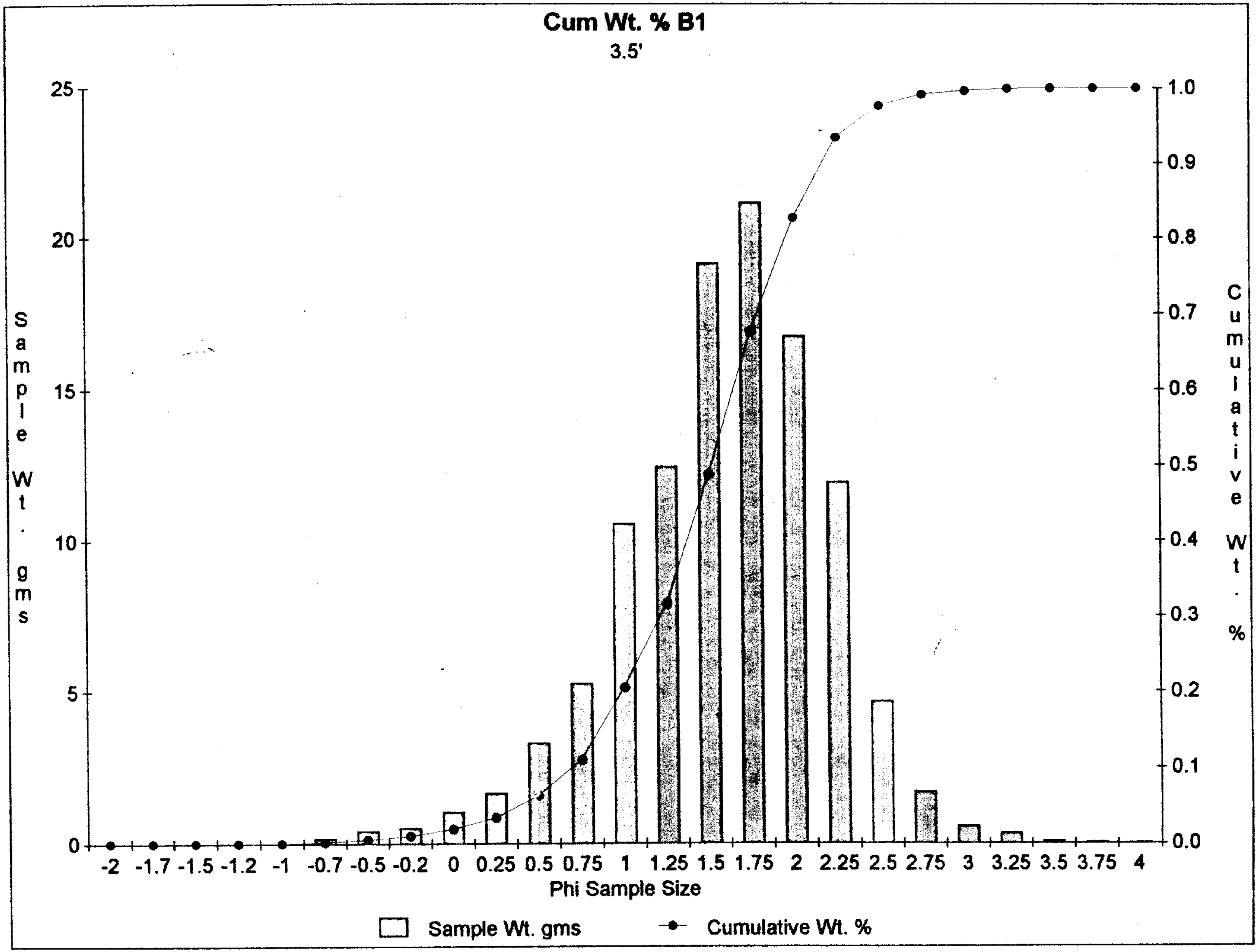

Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-1)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.1753	0.1753	0.0015672	0.0015672
-0.5	0.4075	0.5828	0.0036431	0.0052103
-0.25	0.5039	1.0867	0.0045049	0.0097152
0	1.0384	2.1251	0.0092834	0.0189986
0.25	1.6647	3.7898	0.0148826	0.0338812
0.5	3.3108	7.1006	0.0295988	0.06348
0.75	5.2544	12.355	0.0469748	0.1104548
1	10.57	22.925	0.0944967	0.2049516
1.25	12.4578	35.3828	0.1113739	0.3163254
1.5	19.1737	54.5565	0.1714146	0.48774
1.75	21.2047	75.7612	0.1895719	0.6773119
2	16.7851	92.5463	0.1500603	0.8273722
2.25	11.9415	104.4878	0.1067581	0.9341303
2.5	4.671	109.1588	0.0417592	0.9758895
2.75	1.6901	110.8489	0.0151096	0.9909991
3	0.5499	111.3988	0.0049162	0.9959153
3.25	0.3308	111.7296	0.0029574	0.9988727
3.5	0.0826	111.8122	0.0007385	0.9996111
3.75	0.0314	111.8436	0.0002807	0.9998918
4	0.0121	111.8557	0.0001082	1

Total Wt.	111.8557 gms		
Median Weight	55.92785 gms		
Mean Grain Size	1.52 phi	0.3486859	mm



Cum Wt. % B1

3.5'

Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

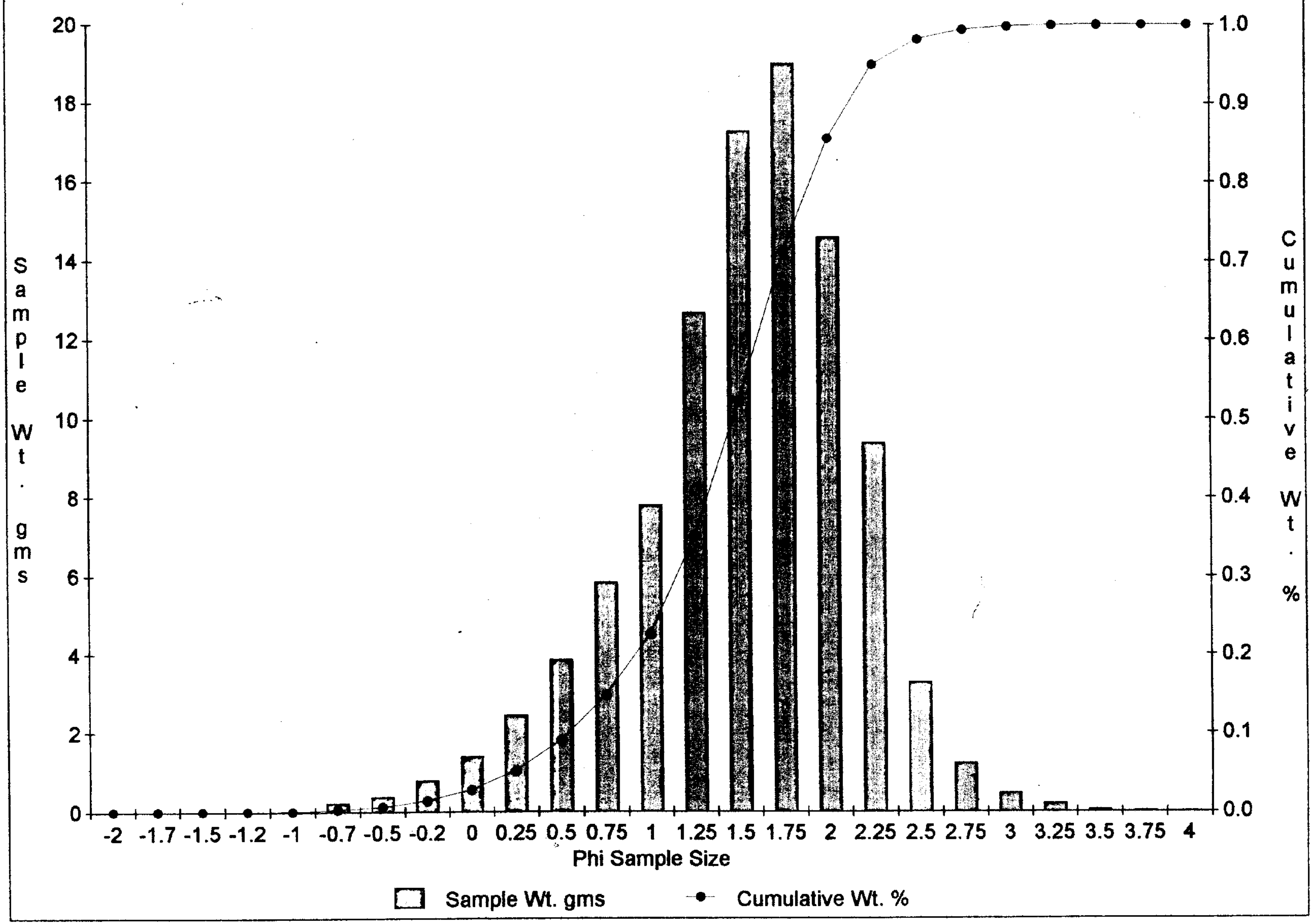
Grain Size Distribution Chart

CORE (B-1)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.004	0.004	3.968E-05	3.968E-05
-0.75	0.2201	0.2241	0.0021836	0.0022233
-0.5	0.3708	0.5949	0.0036787	0.005902
-0.25	0.7766	1.3715	0.0077046	0.0136067
0	1.3823	2.7538	0.0137138	0.0273204
0.25	2.4346	5.1884	0.0241537	0.0514741
0.5	3.849	9.0374	0.0381859	0.08966
0.75	5.8312	14.8686	0.0578513	0.1475114
1	7.7968	22.6654	0.077352	0.2248634
1.25	12.6781	35.3435	0.1257794	0.3506428
1.5	17.2858	52.6293	0.1714924	0.5221352
1.75	18.9896	71.6189	0.1883958	0.710531
2	14.5819	86.2008	0.144667	0.8551981
2.25	9.3724	95.5732	0.0929836	0.9481816
2.5	3.2698	98.843	0.0324397	0.9806213
2.75	1.2132	100.0562	0.0120362	0.9926575
3	0.4556	100.5118	0.00452	0.9971775
3.25	0.2033	100.7151	0.0020169	0.9991944
3.5	0.0516	100.7667	0.0005119	0.9997063
3.75	0.025	100.7917	0.000248	0.9999544
4	0.0046	100.7963	4.564E-05	1

Total Wt.	100.7963	gms	
Median Weight	50.39815	gms	
Mean Grain Size	1.47	phi	0.3609823 mm

Cum Wt. % B1
4'


Sample Wt. gms
20
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

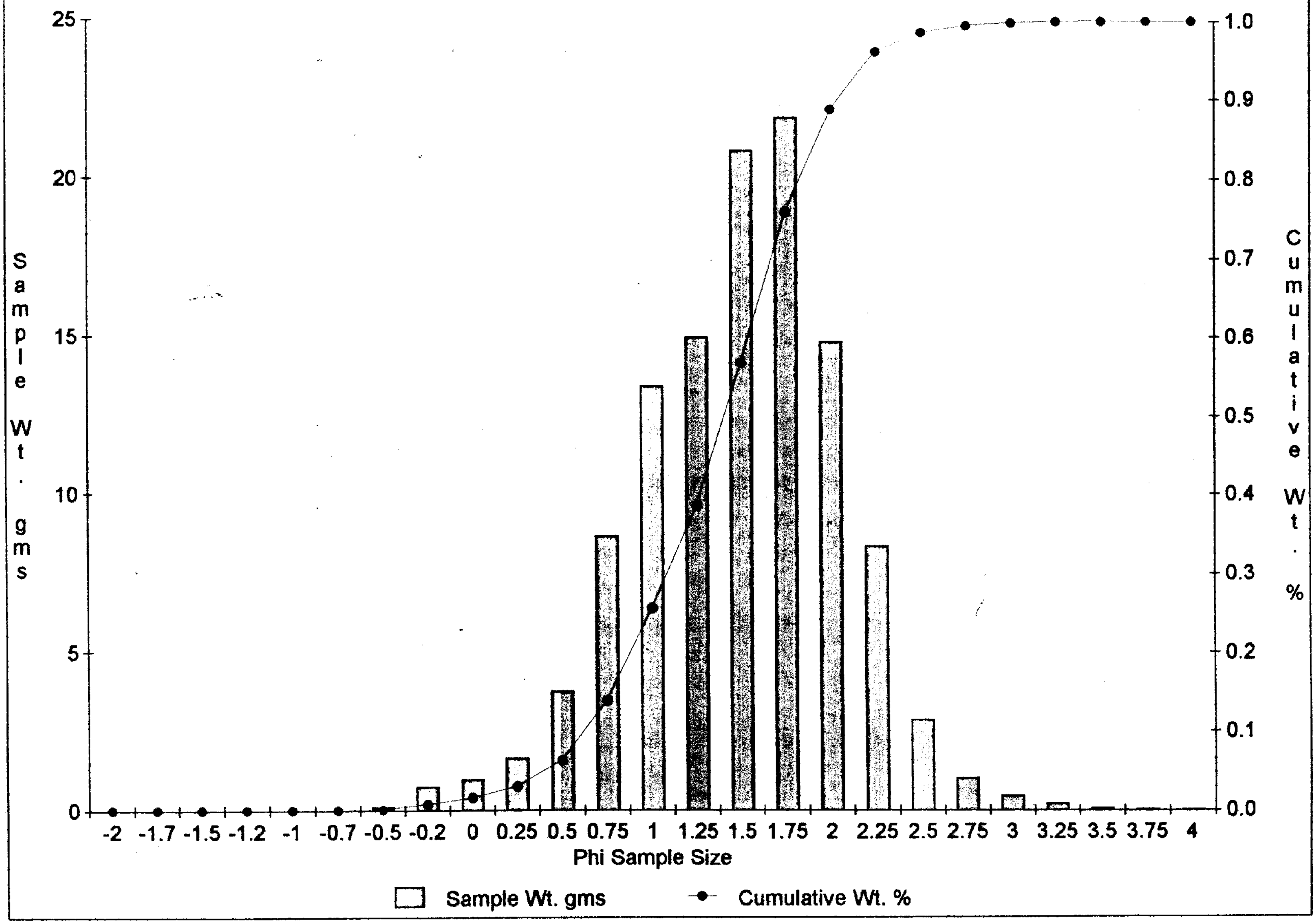
CORE (B-1)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.1022	0.1022	0.0008899	0.0008899
-0.25	0.7301	0.8323	0.0063571	0.007247
0	0.9532	1.7855	0.0082997	0.0155466
0.25	1.636	3.4215	0.0142449	0.0297916
0.5	3.7341	7.1556	0.0325134	0.062305
0.75	8.6702	15.8258	0.0754928	0.1377978
1	13.4334	29.2592	0.1169668	0.2547646
1.25	14.9865	44.2457	0.1304899	0.3852544
1.5	20.8858	65.1315	0.181856	0.5671104
1.75	21.9313	87.0628	0.1909594	0.7580698
2	14.8399	101.9027	0.1292134	0.8872832
2.25	8.3421	110.2448	0.072636	0.9599192
2.5	2.8378	113.0826	0.0247092	0.9846284
2.75	1.0101	114.0927	0.0087951	0.9934235
3	0.4477	114.5404	0.0038982	0.9973217
3.25	0.2024	114.7428	0.0017623	0.999084
3.5	0.0634	114.8062	0.000552	0.999636
3.75	0.0307	114.8369	0.0002673	0.9999034
4	0.0111	114.848	9.665E-05	1

Total Wt.	114.848	gms		
Median Weight	57.424	gms		
Mean Grain Size	1.41	phi	0.3763117	mm

Cum Wt. % B1

4.5'

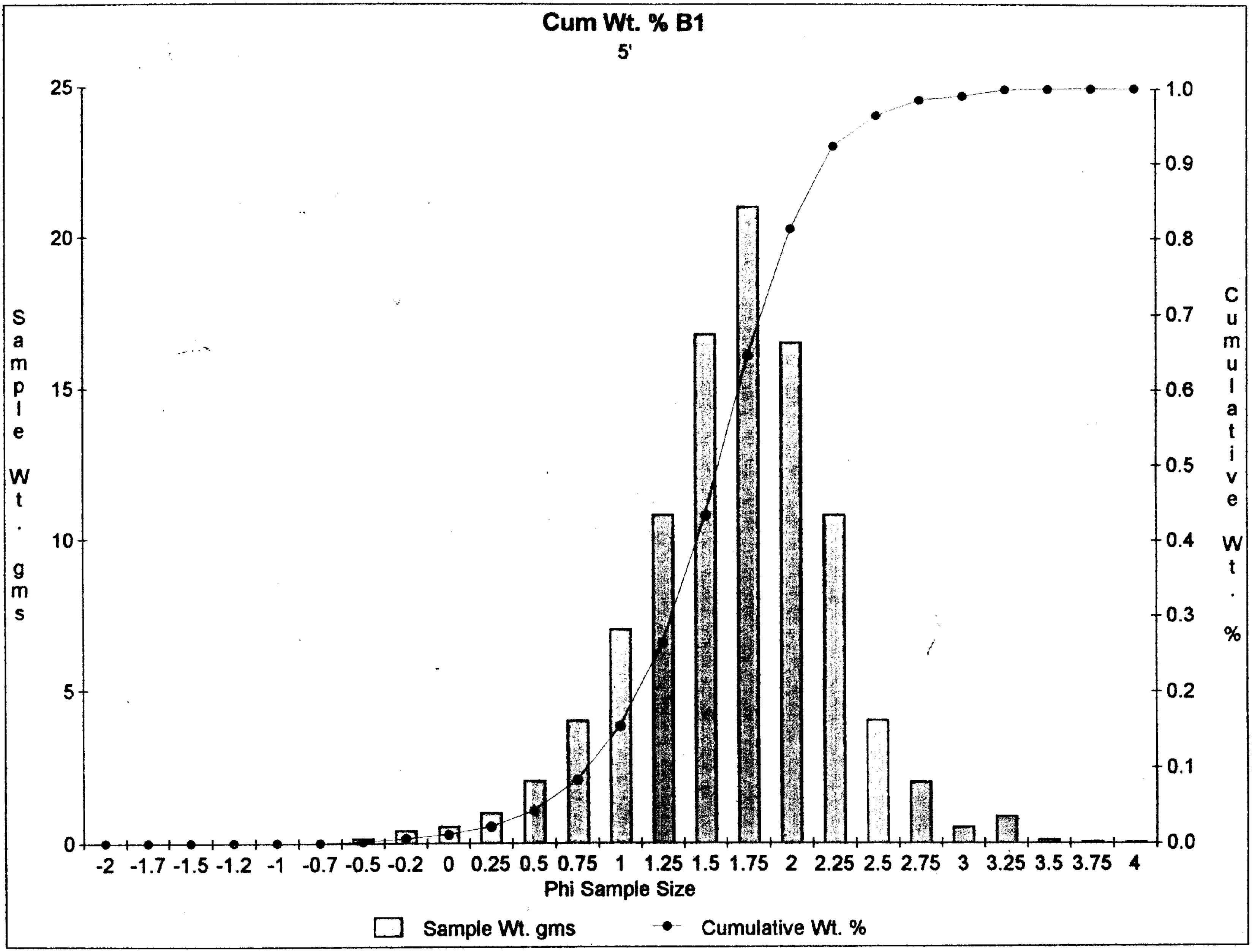

Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-1)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.1543	0.1543	0.0015568	0.0015568
-0.25	0.4198	0.5741	0.0042355	0.0057923
0	0.5438	1.1179	0.0054866	0.0112788
0.25	0.9873	2.1052	0.0099612	0.02124
0.5	2.0446	4.1498	0.0206286	0.0418686
0.75	4.0262	8.176	0.0406215	0.0824901
1	7.0397	15.2157	0.0710256	0.1535158
1.25	10.8631	26.0788	0.1096011	0.2631168
1.5	16.8622	42.941	0.1701278	0.4332446
1.75	21.0627	64.0037	0.2125079	0.6457526
2	16.5897	80.5934	0.1673785	0.813131
2.25	10.8625	91.4559	0.109595	0.922726
2.5	4.0493	95.5052	0.0408546	0.9635807
2.75	2.0176	97.5228	0.0203562	0.9839368
3	0.5314	98.0542	0.0053615	0.9892983
3.25	0.8789	98.9331	0.0088675	0.9981658
3.5	0.1008	99.0339	0.001017	0.9991828
3.75	0.0484	99.0823	0.0004883	0.9996711
4	0.0326	99.1149	0.0003289	1

Total Wt.	99.1149 gms	
Median Weight	49.55745 gms	
Mean Grain Size	1.58 phi	0.3344819 mm


Cum Wt. % B1

5'
Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

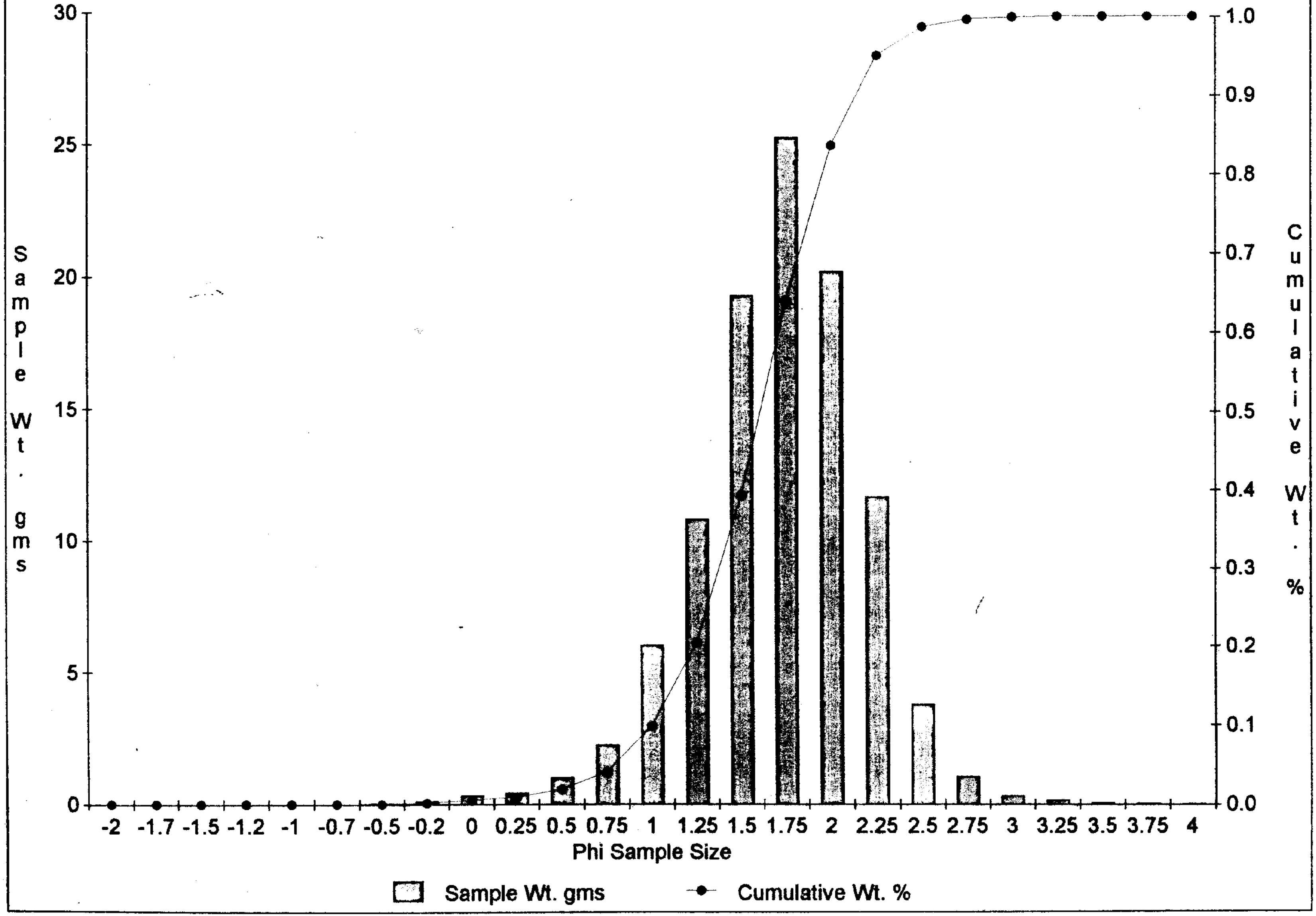
CORE (B-1)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0342	0.0342	0.0003325	0.0003325
-0.25	0.1181	0.1523	0.0011482	0.0014806
0	0.3305	0.4828	0.0032131	0.0046937
0.25	0.4151	0.8979	0.0040355	0.0087293
0.5	0.9976	1.8955	0.0096985	0.0184278
0.75	2.2171	4.1126	0.0215544	0.0399822
1	6.008	10.1206	0.058409	0.0983911
1.25	10.8153	20.9359	0.1051449	0.203536
1.5	19.3215	40.2574	0.1878411	0.3913771
1.75	25.339	65.5964	0.2463424	0.6377195
2	20.2539	85.8503	0.1969057	0.8346252
2.25	11.6797	97.53	0.1135485	0.9481737
2.5	3.7559	101.2859	0.0365144	0.9846881
2.75	1.0294	102.3153	0.0100077	0.9946957
3	0.3087	102.624	0.0030011	0.9976969
3.25	0.1413	102.7653	0.0013737	0.9990706
3.5	0.0446	102.8099	0.0004336	0.9995042
3.75	0.0399	102.8498	0.0003879	0.9998921
4	0.0111	102.8609	0.0001079	1

Total Wt.	102.8609 gms	
Median Weight	51.43045 gms	
Mean Grain Size	1.61 phi	0.3275984 mm

Cum Wt. % B1

6'



Sample Wt. gms
30
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

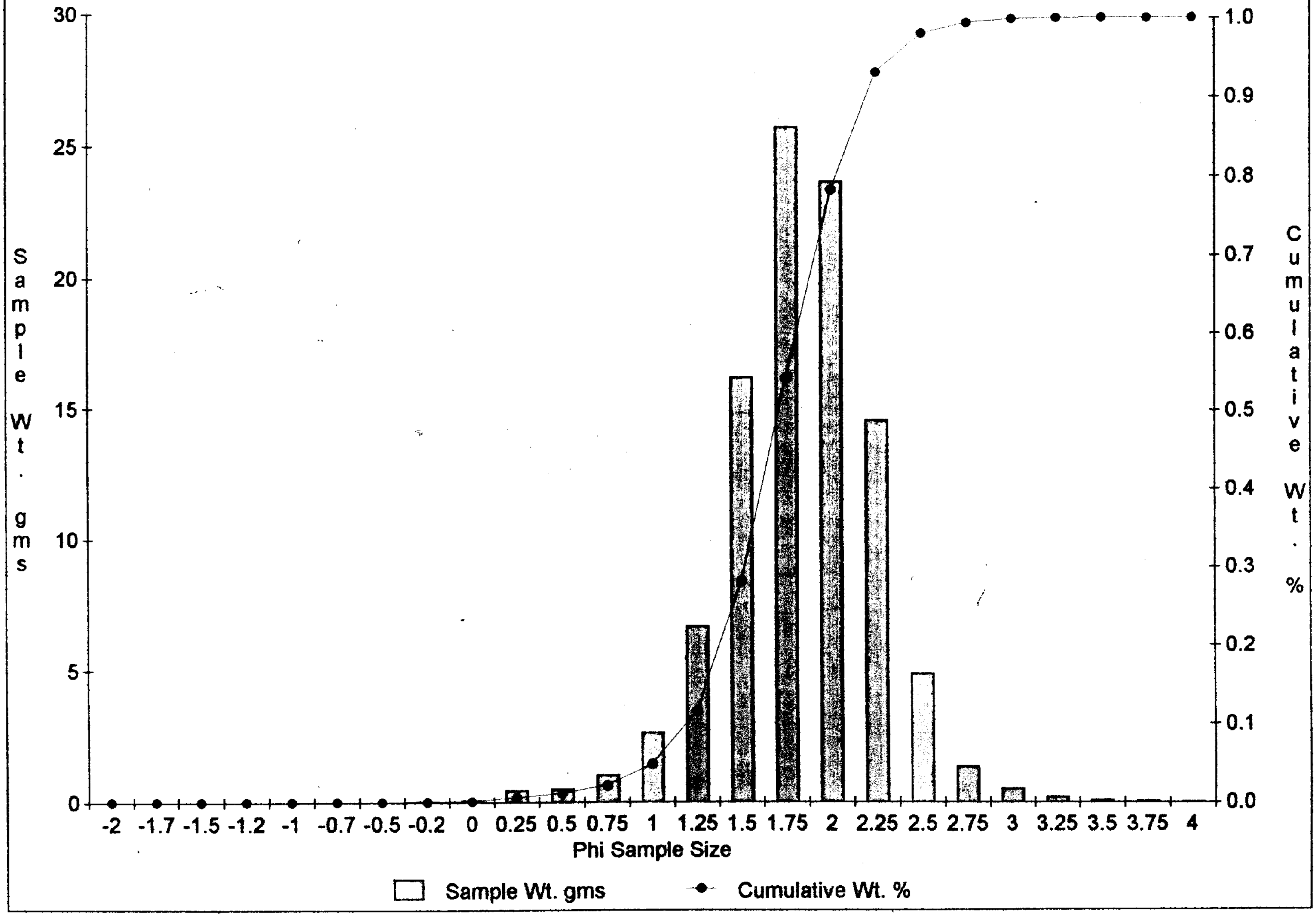
CORE (B-1)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.025	0.025	0.0002531	0.0002531
0	0.0803	0.1053	0.0008131	0.0010662
0.25	0.4402	0.5455	0.0044572	0.0055234
0.5	0.5015	1.047	0.0050778	0.0106012
0.75	1.0069	2.0539	0.0101952	0.0207964
1	2.6214	4.6753	0.0265425	0.0473389
1.25	6.6774	11.3527	0.0676108	0.1149497
1.5	16.2571	27.6098	0.1646084	0.2795581
1.75	25.8116	53.4214	0.2613507	0.5409088
2	23.7579	77.1793	0.2405564	0.7814652
2.25	14.587	91.7663	0.1476981	0.9291633
2.5	4.8731	96.6394	0.0493417	0.978505
2.75	1.3322	97.9716	0.013489	0.9919939
3	0.4879	98.4595	0.0049401	0.9969341
3.25	0.1807	98.6402	0.0018296	0.9987637
3.5	0.0729	98.7131	0.0007381	0.9995018
3.75	0.0305	98.7436	0.0003088	0.9998107
4	0.0187	98.7623	0.0001893	1

Total Wt.	98.7623 gms		
Median Weight	49.38115 gms		
Mean Grain Size	1.71 phi	0.3056601	mm

Cum Wt. % B1

7'


Sample Wt. gms
30
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

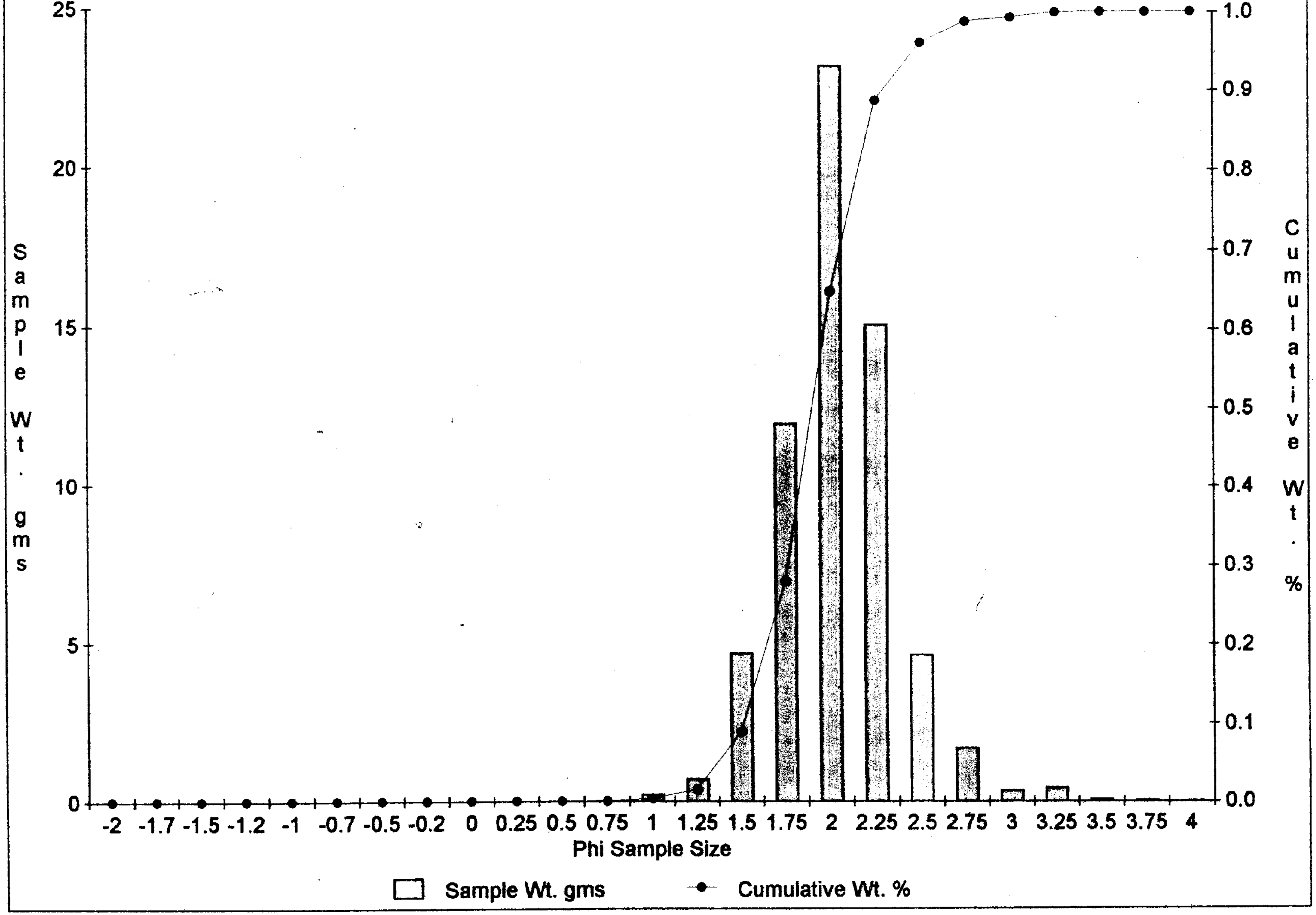
CORE (B-1)
DEPTH (8 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0	0	0	0
0.5	0	0	0	0
0.75	0.0063	0.0063	9.979E-05	9.979E-05
1	0.2004	0.2067	0.0031743	0.0032741
1.25	0.7002	0.9069	0.011091	0.014365
1.5	4.6871	5.594	0.0742423	0.0886073
1.75	11.9745	17.5685	0.1896725	0.2782798
2	23.2339	40.8024	0.3680181	0.6462979
2.25	15.1105	55.9129	0.2393458	0.8856437
2.5	4.65	60.5629	0.0736546	0.9592983
2.75	1.7049	62.2678	0.0270051	0.9863034
3	0.3353	62.6031	0.0053111	0.9916145
3.25	0.4329	63.036	0.006857	0.9984715
3.5	0.0548	63.0908	0.000868	0.9993395
3.75	0.0259	63.1167	0.0004102	0.9997497
4	0.0158	63.1325	0.0002503	1

Total Wt.	63.1325 gms	
Median Weight	31.56625 gms	
Mean Grain Size	1.9 phi	0.2679434 mm

Cum Wt. % B1

8'



Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

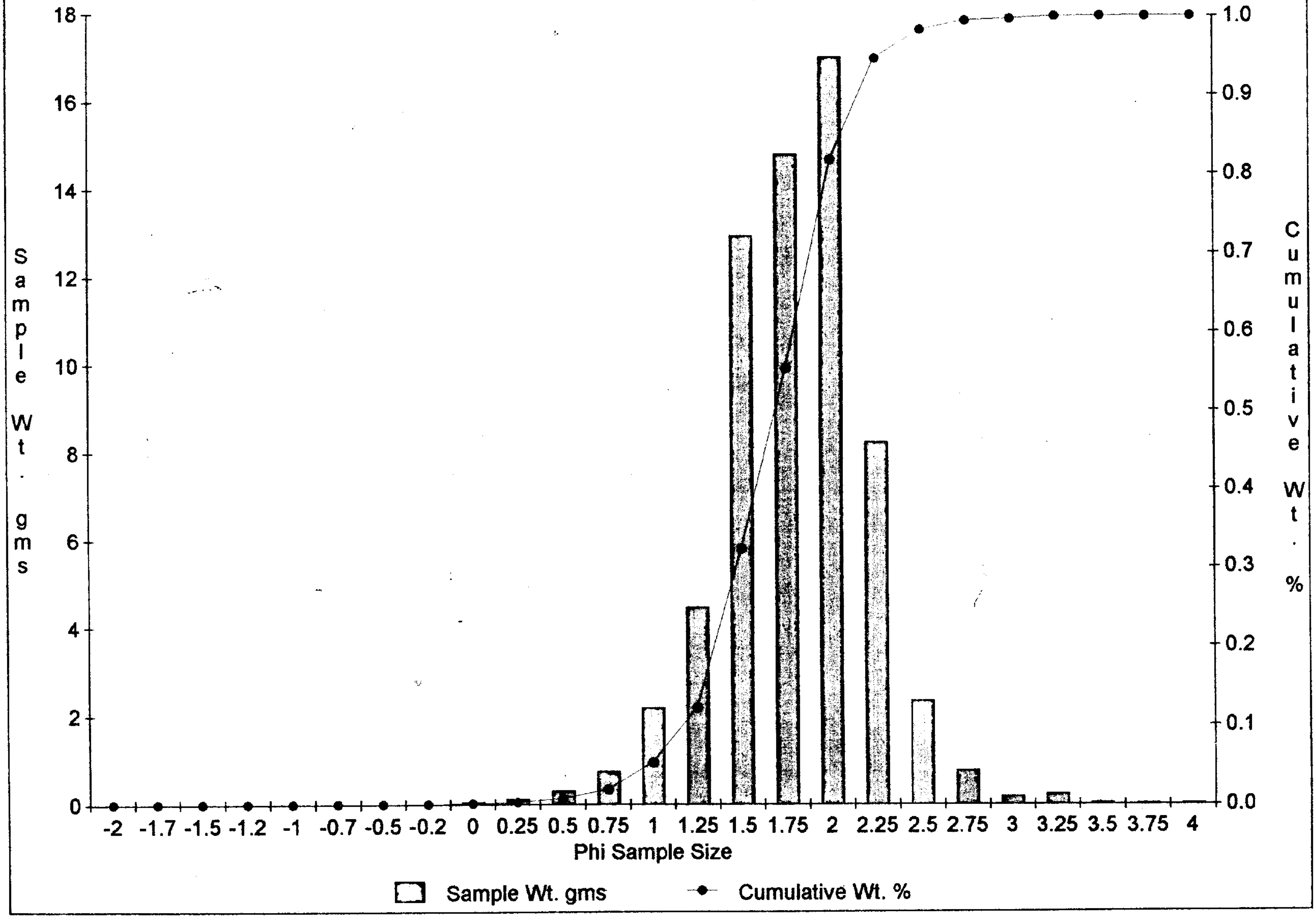
CORE (B-1)
DEPTH (8.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.0467	0.0467	0.0007247	0.0007247
0.25	0.1128	0.1595	0.0017504	0.0024751
0.5	0.2945	0.454	0.0045701	0.0070452
0.75	0.7321	1.1861	0.0113608	0.018406
1	2.18	3.3661	0.0338295	0.0522355
1.25	4.4554	7.8215	0.0691394	0.121375
1.5	12.9498	20.7713	0.2009565	0.3223315
1.75	14.8255	35.5968	0.2300639	0.5523954
2	17.0319	52.6287	0.2643031	0.8166984
2.25	8.2463	60.875	0.1279671	0.9446655
2.5	2.3322	63.2072	0.0361914	0.9808568
2.75	0.7532	63.9604	0.0116882	0.9925451
3	0.1678	64.1282	0.0026039	0.995149
3.25	0.2317	64.3599	0.0035955	0.9987446
3.5	0.0383	64.3982	0.0005943	0.9993389
3.75	0.0258	64.424	0.0004004	0.9997393
4	0.0168	64.4408	0.0002607	1

Total Wt.	64.4408 gms		
Median Weight	32.2204 gms		
Mean Grain Size	1.69 phi	0.3099269 mm	

Cum Wt. % B1

8.5'

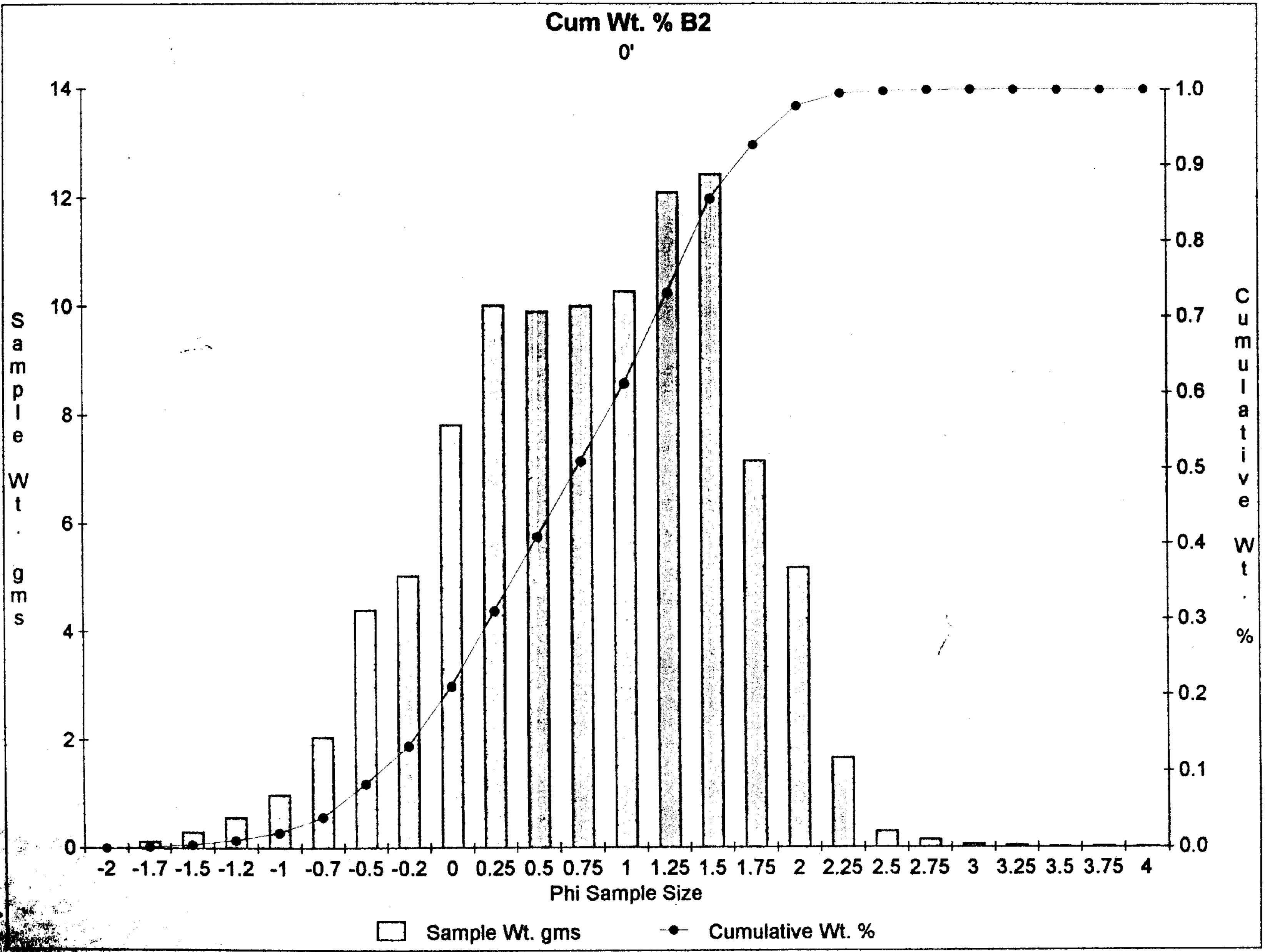

Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.1242	0.1242	0.0012379	0.0012379
-1.5	0.297	0.4212	0.0029601	0.0041979
-1.25	0.5627	0.9839	0.0098061	0.0098061
-1	0.9766	1.9605	0.0195395	0.0195395
-0.75	2.0332	3.9937	0.0202641	0.0398037
-0.5	4.3702	8.3639	0.0435561	0.0833597
-0.25	5.0015	13.3654	0.049848	0.1332078
0	7.799	21.1644	0.0777296	0.2109374
0.25	10.0019	31.1663	0.0996851	0.3106224
0.5	9.8906	41.0569	0.0985758	0.4091982
0.75	9.9981	51.055	0.0996472	0.5088454
1	10.2686	61.3236	0.1023432	0.6111885
1.25	12.1012	73.4248	0.120608	0.7317965
1.5	12.4281	85.8529	0.123866	0.8556625
1.75	7.1337	92.9866	0.0710988	0.9267613
2	5.1544	98.141	0.0513719	0.9781333
2.25	1.6452	99.7862	0.0163971	0.9945303
2.5	0.2904	100.0766	0.0028943	0.9974246
2.75	0.1429	100.2195	0.0014242	0.9988489
3	0.0532	100.2727	0.0005302	0.9993791
3.25	0.0372	100.3099	0.0003708	0.9997498
3.5	0.0098	100.3197	9.767E-05	0.9998475
3.75	0.0113	100.331	0.0001126	0.9999601
4	0.004	100.335	3.987E-05	1

Total Wt.	100.335 gms	
Median Weight	50.1675 gms	
Mean Grain Size	0.73 phi	0.6029039 mm



Cum Wt. % B2

0'

14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

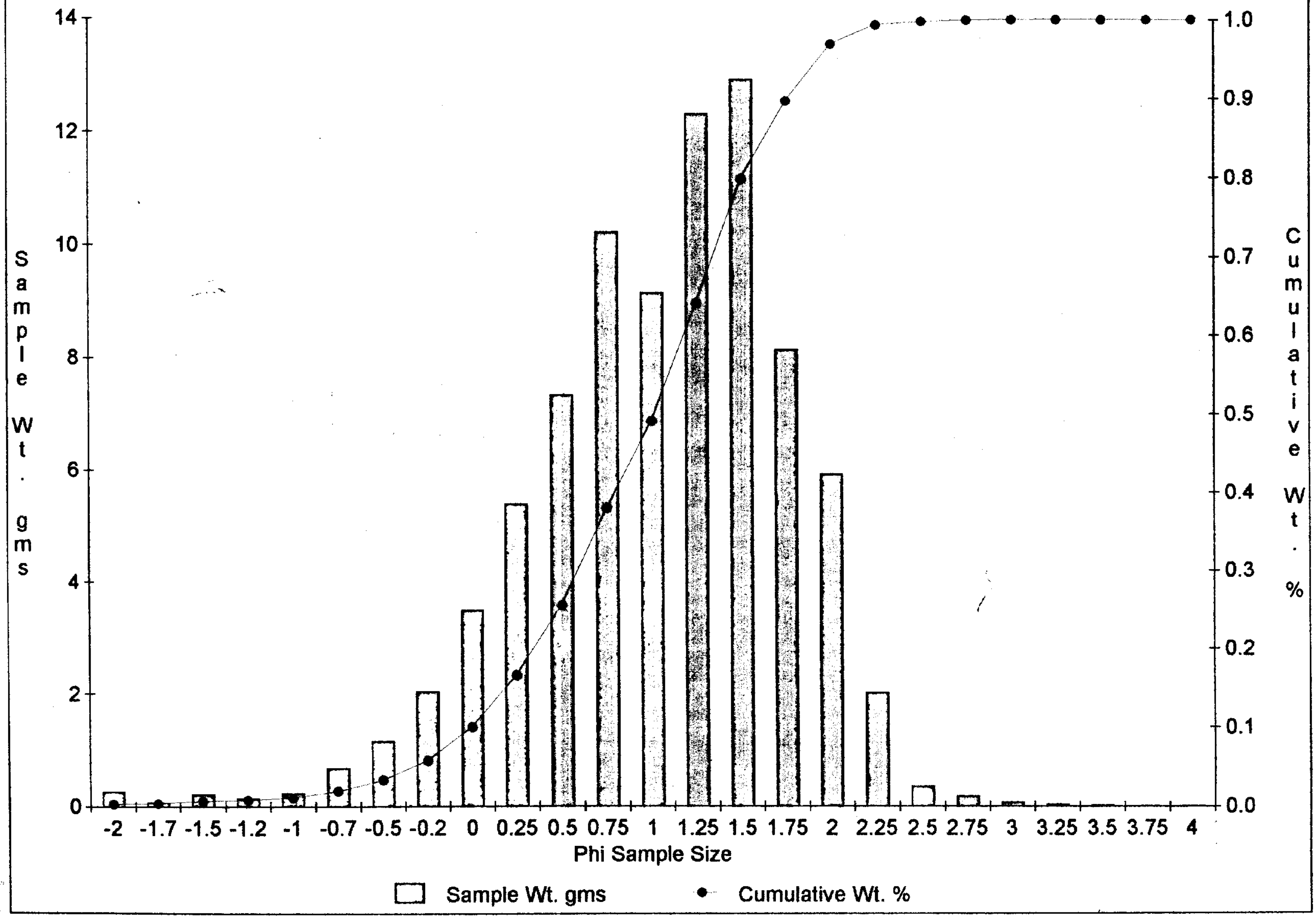
CORE (B-2)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.2579	0.2579	0.0031386	0.0031386
-1.75	0.0722	0.3301	0.0008787	0.0040173
-1.5	0.2131	0.5432	0.0025934	0.0066107
-1.25	0.1375	0.6807	0.0082841	0.0082841
-1	0.2329	0.9136	0.0111185	0.0111185
-0.75	0.6685	1.5821	0.0192542	0.0192542
-0.5	1.1472	2.7293	0.0139614	0.0332156
-0.25	2.0237	4.753	0.0246284	0.0578441
0	3.4647	8.2177	0.0421654	0.1000095
0.25	5.3735	13.5912	0.0653955	0.165405
0.5	7.3174	20.9086	0.0890528	0.2544579
0.75	10.2101	31.1187	0.124257	0.3787149
1	9.135	40.2537	0.111173	0.4898879
1.25	12.3042	52.5579	0.1497422	0.6396302
1.5	12.9156	65.4735	0.157183	0.7968132
1.75	8.1247	73.5982	0.0988777	0.8956908
2	5.9133	79.5115	0.0719649	0.9676558
2.25	2.0019	81.5134	0.0243631	0.9920189
2.5	0.3527	81.8661	0.0042924	0.9963113
2.75	0.175	82.0411	0.0021298	0.998441
3	0.0699	82.111	0.0008507	0.9992917
3.25	0.0299	82.1409	0.0003639	0.9996556
3.5	0.0112	82.1521	0.0001363	0.9997919
3.75	0.0087	82.1608	0.0001059	0.9998978
4	0.0084	82.1692	0.0001022	1

Total Wt.	82.1692 gms	
Median Weight	41.0846 gms	
Mean Grain Size	1.02 phi	0.4931164 mm

Cum Wt. % B2

0.5'

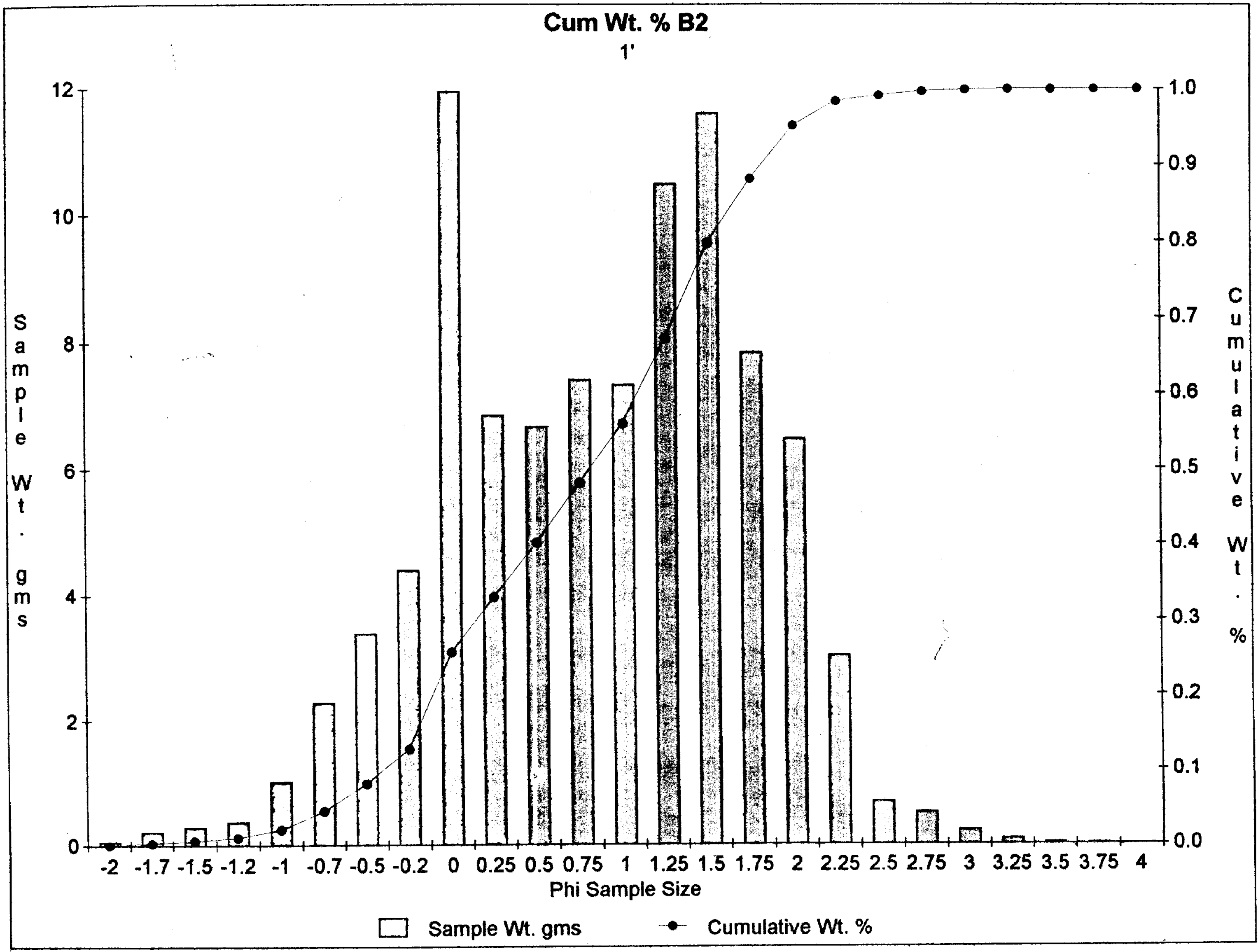

Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0553	0.0553	0.0005935	0.0005935
-1.75	0.2105	0.2658	0.0022593	0.0028528
-1.5	0.2826	0.5484	0.0030331	0.005886
-1.25	0.3655	0.9139	0.0098089	0.0098089
-1	1.0006	1.9145	0.0205483	0.0205483
-0.75	2.2697	4.1842	0.0449089	0.0449089
-0.5	3.3782	7.5624	0.0362581	0.0811671
-0.25	4.3925	11.9549	0.0471446	0.1283117
0	11.9549	23.9098	0.1283117	0.2566233
0.25	6.8535	30.7633	0.0735585	0.3301818
0.5	6.6701	37.4334	0.07159	0.4017718
0.75	7.4172	44.8506	0.0796086	0.4813804
1	7.3359	52.1865	0.078736	0.5601165
1.25	10.5058	62.6923	0.1127585	0.672875
1.5	11.6125	74.3048	0.1246367	0.7975117
1.75	7.8544	82.1592	0.0843011	0.8818128
2	6.4804	88.6396	0.069554	0.9513667
2.25	3.0246	91.6642	0.032463	0.9838297
2.5	0.6731	92.3373	0.0072244	0.9910541
2.75	0.5008	92.8381	0.0053751	0.9964291
3	0.2184	93.0565	0.0023441	0.9987732
3.25	0.0816	93.1381	0.0008758	0.999649
3.5	0.019	93.1571	0.0002039	0.999853
3.75	0.0125	93.1696	0.0001342	0.9999871
4	0.0012	93.1708	1.288E-05	1

Total Wt.	93.1708 gms	
Median Weight	46.5854 gms	
Mean Grain Size	0.81 phi	0.5703819 mm

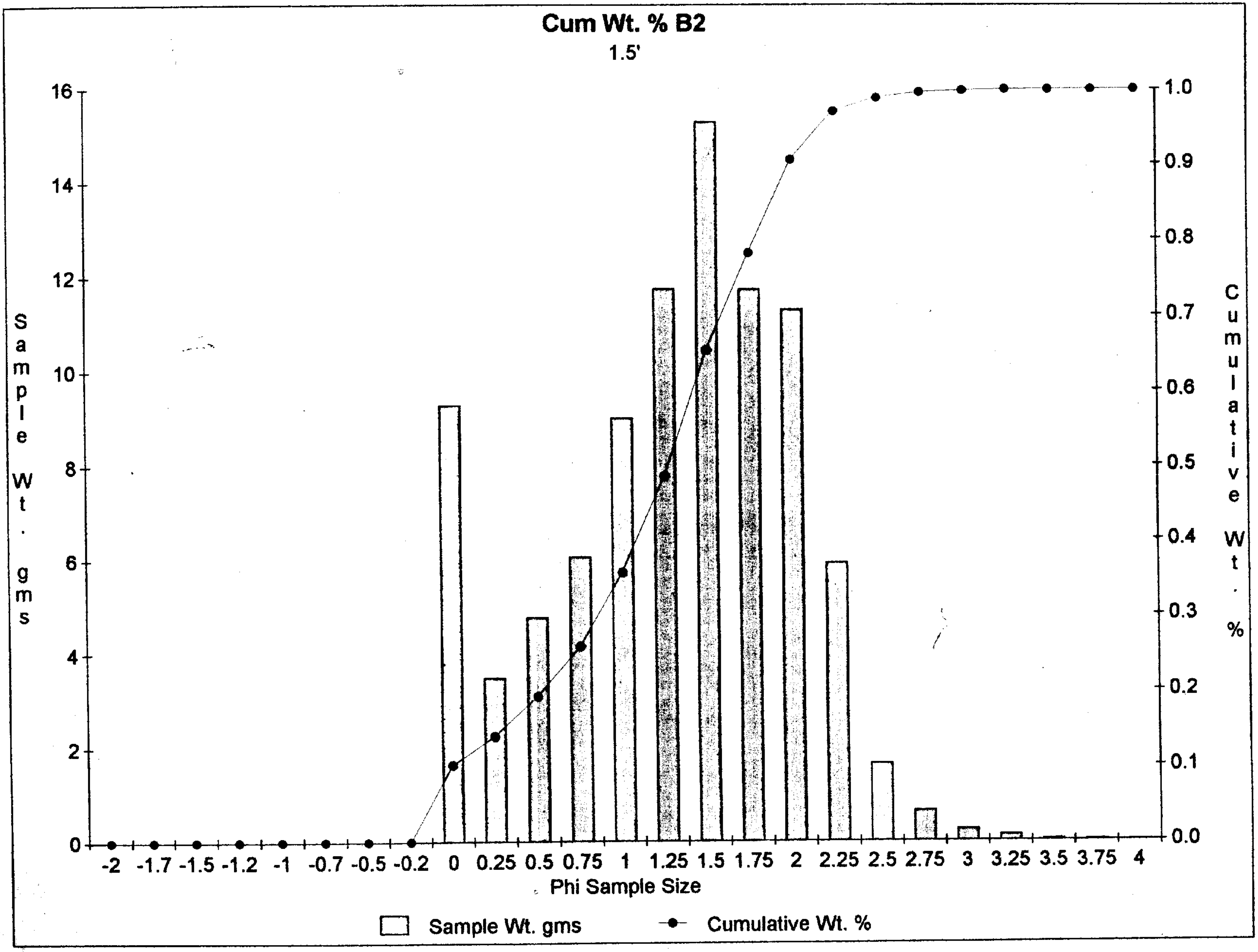

Cum Wt. % B2
1'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	9.2878	9.2878	0.1017899	0.1017899
0.25	3.4728	12.7606	0.0380603	0.1398502
0.5	4.7493	17.5099	0.0520501	0.1919003
0.75	6.0352	23.5451	0.0661429	0.2580432
1	9.0032	32.5483	0.0986708	0.356714
1.25	11.7481	44.2964	0.1287536	0.4854677
1.5	15.2911	59.5875	0.1675832	0.6530509
1.75	11.7433	71.3308	0.128701	0.7817519
2	11.3074	82.6382	0.1239238	0.9056757
2.25	5.903	88.5412	0.0646941	0.9703698
2.5	1.6451	90.1863	0.0180295	0.9883993
2.75	0.6407	90.827	0.0070218	0.9954211
3	0.244	91.071	0.0026741	0.9980952
3.25	0.1206	91.1916	0.0013217	0.999417
3.5	0.0312	91.2228	0.0003419	0.9997589
3.75	0.0169	91.2397	0.0001852	0.9999441
4	0.0051	91.2448	5.589E-05	1

Total Wt.	91.2448 gms
Median Weight	45.6224 gms
Mean Grain Size	1.27 phi 0.4146598 mm



Cum Wt. % B2

1.5'

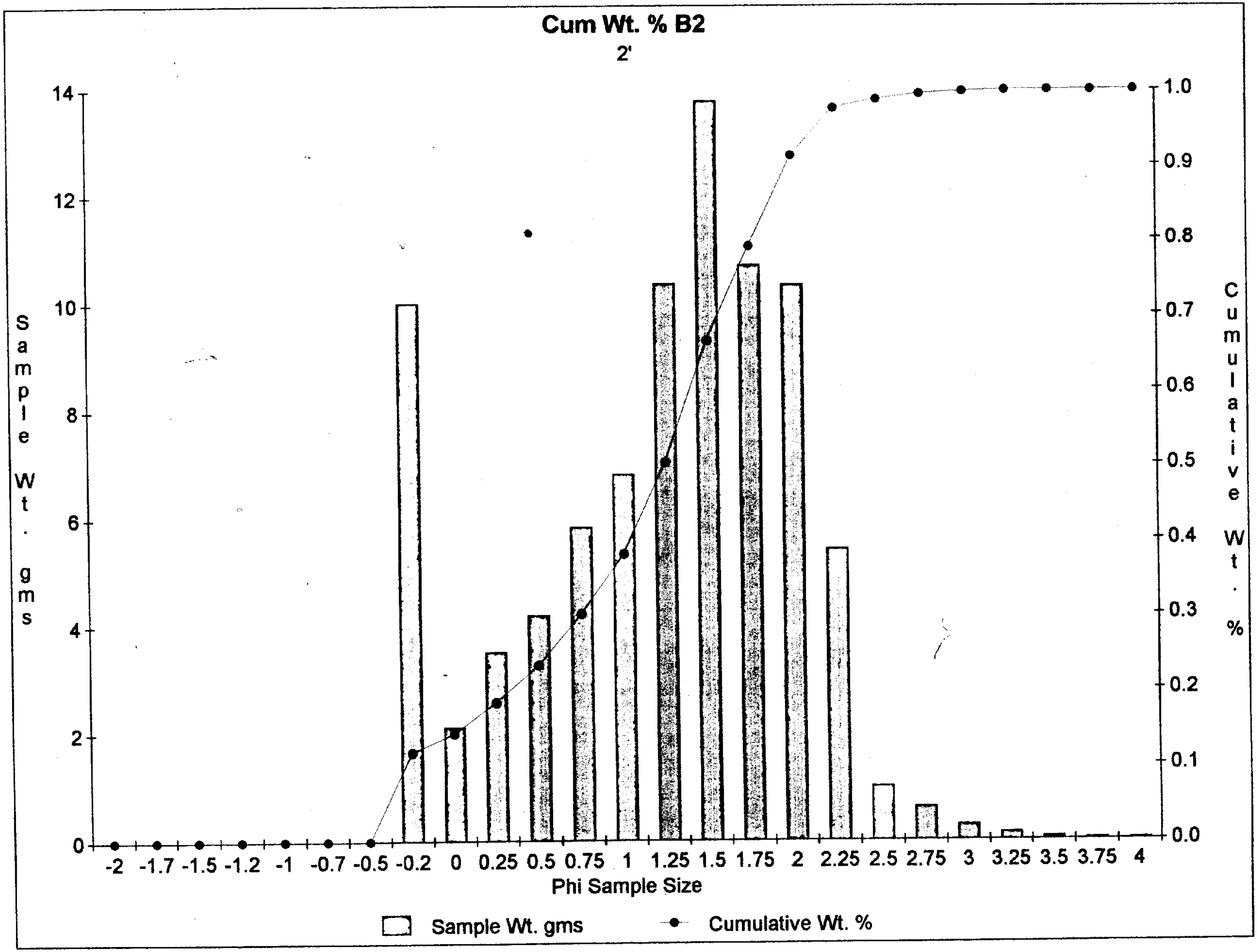
Sample Wt. gms
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	10.003	10.003	0.1174875	0.1174875
0	2.1013	12.1043	0.0246802	0.1421677
0.25	3.5025	15.6068	0.0411376	0.1833053
0.5	4.1786	19.7854	0.0490786	0.2323839
0.75	5.8271	25.6125	0.0684406	0.3008245
1	6.8087	32.4212	0.0799697	0.3807942
1.25	10.3662	42.7874	0.1217533	0.5025475
1.5	13.7864	56.5738	0.1619243	0.6644719
1.75	10.7109	67.2847	0.1258019	0.7902738
2	10.3447	77.6294	0.1215008	0.9117746
2.25	5.4178	83.0472	0.0636333	0.9754079
2.5	0.9915	84.0387	0.0116454	0.9870532
2.75	0.6035	84.6422	0.0070882	0.9941415
3	0.2756	84.9178	0.003237	0.9973785
3.25	0.1342	85.052	0.0015762	0.9989547
3.5	0.0501	85.1021	0.0005884	0.9995431
3.75	0.0254	85.1275	0.0002983	0.9998414
4	0.0135	85.141	0.0001586	1

Total Wt.	85.141 gms		
Median Weight	42.5705 gms		
Mean Grain Size	1.24 phi	0.4233727	mm


Cum Wt. % B2
2'
Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

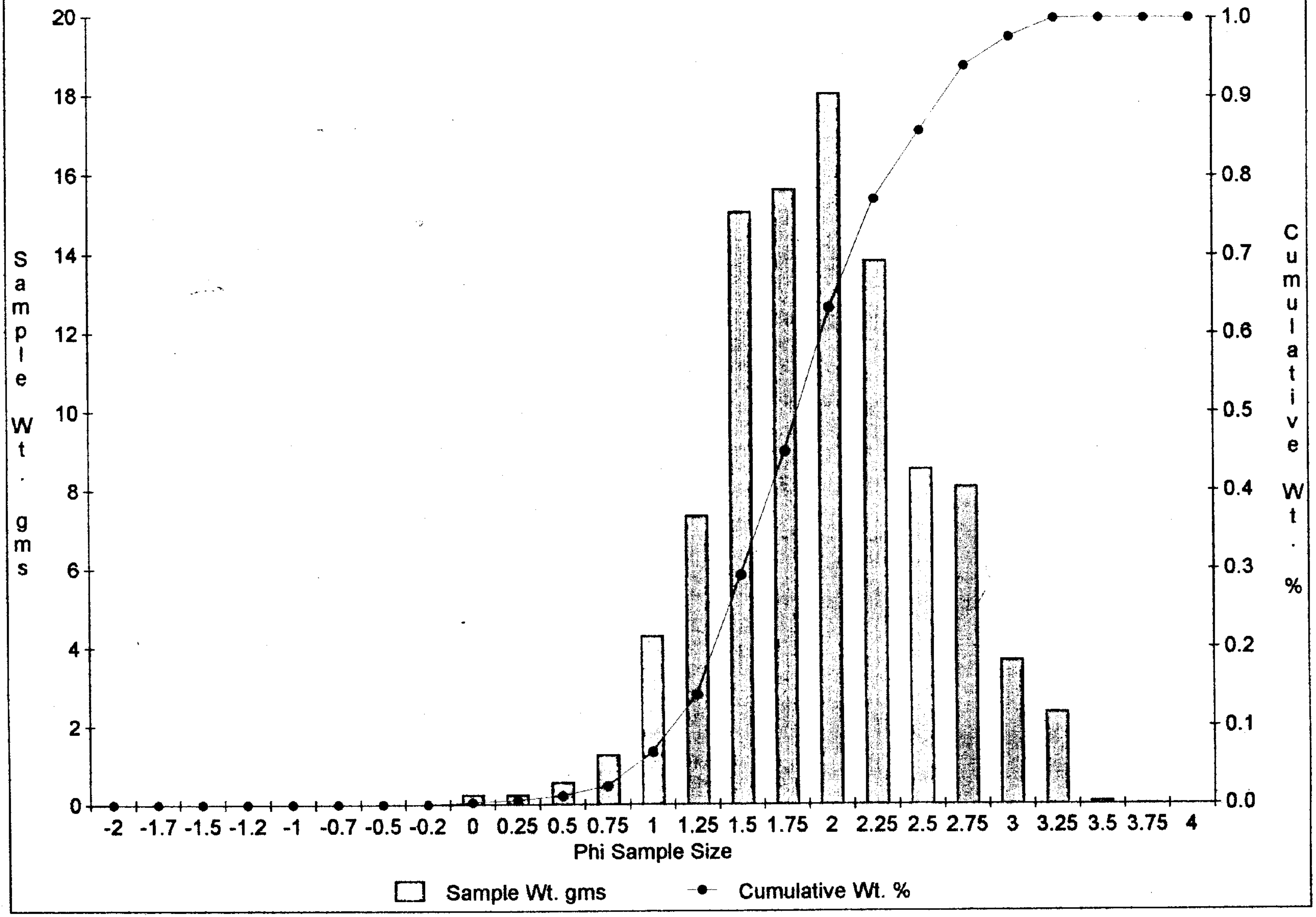
CORE (B-2)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.2437	0.2437	0.0024559	0.0024559
0.25	0.2454	0.4891	0.002473	0.0049289
0.5	0.5443	1.0334	0.0054852	0.0104141
0.75	1.2385	2.2719	0.012481	0.0228951
1	4.2747	6.5466	0.0430784	0.0659735
1.25	7.3375	13.8841	0.0739438	0.1399172
1.5	15.068	28.9521	0.151848	0.2917653
1.75	15.6513	44.6034	0.1577262	0.4494915
2	18.0598	62.6632	0.1819979	0.6314894
2.25	13.8387	76.5019	0.1394597	0.7709491
2.5	8.5417	85.0436	0.0860791	0.8570283
2.75	8.0974	93.141	0.0816017	0.9386299
3	3.6638	96.8048	0.036922	0.9755519
3.25	2.3494	99.1542	0.0236761	0.9992281
3.5	0.0676	99.2218	0.0006812	0.9999093
3.75	0.0079	99.2297	7.961E-05	0.9999889
4	0.0011	99.2308	1.109E-05	1

Total Wt.	99.2308 gms		
Median Weight	49.6154 gms		
Mean Grain Size	1.82 phi	0.283221 mm	

Cum Wt. % B2

2.5'

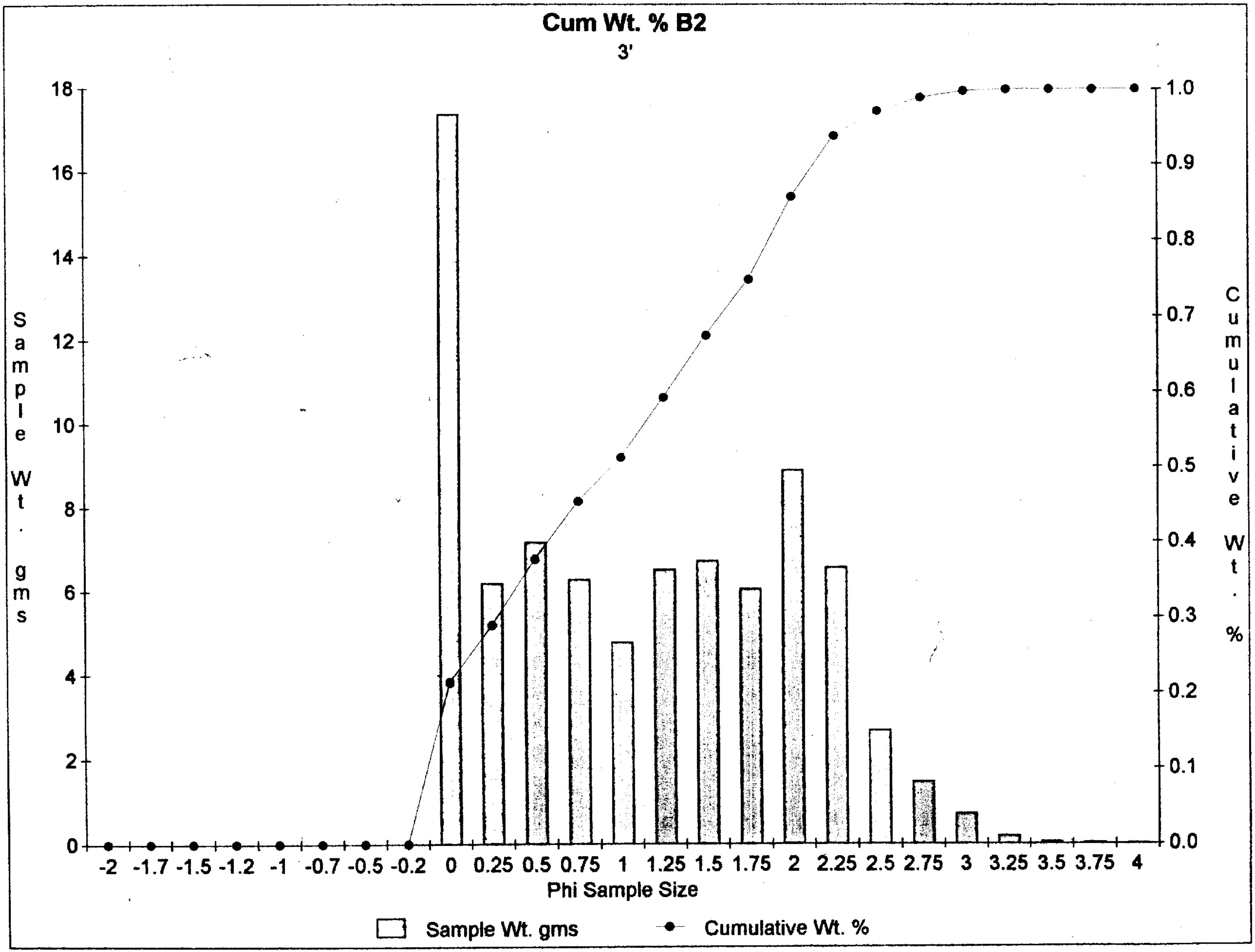

Sample Wt. gms
20
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	17.3791	17.3791	0.2127448	0.2127448
0.25	6.1783	23.5574	0.0756311	0.2883759
0.5	7.1703	30.7277	0.0877746	0.3761505
0.75	6.2708	36.9985	0.0767635	0.452914
1	4.7811	41.7796	0.0585274	0.5114414
1.25	6.5121	48.2917	0.0797173	0.5911588
1.5	6.7211	55.0128	0.0822758	0.6734345
1.75	6.0545	61.0673	0.0741156	0.7475502
2	8.9064	69.9737	0.1090269	0.8565771
2.25	6.5716	76.5453	0.0804457	0.9370228
2.5	2.6964	79.2417	0.0330078	0.9700306
2.75	1.4716	80.7133	0.0180145	0.988045
3	0.7154	81.4287	0.0087575	0.9968025
3.25	0.1766	81.6053	0.0021618	0.9989644
3.5	0.0485	81.6538	0.0005937	0.9995581
3.75	0.0246	81.6784	0.0003011	0.9998592
4	0.0115	81.6899	0.0001408	1

Total Wt.	81.6899 gms	
Median Weight	40.84495 gms	
Mean Grain Size	0.95 phi	0.5176325 mm

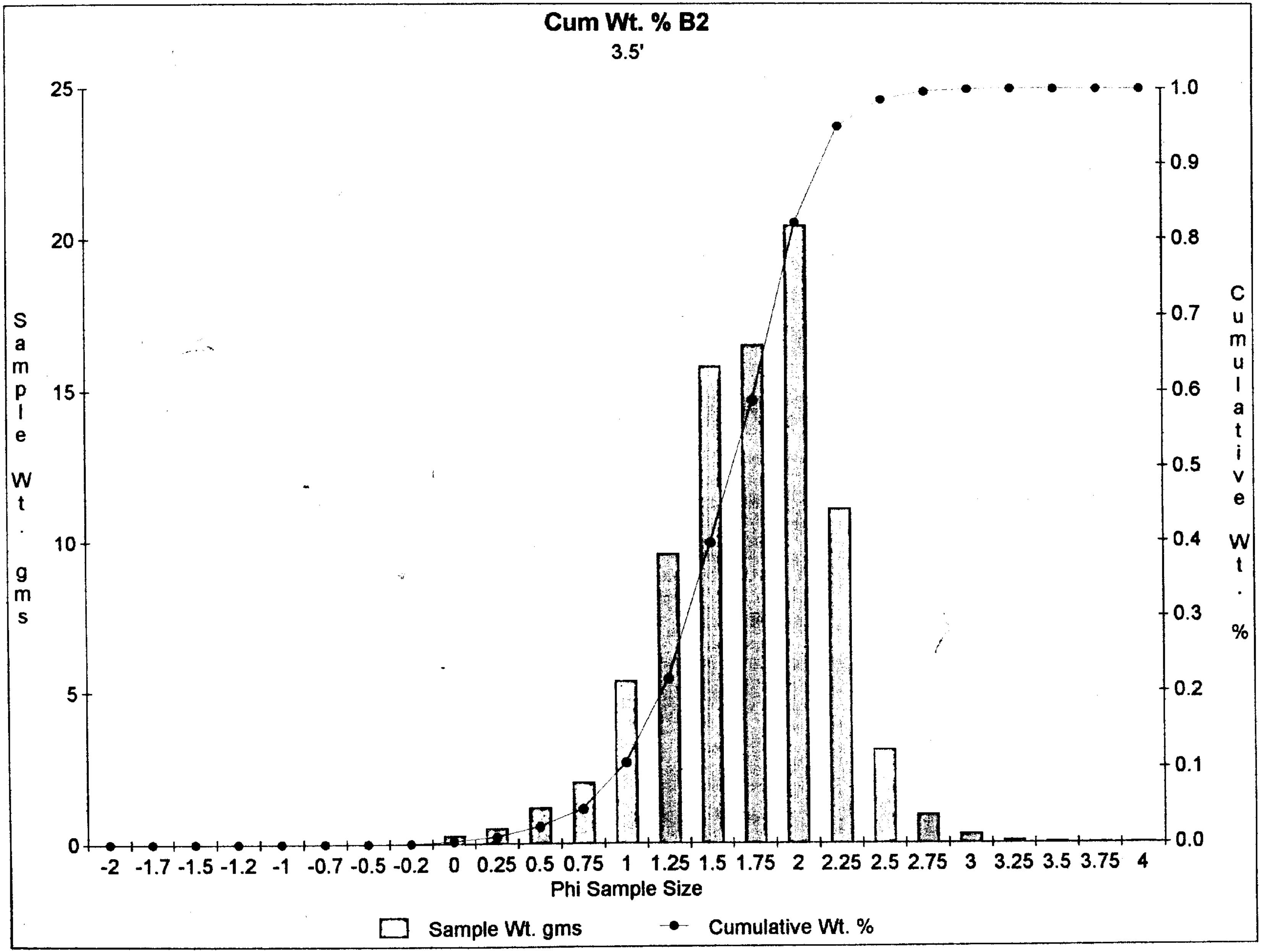

Cum Wt. % B2
3'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
2
4
6
8
10
12
14
16
18
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.2592	0.2592	0.0029787	0.0029787
0.25	0.496	0.7552	0.0057	0.0086787
0.5	1.1691	1.9243	0.0134352	0.0221139
0.75	1.9994	3.9237	0.0229769	0.0450908
1	5.3188	9.2425	0.0611232	0.106214
1.25	9.5584	18.8009	0.1098443	0.2160583
1.5	15.7984	34.5993	0.1815539	0.3976122
1.75	16.5116	51.1109	0.1897499	0.5873621
2	20.4328	71.5437	0.234812	0.8221741
2.25	11.0767	82.6204	0.1272925	0.9494666
2.5	3.0602	85.6806	0.0351676	0.9846342
2.75	0.9249	86.6055	0.0106289	0.995263
3	0.2891	86.8946	0.0033223	0.9985853
3.25	0.0801	86.9747	0.0009205	0.9995058
3.5	0.0244	86.9991	0.0002804	0.9997863
3.75	0.0146	87.0137	0.0001678	0.999954
4	0.004	87.0177	4.597E-05	1

Total Wt.	87.0177 gms	
Median Weight	43.50885 gms	
Mean Grain Size	1.63 phi	0.3230882 mm


Cum Wt. % B2
3.5'
Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

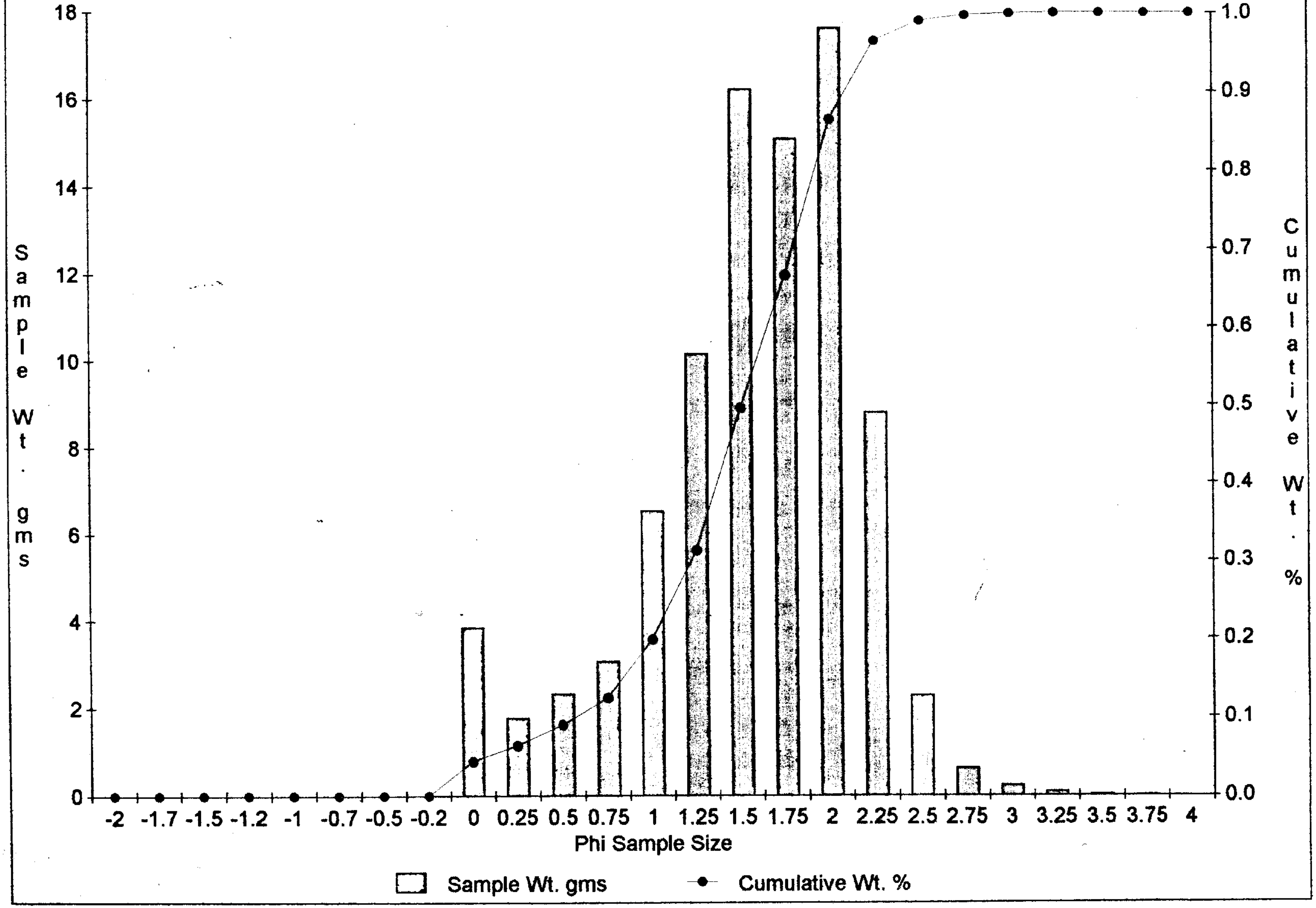
Grain Size Distribution Chart

CORE (B-2)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	3.8264	3.8264	0.0431643	0.0431643
0.25	1.7654	5.5918	0.0199149	0.0630792
0.5	2.3064	7.8982	0.0260177	0.0890969
0.75	3.0523	10.9505	0.034432	0.1235289
1	6.5182	17.4687	0.0735296	0.1970585
1.25	10.1515	27.6202	0.1145156	0.3115741
1.5	16.237	43.8572	0.1831641	0.4947381
1.75	15.1079	58.9651	0.1704271	0.6651652
2	17.6238	76.5889	0.1988081	0.8639733
2.25	8.8124	85.4013	0.0994097	0.963383
2.5	2.2798	87.6811	0.0257176	0.9891006
2.75	0.6182	88.2993	0.0069737	0.9960743
3	0.2251	88.5244	0.0025393	0.9986136
3.25	0.0943	88.6187	0.0010638	0.9996774
3.5	0.0183	88.637	0.0002064	0.9998838
3.75	0.0093	88.6463	0.0001049	0.9999887
4	0.001	88.6473	1.128E-05	1

Total Wt. 88.6473 gms
Median Weight 44.32365 gms
Mean Grain Size 1.51 phi 0.3511112 mm

Cum Wt. % B2
4'

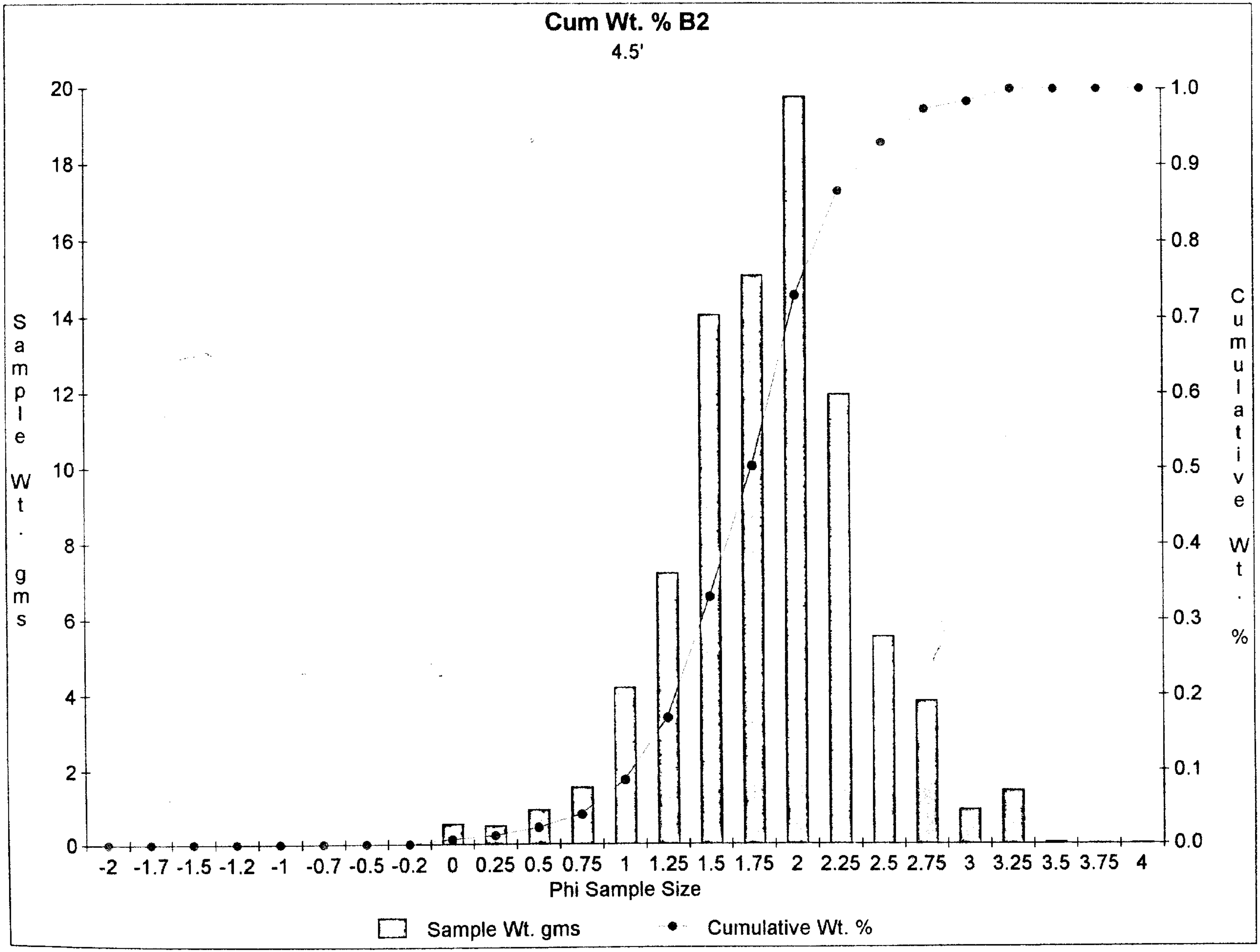

Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.5251	0.5251	0.0059991	0.0059991
0.25	0.4776	1.0027	0.0054564	0.0114555
0.5	0.9067	1.9094	0.0103587	0.0218142
0.75	1.5285	3.4379	0.0174625	0.0392767
1	4.1903	7.6282	0.0478726	0.0871493
1.25	7.2319	14.8601	0.0826217	0.1697709
1.5	14.0601	28.9202	0.1606312	0.3304022
1.75	15.0966	44.0168	0.1724728	0.502875
2	19.7832	63.8	0.2260154	0.7288905
2.25	11.963	75.763	0.1366727	0.8655631
2.5	5.5381	81.3011	0.0632707	0.9288338
2.75	3.8305	85.1316	0.043762	0.9725958
3	0.9064	86.038	0.0103553	0.982951
3.25	1.4386	87.4766	0.0164355	0.9993865
3.5	0.0384	87.515	0.0004387	0.9998252
3.75	0.0102	87.5252	0.0001165	0.9999417
4	0.0051	87.5303	5.827E-05	1

Total Wt.	87.5303 gms		
Median Weight	43.76515 gms		
Mean Grain Size	1.75 phi	0.2973018	mm



Cum Wt. % B2

4.5'

Sample Wt. gms
20
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

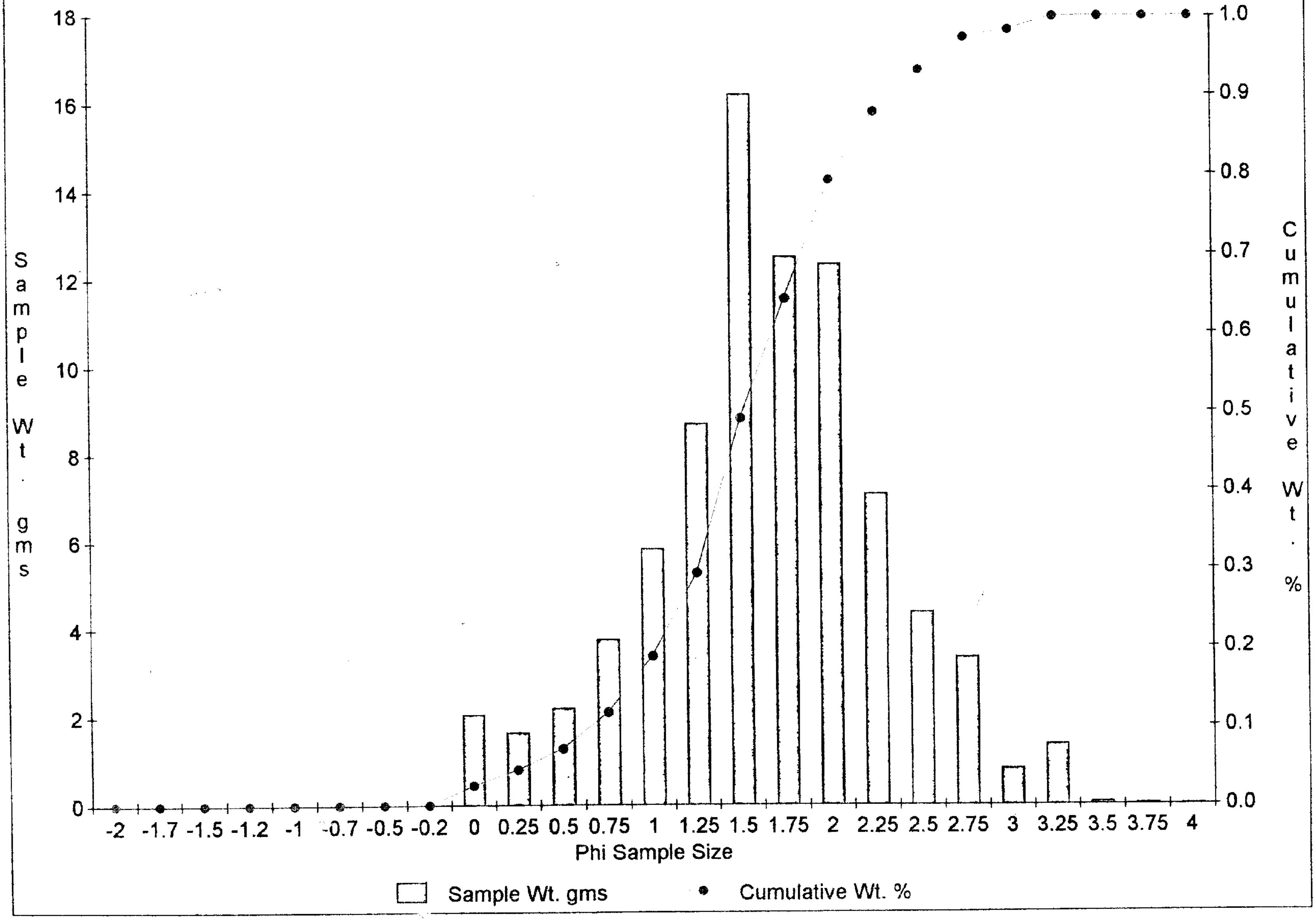
CORE (B-2)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	2.0422	2.0422	0.0247985	0.0247985
0.25	1.6447	3.6869	0.0199717	0.0447702
0.5	2.1939	5.8808	0.0266406	0.0714109
0.75	3.7686	9.6494	0.0457623	0.1171732
1	5.8393	15.4887	0.0709069	0.1880801
1.25	8.6999	24.1886	0.1056434	0.2937235
1.5	16.2174	40.406	0.1969288	0.4906523
1.75	12.5209	52.9269	0.152042	0.6426943
2	12.3605	65.2874	0.1500942	0.7927885
2.25	7.0915	72.3789	0.0861125	0.878901
2.5	4.3695	76.7484	0.0530591	0.93196
2.75	3.3433	80.0917	0.0405979	0.9725579
3	0.8177	80.9094	0.0099294	0.9824873
3.25	1.3672	82.2766	0.016602	0.9990893
3.5	0.053	82.3296	0.0006436	0.9997329
3.75	0.0175	82.3471	0.0002125	0.9999454
4	0.0045	82.3516	5.464E-05	1

Total Wt.	82.3516 gms		
Median Weight	41.1758 gms		
Mean Grain Size	1.52 phi	0.3486859 mm	

Cum Wt. % B2

5'



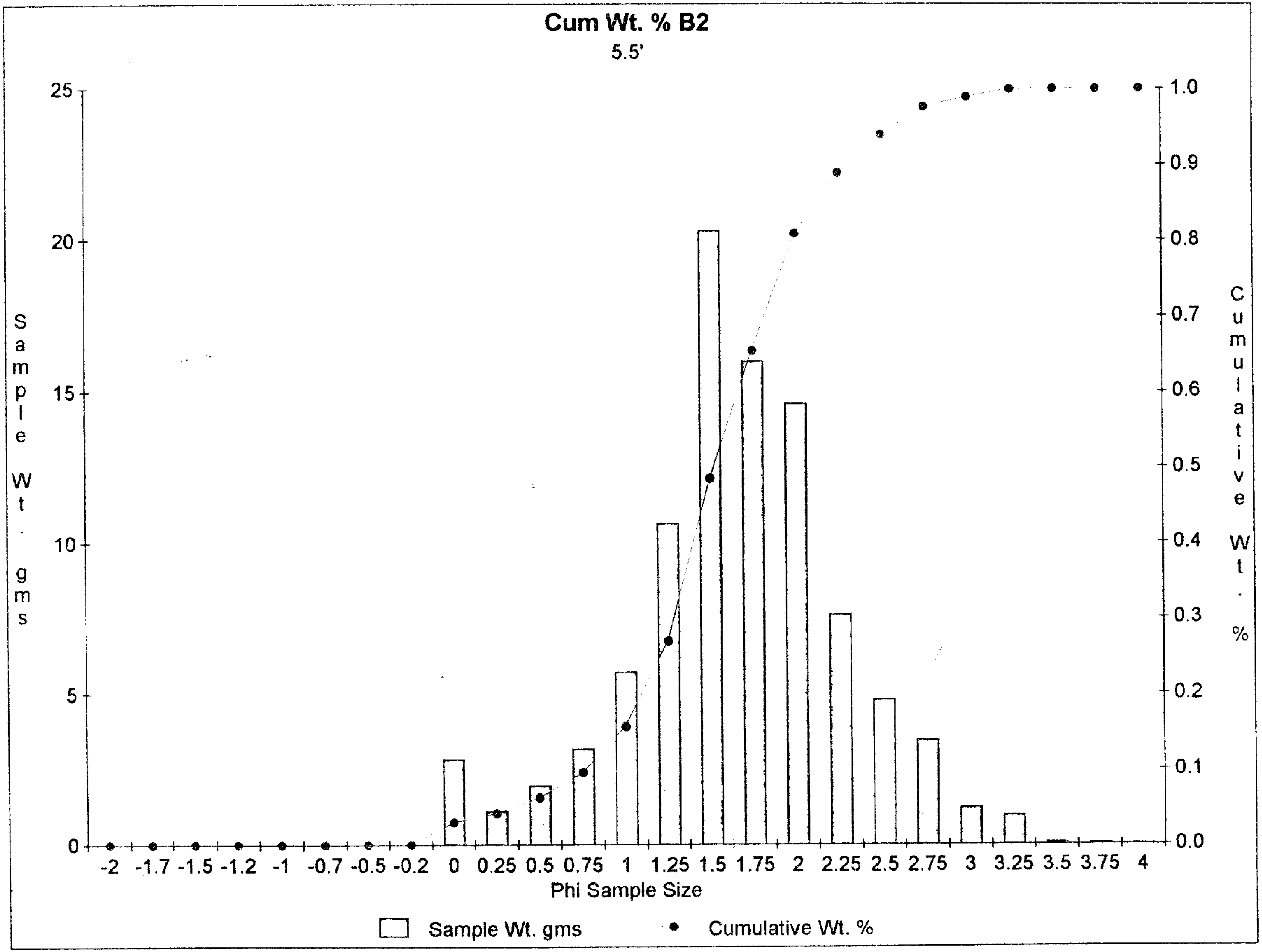
Sample Wt. gms
0
2
4
6
8
10
12
14
16
18
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-2)
DEPTH (5.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	2.8176	2.8176	0.0299123	0.0299123
0.25	1.1037	3.9213	0.0117171	0.0416294
0.5	1.9239	5.8452	0.0204246	0.062054
0.75	3.1552	9.0004	0.0334963	0.0955503
1	5.6743	14.6747	0.0602397	0.15579
1.25	10.6051	25.2798	0.1125862	0.2683762
1.5	20.2951	45.5749	0.2154574	0.4838336
1.75	15.9824	61.5573	0.1696728	0.6535064
2	14.5882	76.1455	0.1548717	0.8083781
2.25	7.5714	83.7169	0.0803797	0.8887578
2.5	4.7652	88.4821	0.0505885	0.9393463
2.75	3.4367	91.9188	0.0364848	0.9758311
3	1.2082	93.127	0.0128265	0.9886576
3.25	0.9591	94.0861	0.010182	0.9988396
3.5	0.0593	94.1454	0.0006295	0.9994692
3.75	0.032	94.1774	0.0003397	0.9998089
4	0.018	94.1954	0.0001911	1

Total Wt.	94.1954 gms	
Median Weight	47.0977 gms	
Mean Grain Size	1.52 phi	0.3486859 mm



Cum Wt. % B2

5.5'

25
20
15
10
5
0
Sample Wt. gms
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

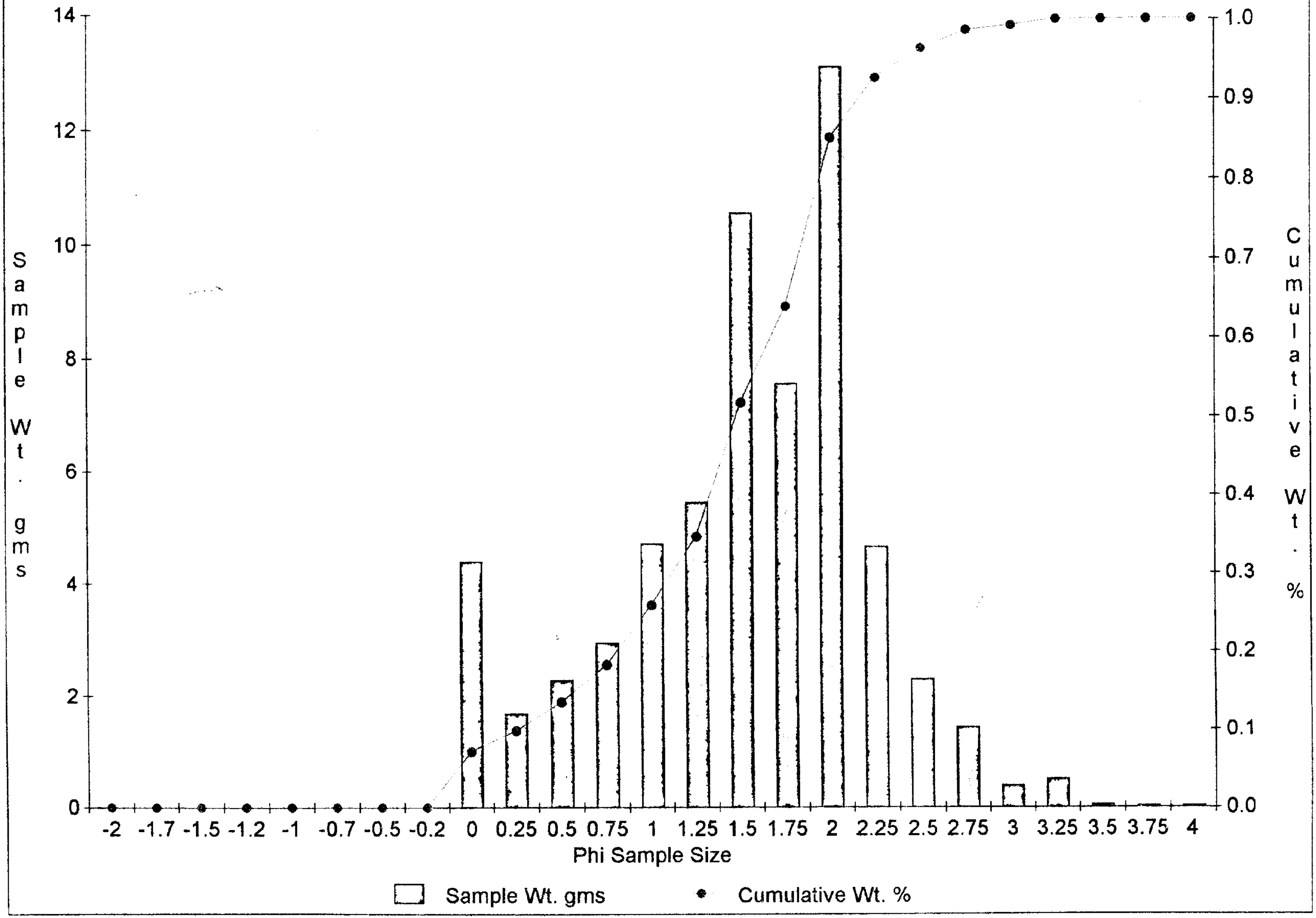
CORE (B-2)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	4.3685	4.3685	0.0705853	0.0705853
0.25	1.666	6.0345	0.0269189	0.0975041
0.5	2.255	8.2895	0.0364358	0.1339399
0.75	2.9222	11.2117	0.0472163	0.1811562
1	4.6883	15.9	0.0757525	0.2569087
1.25	5.4317	21.3317	0.0877642	0.3446729
1.5	10.5614	31.8931	0.1706488	0.5153216
1.75	7.5461	39.4392	0.1219282	0.6372498
2	13.1211	52.5603	0.2120078	0.8492576
2.25	4.6462	57.2065	0.0750723	0.9243299
2.5	2.2813	59.4878	0.0368607	0.9611906
2.75	1.4241	60.9119	0.0230103	0.9842009
3	0.3816	61.2935	0.0061658	0.9903667
3.25	0.4985	61.792	0.0080547	0.9984214
3.5	0.0456	61.8376	0.0007368	0.9991582
3.75	0.0295	61.8671	0.0004767	0.9996348
4	0.0226	61.8897	0.0003652	1

Total Wt.	61.8897	gms		
Median Weight	30.94485	gms		
Mean Grain Size	1.48	phi	0.3584888	mm

Cum Wt. % B2

6'

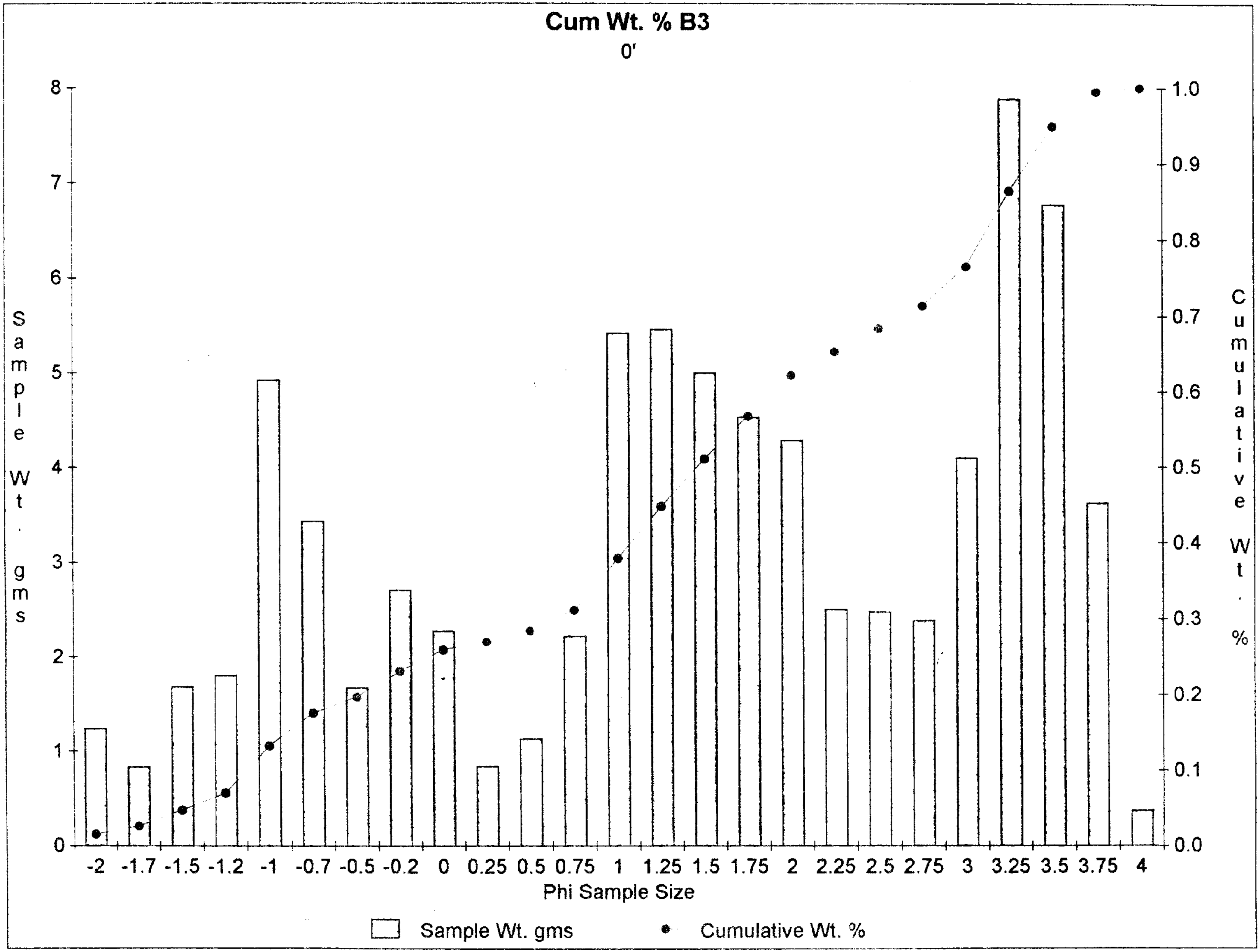

14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	1.2379	1.2379	0.0155906	0.0155906
-1.75	0.8319	2.0698	0.0104773	0.0260678
-1.5	1.6804	3.7502	0.0211636	0.0472314
-1.25	1.794	5.5442	0.0225943	0.0698257
-1	4.916	10.4602	0.0619139	0.1317396
-0.75	3.4249	13.8851	0.0431344	0.174874
-0.5	1.6612	15.5463	0.0209218	0.1957957
-0.25	2.6972	18.2435	0.0339695	0.2297653
0	2.2591	20.5026	0.0284519	0.2582172
0.25	0.8335	21.3361	0.0104974	0.2687146
0.5	1.119	22.4551	0.0140931	0.2828077
0.75	2.2046	24.6597	0.0277655	0.3105732
1	5.4162	30.0759	0.0682136	0.3787868
1.25	5.4543	35.5302	0.0686934	0.4474802
1.5	4.9969	40.5271	0.0629328	0.510413
1.75	4.5267	45.0538	0.0570109	0.5674239
2	4.2797	49.3335	0.0539001	0.621324
2.25	2.492	51.8255	0.0313852	0.6527092
2.5	2.464	54.2895	0.0310325	0.6837417
2.75	2.3718	56.6613	0.0298713	0.713613
3	4.0953	60.7566	0.0515777	0.7651907
3.25	7.8866	68.6432	0.0993267	0.8645174
3.5	6.7722	75.4154	0.0852915	0.9498089
3.75	3.6151	79.0305	0.0455299	0.9953388
4	0.3701	79.4006	0.0046612	1

Total Wt.	79.4006	gms	
Median Weight	39.7003	gms	
Mean Grain Size	1.46	phi	0.3634931 mm


Cum Wt. % B3
0'
Sample Wt. gms
0
1
2
3
4
5
6
7
8
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

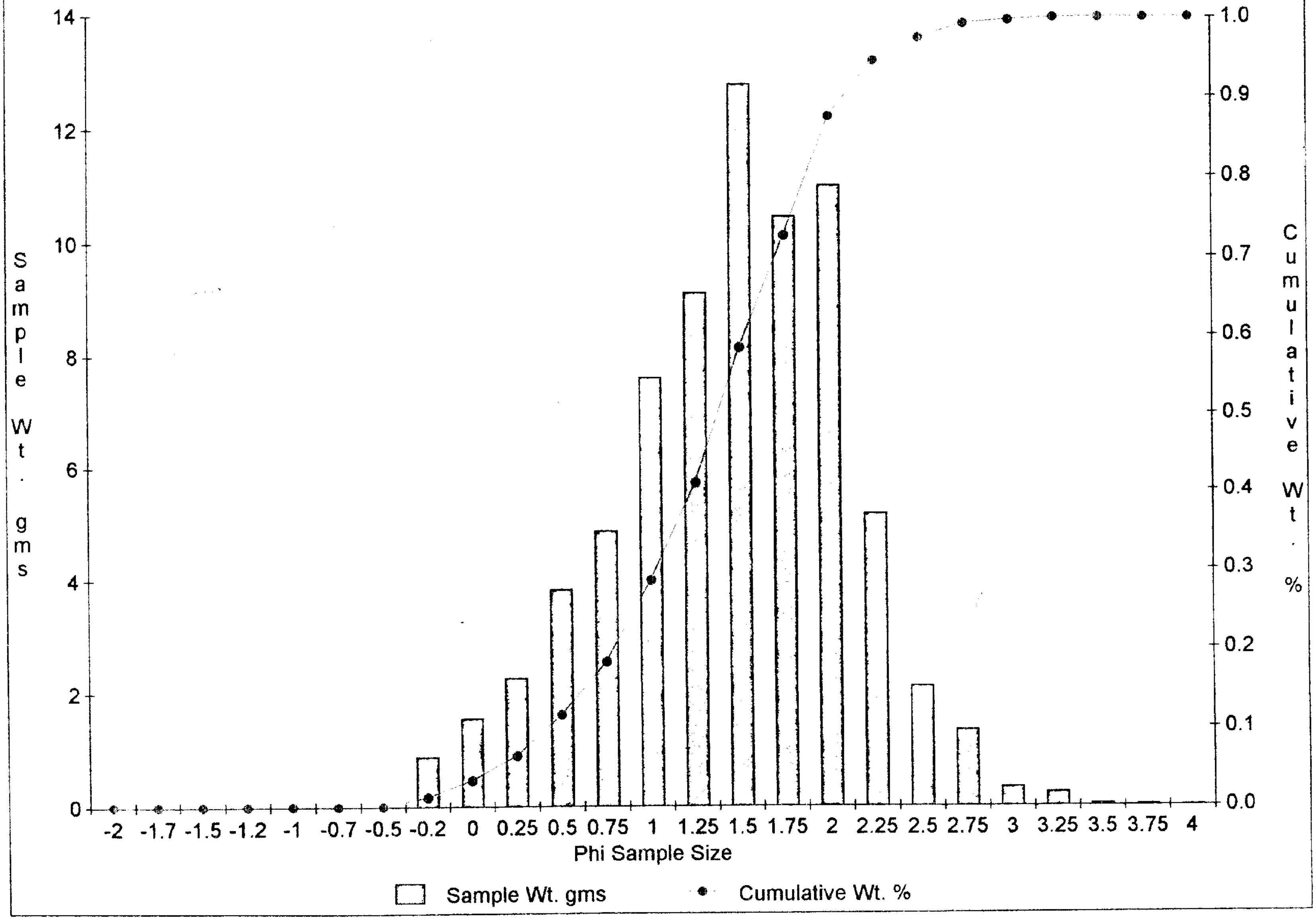
CORE (B-3)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.8801	0.8801	0.0119364	0.0119364
0	1.5573	2.4374	0.021121	0.0330575
0.25	2.2663	4.7037	0.0307369	0.0637944
0.5	3.8277	8.5314	0.0519135	0.1157079
0.75	4.8719	13.4033	0.0660756	0.1817835
1	7.6168	21.0201	0.1033036	0.2850871
1.25	9.1338	30.1539	0.123878	0.4089651
1.5	12.8061	42.96	0.173684	0.5826491
1.75	10.4862	53.4462	0.1422201	0.7248692
2	11.0312	64.4774	0.1496117	0.8744809
2.25	5.1748	69.6522	0.0701837	0.9446646
2.5	2.1127	71.7649	0.0286537	0.9733183
2.75	1.3432	73.1081	0.0182173	0.9915356
3	0.3254	73.4335	0.0044133	0.9959489
3.25	0.2421	73.6756	0.0032835	0.9992324
3.5	0.0347	73.7103	0.0004706	0.999703
3.75	0.0159	73.7262	0.0002156	0.9999186
4	0.006	73.7322	8.138E-05	1

Total Wt.	73.7322 gms	
Median Weight	36.8661 gms	
Mean Grain Size	1.38 phi	0.3842188 mm

Cum Wt. % B3

0.5'

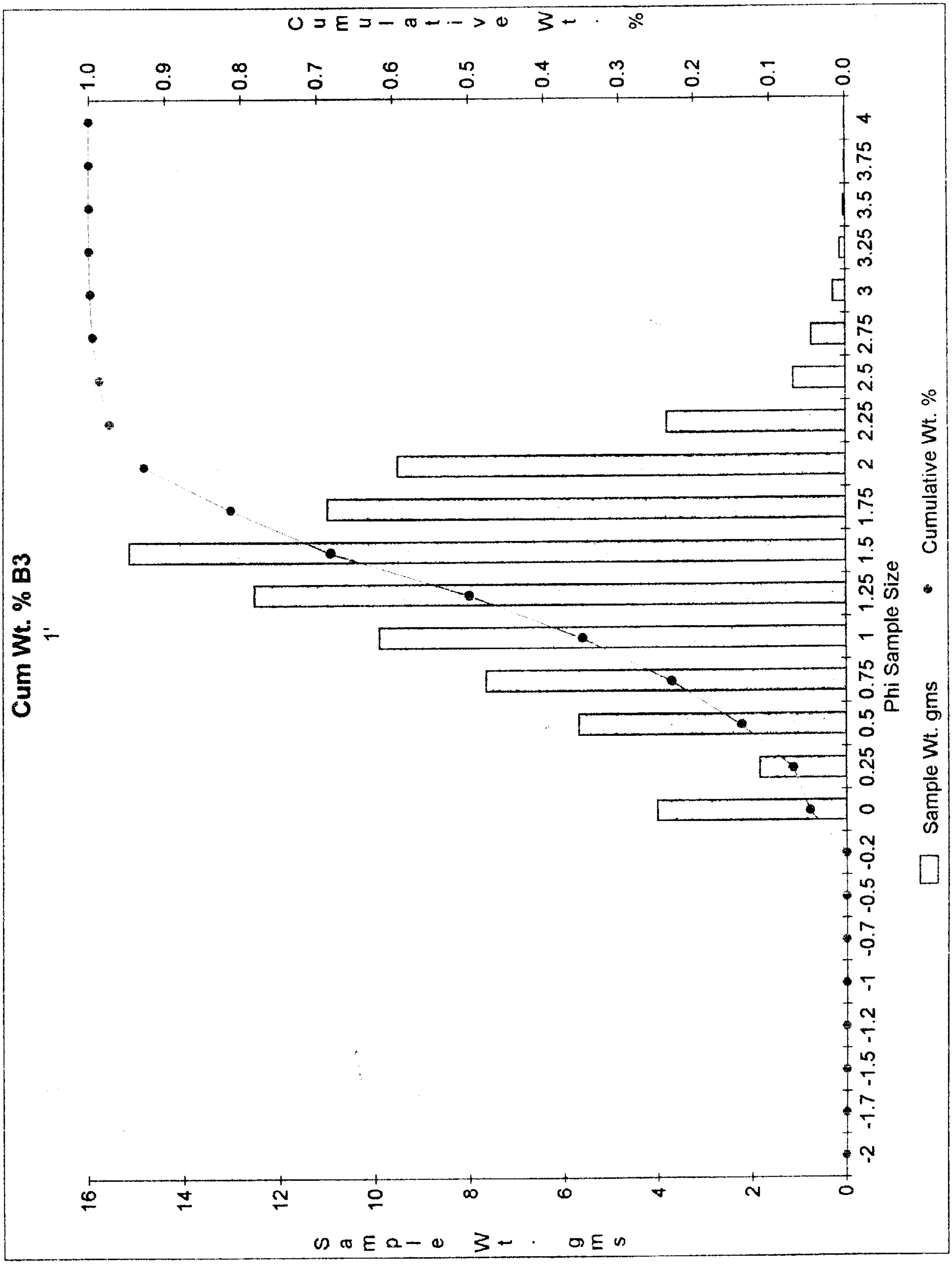

14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	3.9889	3.9889	0.0479641	0.0479641
0.25	1.827	5.8159	0.0219686	0.0699327
0.5	5.6555	11.4714	0.068004	0.1379368
0.75	7.6388	19.1102	0.091852	0.2297888
1	9.8758	28.986	0.1187506	0.3485394
1.25	12.5184	41.5044	0.1505263	0.4990657
1.5	15.1498	56.6542	0.1821673	0.681233
1.75	10.969	67.6232	0.1318957	0.8131287
2	9.5031	77.1263	0.1142691	0.9273978
2.25	3.7727	80.899	0.0453645	0.9727623
2.5	1.0985	81.9975	0.0132088	0.9859711
2.75	0.7209	82.7184	0.0086684	0.9946395
3	0.2687	82.9871	0.003231	0.9978705
3.25	0.1237	83.1108	0.0014874	0.9993579
3.5	0.037	83.1478	0.0004449	0.9998028
3.75	0.0132	83.161	0.0001587	0.9999615
4	0.0032	83.1642	3.848E-05	1

Total Wt.	83.1642	gms	
Median Weight	41.5821	gms	
Mean Grain Size	1.25	phi	0.4204482 mm

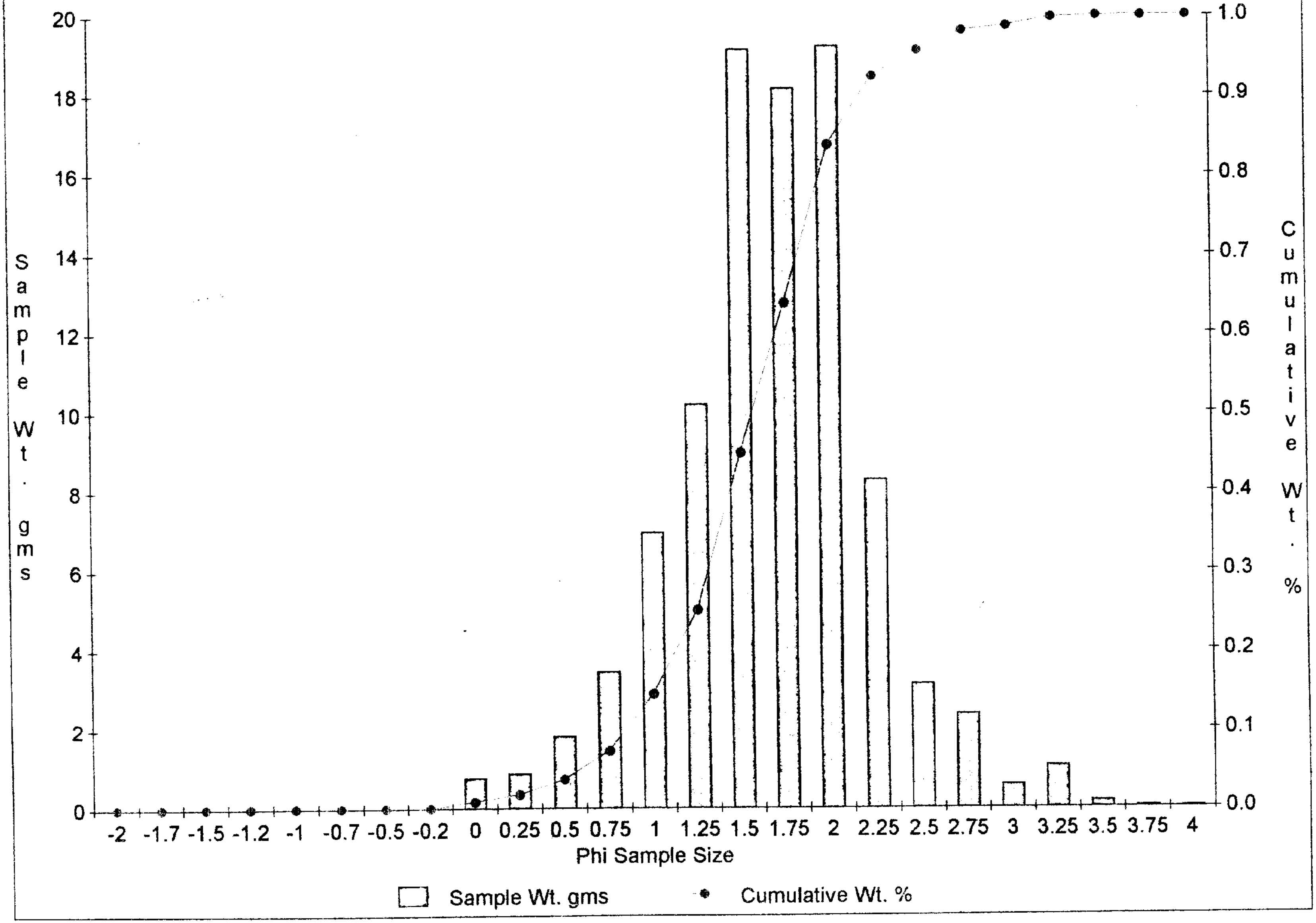

Cum Wt. % B3
1'
Sample Wt. gms
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.7581	0.7581	0.0078762	0.0078762
0.25	0.8717	1.6298	0.0090564	0.0169327
0.5	1.8184	3.4482	0.0188921	0.0358247
0.75	3.4374	6.8856	0.0357125	0.0715373
1	6.9594	13.845	0.072304	0.1438413
1.25	10.1919	24.0369	0.1058878	0.2497291
1.5	19.1526	43.1895	0.1989841	0.4487132
1.75	18.1732	61.3627	0.1888087	0.637522
2	19.233	80.5957	0.1998194	0.8373414
2.25	8.305	88.9007	0.086284	0.9236254
2.5	3.1328	92.0335	0.0325479	0.9561733
2.75	2.376	94.4095	0.0246852	0.9808586
3	0.5772	94.9867	0.0059968	0.9868553
3.25	1.0416	96.0283	0.0108216	0.9976769
3.5	0.1619	96.1902	0.001682	0.999359
3.75	0.039	96.2292	0.0004052	0.9997642
4	0.0227	96.2519	0.0002358	1

Total Wt.	96.2519 gms	
Median Weight	48.12595 gms	
Mean Grain Size	1.57 phi	0.3368084 mm



Cum Wt. % B3

1.5'

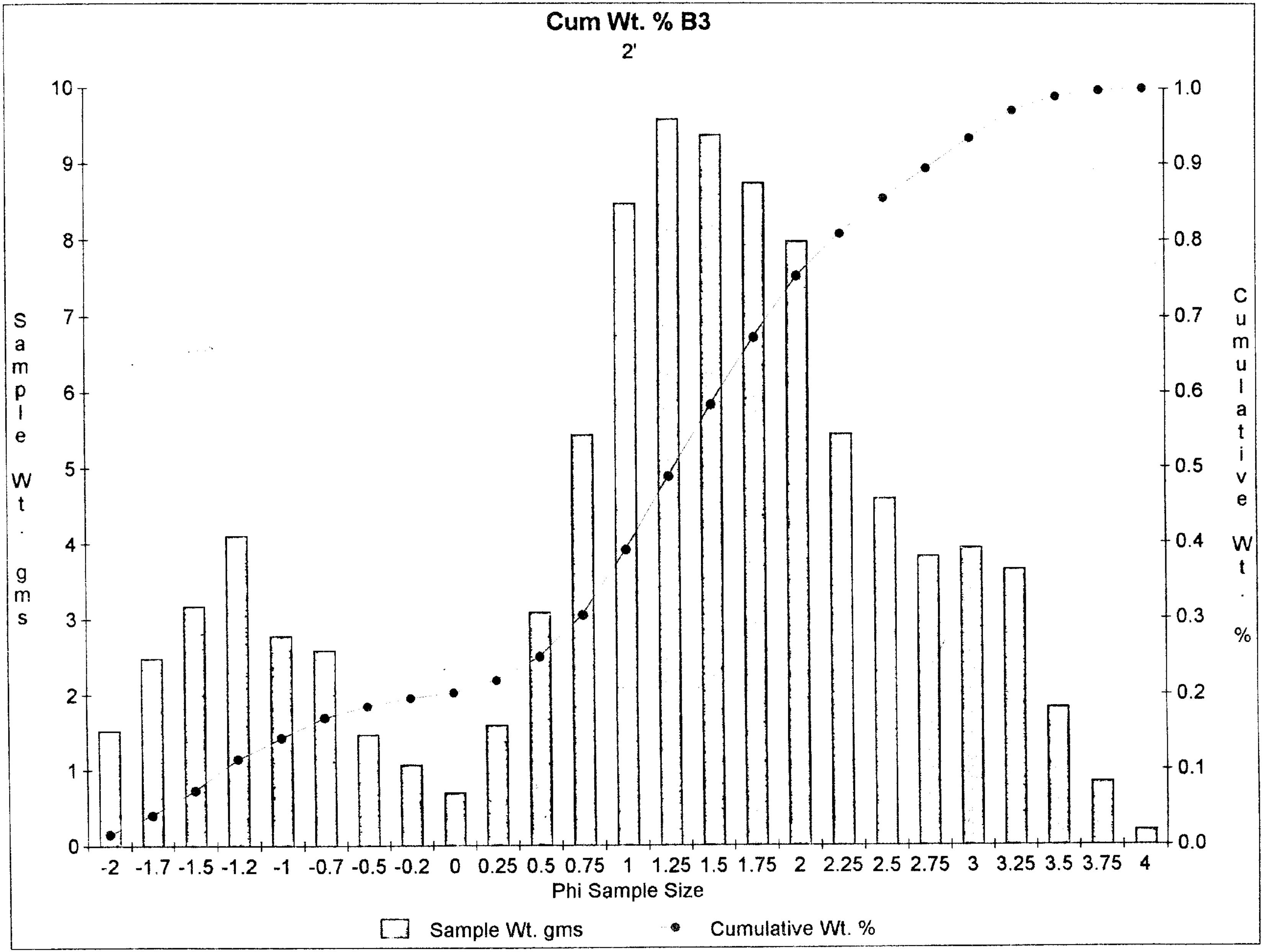
Sample Wt. gms
20
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	1.5299	1.5299	0.0155471	0.0155471
-1.75	2.482	4.0119	0.0252226	0.0407697
-1.5	3.1662	7.1781	0.0321755	0.0729452
-1.25	4.1027	11.2808	0.0416924	0.1146376
-1	2.7682	14.049	0.028131	0.1427686
-0.75	2.5753	16.6243	0.0261707	0.1689393
-0.5	1.4649	18.0892	0.0148866	0.1838259
-0.25	1.0618	19.151	0.0107902	0.1946161
0	0.6867	19.8377	0.0069784	0.2015944
0.25	1.5857	21.4234	0.0161142	0.2177086
0.5	3.0787	24.5021	0.0312863	0.248995
0.75	5.432	29.9341	0.055201	0.304196
1	8.4765	38.4106	0.0861398	0.3903358
1.25	9.5879	47.9985	0.097434	0.4877698
1.5	9.3761	57.3746	0.0952817	0.5830515
1.75	8.7545	66.1291	0.0889649	0.6720164
2	7.9866	74.1157	0.0811613	0.7531777
2.25	5.445	79.5607	0.0553331	0.8085108
2.5	4.5779	84.1386	0.0465215	0.8550323
2.75	3.8176	87.9562	0.0387952	0.8938275
3	3.9341	91.8903	0.0399791	0.9338066
3.25	3.6475	95.5378	0.0370666	0.9708731
3.5	1.8306	97.3684	0.0186029	0.989476
3.75	0.8369	98.2053	0.0085047	0.9979808
4	0.1987	98.404	0.0020192	1

Total Wt.	98.404	gms	
Median Weight	49.202	gms	
Mean Grain Size	1.28	phi	0.4117955 mm


Cum Wt. % B3
2'
Sample Wt. gms
Cumulative Wt. %
10
9
8
7
6
5
4
3
2
1
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

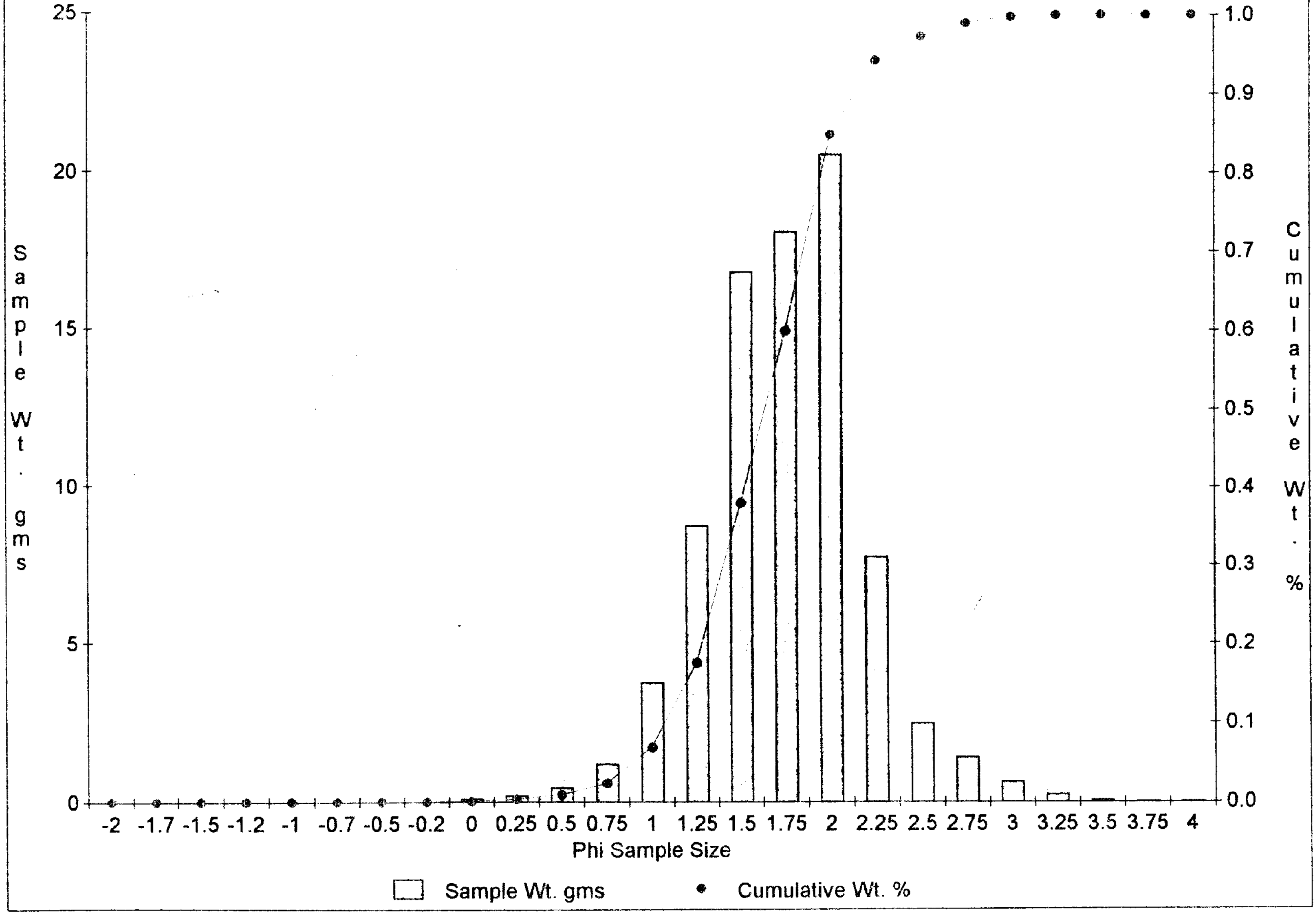
CORE (B-3)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.0835	0.0835	0.0010141	0.0010141
0.25	0.1838	0.2673	0.0022323	0.0032464
0.5	0.4403	0.7076	0.0053475	0.008594
0.75	1.1812	1.8888	0.0143459	0.0229399
1	3.7234	5.6122	0.0452215	0.0681614
1.25	8.7179	14.3301	0.1058808	0.1740423
1.5	16.8044	31.1345	0.2040932	0.3781354
1.75	18.0804	49.2149	0.2195905	0.5977259
2	20.5497	69.7646	0.2495807	0.8473066
2.25	7.7407	77.5053	0.0940125	0.9413191
2.5	2.469	79.9743	0.0299866	0.9713057
2.75	1.4118	81.3861	0.0171466	0.9884523
3	0.6369	82.023	0.0077353	0.9961876
3.25	0.2301	82.2531	0.0027946	0.9989822
3.5	0.0536	82.3067	0.000651	0.9996332
3.75	0.0179	82.3246	0.0002174	0.9998506
4	0.0123	82.3369	0.0001494	1

Total Wt.	82.3369	gms	
Median Weight	41.16845	gms	
Mean Grain Size	1.64	phi	0.3208565 mm

Cum Wt. % B3

2.5'

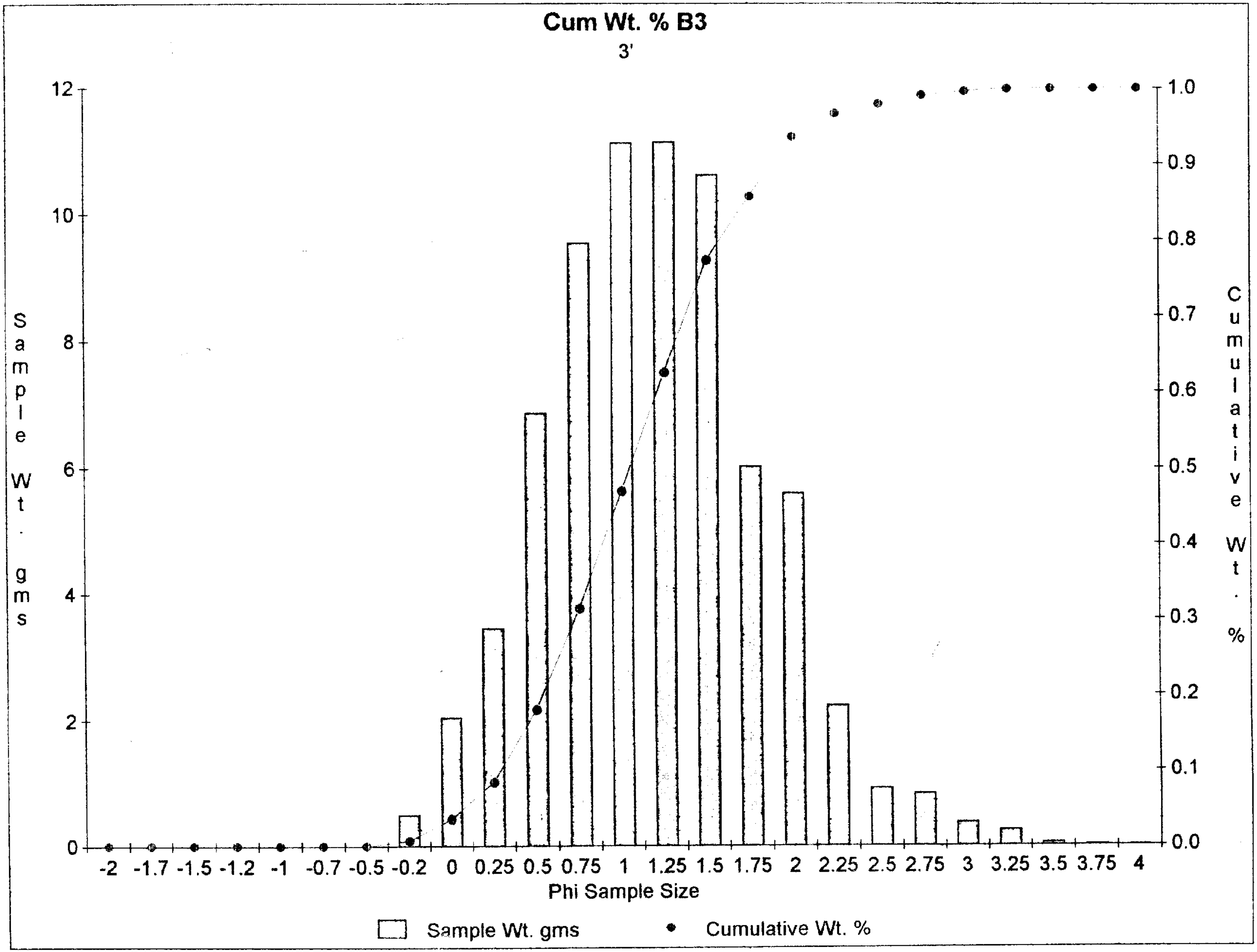

Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.4922	0.4922	0.0068835	0.0068835
0	2.0316	2.5238	0.0284122	0.0352957
0.25	3.443	5.9668	0.0481509	0.0834466
0.5	6.8558	12.8226	0.0958794	0.179326
0.75	9.5491	22.3717	0.1335456	0.3128717
1	11.1336	33.5053	0.1557051	0.4685768
1.25	11.1454	44.6507	0.1558701	0.6244469
1.5	10.626	55.2767	0.1486062	0.7730531
1.75	6.022	61.2987	0.0842186	0.8572717
2	5.5924	66.8911	0.0782106	0.9354823
2.25	2.2145	69.1056	0.0309701	0.9664524
2.5	0.901	70.0066	0.0126006	0.979053
2.75	0.8182	70.8248	0.0114427	0.9904957
3	0.3671	71.1919	0.0051339	0.9956296
3.25	0.2432	71.4351	0.0034012	0.9990308
3.5	0.0449	71.48	0.0006279	0.9996588
3.75	0.0158	71.4958	0.000221	0.9998797
4	0.0086	71.5044	0.0001203	1

Total Wt.	71.5044 gms	
Median Weight	35.7522 gms	
Mean Grain Size	1.05 phi	0.4829682 mm



Cum Wt. % B3

3'

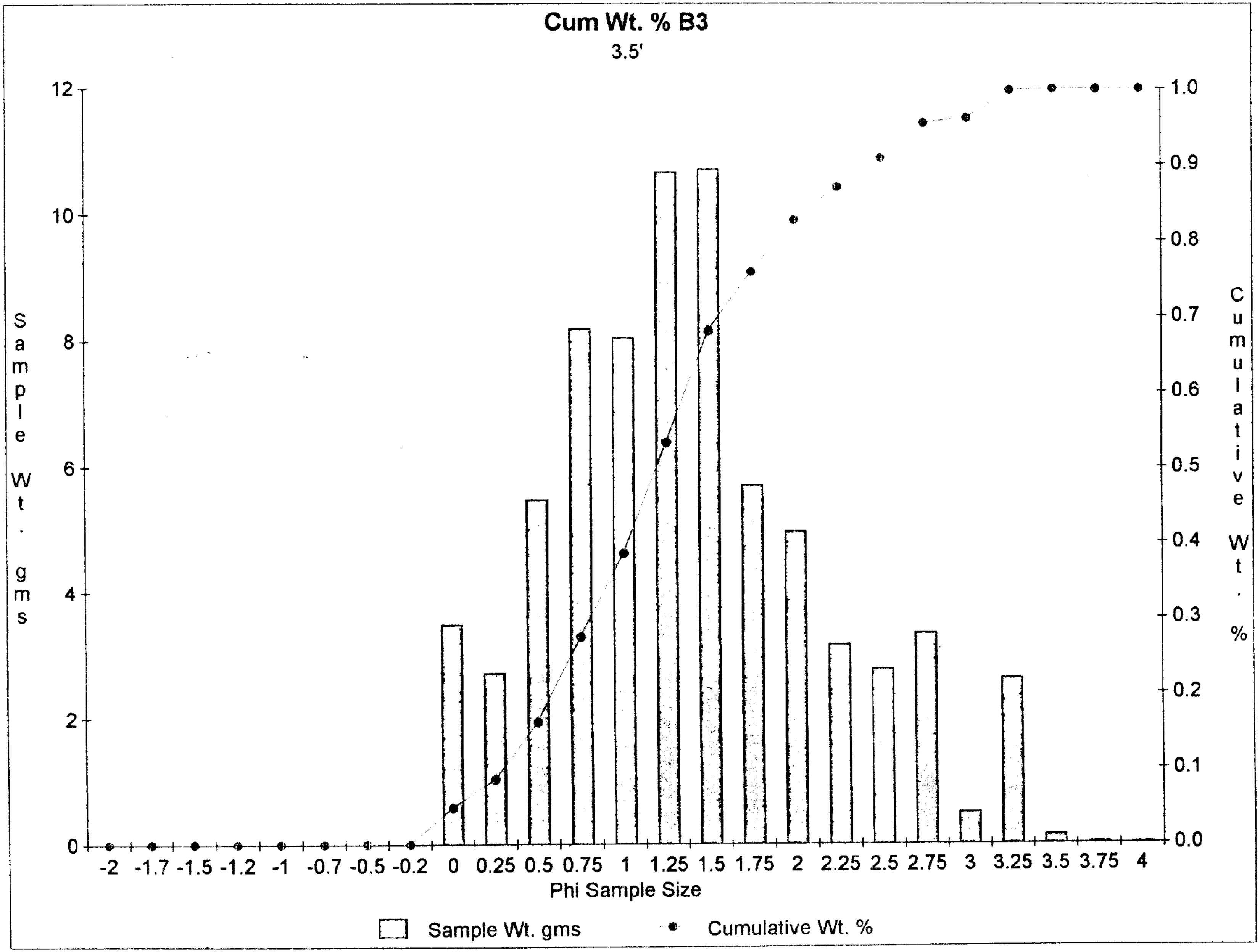
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	3.4771	3.4771	0.0479313	0.0479313
0.25	2.7048	6.1819	0.0372853	0.0852166
0.5	5.4744	11.6563	0.0754638	0.1606804
0.75	8.1917	19.848	0.1129214	0.2736017
1	8.0483	27.8963	0.1109446	0.3845464
1.25	10.6756	38.5719	0.1471616	0.5317079
1.5	10.7257	49.2976	0.1478522	0.6795601
1.75	5.7016	54.9992	0.0785957	0.7581558
2	4.9646	59.9638	0.0684363	0.8265921
2.25	3.1576	63.1214	0.043527	0.8701191
2.5	2.7715	65.8929	0.0382047	0.9083238
2.75	3.3424	69.2353	0.0460745	0.9543983
3	0.4981	69.7334	0.0068662	0.9612646
3.25	2.6317	72.3651	0.0362776	0.9975422
3.5	0.1405	72.5056	0.0019368	0.9994789
3.75	0.0252	72.5308	0.0003474	0.9998263
4	0.0126	72.5434	0.0001737	1

Total Wt.	72.5434	gms	
Median Weight	36.2717	gms	
Mean Grain Size	1.2	phi	0.4352753 mm


Cum Wt. % B3
3.5'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

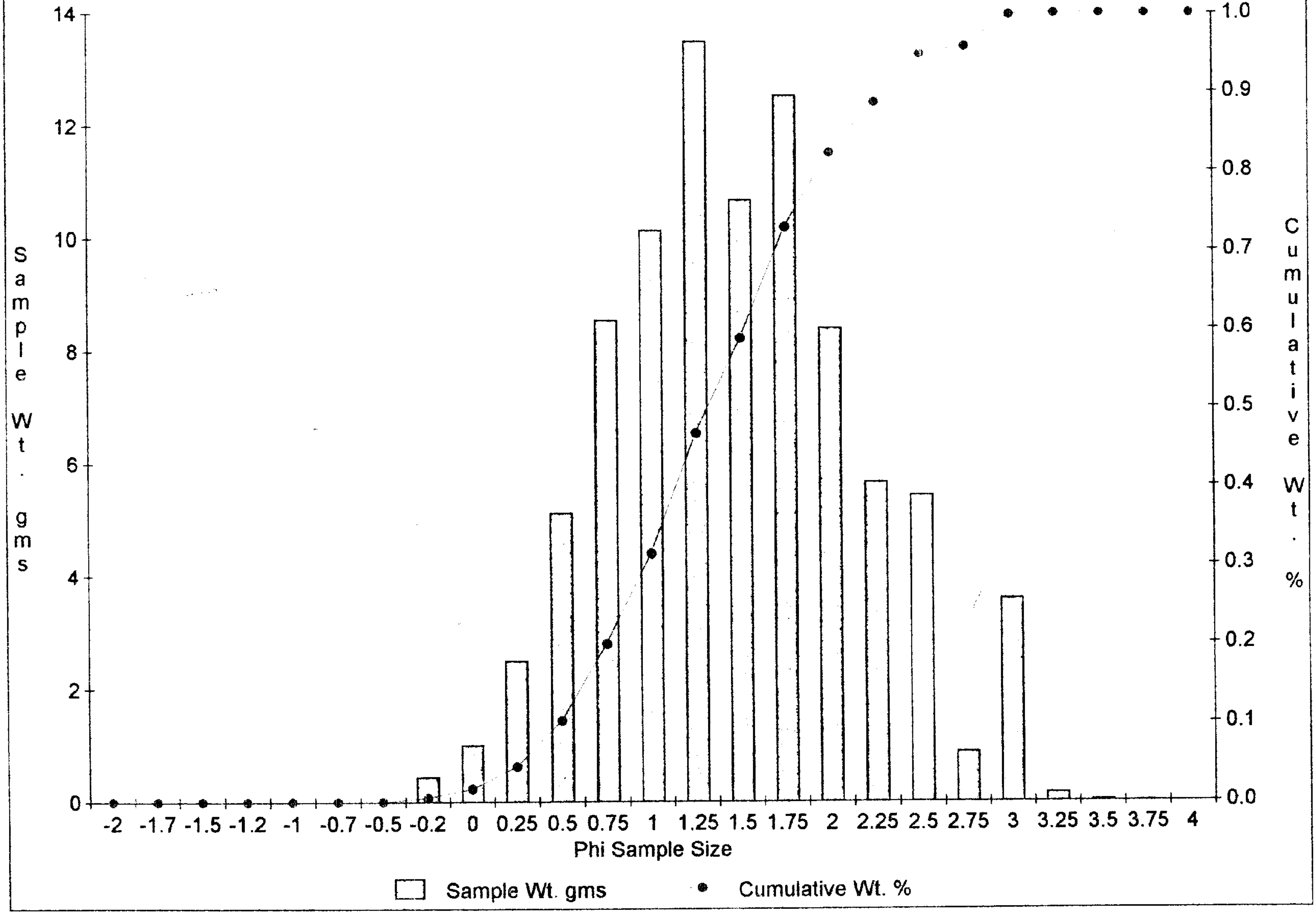
CORE (B-3)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.4358	0.4358	0.0049285	0.0049285
0	0.9894	1.4252	0.0111891	0.0161176
0.25	2.4706	3.8958	0.0279401	0.0440577
0.5	5.0955	8.9913	0.0576251	0.1016828
0.75	8.5245	17.5158	0.0964037	0.1980865
1	10.1262	27.642	0.1145174	0.3126039
1.25	13.4862	41.1282	0.1525157	0.4651196
1.5	10.6796	51.8078	0.1207758	0.5858954
1.75	12.5263	64.3341	0.1416602	0.7275556
2	8.3874	72.7215	0.0948533	0.8224088
2.25	5.649	78.3705	0.0638846	0.8862935
2.5	5.4201	83.7906	0.061296	0.9475895
2.75	0.8772	84.6678	0.0099203	0.9575098
3	3.5782	88.246	0.0404659	0.9979757
3.25	0.151	88.397	0.0017077	0.9996833
3.5	0.0223	88.4193	0.0002522	0.9999355
3.75	0.0045	88.4238	5.089E-05	0.9999864
4	0.0012	88.425	1.357E-05	1

Total Wt. 88.425 gms
Median Weight 44.2125 gms
Mean Grain Size 1.32 phi 0.4005349 mm

Cum Wt. % B3

4'



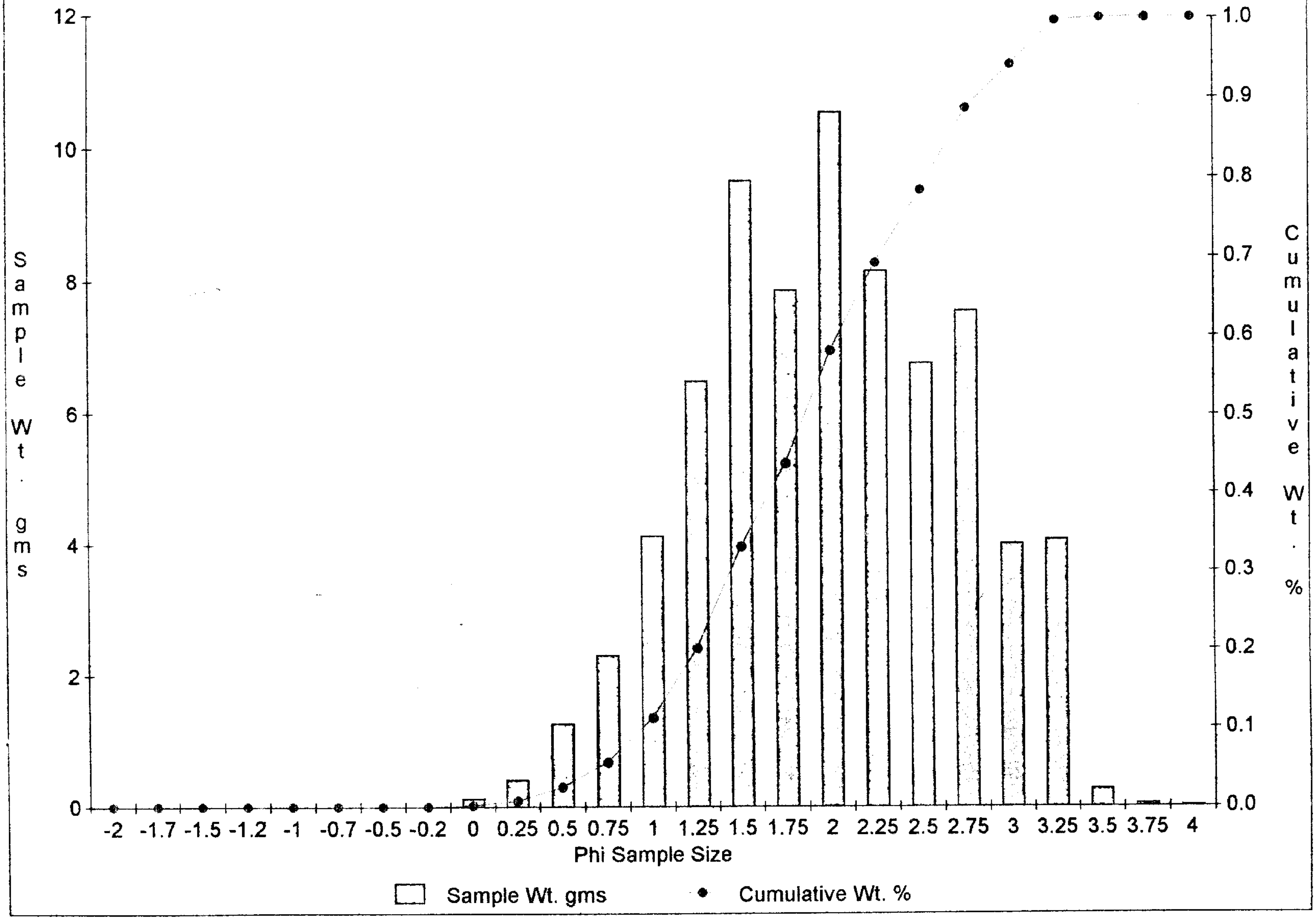
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
2
4
6
8
10
12
14
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.1229	0.1229	0.0016713	0.0016713
0.25	0.402	0.5249	0.0054666	0.0071379
0.5	1.2526	1.7775	0.0170336	0.0241715
0.75	2.2874	4.0649	0.0311055	0.055277
1	4.1156	8.1805	0.0559665	0.1112435
1.25	6.4884	14.6689	0.0882333	0.1994767
1.5	9.5238	24.1927	0.1295105	0.3289872
1.75	7.8671	32.0598	0.1069817	0.4359689
2	10.563	42.6228	0.1436422	0.5796111
2.25	8.1669	50.7897	0.1110585	0.6906696
2.5	6.7683	57.558	0.0920395	0.7827091
2.75	7.5716	65.1296	0.1029633	0.8856724
3	4.0098	69.1394	0.0545277	0.9402001
3.25	4.0729	73.2123	0.0553858	0.9955859
3.5	0.266	73.4783	0.0036172	0.9992031
3.75	0.0415	73.5198	0.0005643	0.9997675
4	0.0171	73.5369	0.0002325	1

Total Wt.	73.5369 gms		
Median Weight	36.76845 gms		
Mean Grain Size	1.86 phi	0.2754763 mm	



Cum Wt. % B3

4.5'

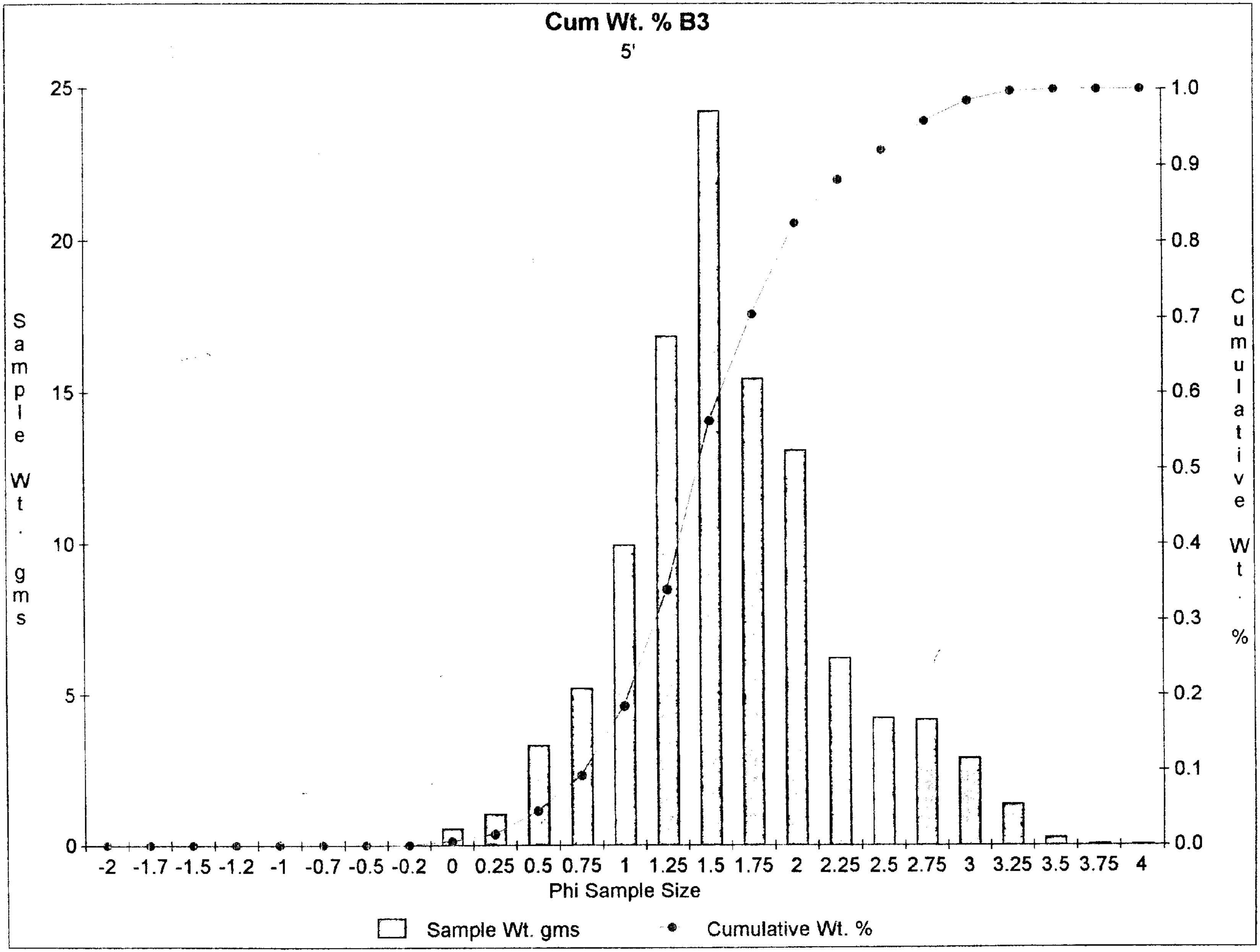
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.5479	0.5479	0.0050346	0.0050346
0.25	1.0253	1.5732	0.0094214	0.0144559
0.5	3.3034	4.8766	0.0303545	0.0448105
0.75	5.1922	10.0688	0.0477105	0.092521
1	9.9398	20.0086	0.0913356	0.1838566
1.25	16.8595	36.8681	0.1549199	0.3387765
1.5	24.2556	61.1237	0.2228818	0.5616583
1.75	15.447	76.5707	0.1419406	0.7035989
2	13.0773	89.648	0.1201657	0.8237646
2.25	6.2022	95.8502	0.0569913	0.8807559
2.5	4.2139	100.0641	0.038721	0.9194769
2.75	4.1623	104.2264	0.0382469	0.9577238
3	2.9146	107.141	0.0267819	0.9845057
3.25	1.351	108.492	0.0124142	0.9969199
3.5	0.258	108.75	0.0023707	0.9992906
3.75	0.0515	108.8015	0.0004732	0.9997638
4	0.0257	108.8272	0.0002362	1

Total Wt.	108.8272 gms	
Median Weight	54.4136 gms	
Mean Grain Size	1.43 phi	0.3711309 mm



Cum Wt. % B3

5'

25
20
15
10
5
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

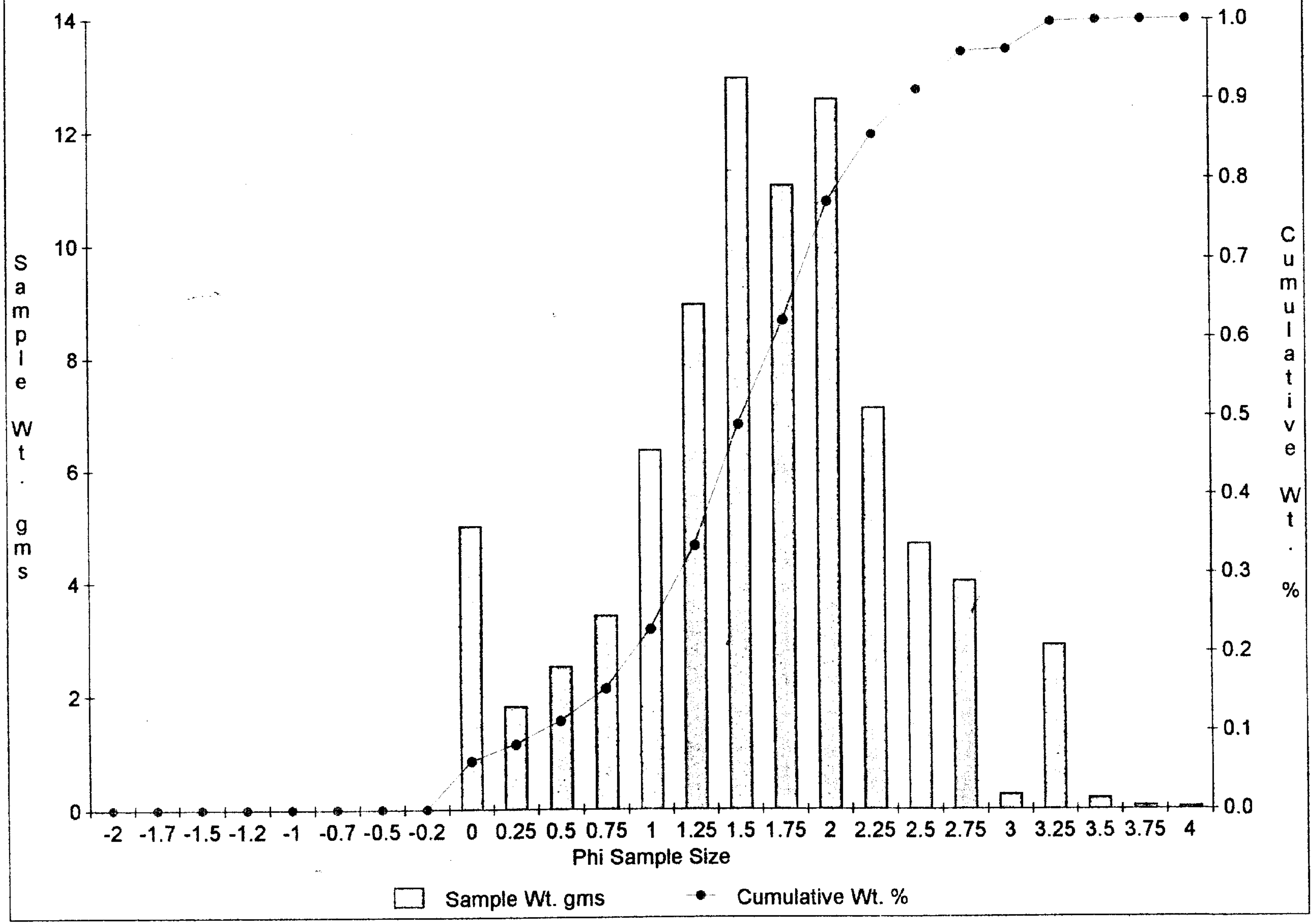
Grain Size Distribution Chart

CORE (B-3)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	5.0085	5.0085	0.0595766	0.0595766
0.25	1.804	6.8125	0.0214588	0.0810354
0.5	2.512	9.3245	0.0298805	0.1109159
0.75	3.4173	12.7418	0.0406491	0.151565
1	6.3832	19.125	0.0759288	0.2274939
1.25	8.9699	28.0949	0.1066979	0.3341918
1.5	12.9674	41.0623	0.1542486	0.4884403
1.75	11.069	52.1313	0.1316669	0.6201072
2	12.5932	64.7245	0.1497974	0.7699047
2.25	7.1287	71.8532	0.0847966	0.8547013
2.5	4.7088	76.562	0.0560117	0.910713
2.75	4.044	80.606	0.0481038	0.9588168
3	0.2588	80.8648	0.0030785	0.9618952
3.25	2.9075	83.7723	0.034585	0.9964802
3.5	0.1974	83.9697	0.0023481	0.9988283
3.75	0.0578	84.0275	0.0006875	0.9995159
4	0.0407	84.0682	0.0004841	1

Total Wt.	84.0682 gms		
Median Weight	42.0341 gms		
Mean Grain Size	1.52	phi	0.3486859 mm

Cum Wt. % B3
6'


Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
14
12
10
8
6
4
2
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

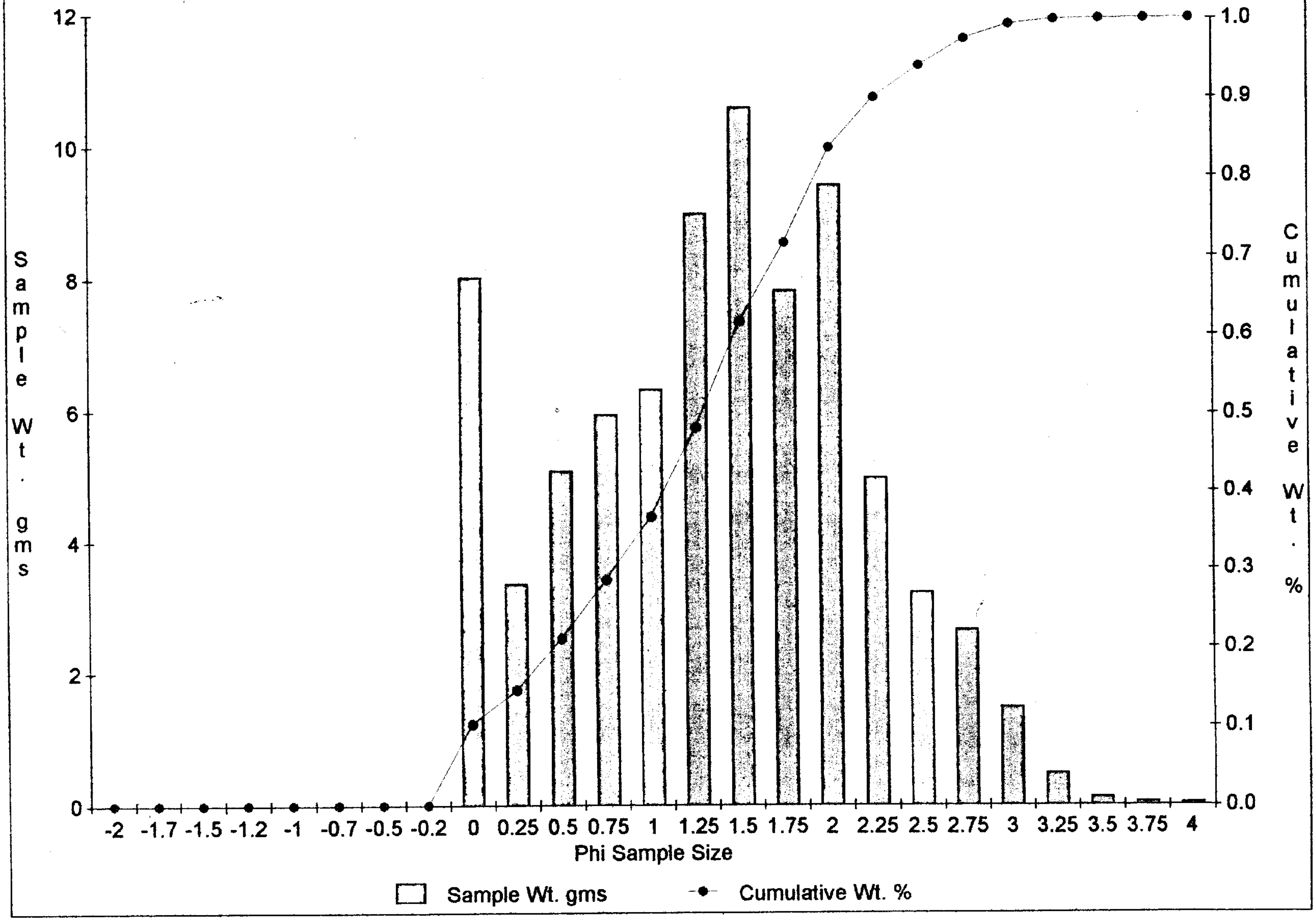
CORE (B-3)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	8.0384	8.0384	0.1020363	0.1020363
0.25	3.3607	11.3991	0.0426594	0.1446957
0.5	5.1008	16.4999	0.0647476	0.2094433
0.75	5.9589	22.4588	0.0756399	0.2850832
1	6.3437	28.8025	0.0805244	0.3656077
1.25	9.0153	37.8178	0.1144367	0.4800444
1.5	10.6156	48.4334	0.1347503	0.6147947
1.75	7.8559	56.2893	0.0997197	0.7145144
2	9.4466	65.7359	0.1199114	0.8344258
2.25	4.9933	70.7292	0.063383	0.8978088
2.5	3.2277	73.9569	0.0409712	0.93878
2.75	2.6536	76.6105	0.0336838	0.9724638
3	1.4826	78.0931	0.0188195	0.9912833
3.25	0.4783	78.5714	0.0060714	0.9973547
3.5	0.124	78.6954	0.001574	0.9989287
3.75	0.0497	78.7451	0.0006309	0.9995595
4	0.0347	78.7798	0.0004405	1

Total Wt.	78.7798 gms	
Median Weight	39.3899 gms	
Mean Grain Size	1.29 phi	0.408951 mm

Cum Wt. % B3

7'

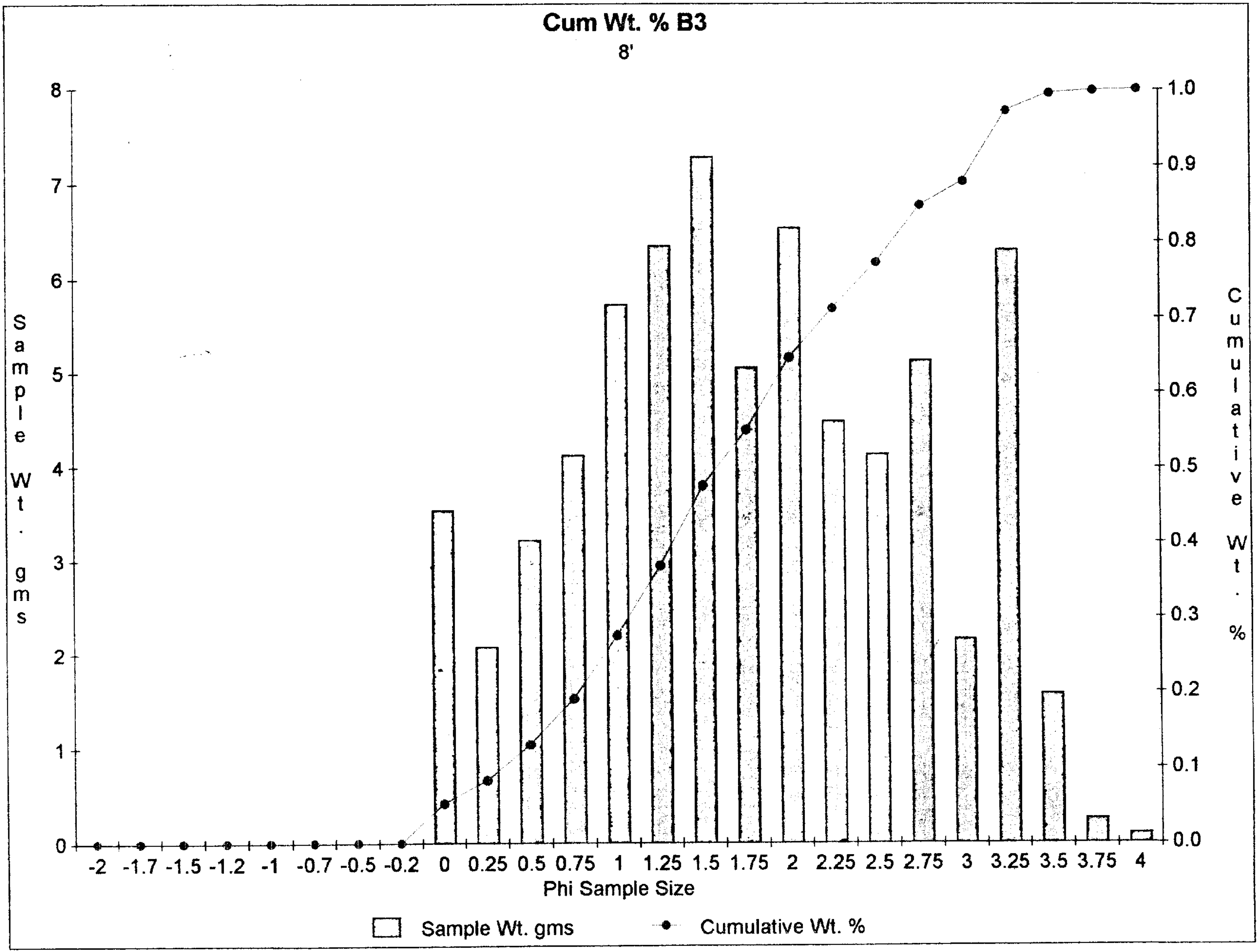

12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (8 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	3.5414	3.5414	0.0520098	0.0520098
0.25	2.0777	5.6191	0.0305136	0.0825234
0.5	3.2209	8.84	0.0473029	0.1298263
0.75	4.126	12.966	0.0605954	0.1904216
1	5.7305	18.6965	0.0841594	0.2745811
1.25	6.3494	25.0459	0.0932487	0.3678298
1.5	7.2862	32.3321	0.1070068	0.4748366
1.75	5.0577	37.3898	0.0742785	0.5491152
2	6.54	43.9298	0.0960479	0.6451631
2.25	4.4865	48.4163	0.0658898	0.7110529
2.5	4.1371	52.5534	0.0607584	0.7718113
2.75	5.1354	57.6888	0.0754197	0.8472309
3	2.1574	59.8462	0.0316841	0.878915
3.25	6.31	66.1562	0.0926701	0.9715851
3.5	1.5759	67.7321	0.023144	0.9947291
3.75	0.2561	67.9882	0.0037611	0.9984903
4	0.1028	68.091	0.0015097	1

Total Wt.	68.091 gms	
Median Weight	34.0455 gms	
Mean Grain Size	1.58 phi	0.3344819 mm

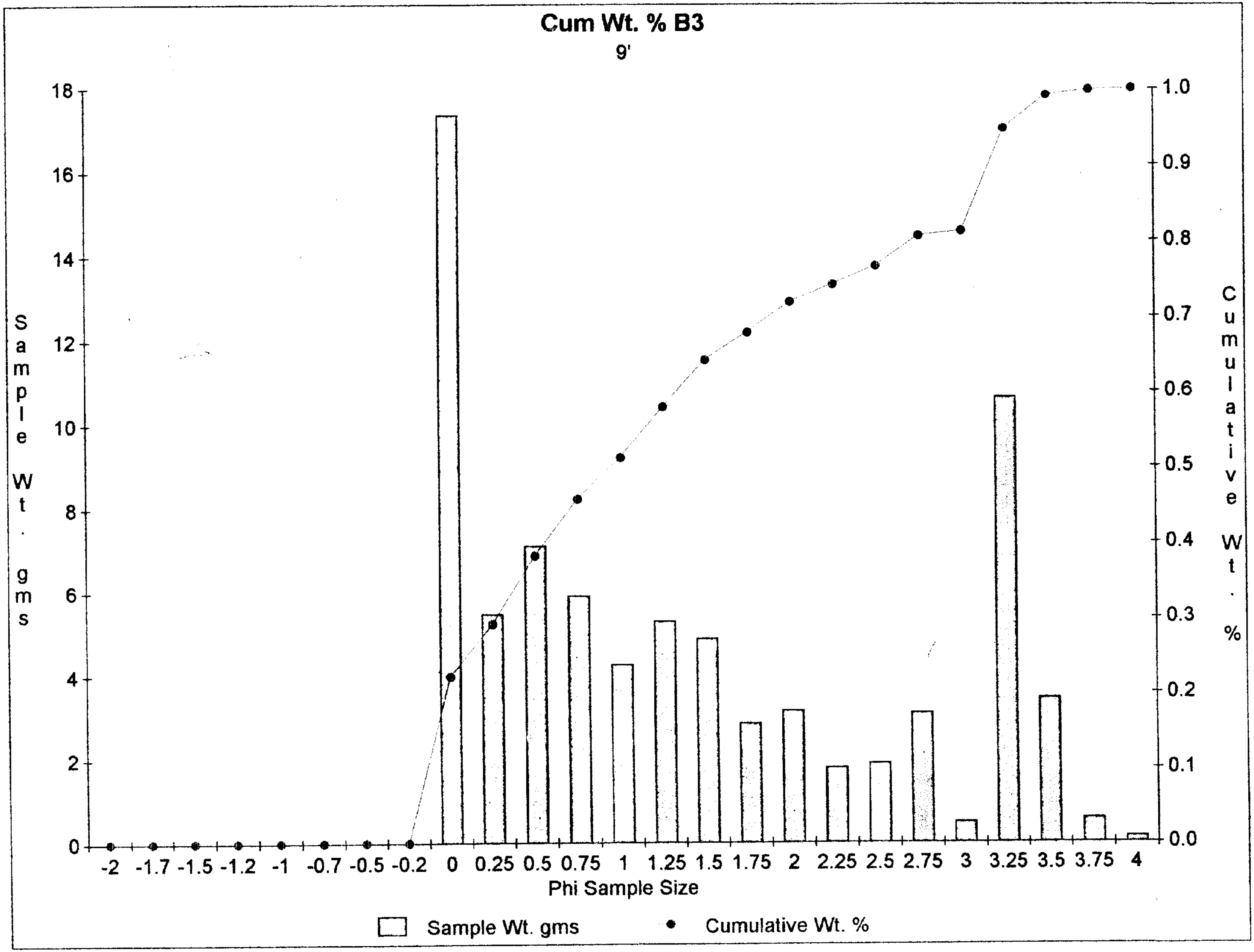

Cum Wt. % B3
8'
Sample Wt. gms
Cumulative Wt. %
0
1
2
3
4
5
6
7
8
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-3)
DEPTH (9 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	17.3822	17.3822	0.2213887	0.2213887
0.25	5.4826	22.8648	0.0698292	0.2912179
0.5	7.1192	29.984	0.0906738	0.3818917
0.75	5.9158	35.8998	0.0753467	0.4572384
1	4.2714	40.1712	0.0544028	0.5116412
1.25	5.302	45.4732	0.067529	0.5791702
1.5	4.8888	50.362	0.0622663	0.6414365
1.75	2.8699	53.2319	0.0365525	0.677989
2	3.1669	56.3988	0.0403353	0.7183243
2.25	1.8065	58.2053	0.0230085	0.7413328
2.5	1.909	60.1143	0.024314	0.7656468
2.75	3.1079	63.2222	0.0395838	0.8052306
3	0.4755	63.6977	0.0060562	0.8112868
3.25	10.6498	74.3475	0.1356414	0.9469282
3.5	3.4575	77.805	0.0440365	0.9909647
3.75	0.5721	78.3771	0.0072866	0.9982513
4	0.1373	78.5144	0.0017487	1

Total Wt. 78.5144 gms
Median Weight 39.2572 gms
Mean Grain Size 0.95 phi 0.5176325 mm

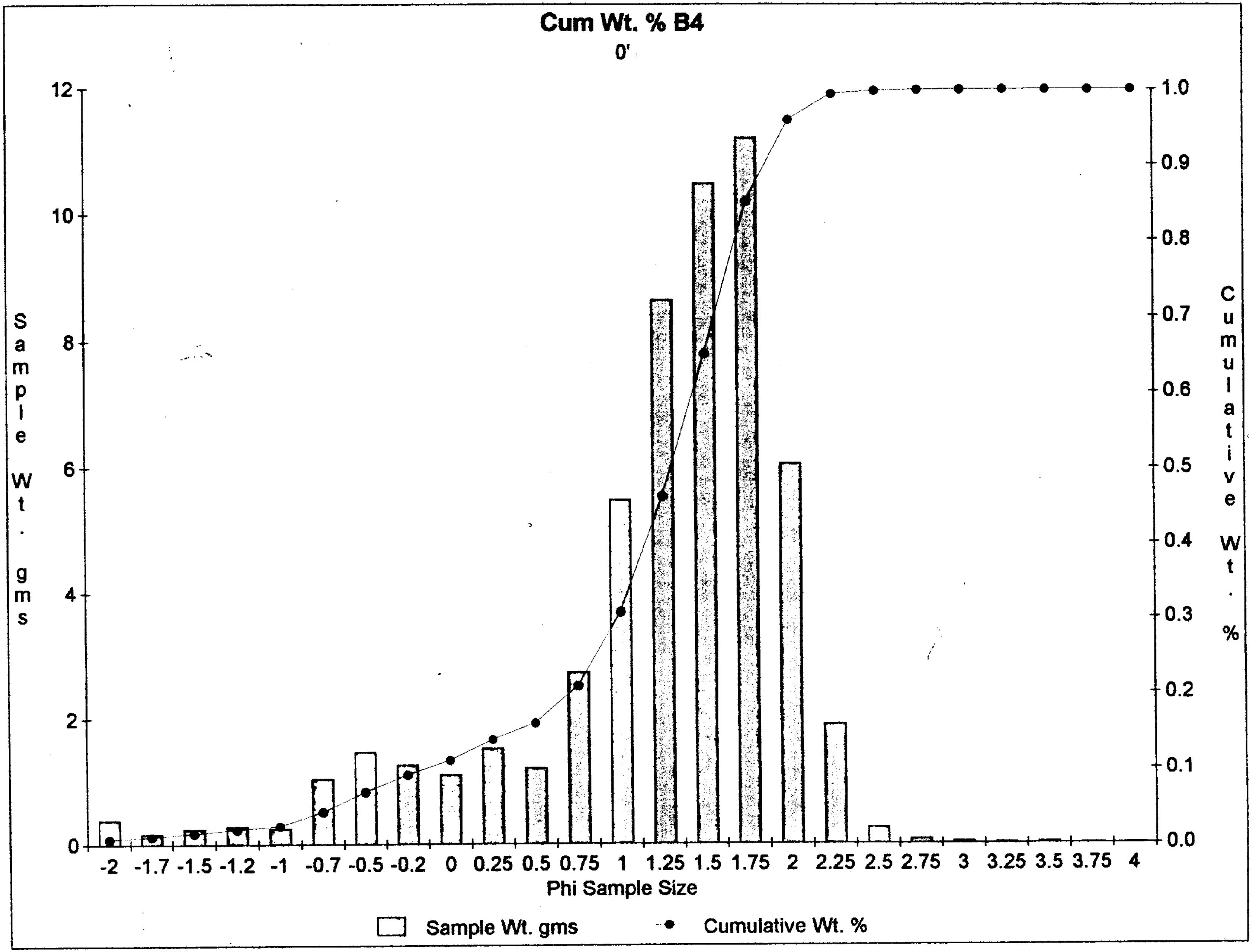

Cum Wt. % B3
9'
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.3904	0.3904	0.0069939	0.0069939
-1.75	0.171	0.5614	0.0030634	0.0100574
-1.5	0.2464	0.8078	0.0044142	0.0144716
-1.25	0.2857	1.0935	0.0051183	0.0195899
-1	0.254	1.3475	0.0045504	0.0241402
-0.75	1.0367	2.3842	0.0185723	0.0427125
-0.5	1.4616	3.8458	0.0261843	0.0688968
-0.25	1.2542	5.1	0.0224688	0.0913656
0	1.0928	6.1928	0.0195773	0.1109429
0.25	1.5175	7.7103	0.0271857	0.1381287
0.5	1.2003	8.9106	0.0215032	0.1596318
0.75	2.7234	11.634	0.0487892	0.208421
1	5.4801	17.1141	0.098175	0.3065961
1.25	8.6492	25.7633	0.1549489	0.4615449
1.5	10.4917	36.255	0.1879569	0.6495019
1.75	11.2125	47.4675	0.2008699	0.8503718
2	6.056	53.5235	0.1084922	0.958864
2.25	1.8955	55.419	0.0339575	0.9928215
2.5	0.2494	55.6684	0.004468	0.9972895
2.75	0.0687	55.7371	0.0012307	0.9985202
3	0.0329	55.77	0.0005894	0.9991096
3.25	0.0127	55.7827	0.0002275	0.9993372
3.5	0.0192	55.8019	0.000344	0.9996811
3.75	0.0087	55.8106	0.0001559	0.999837
4	0.0091	55.8197	0.000163	1

Total Wt. 55.8197 gms
Median Weight 27.90985 gms
Mean Grain Size 1.3 phi 0.4061262 mm



Cum Wt. % B4

0'

Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
2
4
6
8
10
12
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

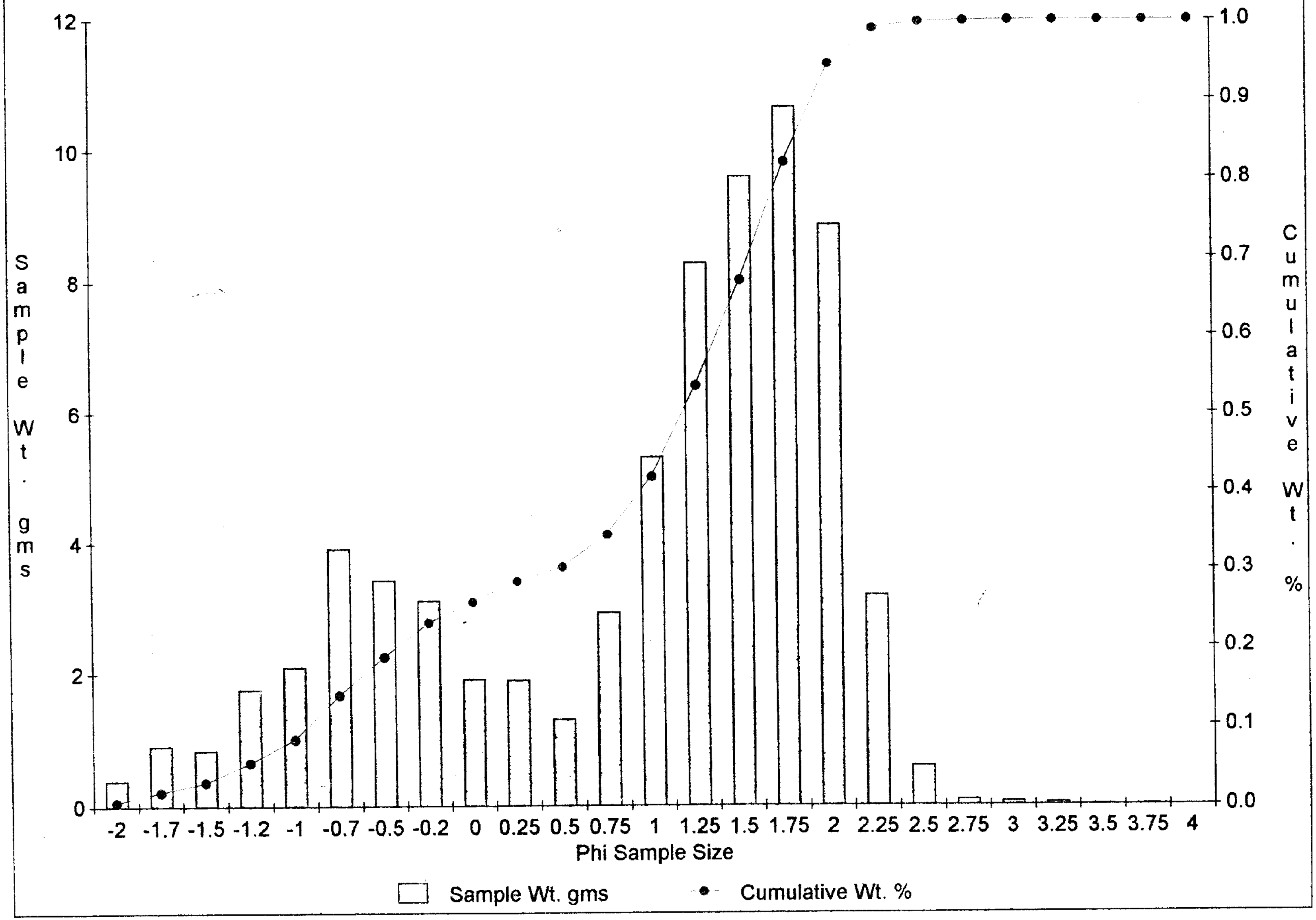
CORE (B-4)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.3886	0.3886	0.0054599	0.0054599
-1.75	0.9107	1.2993	0.0127955	0.0182554
-1.5	0.841	2.1403	0.0118162	0.0300717
-1.25	1.7596	3.8999	0.0247228	0.0547944
-1	2.0919	5.9918	0.0293916	0.0841861
-0.75	3.9094	9.9012	0.0549279	0.139114
-0.5	3.4194	13.3206	0.0480433	0.1871573
-0.25	3.1061	16.4267	0.0436414	0.2307986
0	1.9007	18.3274	0.0267052	0.2575039
0.25	1.8841	20.2115	0.026472	0.2839759
0.5	1.294	21.5055	0.018181	0.3021568
0.75	2.9224	24.4279	0.0410603	0.3432172
1	5.32	29.7479	0.0747471	0.4179643
1.25	8.2997	38.0476	0.1166125	0.5345769
1.5	9.6127	47.6603	0.1350605	0.6696373
1.75	10.6734	58.3337	0.1499635	0.8196009
2	8.8795	67.2132	0.1247589	0.9443598
2.25	3.1874	70.4006	0.0447836	0.9891434
2.5	0.5884	70.989	0.0082671	0.9974105
2.75	0.0849	71.0739	0.0011929	0.9986034
3	0.0523	71.1262	0.0007348	0.9993382
3.25	0.0367	71.1629	0.0005156	0.9998539
3.5	0.0055	71.1684	7.728E-05	0.9999312
3.75	0.0041	71.1725	5.761E-05	0.9999888
4	0.0008	71.1733	1.124E-05	1

Total Wt.	71.1733	gms	
Median Weight	35.58665	gms	
Mean Grain Size	1.18	phi	0.4413515 mm

Cum Wt. % B4

0.5'


Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

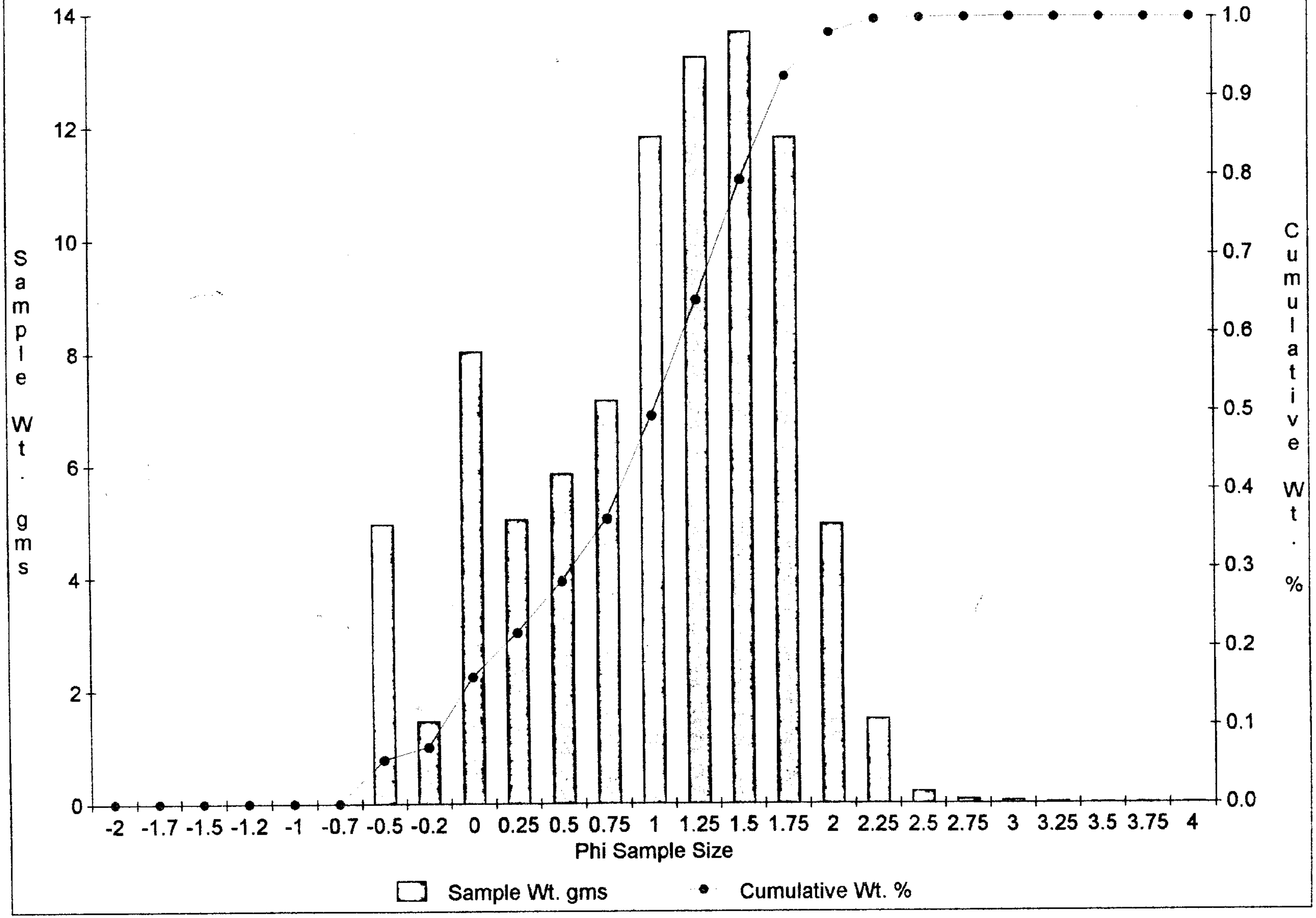
CORE (B-4)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	4.9517	4.9517	0.0549817	0.0549817
-0.25	1.4671	6.4188	0.0162901	0.0712718
0	8.0468	14.4656	0.0893484	0.1606202
0.25	5.041	19.5066	0.0559732	0.2165934
0.5	5.864	25.3706	0.0651115	0.2817049
0.75	7.1699	32.5405	0.0796117	0.3613166
1	11.8563	44.3968	0.1316476	0.4929642
1.25	13.2719	57.6687	0.1473658	0.64033
1.5	13.7176	71.3863	0.1523147	0.7926448
1.75	11.858	83.2443	0.1316665	0.9243112
2	4.9686	88.2129	0.0551693	0.9794806
2.25	1.5015	89.7144	0.0166721	0.9961526
2.5	0.2029	89.9173	0.0022529	0.9984055
2.75	0.0704	89.9877	0.0007817	0.9991872
3	0.0399	90.0276	0.000443	0.9996303
3.25	0.0133	90.0409	0.0001477	0.9997779
3.5	0.0087	90.0496	9.66E-05	0.9998745
3.75	0.0072	90.0568	7.995E-05	0.9999545
4	0.0041	90.0609	4.552E-05	1

Total Wt.	90.0609 gms		
Median Weight	45.03045 gms		
Mean Grain Size	1 phi		0.5 mm

Cum Wt. % B4

1'



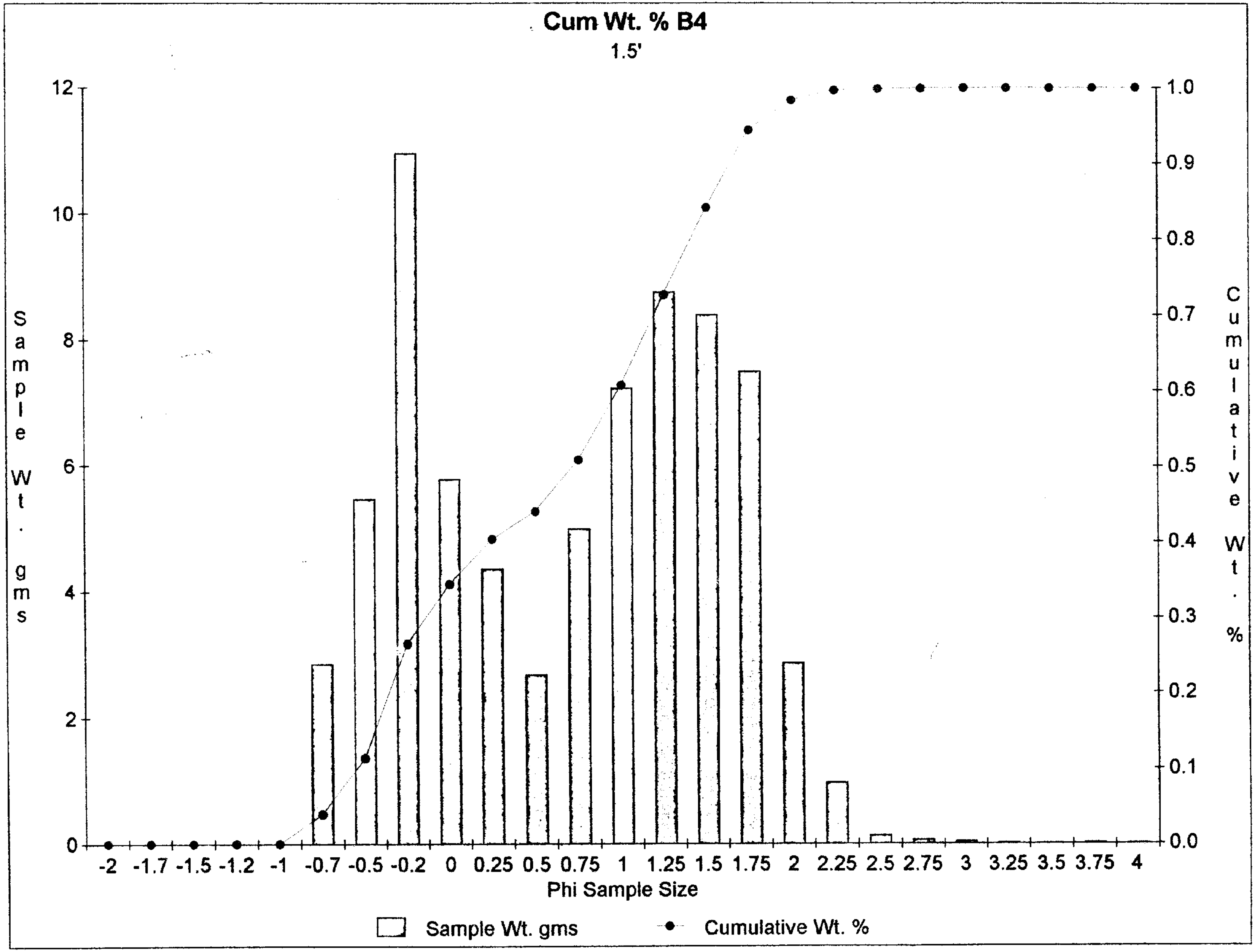
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	2.8442	2.8442	0.0389452	0.0389452
-0.5	5.4669	8.3111	0.0748575	0.1138027
-0.25	10.9508	19.2619	0.1499477	0.2637504
0	5.7764	25.0383	0.0790954	0.3428458
0.25	4.3621	29.4004	0.0597296	0.4025754
0.5	2.6701	32.0705	0.0365613	0.4391366
0.75	4.9944	37.0649	0.0683876	0.5075242
1	7.231	44.2959	0.099013	0.6065372
1.25	8.76	53.0559	0.1199494	0.7264866
1.5	8.3951	61.451	0.1149529	0.8414395
1.75	7.4971	68.9481	0.1026567	0.9440962
2	2.8621	71.8102	0.0391903	0.9832865
2.25	0.9618	72.772	0.0131698	0.9964563
2.5	0.1256	72.8976	0.0017198	0.9981761
2.75	0.0564	72.954	0.0007723	0.9989484
3	0.0349	72.9889	0.0004779	0.9994263
3.25	0.0144	73.0033	0.0001972	0.9996234
3.5	0.0075	73.0108	0.0001027	0.9997261
3.75	0.0113	73.0221	0.0001547	0.9998809
4	0.0087	73.0308	0.0001191	1

Total Wt.	73.0308 gms		
Median Weight	36.5154 gms		
Mean Grain Size	0.72 phi	0.6070974	mm


Cum Wt. % B4
1.5'
Sample Wt. gms
Cumulative Wt. %
12
10
8
6
4
2
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

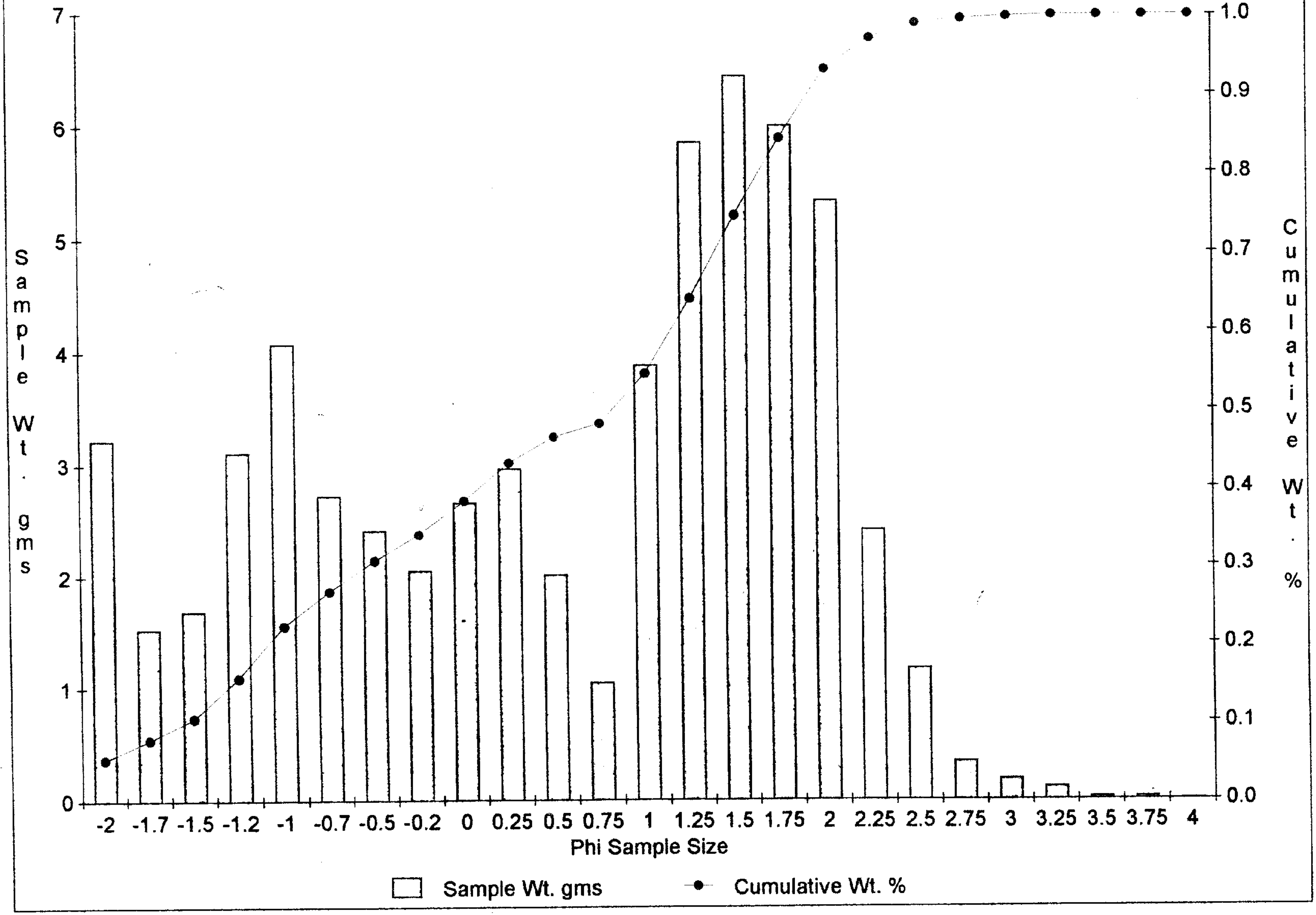
CORE (B-4)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	3.2218	3.2218	0.0525685	0.0525685
-1.75	1.5282	4.75	0.0249349	0.0775033
-1.5	1.689	6.439	0.0275585	0.1050619
-1.25	3.1091	9.5481	0.0507296	0.1557915
-1	4.0706	13.6187	0.0664179	0.2222094
-0.75	2.722	16.3407	0.0444135	0.2666228
-0.5	2.4079	18.7486	0.0392885	0.3059113
-0.25	2.0489	20.7975	0.0334309	0.3393422
0	2.6616	23.4591	0.043428	0.3827701
0.25	2.9643	26.4234	0.048367	0.4311371
0.5	2.0081	28.4315	0.0327651	0.4639022
0.75	1.0448	29.4763	0.0170475	0.4809497
1	3.8803	33.3566	0.0633129	0.5442626
1.25	5.8614	39.218	0.0956375	0.6399
1.5	6.4482	45.6662	0.105212	0.745112
1.75	6.0094	51.6756	0.0980523	0.8431643
2	5.3467	57.0223	0.0872394	0.9304037
2.25	2.4151	59.4374	0.0394059	0.9698096
2.5	1.1697	60.6071	0.0190854	0.988895
2.75	0.3414	60.9485	0.0055704	0.9944654
3	0.1828	61.1313	0.0029827	0.9974481
3.25	0.1111	61.2424	0.0018128	0.9992609
3.5	0.0203	61.2627	0.0003312	0.9995921
3.75	0.0201	61.2828	0.000328	0.99992
4	0.0049	61.2877	7.995E-05	1

Total Wt.	61.2877	gms		
Median Weight	30.64385	gms		
Mean Grain Size	0.83	phi	0.5625292	mm

Cum Wt. % B4

2'

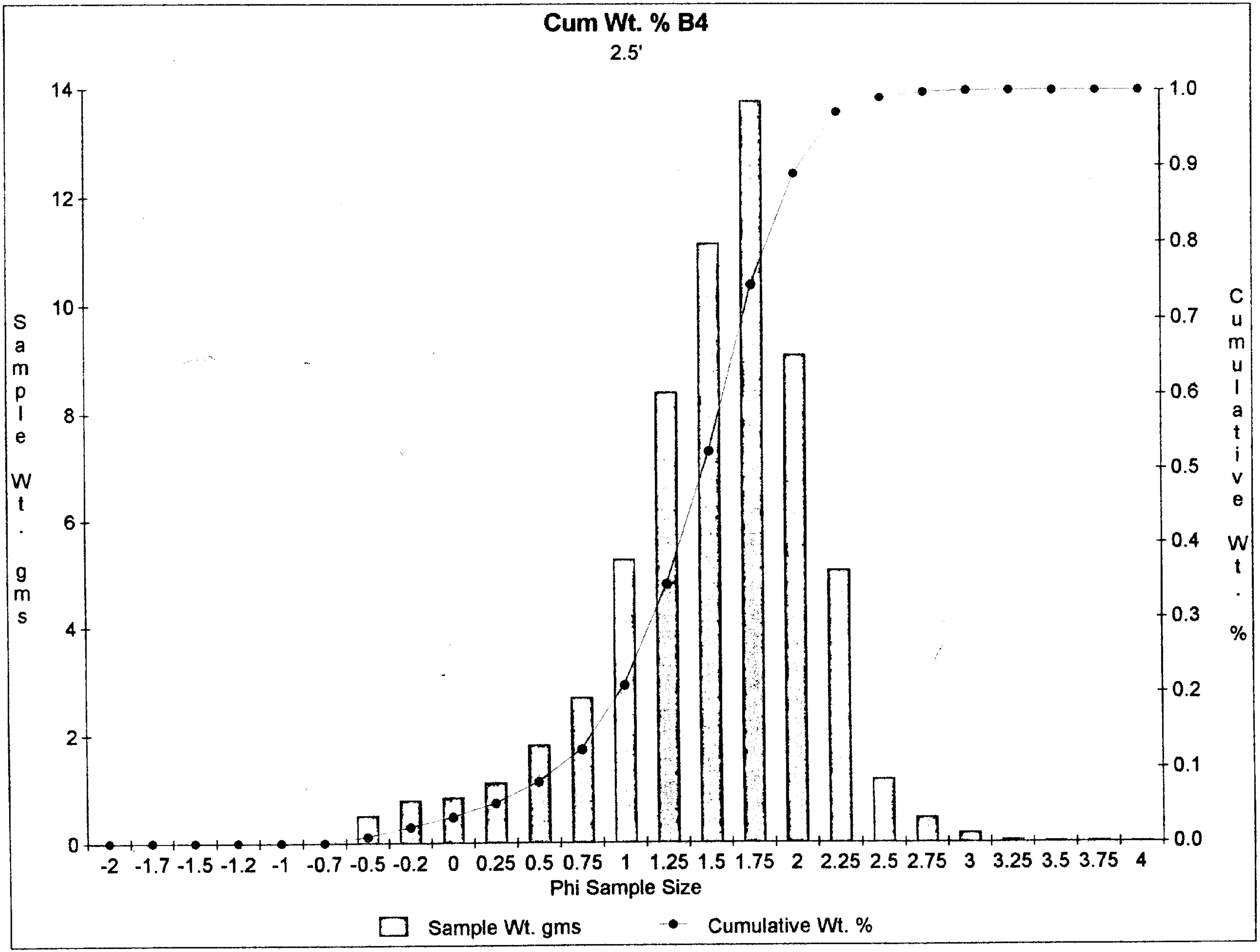

Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.4951	0.4951	0.0079362	0.0079362
-0.25	0.7751	1.2702	0.0124244	0.0203605
0	0.8318	2.102	0.0133332	0.0336938
0.25	1.1196	3.2216	0.0179465	0.0516403
0.5	1.8184	5.04	0.0291478	0.0807881
0.75	2.6874	7.7274	0.0430774	0.1238655
1	5.2633	12.9907	0.0843675	0.208233
1.25	8.4069	21.3976	0.1347575	0.3429905
1.5	11.1594	32.557	0.1788784	0.5218689
1.75	13.7862	46.3432	0.2209844	0.7428533
2	9.1036	55.4468	0.1459252	0.8887785
2.25	5.0713	60.5181	0.0812899	0.9700683
2.5	1.1816	61.6997	0.0189403	0.9890086
2.75	0.4516	62.1513	0.0072389	0.9962475
3	0.165	62.3163	0.0026448	0.9988924
3.25	0.0345	62.3508	0.000553	0.9994454
3.5	0.0143	62.3651	0.0002292	0.9996746
3.75	0.0157	62.3808	0.0002517	0.9999263
4	0.0046	62.3854	7.374E-05	1

Total Wt.	62.3854 gms		
Median Weight	31.1927 gms		
Mean Grain Size	1.47	phi 0.3609823	mm



Cum Wt. % B4

2.5'

Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

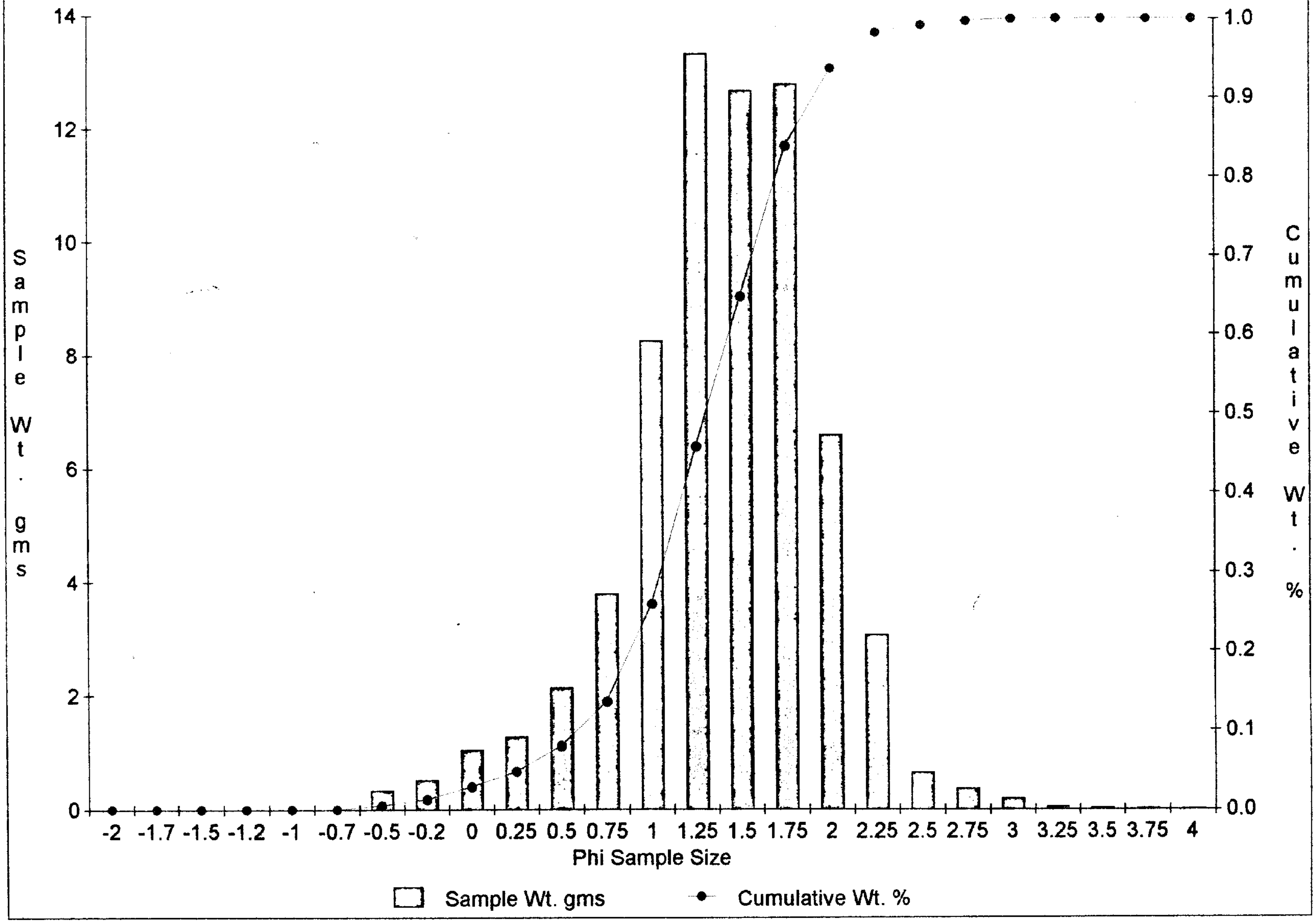
CORE (B-4)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.3293	0.3293	0.0049079	0.0049079
-0.25	0.5044	0.8337	0.0075176	0.0124254
0	1.0318	1.8655	0.0153779	0.0278033
0.25	1.261	3.1265	0.0187939	0.0465972
0.5	2.1296	5.2561	0.0317395	0.0783367
0.75	3.7829	9.039	0.0563802	0.1347168
1	8.2562	17.2952	0.12305	0.2577668
1.25	13.3512	30.6464	0.1989856	0.4567525
1.5	12.6975	43.3439	0.1892429	0.6459954
1.75	12.8192	56.1631	0.1910567	0.8370521
2	6.6041	62.7672	0.0984272	0.9354793
2.25	3.0612	65.8284	0.045624	0.9811033
2.5	0.638	66.4664	0.0095087	0.990612
2.75	0.3587	66.8251	0.005346	0.995958
3	0.1818	67.0069	0.0027095	0.9986676
3.25	0.0453	67.0522	0.0006751	0.9993427
3.5	0.0257	67.0779	0.000383	0.9997258
3.75	0.0113	67.0892	0.0001684	0.9998942
4	0.0071	67.0963	0.0001058	1

Total Wt.	67.0963 gms		
Median Weight	33.54815 gms		
Mean Grain Size	1.31 phi	0.4033209	mm

Cum Wt. % B4

3'

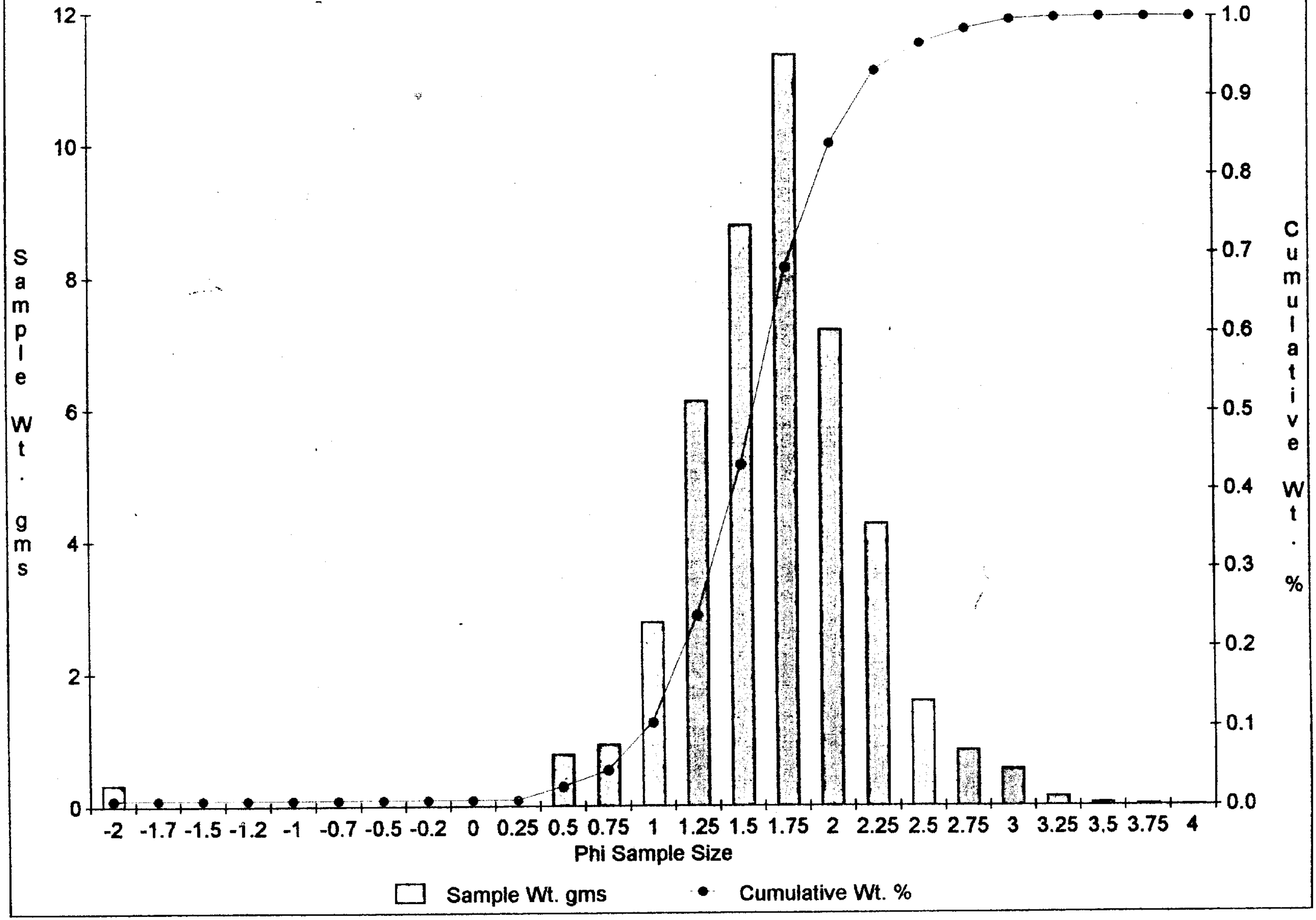

14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.3301	0.3301	0.0072059	0.0072059
-1.75	0	0.3301	0	0.0072059
-1.5	0	0.3301	0	0.0072059
-1.25	0	0.3301	0	0.0072059
-1	0	0.3301	0	0.0072059
-0.75	0	0.3301	0	0.0072059
-0.5	0	0.3301	0	0.0072059
-0.25	0	0.3301	0	0.0072059
0	0	0.3301	0	0.0072059
0.25	0	0.3301	0	0.0072059
0.5	0.7731	1.1032	0.0168763	0.0240822
0.75	0.9227	2.0259	0.020142	0.0442243
1	2.7679	4.7938	0.0604217	0.104646
1.25	6.1436	10.9374	0.1341113	0.2387573
1.5	8.8071	19.7445	0.192254	0.4310113
1.75	11.4072	31.1517	0.2490128	0.6800241
2	7.2212	38.3729	0.1576347	0.8376588
2.25	4.2637	42.6366	0.0930742	0.930733
2.5	1.5761	44.2127	0.0344054	0.9651384
2.75	0.8375	45.0502	0.0182822	0.9834205
3	0.5509	45.6011	0.0120258	0.9954464
3.25	0.1376	45.7387	0.0030037	0.9984501
3.5	0.0454	45.7841	0.0009911	0.9994412
3.75	0.0198	45.8039	0.0004322	0.9998734
4	0.0058	45.8097	0.0001266	1

Total Wt.	45.8097	gms		
Median Weight	22.90485	gms		
Mean Grain Size	1.57	phi	0.3368084	mm



Cum Wt. % B4

3.5'

12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

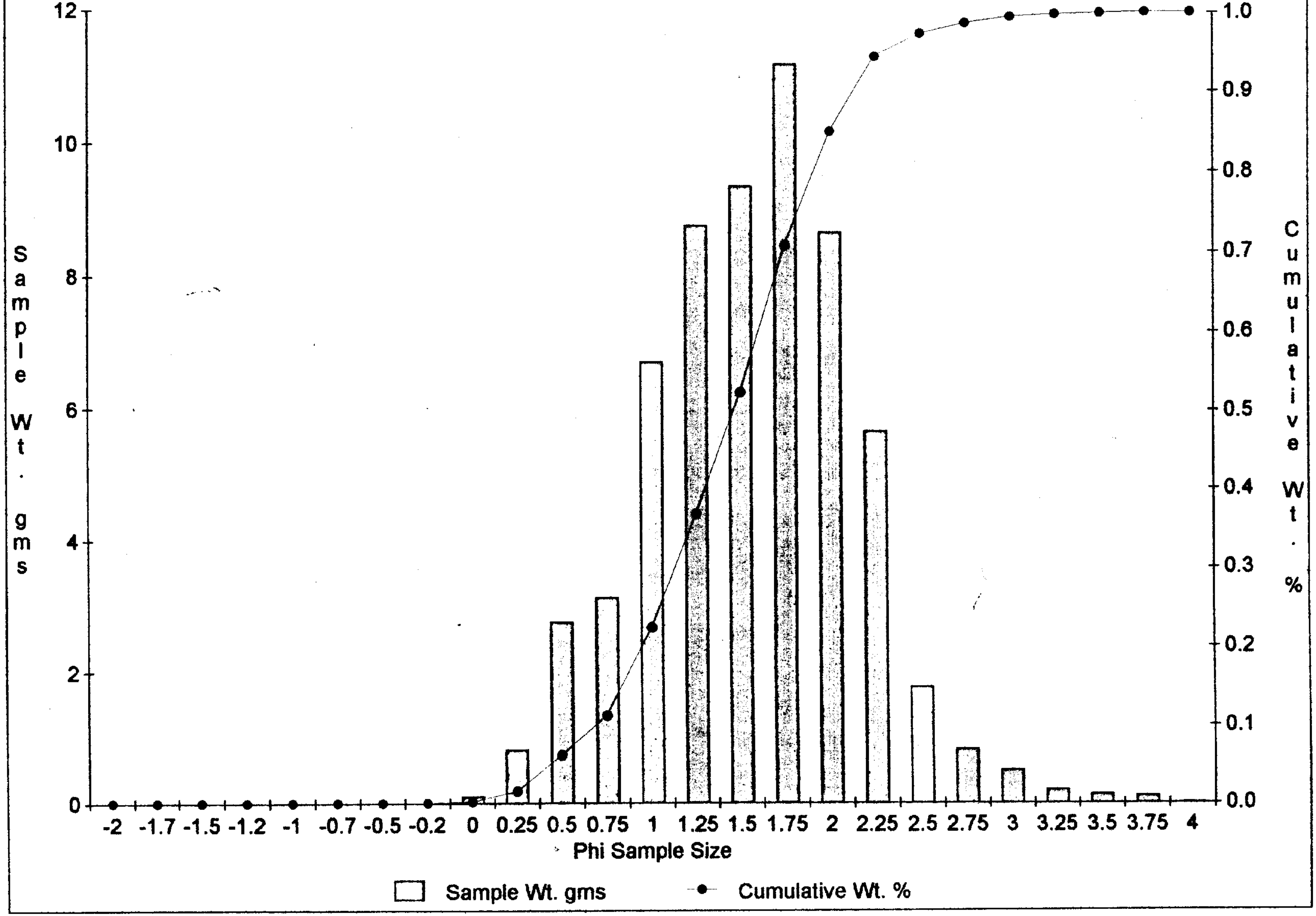
CORE (B-4)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.0946	0.0946	0.0015596	0.0015596
0.25	0.8042	0.8988	0.0132579	0.0148175
0.5	2.7539	3.6527	0.0454004	0.0602178
0.75	3.1273	6.78	0.0515562	0.111774
1	6.7189	13.4989	0.1107667	0.2225408
1.25	8.7647	22.2636	0.1444935	0.3670342
1.5	9.3622	31.6258	0.1543438	0.521378
1.75	11.1857	42.8115	0.1844057	0.7057837
2	8.6704	51.4819	0.1429389	0.8487226
2.25	5.6632	57.1451	0.0933626	0.9420852
2.5	1.7716	58.9167	0.0292063	0.9712916
2.75	0.8158	59.7325	0.0134492	0.9847407
3	0.4955	60.228	0.0081687	0.9929094
3.25	0.1964	60.4244	0.0032378	0.9961473
3.5	0.1252	60.5496	0.002064	0.9982113
3.75	0.1036	60.6532	0.0017079	0.9999192
4	0.0049	60.6581	8.078E-05	1

Total Wt.	60.6581	gms		
Median Weight	30.32905	gms		
Mean Grain Size	1.47	phi	0.3609823	mm

Cum Wt. % B4

4'


Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

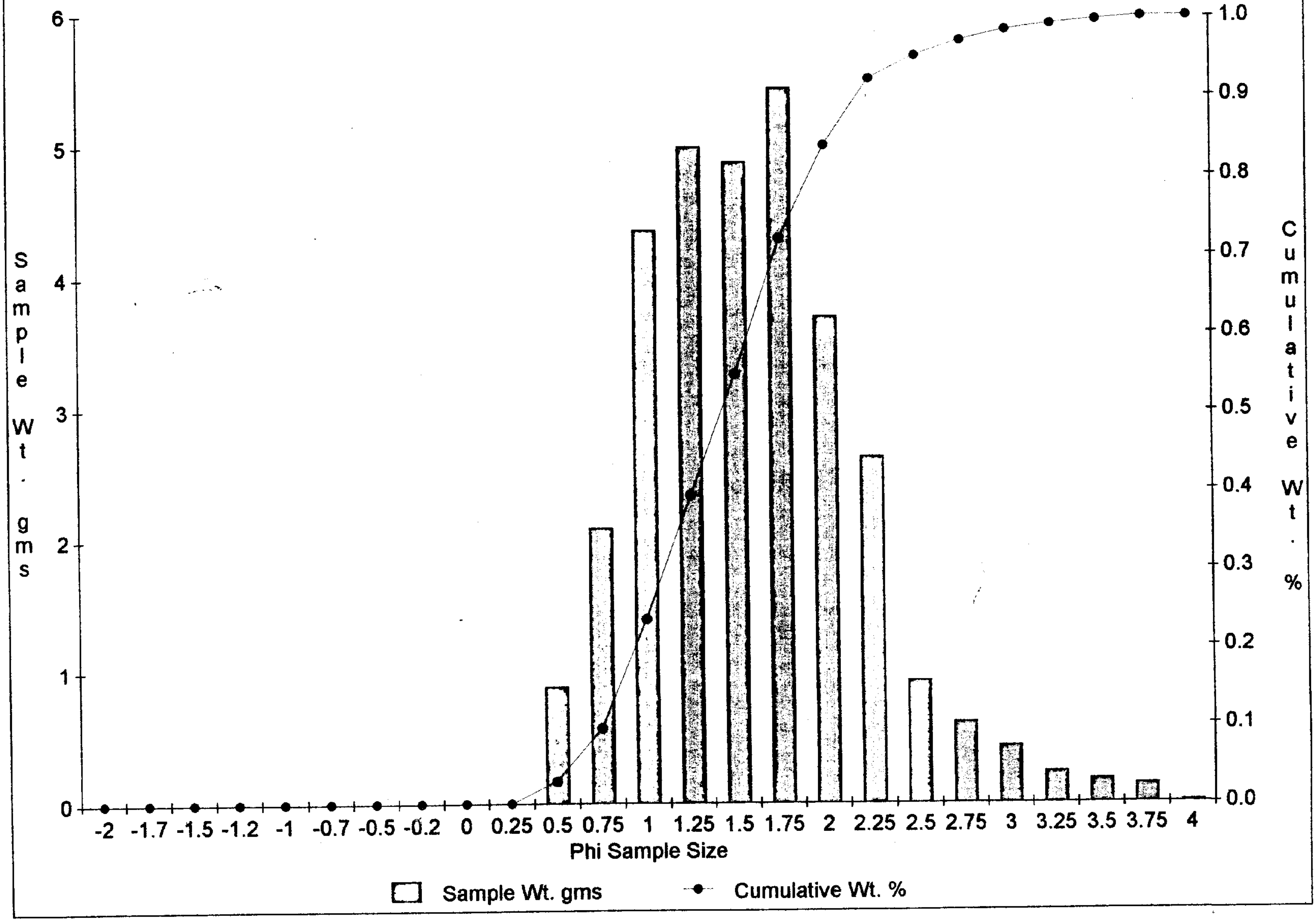
CORE (B-4)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0	0	0	0
0.5	0.8834	0.8834	0.0279685	0.0279685
0.75	2.0969	2.9803	0.0663881	0.0943566
1	4.3725	7.3528	0.1384338	0.2327904
1.25	5.0071	12.3599	0.1585253	0.3913156
1.5	4.8894	17.2493	0.1547989	0.5461145
1.75	5.4516	22.7009	0.1725982	0.7187127
2	3.7168	26.4177	0.1176742	0.8363869
2.25	2.6415	29.0592	0.0836301	0.9200171
2.5	0.9256	29.9848	0.0293046	0.9493217
2.75	0.6109	30.5957	0.0193412	0.9686628
3	0.4286	31.0243	0.0135695	0.9822324
3.25	0.2333	31.2576	0.0073863	0.9896187
3.5	0.1762	31.4338	0.0055785	0.9951972
3.75	0.1429	31.5767	0.0045242	0.9997214
4	0.0088	31.5855	0.0002786	1

Total Wt. 31.5855 gms
Median Weight 15.79275 gms
Mean Grain Size 1.42 phi 0.3737123 mm

Cum Wt. % B4

4.5'

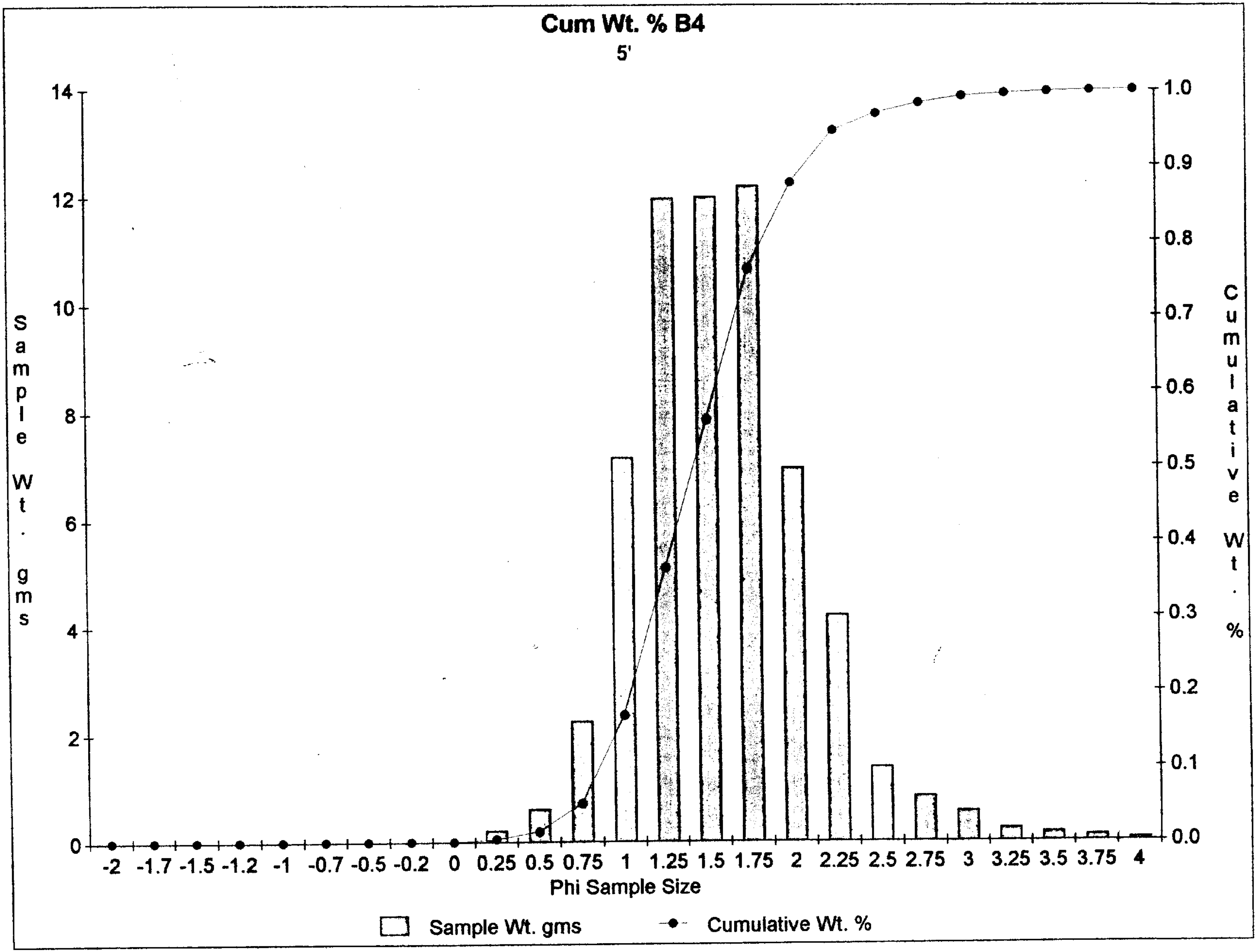

6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.2011	0.2011	0.0033039	0.0033039
0.5	0.6009	0.802	0.0098721	0.013176
0.75	2.2352	3.0372	0.0367219	0.0498979
1	7.1536	10.1908	0.1175259	0.1674238
1.25	11.9793	22.1701	0.1968069	0.3642306
1.5	12.0094	34.1795	0.1973014	0.561532
1.75	12.212	46.3915	0.2006299	0.7621619
2	6.9607	53.3522	0.1143567	0.8765186
2.25	4.2097	57.5619	0.0691608	0.9456794
2.5	1.3839	58.9458	0.022736	0.9684154
2.75	0.8358	59.7816	0.0137313	0.9821467
3	0.5574	60.339	0.0091575	0.9913042
3.25	0.227	60.566	0.0037294	0.9950335
3.5	0.1555	60.7215	0.0025547	0.9975882
3.75	0.1017	60.8232	0.0016708	0.9992591
4	0.0451	60.8683	0.0007409	1

Total Wt.	60.8683	gms		
Median Weight	30.43415	gms		
Mean Grain Size	1.42	phi	0.3737123	mm

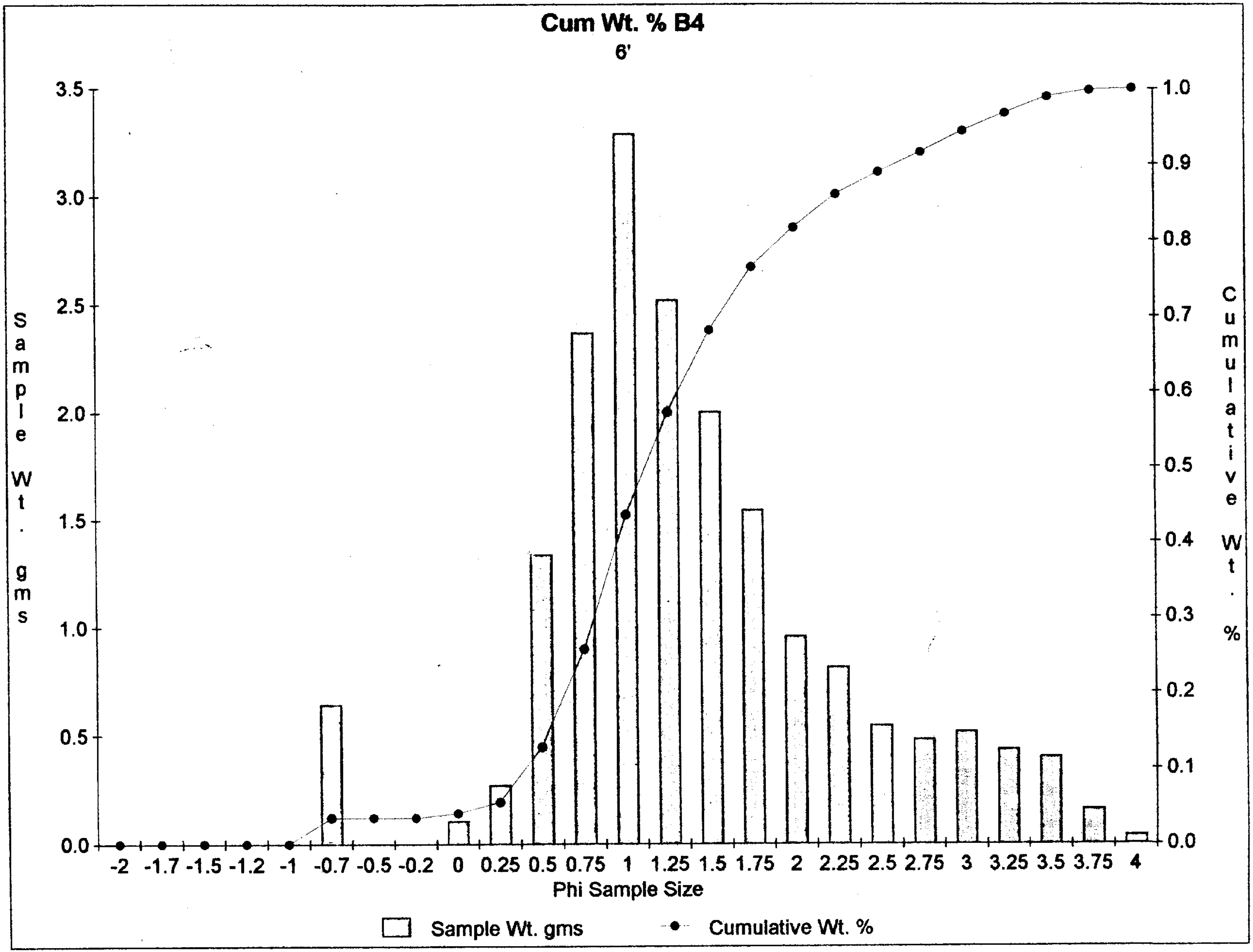

Cum Wt. % B4
5'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
14
12
10
8
6
4
2
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.6401	0.6401	0.0347493	0.0347493
-0.5	0	0.6401	0	0.0347493
-0.25	0	0.6401	0	0.0347493
0	0.1041	0.7442	0.0056513	0.0404006
0.25	0.2706	1.0148	0.0146902	0.0550908
0.5	1.3336	2.3484	0.0723976	0.1274884
0.75	2.3671	4.7155	0.1285036	0.255992
1	3.2902	8.0057	0.1786162	0.4346082
1.25	2.5221	10.5278	0.1369181	0.5715263
1.5	2.0017	12.5295	0.108667	0.6801933
1.75	1.5439	14.0734	0.0838142	0.7640075
2	0.9553	15.0287	0.0518607	0.8158682
2.25	0.813	15.8417	0.0441356	0.8600038
2.5	0.5427	16.3844	0.0294617	0.8894655
2.75	0.4816	16.866	0.0261448	0.9156103
3	0.5163	17.3823	0.0280286	0.9436389
3.25	0.4356	17.8179	0.0236476	0.9672864
3.5	0.4018	18.2197	0.0218127	0.9890991
3.75	0.1607	18.3804	0.008724	0.9978231
4	0.0401	18.4205	0.0021769	1

Total Wt.	18.4205 gms	
Median Weight	9.21025 gms	
Mean Grain Size	1.12 phi	0.4600938 mm

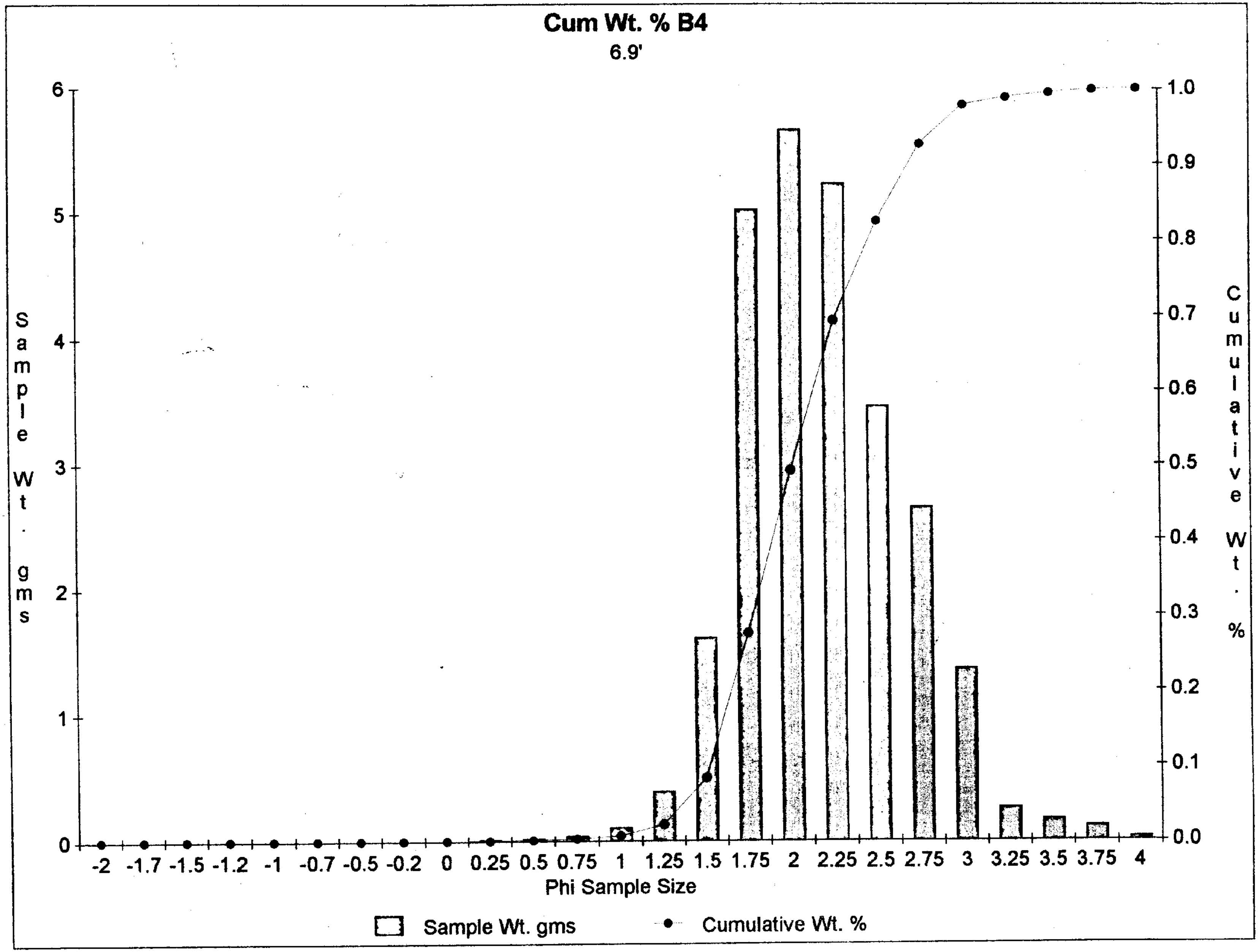
Cum Wt. % B4
6'
Sample Wt. gms
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-4)
DEPTH (6.9 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.0104	0.0104	0.0003974	0.0003974
0.5	0.0177	0.0281	0.0006763	0.0010736
0.75	0.0386	0.0667	0.0014748	0.0025484
1	0.1015	0.1682	0.003878	0.0064264
1.25	0.3857	0.5539	0.0147365	0.0211629
1.5	1.6106	2.1645	0.0615365	0.0826994
1.75	5.0356	7.2001	0.192396	0.2750954
2	5.6732	12.8733	0.2167569	0.4918523
2.25	5.2411	18.1144	0.2002476	0.6920999
2.5	3.4669	21.5813	0.1324604	0.8245603
2.75	2.6559	24.2372	0.1014744	0.9260347
3	1.3664	25.6036	0.0522063	0.978241
3.25	0.2615	25.8651	0.0099912	0.9882322
3.5	0.1686	26.0337	0.0064417	0.9946739
3.75	0.1134	26.1471	0.0043327	0.9990066
4	0.026	26.1731	0.0009934	1

Total Wt.	26.1731	gms	
Median Weight	13.08655	gms	
Mean Grain Size	2.01	phi	0.2482731 mm


Cum Wt. % B4

6.9'

Sample Wt. gms
0
1
2
3
4
5
6
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

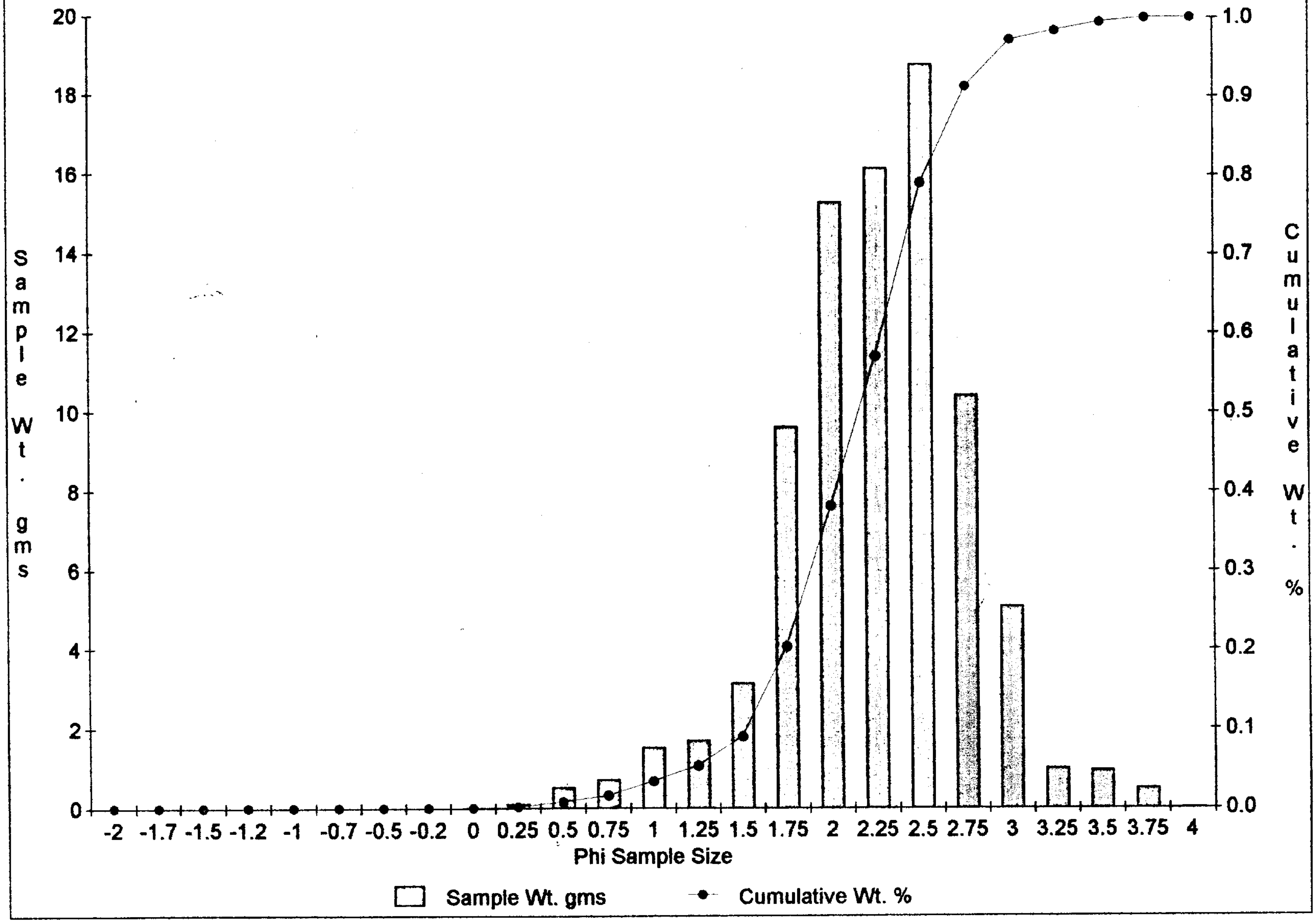
CORE (B-5)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.0071	0.0071	8.312E-05	8.312E-05
0.25	0.1041	0.1112	0.0012187	0.0013018
0.5	0.5071	0.6183	0.0059366	0.0072385
0.75	0.7001	1.3184	0.0081961	0.0154346
1	1.5109	2.8293	0.0176882	0.0331228
1.25	1.6808	4.5101	0.0196772	0.0528
1.5	3.1141	7.6242	0.0364569	0.0892569
1.75	9.6004	17.2246	0.1123924	0.2016493
2	15.2847	32.5093	0.1789388	0.3805881
2.25	16.1607	48.67	0.1891942	0.5697822
2.5	18.8015	67.4715	0.2201101	0.7898924
2.75	10.4143	77.8858	0.1219208	0.9118131
3	5.081	82.9668	0.0594835	0.9712966
3.25	1.0018	83.9686	0.0117281	0.9830248
3.5	0.9415	84.9101	0.0110222	0.994047
3.75	0.4955	85.4056	0.0058008	0.9998478
4	0.013	85.4186	0.0001522	1

Total Wt.	85.4186 gms	
Median Weight	42.7093 gms	
Mean Grain Size	2.16 phi	0.2237563 mm

Cum Wt. % B5

0'


Sample Wt. gms
20
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

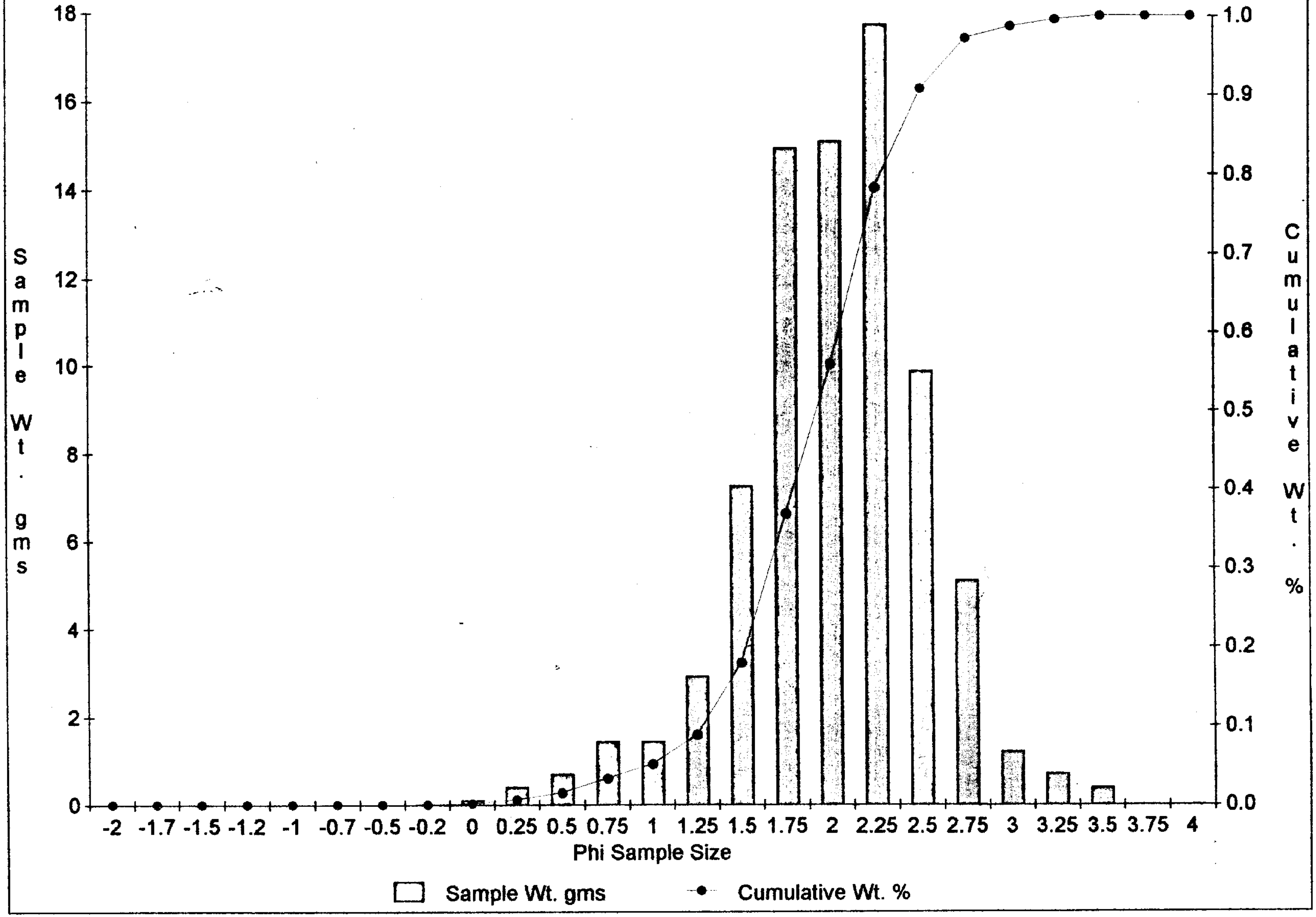
CORE (B-5)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.0045	0.0045	5.67E-05	5.67E-05
0	0.0984	0.1029	0.0012398	0.0012965
0.25	0.3961	0.499	0.0049906	0.006287
0.5	0.693	1.192	0.0087313	0.0150183
0.75	1.4232	2.6152	0.0179312	0.0329495
1	1.4272	4.0424	0.0179816	0.0509311
1.25	2.9088	6.9512	0.0366487	0.0875798
1.5	7.2489	14.2001	0.0913306	0.1789104
1.75	14.9709	29.171	0.1886219	0.3675323
2	15.126	44.297	0.190576	0.5581083
2.25	17.7801	62.0771	0.2240157	0.782124
2.5	9.8807	71.9578	0.1244893	0.9066132
2.75	5.0975	77.0553	0.0642246	0.9708378
3	1.2042	78.2595	0.015172	0.9860098
3.25	0.7031	78.9626	0.0088585	0.9948683
3.5	0.3875	79.3501	0.0048822	0.9997505
3.75	0.0141	79.3642	0.0001776	0.9999282
4	0.0057	79.3699	7.182E-05	1

Total Wt. 79.3699 gms
Median Weight 39.68495 gms
Mean Grain Size 1.92 phi 0.2642545 mm

Cum Wt. % B5

0.5'



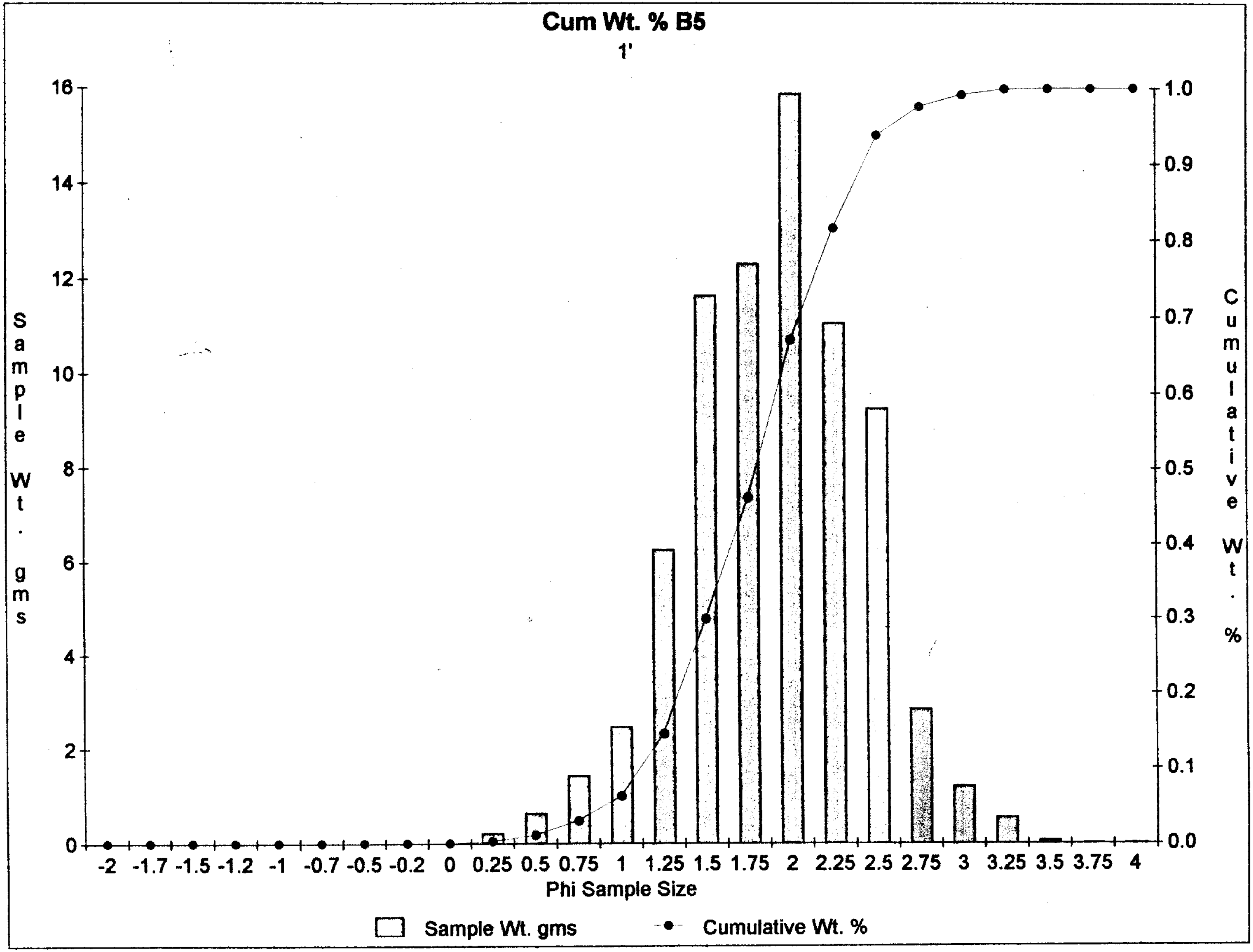
18
16
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-5)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.2089	0.2089	0.0027534	0.0027534
0.5	0.6301	0.839	0.0083051	0.0110585
0.75	1.4162	2.2552	0.0186664	0.029725
1	2.4627	4.7179	0.0324599	0.0621849
1.25	6.2672	10.9851	0.0826057	0.1447906
1.5	11.6502	22.6353	0.153557	0.2983475
1.75	12.311	34.9463	0.1622668	0.4606143
2	15.8906	50.8369	0.2094481	0.6700624
2.25	11.0693	61.9062	0.1459004	0.8159628
2.5	9.2688	71.175	0.1221686	0.9381314
2.75	2.8456	74.0206	0.0375068	0.9756382
3	1.2086	75.2292	0.0159301	0.9915684
3.25	0.555	75.7842	0.0073153	0.9988836
3.5	0.0688	75.853	0.0009068	0.9997904
3.75	0.0124	75.8654	0.0001634	0.9999539
4	0.0035	75.8689	4.613E-05	1

Total Wt.	75.8689 gms		
Median Weight	37.93445 gms		
Mean Grain Size	1.8	phi	0.2871746 mm

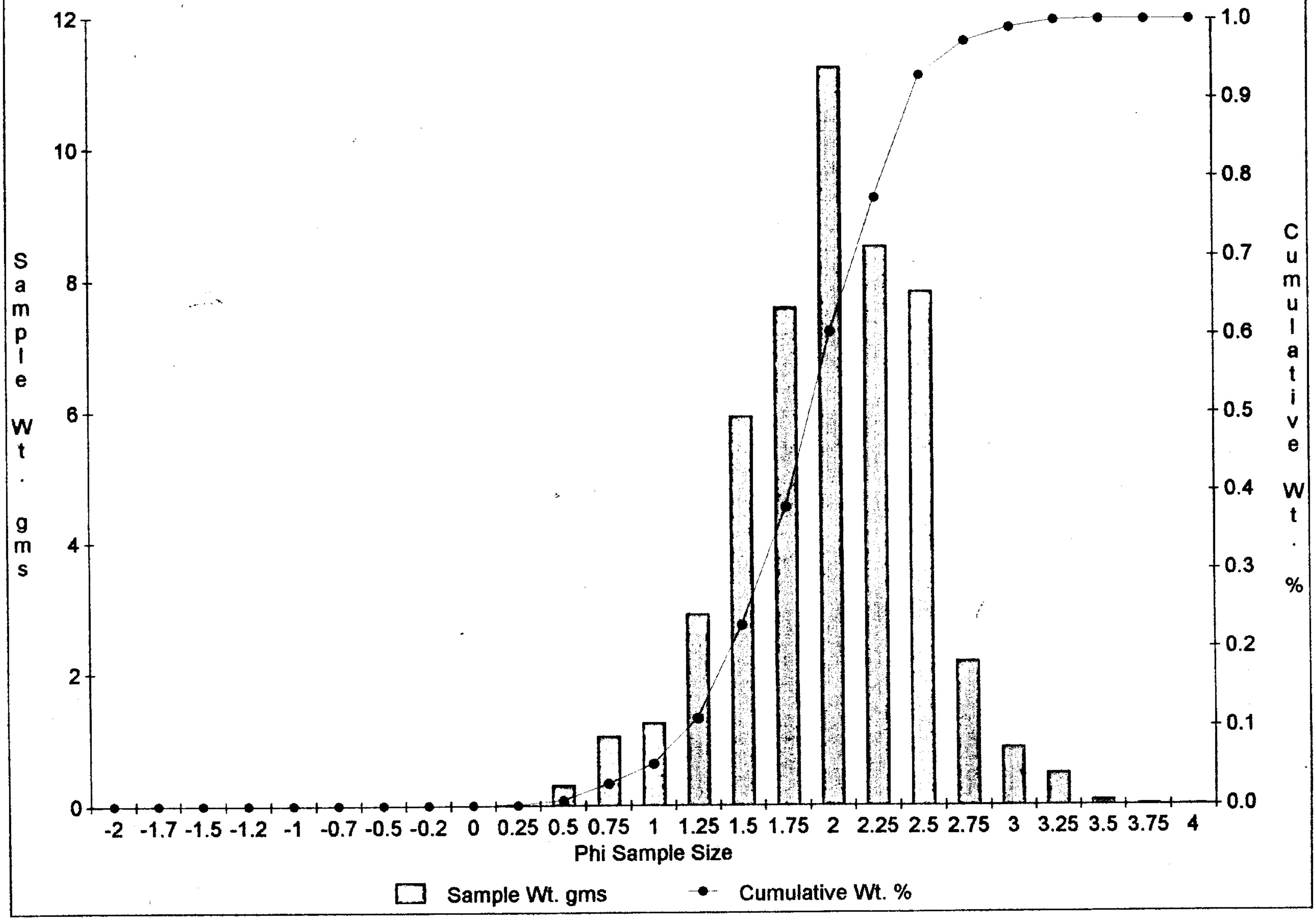

Cum Wt. % B5
1'
Sample Wt. gms
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-5)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.0107	0.0107	0.0002129	0.0002129
0.5	0.3041	0.3148	0.0060517	0.0062646
0.75	1.0415	1.3563	0.0207262	0.0269909
1	1.2389	2.5952	0.0246546	0.0516455
1.25	2.8906	5.4858	0.057524	0.1091695
1.5	5.9252	11.411	0.1179137	0.2270832
1.75	7.5941	19.0051	0.1511255	0.3782087
2	11.2618	30.2669	0.2241141	0.6023228
2.25	8.5255	38.7924	0.1696607	0.7719835
2.5	7.8371	46.6295	0.1559613	0.9279447
2.75	2.1794	48.8089	0.0433709	0.9713156
3	0.8735	49.6824	0.017383	0.9886986
3.25	0.4785	50.1609	0.0095223	0.9982209
3.5	0.073	50.2339	0.0014527	0.9996736
3.75	0.0097	50.2436	0.000193	0.9998667
4	0.0067	50.2503	0.0001333	1

Total Wt.	50.2503 gms	
Median Weight	25.12515 gms	
Mean Grain Size	1.89 phi	0.2698071 mm



Cum Wt. % B5

1.5'

Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

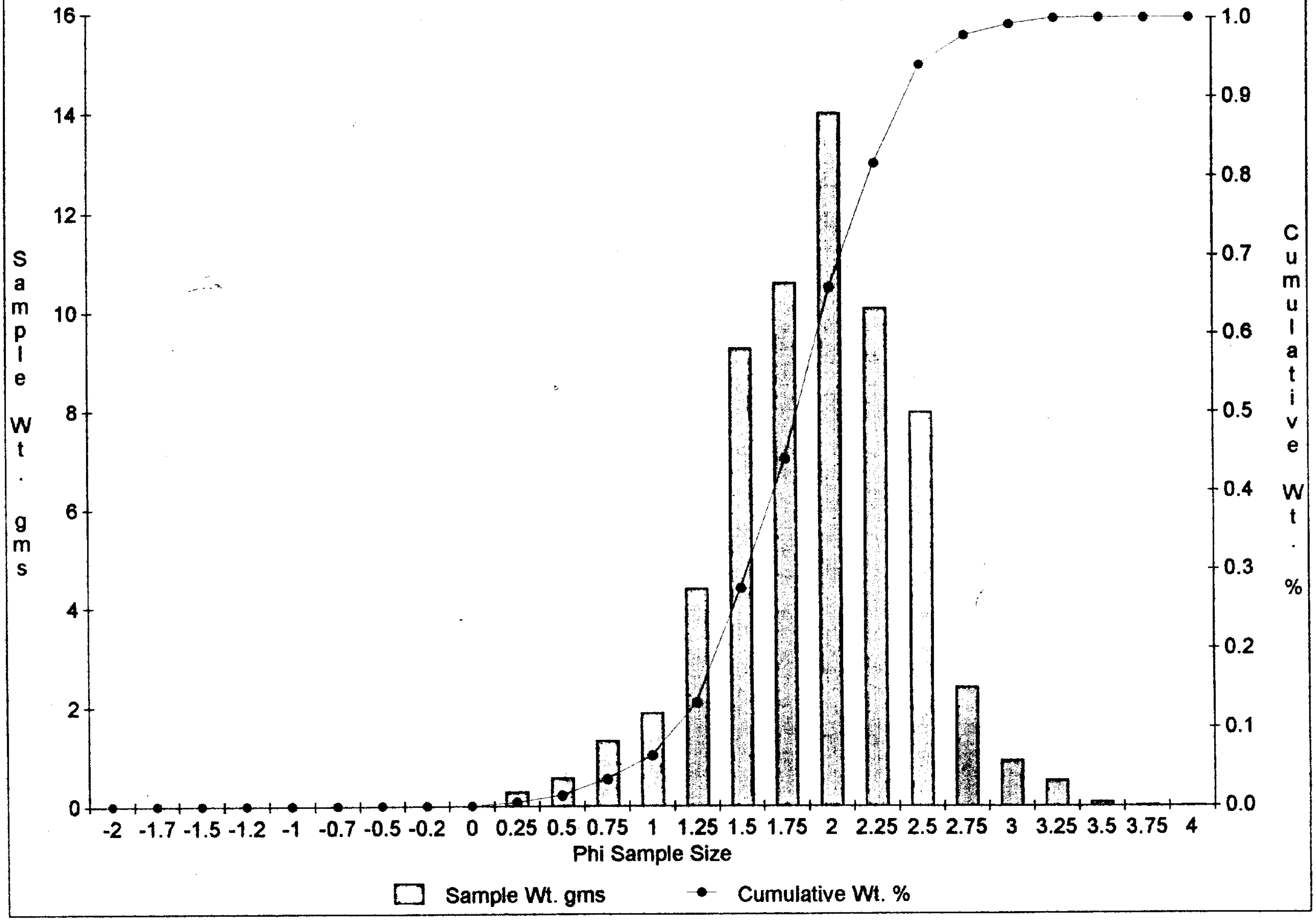
CORE (B-5)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.2833	0.2833	0.0044009	0.0044009
0.5	0.5572	0.8405	0.0086559	0.0130568
0.75	1.3137	2.1542	0.0204078	0.0334645
1	1.8797	4.0339	0.0292003	0.0626649
1.25	4.3865	8.4204	0.0681423	0.1308072
1.5	9.2702	17.6906	0.1440085	0.2748157
1.75	10.6125	28.3031	0.1648605	0.4396762
2	14.0572	42.3603	0.2183724	0.6580486
2.25	10.102	52.4623	0.1569301	0.8149787
2.5	7.9789	60.4412	0.1239487	0.9389274
2.75	2.4067	62.8479	0.037387	0.9763145
3	0.9067	63.7546	0.0140852	0.9903996
3.25	0.5122	64.2668	0.0079568	0.9983564
3.5	0.0748	64.3416	0.001162	0.9995184
3.75	0.0213	64.3629	0.0003309	0.9998493
4	0.0097	64.3726	0.0001507	1

Total Wt.	64.3726 gms		
Median Weight	32.1863 gms		
Mean Grain Size	1.82 phi	0.283221 mm	

Cum Wt. % B5

2'

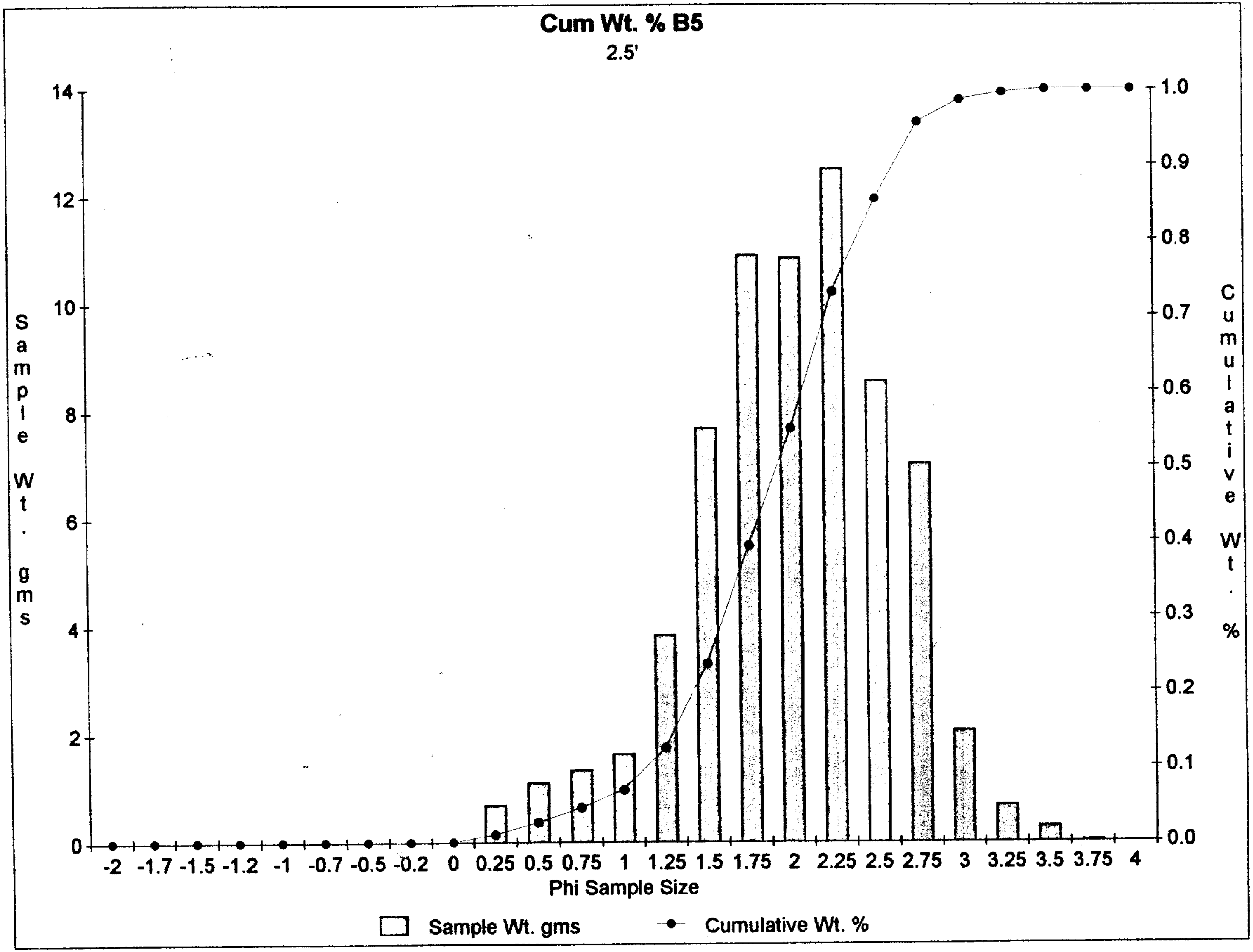

16
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-5)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.681	0.681	0.0098464	0.0098464
0.5	1.0928	1.7738	0.0158005	0.025647
0.75	1.3249	3.0987	0.0191564	0.0448034
1	1.6206	4.7193	0.0234319	0.0682352
1.25	3.8281	8.5474	0.0553496	0.1235848
1.5	7.689	16.2364	0.1111734	0.2347583
1.75	10.9109	27.1473	0.1577581	0.3925164
2	10.8528	38.0001	0.1569181	0.5494345
2.25	12.5084	50.5085	0.180856	0.7302905
2.5	8.5664	59.0749	0.1238596	0.8541501
2.75	7.038	66.1129	0.1017608	0.9559109
3	2.0556	68.1685	0.0297214	0.9856323
3.25	0.6774	68.8459	0.0097944	0.9954267
3.5	0.2887	69.1346	0.0041742	0.9996009
3.75	0.0235	69.1581	0.0003398	0.9999407
4	0.0041	69.1622	5.928E-05	1

Total Wt.	69.1622	gms	
Median Weight	34.5811	gms	
Mean Grain Size	1.92	phi	0.2642545 mm

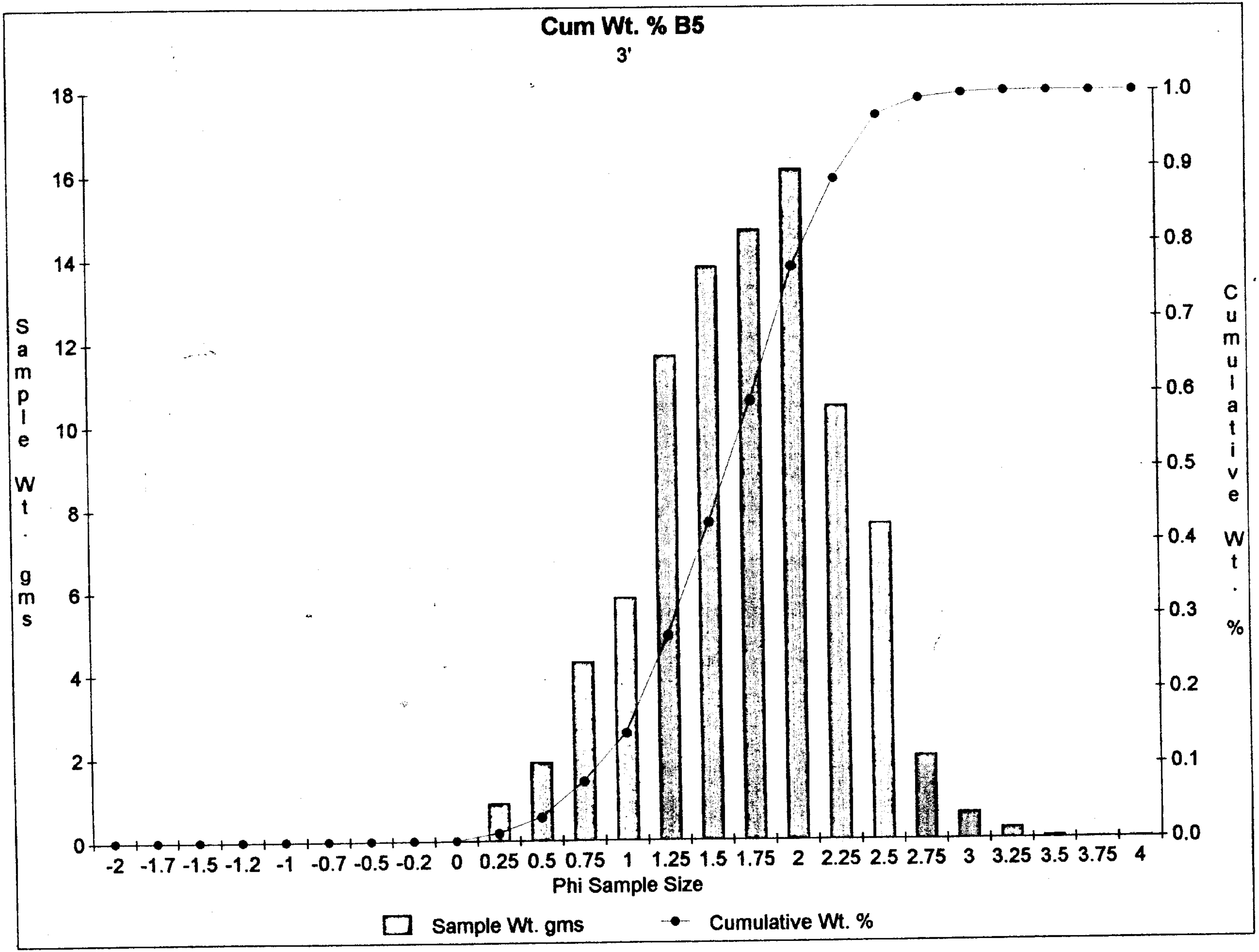

Cum Wt. % B5
2.5'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-5)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.8789	0.8789	0.0097523	0.0097523
0.5	1.8611	2.74	0.0206508	0.0304031
0.75	4.2674	7.0074	0.0473511	0.0777542
1	5.8262	12.8336	0.0646476	0.1424017
1.25	11.6818	24.5154	0.1296213	0.2720231
1.5	13.8043	38.3197	0.1531726	0.4251957
1.75	14.6856	53.0053	0.1629515	0.5881472
2	16.1231	69.1284	0.178902	0.7670493
2.25	10.4655	79.5939	0.1161253	0.8831746
2.5	7.6161	87.21	0.0845083	0.9676829
2.75	1.9979	89.2079	0.0221687	0.9898516
3	0.6184	89.8263	0.0068618	0.9967134
3.25	0.2464	90.0727	0.0027341	0.9994474
3.5	0.0413	90.114	0.0004583	0.9999057
3.75	0.0058	90.1198	6.436E-05	0.99997
4	0.0027	90.1225	2.996E-05	1

Total Wt.	90.1225	gms	
Median Weight	45.06125	gms	
Mean Grain Size	1.61	phi	0.3275984 mm


Cum Wt. % B5
3'
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

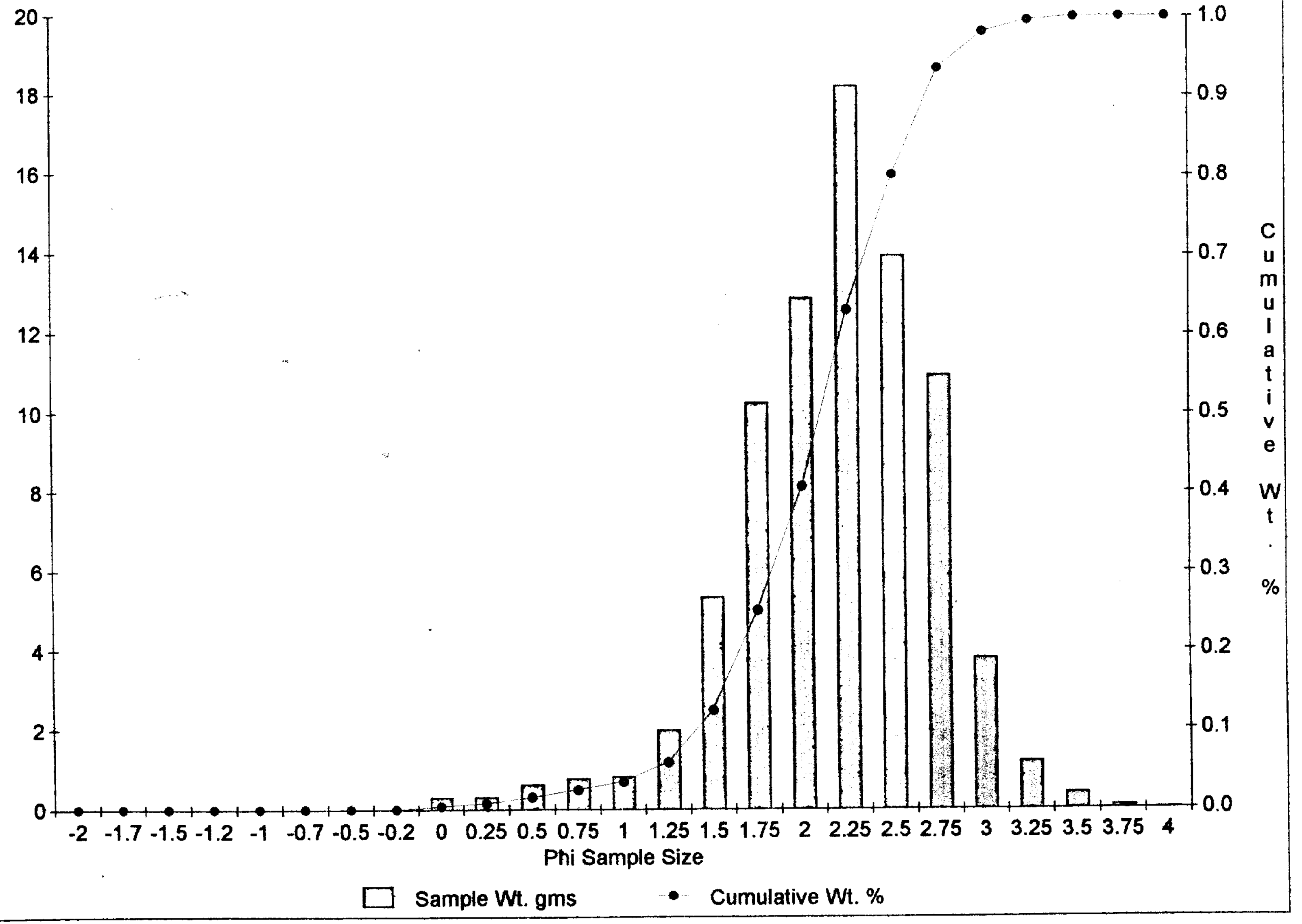
CORE (B-5)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.2907	0.2907	0.00356	0.00356
0.25	0.3018	0.5925	0.0036959	0.0072559
0.5	0.6174	1.2099	0.0075608	0.0148167
0.75	0.7505	1.9604	0.0091908	0.0240076
1	0.8016	2.762	0.0098166	0.0338242
1.25	1.9704	4.7324	0.02413	0.0579542
1.5	5.3052	10.0376	0.0649688	0.122923
1.75	10.2319	20.2695	0.1253025	0.2482255
2	12.8664	33.1359	0.1575652	0.4057908
2.25	18.2036	51.3395	0.222926	0.6287167
2.5	13.9417	65.2812	0.1707336	0.7994504
2.75	10.9362	76.2174	0.1339275	0.9333779
3	3.7794	79.9968	0.0462835	0.9796614
3.25	1.1937	81.1905	0.0146184	0.9942798
3.5	0.3875	81.578	0.0047454	0.9990252
3.75	0.0694	81.6474	0.0008499	0.9998751
4	0.0102	81.6576	0.0001249	1

Total Wt.	81.6576 gms	
Median Weight	40.8288 gms	
Mean Grain Size	2.11 phi	0.231647 mm

Cum Wt. % B5

3.5'

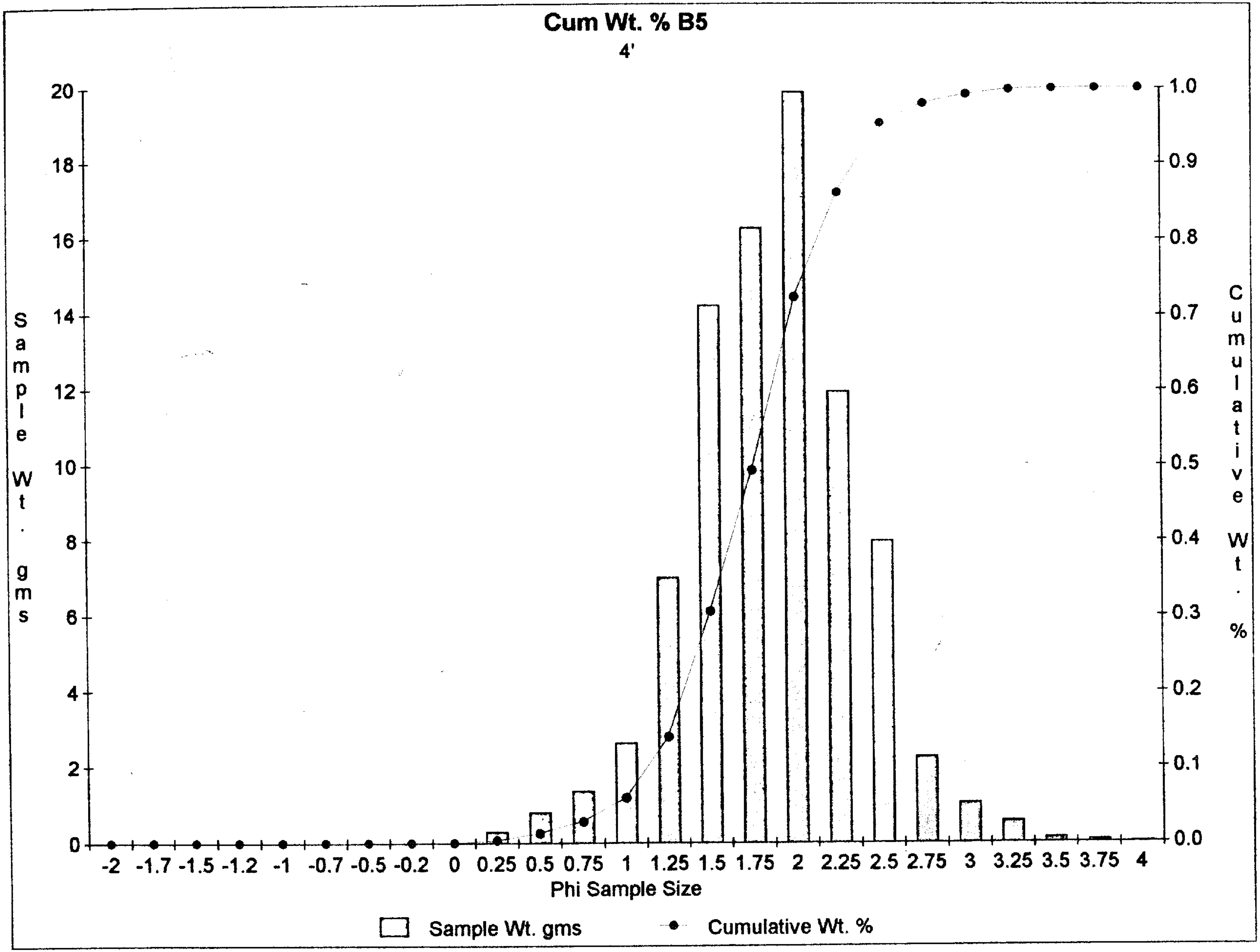

Sample Wt. gms
0
2
4
6
8
10
12
14
16
18
20
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-5)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.2864	0.2864	0.0033158	0.0033158
0.5	0.7884	1.0748	0.0091276	0.0124434
0.75	1.3398	2.4146	0.0155114	0.0279548
1	2.6236	5.0382	0.0303745	0.0583292
1.25	6.9897	12.0279	0.0809225	0.1392518
1.5	14.2307	26.2586	0.1647545	0.3040062
1.75	16.2754	42.534	0.1884268	0.492433
2	19.8889	62.4229	0.2302617	0.7226947
2.25	11.9327	74.3556	0.1381496	0.8608443
2.5	7.9765	82.3321	0.0923471	0.9531914
2.75	2.2574	84.5895	0.0261348	0.9793262
3	1.0337	85.6232	0.0119676	0.9912938
3.25	0.5645	86.1877	0.0065354	0.9978292
3.5	0.1225	86.3102	0.0014182	0.9992475
3.75	0.0561	86.3663	0.0006495	0.999897
4	0.0089	86.3752	0.000103	1

Total Wt.	86.3752 gms	
Median Weight	43.1876 gms	
Mean Grain Size	1.76 phi	0.2952482 mm



Cum Wt. % B5

4'

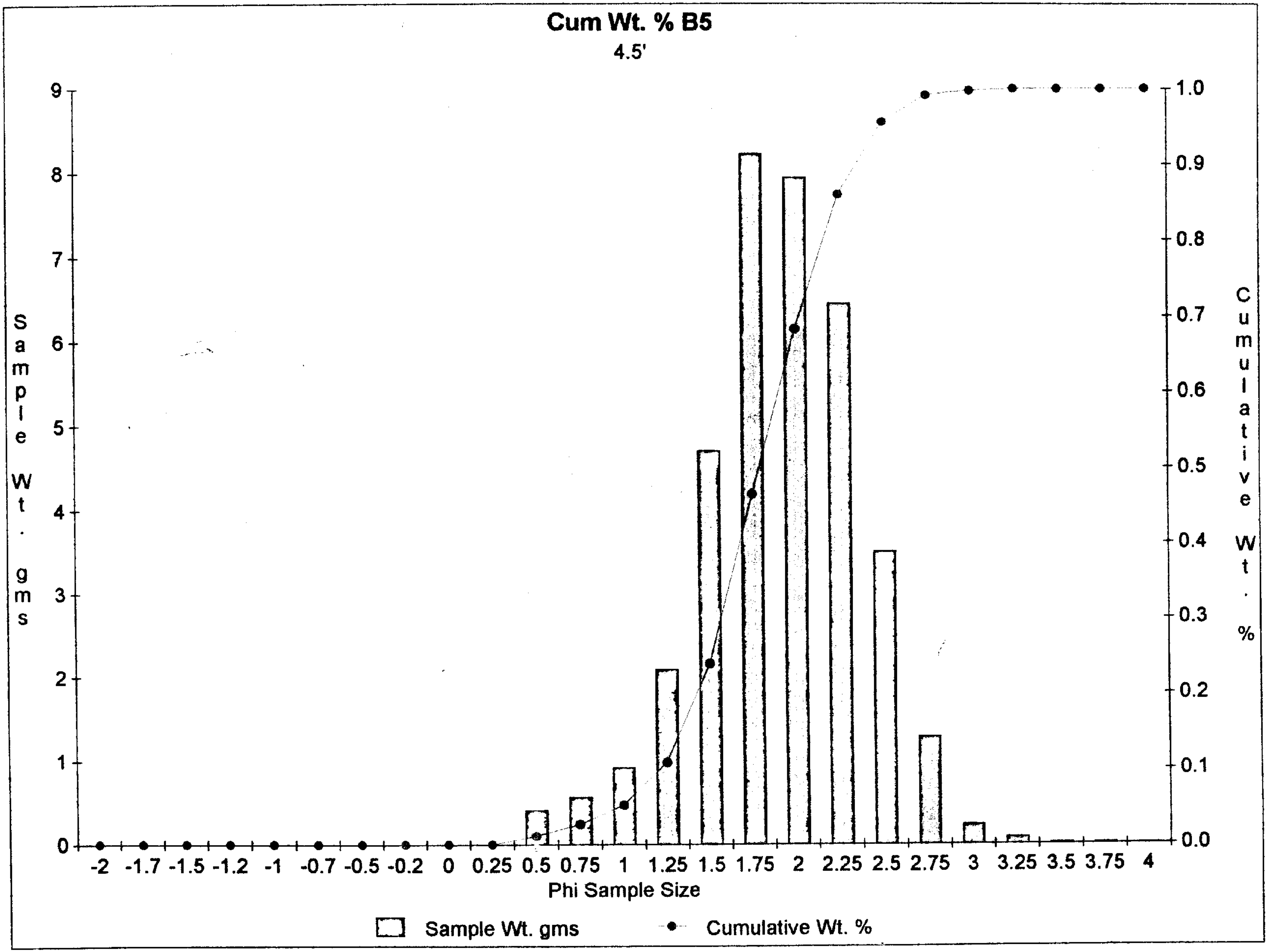
Sample Wt. gms
20
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-5)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0	0	0	0
0.5	0.401	0.401	0.0110316	0.0110316
0.75	0.5582	0.9592	0.0153562	0.0263878
1	0.9166	1.8758	0.0252159	0.0516037
1.25	2.0696	3.9454	0.0569352	0.1085389
1.5	4.6992	8.6446	0.1292761	0.237815
1.75	8.2239	16.8685	0.2262415	0.4640565
2	7.9409	24.8094	0.2184561	0.6825126
2.25	6.4474	31.2568	0.1773695	0.8598821
2.5	3.489	34.7458	0.0959832	0.9558653
2.75	1.2771	36.0229	0.0351333	0.9909986
3	0.2291	36.252	0.0063026	0.9973012
3.25	0.0785	36.3305	0.0021596	0.9994608
3.5	0.0083	36.3388	0.0002283	0.9996891
3.75	0.0096	36.3484	0.0002641	0.9999532
4	0.0017	36.3501	4.677E-05	1

Total Wt.	36.3501 gms		
Median Weight	18.17505 gms		
Mean Grain Size	1.79 phi	0.289172 mm	



Cum Wt. % B5

4.5'

Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

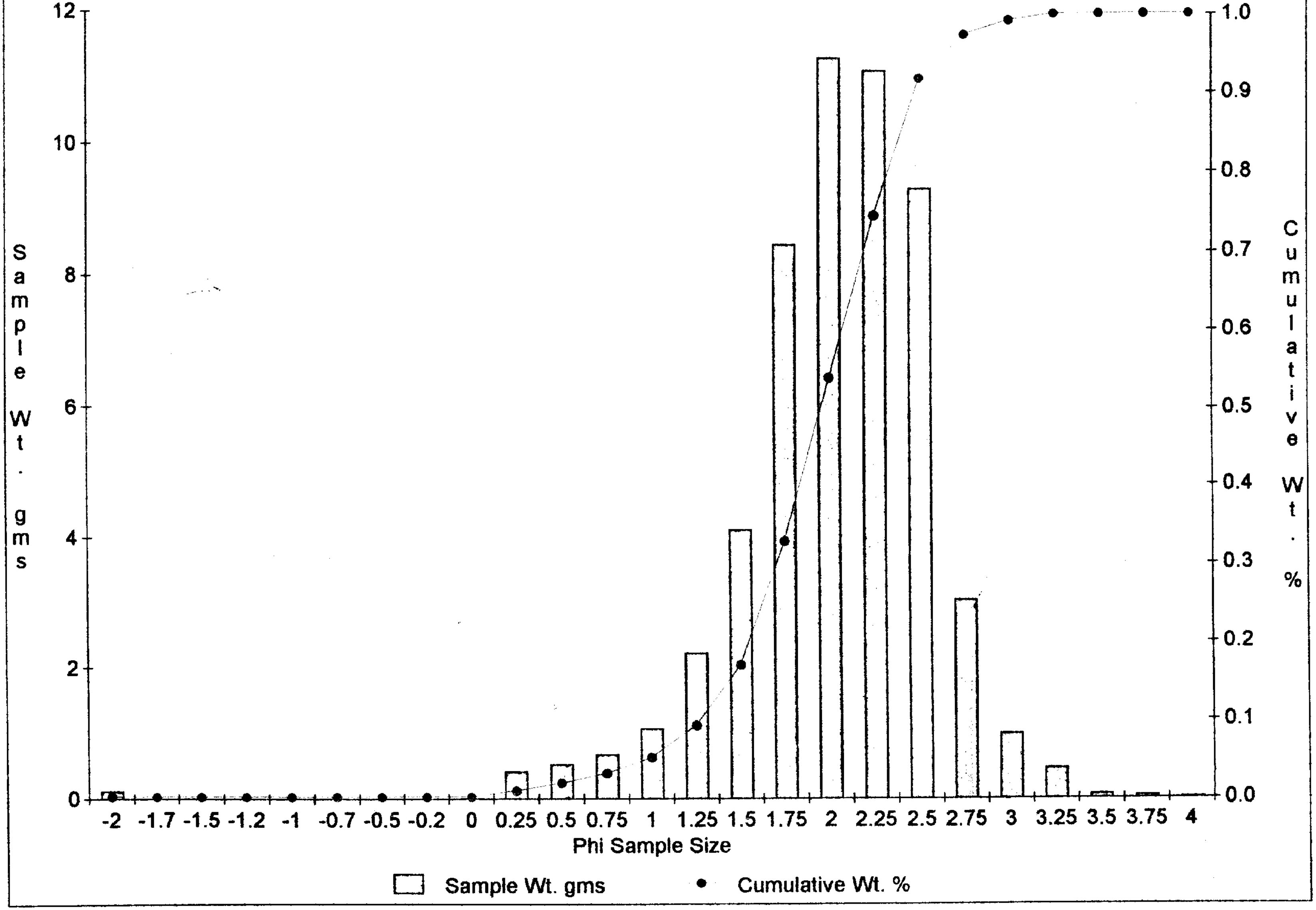
CORE (B-5)
DEPTH (5.3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.1149	0.1149	0.0021358	0.0021358
-1.75	0	0.1149	0	0.0021358
-1.5	0	0.1149	0	0.0021358
-1.25	0	0.1149	0.0021358	0.0021358
-1	0	0.1149	0.0021358	0.0021358
-0.75	0	0.1149	0	0.0021358
-0.5	0	0.1149	0	0.0021358
-0.25	0	0.1149	0	0.0021358
0	0.0054	0.1203	0.0001004	0.0022362
0.25	0.4141	0.5344	0.0076974	0.0099335
0.5	0.5201	1.0545	0.0096677	0.0196013
0.75	0.6639	1.7184	0.0123407	0.031942
1	1.0616	2.78	0.0197333	0.0516753
1.25	2.1985	4.9785	0.0408662	0.0925415
1.5	4.0801	9.0586	0.0758418	0.1683833
1.75	8.4621	17.5207	0.1572954	0.3256787
2	11.2881	28.8088	0.2098257	0.5355044
2.25	11.0938	39.9026	0.206214	0.7417185
2.5	9.3154	49.218	0.1731567	0.9148752
2.75	3.0222	52.2402	0.0561773	0.9710526
3	0.9915	53.2317	0.0184302	0.9894828
3.25	0.4583	53.69	0.008519	0.9980018
3.5	0.0589	53.7489	0.0010948	0.9990966
3.75	0.0381	53.787	0.0007082	0.9998048
4	0.0105	53.7975	0.0001952	1

Total Wt. 53.7975 gms
Median Weight 26.89875 gms
Mean Grain Size 1.96 phi 0.2570285 mm

Cum Wt. % B5

5.3'

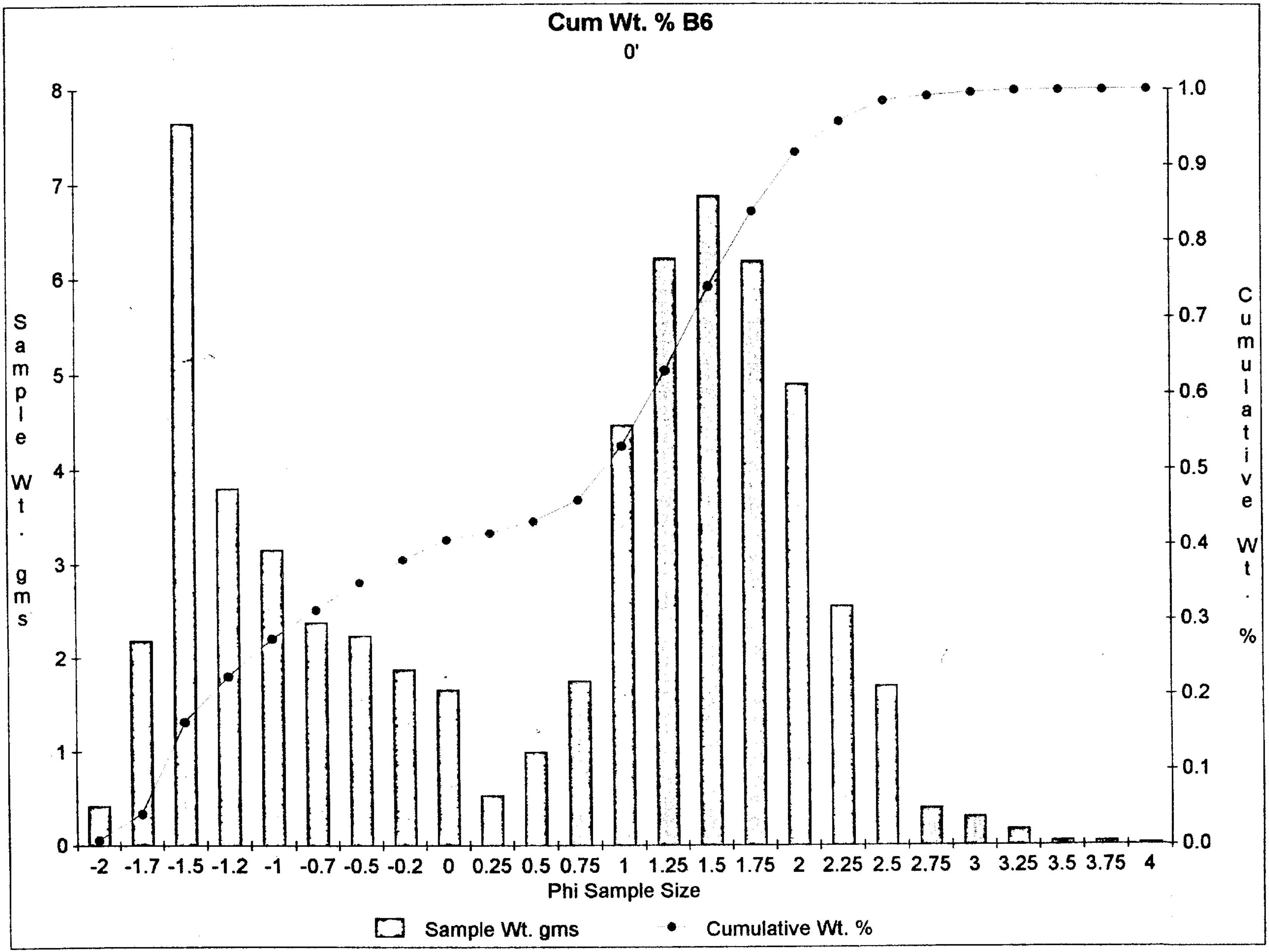

12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-6)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.419	0.419	0.0067126	0.0067126
-1.75	2.1893	2.6083	0.0350738	0.0417864
-1.5	7.643	10.2513	0.1224449	0.1642313
-1.25	3.8005	14.0518	0.2251173	0.2251173
-1	3.1507	17.2025	0.2755932	0.2755932
-0.75	2.3807	19.5832	0.0381401	0.3137333
-0.5	2.2358	21.819	0.0358187	0.349552
-0.25	1.8709	23.6899	0.0299728	0.3795248
0	1.6509	25.3408	0.0264483	0.4059731
0.25	0.5278	25.8686	0.0084556	0.4144287
0.5	0.991	26.8596	0.0158763	0.4303051
0.75	1.7408	28.6004	0.0278885	0.4581936
1	4.4581	33.0585	0.0714211	0.5296148
1.25	6.2096	39.2681	0.0994811	0.6290958
1.5	6.8749	46.143	0.1101396	0.7392354
1.75	6.1844	52.3274	0.0990774	0.8383128
2	4.8929	57.2203	0.0783869	0.9166996
2.25	2.5382	59.7585	0.0406633	0.957363
2.5	1.6883	61.4468	0.0270475	0.9844104
2.75	0.394	61.8408	0.0063121	0.9907225
3	0.3024	62.1432	0.0048446	0.9955671
3.25	0.1689	62.3121	0.0027059	0.998273
3.5	0.0472	62.3593	0.0007562	0.9990292
3.75	0.0405	62.3998	0.0006488	0.999678
4	0.0201	62.4199	0.000322	1

Total Wt.	62.4199	gms		
Median Weight	31.20995	gms		
Mean Grain Size	0.9	phi	0.5358867	mm



Cum Wt. % B6

0'

Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

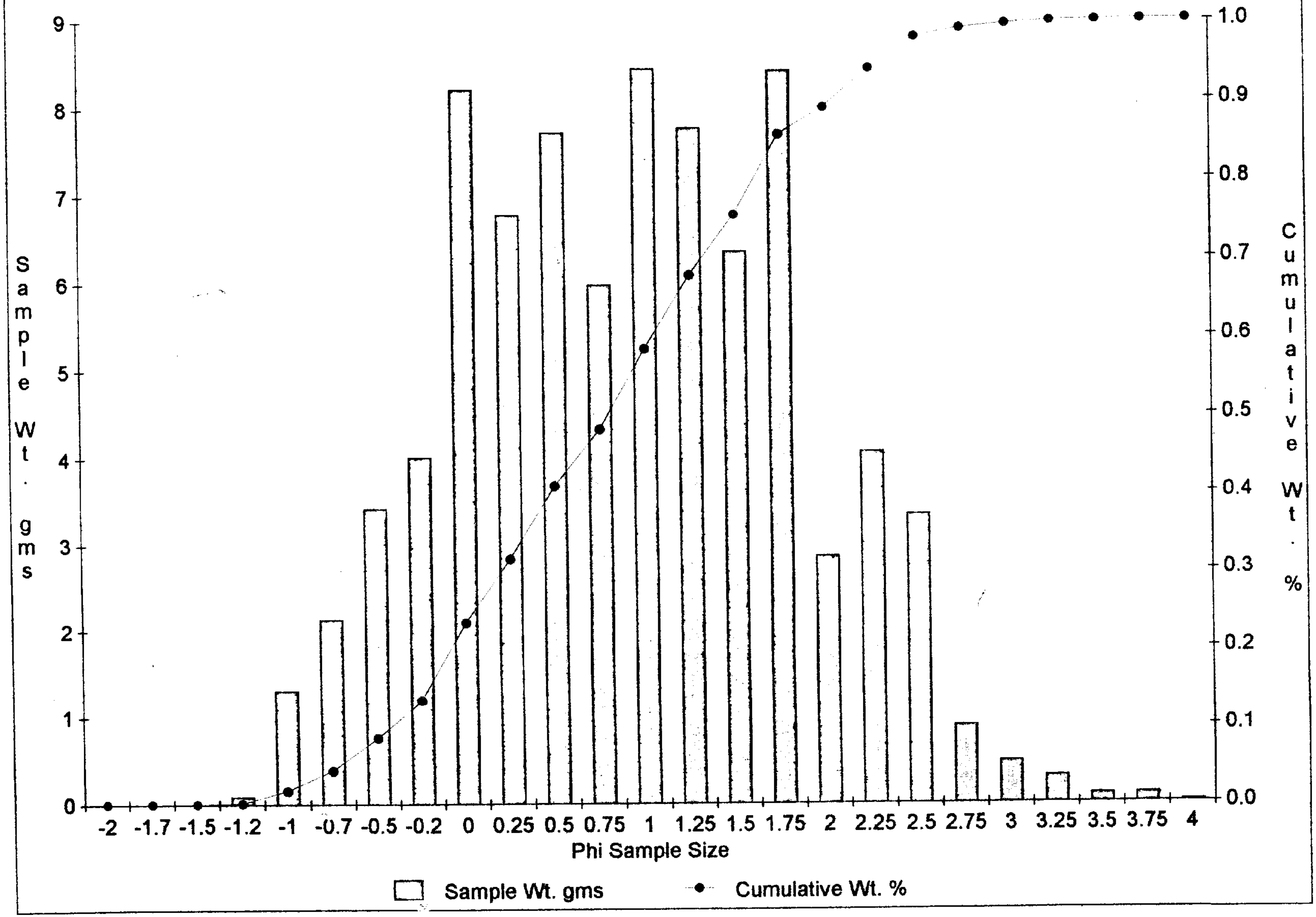
CORE (B-6)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0842	0.0842	0.0010194	0.0010194
-1	1.3031	1.3873	0.0167964	0.0167964
-0.75	2.1315	3.5188	0.0258067	0.0426031
-0.5	3.4079	6.9267	0.0412604	0.0838635
-0.25	3.9976	10.9243	0.0484001	0.1322636
0	8.1929	19.1172	0.0991938	0.2314574
0.25	6.765	25.8822	0.0819058	0.3133632
0.5	7.7052	33.5874	0.0932891	0.4066522
0.75	5.9626	39.55	0.0721909	0.4788431
1	8.4276	47.9776	0.1020354	0.5808785
1.25	7.7564	55.734	0.0939089	0.6747874
1.5	6.3435	62.0775	0.0768026	0.75159
1.75	8.4072	70.4847	0.1017884	0.8533784
2	2.8428	73.3275	0.0344186	0.8877969
2.25	4.0547	77.3822	0.0490914	0.9368884
2.5	3.3282	80.7104	0.0402955	0.9771838
2.75	0.8913	81.6017	0.0107912	0.987975
3	0.4756	82.0773	0.0057582	0.9937333
3.25	0.3034	82.3807	0.0036734	0.9974066
3.5	0.0975	82.4782	0.0011805	0.9985871
3.75	0.1017	82.5799	0.0012313	0.9998184
4	0.015	82.5949	0.0001816	1

Total Wt.	82.5949 gms		
Median Weight	41.29745 gms		
Mean Grain Size	0.8	phi	0.5743492 mm

Cum Wt. % B6

0.5'

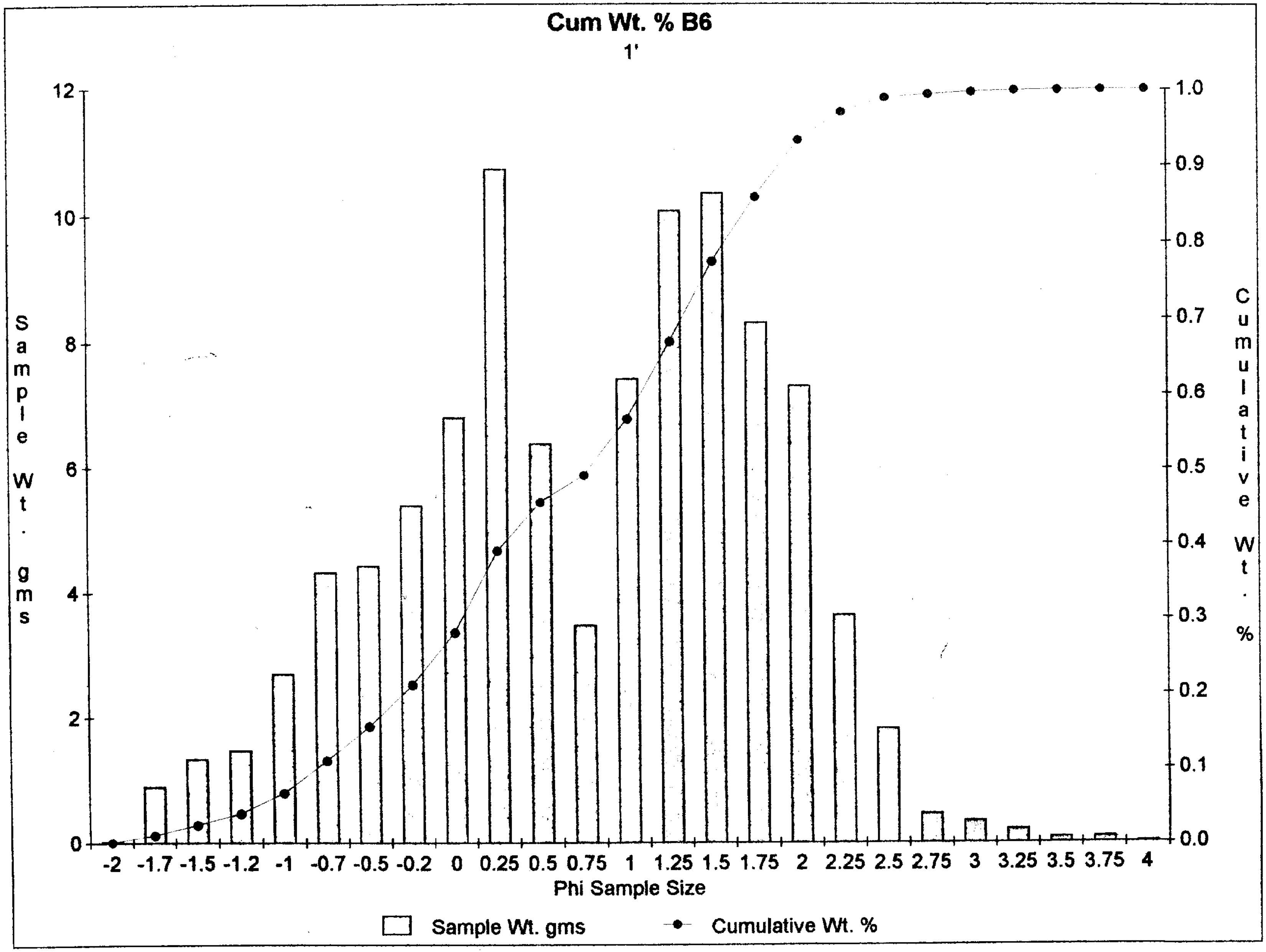

Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-6)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0204	0.0204	0.000208	0.000208
-1.75	0.8901	0.9105	0.0090739	0.0092818
-1.5	1.3446	2.2551	0.0137071	0.022989
-1.25	1.4789	3.734	0.0150762	0.0380652
-1	2.7038	6.4378	0.0275631	0.0656283
-0.75	4.3284	10.7662	0.0441246	0.1097529
-0.5	4.425	15.1912	0.0451094	0.1548623
-0.25	5.3923	20.5835	0.0549702	0.2098325
0	6.8042	27.3877	0.0693634	0.279196
0.25	10.7241	38.1118	0.1093237	0.3885197
0.5	6.3747	44.4865	0.064985	0.4535047
0.75	3.4662	47.9527	0.0353352	0.4888399
1	7.4252	55.3779	0.075694	0.5645339
1.25	10.082	65.4599	0.102778	0.667312
1.5	10.3592	75.8191	0.1056039	0.7729158
1.75	8.3143	84.1334	0.0847577	0.8576735
2	7.3173	91.4507	0.0745941	0.9322676
2.25	3.6279	95.0786	0.0369836	0.9692512
2.5	1.8222	96.9008	0.0185759	0.9878271
2.75	0.459	97.3598	0.0046791	0.9925062
3	0.3422	97.702	0.0034885	0.9959947
3.25	0.2114	97.9134	0.0021551	0.9981498
3.5	0.0787	97.9921	0.0008023	0.998952
3.75	0.0903	98.0824	0.0009205	0.9998726
4	0.0125	98.0949	0.0001274	1

Total Wt.	98.0949	gms	
Median Weight	49.04745	gms	
Mean Grain Size	0.79	phi	0.5783441 mm

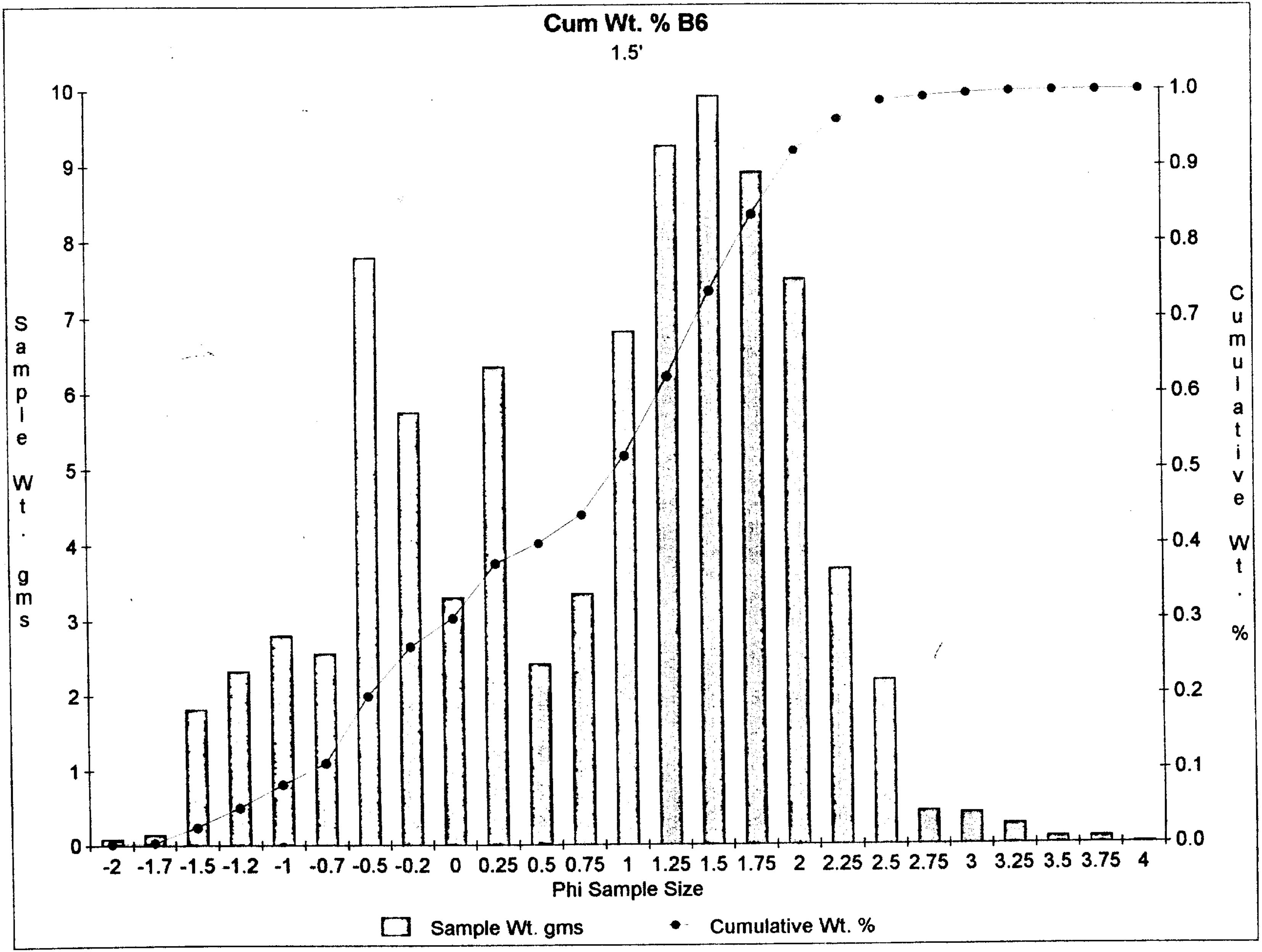

Cum Wt. % B6
1'
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-6)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0841	0.0841	0.0009545	0.0009545
-1.75	0.141	0.2251	0.0016003	0.0025547
-1.5	1.8203	2.0454	0.0206592	0.023214
-1.25	2.3276	4.373	0.0496307	0.0496307
-1	2.7984	7.1714	0.0813907	0.0813907
-0.75	2.557	9.7284	0.0290203	0.110411
-0.5	7.774	17.5024	0.0882298	0.1986408
-0.25	5.7406	23.243	0.0651521	0.2637929
0	3.2866	26.5296	0.0373008	0.3010936
0.25	6.3346	32.8642	0.0718936	0.3729872
0.5	2.4028	35.267	0.0272702	0.4002574
0.75	3.3295	38.5965	0.0377876	0.4380451
1	6.7984	45.3949	0.0771574	0.5152024
1.25	9.2524	54.6473	0.1050087	0.6202111
1.5	9.911	64.5583	0.1124834	0.7326945
1.75	8.9069	73.4652	0.1010875	0.833782
2	7.4882	80.9534	0.0849862	0.9187682
2.25	3.6659	84.6193	0.0416056	0.9603738
2.5	2.1837	86.803	0.0247836	0.9851573
2.75	0.4437	87.2467	0.0050357	0.990193
3	0.4136	87.6603	0.0046941	0.9948871
3.25	0.2587	87.919	0.0029361	0.9978232
3.5	0.0886	88.0076	0.0010056	0.9988287
3.75	0.0901	88.0977	0.0010226	0.9998513
4	0.0131	88.1108	0.0001487	1

Total Wt.	88.1108 gms
Median Weight	44.0554 gms
Mean Grain Size	0.95 phi 0.5176325 mm


Cum Wt. % B6
1.5'
Sample Wt. gms
0
1
2
3
4
5
6
7
8
9
10
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

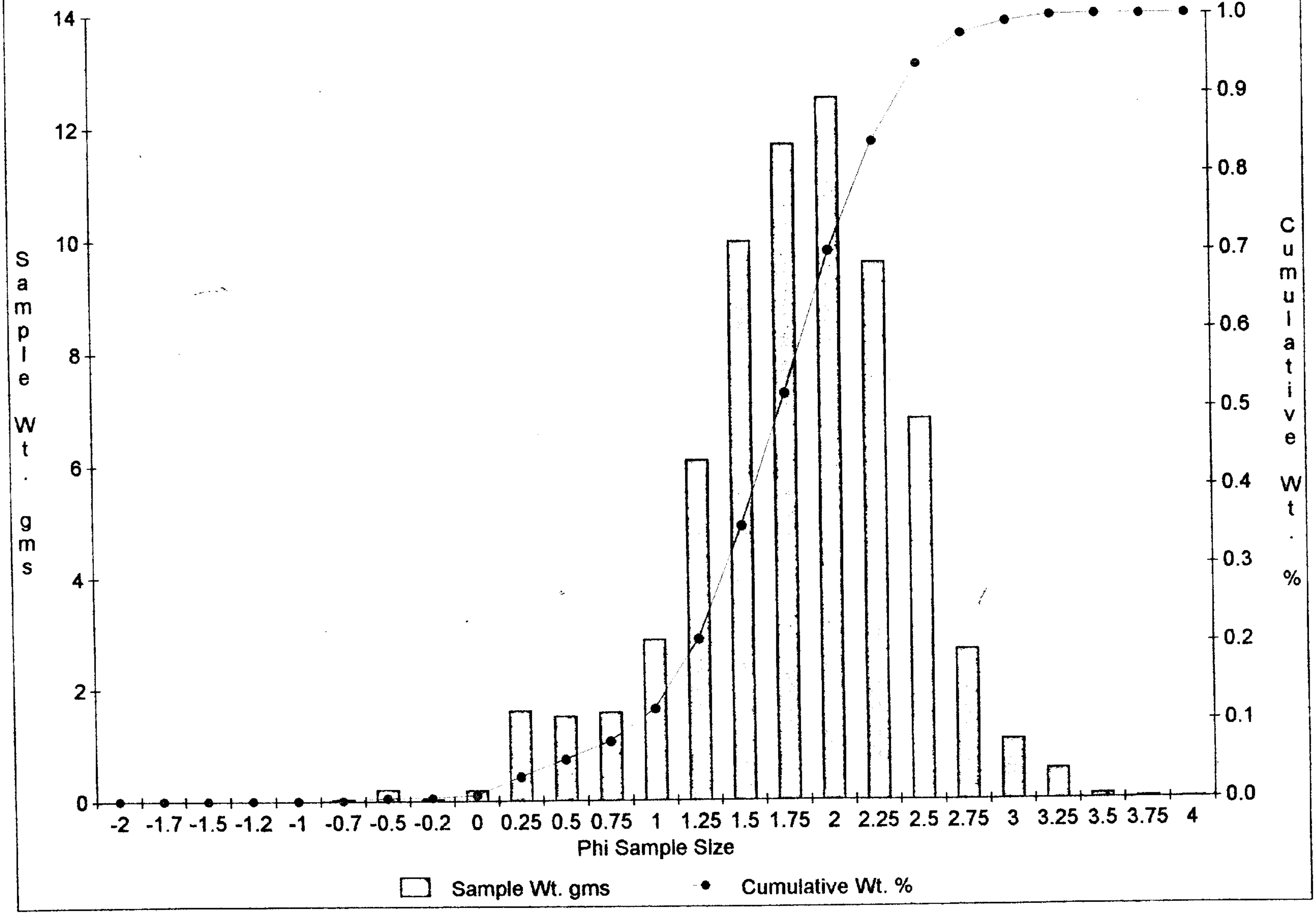
CORE (B-6)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0305	0.0305	0.0004426	0.0004426
-0.5	0.2041	0.2346	0.0029618	0.0034044
-0.25	0.0301	0.2647	0.0004368	0.0038412
0	0.1877	0.4524	0.0027238	0.0065651
0.25	1.5914	2.0438	0.0230939	0.029659
0.5	1.4947	3.5385	0.0216906	0.0513496
0.75	1.5574	5.0959	0.0226005	0.0739501
1	2.8359	7.9318	0.0411537	0.1151038
1.25	6.0574	13.9892	0.0879031	0.2030068
1.5	9.9553	23.9445	0.1444681	0.347475
1.75	11.6852	35.6297	0.1695719	0.5170469
2	12.5148	48.1445	0.1816108	0.6986577
2.25	9.5855	57.73	0.1391017	0.8377594
2.5	6.7976	64.5276	0.0986446	0.936404
2.75	2.6631	67.1907	0.0386461	0.9750501
3	1.0684	68.2591	0.0155043	0.9905543
3.25	0.5336	68.7927	0.0077434	0.9982978
3.5	0.0809	68.8736	0.001174	0.9994718
3.75	0.0257	68.8993	0.000373	0.9998447
4	0.0107	68.91	0.0001553	1

Total Wt.	68.91	gms	
Median Weight	34.455	gms	
Mean Grain Size	1.72	phi	0.3035487 mm

Cum Wt. % B6

2'


Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

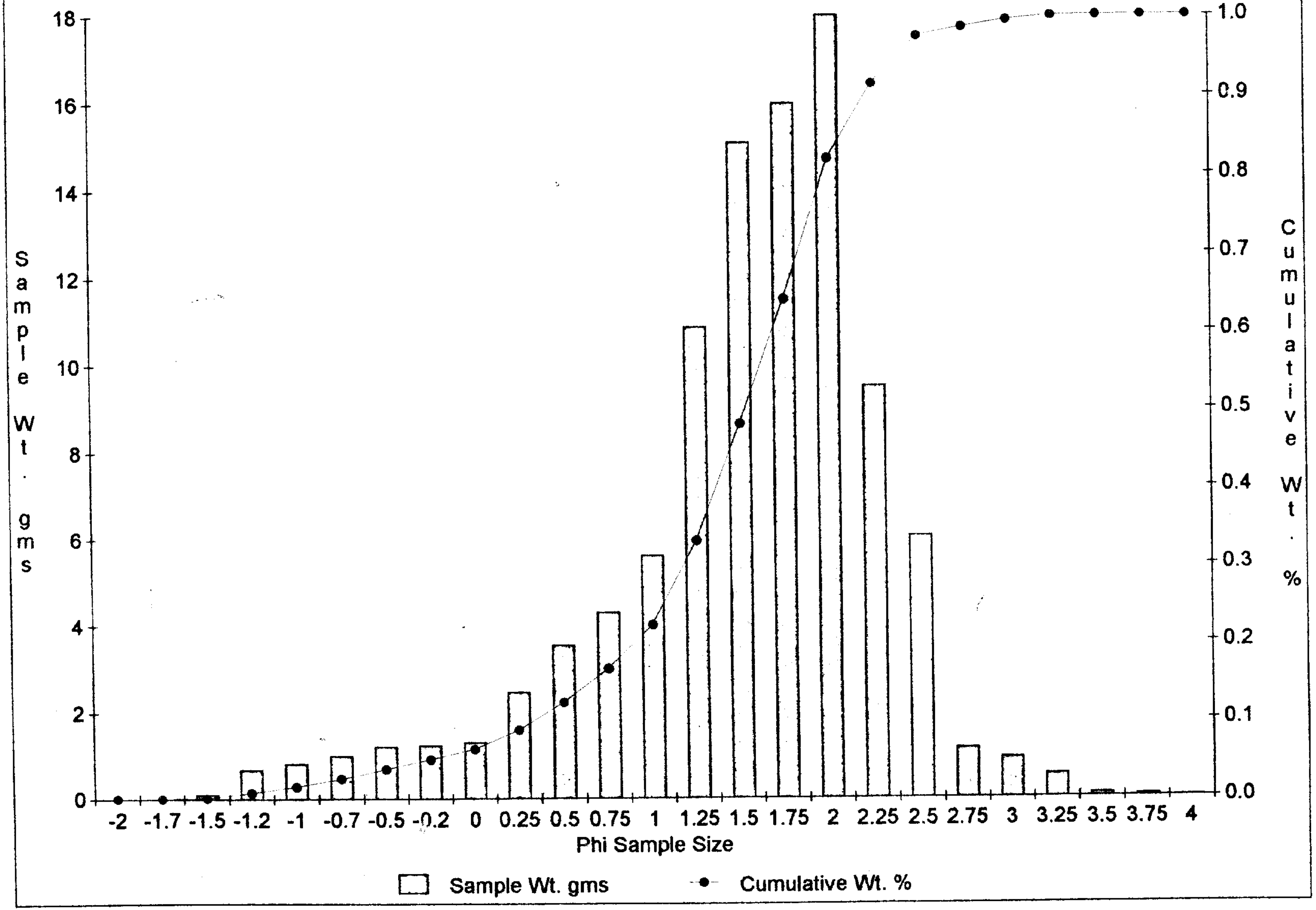
CORE (B-6)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0961	0.0961	0.0009587	0.0009587
-1.25	0.6777	0.7738	0.0077199	0.0077199
-1	0.8149	1.5887	0.0158498	0.0158498
-0.75	0.9819	2.5706	0.009796	0.0256458
-0.5	1.2004	3.771	0.0119759	0.0376216
-0.25	1.2146	4.9856	0.0121175	0.0497392
0	1.2913	6.2769	0.0128827	0.0626219
0.25	2.4447	8.7216	0.0243897	0.0870116
0.5	3.5098	12.2314	0.0350157	0.1220274
0.75	4.2594	16.4908	0.0424942	0.1645215
1	5.5784	22.0692	0.0556533	0.2201748
1.25	10.8501	32.9193	0.1082467	0.3284215
1.5	15.0851	48.0044	0.1504975	0.478919
1.75	15.9792	63.9836	0.1594175	0.6383365
2	17.9897	81.9733	0.1794754	0.817812
2.25	9.4943	91.4676	0.0947205	0.9125325
2.5	6.0428	97.5104	0.0602864	0.9728188
2.75	1.1403	98.6507	0.0113763	0.9841951
3	0.9204	99.5711	0.0091824	0.9933776
3.25	0.5259	100.097	0.0052467	0.9986242
3.5	0.0824	100.1794	0.0008221	0.9994463
3.75	0.0498	100.2292	0.0004968	0.9999431
4	0.0057	100.2349	5.687E-05	1

Total Wt.	100.2349	gms		
Median Weight	50.11745	gms		
Mean Grain Size	1.53	phi	0.3462774	mm

Cum Wt. % B6

2.5'


Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

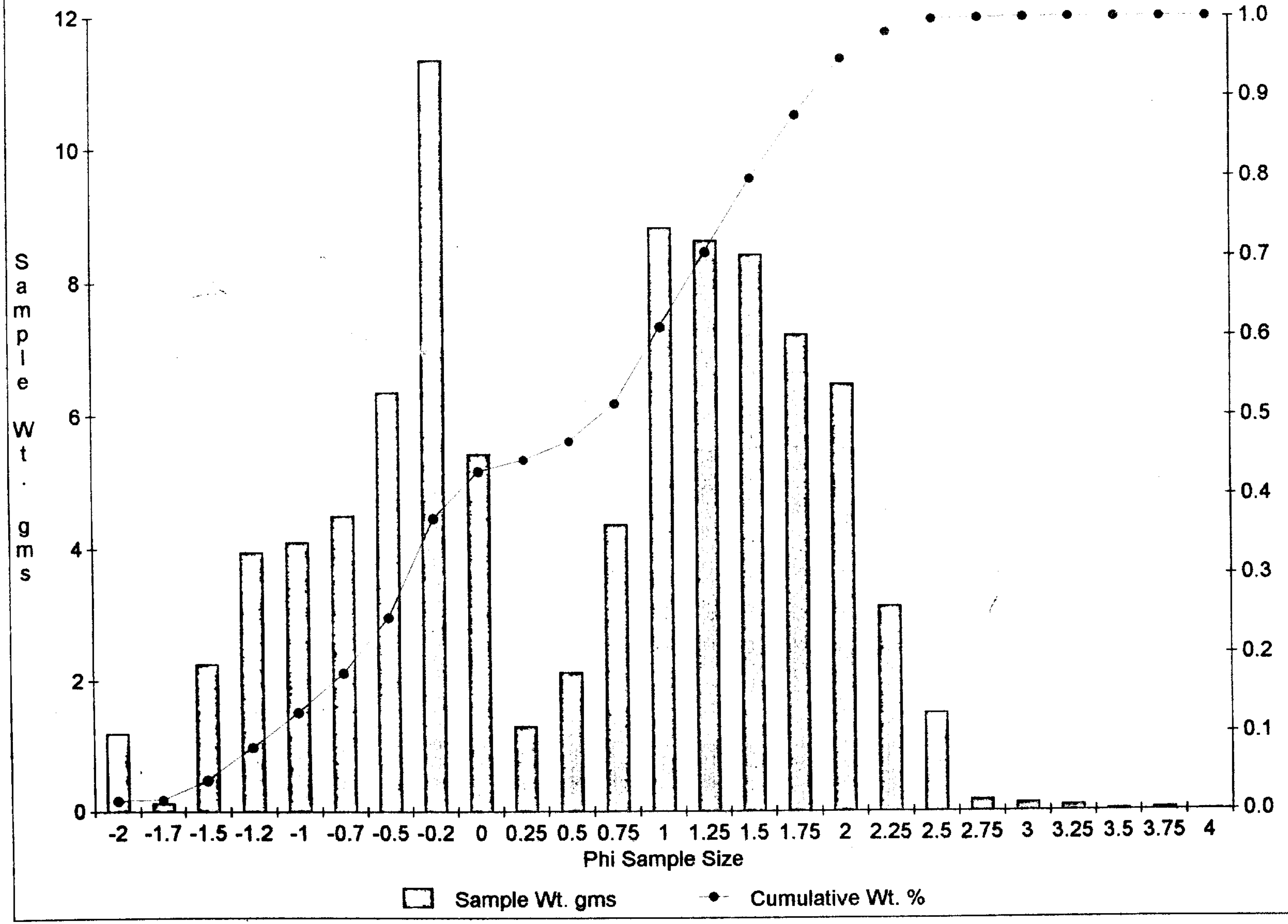
CORE (B-6)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	1.203	1.203	0.0131593	0.0131593
-1.75	0.1174	1.3204	0.0012842	0.0144435
-1.5	2.256	3.5764	0.0246778	0.0391214
-1.25	3.9476	7.524	0.0823032	0.0823032
-1	4.0944	11.6184	0.1270908	0.1270908
-0.75	4.4863	16.1047	0.0490745	0.1761653
-0.5	6.3386	22.4433	0.0693364	0.2455017
-0.25	11.3132	33.7565	0.1237523	0.369254
0	5.4041	39.1606	0.0591141	0.4283681
0.25	1.3031	40.4637	0.0142543	0.4426224
0.5	2.1104	42.5741	0.0230851	0.4657076
0.75	4.3285	46.9026	0.0473484	0.5130559
1	8.8039	55.7065	0.0963037	0.6093596
1.25	8.6113	64.3178	0.0941969	0.7035565
1.5	8.4026	72.7204	0.091914	0.7954705
1.75	7.2038	79.9242	0.0788006	0.8742711
2	6.4546	86.3788	0.0706053	0.9448763
2.25	3.1022	89.481	0.0339342	0.9788105
2.5	1.4979	90.9789	0.0163852	0.9951957
2.75	0.1709	91.1498	0.0018694	0.9970651
3	0.1216	91.2714	0.0013302	0.9983953
3.25	0.0794	91.3508	0.0008685	0.9992638
3.5	0.0195	91.3703	0.0002133	0.9994771
3.75	0.0387	91.409	0.0004233	0.9999005
4	0.0091	91.4181	9.954E-05	1

Total Wt.	91.4181	gms		
Median Weight	45.70905	gms		
Mean Grain Size	0.68	phi	0.6241653	mm

Cum Wt. % B6

3'



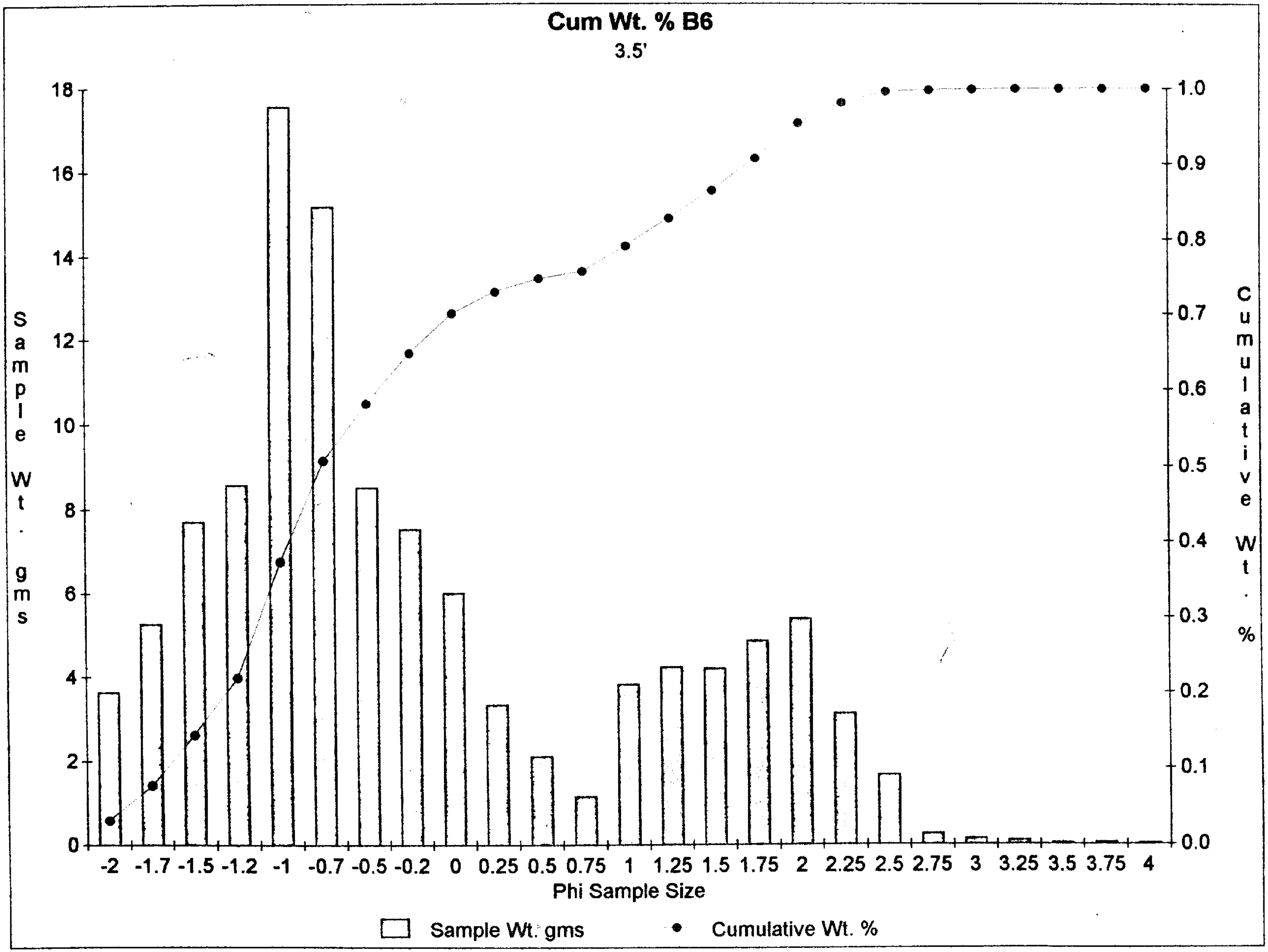
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-6)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	3.6401	3.6401	0.0319097	0.0319097
-1.75	5.2733	8.9134	0.0462266	0.0781362
-1.5	7.7051	16.6185	0.0675441	0.1456803
-1.25	8.5717	25.1902	0.2208212	0.2208212
-1	17.5475	42.7377	0.3746453	0.3746453
-0.75	15.1472	57.8849	0.1327827	0.507428
-0.5	8.4995	66.3844	0.0745079	0.5819359
-0.25	7.5007	73.8851	0.0657523	0.6476882
0	5.9745	79.8596	0.0523734	0.7000616
0.25	3.3154	83.175	0.0290633	0.7291249
0.5	2.0992	85.2742	0.0184019	0.7475268
0.75	1.1399	86.4141	0.0099925	0.7575194
1	3.7926	90.2067	0.0332465	0.7907659
1.25	4.2013	94.408	0.0368292	0.8275952
1.5	4.1622	98.5702	0.0364865	0.8640816
1.75	4.8354	103.4056	0.0423879	0.9064695
2	5.3644	108.77	0.0470252	0.9534947
2.25	3.0982	111.8682	0.0271593	0.980654
2.5	1.6419	113.5101	0.0143931	0.9950471
2.75	0.2482	113.7583	0.0021758	0.9972229
3	0.1405	113.8988	0.0012316	0.9984545
3.25	0.0899	113.9887	0.0007881	0.9992426
3.5	0.0293	114.018	0.0002568	0.9994995
3.75	0.0407	114.0587	0.0003568	0.9998562
4	0.0164	114.0751	0.0001438	1

Total Wt.	114.0751 gms	
Median Weight	57.03755 gms	
Mean Grain Size	-0.76 phi	1.6934906 mm

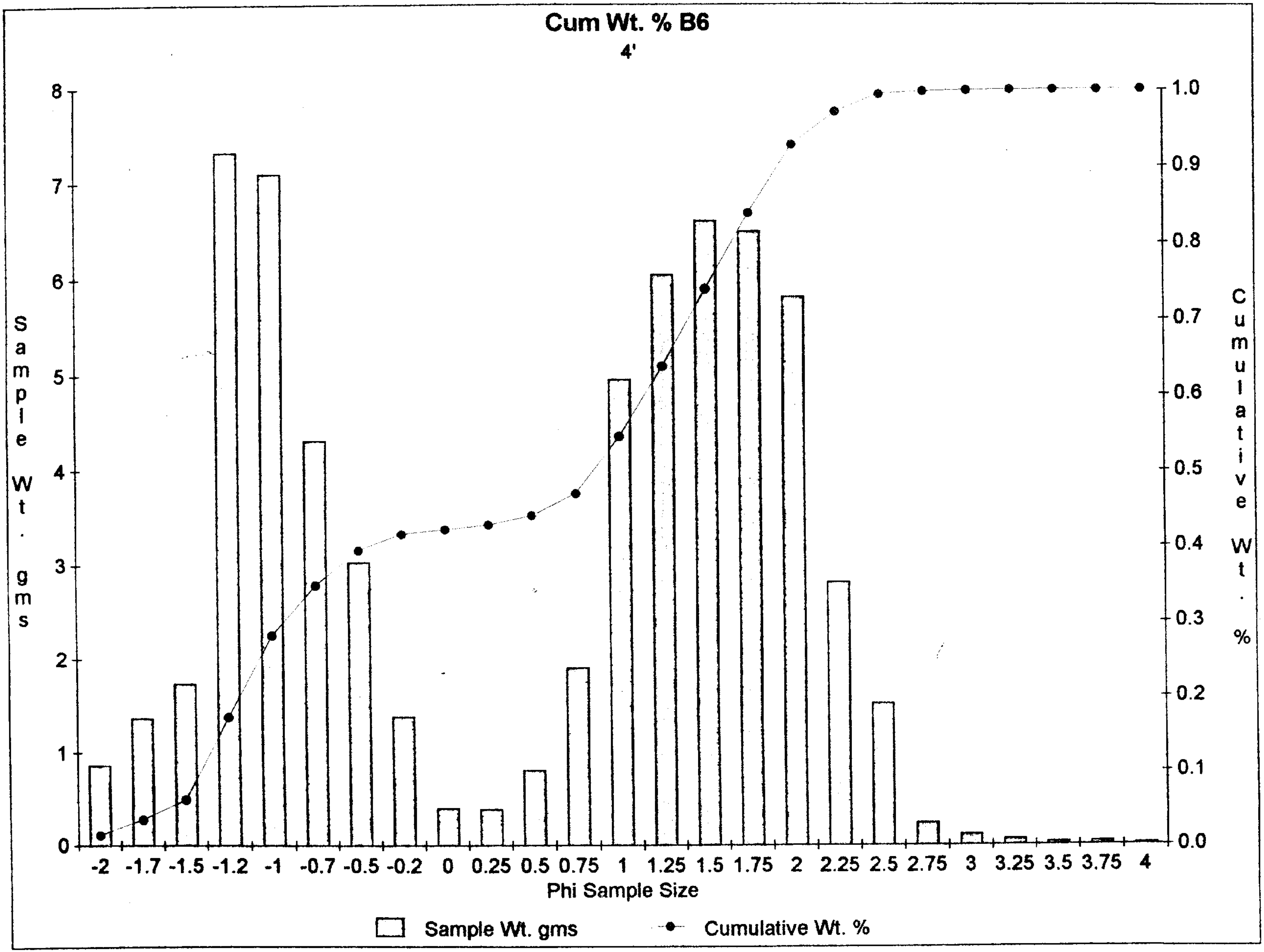

Cum Wt. % B6
3.5'
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-6)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.8654	0.8654	0.0132412	0.0132412
-1.75	1.372	2.2374	0.0209925	0.0342336
-1.5	1.7392	3.9766	0.0266108	0.0608445
-1.25	7.3211	11.2977	0.1728619	0.1728619
-1	7.0964	18.3941	0.2814413	0.2814413
-0.75	4.3157	22.7098	0.0660329	0.3474742
-0.5	3.0229	25.7327	0.0462523	0.3937264
-0.25	1.3807	27.1134	0.0211256	0.414852
0	0.393	27.5064	0.0060131	0.4208652
0.25	0.3809	27.8873	0.005828	0.4266932
0.5	0.8079	28.6952	0.0123614	0.4390545
0.75	1.8945	30.5897	0.028987	0.4680416
1	4.9565	35.5462	0.0758376	0.5438791
1.25	6.0549	41.6011	0.0926438	0.6365229
1.5	6.6196	48.2207	0.101284	0.7378069
1.75	6.5107	54.7314	0.0996178	0.8374247
2	5.8259	60.5573	0.0891399	0.9265646
2.25	2.8044	63.3617	0.0429091	0.9694737
2.5	1.5141	64.8758	0.0231667	0.9926404
2.75	0.2318	65.1076	0.0035467	0.9961871
3	0.1117	65.2193	0.0017091	0.9978962
3.25	0.0628	65.2821	0.0009609	0.998857
3.5	0.0285	65.3106	0.0004361	0.9992931
3.75	0.0321	65.3427	0.0004912	0.9997843
4	0.0141	65.3568	0.0002157	1

Total Wt.	65.3568 gms		
Median Weight	32.6784 gms		
Mean Grain Size	0.85 phi	0.5547847 mm	


Cum Wt. % B6

4'

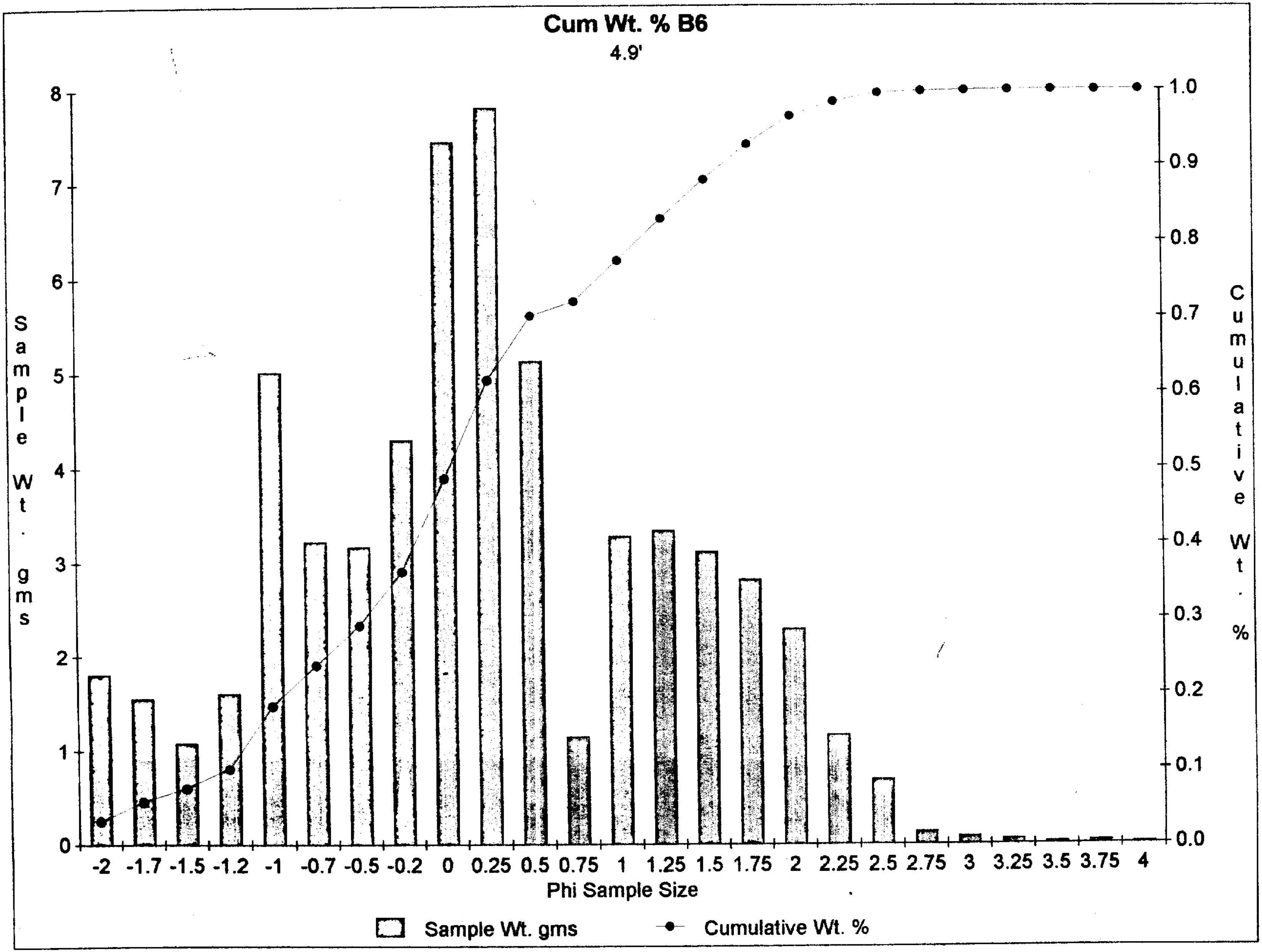
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (B-6)
DEPTH (4.9 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	1.8081	1.8081	0.0300791	0.0300791
-1.75	1.5565	3.3646	0.0258935	0.0559726
-1.5	1.0816	4.4462	0.0179932	0.0739658
-1.25	1.6063	6.0525	0.1006877	0.1006877
-1	5.0081	11.0606	0.1840011	0.1840011
-0.75	3.2155	14.2761	0.0534922	0.2374933
-0.5	3.1591	17.4352	0.0525539	0.2900472
-0.25	4.2951	21.7303	0.0714521	0.3614993
0	7.4344	29.1647	0.1236766	0.4851759
0.25	7.799	36.9637	0.129742	0.6149179
0.5	5.1248	42.0885	0.0852548	0.7001727
0.75	1.1377	43.2262	0.0189265	0.7190991
1	3.2612	46.4874	0.0542524	0.7733516
1.25	3.3186	49.806	0.0552073	0.8285589
1.5	3.0937	52.8997	0.0514659	0.8800248
1.75	2.7971	55.6968	0.0465318	0.9265566
2	2.2736	57.9704	0.037823	0.9643796
2.25	1.1554	59.1258	0.0192209	0.9836005
2.5	0.6744	59.8002	0.0112191	0.9948196
2.75	0.1248	59.925	0.0020761	0.9968958
3	0.0744	59.9994	0.0012377	0.9981335
3.25	0.0521	60.0515	0.0008667	0.9990002
3.5	0.022	60.0735	0.000366	0.9993662
3.75	0.0294	60.1029	0.0004891	0.9998553
4	0.0087	60.1116	0.0001447	1

Total Wt.	60.1116 gms		
Median Weight	30.0558 gms		
Mean Grain Size	0.03	phi	0.9794203 mm



Cum Wt. % B6

4.9'

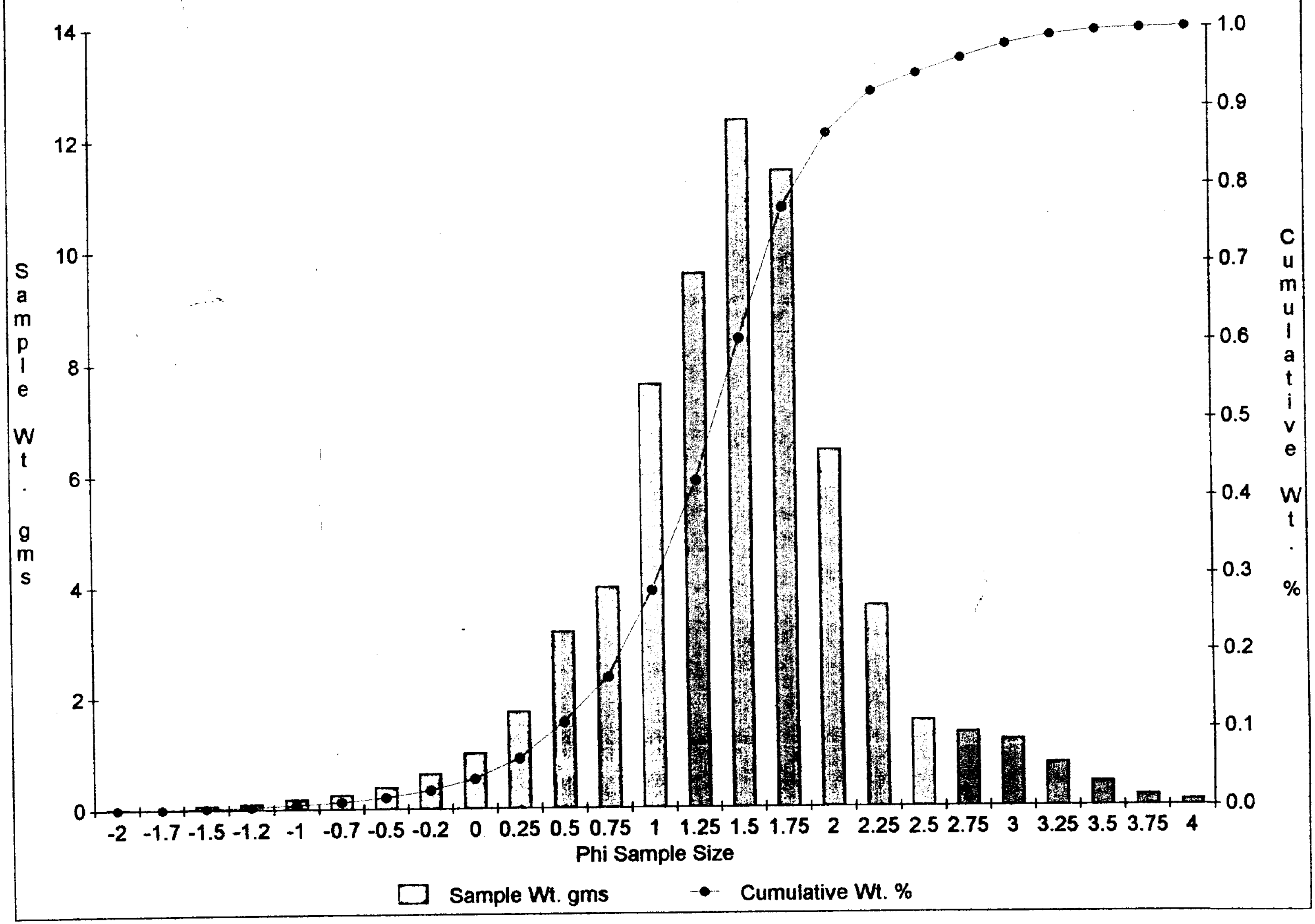
Sample Wt. gms
0
1
2
3
4
5
6
7
8
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0205	0.0205	0.0003005	0.0003005
-1.75	0	0.0205	0	0.0003005
-1.5	0.0704	0.0909	0.0010319	0.0013324
-1.25	0.1007	0.1916	0.001476	0.0028084
-1	0.1746	0.3662	0.0025592	0.0053676
-0.75	0.2508	0.617	0.0036761	0.0090438
-0.5	0.3841	1.0011	0.00563	0.0146737
-0.25	0.6248	1.6259	0.0091581	0.0238318
0	0.9919	2.6178	0.0145389	0.0383707
0.25	1.755	4.3728	0.0257241	0.0640948
0.5	3.1848	7.5576	0.0466816	0.1107764
0.75	3.9884	11.546	0.0584605	0.1692369
1	7.6254	19.1714	0.1117702	0.2810071
1.25	9.5988	28.7702	0.1406956	0.4217027
1.5	12.3535	41.1237	0.1810729	0.6027756
1.75	11.4451	52.5688	0.1677579	0.7705335
2	6.4455	59.0143	0.0944757	0.8650092
2.25	3.6456	62.6599	0.0534358	0.918445
2.5	1.5572	64.2171	0.0228248	0.9412698
2.75	1.3303	65.5474	0.019499	0.9607689
3	1.1989	66.7463	0.017573	0.9783419
3.25	0.772	67.5183	0.0113157	0.9896576
3.5	0.4243	67.9426	0.0062192	0.9958768
3.75	0.1812	68.1238	0.002656	0.9985328
4	0.1001	68.2239	0.0014672	1

Total Wt.	68.2239	gms	
Median Weight	34.11195	gms	
Mean Grain Size	1.36	phi	0.3895823 mm



Cum Wt. % IR1

0'

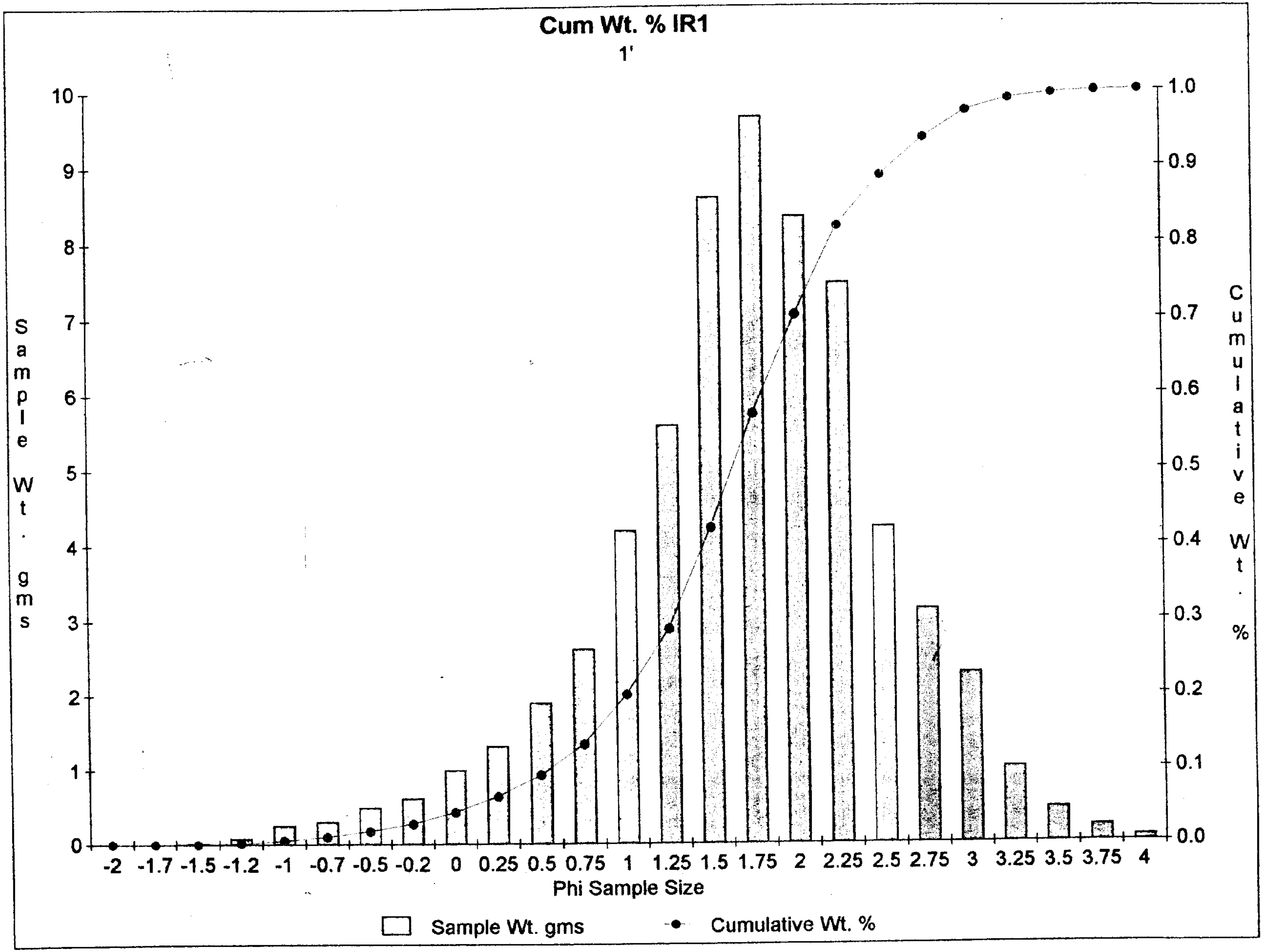
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0094	0.0094	0.0001477	0.0001477
-1.25	0.073	0.0824	0.0011472	0.001295
-1	0.2501	0.3325	0.0039304	0.0052254
-0.75	0.3003	0.6328	0.0047194	0.0099448
-0.5	0.4855	1.1183	0.0076299	0.0175747
-0.25	0.6047	1.723	0.0095032	0.0270778
0	0.9891	2.7121	0.0155442	0.042622
0.25	1.3107	4.0228	0.0205983	0.0632204
0.5	1.8824	5.9052	0.0295829	0.0928032
0.75	2.5929	8.4981	0.0407487	0.133552
1	4.1696	12.6677	0.0655274	0.1990794
1.25	5.5692	18.2369	0.0875228	0.2866022
1.5	8.5802	26.8171	0.1348422	0.4214444
1.75	9.6446	36.4617	0.1515698	0.5730143
2	8.3354	44.7971	0.1309951	0.7040093
2.25	7.4583	52.2554	0.117211	0.8212203
2.5	4.2241	56.4795	0.0663839	0.8876042
2.75	3.1305	59.61	0.0491974	0.9368016
3	2.2731	61.8831	0.0357229	0.9725246
3.25	1.0144	62.8975	0.0159418	0.9884664
3.5	0.4516	63.3491	0.0070971	0.9955635
3.75	0.2112	63.5603	0.0033191	0.9988826
4	0.0711	63.6314	0.0011174	1

Total Wt.	63.6314	gms		
Median Weight	31.8157	gms		
Mean Grain Size	1.63	phi	0.3230882	mm



Cum Wt. % IR1

1'

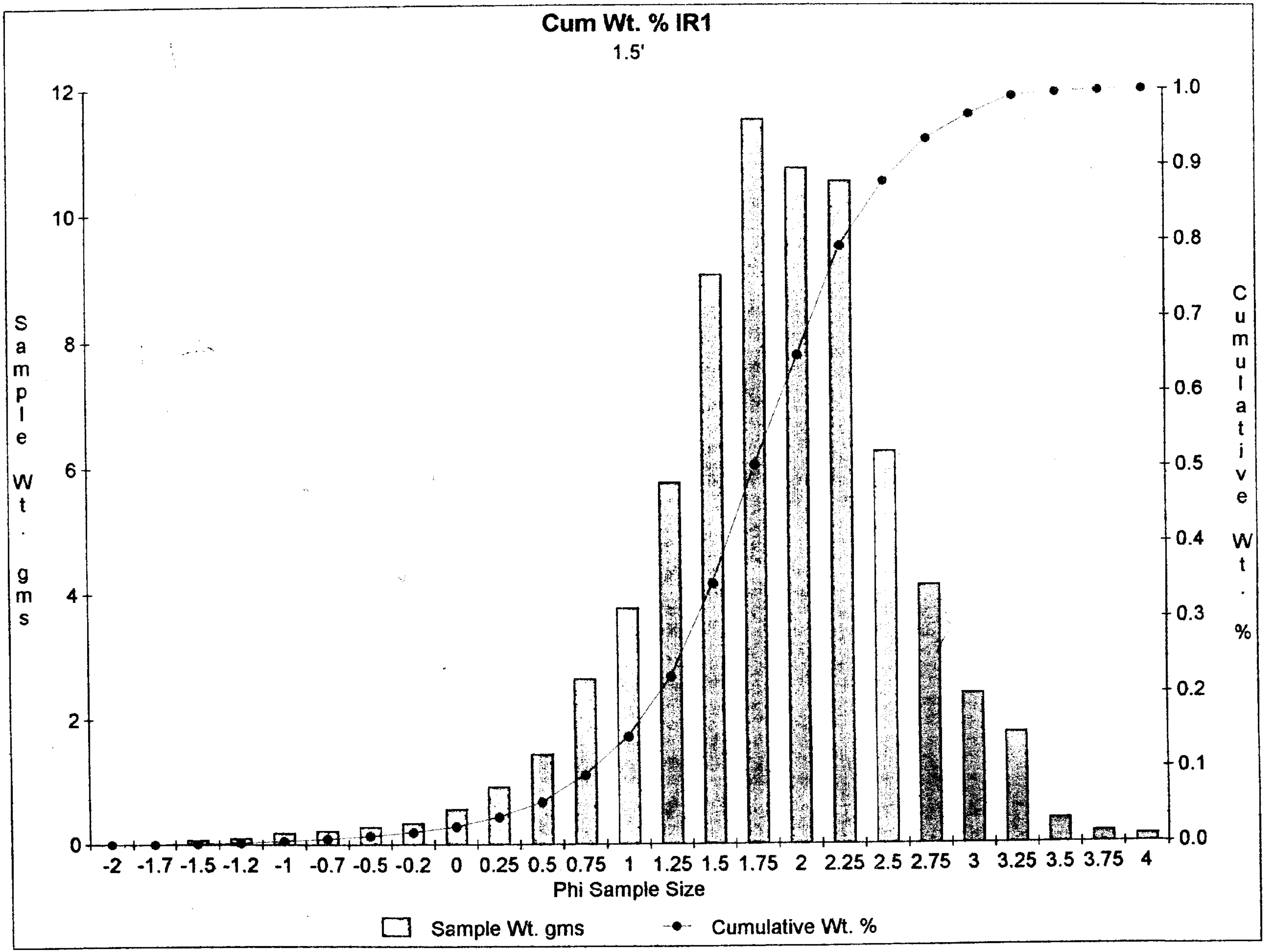
10
9
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.071	0.071	0.0009704	0.0009704
-1.25	0.0979	0.1689	0.0013381	0.0023085
-1	0.1822	0.3511	0.0024903	0.0047988
-0.75	0.2127	0.5638	0.0029071	0.0077059
-0.5	0.2782	0.842	0.0038024	0.0115083
-0.25	0.3398	1.1818	0.0046443	0.0161526
0	0.5518	1.7336	0.0075419	0.0236945
0.25	0.9019	2.6355	0.012327	0.0360214
0.5	1.4231	4.0586	0.0194506	0.055472
0.75	2.6182	6.6768	0.035785	0.091257
1	3.7407	10.4175	0.051127	0.142384
1.25	5.7382	16.1557	0.0784284	0.2208125
1.5	9.0473	25.203	0.1236565	0.3444689
1.75	11.5129	36.7159	0.1573557	0.5018246
2	10.7413	47.4572	0.1468097	0.6486343
2.25	10.5358	57.993	0.1440009	0.7926353
2.5	6.2358	64.2288	0.0852295	0.8778648
2.75	4.1052	68.334	0.0561089	0.9339737
3	2.3829	70.7169	0.0325689	0.9665427
3.25	1.7743	72.4912	0.0242507	0.9907934
3.5	0.38	72.8712	0.0051938	0.9959871
3.75	0.1735	73.0447	0.0023714	0.9983585
4	0.1201	73.1648	0.0016415	1

Total Wt.	73.1648 gms		
Median Weight	36.5824 gms		
Mean Grain Size	1.75 phi	0.2973018 mm	



Cum Wt. % IR1

1.5'

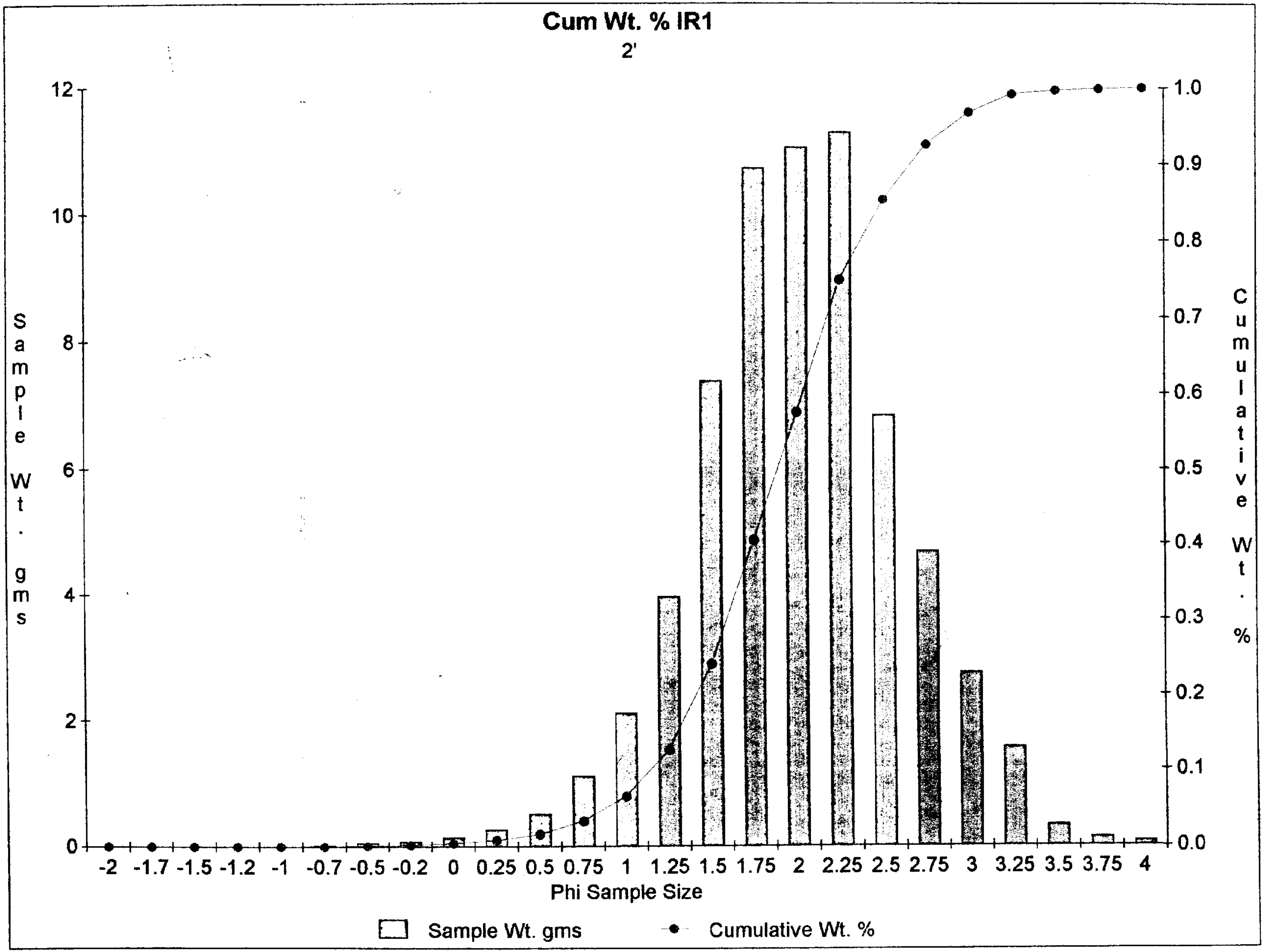
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0169	0.0169	0.0002601	0.0002601
-0.5	0.0527	0.0696	0.0008112	0.0010713
-0.25	0.073	0.1426	0.0011237	0.002195
0	0.1383	0.2809	0.0021288	0.0043238
0.25	0.2592	0.5401	0.0039898	0.0083136
0.5	0.5049	1.045	0.0077718	0.0160854
0.75	1.0988	2.1438	0.0169135	0.0329989
1	2.0885	4.2323	0.0321477	0.0651466
1.25	3.9334	8.1657	0.0605457	0.1256923
1.5	7.3812	15.5469	0.1136167	0.239309
1.75	10.7313	26.2782	0.1651838	0.4044928
2	11.0581	37.3363	0.1702142	0.574707
2.25	11.2999	48.6362	0.1739361	0.7486431
2.5	6.8509	55.4871	0.1054539	0.8540971
2.75	4.677	60.1641	0.0719917	0.9260888
3	2.7379	62.902	0.0421437	0.9682325
3.25	1.5465	64.4485	0.0238048	0.9920373
3.5	0.3234	64.7719	0.004978	0.9970154
3.75	0.1278	64.8997	0.0019672	0.9989825
4	0.0661	64.9658	0.0010175	1

Total Wt.	64.9658 gms		
Median Weight	32.4829 gms		
Mean Grain Size	1.89 phi	0.2698071 mm	

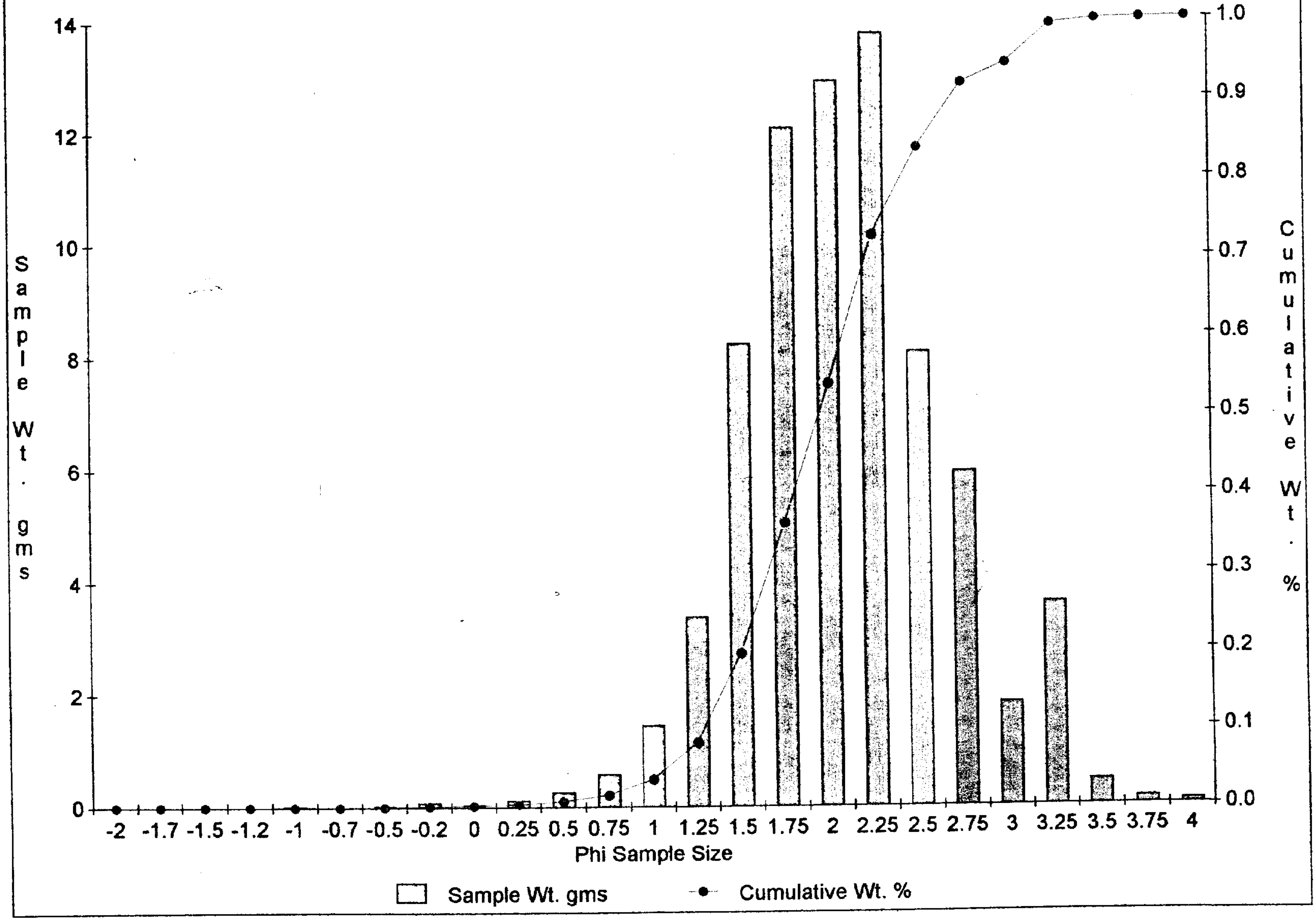

Cum Wt. % IR1
2'
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0148	0.0148	0.0002035	0.0002035
-0.75	0	0.0148	0	0.0002035
-0.5	0.0269	0.0417	0.0003699	0.0005733
-0.25	0.0754	0.1171	0.0010367	0.00161
0	0.041	0.1581	0.0005637	0.0021737
0.25	0.118	0.2761	0.0016224	0.0037961
0.5	0.2549	0.531	0.0035047	0.0073008
0.75	0.5708	1.1018	0.007848	0.0151488
1	1.429	2.5308	0.0196475	0.0347963
1.25	3.3449	5.8757	0.0459895	0.0807858
1.5	8.2045	14.0802	0.1128049	0.1935907
1.75	12.0169	26.0971	0.1652221	0.3588128
2	12.8523	38.9494	0.1767081	0.5355209
2.25	13.7033	52.6527	0.1884086	0.7239296
2.5	8.0582	60.7109	0.1107934	0.8347229
2.75	5.9403	66.6512	0.081674	0.916397
3	1.8332	68.4844	0.0252049	0.9416019
3.25	3.6196	72.104	0.0497664	0.9913683
3.5	0.4376	72.5416	0.0060166	0.9973849
3.75	0.1217	72.6633	0.0016733	0.9990582
4	0.0685	72.7318	0.0009418	1

Total Wt.	72.7318 gms		
Median Weight	36.3659 gms		
Mean Grain Size	1.94 phi	0.2606164 mm	



Cum Wt. % IR1

2.5'

14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

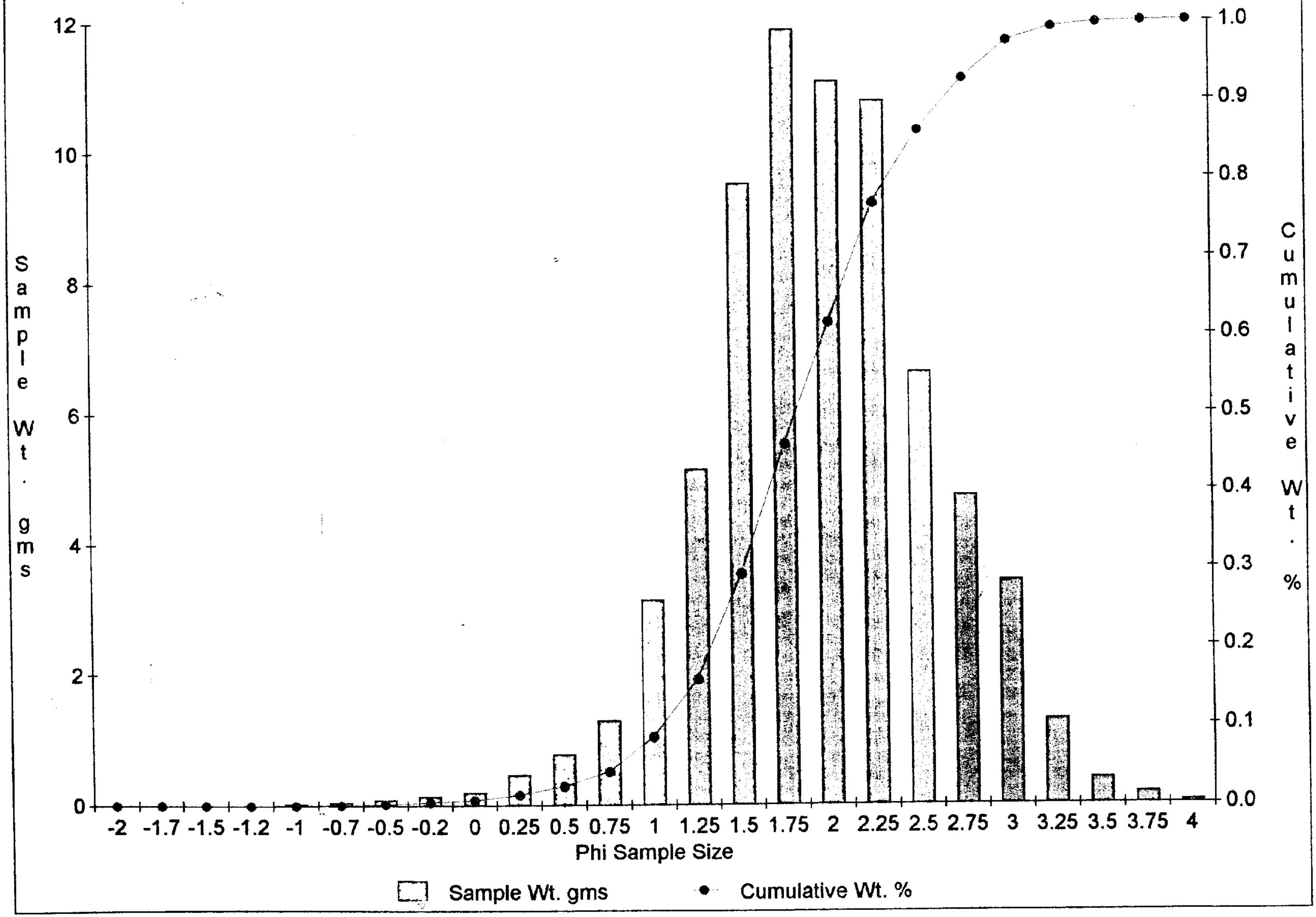
CORE (IR-1)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.023	0.023	0.0003245	0.0003245
-0.75	0.041	0.064	0.0005784	0.0009029
-0.5	0.0813	0.1453	0.001147	0.0020499
-0.25	0.1395	0.2848	0.0019681	0.0040181
0	0.1921	0.4769	0.0027102	0.0067283
0.25	0.4597	0.9366	0.0064856	0.0132139
0.5	0.7679	1.7045	0.0108338	0.0240477
0.75	1.2728	2.9773	0.0179571	0.0420047
1	3.0927	6.07	0.0436328	0.0856376
1.25	5.1031	11.1731	0.0719962	0.1576338
1.5	9.48	20.6531	0.133747	0.2913808
1.75	11.8441	32.4972	0.1671005	0.4584813
2	11.0574	43.5546	0.1560015	0.6144828
2.25	10.7566	54.3112	0.1517577	0.7662405
2.5	6.6117	60.9229	0.0932801	0.8595205
2.75	4.7056	65.6285	0.0663882	0.9259087
3	3.394	69.0225	0.0478837	0.9737924
3.25	1.2703	70.2928	0.0179218	0.9917142
3.5	0.3852	70.678	0.0054345	0.9971487
3.75	0.1679	70.8459	0.0023688	0.9995175
4	0.0342	70.8801	0.0004825	1

Total Wt.	70.8801	gms		
Median Weight	35.44005	gms		
Mean Grain Size	1.82	phi	0.283221	mm

Cum Wt. % IR1

3'



Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

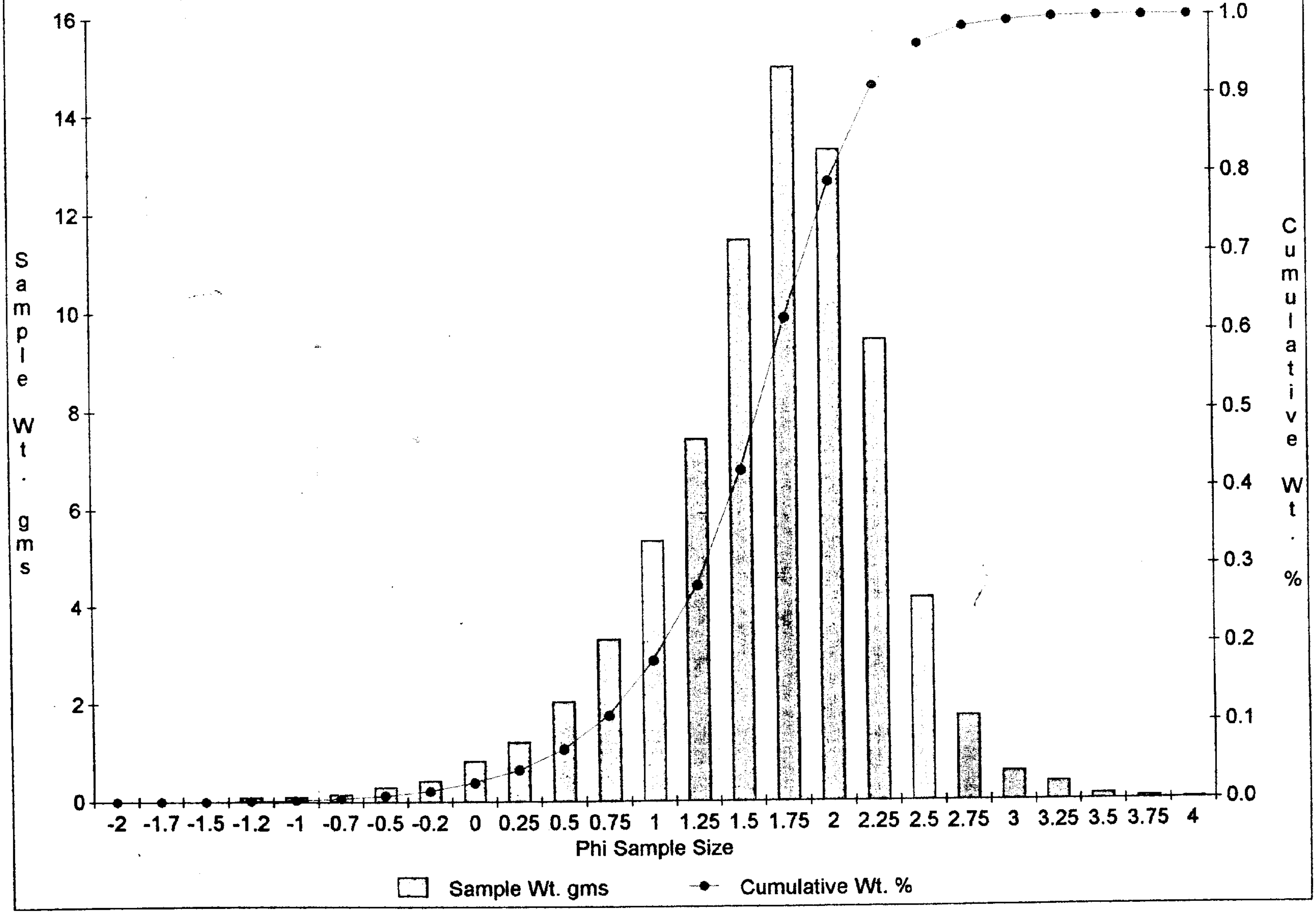
CORE (IR-1)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0935	0.0935	0.0012141	0.0012141
-1	0.1015	0.195	0.001318	0.0025322
-0.75	0.1533	0.3483	0.0019907	0.0045228
-0.5	0.2964	0.6447	0.0038489	0.0083717
-0.25	0.4258	1.0705	0.0055292	0.0139009
0	0.8262	1.8967	0.0107286	0.0246295
0.25	1.2074	3.1041	0.0156786	0.0403082
0.5	2.0253	5.1294	0.0262995	0.0666076
0.75	3.2705	8.3999	0.042469	0.1090766
1	5.2879	13.6878	0.0686658	0.1777424
1.25	7.3755	21.0633	0.0957743	0.2735167
1.5	11.4195	32.4828	0.1482875	0.4218041
1.75	14.9211	47.4039	0.1937574	0.6155615
2	13.2429	60.6468	0.1719652	0.7875267
2.25	9.4086	70.0554	0.122175	0.9097017
2.5	4.1156	74.171	0.053443	0.9631447
2.75	1.7165	75.8875	0.0222895	0.9854342
3	0.5765	76.464	0.0074861	0.9929203
3.25	0.3622	76.8262	0.0047033	0.9976237
3.5	0.1115	76.9377	0.0014479	0.9990715
3.75	0.0494	76.9871	0.0006415	0.999713
4	0.0221	77.0092	0.000287	1

Total Wt.	77.0092 gms		
Median Weight	38.5046 gms		
Mean Grain Size	1.6 phi	0.329877	mm

Cum Wt. % IR1

3.5'

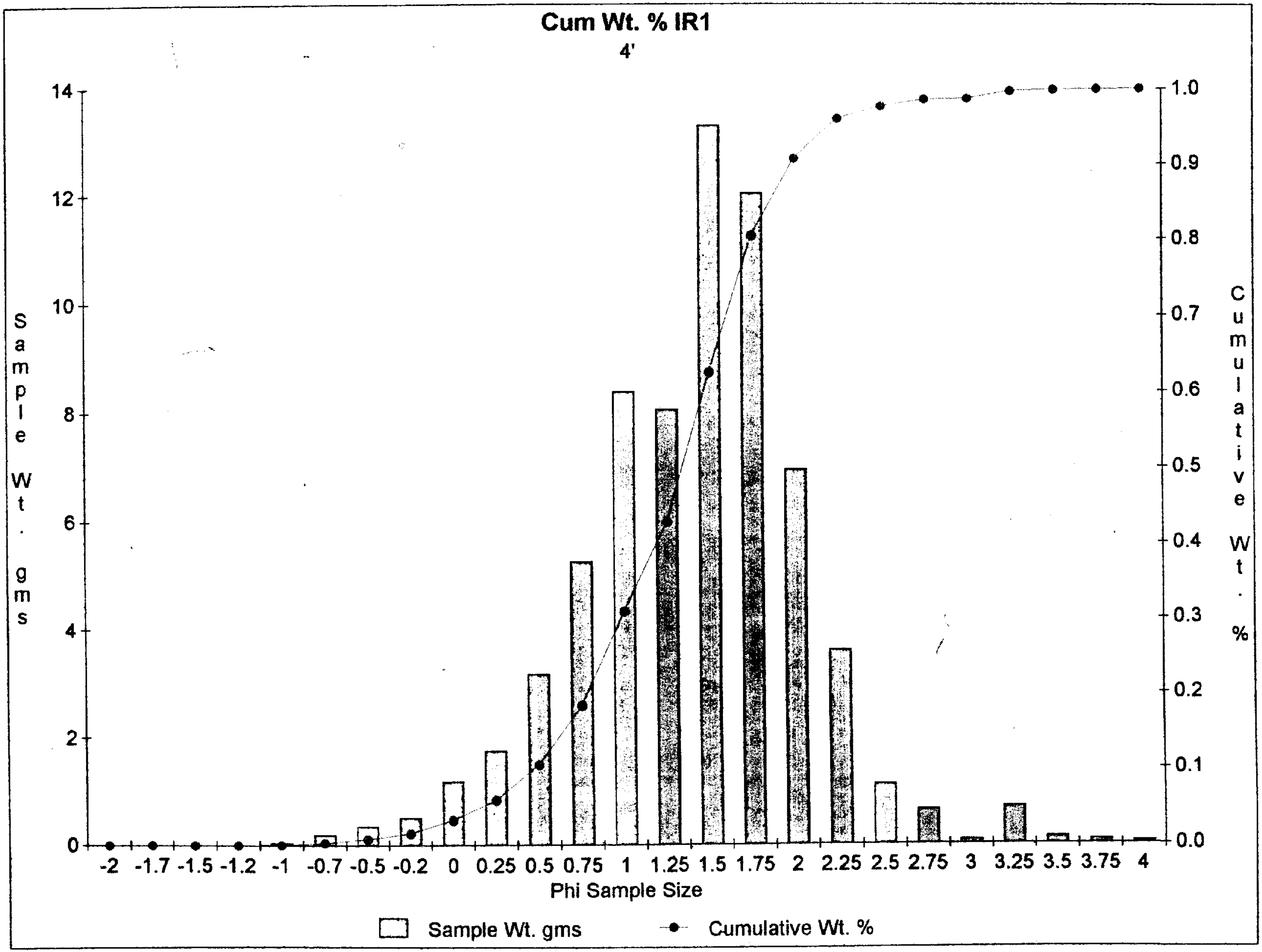

Sample Wt. gms
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0304	0.0304	0.0004514	0.0004514
-0.75	0.1825	0.2129	0.0027098	0.0031612
-0.5	0.3432	0.5561	0.005096	0.0082572
-0.25	0.5001	1.0562	0.0074257	0.0156829
0	1.1648	2.221	0.0172954	0.0329784
0.25	1.7401	3.9611	0.0258377	0.0588161
0.5	3.1416	7.1027	0.0466478	0.1054639
0.75	5.2306	12.3333	0.0776662	0.1831301
1	8.3838	20.7171	0.1244862	0.3076164
1.25	8.0547	28.7718	0.1195996	0.427216
1.5	13.3102	42.082	0.1976355	0.6248515
1.75	12.0466	54.1286	0.1788731	0.8037246
2	6.9458	61.0744	0.1031342	0.9068588
2.25	3.5811	64.6555	0.0531737	0.9600325
2.5	1.0872	65.7427	0.0161432	0.9761757
2.75	0.6222	66.3649	0.0092387	0.9854144
3	0.0677	66.4326	0.0010052	0.9864196
3.25	0.6821	67.1147	0.0101281	0.9965477
3.5	0.1249	67.2396	0.0018546	0.9984023
3.75	0.0666	67.3062	0.0009889	0.9993912
4	0.041	67.3472	0.0006088	1

Total Wt.	67.3472 gms		
Median Weight	33.6736 gms		
Mean Grain Size	1.34 phi	0.3950207	mm



Cum Wt. % IR1

4'

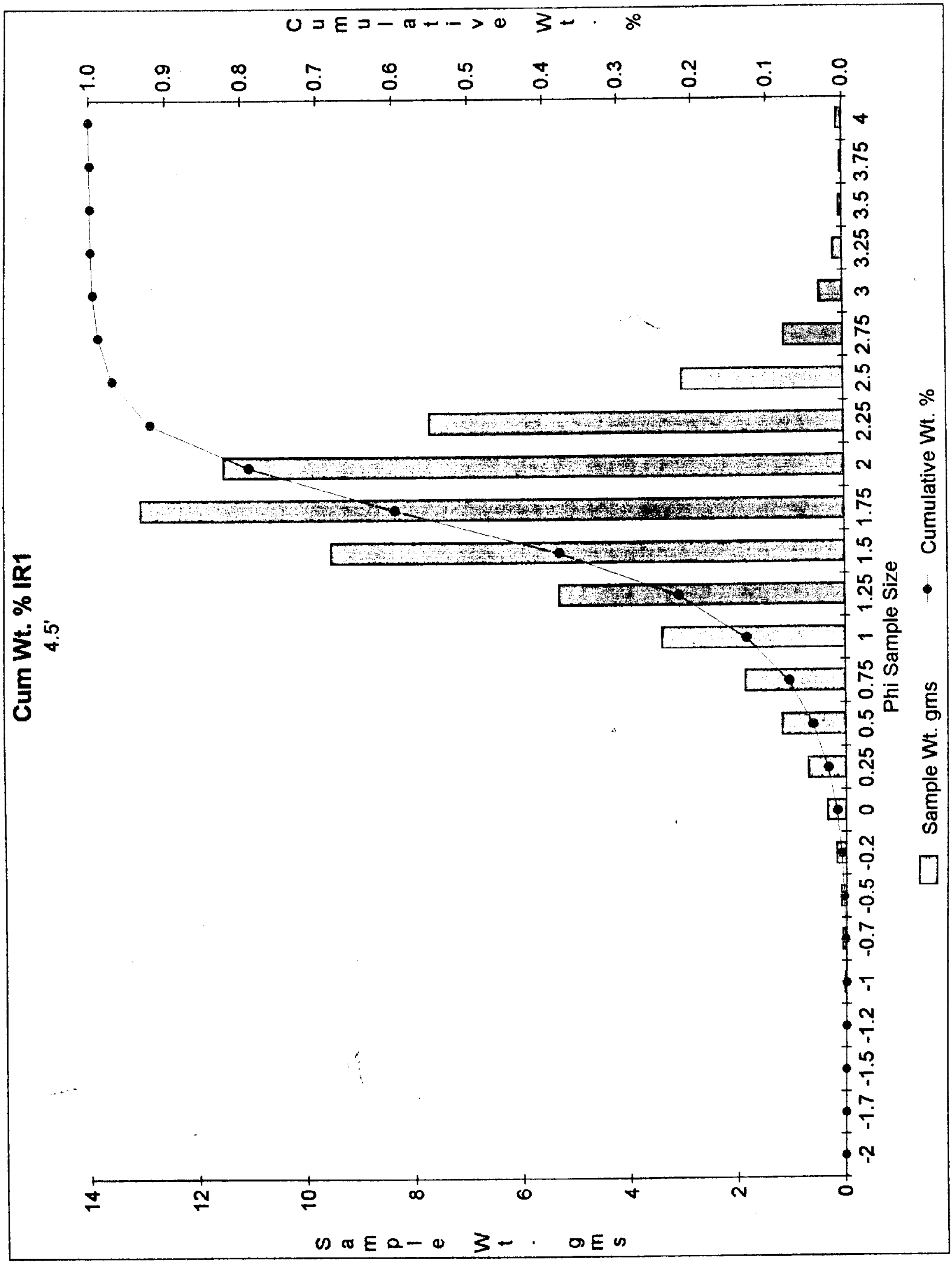
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0209	0.0209	0.0003499	0.0003499
-0.75	0.0726	0.0935	0.0012155	0.0015654
-0.5	0.0966	0.1901	0.0016173	0.0031827
-0.25	0.1762	0.3663	0.00295	0.0061327
0	0.3412	0.7075	0.0057124	0.0118451
0.25	0.6922	1.3997	0.011589	0.0234341
0.5	1.1638	2.5635	0.0194846	0.0429186
0.75	1.8394	4.4029	0.0307956	0.0737142
1	3.377	7.7799	0.0565384	0.1302527
1.25	5.3023	13.0822	0.0887722	0.2190248
1.5	9.5238	22.606	0.1594494	0.3784742
1.75	13.03	35.636	0.2181509	0.5966251
2	11.5071	47.1431	0.1926542	0.7892793
2.25	7.7119	54.855	0.1291142	0.9183935
2.5	2.9872	57.8422	0.0500123	0.9684058
2.75	1.0921	58.9343	0.0182842	0.9866899
3	0.4355	59.3698	0.0072912	0.9939812
3.25	0.1745	59.5443	0.0029215	0.9969027
3.5	0.0574	59.6017	0.000961	0.9978637
3.75	0.0306	59.6323	0.0005123	0.998376
4	0.097	59.7293	0.001624	1

Total Wt.	59.7293	gms		
Median Weight	29.86465	gms		
Mean Grain Size	1.64	phi	0.3208565	mm


Cum Wt. % IR1
4.5'
Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

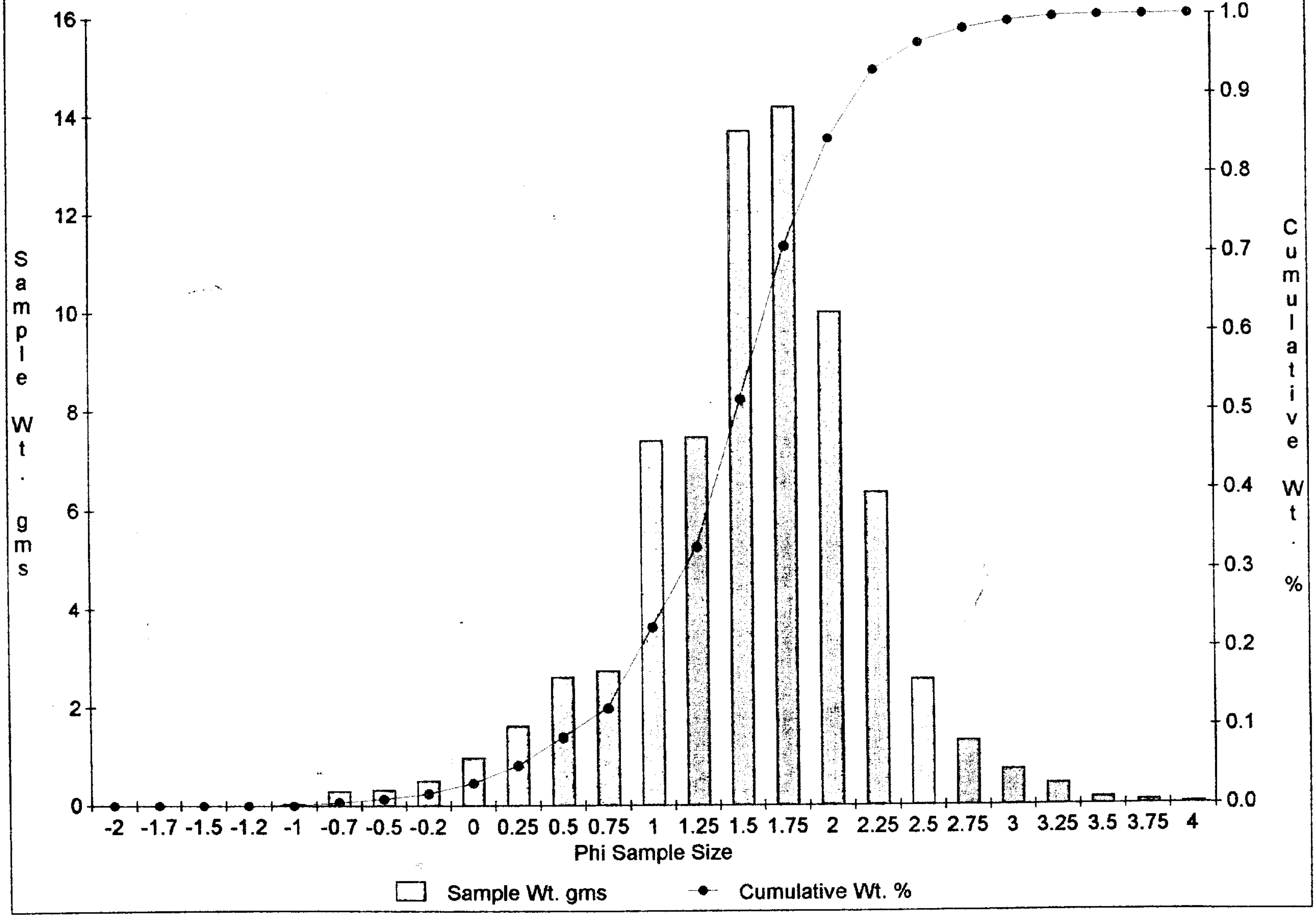
CORE (IR-1)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0321	0.0321	0.0004397	0.0004397
-0.75	0.2904	0.3225	0.0039781	0.0044179
-0.5	0.3199	0.6424	0.0043823	0.0088001
-0.25	0.4955	1.1379	0.0067878	0.0155879
0	0.9601	2.098	0.0131523	0.0287402
0.25	1.6002	3.6982	0.0219209	0.050661
0.5	2.5888	6.287	0.0354635	0.0861246
0.75	2.7134	9.0004	0.0371704	0.123295
1	7.362	16.3624	0.1008508	0.2241458
1.25	7.43	23.7924	0.1017824	0.3259282
1.5	13.612	37.4044	0.1864686	0.5123968
1.75	14.1011	51.5055	0.1931687	0.7055654
2	9.9599	61.4654	0.136439	0.8420045
2.25	6.3175	67.7829	0.0865424	0.9285469
2.5	2.5326	70.3155	0.0346937	0.9632405
2.75	1.297	71.6125	0.0177674	0.9810079
3	0.7119	72.3244	0.0097522	0.9907601
3.25	0.4286	72.753	0.0058713	0.9966315
3.5	0.1402	72.8932	0.0019206	0.998552
3.75	0.0756	72.9688	0.0010356	0.9995877
4	0.0301	72.9989	0.0004123	1

Total Wt.	72.9989 gms		
Median Weight	36.49945 gms		
Mean Grain Size	1.48 phi	0.3584888 mm	

Cum Wt. % IR1

5'

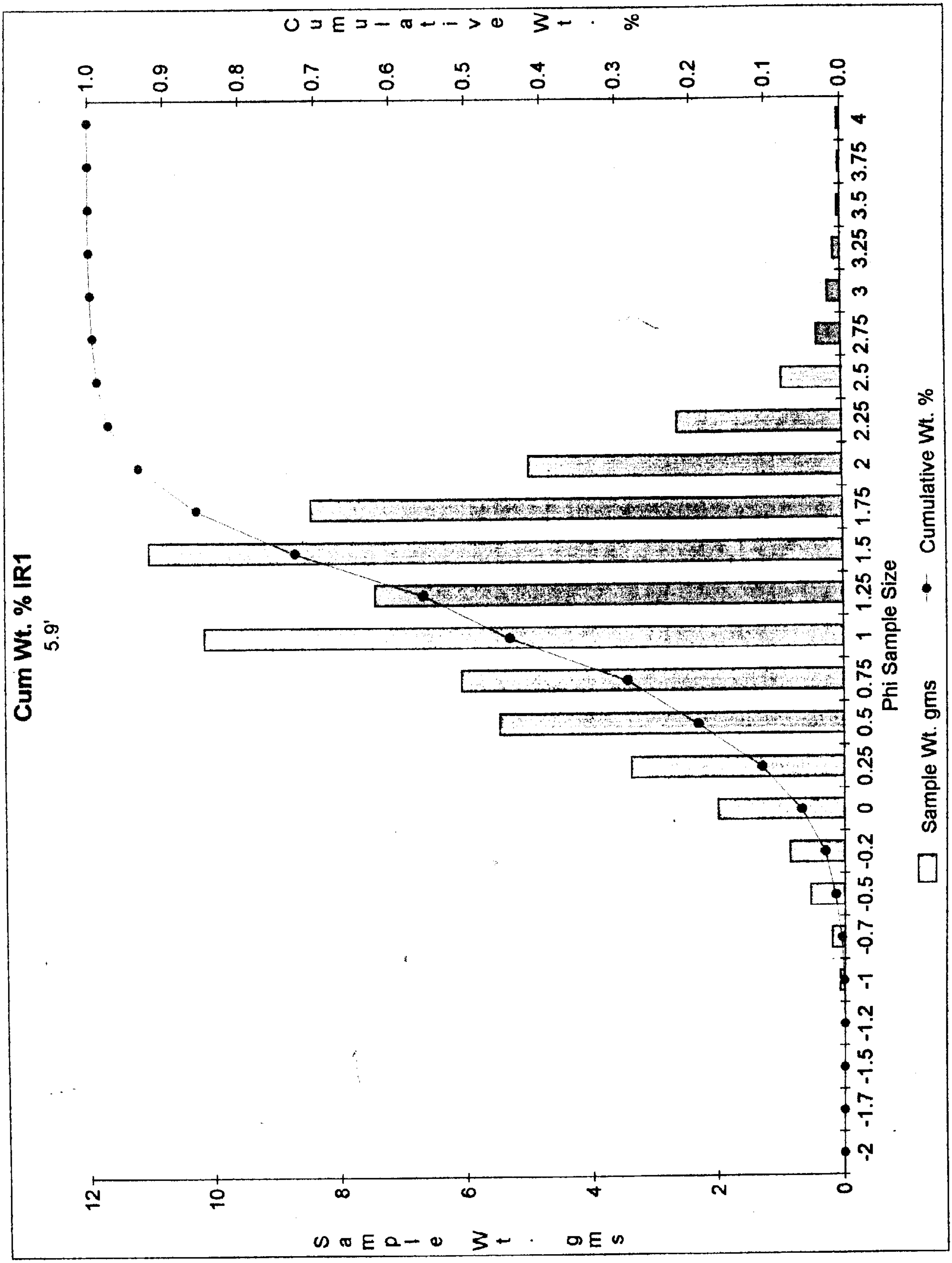

Sample Wt. gms
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-1)
DEPTH (5.9 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0761	0.0761	0.0011713	0.0011713
-0.75	0.201	0.2771	0.0030938	0.0042652
-0.5	0.5355	0.8126	0.0082425	0.0125076
-0.25	0.8554	1.668	0.0131664	0.0256741
0	1.9952	3.6632	0.0307104	0.0563844
0.25	3.3662	7.0294	0.051813	0.1081974
0.5	5.4571	12.4865	0.0839963	0.1921937
0.75	6.0667	18.5532	0.0933794	0.2855731
1	10.1488	28.702	0.1562116	0.4417847
1.25	7.4362	36.1382	0.1144589	0.5562436
1.5	11.0196	47.1578	0.169615	0.7258586
1.75	8.4519	55.6097	0.1300927	0.8559513
2	4.9899	60.5996	0.0768051	0.9327564
2.25	2.6077	63.2073	0.040138	0.9728945
2.5	0.9457	64.153	0.0145563	0.9874508
2.75	0.3824	64.5354	0.0058859	0.9933368
3	0.2083	64.7437	0.0032062	0.9965429
3.25	0.1142	64.8579	0.0017578	0.9983007
3.5	0.0427	64.9006	0.0006572	0.998958
3.75	0.0274	64.928	0.0004217	0.9993797
4	0.0403	64.9683	0.0006203	1

Total Wt.	64.9683	gms		
Median Weight	32.48415	gms		
Mean Grain Size	1.13	phi	0.4569157	mm

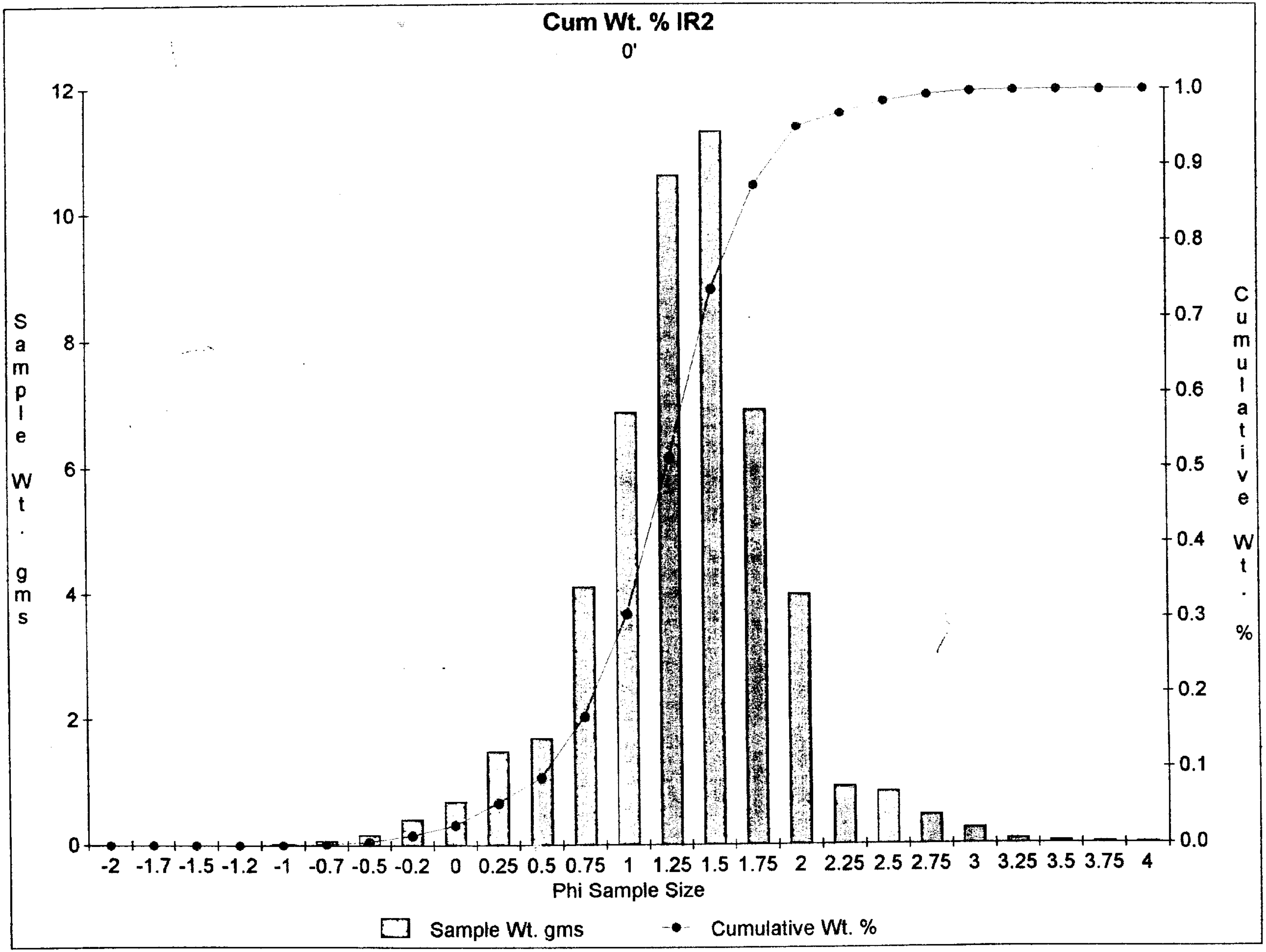

Cum Wt. % IR1
5.9'
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Phi Sample Size
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
☐ Sample Wt. gms
● Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0248	0.0248	0.0004883	0.0004883
-0.75	0.0648	0.0896	0.0012759	0.0017642
-0.5	0.1618	0.2514	0.0031859	0.0049501
-0.25	0.4079	0.6593	0.0080316	0.0129817
0	0.6808	1.3401	0.0134051	0.0263868
0.25	1.4704	2.8105	0.0289525	0.0553393
0.5	1.6794	4.4899	0.0330677	0.088407
0.75	4.0782	8.5681	0.0803006	0.1687076
1	6.8654	15.4335	0.1351811	0.3038886
1.25	10.6068	26.0403	0.20885	0.5127386
1.5	11.3072	37.3475	0.222641	0.7353795
1.75	6.9155	44.263	0.1361675	0.8715471
2	3.9558	48.2188	0.0778905	0.9494375
2.25	0.9081	49.1269	0.0178807	0.9673182
2.5	0.8225	49.9494	0.0161952	0.9835134
2.75	0.449	50.3984	0.0088409	0.9923543
3	0.2448	50.6432	0.0048202	0.9971745
3.25	0.0764	50.7196	0.0015043	0.9986788
3.5	0.0342	50.7538	0.0006734	0.9993522
3.75	0.0219	50.7757	0.0004312	0.9997834
4	0.011	50.7867	0.0002166	1

Total Wt.	50.7867 gms		
Median Weight	25.39335 gms		
Mean Grain Size	1.23	phi	0.4263174 mm


Cum Wt. % IR2
0'
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

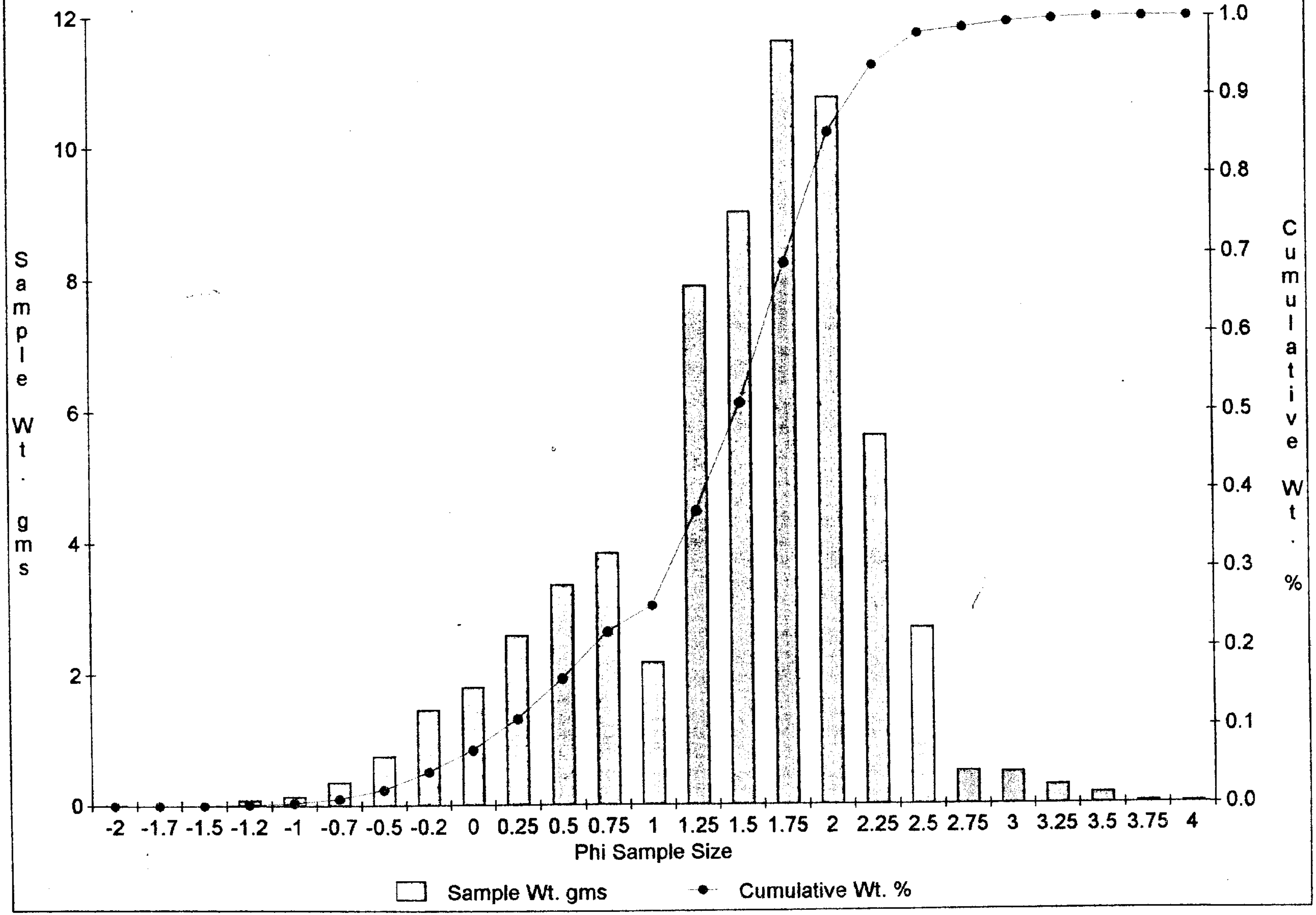
CORE (IR-2)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0082	0.0082	0.0001254	0.0001254
-1.75	0	0.0082	0	0.0001254
-1.5	0	0.0082	0	0.0001254
-1.25	0.0821	0.0903	0.0012553	0.0013807
-1	0.1366	0.2269	0.0020886	0.0034693
-0.75	0.3505	0.5774	0.0053592	0.0088285
-0.5	0.7401	1.3175	0.0113162	0.0201447
-0.25	1.4429	2.7604	0.0220621	0.0422067
0	1.7768	4.5372	0.0271674	0.0693741
0.25	2.5632	7.1004	0.0391915	0.1085657
0.5	3.3329	10.4333	0.0509603	0.1595259
0.75	3.8159	14.2492	0.0583454	0.2178713
1	2.1505	16.3997	0.0328813	0.2507527
1.25	7.8899	24.2896	0.1206372	0.3713898
1.5	9.0068	33.2964	0.1377147	0.5091045
1.75	11.6024	44.8988	0.1774016	0.686506
2	10.7404	55.6392	0.1642215	0.8507276
2.25	5.6089	61.2481	0.0857605	0.9364881
2.5	2.6673	63.9154	0.0407832	0.9772713
2.75	0.4983	64.4137	0.007619	0.9848903
3	0.4852	64.8989	0.0074187	0.9923091
3.25	0.2842	65.1831	0.0043454	0.9966545
3.5	0.1625	65.3456	0.0024846	0.9991392
3.75	0.0321	65.3777	0.0004908	0.99963
4	0.0242	65.4019	0.00037	1

Total Wt.	65.4019	gms		
Median Weight	32.70095	gms		
Mean Grain Size	1.48	phi	0.3584888	mm

Cum Wt. % IR2

0.5'

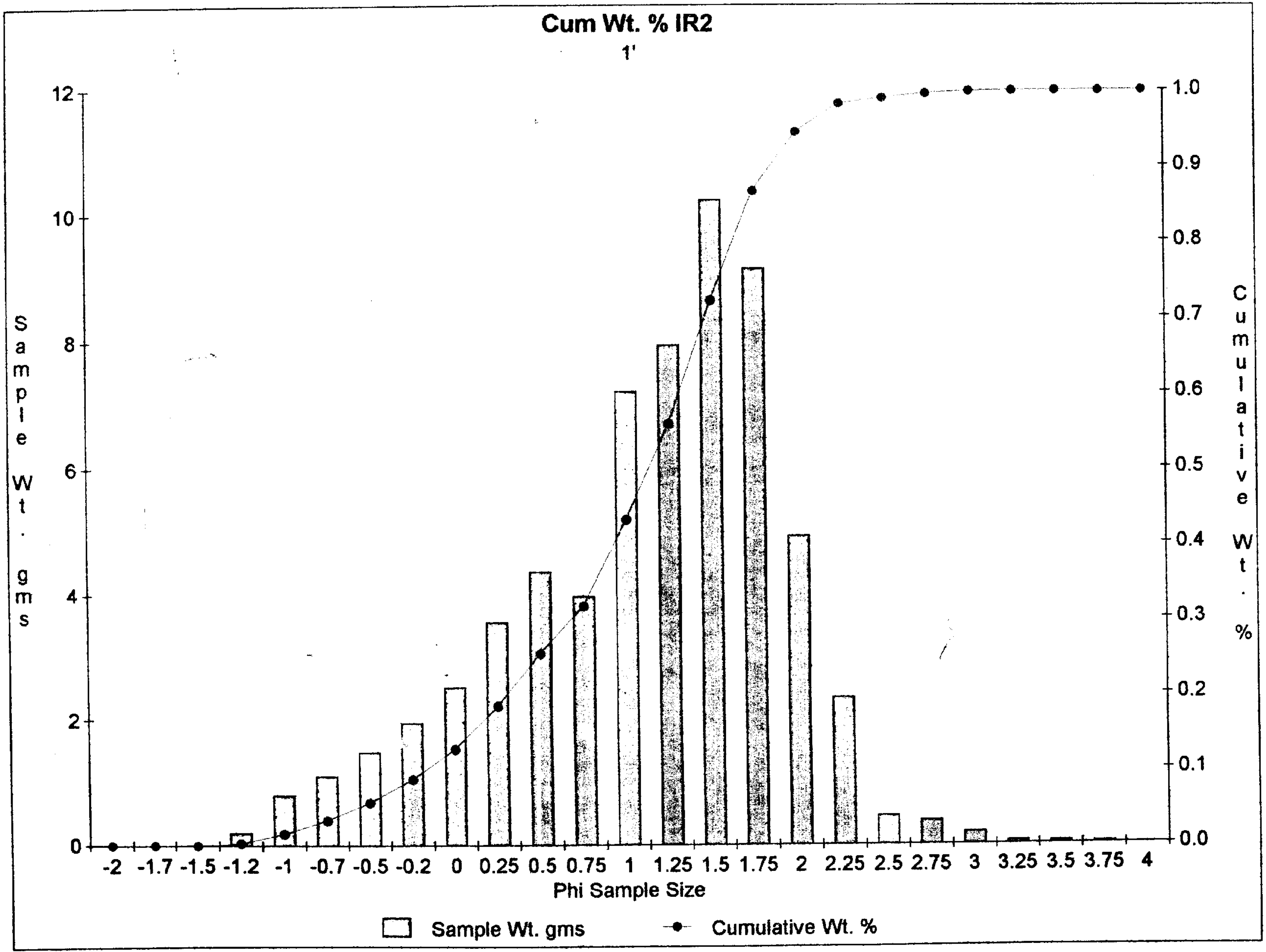

Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0027	0.0027	4.301E-05	4.301E-05
-1.25	0.194	0.1967	0.0030901	0.0031331
-1	0.8001	0.9968	0.0127441	0.0158772
-0.75	1.1054	2.1022	0.017607	0.0334842
-0.5	1.4887	3.5909	0.0237123	0.0571965
-0.25	1.9452	5.5361	0.0309835	0.08818
0	2.5076	8.0437	0.0399415	0.1281215
0.25	3.5381	11.5818	0.0563555	0.184477
0.5	4.3368	15.9186	0.0690773	0.2535544
0.75	3.9493	19.8679	0.0629052	0.3164595
1	7.2122	27.0801	0.1148772	0.4313368
1.25	7.9438	35.0239	0.1265303	0.5578671
1.5	10.2468	45.2707	0.1632129	0.72108
1.75	9.1492	54.4199	0.1457301	0.8668101
2	4.9023	59.3222	0.0780847	0.9448949
2.25	2.335	61.6572	0.0371923	0.9820872
2.5	0.4527	62.1099	0.0072107	0.9892979
2.75	0.3743	62.4842	0.0059619	0.9952598
3	0.188	62.6722	0.0029945	0.9982543
3.25	0.0427	62.7149	0.0006801	0.9989344
3.5	0.0368	62.7517	0.0005862	0.9995206
3.75	0.0207	62.7724	0.0003297	0.9998503
4	0.0094	62.7818	0.0001497	1

Total Wt.	62.7818 gms		
Median Weight	31.3909 gms		
Mean Grain Size	1.14	phi	0.4537596 mm

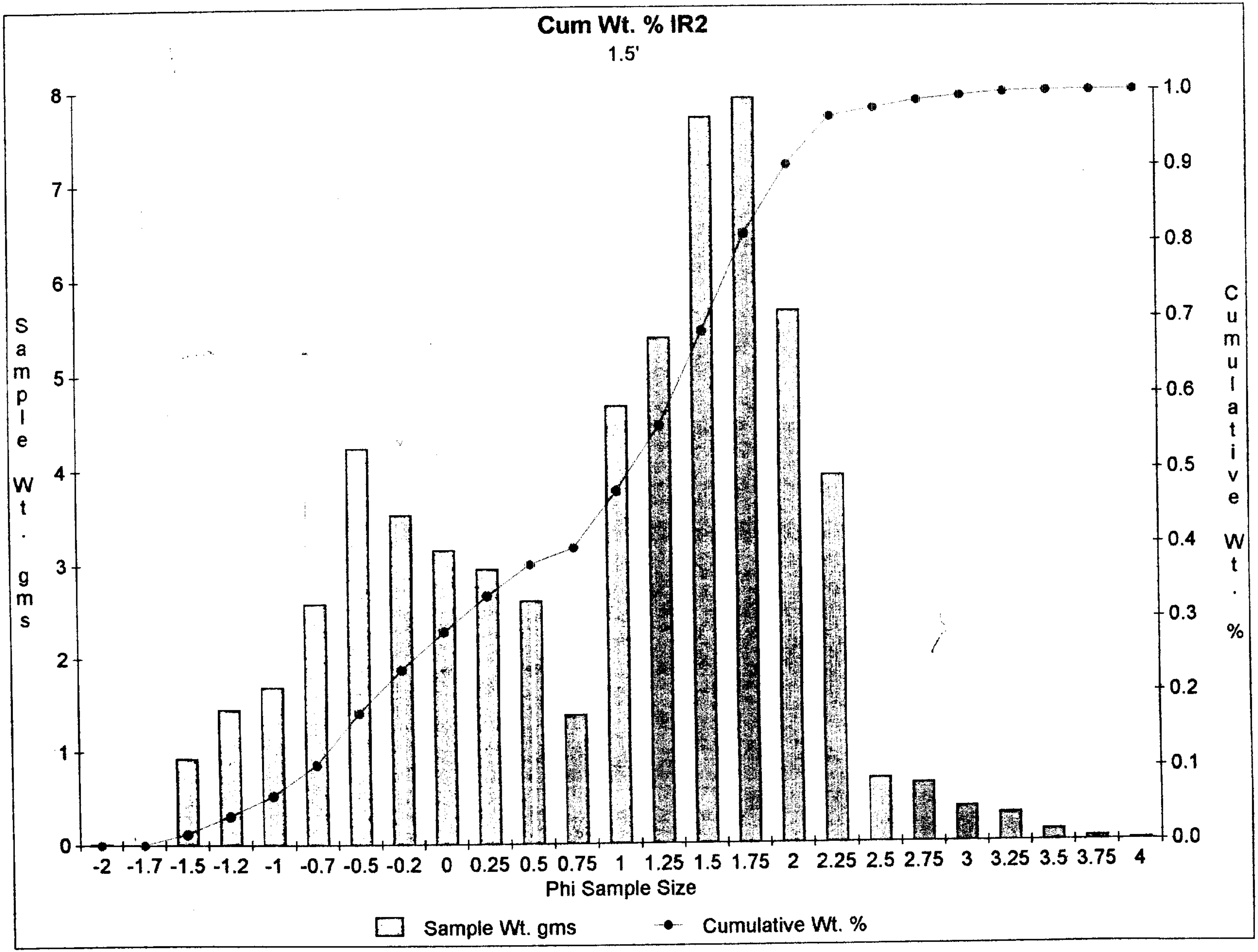

Cum Wt. % IR2
1'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0087	0.0087	0.0001407	0.0001407
-1.75	0	0.0087	0	0.0001407
-1.5	0.9301	0.9388	0.0150418	0.0151825
-1.25	1.4534	2.3922	0.0235047	0.0386872
-1	1.6866	4.0788	0.0272761	0.0659633
-0.75	2.5763	6.6551	0.0416645	0.1076278
-0.5	4.2248	10.8799	0.0683244	0.1759522
-0.25	3.5168	14.3967	0.0568745	0.2328267
0	3.1345	17.5312	0.0506918	0.2835186
0.25	2.933	20.4642	0.0474331	0.3309517
0.5	2.588	23.0522	0.0418537	0.3728054
0.75	1.3685	24.4207	0.0221317	0.3949371
1	4.6673	29.088	0.0754806	0.4704178
1.25	5.3818	34.4698	0.0870357	0.5574535
1.5	7.7116	42.1814	0.1247138	0.6821672
1.75	7.9148	50.0962	0.1279999	0.8101672
2	5.6679	55.7641	0.0916626	0.9018297
2.25	3.9284	59.6925	0.063531	0.9653607
2.5	0.6814	60.3739	0.0110198	0.9763805
2.75	0.6215	60.9954	0.010051	0.9864315
3	0.3689	61.3643	0.0059659	0.9923974
3.25	0.2959	61.6602	0.0047854	0.9971828
3.5	0.1192	61.7794	0.0019277	0.9991105
3.75	0.0414	61.8208	0.0006695	0.9997801
4	0.0136	61.8344	0.0002199	1

Total Wt.	61.8344 gms
Median Weight	30.9172 gms
Mean Grain Size	1.08 phi 0.4730288 mm


Cum Wt. % IR2

1.5'

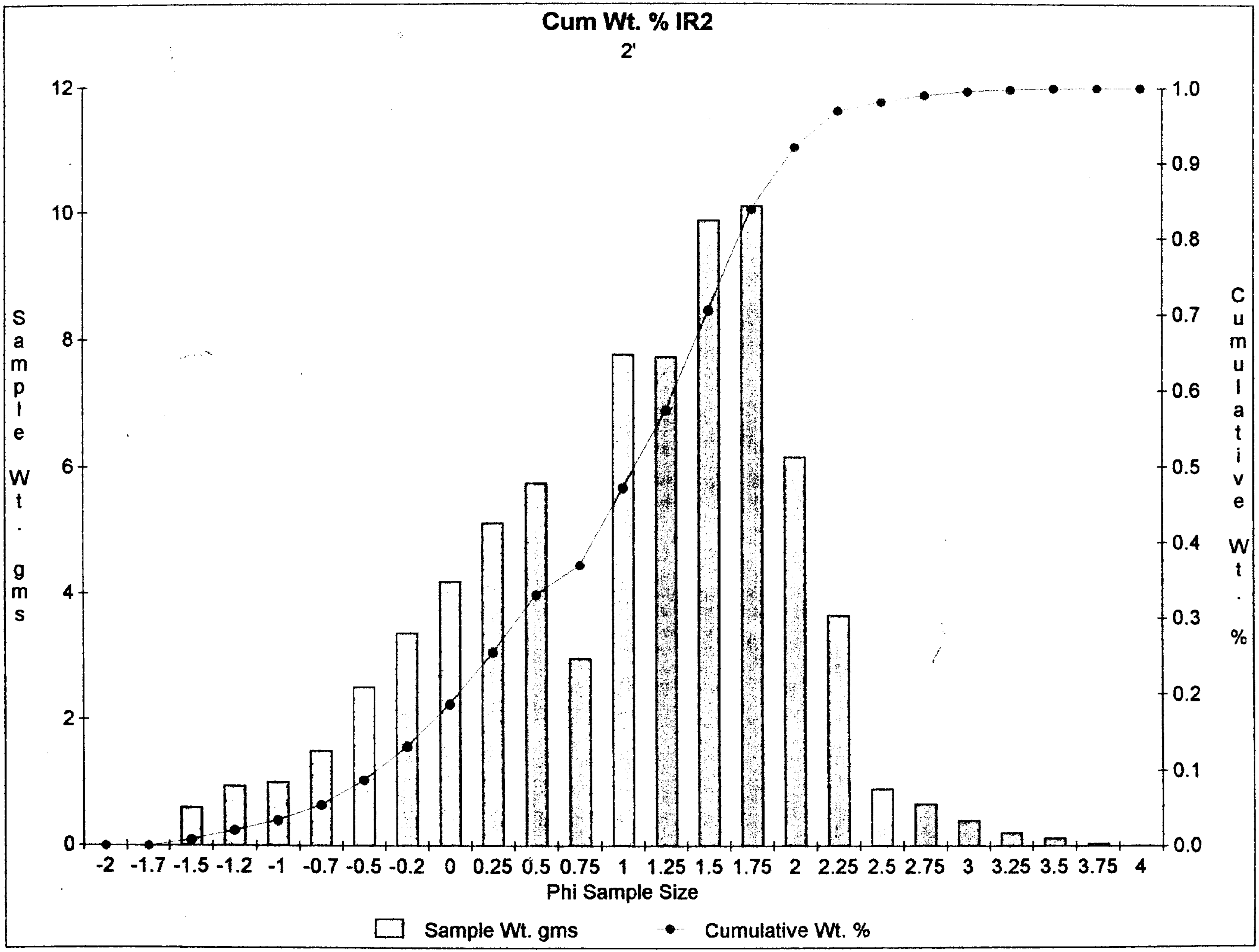
Sample Wt. gms
0
1
2
3
4
5
6
7
8
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.5949	0.5949	0.0078864	0.0078864
-1.25	0.9409	1.5358	0.0124733	0.0203597
-1	1.0027	2.5385	0.0132926	0.0336523
-0.75	1.5049	4.0434	0.0199501	0.0536024
-0.5	2.5028	6.5462	0.033179	0.0867814
-0.25	3.3561	9.9023	0.044491	0.1312724
0	4.1639	14.0662	0.0551998	0.1864723
0.25	5.105	19.1712	0.0676758	0.254148
0.5	5.7307	24.9019	0.0759705	0.3301186
0.75	2.9469	27.8488	0.0390664	0.3691849
1	7.7697	35.6185	0.1030011	0.472186
1.25	7.731	43.3495	0.102488	0.574674
1.5	9.8841	53.2336	0.1310312	0.7057052
1.75	10.1152	63.3488	0.1340948	0.8398
2	6.1479	69.4967	0.0815012	0.9213012
2.25	3.6268	73.1235	0.0480796	0.9693809
2.5	0.8955	74.019	0.0118714	0.9812523
2.75	0.6547	74.6737	0.0086792	0.9899315
3	0.3939	75.0676	0.0052218	0.9951533
3.25	0.2076	75.2752	0.0027521	0.9979054
3.5	0.1182	75.3934	0.0015669	0.9994724
3.75	0.0357	75.4291	0.0004733	0.9999456
4	0.0041	75.4332	5.435E-05	1

Total Wt.	75.4332 gms		
Median Weight	37.7166 gms		
Mean Grain Size	1.07 phi	0.476319 mm	

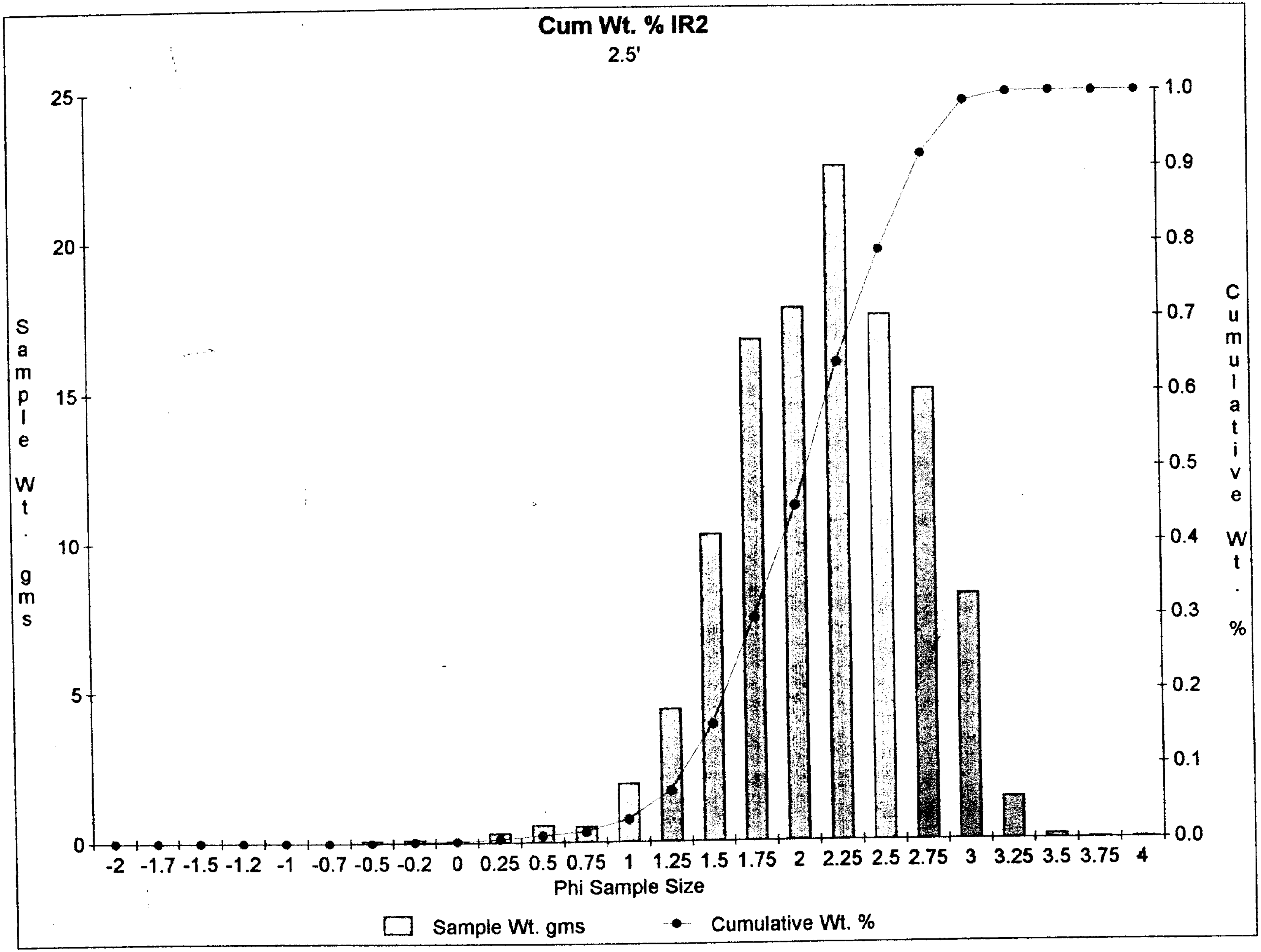

Cum Wt. % IR2
2'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0722	0.0722	0.0006143	0.0006143
-0.25	0.1025	0.1747	0.0008721	0.0014864
0	0.0663	0.241	0.0005641	0.0020504
0.25	0.2941	0.5351	0.0025022	0.0045526
0.5	0.5537	1.0888	0.0047109	0.0092635
0.75	0.5113	1.6001	0.0043501	0.0136137
1	1.8963	3.4964	0.0161338	0.0297474
1.25	4.3671	7.8635	0.0371554	0.0669028
1.5	10.2364	18.0999	0.0870915	0.1539943
1.75	16.7508	34.8507	0.1425161	0.2965104
2	17.7917	52.6424	0.1513721	0.4478824
2.25	22.4845	75.1269	0.1912985	0.639181
2.5	17.5381	92.665	0.1492145	0.7883954
2.75	15.0779	107.7429	0.128283	0.9166784
3	8.224	115.9669	0.0699699	0.9866484
3.25	1.3815	117.3484	0.0117538	0.9984022
3.5	0.1392	117.4876	0.0011843	0.9995865
3.75	0.0247	117.5123	0.0002101	0.9997967
4	0.0239	117.5362	0.0002033	1

Total Wt.	117.5362	gms	
Median Weight	58.7681	gms	
Mean Grain Size	2.07	phi	0.2381595 mm


Cum Wt. % IR2
2.5'
Sample Wt. gms
25
20
15
10
5
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

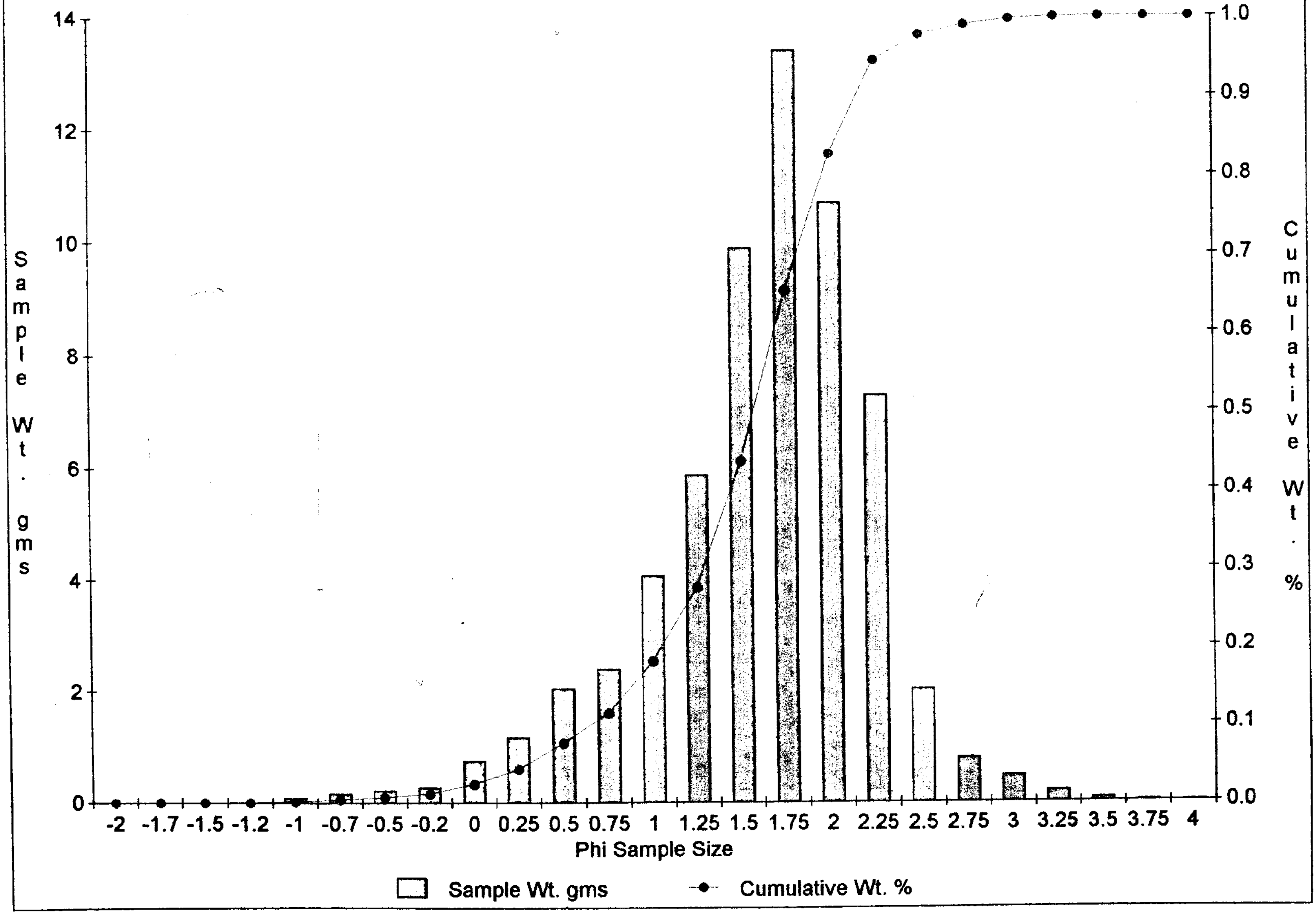
CORE (IR-2)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0096	0.0096	0.0001558	0.0001558
-1	0.0809	0.0905	0.0013133	0.0014691
-0.75	0.1561	0.2466	0.002534	0.0040031
-0.5	0.2143	0.4609	0.0034788	0.0074819
-0.25	0.2699	0.7308	0.0043813	0.0118632
0	0.7427	1.4735	0.0120563	0.0239195
0.25	1.1612	2.6347	0.0188499	0.0427694
0.5	2.0357	4.6704	0.0330458	0.0758152
0.75	2.3701	7.0405	0.0384742	0.1142894
1	4.0262	11.0667	0.0653578	0.1796472
1.25	5.8286	16.8953	0.0946164	0.2742637
1.5	9.8689	26.7642	0.1602032	0.4344668
1.75	13.3669	40.1311	0.2169867	0.6514535
2	10.672	50.8031	0.17324	0.8246935
2.25	7.2575	58.0606	0.117812	0.9425055
2.5	2.0144	60.075	0.0327	0.9752055
2.75	0.7869	60.8619	0.0127739	0.9879794
3	0.4597	61.3216	0.0074624	0.9954417
3.25	0.1905	61.5121	0.0030924	0.9985341
3.5	0.0639	61.576	0.0010373	0.9995714
3.75	0.0198	61.5958	0.0003214	0.9998929
4	0.0066	61.6024	0.0001071	1

Total Wt.	61.6024 gms	
Median Weight	30.8012 gms	
Mean Grain Size	1.58 phi	0.3344819 mm

Cum Wt. % IR2

3'



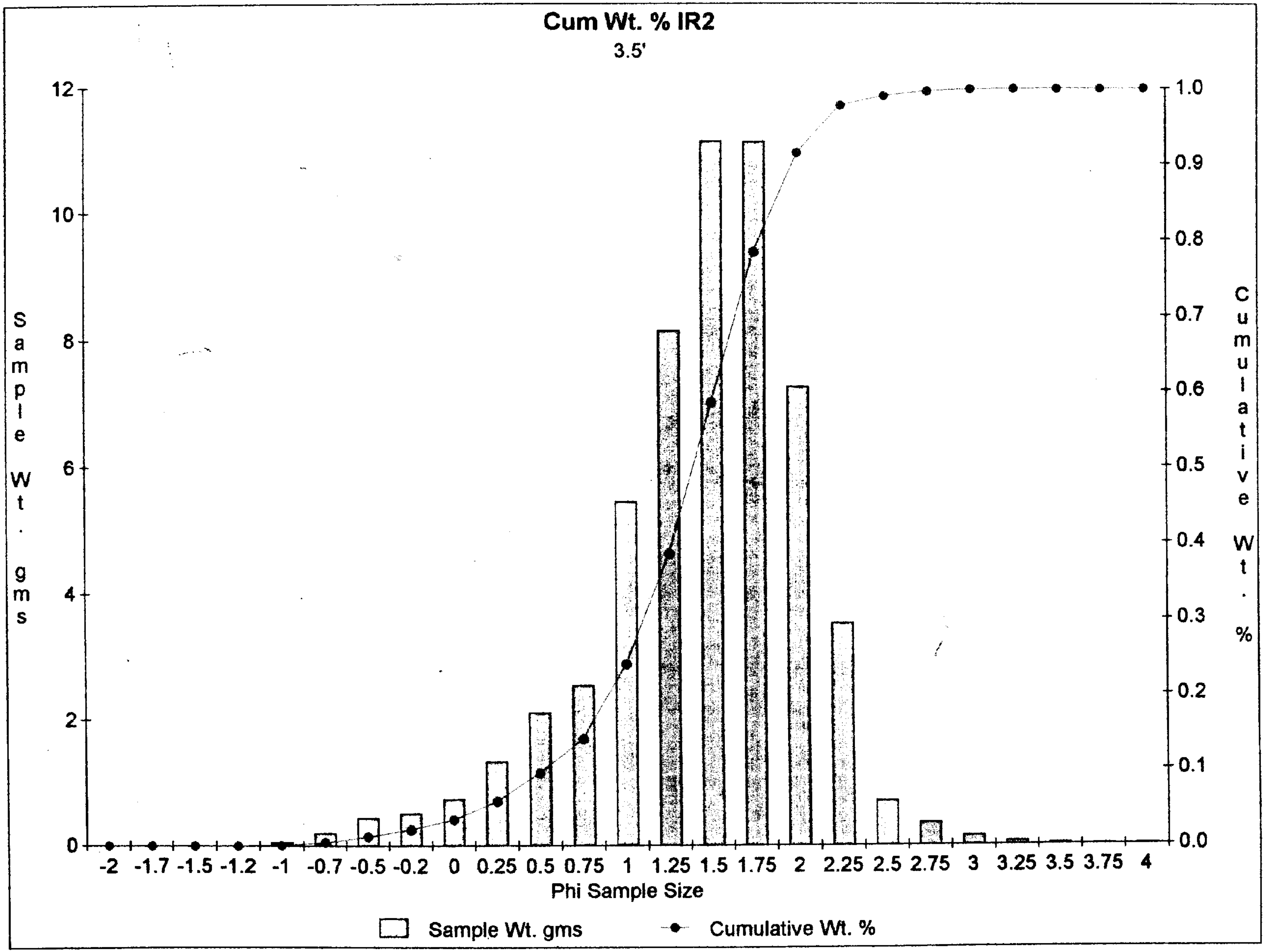
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0505	0.0505	0.0009051	0.0009051
-0.75	0.2007	0.2512	0.0035971	0.0045022
-0.5	0.4365	0.6877	0.0078233	0.0123254
-0.25	0.5056	1.1933	0.0090617	0.0213871
0	0.7305	1.9238	0.0130925	0.0344797
0.25	1.3291	3.2529	0.023821	0.0583007
0.5	2.094	5.3469	0.0375301	0.0958308
0.75	2.5275	7.8744	0.0452996	0.1411304
1	5.4339	13.3083	0.0973901	0.2385205
1.25	8.1483	21.4566	0.1460394	0.38456
1.5	11.1498	32.6064	0.1998344	0.5843944
1.75	11.1426	43.749	0.1997054	0.7840997
2	7.2648	51.0138	0.1302047	0.9143045
2.25	3.5098	54.5236	0.0629051	0.9772095
2.5	0.6936	55.2172	0.0124312	0.9896407
2.75	0.3529	55.5701	0.0063249	0.9959656
3	0.1453	55.7154	0.0026042	0.9985698
3.25	0.0523	55.7677	0.0009374	0.9995071
3.5	0.0181	55.7858	0.0003244	0.9998315
3.75	0.0064	55.7922	0.0001147	0.9999462
4	0.003	55.7952	5.377E-05	1

Total Wt.	55.7952 gms	
Median Weight	27.8976 gms	
Mean Grain Size	1.39 phi	0.3815648 mm



Cum Wt. % IR2

3.5'

Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

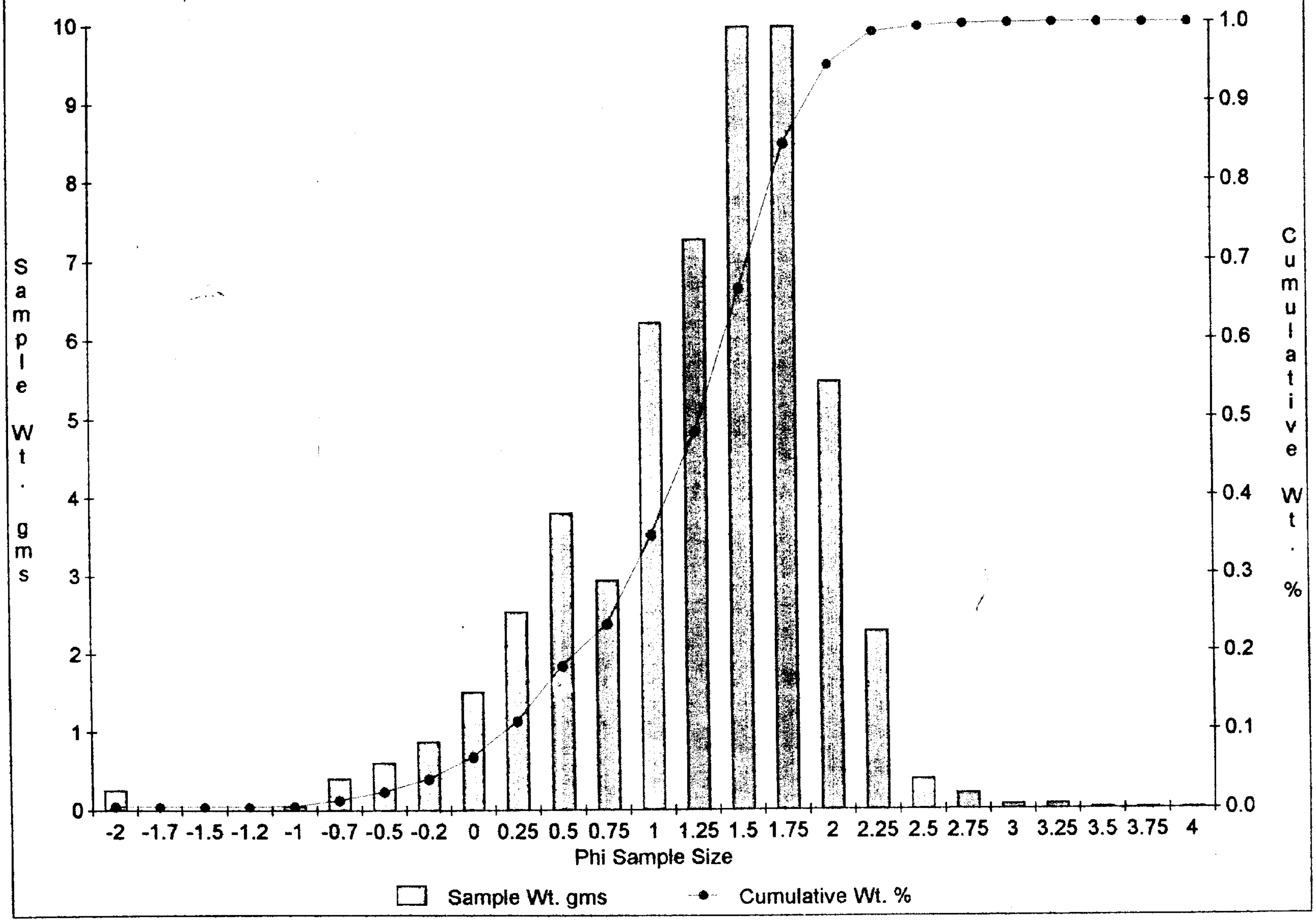
CORE (IR-2)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.2566	0.2566	0.0046951	0.0046951
-1.75	0	0.2566	0	0.0046951
-1.5	0	0.2566	0	0.0046951
-1.25	0	0.2566	0	0.0046951
-1	0.0531	0.3097	0.0009716	0.0056667
-0.75	0.4027	0.7124	0.0073683	0.013035
-0.5	0.5972	1.3096	0.0109271	0.0239621
-0.25	0.8687	2.1783	0.0158948	0.0398569
0	1.5047	3.683	0.0275319	0.0673888
0.25	2.5231	6.2061	0.0461658	0.1135546
0.5	3.775	9.9811	0.0690721	0.1826268
0.75	2.9167	12.8978	0.0533676	0.2359944
1	6.1992	19.097	0.1134284	0.3494227
1.25	7.2504	26.3474	0.1326624	0.4820852
1.5	9.9241	36.2715	0.1815838	0.663669
1.75	9.9309	46.2024	0.1817082	0.8453772
2	5.4568	51.6592	0.0998445	0.9452217
2.25	2.2656	53.9248	0.0414543	0.9866759
2.5	0.378	54.3028	0.0069164	0.9935923
2.75	0.1965	54.4993	0.0035954	0.9971877
3	0.0553	54.5546	0.0010118	0.9981995
3.25	0.0614	54.616	0.0011235	0.999323
3.5	0.0168	54.6328	0.0003074	0.9996304
3.75	0.0082	54.641	0.00015	0.9997804
4	0.012	54.653	0.0002196	1

Total Wt.	54.653	gms	
Median Weight	27.3265	gms	
Mean Grain Size	1.27	phi	0.4146598 mm

Cum Wt. % IR2

4'

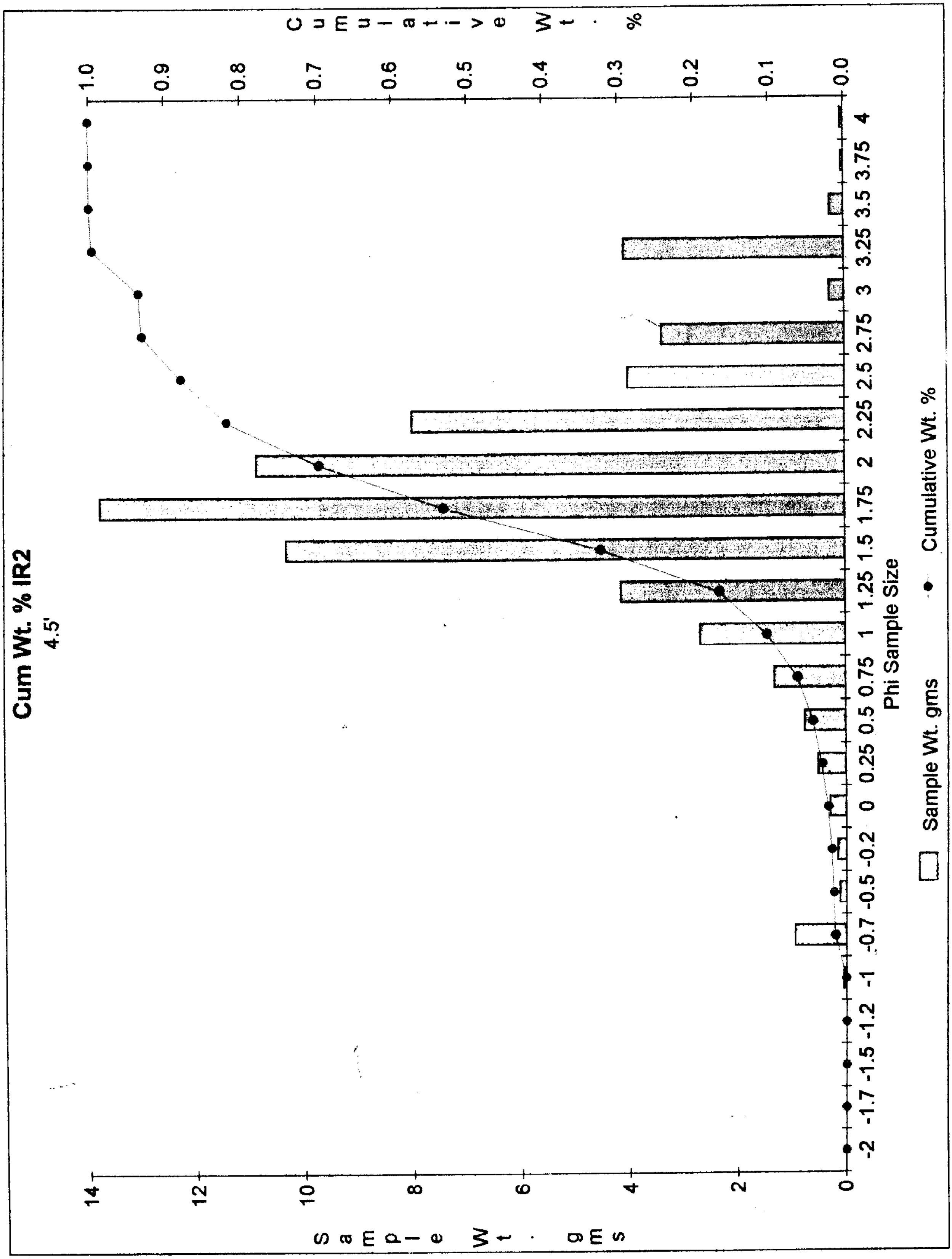

Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0501	0.0501	0.0007581	0.0007581
-0.75	0.947	0.9971	0.0143295	0.0150876
-0.5	0.1266	1.1237	0.0019156	0.0170032
-0.25	0.1567	1.2804	0.0023711	0.0193743
0	0.2983	1.5787	0.0045137	0.023888
0.25	0.5099	2.0886	0.0077155	0.0316035
0.5	0.7482	2.8368	0.0113213	0.0429248
0.75	1.3043	4.1411	0.0197359	0.0626608
1	2.6692	6.8103	0.0403888	0.1030496
1.25	4.1393	10.9496	0.0626335	0.1656831
1.5	10.3552	21.3048	0.156689	0.3223721
1.75	13.789	35.0938	0.2086473	0.5310194
2	10.8863	45.9801	0.1647253	0.6957447
2.25	8.0051	53.9852	0.1211286	0.8168734
2.5	4.0083	57.9935	0.0606513	0.8775247
2.75	3.3857	61.3792	0.0512305	0.9287552
3	0.2731	61.6523	0.0041324	0.9328876
3.25	4.0837	65.736	0.0617922	0.9946798
3.5	0.259	65.995	0.003919	0.9985988
3.75	0.0417	66.0367	0.000631	0.9992298
4	0.0509	66.0876	0.0007702	1

Total Wt.	66.0876 gms		
Median Weight	33.0438 gms		
Mean Grain Size	1.71 phi	0.3056601	mm



Cum Wt. % IR2

4.5'

Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

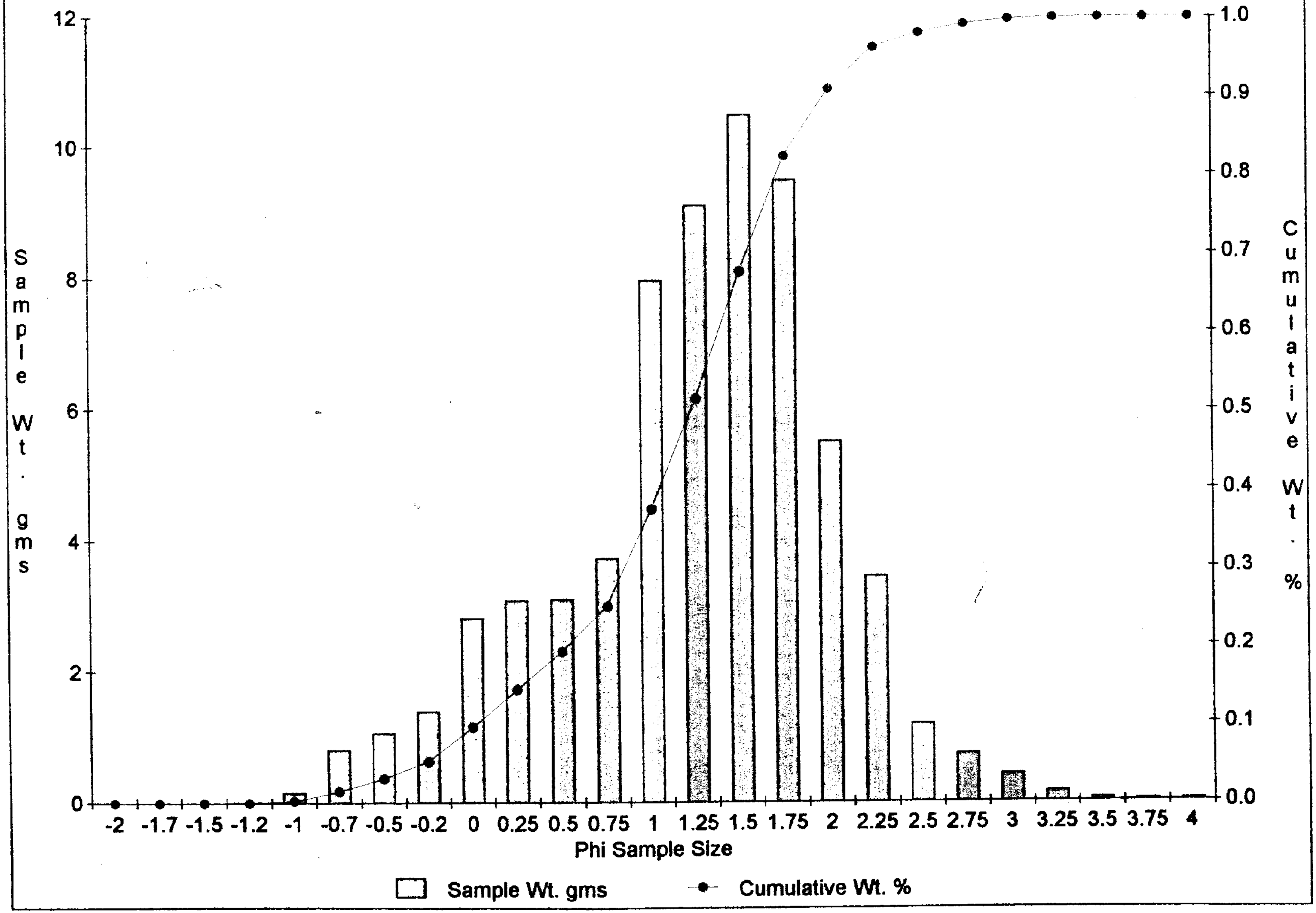
CORE (IR-2)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0089	0.0089	0.0001377	0.0001377
-1	0.15	0.1589	0.0023212	0.0024589
-0.75	0.8043	0.9632	0.0124461	0.0149049
-0.5	1.0579	2.0211	0.0163704	0.0312753
-0.25	1.385	3.4061	0.021432	0.0527073
0	2.7986	6.2047	0.0433066	0.096014
0.25	3.0677	9.2724	0.0474708	0.1434847
0.5	3.0873	12.3597	0.0477741	0.1912588
0.75	3.7103	16.07	0.0574146	0.2486735
1	7.949	24.019	0.1230059	0.3716794
1.25	9.0998	33.1188	0.1408139	0.5124932
1.5	10.4773	43.5961	0.1621298	0.6746231
1.75	9.4889	53.085	0.1468349	0.821458
2	5.5038	58.5888	0.085168	0.906626
2.25	3.4438	62.0326	0.0532907	0.9599167
2.5	1.1923	63.2249	0.0184501	0.9783668
2.75	0.7324	63.9573	0.0113334	0.9897002
3	0.4221	64.3794	0.0065317	0.996232
3.25	0.1505	64.5299	0.0023289	0.9985609
3.5	0.0472	64.5771	0.0007304	0.9992913
3.75	0.0224	64.5995	0.0003466	0.9996379
4	0.0234	64.6229	0.0003621	1

Total Wt.	64.6229	gms	
Median Weight	32.31145	gms	
Mean Grain Size	1.23	phi	0.4263174 mm

Cum Wt. % IR2

5'

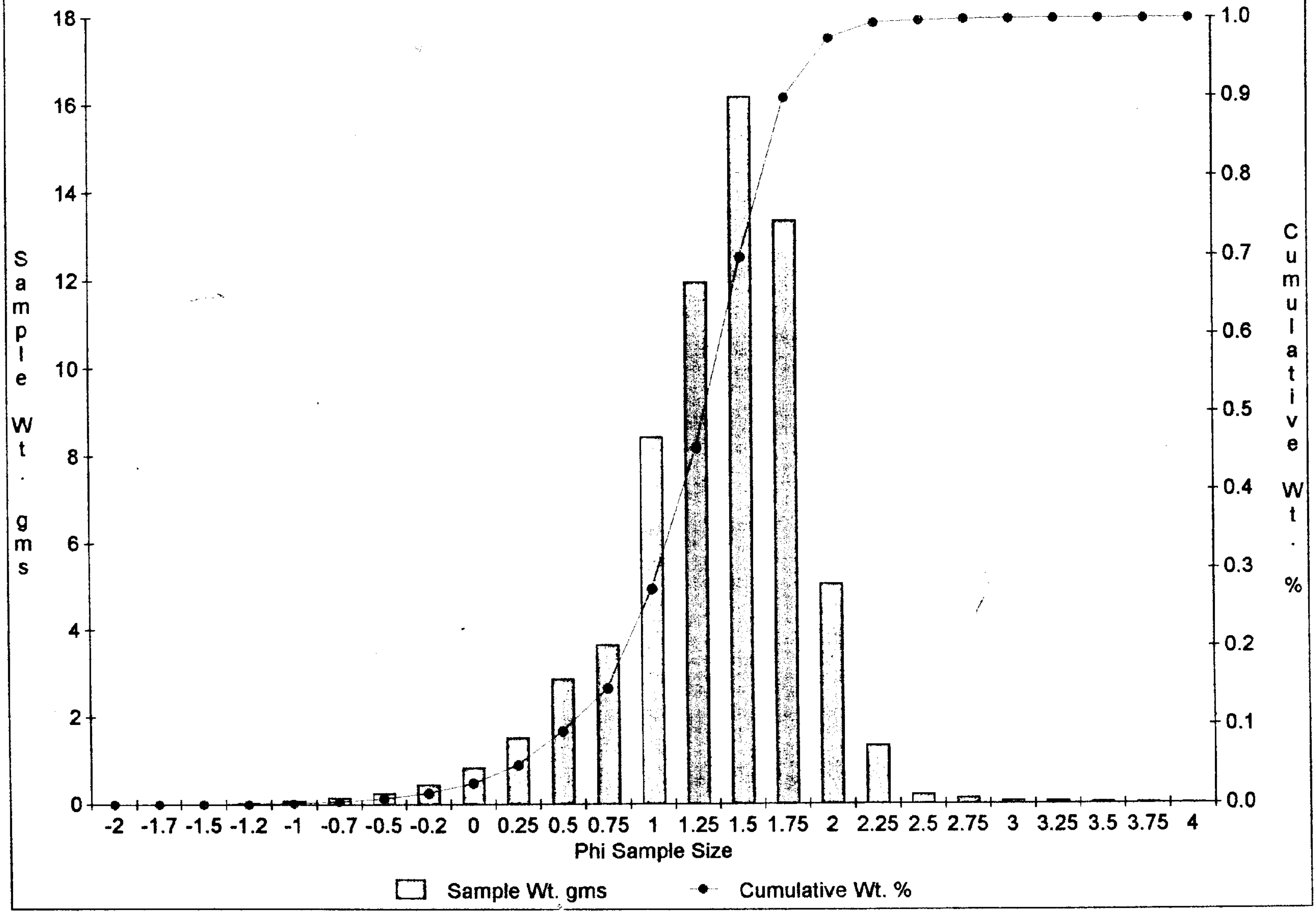

Sample Wt. gms
12
10
8
6
4
2
0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0251	0.0251	0.0003777	0.0003777
-1	0.0747	0.0998	0.0011241	0.0015018
-0.75	0.1482	0.248	0.0022302	0.003732
-0.5	0.2512	0.4992	0.0037802	0.0075122
-0.25	0.453	0.9522	0.0068169	0.0143291
0	0.8318	1.784	0.0125172	0.0268463
0.25	1.5104	3.2944	0.0227291	0.0495754
0.5	2.8552	6.1496	0.0429662	0.0925416
0.75	3.6238	9.7734	0.0545323	0.1470739
1	8.3972	18.1706	0.1263643	0.2734382
1.25	11.9471	30.1177	0.1797846	0.4532228
1.5	16.1513	46.269	0.243051	0.6962739
1.75	13.3531	59.6221	0.2009426	0.8972165
2	5.0243	64.6464	0.0756076	0.9728241
2.25	1.3218	65.9682	0.019891	0.9927151
2.5	0.1994	66.1676	0.0030006	0.9957157
2.75	0.1196	66.2872	0.0017998	0.9975155
3	0.052	66.3392	0.0007825	0.998298
3.25	0.0555	66.3947	0.0008352	0.9991332
3.5	0.0279	66.4226	0.0004199	0.9995531
3.75	0.0198	66.4424	0.000298	0.999851
4	0.0099	66.4523	0.000149	1

Total Wt.	66.4523	gms		
Median Weight	33.22615	gms		
Mean Grain Size	1.3	phi	0.4061262	mm



Cum Wt. % IR2

6'

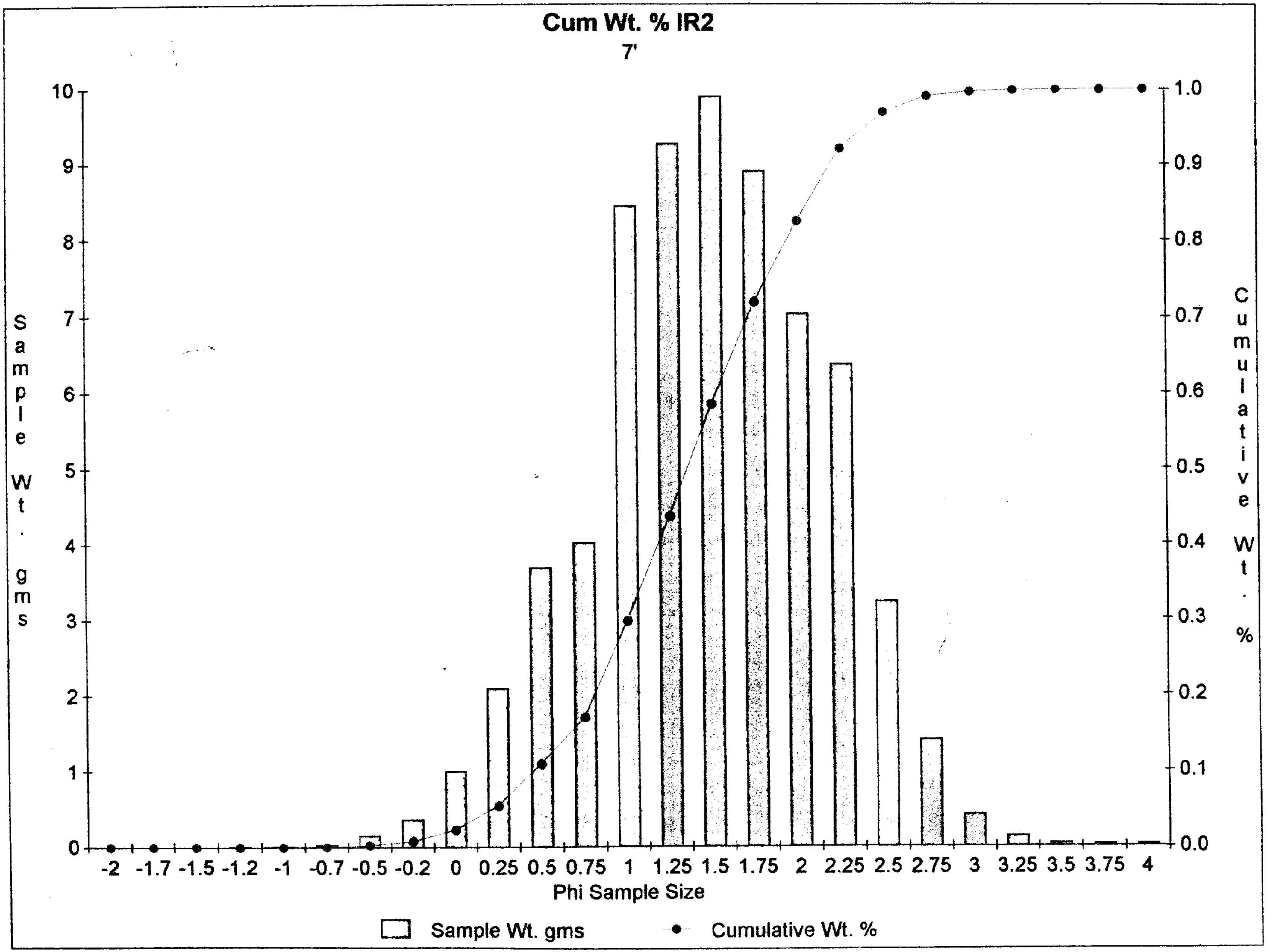
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-2)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0017	0.0017	2.556E-05	2.556E-05
-1	0.0094	0.0111	0.0001413	0.0001669
-0.75	0.028	0.0391	0.000421	0.0005878
-0.5	0.1514	0.1905	0.0022762	0.002864
-0.25	0.3602	0.5507	0.0054153	0.0082793
0	0.9961	1.5468	0.0149756	0.0232549
0.25	2.0837	3.6305	0.0313268	0.0545818
0.5	3.6752	7.3057	0.0552538	0.1098355
0.75	4.0122	11.3179	0.0603203	0.1701559
1	8.4524	19.7703	0.1270753	0.2972311
1.25	9.2686	29.0389	0.1393462	0.4365774
1.5	9.8972	38.9361	0.1487967	0.5853741
1.75	8.9048	47.8409	0.1338768	0.7192509
2	7.0389	54.8798	0.1058244	0.8250753
2.25	6.3732	61.253	0.0958161	0.9208914
2.5	3.2235	64.4765	0.0484628	0.9693542
2.75	1.4007	65.8772	0.0210584	0.9904127
3	0.4138	66.291	0.0062212	0.9966338
3.25	0.1334	66.4244	0.0020056	0.9986394
3.5	0.0399	66.4643	0.0005999	0.9992393
3.75	0.0246	66.4889	0.0003698	0.9996091
4	0.026	66.5149	0.0003909	1

Total Wt.	66.5149 gms	
Median Weight	33.25745 gms	
Mean Grain Size	1.36 phi	0.3895823 mm


Cum Wt. % IR2
7'
Sample Wt. gms
0
1
2
3
4
5
6
7
8
9
10
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

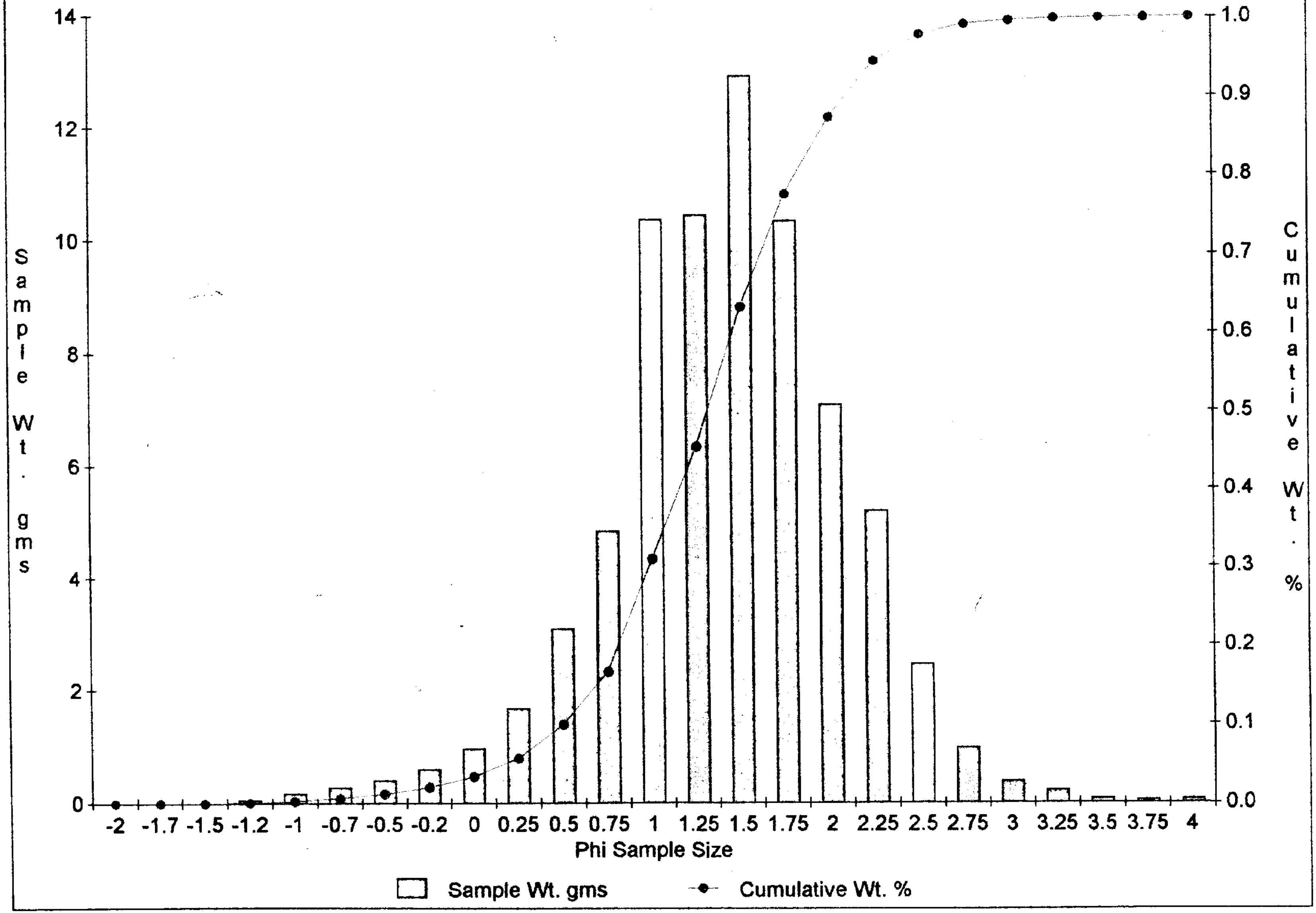
CORE (IR-2)
DEPTH (8.2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0501	0.0501	0.0006907	0.0006907
-1	0.1654	0.2155	0.0022803	0.002971
-0.75	0.2768	0.4923	0.0038161	0.0067871
-0.5	0.4041	0.8964	0.0055712	0.0123583
-0.25	0.5992	1.4956	0.0082609	0.0206192
0	0.9608	2.4564	0.0132462	0.0338654
0.25	1.6627	4.1191	0.022923	0.0567884
0.5	3.0746	7.1937	0.0423883	0.0991767
0.75	4.8134	12.0071	0.0663604	0.1655371
1	10.3737	22.3808	0.1430181	0.3085551
1.25	10.4546	32.8354	0.1441334	0.4526885
1.5	12.9109	45.7463	0.1779974	0.6306859
1.75	10.3572	56.1035	0.1427906	0.7734765
2	7.081	63.1845	0.0976229	0.8710994
2.25	5.186	68.3705	0.0714973	0.9425967
2.5	2.4403	70.8108	0.0336434	0.9762402
2.75	0.9688	71.7796	0.0133565	0.9895966
3	0.3775	72.1571	0.0052044	0.9948011
3.25	0.2098	72.3669	0.0028924	0.9976935
3.5	0.066	72.4329	0.0009099	0.9986034
3.75	0.0399	72.4728	0.0005501	0.9991535
4	0.0614	72.5342	0.0008465	1

Total Wt.	72.5342 gms	
Median Weight	36.2671 gms	
Mean Grain Size	1.32 phi	0.4005349 mm

Cum Wt. % IR2

8.2'



14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

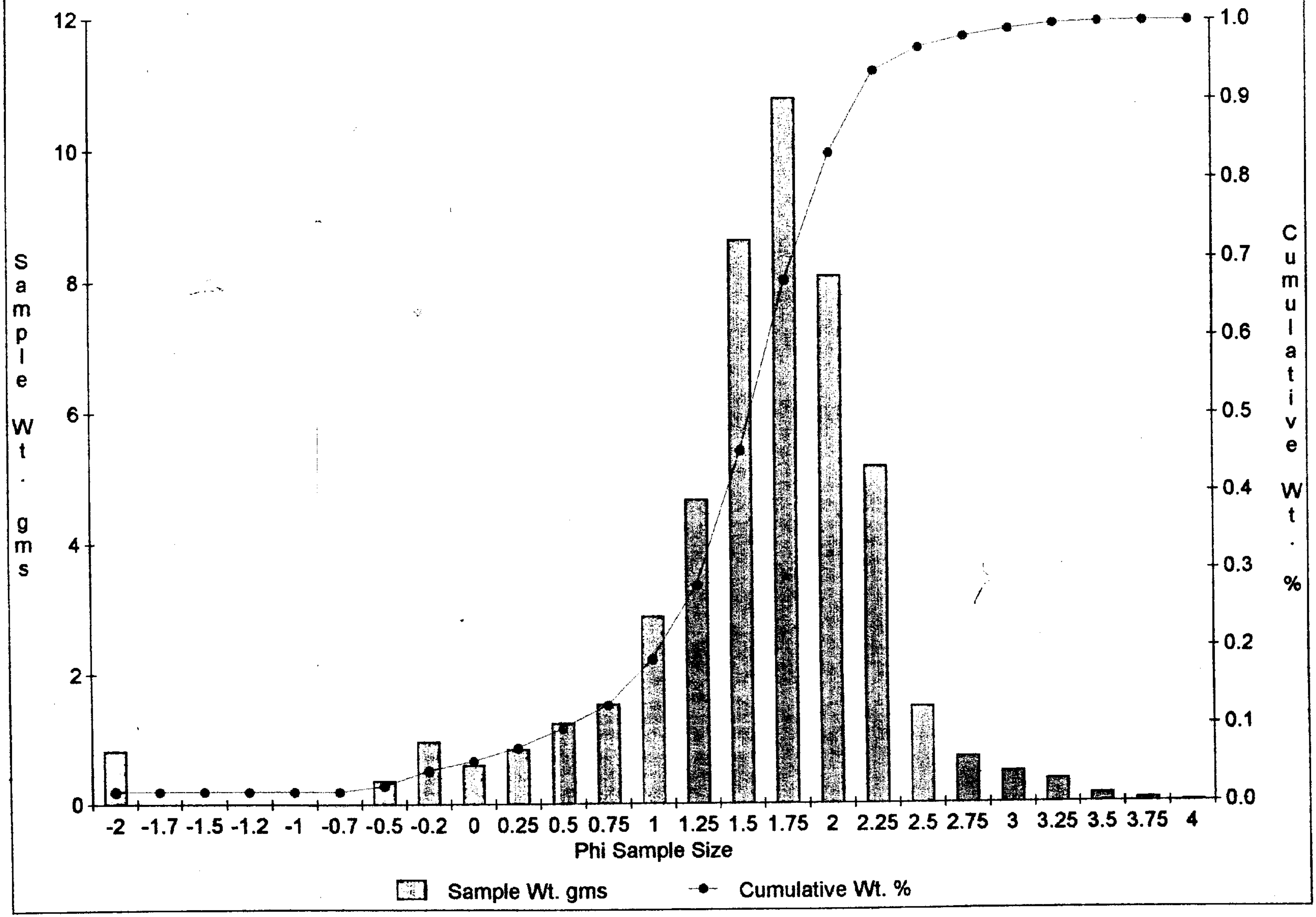
CORE (IR-3)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.8133	0.8133	0.016358	0.016358
-1.75	0	0.8133	0	0.016358
-1.5	0	0.8133	0	0.016358
-1.25	0	0.8133	0	0.016358
-1	0	0.8133	0	0.016358
-0.75	0	0.8133	0	0.016358
-0.5	0.3536	1.1669	0.007112	0.02347
-0.25	0.953	2.1199	0.0191678	0.0426378
0	0.593	2.7129	0.0119271	0.0545649
0.25	0.831	3.5439	0.016714	0.0712789
0.5	1.2241	4.768	0.0246205	0.0958993
0.75	1.5247	6.2927	0.0306665	0.1265658
1	2.8571	9.1498	0.0574652	0.184031
1.25	4.6487	13.7985	0.0934998	0.2775308
1.5	8.6436	22.4421	0.1738497	0.4513806
1.75	10.7992	33.2413	0.2172056	0.6685861
2	8.0907	41.332	0.1627292	0.8313153
2.25	5.1728	46.5048	0.1040411	0.9353564
2.5	1.4904	47.9952	0.0299766	0.965333
2.75	0.7083	48.7035	0.0142461	0.9795792
3	0.472	49.1755	0.0094934	0.9890725
3.25	0.3496	49.5251	0.0070315	0.9961041
3.5	0.1319	49.657	0.0026529	0.998757
3.75	0.0517	49.7087	0.0010398	0.9997969
4	0.0101	49.7188	0.0002031	1

Total Wt.	49.7188 gms	
Median Weight	24.8594 gms	
Mean Grain Size	1.56 phi	0.3391511 mm

Cum Wt. % IR3

0'



Sample Wt. gms
12
10
8
6
4
2
0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

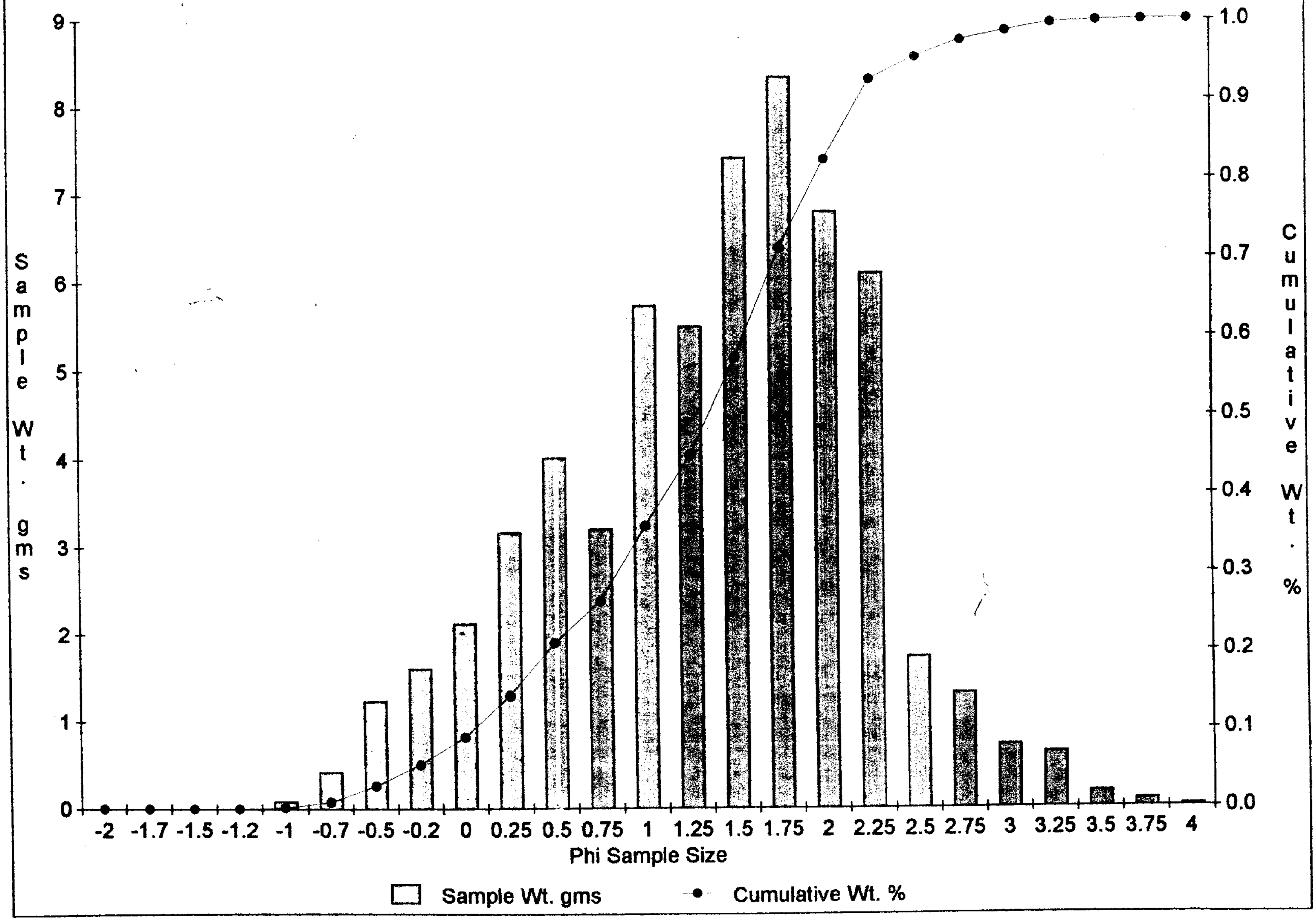
CORE (IR-3)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.086	0.086	0.0014271	0.0014271
-0.75	0.4208	0.5068	0.0069827	0.0084098
-0.5	1.2302	1.737	0.0204139	0.0288238
-0.25	1.5964	3.3334	0.0264906	0.0553144
0	2.1041	5.4375	0.0349154	0.0902298
0.25	3.1412	8.5787	0.052125	0.1423548
0.5	3.9979	12.5766	0.0663411	0.2086959
0.75	3.1766	15.7532	0.0527125	0.2614084
1	5.7206	21.4738	0.0949276	0.3563359
1.25	5.4862	26.96	0.0910379	0.4473738
1.5	7.4096	34.3696	0.1229548	0.5703286
1.75	8.3301	42.6997	0.1382296	0.7085582
2	6.8015	49.5012	0.112864	0.8214222
2.25	6.0957	55.5969	0.101152	0.9225741
2.5	1.7183	57.3152	0.0285134	0.9510876
2.75	1.3137	58.6289	0.0217995	0.9728871
3	0.7165	59.3454	0.0118896	0.9847767
3.25	0.6324	59.9778	0.010494	0.9952707
3.5	0.1773	60.1551	0.0029421	0.9982128
3.75	0.0837	60.2388	0.0013889	0.9996017
4	0.024	60.2628	0.0003983	1

Total Wt.	60.2628 gms		
Median Weight	30.1314 gms		
Mean Grain Size	1.36 phi	0.3895823 mm	

Cum Wt. % IR3

0.5'

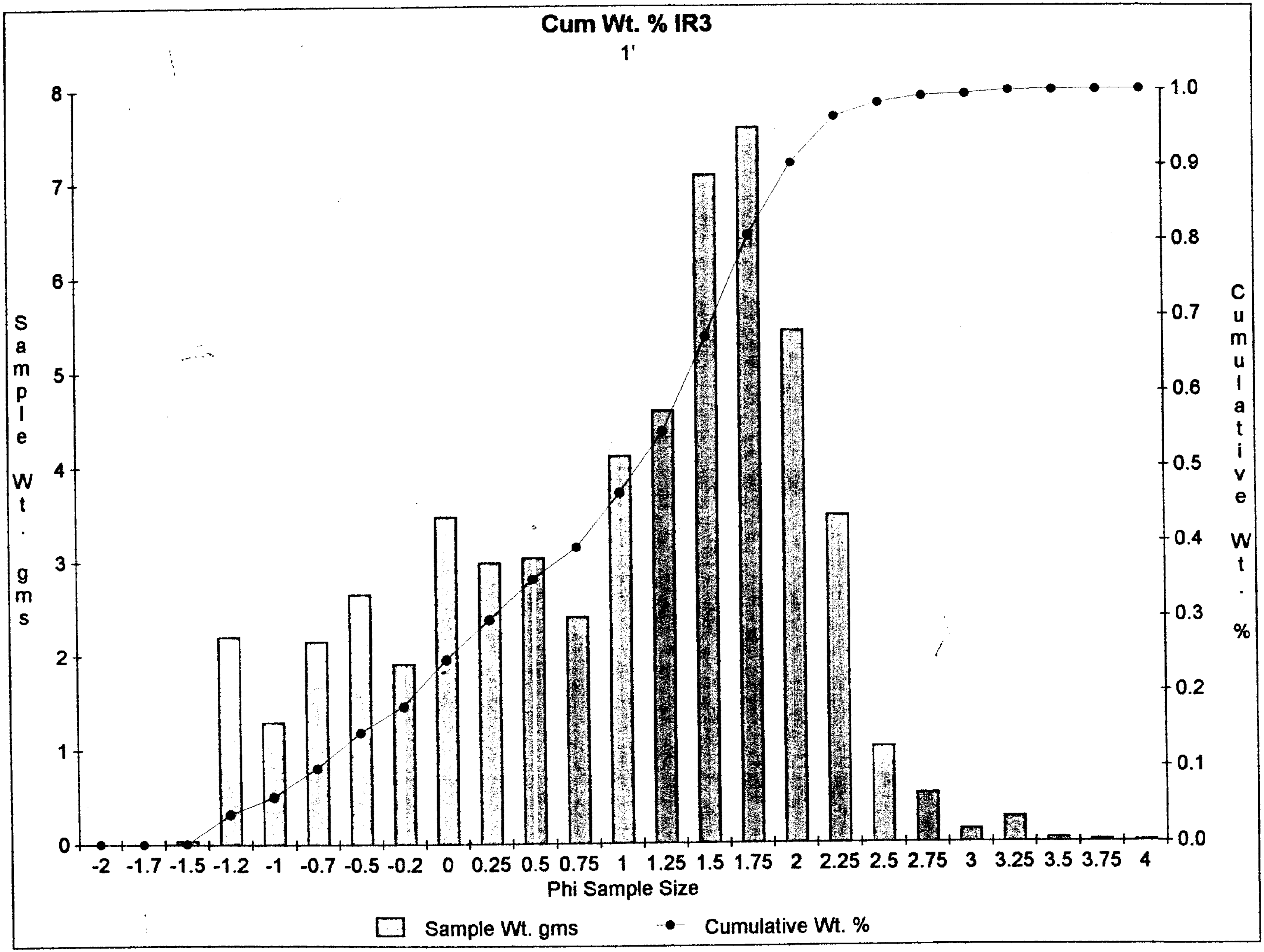

Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-3)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0401	0.0401	0.0007107	0.0007107
-1.25	2.2031	2.2432	0.0390461	0.0397568
-1	1.3009	3.5441	0.0230562	0.062813
-0.75	2.1472	5.6913	0.0380554	0.1008684
-0.5	2.6475	8.3388	0.0469224	0.1477908
-0.25	1.9029	10.2417	0.0337256	0.1815164
0	3.4628	13.7045	0.0613721	0.2428885
0.25	2.9713	16.6758	0.0526611	0.2955497
0.5	3.0223	19.6981	0.053565	0.3491147
0.75	2.3945	22.0926	0.0424384	0.3915531
1	4.1087	26.2013	0.0728196	0.4643727
1.25	4.5902	30.7915	0.0813533	0.545726
1.5	7.0914	37.8829	0.1256828	0.6714088
1.75	7.6017	45.4846	0.134727	0.8061358
2	5.4376	50.9222	0.096372	0.9025078
2.25	3.4854	54.4076	0.0617727	0.9642805
2.5	1.0199	55.4275	0.018076	0.9823565
2.75	0.5135	55.941	0.0091009	0.9914574
3	0.1363	56.0773	0.0024157	0.9938731
3.25	0.2656	56.3429	0.0047073	0.9985804
3.5	0.042	56.3849	0.0007444	0.9993247
3.75	0.0259	56.4108	0.000459	0.9997838
4	0.0122	56.423	0.0002162	1

Total Wt. 56.423 gms
Median Weight 28.2115 gms
Mean Grain Size 1.11 phi 0.463294 mm



Cum Wt. % IR3

1'

Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

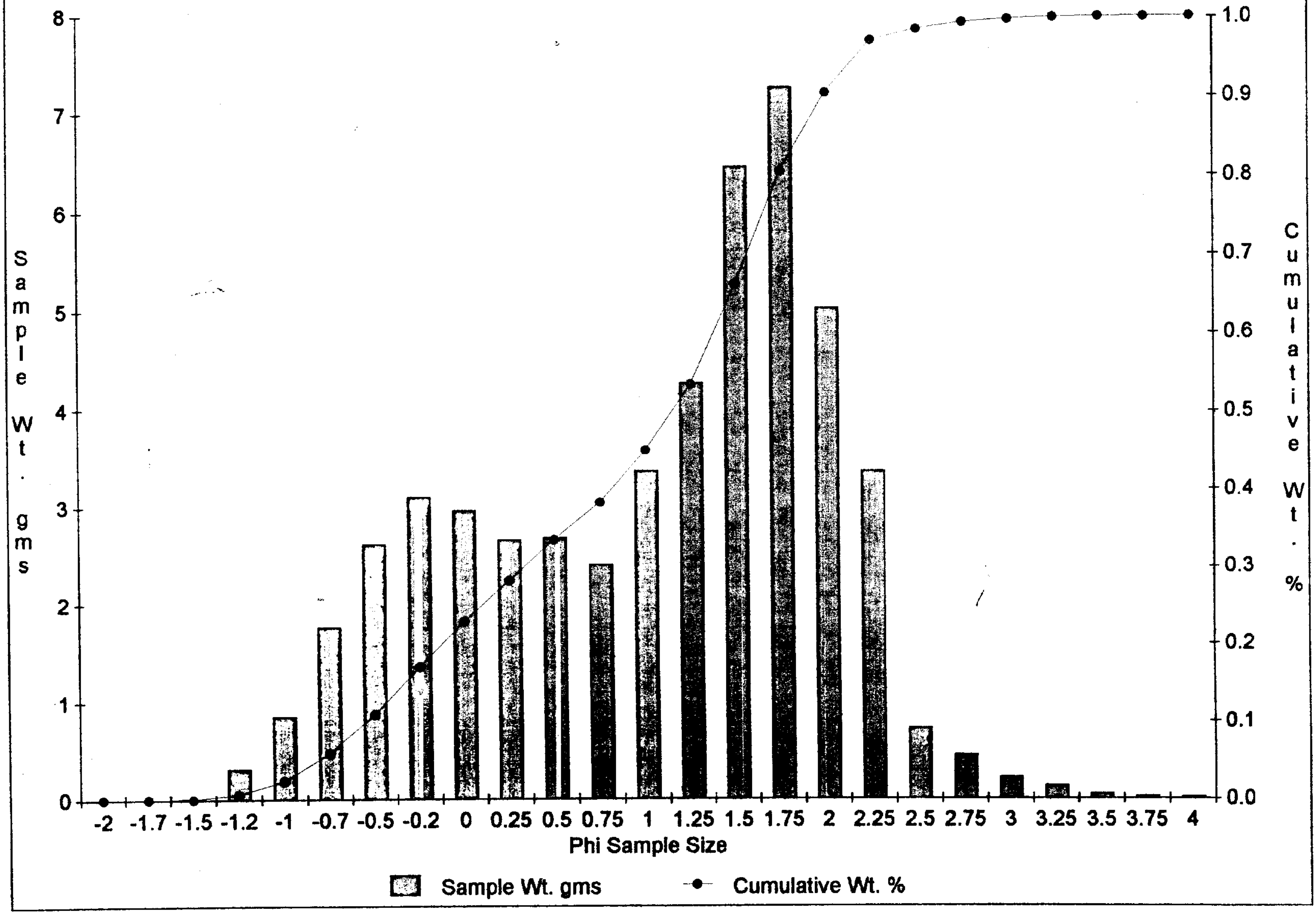
CORE (IR-3)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.011	0.011	0.0002162	0.0002162
-1.25	0.3058	0.3168	0.0060114	0.0062277
-1	0.853	1.1698	0.0167683	0.022996
-0.75	1.7735	2.9433	0.0348635	0.0578595
-0.5	2.6302	5.5735	0.0517045	0.109564
-0.25	3.1167	8.6902	0.0612682	0.1708322
0	2.9801	11.6703	0.0585829	0.2294151
0.25	2.6735	14.3438	0.0525557	0.2819708
0.5	2.6954	17.0392	0.0529863	0.3349571
0.75	2.4196	19.4588	0.0475646	0.3825217
1	3.3816	22.8404	0.0664756	0.4489972
1.25	4.2789	27.1193	0.0841147	0.533112
1.5	6.4698	33.5891	0.1271835	0.6602955
1.75	7.2718	40.8609	0.1429493	0.8032448
2	5.0404	45.9013	0.0990843	0.9023291
2.25	3.3821	49.2834	0.0664854	0.9688145
2.5	0.7278	50.0112	0.0143071	0.9831216
2.75	0.439	50.4502	0.0086299	0.9917515
3	0.2127	50.6629	0.0041813	0.9959328
3.25	0.1266	50.7895	0.0024887	0.9984215
3.5	0.047	50.8365	0.0009239	0.9993454
3.75	0.0212	50.8577	0.0004168	0.9997621
4	0.0121	50.8698	0.0002379	1

Total Wt.	50.8698 gms
Median Weight	25.4349 gms
Mean Grain Size	1.15 phi 0.4506252 mm

Cum Wt. % IR3

1.5'

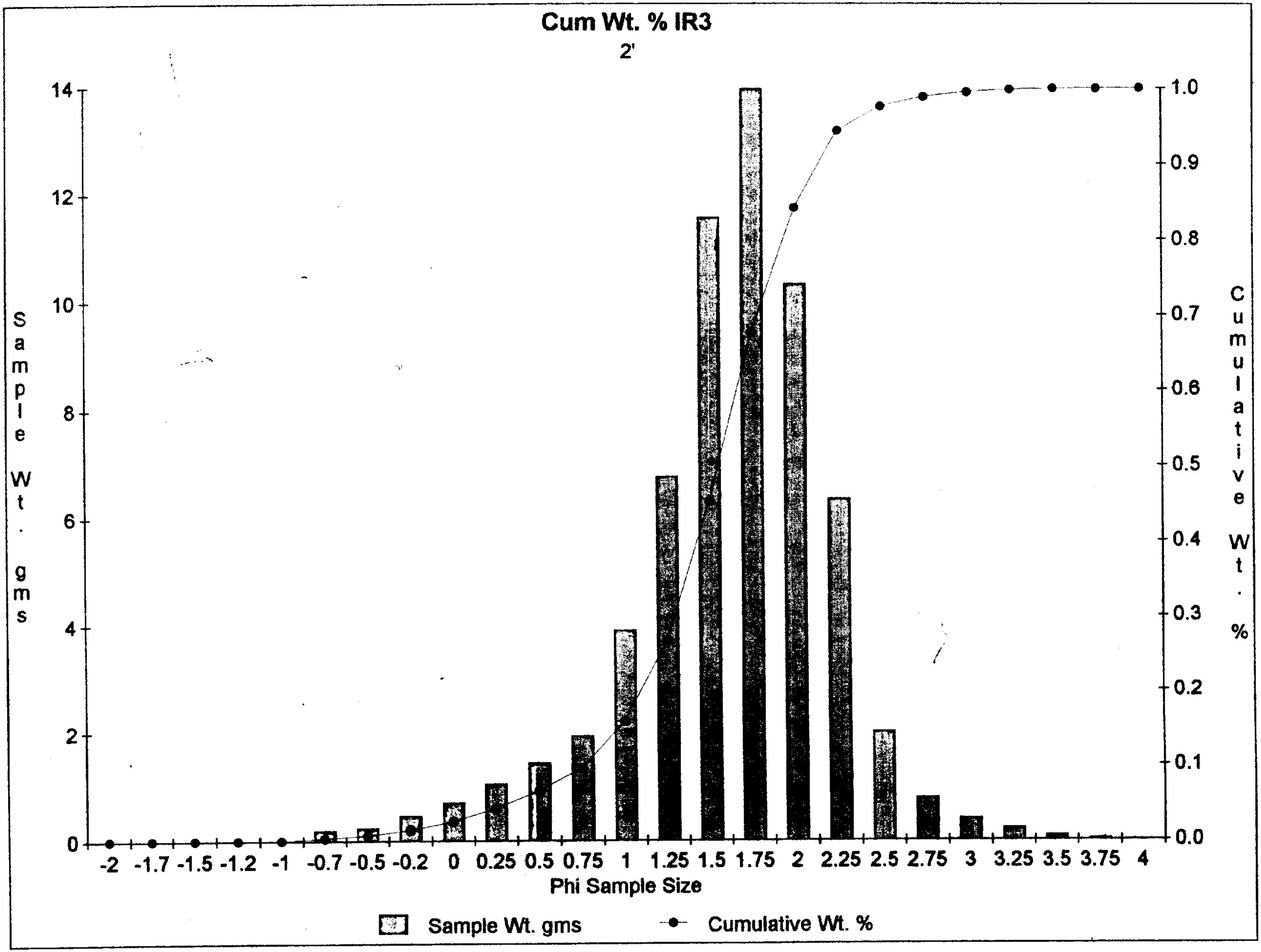

Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-3)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.1881	0.1881	0.0030039	0.0030039
-0.5	0.2341	0.4222	0.0037385	0.0067424
-0.25	0.4551	0.8773	0.0072678	0.0140103
0	0.6977	1.575	0.0111421	0.0251524
0.25	1.0439	2.6189	0.0166708	0.0418232
0.5	1.4506	4.0695	0.0231657	0.0649889
0.75	1.9539	6.0234	0.0312033	0.0961922
1	3.9331	9.9565	0.0628106	0.1590028
1.25	6.7961	16.7526	0.108532	0.2675348
1.5	11.6054	28.358	0.1853353	0.4528701
1.75	13.9828	42.3408	0.2233018	0.6761719
2	10.3712	52.712	0.1656254	0.8417973
2.25	6.3855	59.0975	0.1019748	0.9437721
2.5	2.0252	61.1227	0.0323419	0.976114
2.75	0.7747	61.8974	0.0123718	0.9884858
3	0.3898	62.2872	0.006225	0.9947108
3.25	0.2133	62.5005	0.0034063	0.9981172
3.5	0.0781	62.5786	0.0012472	0.9993644
3.75	0.0295	62.6081	0.0004711	0.9998355
4	0.0103	62.6184	0.0001645	1

Total Wt.	62.6184 gms		
Median Weight	31.3092 gms		
Mean Grain Size	1.55 phi	0.3415101 mm	



Cum Wt. % IR3

2'

Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

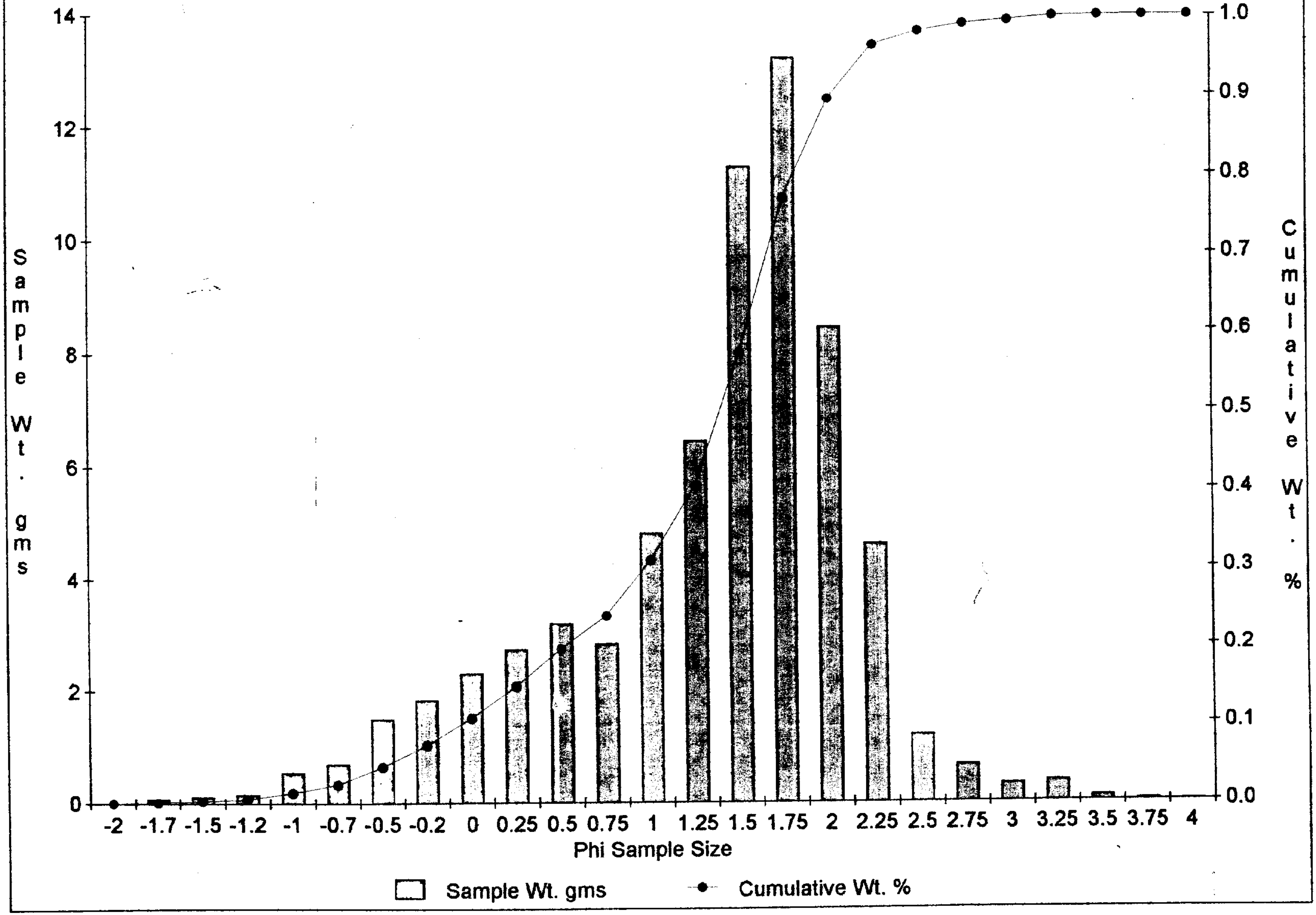
CORE (IR-3)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.0701	0.0701	0.0010432	0.0010432
-1.5	0.1145	0.1846	0.0017039	0.0027471
-1.25	0.1499	0.3345	0.0022307	0.0049779
-1	0.5486	0.8831	0.008164	0.0131419
-0.75	0.6873	1.5704	0.0102281	0.02337
-0.5	1.4818	3.0522	0.0220515	0.0454215
-0.25	1.8173	4.8695	0.0270442	0.0724657
0	2.2841	7.1536	0.0339909	0.1064567
0.25	2.7036	9.8572	0.0402338	0.1466904
0.5	3.1624	13.0196	0.0470614	0.1937518
0.75	2.8014	15.821	0.0416892	0.235441
1	4.7773	20.5983	0.0710936	0.3065346
1.25	6.4236	27.0219	0.0955931	0.4021278
1.5	11.2959	38.3178	0.1681005	0.5702283
1.75	13.2149	51.5327	0.1966582	0.7668865
2	8.4369	59.9696	0.1255542	0.8924406
2.25	4.5942	64.5638	0.0683688	0.9608094
2.5	1.1886	65.7524	0.0176882	0.9784976
2.75	0.6477	66.4001	0.0096388	0.9881364
3	0.3089	66.709	0.0045969	0.9927333
3.25	0.3678	67.0768	0.0054734	0.9982068
3.5	0.0888	67.1656	0.0013215	0.9995283
3.75	0.0263	67.1919	0.0003914	0.9999196
4	0.0054	67.1973	8.036E-05	1

Total Wt. 67.1973 gms
Median Weight 33.59865 gms
Mean Grain Size 1.4 phi 0.3789291 mm

Cum Wt. % IR3

2.5'



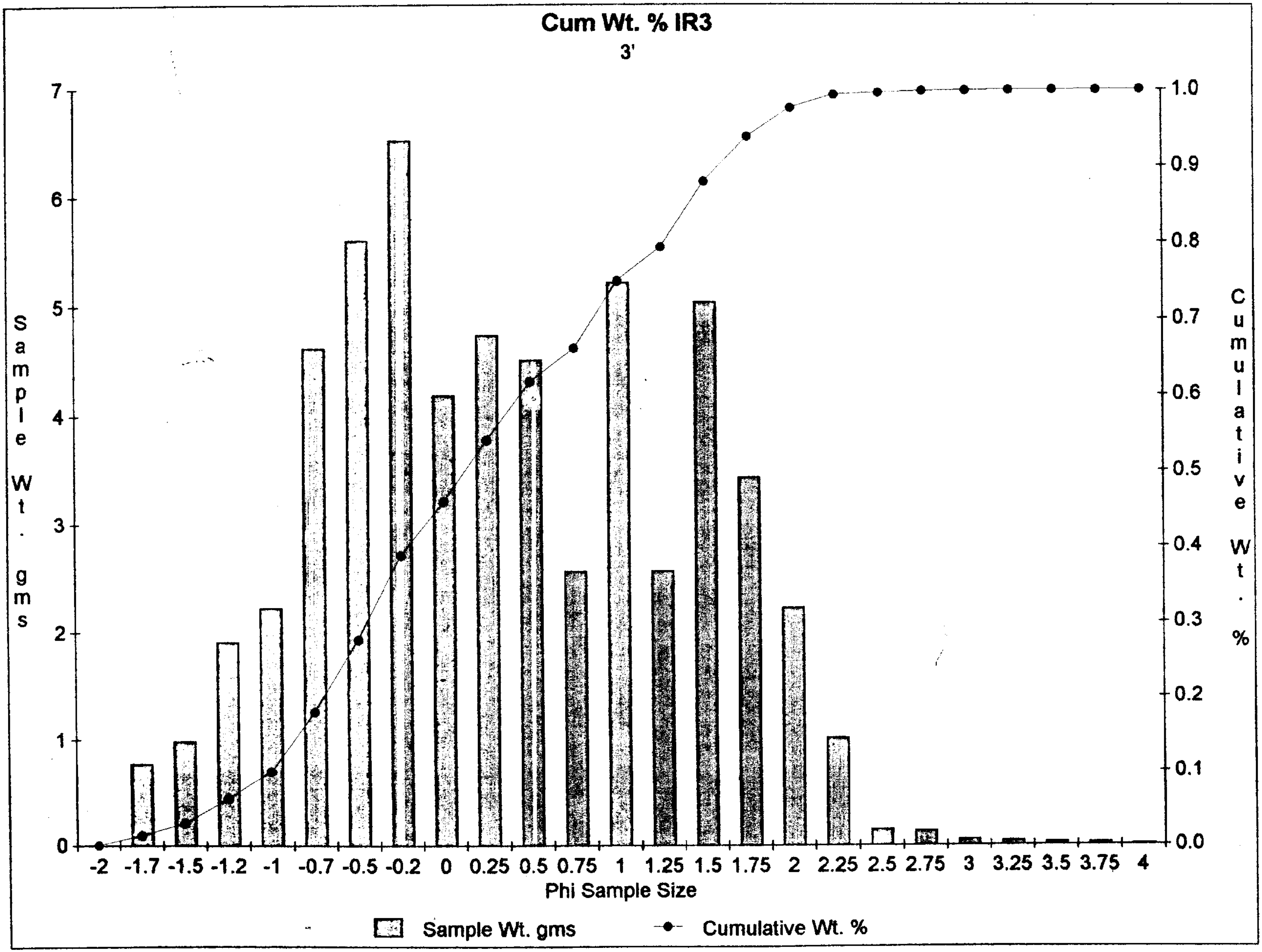
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
☐ Sample Wt. gms
●- Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-3)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.7809	0.7809	0.0133335	0.0133335
-1.5	0.9897	1.7706	0.0168986	0.0302321
-1.25	1.9122	3.6828	0.0326498	0.0628819
-1	2.2255	5.9083	0.0379993	0.1008812
-0.75	4.6183	10.5266	0.0788551	0.1797363
-0.5	5.6008	16.1274	0.0956308	0.2753671
-0.25	6.521	22.6484	0.1113428	0.3867099
0	4.186	26.8344	0.0714738	0.4581837
0.25	4.7366	31.571	0.080875	0.5390588
0.5	4.5077	36.0787	0.0769667	0.6160254
0.75	2.5584	38.6371	0.0436834	0.6597088
1	5.2278	43.8649	0.089262	0.7489708
1.25	2.562	46.4269	0.0437448	0.7927157
1.5	5.045	51.4719	0.0861408	0.8788565
1.75	3.4318	54.9037	0.0585962	0.9374527
2	2.2216	57.1253	0.0379327	0.9753854
2.25	1.0155	58.1408	0.0173391	0.9927246
2.5	0.1459	58.2867	0.0024912	0.9952157
2.75	0.1332	58.4199	0.0022743	0.99749
3	0.0518	58.4717	0.0008845	0.9983745
3.25	0.0415	58.5132	0.0007086	0.9990831
3.5	0.0236	58.5368	0.000403	0.9994861
3.75	0.0204	58.5572	0.0003483	0.9998344
4	0.0097	58.5669	0.0001656	1

Total Wt.	58.5669	gms	
Median Weight	29.28345	gms	
Mean Grain Size	0.13	phi	0.9138315 mm


Cum Wt. % IR3
3'
Sample Wt. gms
0
1
2
3
4
5
6
7
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

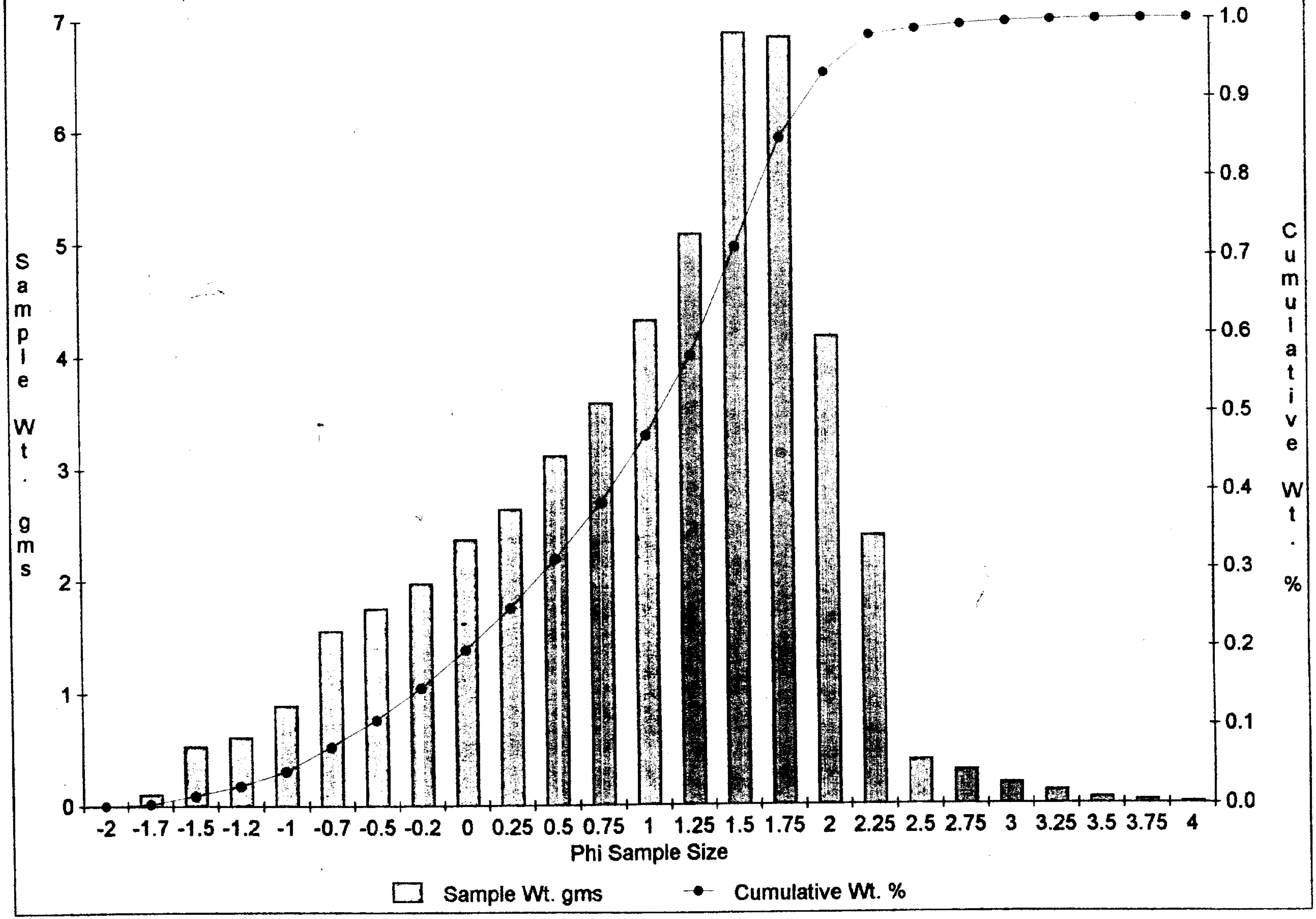
CORE (IR-3)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.1012	0.1012	0.0020336	0.0020336
-1.5	0.5274	0.6286	0.010598	0.0126316
-1.25	0.6095	1.2381	0.0122478	0.0248793
-1	0.8938	2.1319	0.0179607	0.04284
-0.75	1.5493	3.6812	0.0311328	0.0739729
-0.5	1.7443	5.4255	0.0350513	0.1090242
-0.25	1.9665	7.392	0.0395164	0.1485405
0	2.3524	9.7444	0.0472709	0.1958114
0.25	2.6222	12.3666	0.0526925	0.2485039
0.5	3.1039	15.4705	0.0623721	0.3108761
0.75	3.5713	19.0418	0.0717644	0.3826405
1	4.3107	23.3525	0.0866225	0.469263
1.25	5.0782	28.4307	0.1020452	0.5713083
1.5	6.8663	35.297	0.1379767	0.709285
1.75	6.8308	42.1278	0.1372633	0.8465483
2	4.1726	46.3004	0.0838474	0.9303957
2.25	2.3936	48.694	0.0480988	0.9784946
2.5	0.3819	49.0759	0.0076742	0.9861688
2.75	0.2952	49.3711	0.005932	0.9921007
3	0.1825	49.5536	0.0036673	0.995768
3.25	0.1169	49.6705	0.0023491	0.9981171
3.5	0.0541	49.7246	0.0010871	0.9992042
3.75	0.0291	49.7537	0.0005848	0.999789
4	0.0105	49.7642	0.000211	1

Total Wt.	49.7642 gms		
Median Weight	24.8821 gms		
Mean Grain Size	1.08 phi	0.4730288 mm	

Cum Wt. % IR3

3.5'


7
6
5
4
3
2
1
0
Sample Wt. gms
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

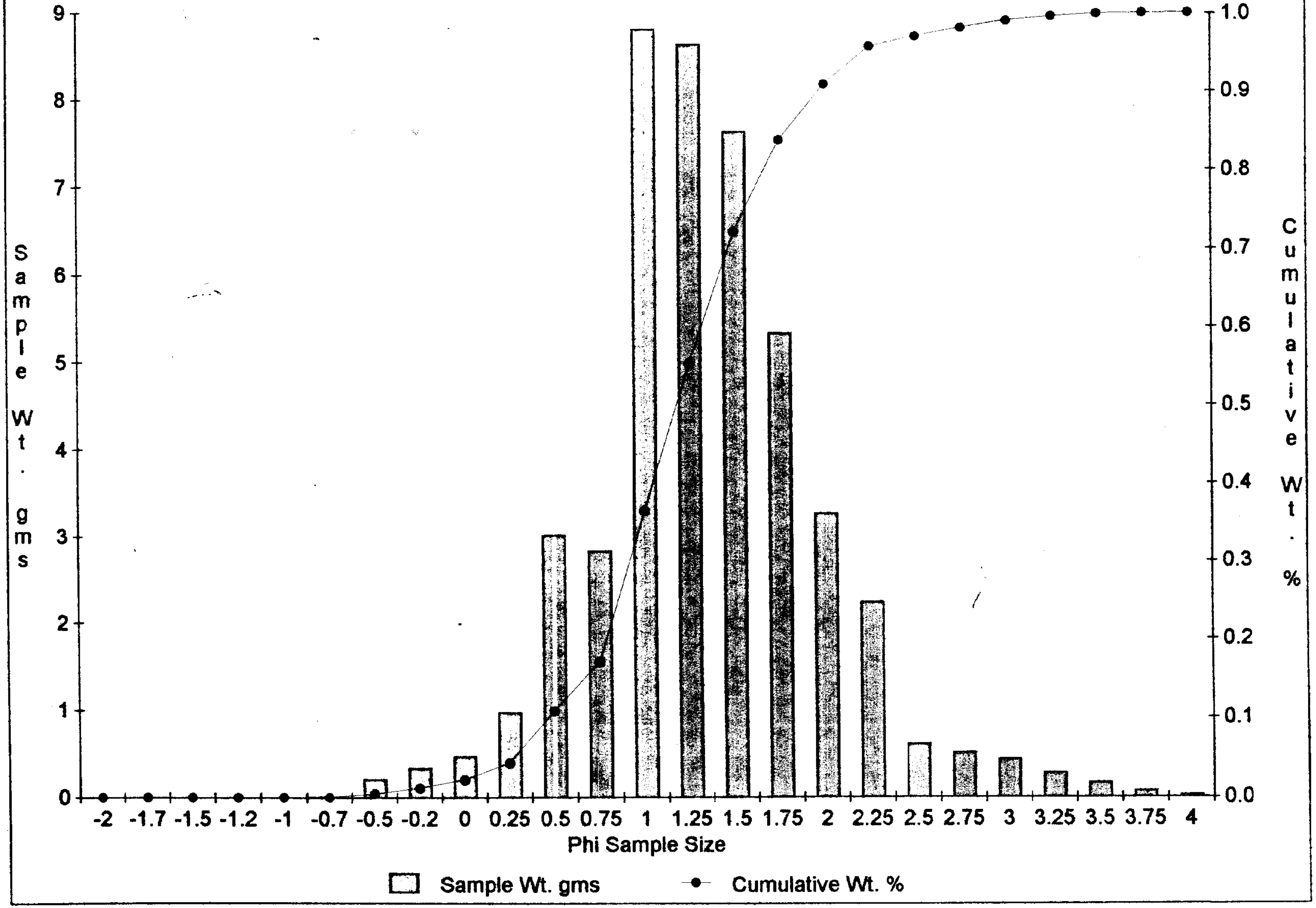
CORE (IR-3)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0076	0.0076	0.0001666	0.0001666
-0.5	0.2051	0.2127	0.0044964	0.0046631
-0.25	0.3315	0.5442	0.0072675	0.0119306
0	0.4623	1.0065	0.0101351	0.0220657
0.25	0.9677	1.9742	0.0212151	0.0432808
0.5	2.9916	4.9658	0.0655854	0.1088662
0.75	2.8089	7.7747	0.06158	0.1704462
1	8.7939	16.5686	0.1927903	0.3632366
1.25	8.6219	25.1905	0.1890196	0.5522561
1.5	7.6182	32.8087	0.1670152	0.7192714
1.75	5.3128	38.1215	0.1164735	0.8357449
2	3.239	41.3605	0.0710092	0.9067541
2.25	2.2159	43.5764	0.0485796	0.9553337
2.5	0.5975	44.1739	0.0130991	0.9684328
2.75	0.5005	44.6744	0.0109726	0.9794054
3	0.4227	45.0971	0.0092669	0.9886723
3.25	0.2671	45.3642	0.0058557	0.994528
3.5	0.1599	45.5241	0.0035055	0.9980335
3.75	0.068	45.5921	0.0014908	0.9995243
4	0.0217	45.6138	0.0004757	1

Total Wt.	45.6138	gms	
Median Weight	22.8069	gms	
Mean Grain Size	1.18	phi	0.4413515 mm

Cum Wt. % IR3

4'

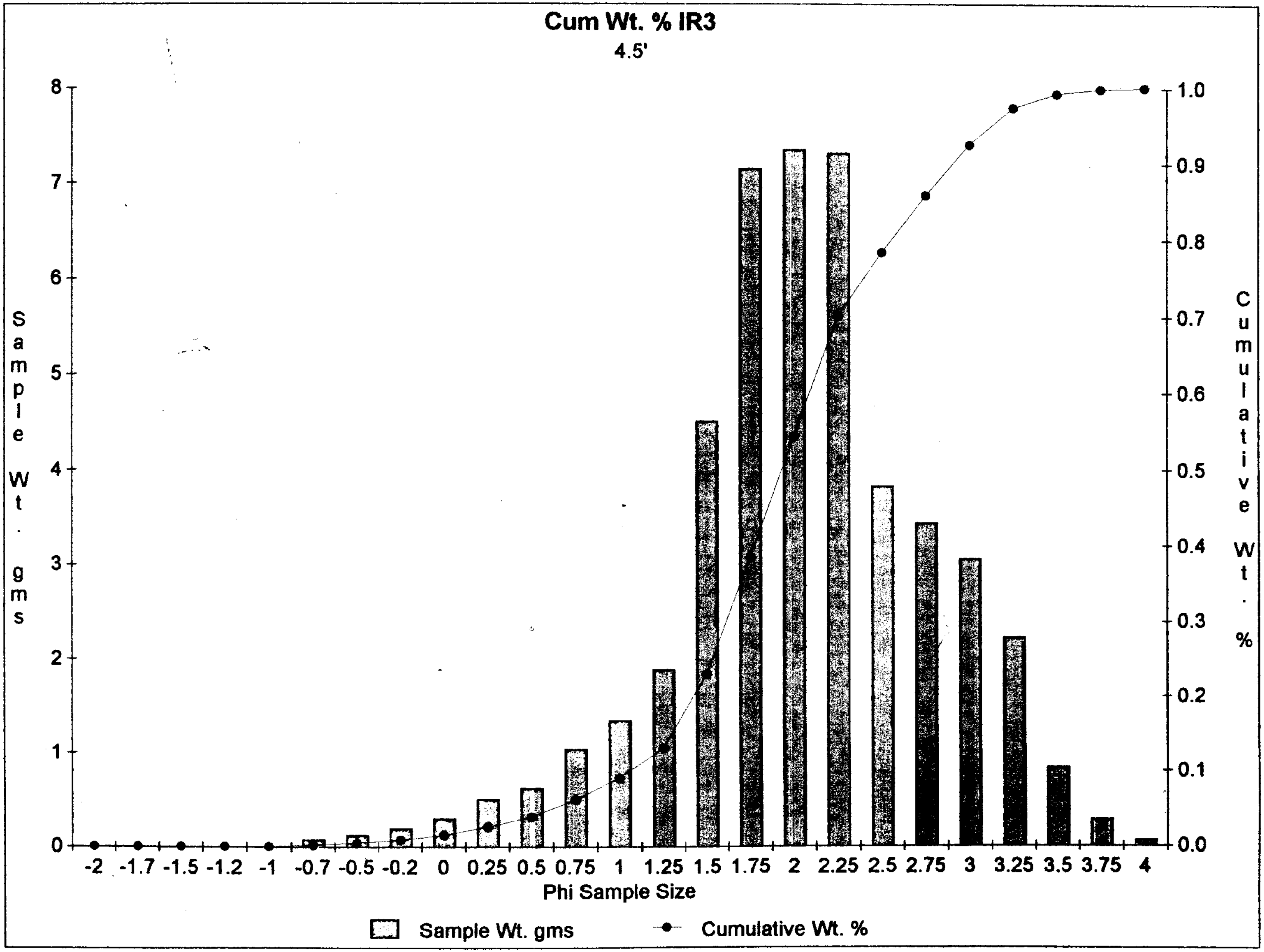

9
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-3)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0749	0.0749	0.0016221	0.0016221
-0.5	0.1217	0.1966	0.0026356	0.0042577
-0.25	0.1916	0.3882	0.0041494	0.0084071
0	0.295	0.6832	0.0063887	0.0147959
0.25	0.5013	1.1845	0.0108565	0.0256524
0.5	0.6176	1.8021	0.0133752	0.0390275
0.75	1.0355	2.8376	0.0224255	0.061453
1	1.3399	4.1775	0.0290178	0.0904708
1.25	1.884	6.0615	0.0408012	0.131272
1.5	4.5093	10.5708	0.0976565	0.2289286
1.75	7.1584	17.7292	0.1550273	0.3839559
2	7.3573	25.0865	0.1593348	0.5432906
2.25	7.3247	32.4112	0.1586288	0.7019194
2.5	3.834	36.2452	0.0830318	0.7849512
2.75	3.4421	39.6873	0.0745445	0.8594957
3	3.0672	42.7545	0.0664254	0.9259211
3.25	2.2337	44.9882	0.0483746	0.9742957
3.5	0.8453	45.8335	0.0183064	0.9926021
3.75	0.2809	46.1144	0.0060834	0.9986854
4	0.0607	46.1751	0.0013146	1

Total Wt.	46.1751 gms		
Median Weight	23.08755 gms		
Mean Grain Size	1.93 phi	0.2624292	mm

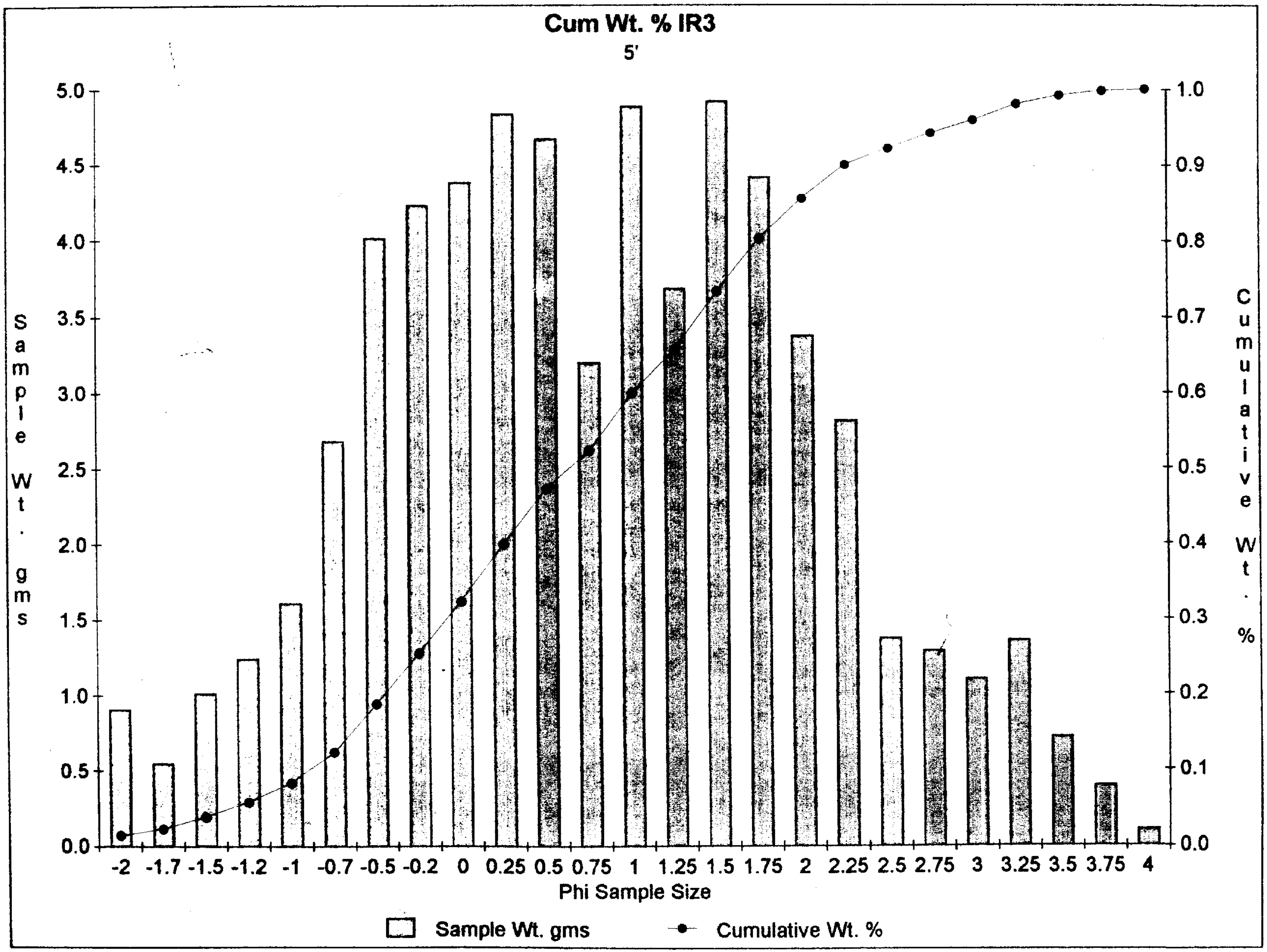

Cum Wt. % IR3
4.5'
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-3)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.9084	0.9084	0.0142397	0.0142397
-1.75	0.5511	1.4595	0.0086388	0.0228785
-1.5	1.0123	2.4718	0.0158684	0.038747
-1.25	1.2417	3.7135	0.0194644	0.0582114
-1	1.6084	5.3219	0.0252126	0.083424
-0.75	2.6819	8.0038	0.0420404	0.1254644
-0.5	4.0174	12.0212	0.0629752	0.1884396
-0.25	4.2344	16.2556	0.0663768	0.2548163
0	4.3835	20.6391	0.068714	0.3235303
0.25	4.8372	25.4763	0.075826	0.3993564
0.5	4.672	30.1483	0.0732364	0.4725928
0.75	3.1974	33.3457	0.0501212	0.5227139
1	4.8864	38.2321	0.0765973	0.5993112
1.25	3.6912	41.9233	0.0578618	0.657173
1.5	4.9244	46.8477	0.0771929	0.7343659
1.75	4.4248	51.2725	0.0693614	0.8037273
2	3.377	54.6495	0.0529365	0.8566639
2.25	2.8139	57.4634	0.0441096	0.9007734
2.5	1.3689	58.8323	0.0214583	0.9222318
2.75	1.2847	60.117	0.0201384	0.9423702
3	1.1011	61.2181	0.0172604	0.9596306
3.25	1.356	62.5741	0.0212561	0.9808867
3.5	0.7195	63.2936	0.0112786	0.9921653
3.75	0.3937	63.6873	0.0061715	0.9983368
4	0.1061	63.7934	0.0016632	1

Total Wt. 63.7934 gms
Median Weight 31.8967 gms
Mean Grain Size 0.64 phi 0.6417129 mm



Cum Wt. % IR3

5'

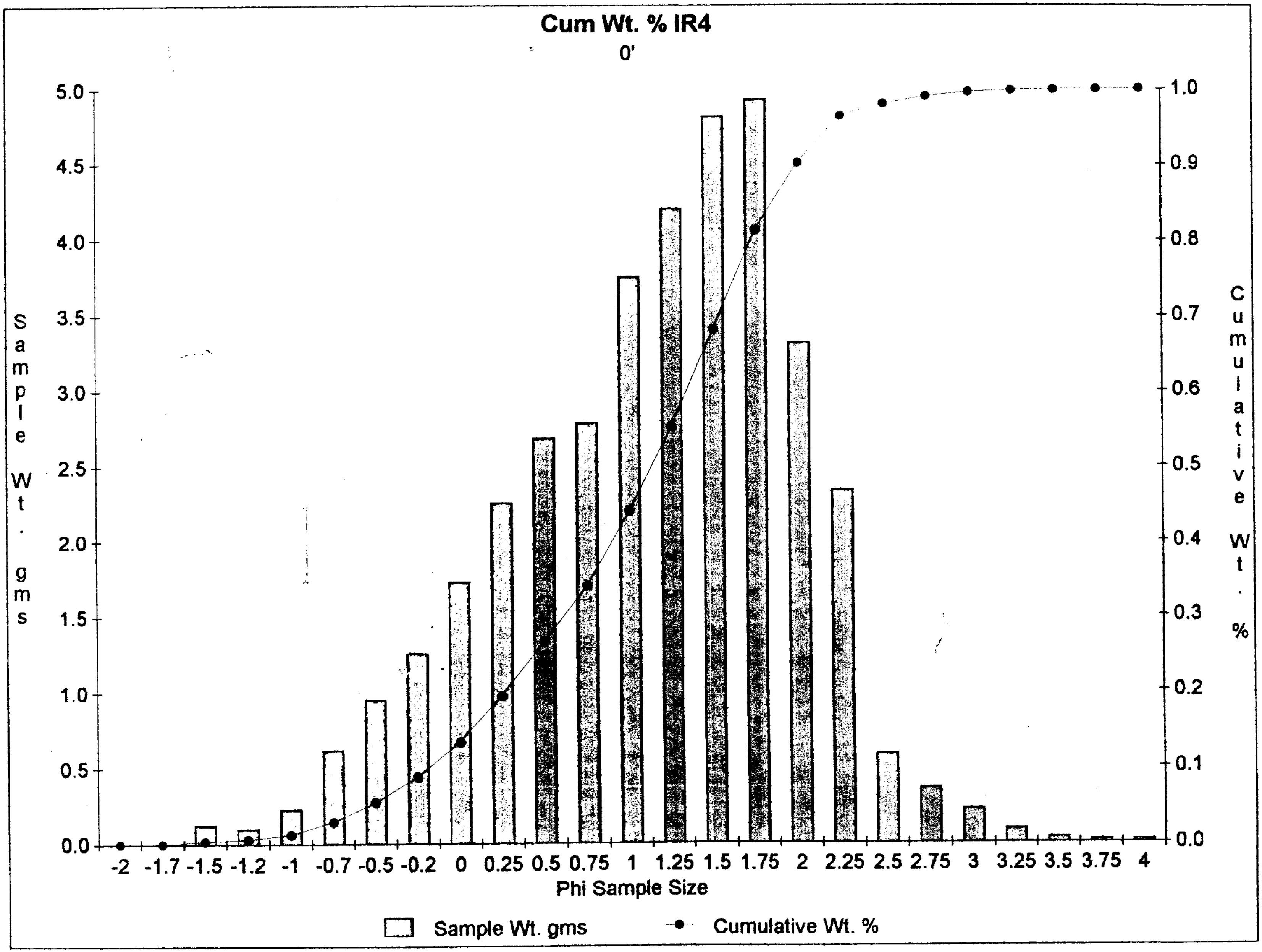
Sample Wt. gms
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.1254	0.1254	0.0033485	0.0033485
-1.25	0.0979	0.2233	0.0026142	0.0059628
-1	0.227	0.4503	0.0060616	0.0120243
-0.75	0.6168	1.0671	0.0164704	0.0284947
-0.5	0.947	2.0141	0.0252877	0.0537823
-0.25	1.2547	3.2688	0.0335041	0.0872865
0	1.7274	4.9962	0.0461266	0.1334131
0.25	2.2585	7.2547	0.0603085	0.1937216
0.5	2.6908	9.9455	0.0718522	0.2655738
0.75	2.7883	12.7338	0.0744557	0.3400295
1	3.76	16.4938	0.1004029	0.4404325
1.25	4.2115	20.7053	0.1124593	0.5528918
1.5	4.8239	25.5292	0.1288122	0.681704
1.75	4.9352	30.4644	0.1317842	0.8134882
2	3.3213	33.7857	0.0886884	0.9021766
2.25	2.3415	36.1272	0.0625249	0.9647014
2.5	0.584	36.7112	0.0155945	0.9802959
2.75	0.356	37.0672	0.0095062	0.9898022
3	0.2187	37.2859	0.0058399	0.9956421
3.25	0.089	37.3749	0.0023766	0.9980186
3.5	0.0357	37.4106	0.0009533	0.9989719
3.75	0.0199	37.4305	0.0005314	0.9995033
4	0.0186	37.4491	0.0004967	1

Total Wt.	37.4491 gms		
Median Weight	18.72455 gms		
Mean Grain Size	1.13 phi	0.4569157 mm	


Cum Wt. % IR4
0'
Sample Wt. gms
Cumulative Wt. %
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

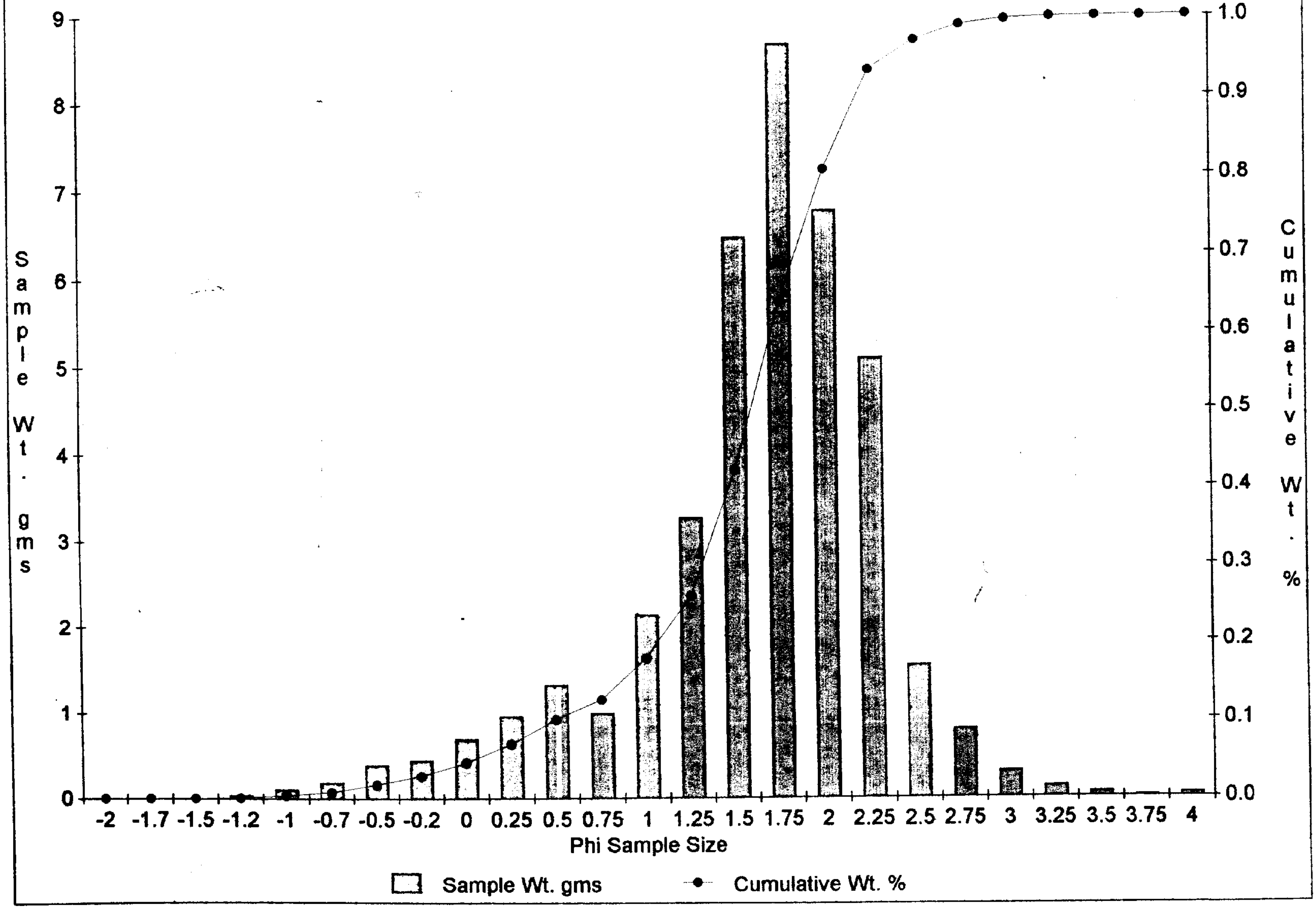
CORE (IR-4)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.031	0.031	0.0007724	0.0007724
-1	0.1041	0.1351	0.0025936	0.003366
-0.75	0.182	0.3171	0.0045345	0.0079005
-0.5	0.3847	0.7018	0.0095847	0.0174852
-0.25	0.438	1.1398	0.0109127	0.028398
0	0.6852	1.825	0.0170717	0.0454696
0.25	0.9508	2.7758	0.023689	0.0691587
0.5	1.2999	4.0757	0.0323868	0.1015455
0.75	0.9798	5.0555	0.0244116	0.125957
1	2.1028	7.1583	0.052391	0.178348
1.25	3.2241	10.3824	0.080328	0.258676
1.5	6.4542	16.8366	0.1608054	0.4194814
1.75	8.6601	25.4967	0.2157651	0.6352465
2	6.7633	32.26	0.1685066	0.8037532
2.25	5.0746	37.3346	0.1264329	0.9301861
2.5	1.5135	38.8481	0.0377086	0.9678947
2.75	0.781	39.6291	0.0194585	0.9873532
3	0.2901	39.9192	0.0072278	0.994581
3.25	0.1182	40.0374	0.0029449	0.997526
3.5	0.0506	40.088	0.0012607	0.9987866
3.75	0.0086	40.0966	0.0002143	0.9990009
4	0.0401	40.1367	0.0009991	1

Total Wt.	40.1367	gms		
Median Weight	20.06835	gms		
Mean Grain Size	1.59	phi	0.3321715	mm

Cum Wt. % IR4

0.5'



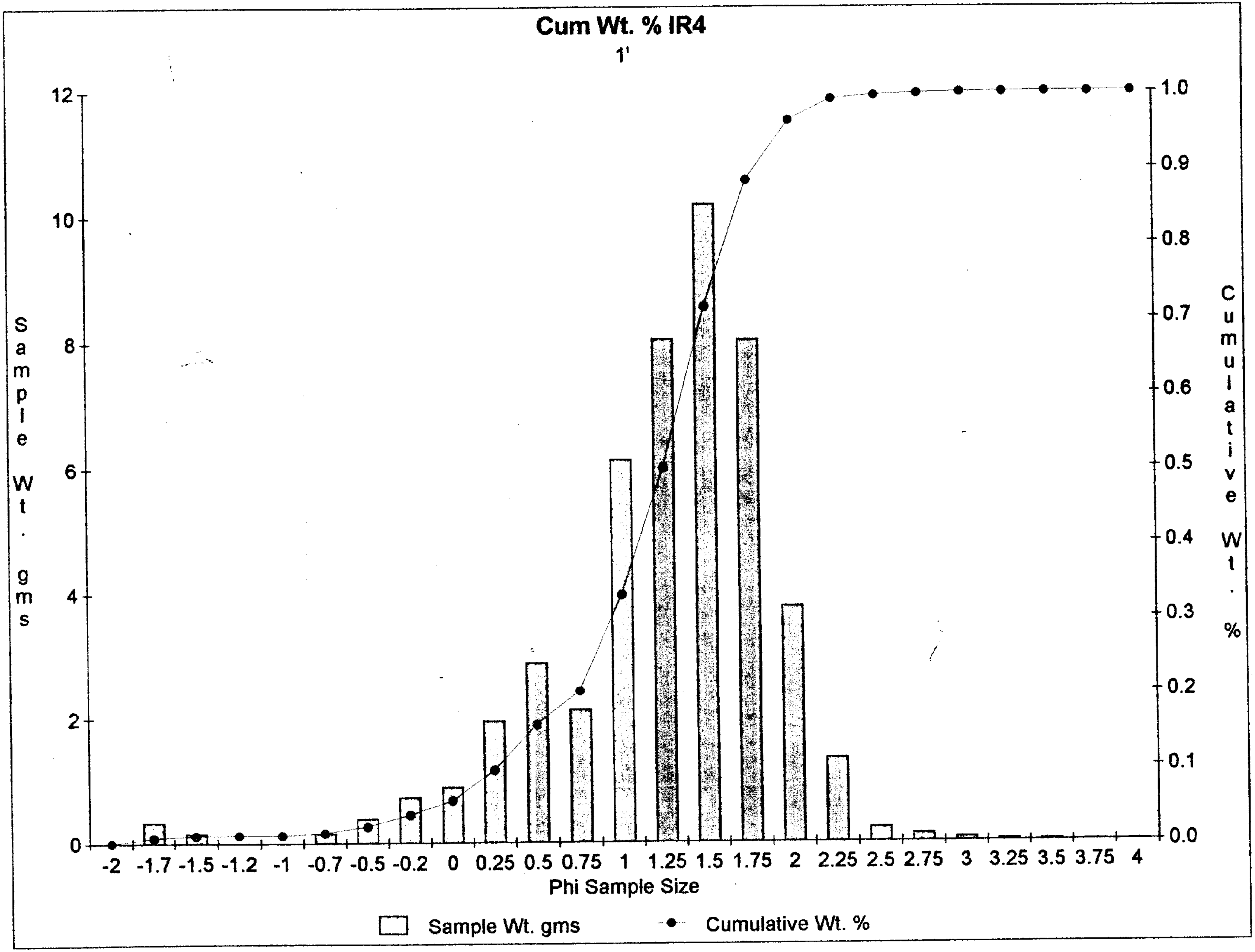
Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.3299	0.3299	0.0069399	0.0069399
-1.5	0.1547	0.4846	0.0032543	0.0101943
-1.25	0	0.4846	0	0.0101943
-1	0	0.4846	0	0.0101943
-0.75	0.1501	0.6347	0.0031576	0.0133518
-0.5	0.3806	1.0153	0.0080065	0.0213583
-0.25	0.7234	1.7387	0.0152178	0.0365761
0	0.8837	2.6224	0.0185899	0.055166
0.25	1.9424	4.5648	0.0408612	0.0960273
0.5	2.868	7.4328	0.0603326	0.1563598
0.75	2.1144	9.5472	0.0444795	0.2008394
1	6.1139	15.6611	0.1286149	0.3294542
1.25	8.0456	23.7067	0.169251	0.4987052
1.5	10.208	33.9147	0.2147403	0.7134455
1.75	8.0375	41.9522	0.1690806	0.8825261
2	3.769	45.7212	0.0792864	0.9618125
2.25	1.3361	47.0573	0.0281068	0.9899193
2.5	0.225	47.2823	0.0047332	0.9946525
2.75	0.1241	47.4064	0.0026106	0.9972632
3	0.0613	47.4677	0.0012895	0.9985527
3.25	0.0305	47.4982	0.0006416	0.9991943
3.5	0.023	47.5212	0.0004838	0.9996781
3.75	0.0081	47.5293	0.0001704	0.9998485
4	0.0072	47.5365	0.0001515	1

Total Wt.	47.5365	gms	
Median Weight	23.76825	gms	
Mean Grain Size	1.25	phi	0.4204482 mm

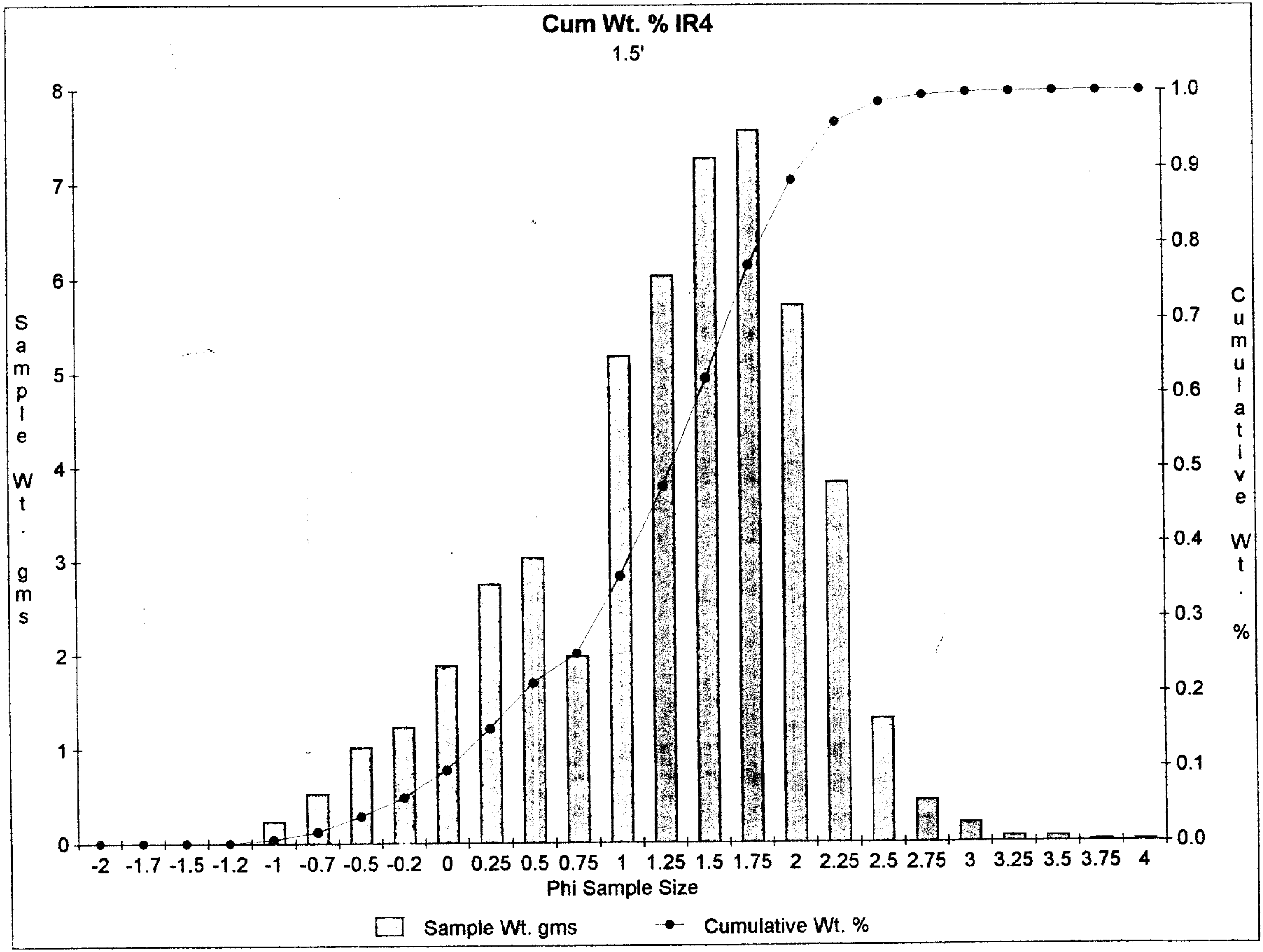

Cum Wt. % IR4
1'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
2
4
6
8
10
12
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.23	0.23	0.0045639	0.0045639
-0.75	0.5201	0.7501	0.0103204	0.0148843
-0.5	1.0185	1.7686	0.0202102	0.0350945
-0.25	1.2338	3.0024	0.0244824	0.0595769
0	1.8806	4.883	0.0373169	0.0968938
0.25	2.7485	7.6315	0.0545387	0.1514325
0.5	3.0291	10.6606	0.0601067	0.2115391
0.75	1.9777	12.6383	0.0392437	0.2507828
1	5.1819	17.8202	0.1028249	0.3536077
1.25	6.0397	23.8599	0.1198463	0.4734539
1.5	7.2878	31.1477	0.1446124	0.6180663
1.75	7.5818	38.7295	0.1504463	0.7685126
2	5.7275	44.457	0.1136512	0.8821638
2.25	3.8324	48.2894	0.0760466	0.9582105
2.5	1.3132	49.6026	0.0260579	0.9842684
2.75	0.4419	50.0445	0.0087687	0.9930371
3	0.2019	50.2464	0.0040063	0.9970434
3.25	0.0609	50.3073	0.0012084	0.9982518
3.5	0.0531	50.3604	0.0010537	0.9993055
3.75	0.0179	50.3783	0.0003552	0.9996607
4	0.0171	50.3954	0.0003393	1

Total Wt.	50.3954 gms		
Median Weight	25.1977 gms		
Mean Grain Size	1.3 phi	0.4061262	mm



Cum Wt. % IR4

1.5'

Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

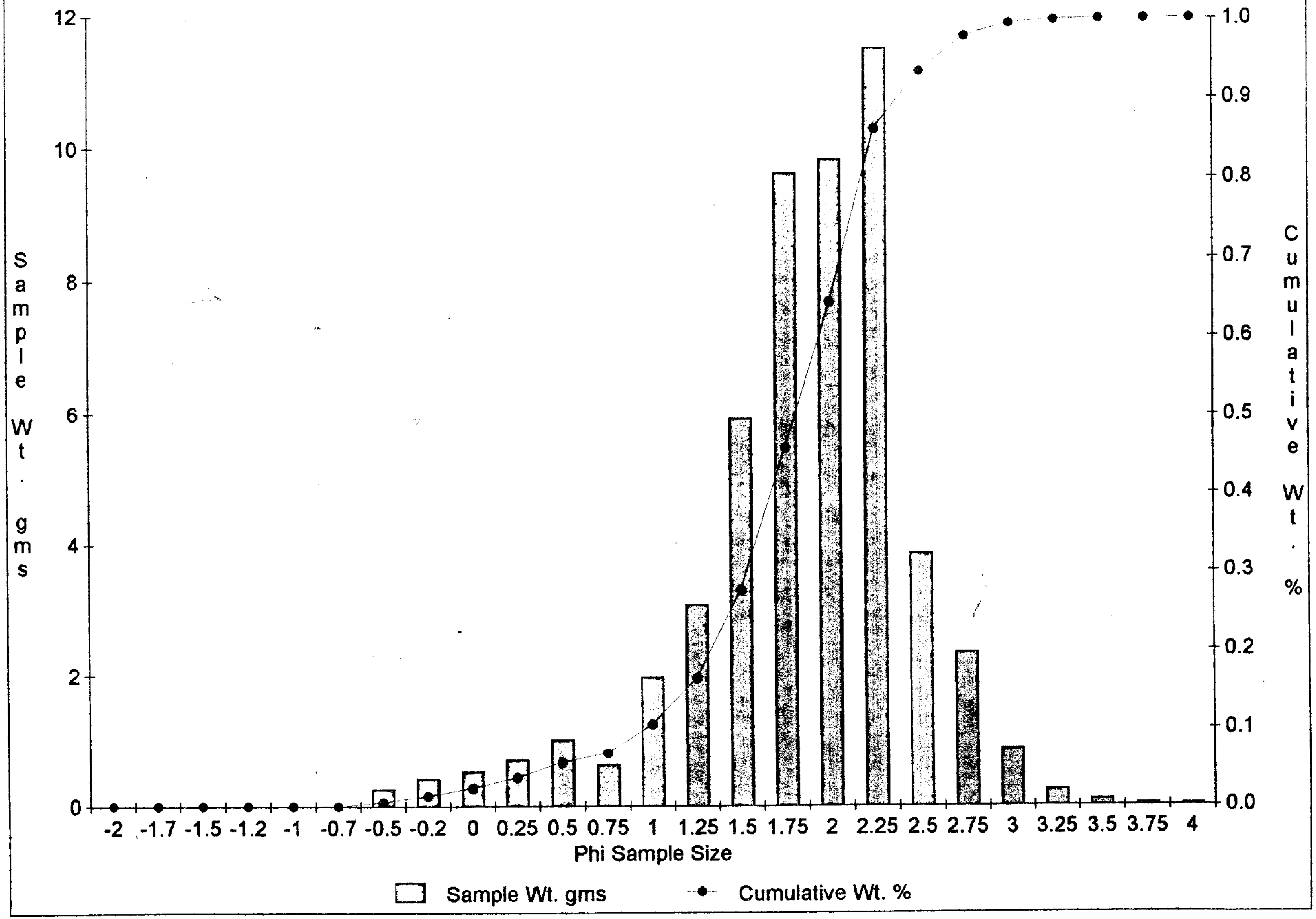
CORE (IR-4)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.2608	0.2608	0.0049224	0.0049224
-0.25	0.413	0.6738	0.0077951	0.0127175
0	0.5311	1.2049	0.0100241	0.0227416
0.25	0.7008	1.9057	0.0132271	0.0359687
0.5	1.0221	2.9278	0.0192914	0.0552601
0.75	0.6293	3.5571	0.0118776	0.0671376
1	1.9613	5.5184	0.0370181	0.1041557
1.25	3.0662	8.5846	0.0578723	0.162028
1.5	5.9169	14.5015	0.1116771	0.2737051
1.75	9.6358	24.1373	0.1818686	0.4555738
2	9.8506	33.9879	0.1859228	0.6414966
2.25	11.5226	45.5105	0.2174806	0.8589772
2.5	3.8594	49.3699	0.0728433	0.9318205
2.75	2.346	51.7159	0.044279	0.9760995
3	0.8762	52.5921	0.0165376	0.9926371
3.25	0.2401	52.8322	0.0045317	0.9971689
3.5	0.0995	52.9317	0.001878	0.9990468
3.75	0.0258	52.9575	0.000487	0.9995338
4	0.0247	52.9822	0.0004662	1

Total Wt.	52.9822 gms	
Median Weight	26.4911 gms	
Mean Grain Size	1.81 phi	0.2851909 mm

Cum Wt. % IR4

2'



Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

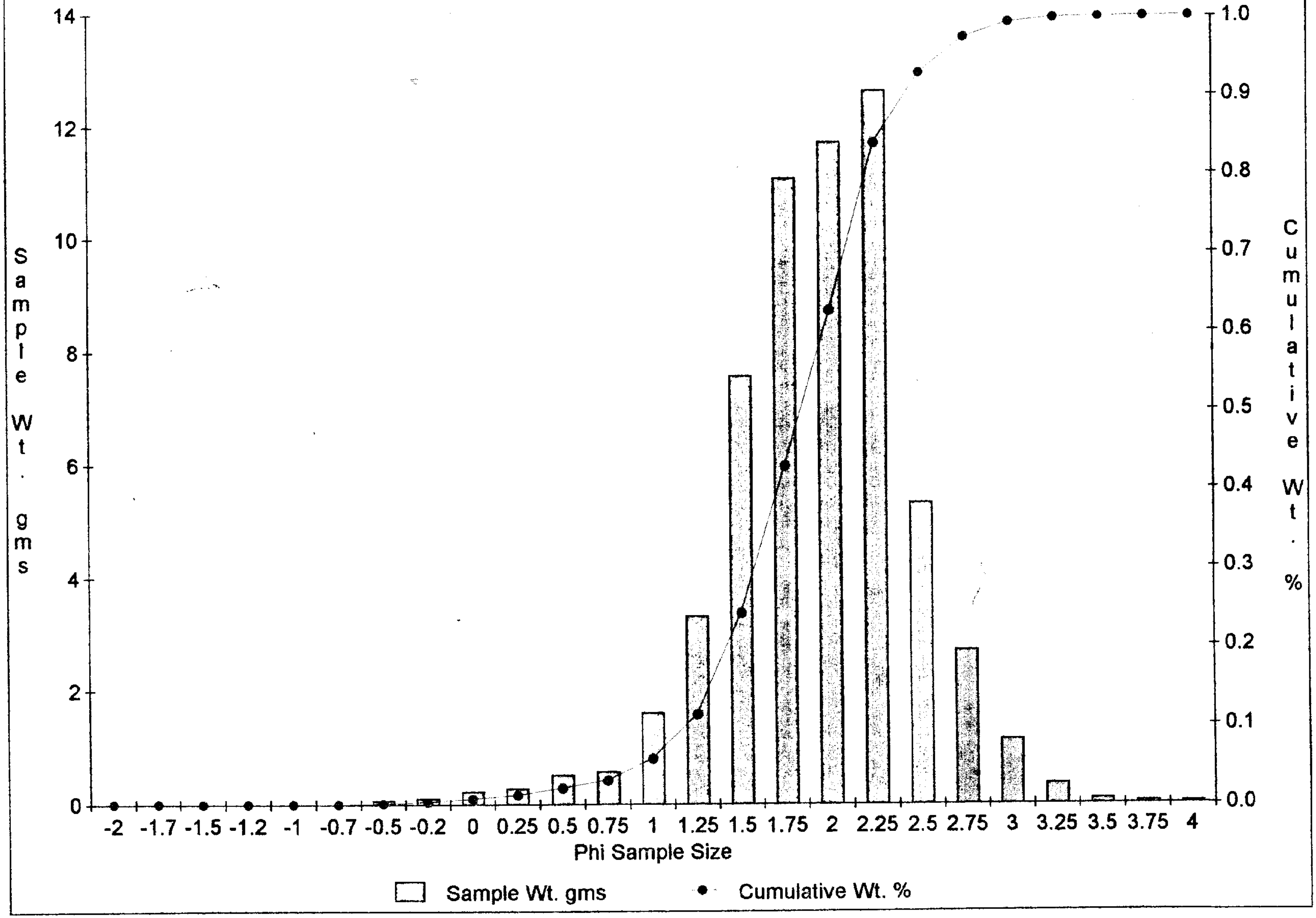
CORE (IR-4)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0704	0.0704	0.0011855	0.0011855
-0.25	0.1081	0.1785	0.0018203	0.0030058
0	0.2253	0.4038	0.0037939	0.0067997
0.25	0.2758	0.6796	0.0046442	0.0114439
0.5	0.5095	1.1891	0.0085796	0.0200235
0.75	0.5732	1.7623	0.0096522	0.0296757
1	1.6015	3.3638	0.026968	0.0566436
1.25	3.3079	6.6717	0.0557023	0.112346
1.5	7.5678	14.2395	0.1274356	0.2397816
1.75	11.076	25.3155	0.1865108	0.4262924
2	11.7309	37.0464	0.1975388	0.6238312
2.25	12.6539	49.7003	0.2130814	0.8369125
2.5	5.3199	55.0202	0.0895828	0.9264953
2.75	2.7052	57.7254	0.0455534	0.9720486
3	1.1343	58.8597	0.0191007	0.9911493
3.25	0.3593	59.219	0.0060503	0.9971996
3.5	0.0907	59.3097	0.0015273	0.998727
3.75	0.0396	59.3493	0.0006668	0.9993938
4	0.036	59.3853	0.0006062	1

Total Wt.	59.3853 gms		
Median Weight	29.69265 gms		
Mean Grain Size	1.84 phi	0.2793218 mm	

Cum Wt. % IR4

2.5'


Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

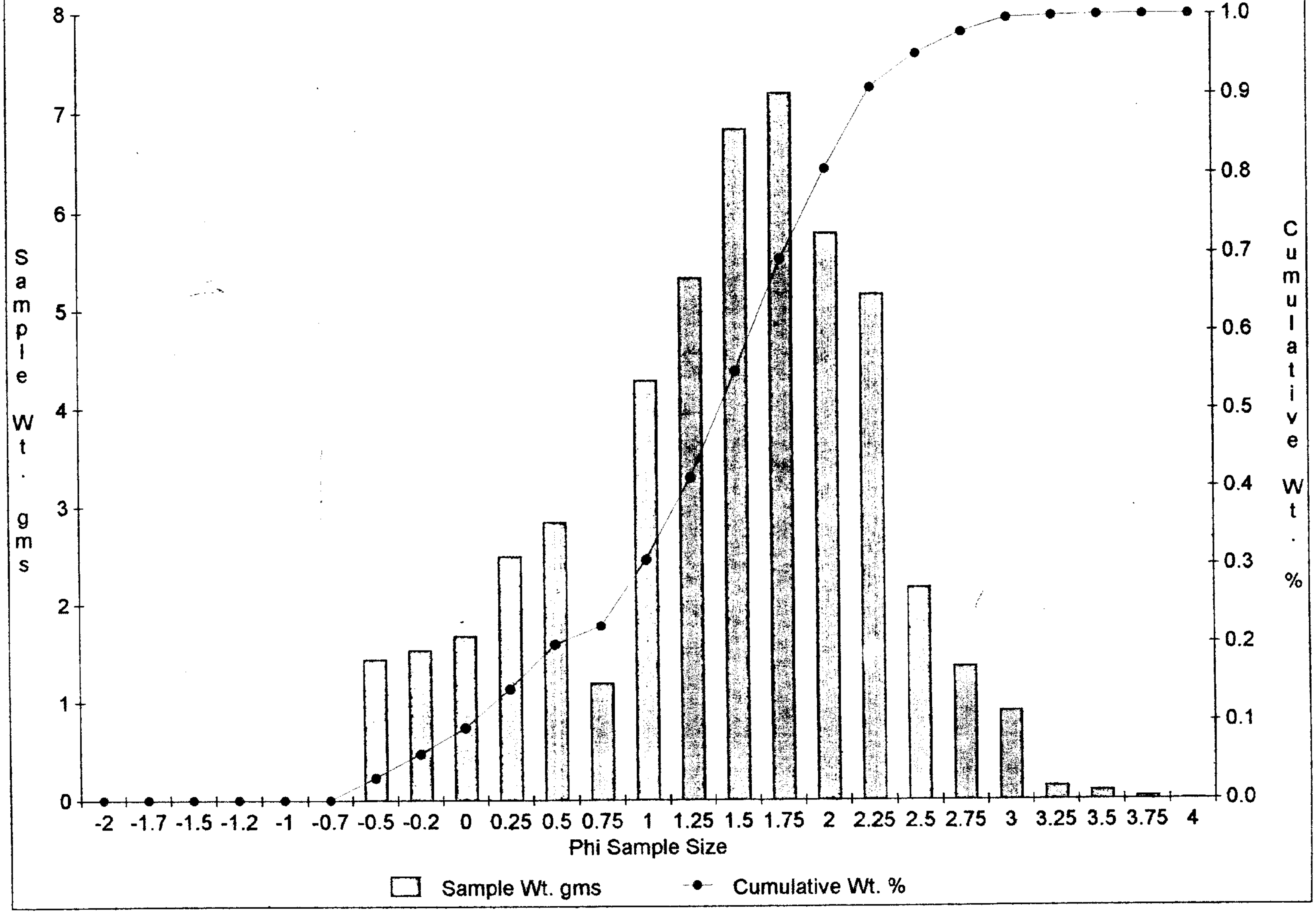
CORE (IR-4)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	1.4313	1.4313	0.0284013	0.0284013
-0.25	1.5223	2.9536	0.0302071	0.0586084
0	1.6673	4.6209	0.0330843	0.0916927
0.25	2.4836	7.1045	0.0492822	0.1409749
0.5	2.8283	9.9328	0.0561221	0.197097
0.75	1.1859	11.1187	0.0235319	0.2206288
1	4.2787	15.3974	0.0849024	0.3055312
1.25	5.3247	20.7221	0.1056582	0.4111895
1.5	6.8356	27.5577	0.1356391	0.5468286
1.75	7.2034	34.7611	0.1429374	0.689766
2	5.7867	40.5478	0.1148257	0.8045917
2.25	5.1625	45.7103	0.1024397	0.9070314
2.5	2.1613	47.8716	0.0428868	0.9499181
2.75	1.3565	49.2281	0.0269171	0.9768352
3	0.906	50.1341	0.0179778	0.994813
3.25	0.1345	50.2686	0.0026689	0.9974819
3.5	0.0909	50.3595	0.0018037	0.9992857
3.75	0.0301	50.3896	0.0005973	0.9998829
4	0.0059	50.3955	0.0001171	1

Total Wt. 50.3955 gms
Median Weight 25.19775 gms
Mean Grain Size 1.41 phi 0.3763117 mm

Cum Wt. % IR4

3'



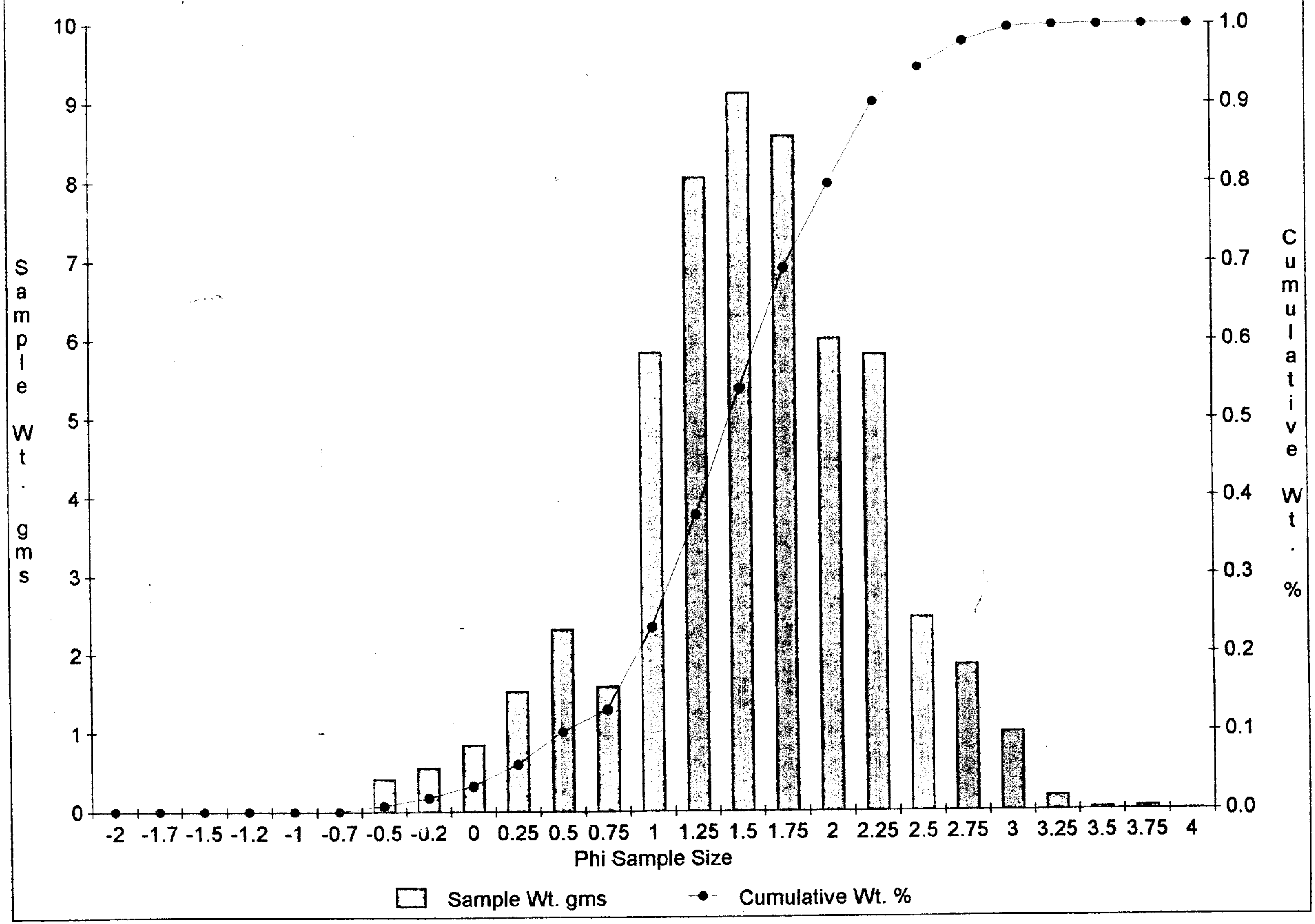
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.4157	0.4157	0.0074003	0.0074003
-0.25	0.5578	0.9735	0.0099299	0.0173302
0	0.8408	1.8143	0.0149679	0.032298
0.25	1.5219	3.3362	0.0270927	0.0593908
0.5	2.2999	5.6361	0.0409426	0.1003334
0.75	1.5797	7.2158	0.0281217	0.1284551
1	5.8342	13.05	0.10386	0.2323151
1.25	8.0484	21.0984	0.143277	0.3755921
1.5	9.1141	30.2125	0.1622485	0.5378407
1.75	8.5721	38.7846	0.1525999	0.6904405
2	6.0178	44.8024	0.1071284	0.797569
2.25	5.8138	50.6162	0.1034968	0.9010658
2.5	2.458	53.0742	0.0437571	0.9448229
2.75	1.8454	54.9196	0.0328517	0.9776746
3	0.996	55.9156	0.0177307	0.9954053
3.25	0.1823	56.0979	0.0032453	0.9986506
3.5	0.0286	56.1265	0.0005091	0.9991597
3.75	0.0416	56.1681	0.0007406	0.9999003
4	0.0056	56.1737	9.969E-05	1

Total Wt.	56.1737	gms
Median Weight	28.08685	gms
Mean Grain Size	1.44	phi 0.3685673 mm



Cum Wt. % IR4

3.5'

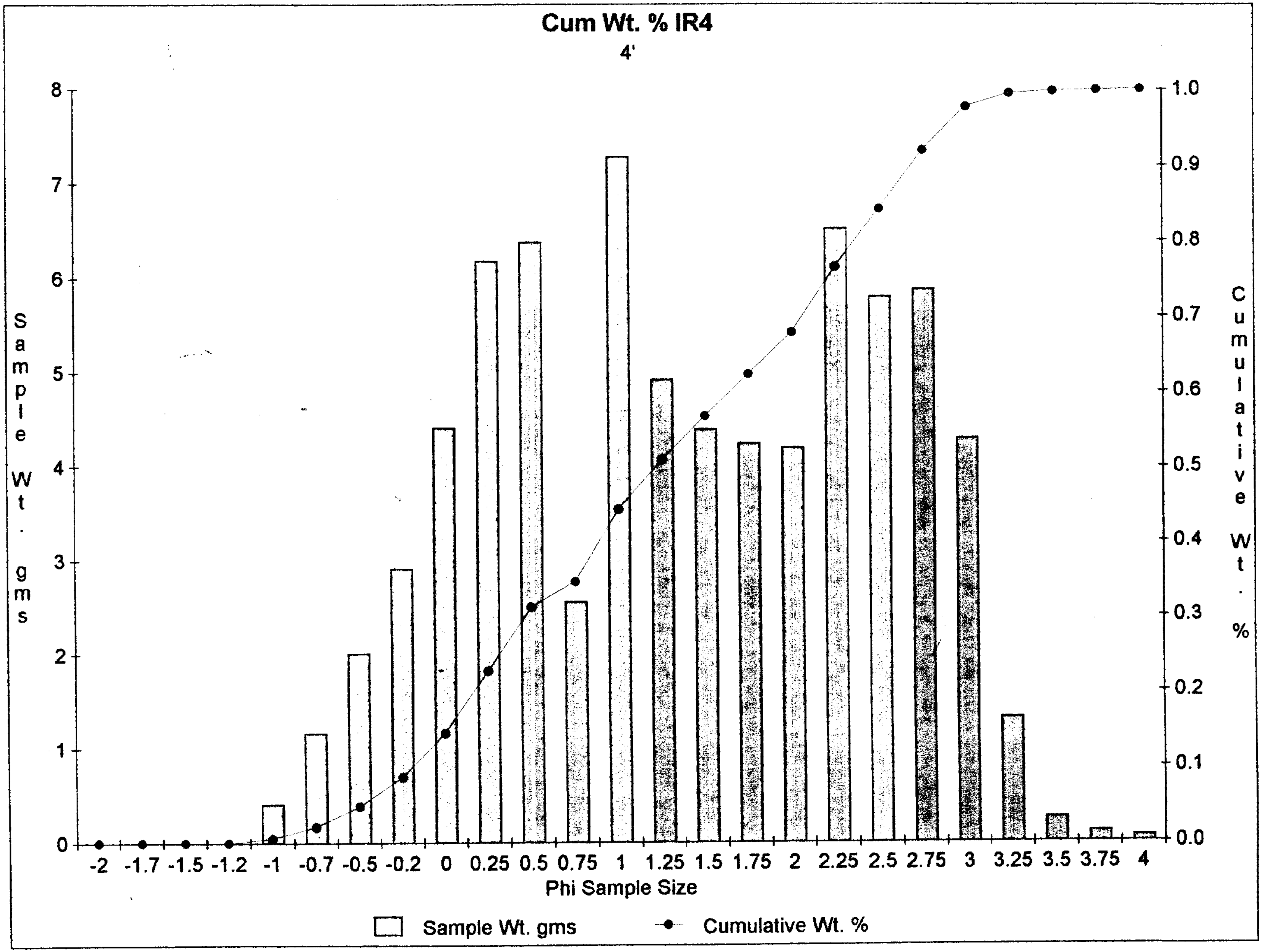
10
9
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.4021	0.4021	0.0053454	0.0053454
-0.75	1.1607	1.5628	0.01543	0.0207754
-0.5	2.0016	3.5644	0.0266086	0.047384
-0.25	2.8986	6.463	0.0385331	0.0859171
0	4.4005	10.8635	0.0584989	0.1444159
0.25	6.1759	17.0394	0.0821005	0.2265164
0.5	6.3775	23.4169	0.0847805	0.3112968
0.75	2.5466	25.9635	0.0338537	0.3451505
1	7.2889	33.2524	0.0968963	0.4420469
1.25	4.916	38.1684	0.0653517	0.5073986
1.5	4.3872	42.5556	0.058322	0.5657206
1.75	4.2391	46.7947	0.0563533	0.6220739
2	4.1905	50.9852	0.0557072	0.6777811
2.25	6.5247	57.5099	0.0867373	0.7645184
2.5	5.8028	63.3127	0.0771406	0.8416589
2.75	5.8814	69.1941	0.0781855	0.9198444
3	4.2948	73.4889	0.0570937	0.9769381
3.25	1.3143	74.8032	0.0174719	0.99441
3.5	0.2545	75.0577	0.0033832	0.9977932
3.75	0.1059	75.1636	0.0014078	0.999201
4	0.0601	75.2237	0.000799	1

Total Wt.	75.2237 gms		
Median Weight	37.61185 gms		
Mean Grain Size	1.22 phi	0.4292827	mm



Cum Wt. % IR4
4'

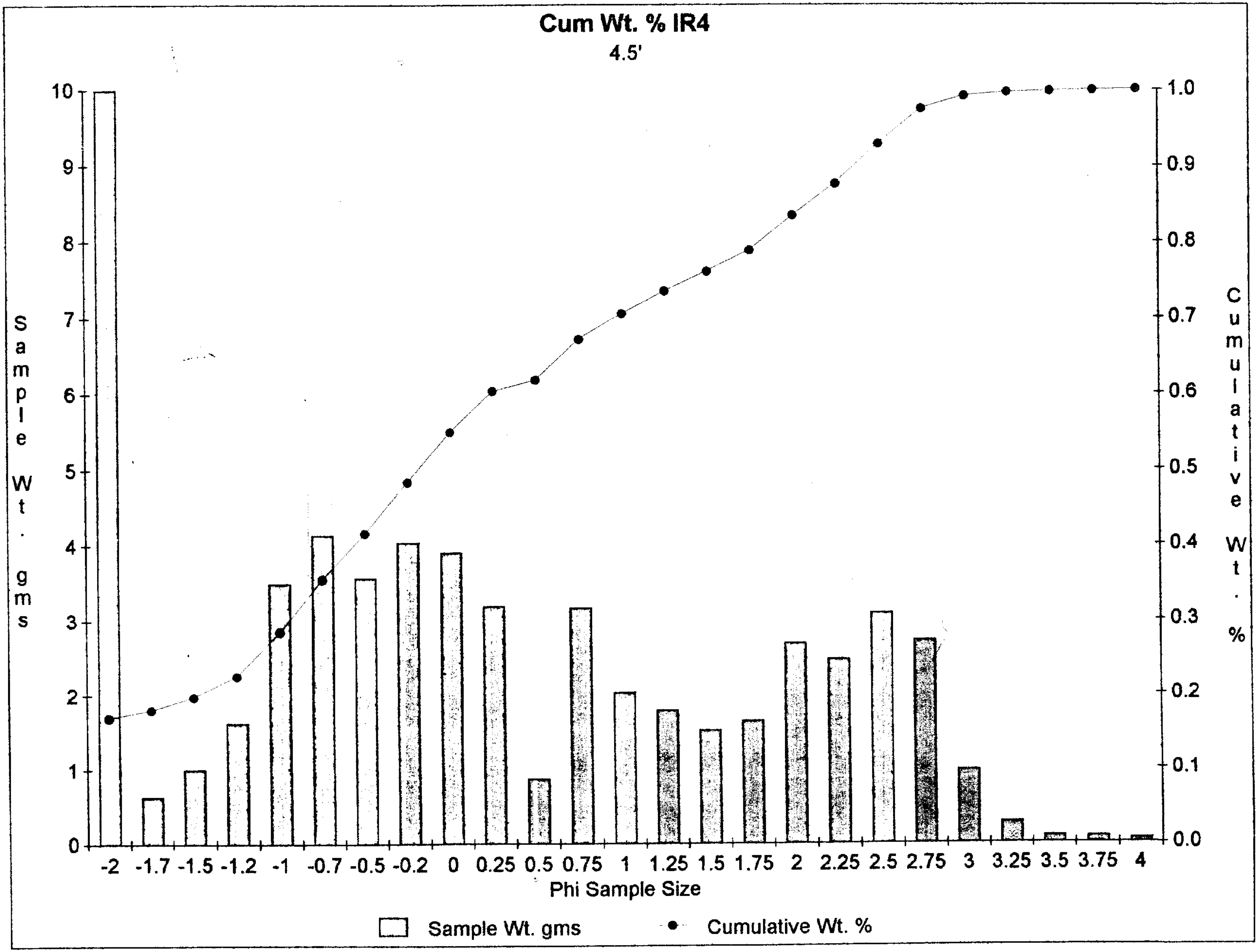
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	9.9949	9.9949	0.1697627	0.1697627
-1.75	0.6229	10.6178	0.0105799	0.1803427
-1.5	1.0031	11.6209	0.0170376	0.1973802
-1.25	1.6219	13.2428	0.0275479	0.2249281
-1	3.4868	16.7296	0.0592231	0.2841512
-0.75	4.1269	20.8565	0.0700951	0.3542463
-0.5	3.553	24.4095	0.0603475	0.4145938
-0.25	4.0206	28.4301	0.0682896	0.4828834
0	3.886	32.3161	0.0660035	0.5488869
0.25	3.1761	35.4922	0.0539459	0.6028327
0.5	0.8609	36.3531	0.0146223	0.6174551
0.75	3.1507	39.5038	0.0535144	0.6709695
1	2.0159	41.5197	0.0342399	0.7052094
1.25	1.7747	43.2944	0.0301432	0.7353526
1.5	1.5142	44.8086	0.0257186	0.7610712
1.75	1.6344	46.443	0.0277602	0.7888314
2	2.6813	49.1243	0.0455417	0.8343731
2.25	2.4625	51.5868	0.0418254	0.8761985
2.5	3.0924	54.6792	0.0525242	0.9287227
2.75	2.7171	57.3963	0.0461498	0.9748725
3	0.981	58.3773	0.0166622	0.9915347
3.25	0.2765	58.6538	0.0046963	0.996231
3.5	0.0914	58.7452	0.0015524	0.9977835
3.75	0.0804	58.8256	0.0013656	0.9991491
4	0.0501	58.8757	0.0008509	1

Total Wt.	58.8757 gms	
Median Weight	29.43785 gms	
Mean Grain Size	-0.19 phi	1.1407637 mm


Cum Wt. % IR4
4.5'

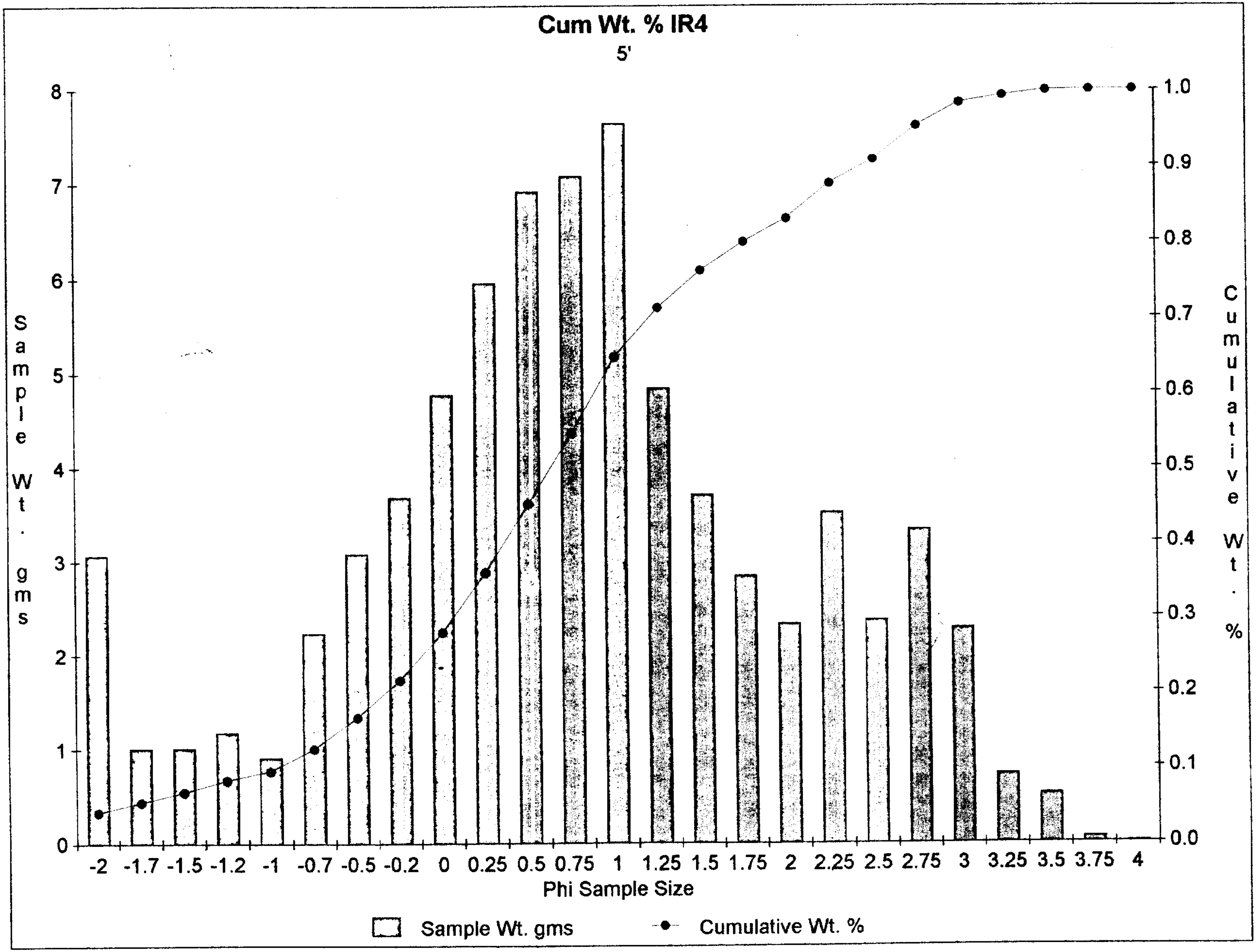
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	3.0664	3.0664	0.0408911	0.0408911
-1.75	1.0052	4.0716	0.0134046	0.0542957
-1.5	1.0145	5.0861	0.0135286	0.0678243
-1.25	1.1764	6.2625	0.0156876	0.0835118
-1	0.9085	7.171	0.012115	0.0956268
-0.75	2.2243	9.3953	0.0296615	0.1252884
-0.5	3.072	12.4673	0.0409658	0.1662542
-0.25	3.6729	16.1402	0.0489789	0.2152331
0	4.7688	20.909	0.063593	0.2788261
0.25	5.9508	26.8598	0.0793552	0.3581813
0.5	6.9206	33.7804	0.0922877	0.450469
0.75	7.081	40.8614	0.0944267	0.5448957
1	7.6476	48.509	0.1019824	0.6468781
1.25	4.8435	53.3525	0.0645891	0.7114672
1.5	3.7069	57.0594	0.0494323	0.7608995
1.75	2.8317	59.8911	0.0377613	0.7986609
2	2.3154	62.2065	0.0308764	0.8295372
2.25	3.5157	65.7222	0.0468826	0.8764199
2.5	2.3578	68.08	0.0314418	0.9078616
2.75	3.3288	71.4088	0.0443903	0.9522519
3	2.2775	73.6863	0.030371	0.9826229
3.25	0.7263	74.4126	0.0096854	0.9923082
3.5	0.5156	74.9282	0.0068756	0.9991839
3.75	0.0527	74.9809	0.0007028	0.9998867
4	0.0085	74.9894	0.0001133	1

Total Wt.	74.9894	gms	
Median Weight	37.4947	gms	
Mean Grain Size	0.63	phi	0.6461764 mm



Cum Wt. % IR4

5'

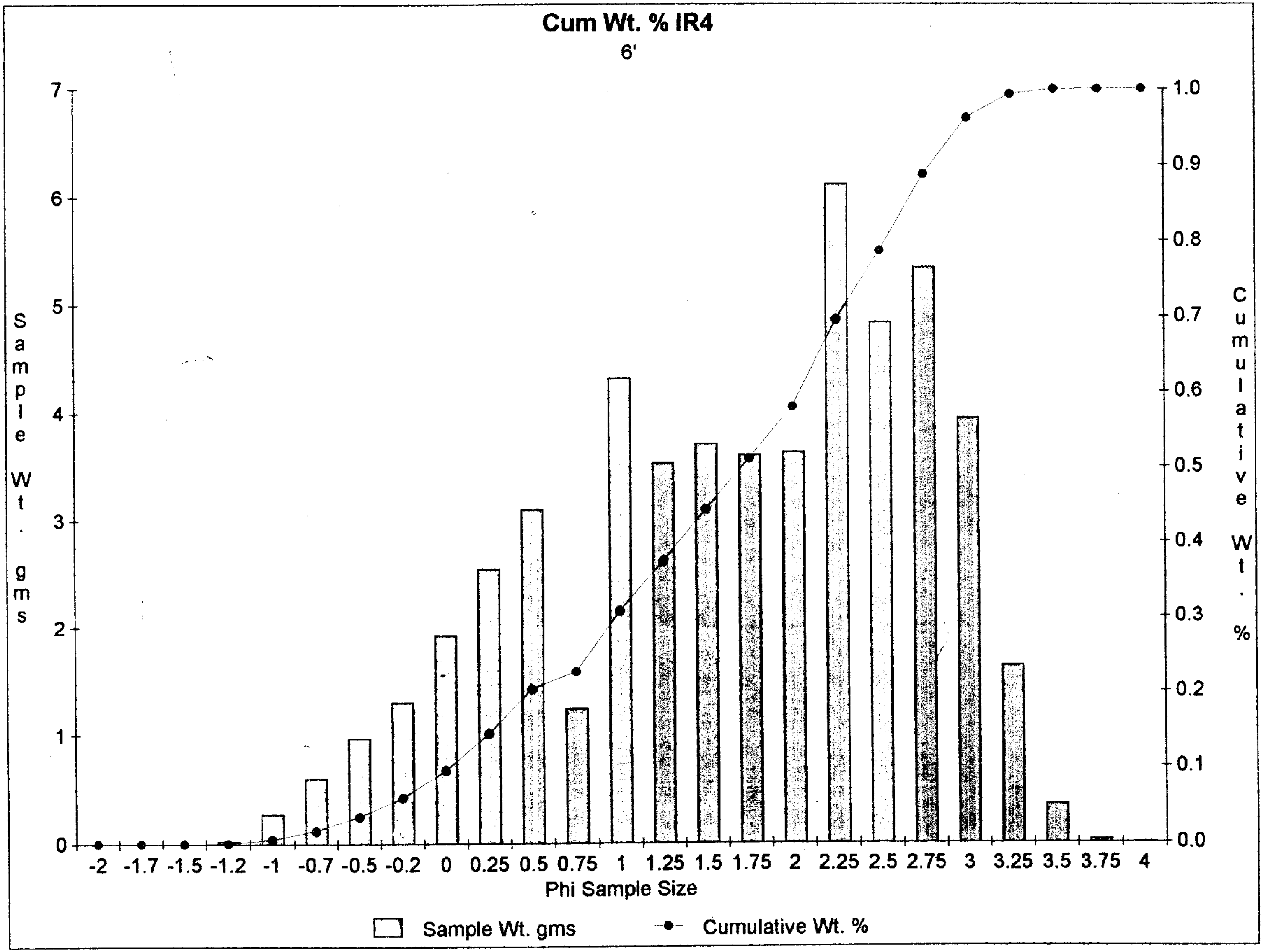
Sample Wt. gms
0
1
2
3
4
5
6
7
8
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0262	0.0262	0.0004937	0.0004937
-1	0.2721	0.2983	0.0051274	0.0056211
-0.75	0.6017	0.9	0.0113383	0.0169593
-0.5	0.9656	1.8656	0.0181955	0.0351548
-0.25	1.2916	3.1572	0.0243385	0.0594934
0	1.9145	5.0717	0.0360763	0.0955697
0.25	2.5398	7.6115	0.0478593	0.1434289
0.5	3.0982	10.7097	0.0583816	0.2018105
0.75	1.235	11.9447	0.023272	0.2250825
1	4.3269	16.2716	0.0815349	0.3066173
1.25	3.5371	19.8087	0.0666521	0.3732694
1.5	3.7148	23.5235	0.0700006	0.4432701
1.75	3.6111	27.1346	0.0680465	0.5113166
2	3.6386	30.7732	0.0685647	0.5798813
2.25	6.1211	36.8943	0.1153442	0.6952256
2.5	4.8461	41.7404	0.0913185	0.7865441
2.75	5.3517	47.0921	0.1008459	0.88739
3	3.952	51.0441	0.0744704	0.9618603
3.25	1.6423	52.6864	0.030947	0.9928074
3.5	0.3522	53.0386	0.0066368	0.9994441
3.75	0.0247	53.0633	0.0004654	0.9999096
4	0.0048	53.0681	9.045E-05	1

Total Wt.	53.0681	gms	
Median Weight	26.53405	gms	
Mean Grain Size	1.71	phi	0.3056601 mm



Cum Wt. % IR4

6'

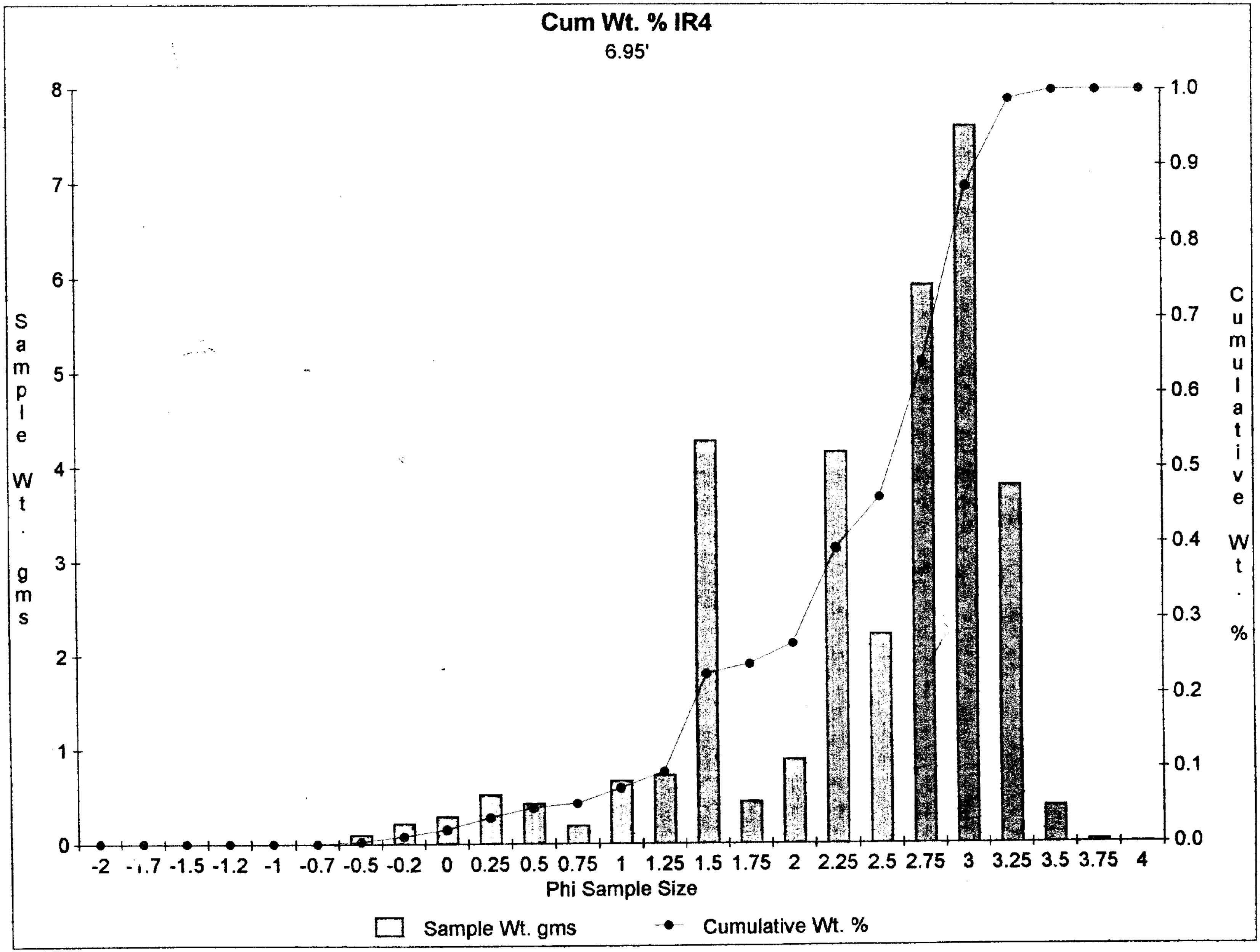
Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (IR-4)
DEPTH (6.95 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0987	0.0987	0.0030041	0.0030041
-0.25	0.2155	0.3142	0.0065592	0.0095633
0	0.2851	0.5993	0.0086776	0.018241
0.25	0.5093	1.1086	0.0155016	0.0337426
0.5	0.4185	1.5271	0.0127379	0.0464806
0.75	0.1895	1.7166	0.0057678	0.0522484
1	0.6606	2.3772	0.0201068	0.0723552
1.25	0.7221	3.0993	0.0219787	0.0943338
1.5	4.2736	7.3729	0.1300762	0.22441
1.75	0.4381	7.811	0.0133345	0.2377445
2	0.8893	8.7003	0.0270677	0.2648122
2.25	4.1553	12.8556	0.1264754	0.3912877
2.5	2.2196	15.0752	0.0675583	0.4588459
2.75	5.9361	21.0113	0.1806779	0.6395238
3	7.6086	28.6199	0.231584	0.8711079
3.25	3.8068	32.4267	0.1158681	0.9869759
3.5	0.3932	32.8199	0.0119679	0.9989438
3.75	0.0292	32.8491	0.0008888	0.9998326
4	0.0055	32.8546	0.0001674	1

Total Wt.	32.8546 gms	
Median Weight	16.4273 gms	
Mean Grain Size	2.56 phi	0.1695755 mm



Cum Wt. % IR4

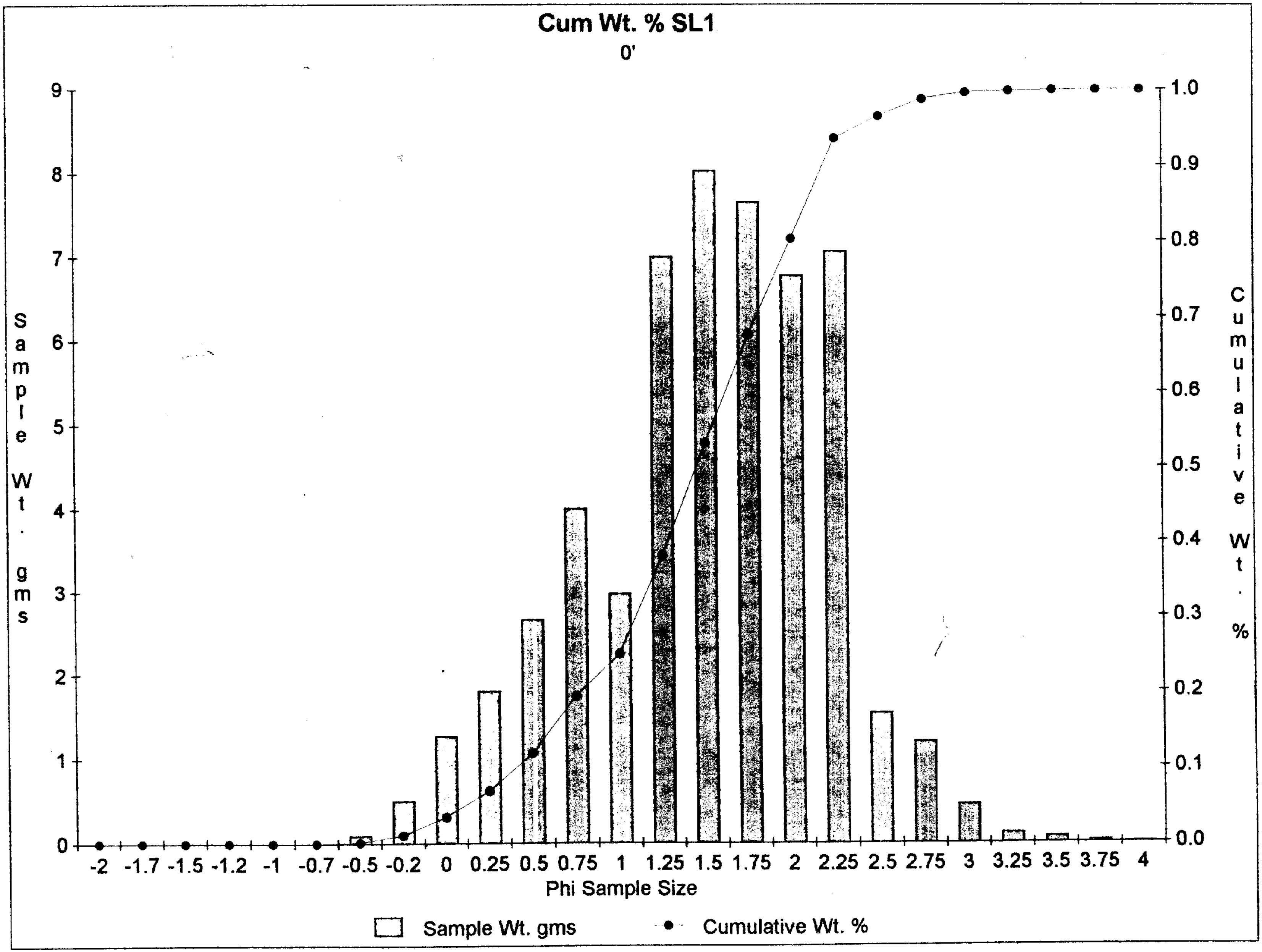
6.95'

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0876	0.0876	0.0016453	0.0016453
-0.25	0.5014	0.589	0.0094175	0.0110629
0	1.2645	1.8535	0.0237504	0.0348133
0.25	1.7949	3.6484	0.0337126	0.0685259
0.5	2.6555	6.3039	0.0498768	0.1184027
0.75	3.9981	10.302	0.0750941	0.1934968
1	2.964	13.266	0.0556712	0.2491679
1.25	7.0144	20.2804	0.1317476	0.3809155
1.5	8.0362	28.3166	0.1509395	0.531855
1.75	7.6627	35.9793	0.1439243	0.6757793
2	6.7895	42.7688	0.1275234	0.8033027
2.25	7.0761	49.8449	0.1329065	0.9362092
2.5	1.5383	51.3832	0.028893	0.9651022
2.75	1.1974	52.5806	0.0224901	0.9875923
3	0.4514	53.032	0.0084784	0.9960707
3.25	0.1131	53.1451	0.0021243	0.998195
3.5	0.0661	53.2112	0.0012415	0.9994365
3.75	0.0243	53.2355	0.0004564	0.9998929
4	0.0057	53.2412	0.0001071	1

Total Wt.	53.2412 gms		
Median Weight	26.6206 gms		
Mean Grain Size	1.45 phi	0.3660214 mm	

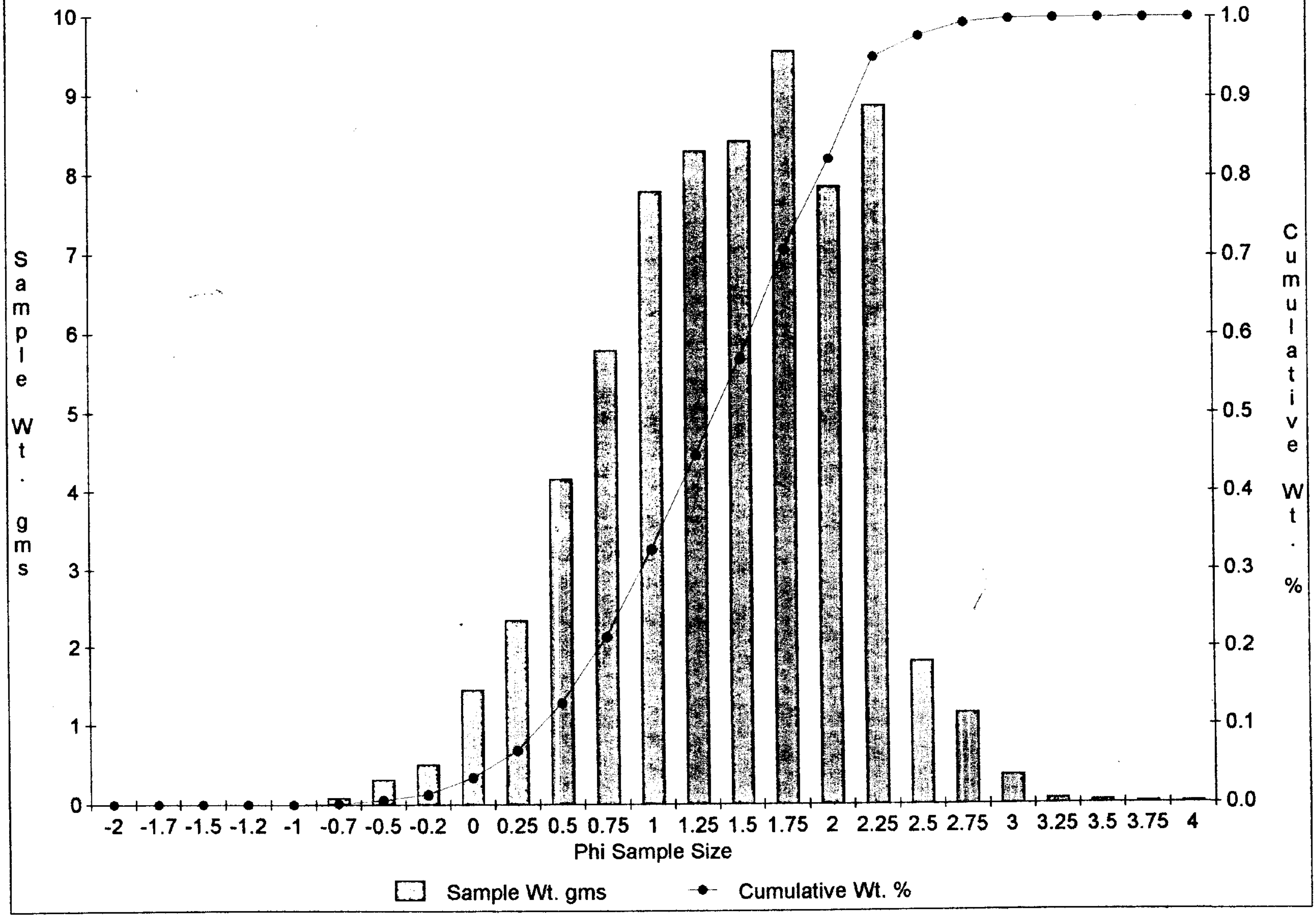

Cum Wt. % SL1
0'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
1
2
3
4
5
6
7
8
9
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0841	0.0841	0.0012208	0.0012208
-0.5	0.311	0.3951	0.0045146	0.0057355
-0.25	0.5027	0.8978	0.0072975	0.013033
0	1.442	2.3398	0.0209329	0.0339658
0.25	2.3346	4.6744	0.0338903	0.0678562
0.5	4.1472	8.8216	0.060203	0.1280592
0.75	5.7816	14.6032	0.0839289	0.2119881
1	7.7938	22.397	0.1131391	0.3251271
1.25	8.2971	30.6941	0.1204453	0.4455724
1.5	8.4236	39.1177	0.1222816	0.567854
1.75	9.5622	48.6799	0.1388101	0.7066641
2	7.8601	56.54	0.1141015	0.8207656
2.25	8.878	65.418	0.1288779	0.9496435
2.5	1.8104	67.2284	0.0262808	0.9759243
2.75	1.158	68.3864	0.0168102	0.9927345
3	0.3623	68.7487	0.0052593	0.9979938
3.25	0.0642	68.8129	0.000932	0.9989258
3.5	0.0385	68.8514	0.0005589	0.9994847
3.75	0.0195	68.8709	0.0002831	0.9997677
4	0.016	68.8869	0.0002323	1

Total Wt.	68.8869 gms	
Median Weight	34.44345 gms	
Mean Grain Size	1.36 phi	0.3895823 mm



Cum Wt. % SL1

0.5'

10
9
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

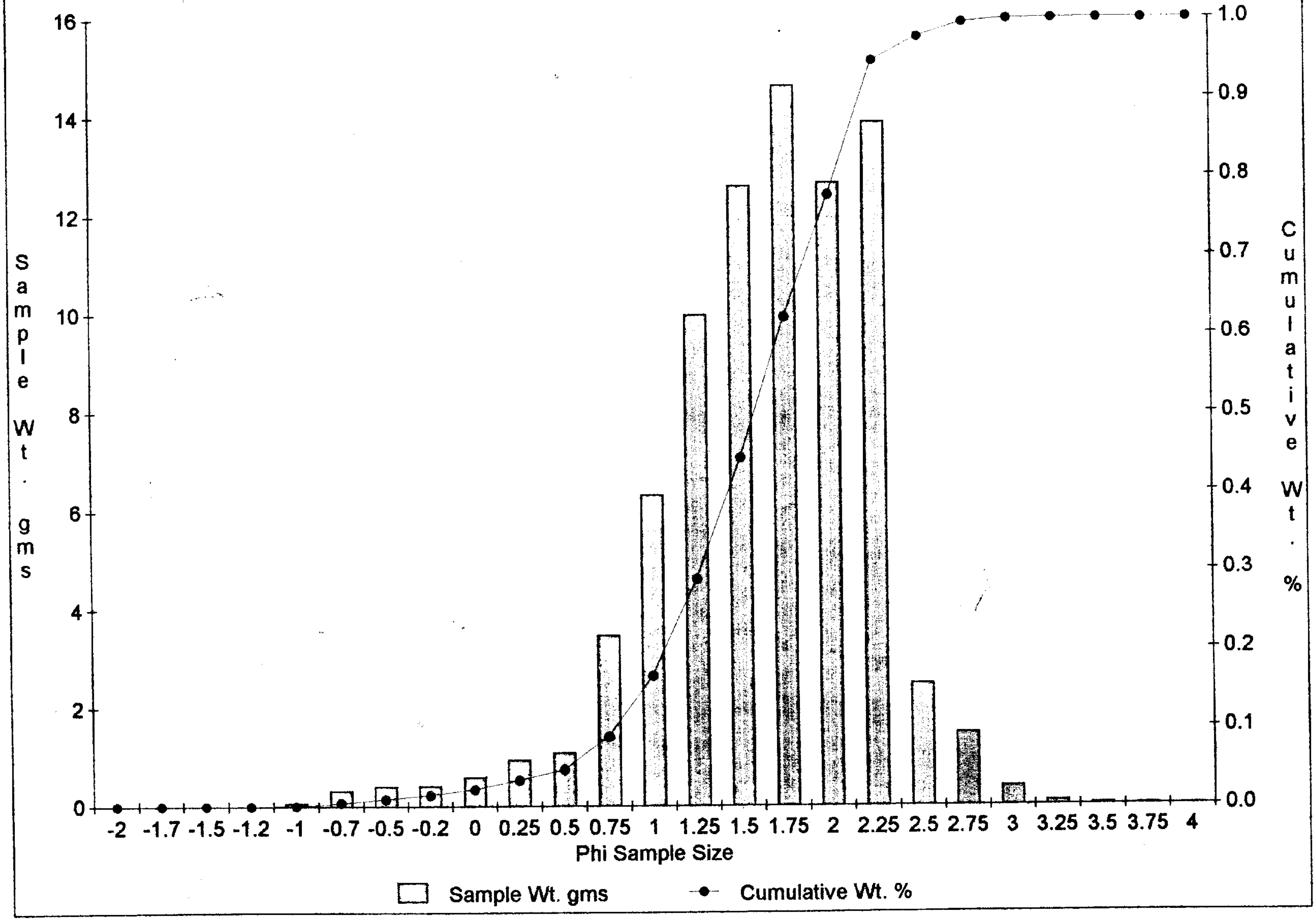
CORE (SL-1)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0611	0.0611	0.0007484	0.0007484
-0.75	0.3107	0.3718	0.0038056	0.004554
-0.5	0.4004	0.7722	0.0049043	0.0094584
-0.25	0.4099	1.1821	0.0050207	0.014479
0	0.5788	1.7609	0.0070895	0.0215685
0.25	0.931	2.6919	0.0114034	0.032972
0.5	1.077	3.7689	0.0131917	0.0461637
0.75	3.4596	7.2285	0.0423752	0.0885389
1	6.2983	13.5268	0.0771452	0.1656841
1.25	9.9572	23.484	0.1219616	0.2876457
1.5	12.5651	36.0491	0.1539047	0.4415504
1.75	14.6063	50.6554	0.1789065	0.6204568
2	12.6382	63.2936	0.1548	0.7752569
2.25	13.8672	77.1608	0.1698535	0.9451104
2.5	2.4805	79.6413	0.0303826	0.975493
2.75	1.4842	81.1255	0.0181793	0.9936724
3	0.3831	81.5086	0.0046924	0.9983648
3.25	0.0758	81.5844	0.0009284	0.9992933
3.5	0.0286	81.613	0.0003503	0.9996436
3.75	0.0172	81.6302	0.0002107	0.9998542
4	0.0119	81.6421	0.0001458	1

Total Wt.	81.6421	gms	
Median Weight	40.82105	gms	
Mean Grain Size	1.58	phi	0.3344819 mm

Cum Wt. % SL1

1'

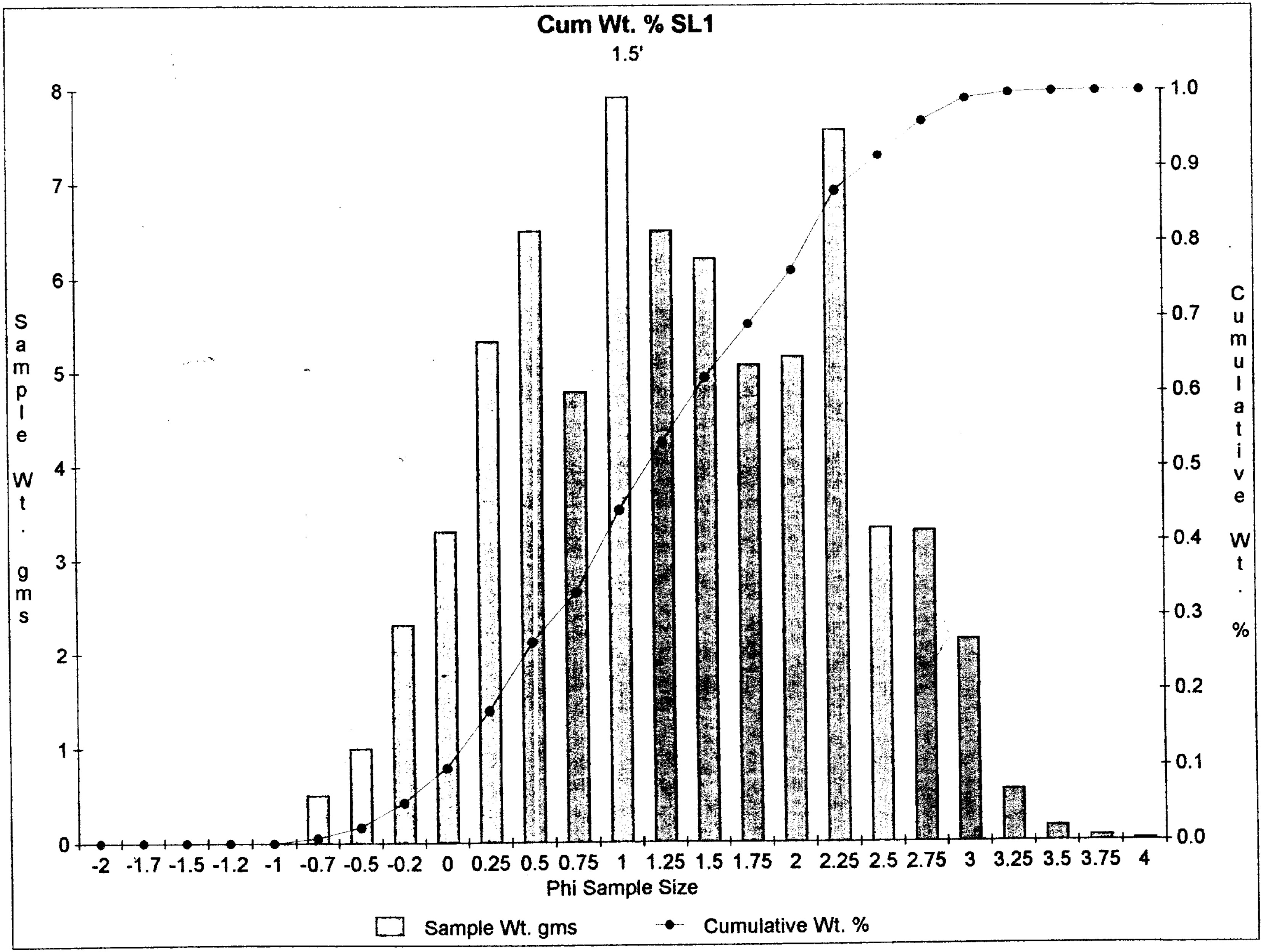

16
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.5013	0.5013	0.0069875	0.0069875
-0.5	0.9987	1.5	0.0139206	0.0209081
-0.25	2.2965	3.7965	0.0320103	0.0529184
0	3.2953	7.0918	0.0459323	0.0988508
0.25	5.3287	12.4205	0.0742754	0.1731261
0.5	6.5058	18.9263	0.0906826	0.2638088
0.75	4.7941	23.7204	0.0668237	0.3306325
1	7.9266	31.647	0.1104868	0.4411193
1.25	6.5109	38.1579	0.0907537	0.531873
1.5	6.2131	44.371	0.0866028	0.6184758
1.75	5.0763	49.4473	0.0707572	0.689233
2	5.164	54.6113	0.0719796	0.7612127
2.25	7.5774	62.1887	0.1056194	0.8668321
2.5	3.3317	65.5204	0.0464397	0.9132718
2.75	3.3072	68.8276	0.0460982	0.95937
3	2.1362	70.9638	0.0297759	0.9891459
3.25	0.5488	71.5126	0.0076496	0.9967955
3.5	0.1551	71.6677	0.0021619	0.9989574
3.75	0.0547	71.7224	0.0007624	0.9997198
4	0.0201	71.7425	0.0002802	1

Total Wt.	71.7425 gms		
Median Weight	35.87125 gms		
Mean Grain Size	1.16 phi	0.4475125 mm	



Cum Wt. % SL1

1.5'

Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

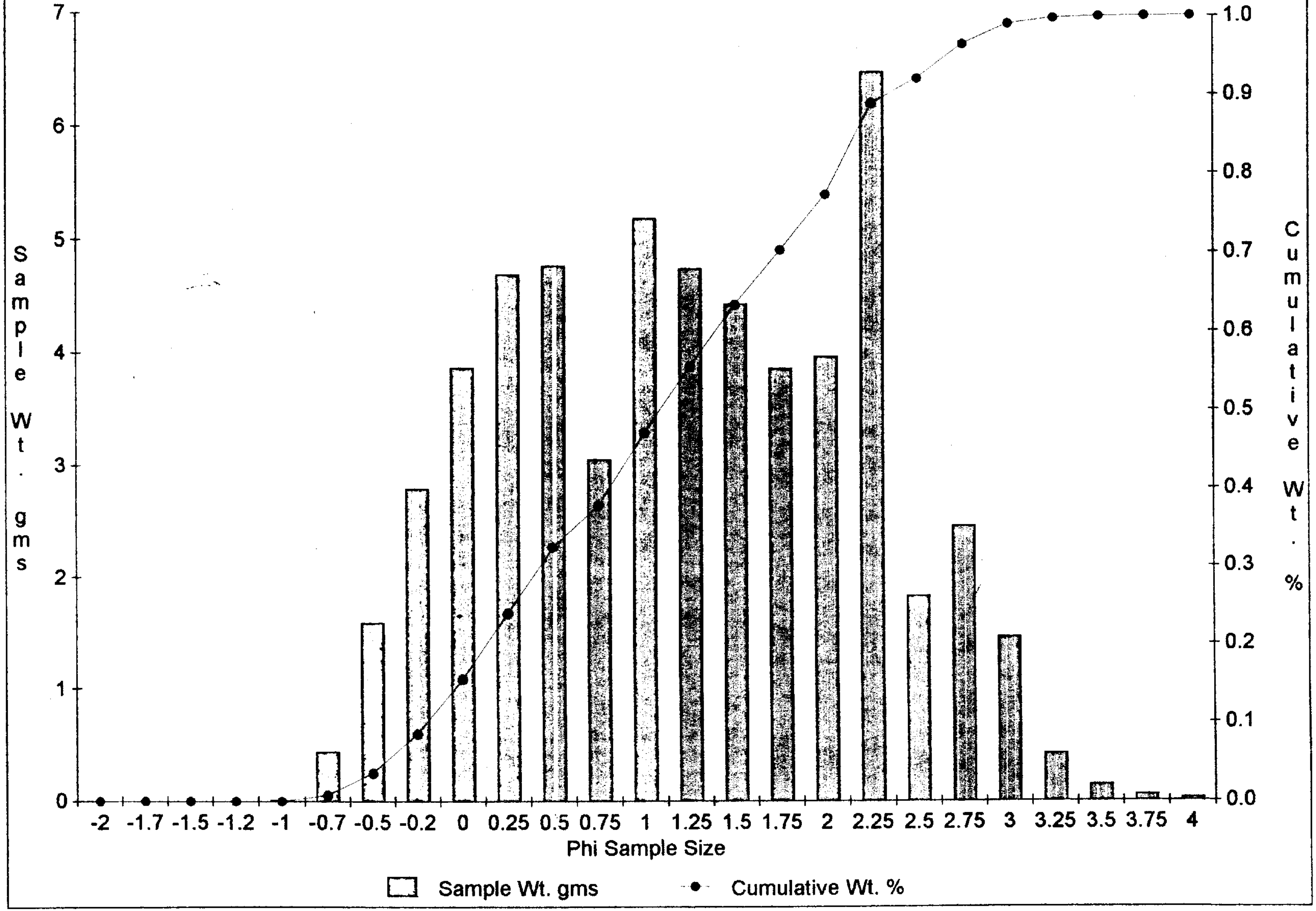
CORE (SL-1)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0061	0.0061	0.0001086	0.0001086
-0.75	0.4401	0.4462	0.0078385	0.0079472
-0.5	1.5793	2.0255	0.0281286	0.0360757
-0.25	2.7783	4.8038	0.0494837	0.0855594
0	3.8564	8.6602	0.0686855	0.1542448
0.25	4.6846	13.3448	0.0834363	0.2376812
0.5	4.7612	18.106	0.0848006	0.3224818
0.75	3.0394	21.1454	0.0541341	0.3766159
1	5.1811	26.3265	0.0922794	0.4688953
1.25	4.7361	31.0626	0.0843536	0.5532489
1.5	4.4241	35.4867	0.0787966	0.6320455
1.75	3.8514	39.3381	0.0685964	0.7006419
2	3.9587	43.2968	0.0705075	0.7711494
2.25	6.4858	49.7826	0.1155171	0.8866665
2.5	1.8191	51.6017	0.0323996	0.9190661
2.75	2.4492	54.0509	0.0436221	0.9626882
3	1.4532	55.5041	0.0258826	0.9885708
3.25	0.4219	55.926	0.0075144	0.9960852
3.5	0.1422	56.0682	0.0025327	0.9986179
3.75	0.0517	56.1199	0.0009208	0.9995387
4	0.0259	56.1458	0.0004613	1

Total Wt.	56.1458 gms	
Median Weight	28.0729 gms	
Mean Grain Size	1.39 phi	0.3815648 mm

Cum Wt. % SL1

2'



Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

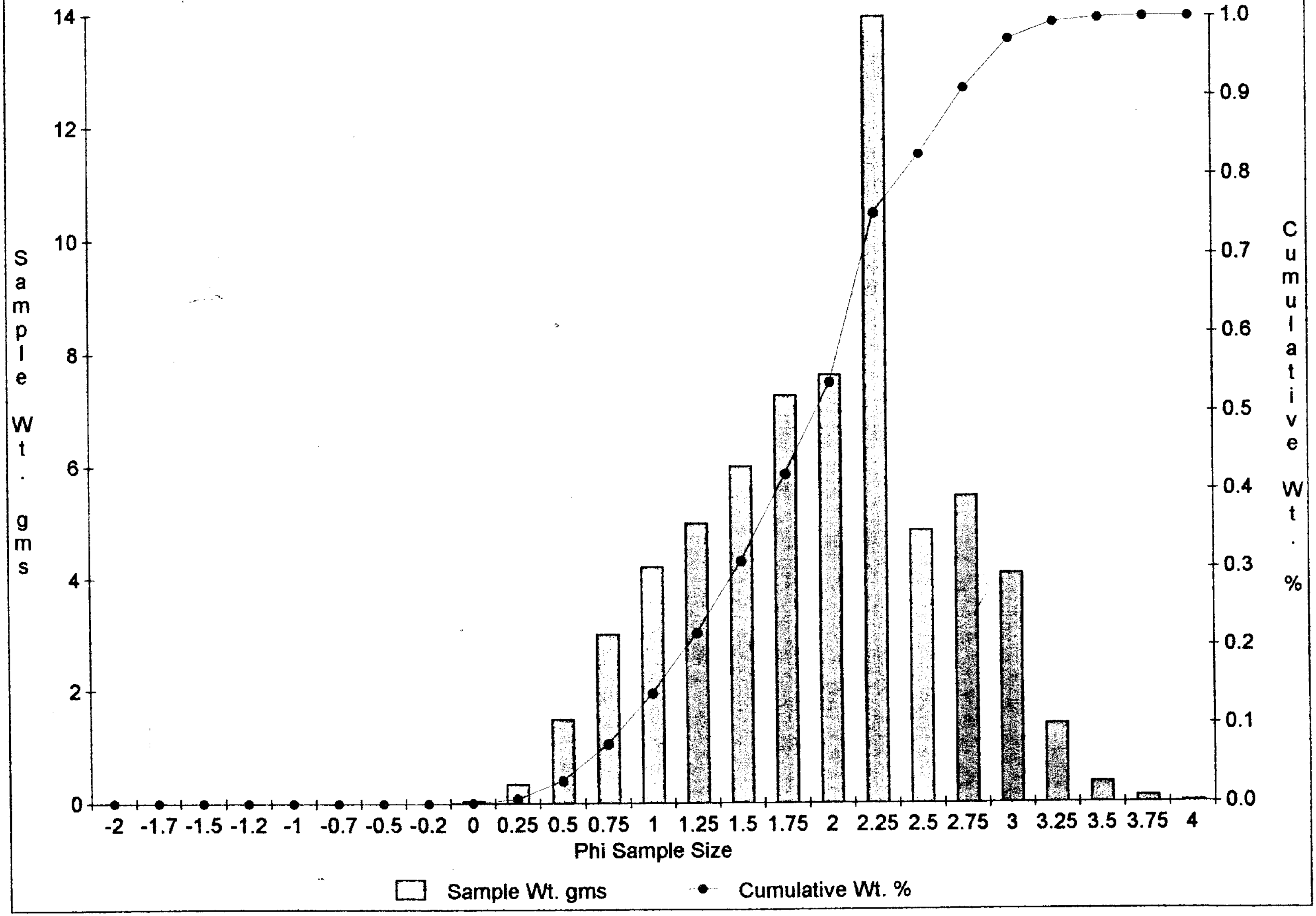
CORE (SL-1)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.0461	0.0461	0.0007074	0.0007074
0.25	0.335	0.3811	0.0051403	0.0058476
0.5	1.4751	1.8562	0.0226341	0.0284817
0.75	2.9896	4.8458	0.0458727	0.0743544
1	4.1882	9.034	0.0642641	0.1386184
1.25	4.9685	14.0025	0.0762371	0.2148555
1.5	5.9937	19.9962	0.0919678	0.3068234
1.75	7.2569	27.2531	0.1113505	0.4181738
2	7.6186	34.8717	0.1169004	0.5350743
2.25	13.9708	48.8425	0.2143691	0.7494434
2.5	4.8567	53.6992	0.0745216	0.823965
2.75	5.4711	59.1703	0.083949	0.907914
3	4.092	63.2623	0.062788	0.970702
3.25	1.4013	64.6636	0.0215017	0.9922037
3.5	0.3685	65.0321	0.0056543	0.997858
3.75	0.1167	65.1488	0.0017907	0.9996486
4	0.0229	65.1717	0.0003514	1

Total Wt.	65.1717	gms		
Median Weight	32.58585	gms		
Mean Grain Size	1.92	phi	0.2642545	mm

Cum Wt. % SL1

2.5'



Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

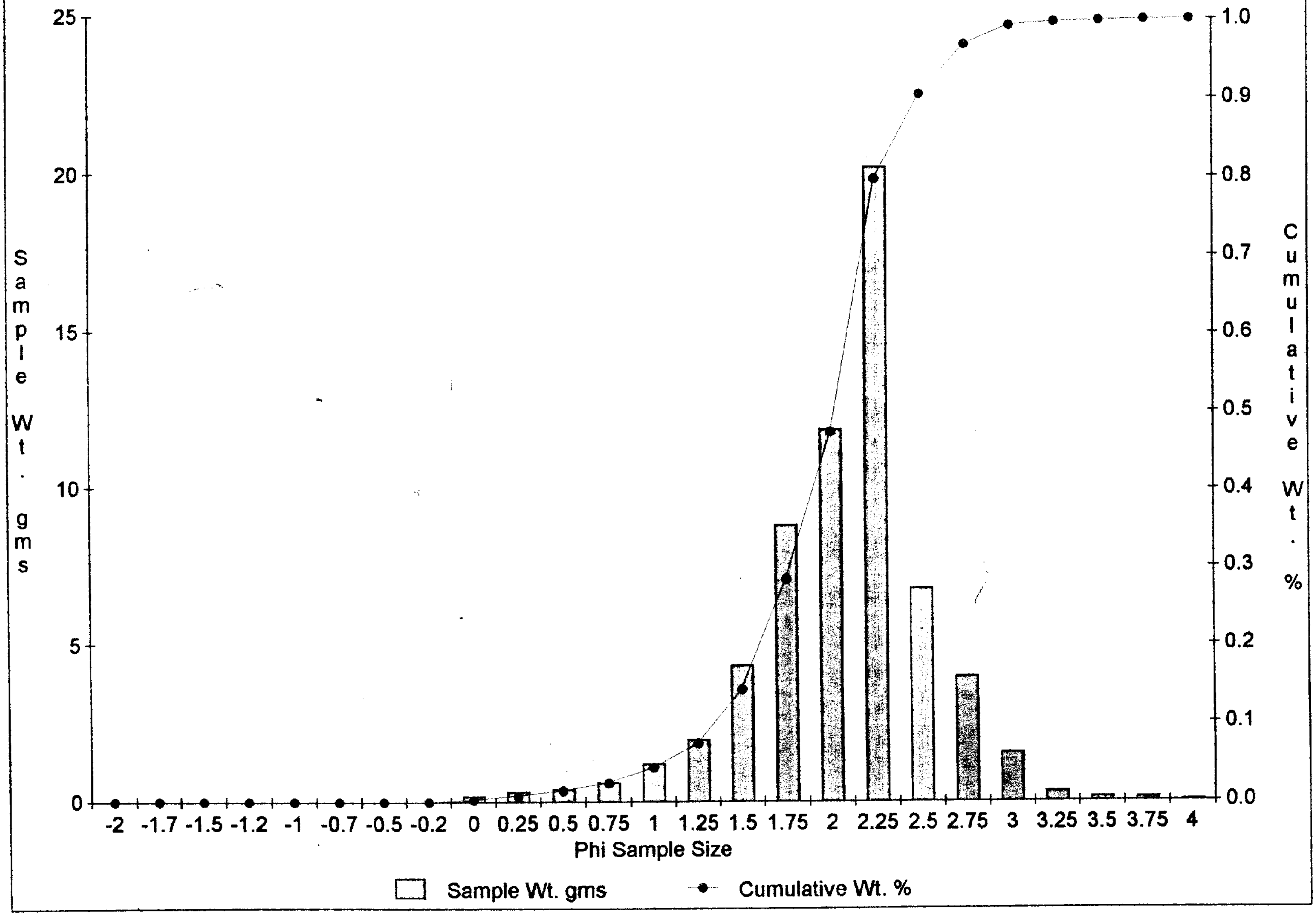
CORE (SL-1)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.1764	0.1764	0.0028155	0.0028155
0.25	0.3217	0.4981	0.0051345	0.00795
0.5	0.4011	0.8992	0.0064018	0.0143518
0.75	0.5963	1.4955	0.0095173	0.0238691
1	1.1881	2.6836	0.0189628	0.042832
1.25	1.9311	4.6147	0.0308216	0.0736536
1.5	4.3009	8.9156	0.0686451	0.1422987
1.75	8.7868	17.7024	0.140243	0.2825418
2	11.8639	29.5663	0.1893555	0.4718973
2.25	20.2538	49.8201	0.3232638	0.7951611
2.5	6.7626	56.5827	0.1079355	0.9030965
2.75	3.9614	60.5441	0.0632265	0.966323
3	1.5391	62.0832	0.024565	0.9908881
3.25	0.3002	62.3834	0.0047914	0.9956795
3.5	0.1249	62.5083	0.0019935	0.9976729
3.75	0.1164	62.6247	0.0018578	0.9995308
4	0.0294	62.6541	0.0004692	1

Total Wt.	62.6541 gms		
Median Weight	31.32705 gms		
Mean Grain Size	2.02 phi	0.2465582 mm	

Cum Wt. % SL1

3'

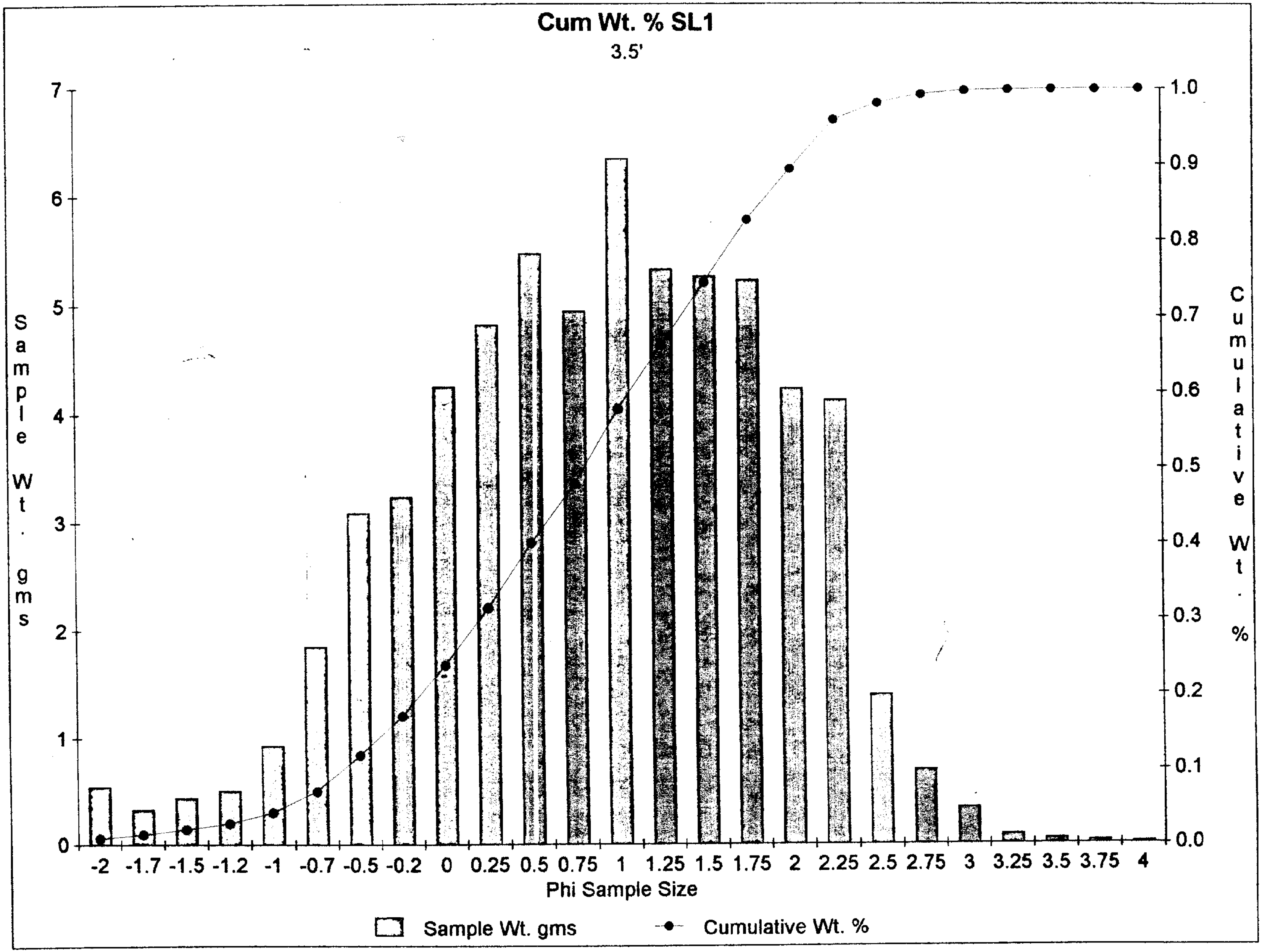

25
20
15
10
5
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.5392	0.5392	0.00849	0.00849
-1.75	0.3206	0.8598	0.005048	0.013538
-1.5	0.4311	1.2909	0.0067879	0.020326
-1.25	0.5041	1.795	0.0079373	0.0282633
-1	0.9316	2.7266	0.0146686	0.0429319
-0.75	1.8438	4.5704	0.0290317	0.0719636
-0.5	3.082	7.6524	0.0485279	0.1204915
-0.25	3.2266	10.879	0.0508047	0.1712961
0	4.251	15.13	0.0669344	0.2382306
0.25	4.8242	19.9542	0.0759598	0.3141904
0.5	5.4779	25.4321	0.0862527	0.4004431
0.75	4.9463	30.3784	0.0778823	0.4783254
1	6.3493	36.7277	0.0999734	0.5782988
1.25	5.3342	42.0619	0.0839901	0.6622889
1.5	5.2707	47.3326	0.0829902	0.7452791
1.75	5.235	52.5676	0.0824281	0.8277072
2	4.2328	56.8004	0.0666479	0.8943551
2.25	4.1251	60.9255	0.0649521	0.9593071
2.5	1.3871	62.3126	0.0218407	0.9811478
2.75	0.6989	63.0115	0.0110046	0.9921524
3	0.3354	63.3469	0.0052811	0.9974335
3.25	0.0826	63.4295	0.0013006	0.9987341
3.5	0.0434	63.4729	0.0006834	0.9994174
3.75	0.0263	63.4992	0.0004141	0.9998315
4	0.0107	63.5099	0.0001685	1

Total Wt.	63.5099	gms		
Median Weight	31.75495	gms		
Mean Grain Size	0.8	phi	0.5743492	mm

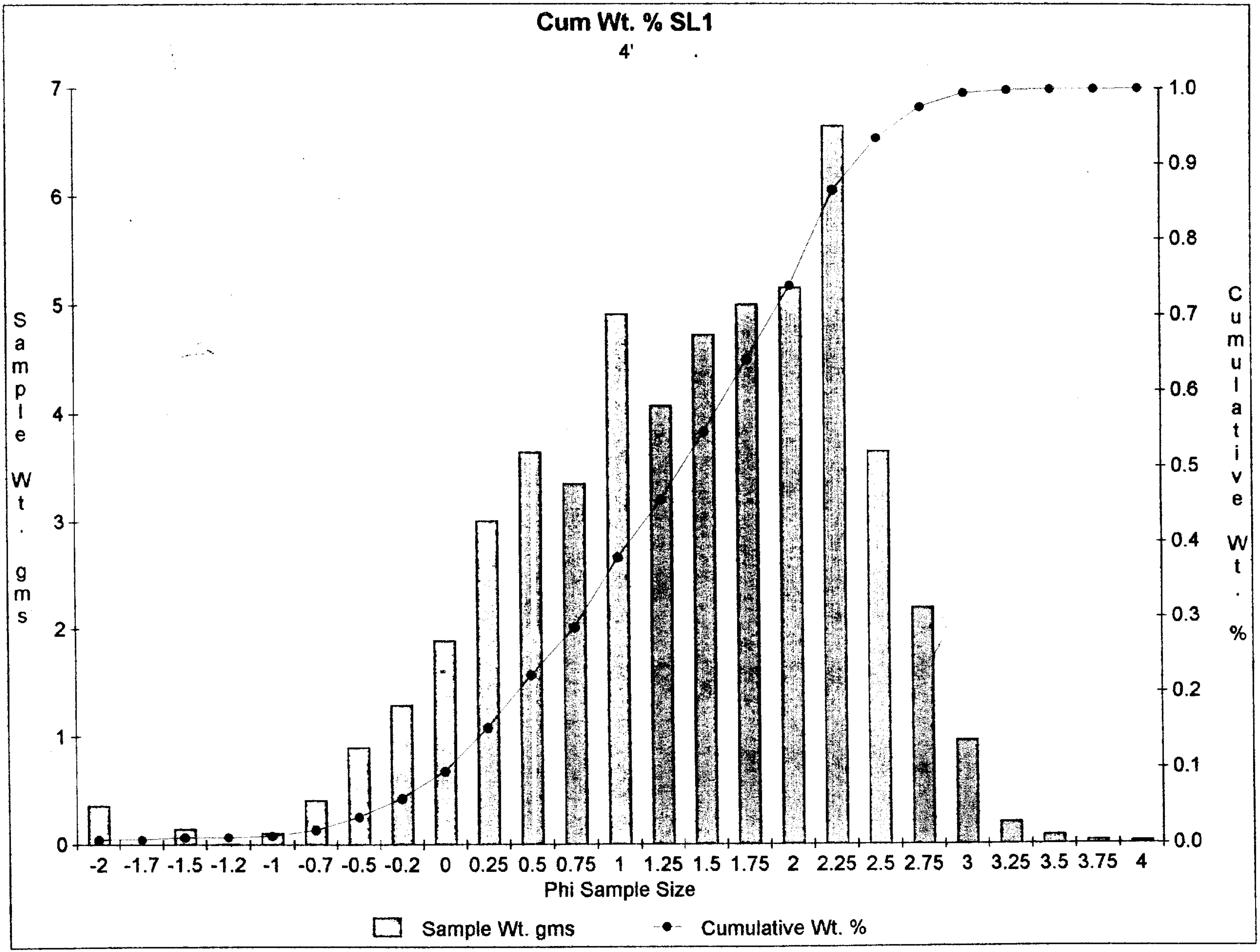

Cum Wt. % SL1
3.5'
Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.357	0.357	0.0067854	0.0067854
-1.75	0	0.357	0	0.0067854
-1.5	0.1436	0.5006	0.0027294	0.0095148
-1.25	0.005	0.5056	9.503E-05	0.0096098
-1	0.1001	0.6057	0.0019026	0.0115124
-0.75	0.4079	1.0136	0.0077528	0.0192652
-0.5	0.8958	1.9094	0.0170262	0.0362914
-0.25	1.2778	3.1872	0.0242868	0.0605782
0	1.8782	5.0654	0.0356984	0.0962766
0.25	2.9948	8.0602	0.0569213	0.1531979
0.5	3.6291	11.6893	0.0689772	0.2221751
0.75	3.3401	15.0294	0.0634843	0.2856594
1	4.9095	19.9389	0.0933134	0.3789729
1.25	4.0597	23.9986	0.0771615	0.4561344
1.5	4.7172	28.7158	0.0896584	0.5457929
1.75	4.9915	33.7073	0.094872	0.6406649
2	5.1498	38.8571	0.0978808	0.7385456
2.25	6.6511	45.5082	0.1264155	0.8649611
2.5	3.6353	49.1435	0.0690951	0.9340562
2.75	2.1806	51.3241	0.041446	0.9755023
3	0.9553	52.2794	0.0181571	0.9936594
3.25	0.2013	52.4807	0.0038261	0.9974854
3.5	0.0804	52.5611	0.0015281	0.9990136
3.75	0.0298	52.5909	0.0005664	0.99958
4	0.0221	52.613	0.00042	1

Total Wt.	52.613	gms
Median Weight	26.3065	gms
Mean Grain Size	1.37	phi 0.3868912 mm

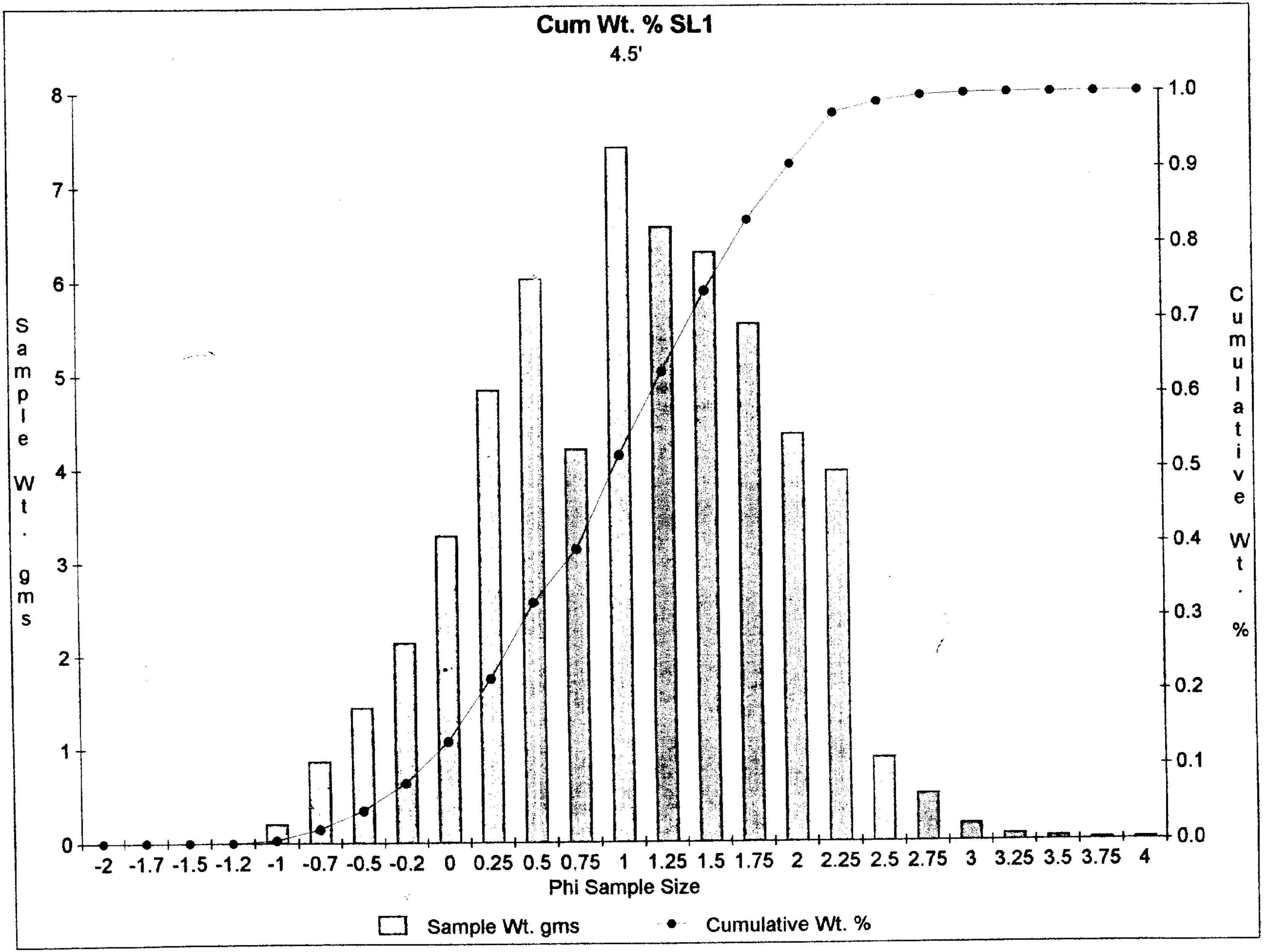

Cum Wt. % SL1
4'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
1
2
3
4
5
6
7
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.1966	0.1966	0.0033461	0.0033461
-0.75	0.8707	1.0673	0.0148193	0.0181654
-0.5	1.4387	2.506	0.0244866	0.042652
-0.25	2.1278	4.6338	0.036215	0.078867
0	3.2769	7.9107	0.0557727	0.1346397
0.25	4.8326	12.7433	0.0822506	0.2168903
0.5	6.0105	18.7538	0.1022984	0.3191886
0.75	4.1972	22.951	0.0714361	0.3906247
1	7.3989	30.3499	0.1259289	0.5165536
1.25	6.5548	36.9047	0.1115623	0.6281159
1.5	6.2927	43.1974	0.1071014	0.7352173
1.75	5.5331	48.7305	0.0941731	0.8293904
2	4.3548	53.0853	0.0741185	0.9035088
2.25	3.9627	57.048	0.0674449	0.9709538
2.5	0.884	57.932	0.0150456	0.9859994
2.75	0.4959	58.4279	0.0084402	0.9944396
3	0.1762	58.6041	0.0029989	0.9974385
3.25	0.0665	58.6706	0.0011318	0.9985703
3.5	0.0422	58.7128	0.0007182	0.9992886
3.75	0.0211	58.7339	0.0003591	0.9996477
4	0.0207	58.7546	0.0003523	1

Total Wt.	58.7546 gms		
Median Weight	29.3773 gms		
Mean Grain Size	0.97 phi	0.5105061	mm


Cum Wt. % SL1
4.5'
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

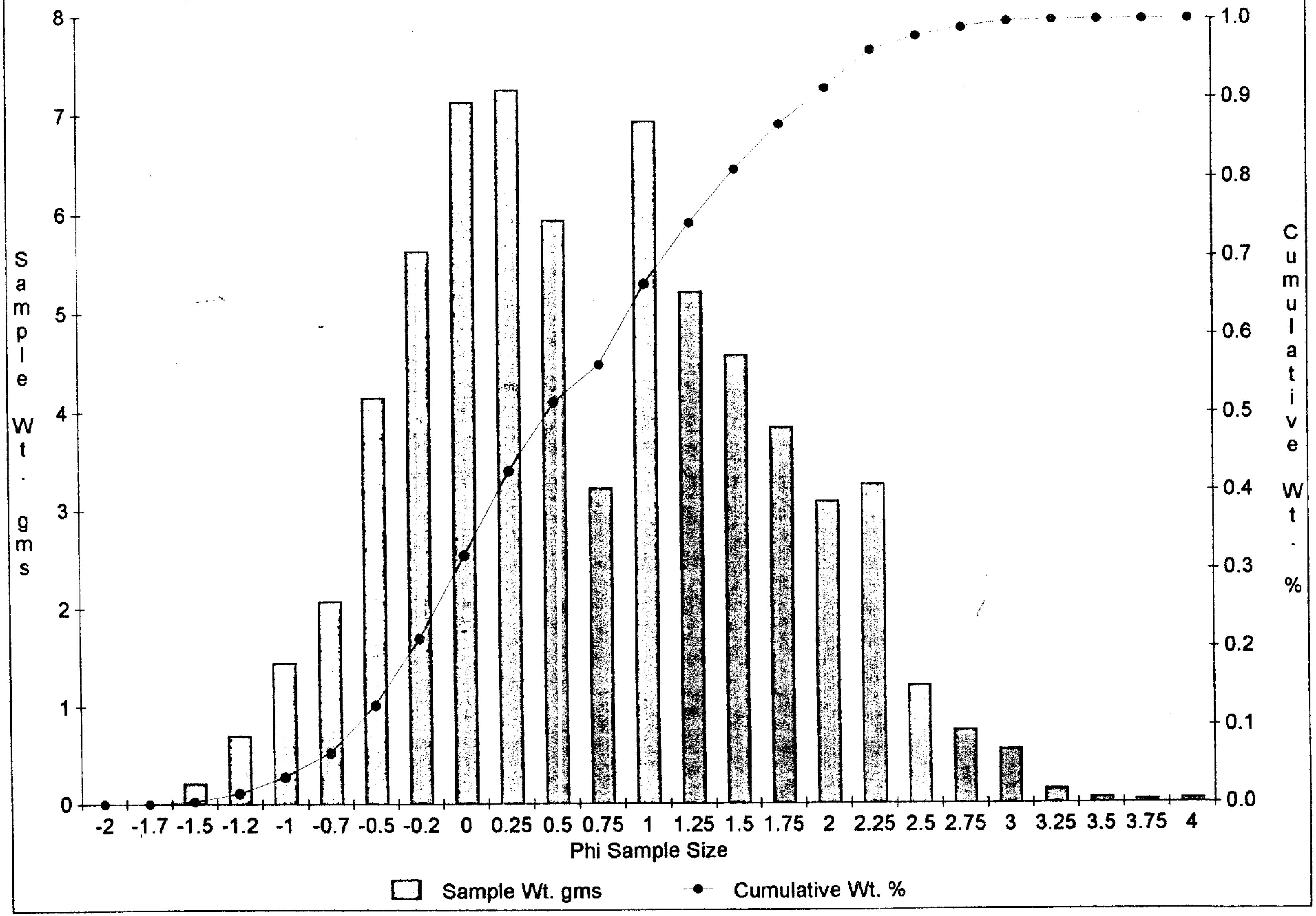
CORE (SL-1)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.2109	0.2109	0.0031285	0.0031285
-1.25	0.703	0.9139	0.0104285	0.013557
-1	1.4425	2.3564	0.0213984	0.0349555
-0.75	2.0655	4.4219	0.0306402	0.0655956
-0.5	4.1421	8.564	0.061445	0.1270406
-0.25	5.6254	14.1894	0.0834487	0.2104893
0	7.1277	21.3171	0.1057342	0.3162235
0.25	7.2524	28.5695	0.107584	0.4238075
0.5	5.9431	34.5126	0.0881615	0.511969
0.75	3.2077	37.7203	0.0475839	0.5595529
1	6.9404	44.6607	0.1029557	0.6625086
1.25	5.2146	49.8753	0.0773548	0.7398634
1.5	4.5714	54.4467	0.0678134	0.8076767
1.75	3.8369	58.2836	0.0569176	0.8645943
2	3.082	61.3656	0.0457192	0.9103135
2.25	3.254	64.6196	0.0482707	0.9585842
2.5	1.2054	65.825	0.0178812	0.9764654
2.75	0.7584	66.5834	0.0112503	0.9877157
3	0.5518	67.1352	0.0081855	0.9959013
3.25	0.1428	67.278	0.0021183	0.9980196
3.5	0.0572	67.3352	0.0008485	0.9988681
3.75	0.0365	67.3717	0.0005415	0.9994096
4	0.0398	67.4115	0.0005904	1

Total Wt.	67.4115 gms		
Median Weight	33.70575 gms		
Mean Grain Size	0.47	phi	0.7219646 mm

Cum Wt. % SL1

5'



Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

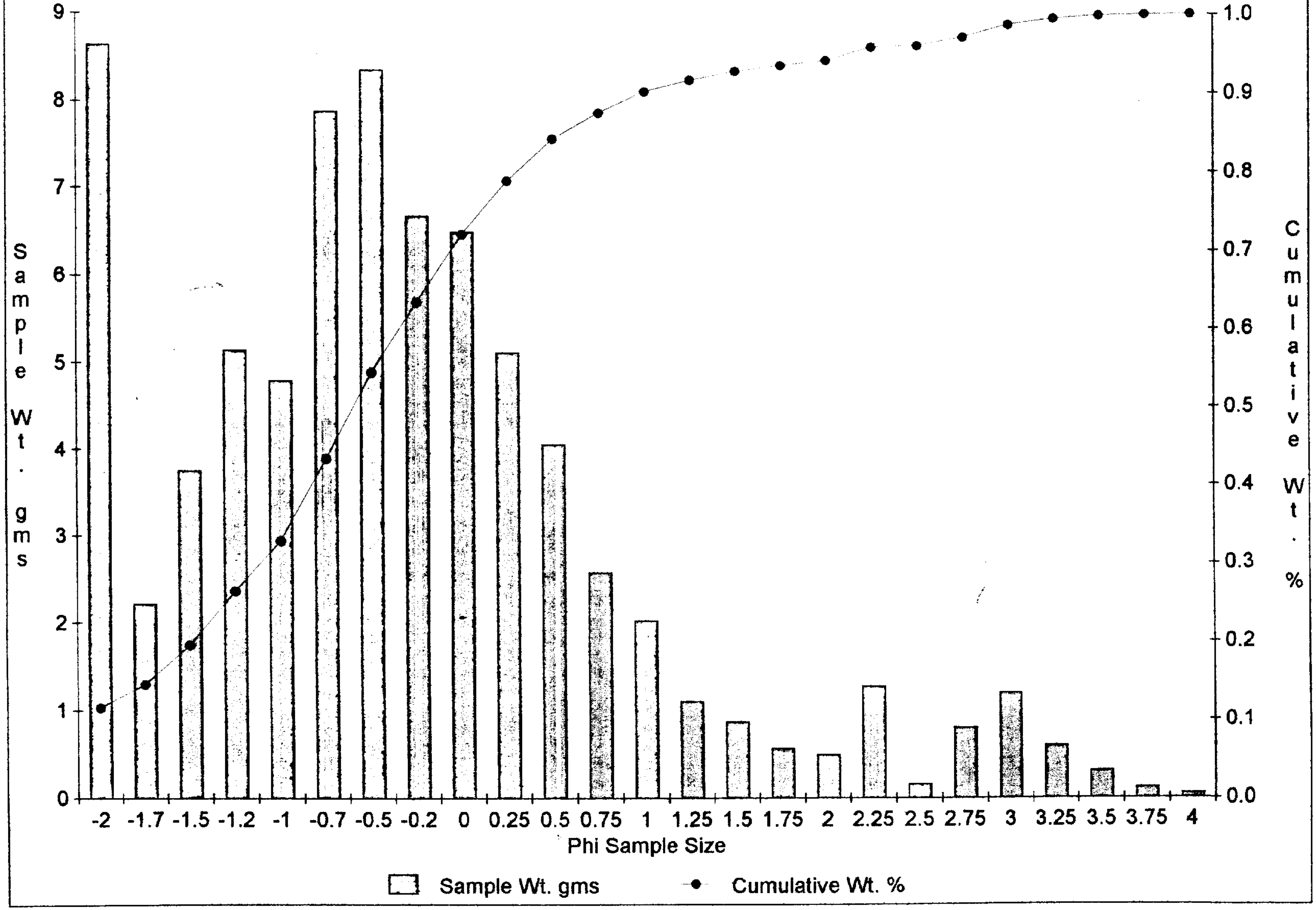
CORE (SL-1)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	8.638	8.638	0.115039	0.115039
-1.75	2.2144	10.8524	0.0294909	0.1445299
-1.5	3.745	14.5974	0.0498751	0.1944049
-1.25	5.1349	19.7323	0.0683855	0.2627904
-1	4.7858	24.5181	0.0637362	0.3265266
-0.75	7.8676	32.3857	0.104779	0.4313056
-0.5	8.3403	40.726	0.1110743	0.5423798
-0.25	6.663	47.389	0.0887364	0.6311162
0	6.4756	53.8646	0.0862406	0.7173568
0.25	5.0945	58.9591	0.0678474	0.7852042
0.5	4.0341	62.9932	0.0537252	0.8389295
0.75	2.5632	65.5564	0.0341361	0.8730656
1	2.0136	67.57	0.0268167	0.8998823
1.25	1.0967	68.6667	0.0146056	0.9144879
1.5	0.8624	69.5291	0.0114853	0.9259731
1.75	0.558	70.0871	0.0074313	0.9334045
2	0.486	70.5731	0.0064724	0.9398769
2.25	1.2735	71.8466	0.0169602	0.9568371
2.5	0.1556	72.0022	0.0020722	0.9589093
2.75	0.8025	72.8047	0.0106875	0.9695968
3	1.2035	74.0082	0.0160279	0.9856248
3.25	0.5984	74.6066	0.0079694	0.9935941
3.5	0.3114	74.918	0.0041472	0.9977413
3.75	0.1186	75.0366	0.0015795	0.9993208
4	0.051	75.0876	0.0006792	1

Total Wt.	75.0876 gms
Median Weight	37.5438 gms
Mean Grain Size	-0.6 phi 1.5157166 mm

Cum Wt. % SL1

6'



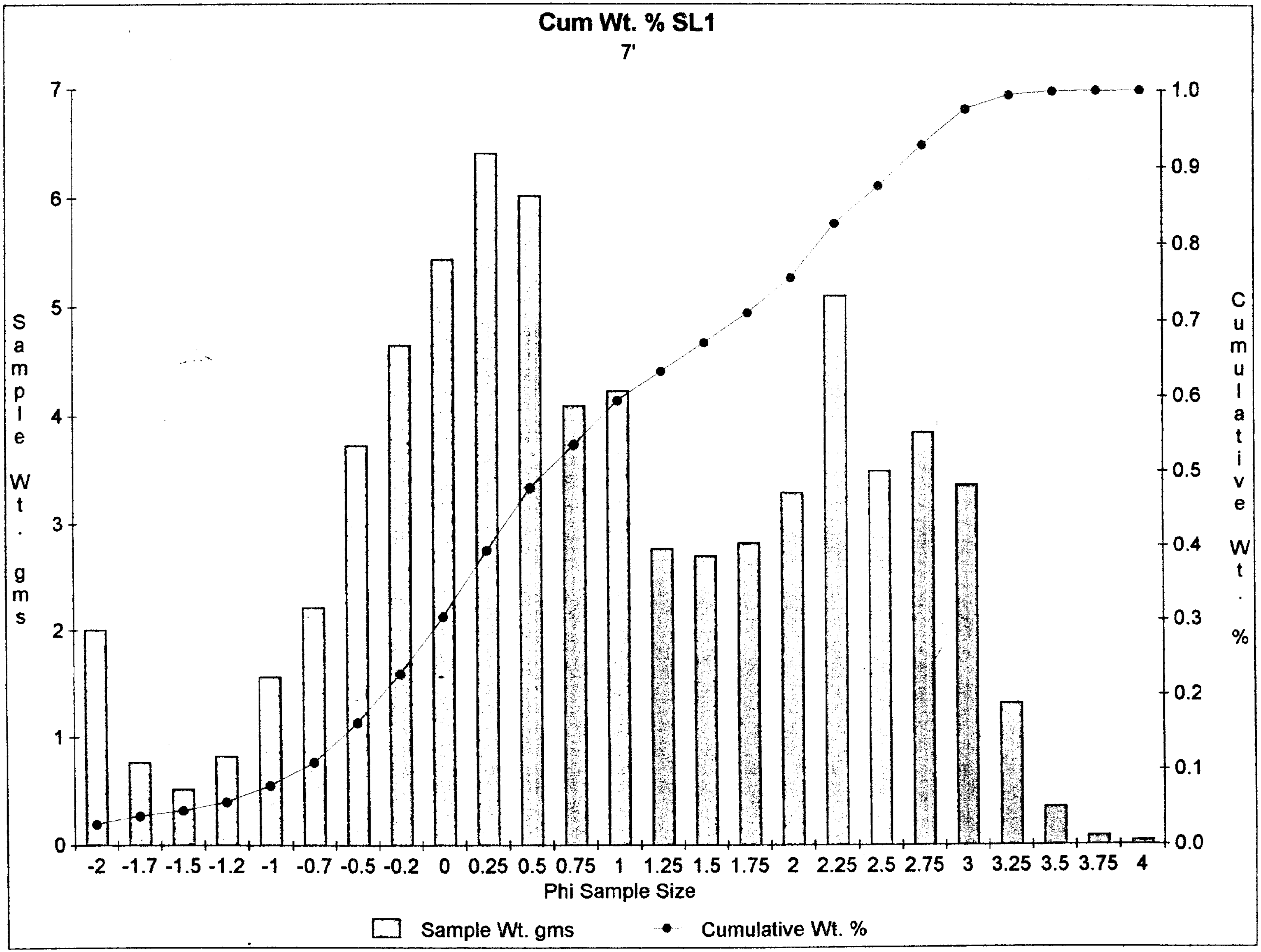
Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	2.0036	2.0036	0.0279596	0.0279596
-1.75	0.7683	2.7719	0.0107214	0.038681
-1.5	0.5184	3.2903	0.0072341	0.0459151
-1.25	0.8281	4.1184	0.0115559	0.057471
-1	1.5617	5.6801	0.021793	0.079264
-0.75	2.2067	7.8868	0.0307938	0.1100578
-0.5	3.7233	11.6101	0.0519575	0.1620153
-0.25	4.6549	16.265	0.0649577	0.226973
0	5.4418	21.7068	0.0759386	0.3029116
0.25	6.4105	28.1173	0.0894565	0.3923682
0.5	6.0273	34.1446	0.0841091	0.4764773
0.75	4.0975	38.2421	0.0571793	0.5336566
1	4.2346	42.4767	0.0590925	0.5927491
1.25	2.7632	45.2399	0.0385596	0.6313087
1.5	2.6918	47.9317	0.0375632	0.668872
1.75	2.8162	50.7479	0.0392992	0.7081712
2	3.2854	54.0333	0.0458467	0.7540179
2.25	5.1136	59.1469	0.0713587	0.8253766
2.5	3.4936	62.6405	0.0487521	0.8741287
2.75	3.8557	66.4962	0.0538051	0.9279338
3	3.3672	69.8634	0.0469882	0.974922
3.25	1.3208	71.1842	0.0184314	0.9933534
3.5	0.3545	71.5387	0.0049469	0.9983003
3.75	0.0837	71.6224	0.001168	0.9994683
4	0.0381	71.6605	0.0005317	1

Total Wt.	71.6605 gms		
Median Weight	35.83025 gms		
Mean Grain Size	0.6 phi	0.659754 mm	



Cum Wt. % SL1

7'

Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

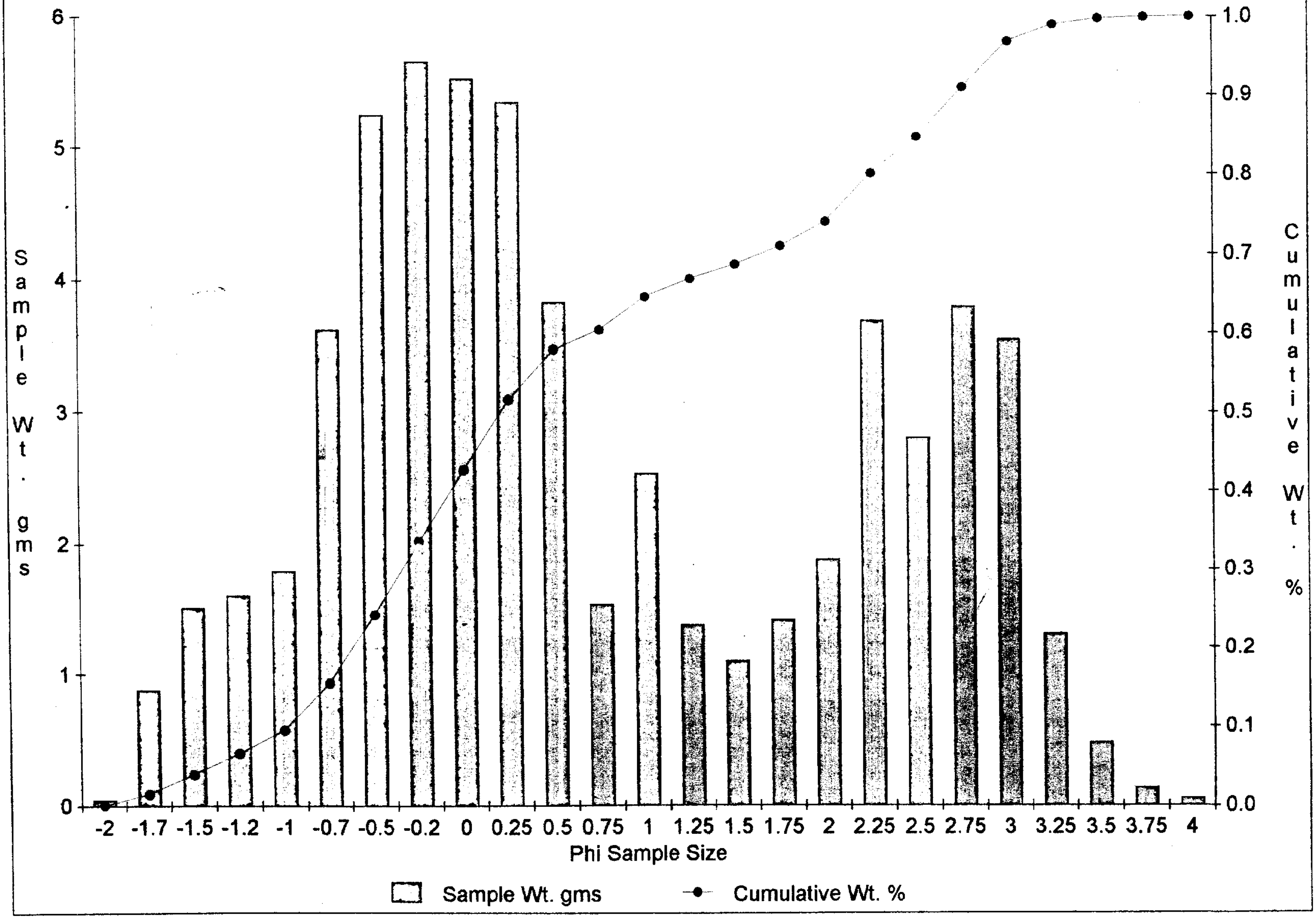
CORE (SL-1)
DEPTH (8 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0411	0.0411	0.0006789	0.0006789
-1.75	0.878	0.9191	0.0145041	0.015183
-1.5	1.506	2.4251	0.0248783	0.0400613
-1.25	1.6047	4.0298	0.0265088	0.0665701
-1	1.7895	5.8193	0.0295616	0.0961316
-0.75	3.6137	9.433	0.0596963	0.155828
-0.5	5.2373	14.6703	0.0865173	0.2423453
-0.25	5.6392	20.3095	0.0931565	0.3355018
0	5.5091	25.8186	0.0910073	0.4265091
0.25	5.332	31.1506	0.0880817	0.5145908
0.5	3.8218	34.9724	0.063134	0.5777248
0.75	1.5249	36.4973	0.0251905	0.6029154
1	2.527	39.0243	0.0417447	0.64466
1.25	1.3644	40.3887	0.0225391	0.6671991
1.5	1.0911	41.4798	0.0180244	0.6852235
1.75	1.4059	42.8857	0.0232247	0.7084482
2	1.8677	44.7534	0.0308534	0.7393016
2.25	3.6846	48.438	0.0608676	0.8001692
2.5	2.7989	51.2369	0.0462363	0.8464055
2.75	3.7924	55.0293	0.0626484	0.9090538
3	3.5466	58.5759	0.0585879	0.9676417
3.25	1.3024	59.8783	0.0215149	0.9891566
3.5	0.4715	60.3498	0.0077889	0.9969456
3.75	0.1317	60.4815	0.0021756	0.9991212
4	0.0532	60.5347	0.0008788	1

Total Wt.	60.5347	gms		
Median Weight	30.26735	gms		
Mean Grain Size	0.21	phi	0.8645372	mm

Cum Wt. % SL1

8'

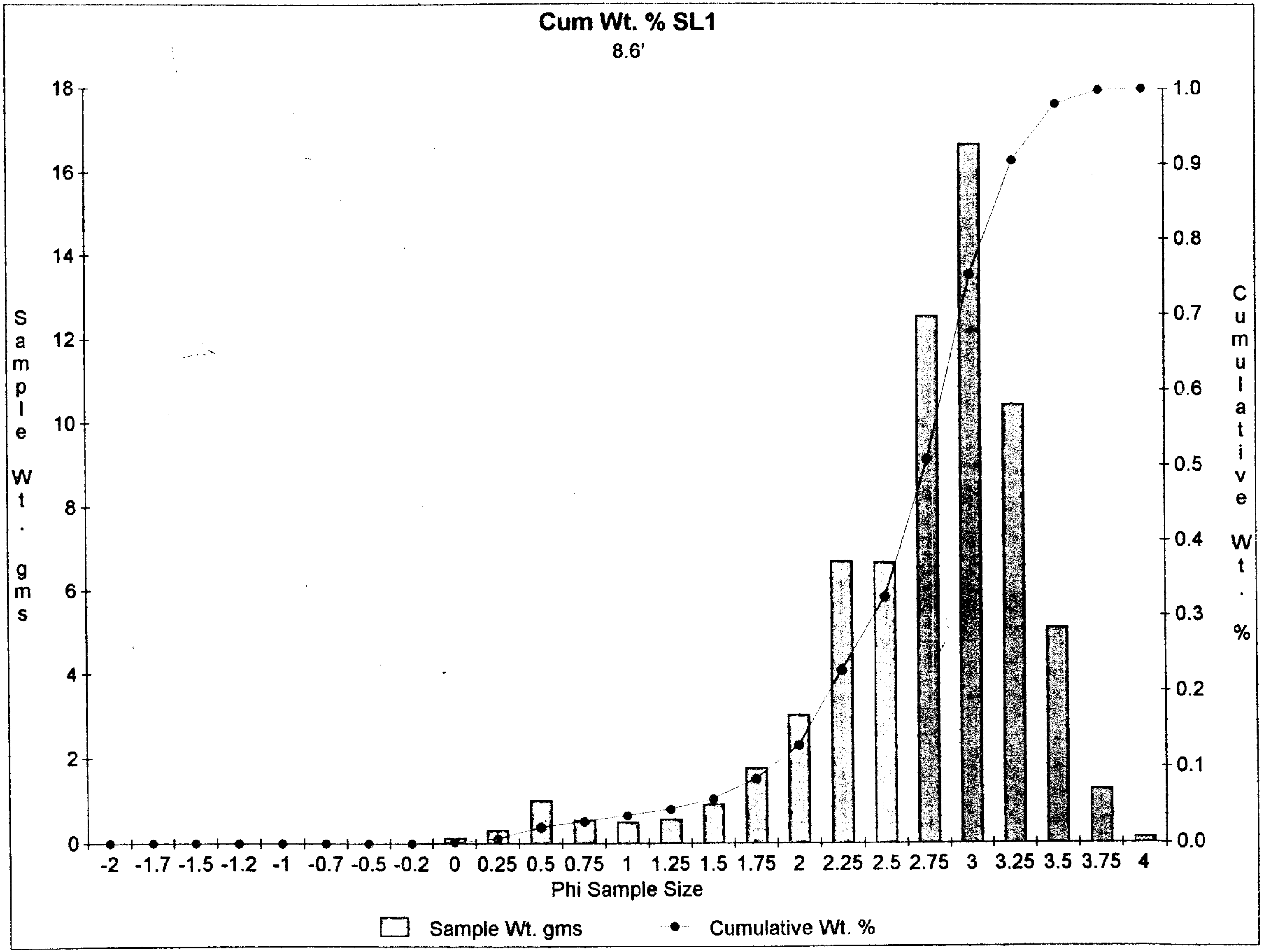

Sample Wt. gms
0
1
2
3
4
5
6
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-1)
DEPTH (8.6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.1264	0.1264	0.0018525	0.0018525
0.25	0.3063	0.4327	0.0044891	0.0063416
0.5	1.0097	1.4424	0.014798	0.0211395
0.75	0.5433	1.9857	0.0079625	0.029102
1	0.4917	2.4774	0.0072063	0.0363083
1.25	0.5685	3.0459	0.0083318	0.0446401
1.5	0.9082	3.9541	0.0133104	0.0579505
1.75	1.7654	5.7195	0.0258733	0.0838238
2	3.0205	8.74	0.0442678	0.1280916
2.25	6.6807	15.4207	0.097911	0.2260026
2.5	6.657	22.0777	0.0975636	0.3235662
2.75	12.5452	34.6229	0.1838599	0.5074261
3	16.6777	51.3006	0.2444249	0.751851
3.25	10.4475	61.7481	0.1531164	0.9049674
3.5	5.0955	66.8436	0.0746786	0.979646
3.75	1.2678	68.1114	0.0185806	0.9982266
4	0.121	68.2324	0.0017734	1

Total Wt.	68.2324 gms	
Median Weight	34.1162 gms	
Mean Grain Size	2.74 phi	0.1496848 mm

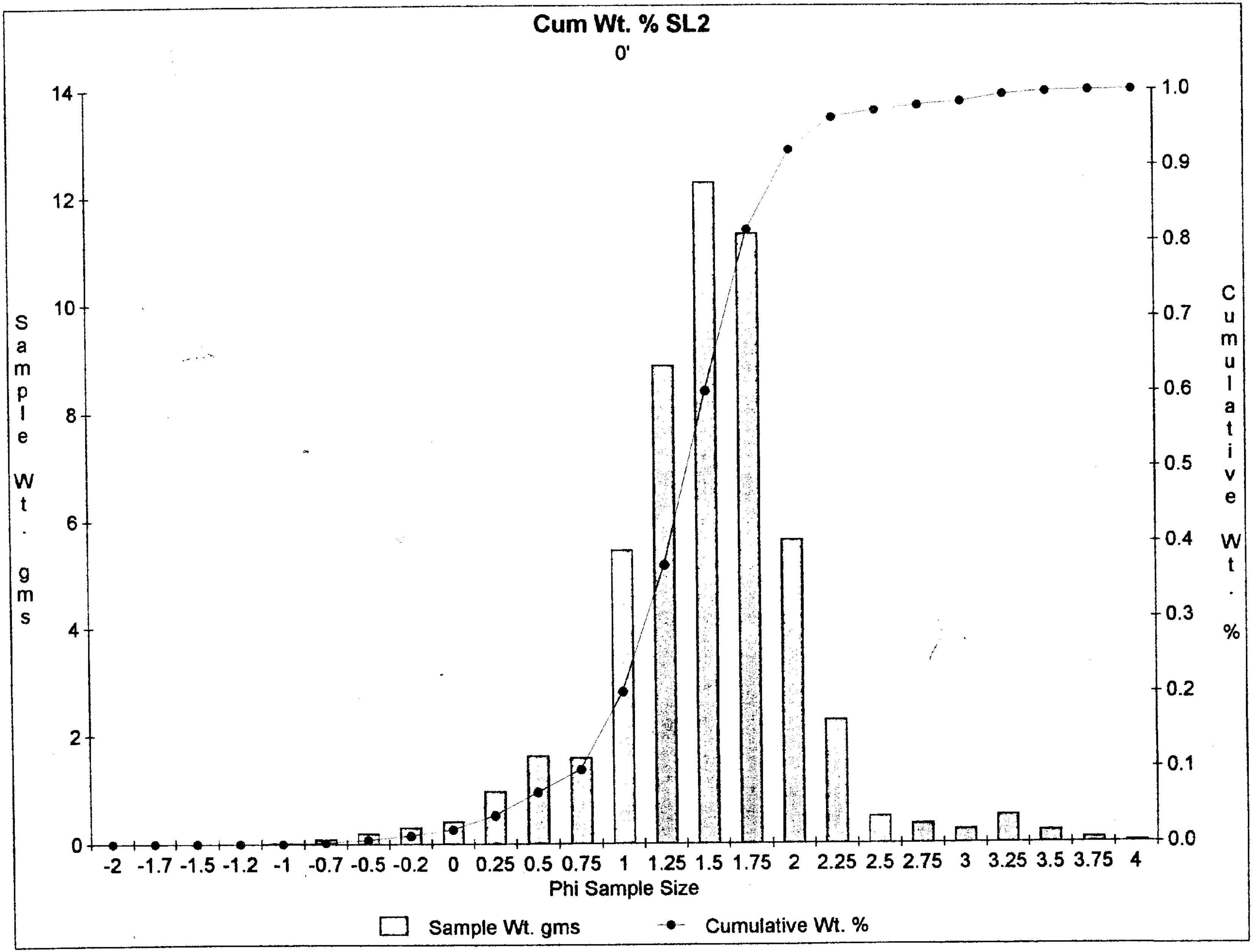

Cum Wt. % SL1
8.6'
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0131	0.0131	0.0002476	0.0002476
-0.75	0.0847	0.0978	0.001601	0.0018486
-0.5	0.1969	0.2947	0.0037219	0.0055705
-0.25	0.3032	0.5979	0.0057312	0.0113017
0	0.4142	1.0121	0.0078293	0.019131
0.25	0.9639	1.976	0.0182199	0.0373509
0.5	1.6162	3.5922	0.0305498	0.0679007
0.75	1.5792	5.1714	0.0298505	0.0977512
1	5.4253	10.5967	0.1025505	0.2003017
1.25	8.8685	19.4652	0.1676348	0.3679365
1.5	12.2721	31.7373	0.2319705	0.599907
1.75	11.3224	43.0597	0.2140191	0.8139261
2	5.6208	48.6805	0.1062459	0.9201719
2.25	2.2808	50.9613	0.0431123	0.9632842
2.5	0.4871	51.4484	0.0092073	0.9724915
2.75	0.3581	51.8065	0.0067689	0.9792604
3	0.2534	52.0599	0.0047898	0.9840503
3.25	0.5091	52.569	0.0096231	0.9936734
3.5	0.2248	52.7938	0.0042492	0.9979226
3.75	0.0868	52.8806	0.0016407	0.9995634
4	0.0231	52.9037	0.0004366	1

Total Wt.	52.9037 gms	
Median Weight	26.45185 gms	
Mean Grain Size	1.39 phi	0.3815648 mm



Cum Wt. % SL2

0'

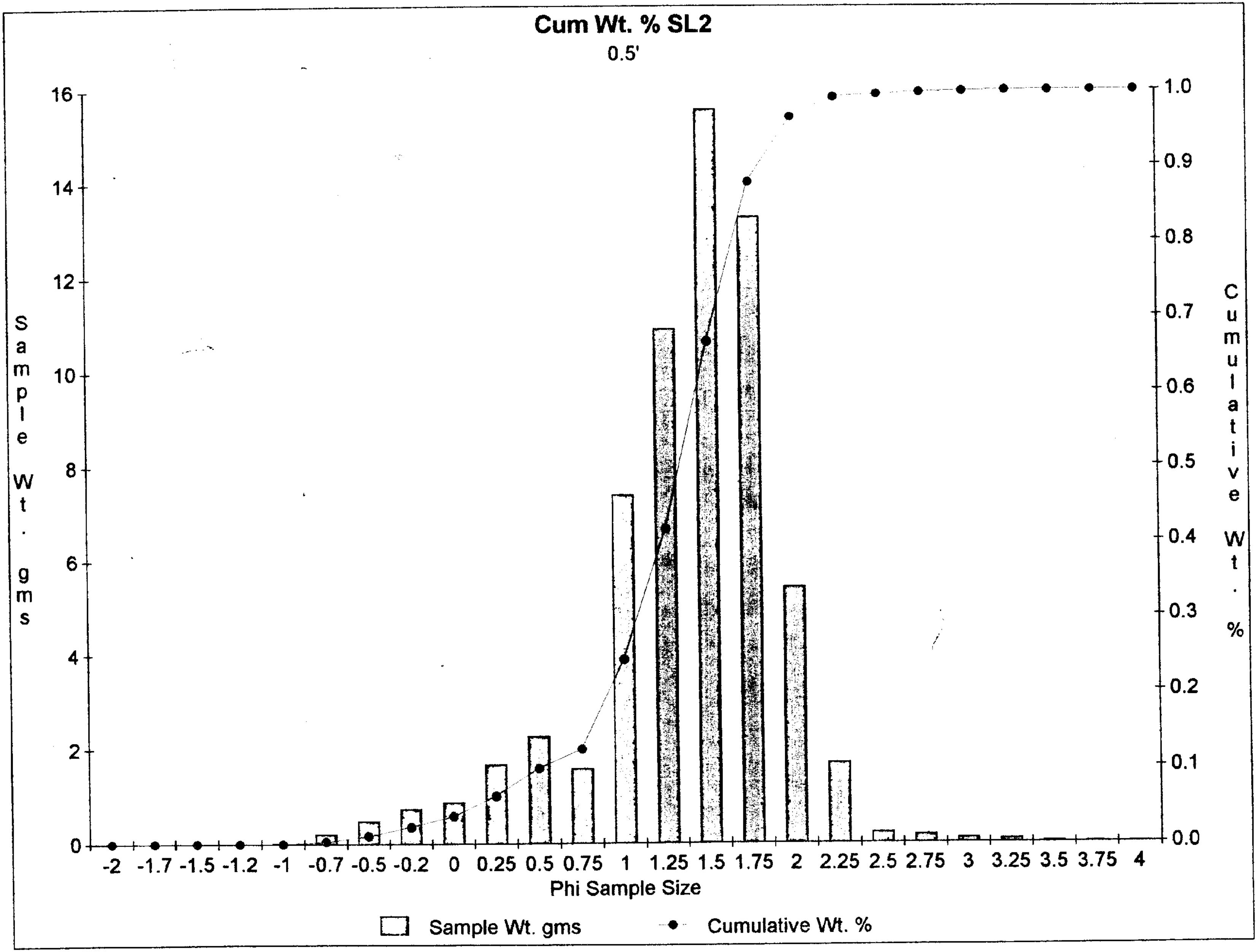
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0042	0.0042	6.713E-05	6.713E-05
-0.75	0.1989	0.2031	0.0031791	0.0032462
-0.5	0.4792	0.6823	0.0076593	0.0109055
-0.25	0.7369	1.4192	0.0117782	0.0226837
0	0.8675	2.2867	0.0138656	0.0365493
0.25	1.6643	3.951	0.0266012	0.0631505
0.5	2.2525	6.2035	0.0360027	0.0991532
0.75	1.5693	7.7728	0.0250828	0.124236
1	7.3655	15.1383	0.1177259	0.2419619
1.25	10.901	26.0393	0.1742354	0.4161973
1.5	15.5822	41.6215	0.249057	0.6652543
1.75	13.2848	54.9063	0.2123366	0.8775909
2	5.4077	60.314	0.0864336	0.9640245
2.25	1.6779	61.9919	0.0268186	0.9908431
2.5	0.217	62.2089	0.0034684	0.9943115
2.75	0.1589	62.3678	0.0025398	0.9968513
3	0.0904	62.4582	0.0014449	0.9982962
3.25	0.0724	62.5306	0.0011572	0.9994534
3.5	0.0178	62.5484	0.0002845	0.9997379
3.75	0.0099	62.5583	0.0001582	0.9998961
4	0.0065	62.5648	0.0001039	1

Total Wt.	62.5648 gms	
Median Weight	31.2824 gms	
Mean Grain Size	1.33 phi	0.3977682 mm


Cum Wt. % SL2
0.5'
Sample Wt. gms
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

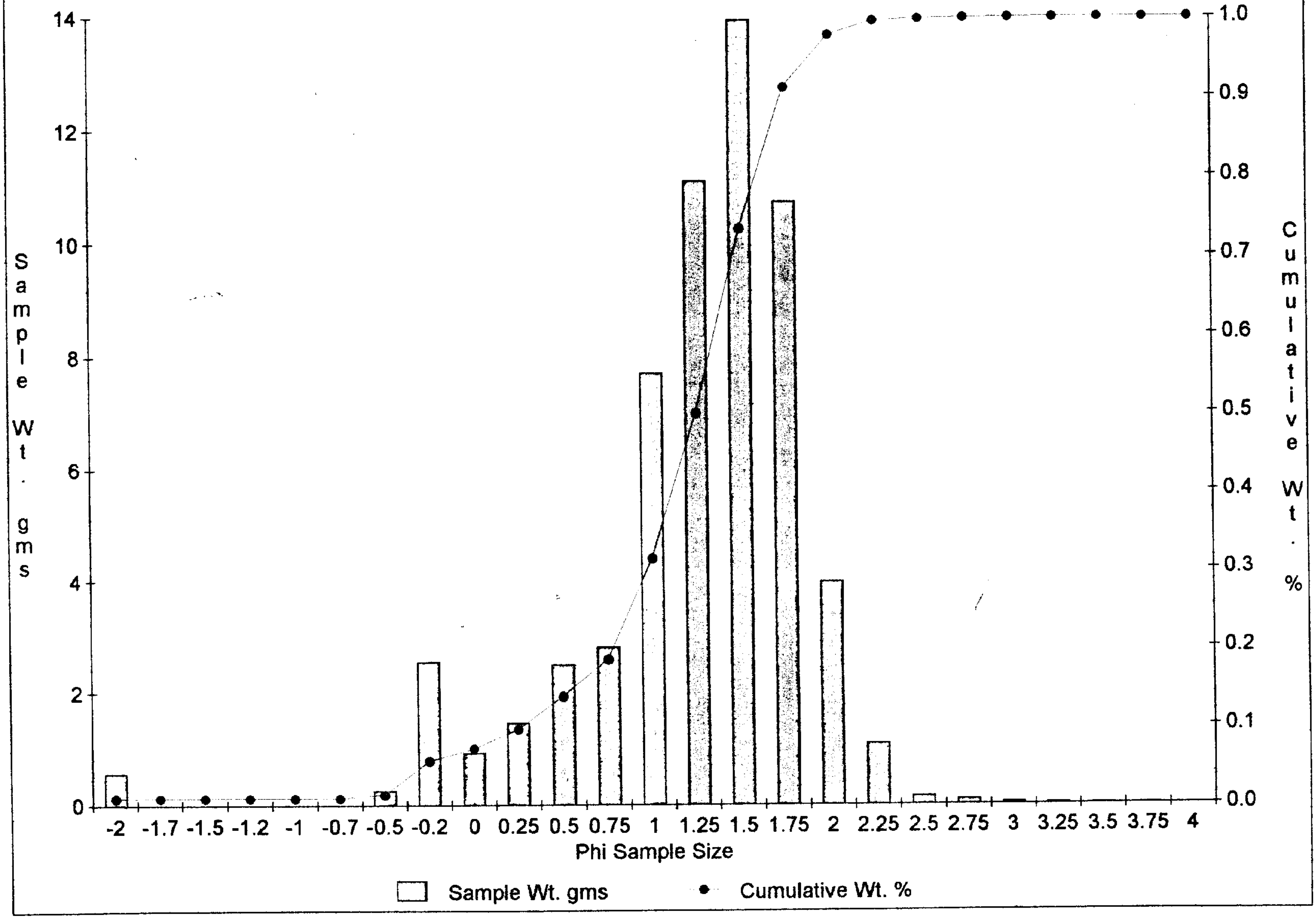
CORE (SL-2)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.5608	0.5608	0.0093867	0.0093867
-1.75	0	0.5608	0	0.0093867
-1.5	0	0.5608	0	0.0093867
-1.25	0	0.5608	0	0.0093867
-1	0	0.5608	0	0.0093867
-0.75	0	0.5608	0	0.0093867
-0.5	0.2626	0.8234	0.0043954	0.0137822
-0.25	2.5349	3.3583	0.0424295	0.0562117
0	0.9211	4.2794	0.0154175	0.0716292
0.25	1.4483	5.7277	0.0242418	0.095871
0.5	2.4752	8.2029	0.0414302	0.1373013
0.75	2.7918	10.9947	0.0467295	0.1840308
1	7.6788	18.6735	0.1285288	0.3125596
1.25	11.0913	29.7648	0.1856477	0.4982073
1.5	13.931	43.6958	0.233179	0.7313864
1.75	10.717	54.4128	0.1793826	0.910769
2	3.954	58.3668	0.0661826	0.9769516
2.25	1.0783	59.4451	0.0180487	0.9950003
2.5	0.1442	59.5893	0.0024136	0.997414
2.75	0.0885	59.6778	0.0014813	0.9988953
3	0.0301	59.7079	0.0005038	0.9993991
3.25	0.0202	59.7281	0.0003381	0.9997372
3.5	0.0105	59.7386	0.0001758	0.999913
3.75	0.0037	59.7423	6.193E-05	0.9999749
4	0.0015	59.7438	2.511E-05	1

Total Wt.	59.7438 gms		
Median Weight	29.8719 gms		
Mean Grain Size	1.25 phi	0.4204482 mm	

Cum Wt. % SL2

1'



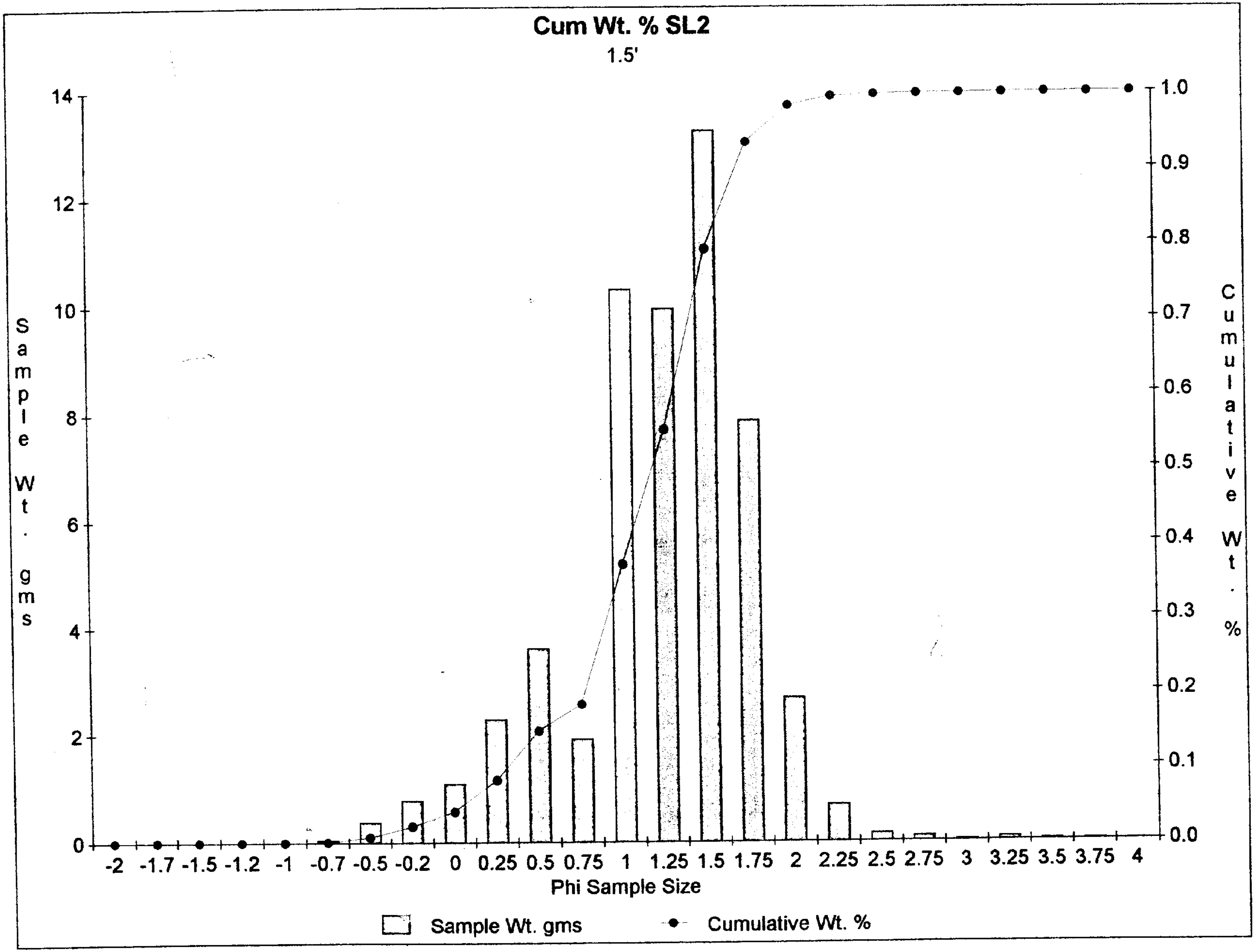
Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0415	0.0415	0.0007528	0.0007528
-0.5	0.3757	0.4172	0.0068152	0.007568
-0.25	0.7818	1.199	0.0141818	0.0217498
0	1.0835	2.2825	0.0196547	0.0414045
0.25	2.2742	4.5567	0.0412539	0.0826584
0.5	3.5892	8.1459	0.065108	0.1477663
0.75	1.9084	10.0543	0.0346183	0.1823846
1	10.3038	20.3581	0.1869106	0.3692952
1.25	9.9479	30.306	0.1804546	0.5497498
1.5	13.2708	43.5768	0.2407318	0.7904816
1.75	7.8604	51.4372	0.1425874	0.933069
2	2.6702	54.1074	0.0484373	0.9815063
2.25	0.6745	54.7819	0.0122354	0.9937417
2.5	0.1438	54.9257	0.0026085	0.9963502
2.75	0.0856	55.0113	0.0015528	0.997903
3	0.0131	55.0244	0.0002376	0.9981407
3.25	0.0582	55.0826	0.0010557	0.9991964
3.5	0.0187	55.1013	0.0003392	0.9995356
3.75	0.0171	55.1184	0.0003102	0.9998458
4	0.0085	55.1269	0.0001542	1

Total Wt.	55.1269 gms	
Median Weight	27.56345 gms	
Mean Grain Size	1.18 phi	0.4413515 mm



Cum Wt. % SL2

1.5'

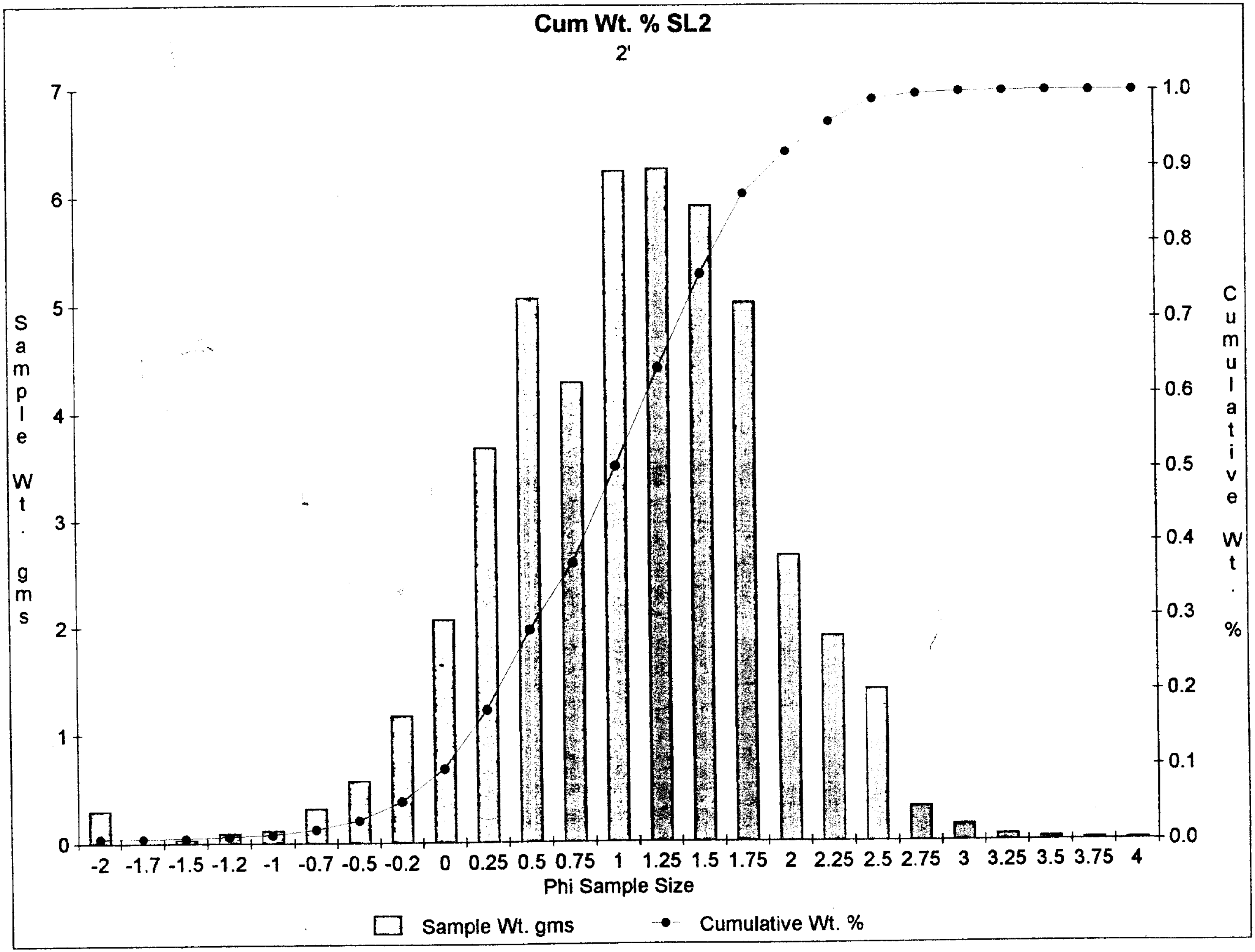
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.3011	0.3011	0.0063035	0.0063035
-1.75	0	0.3011	0	0.0063035
-1.5	0.032	0.3331	0.0006699	0.0069734
-1.25	0.0881	0.4212	0.0018444	0.0088177
-1	0.113	0.5342	0.0023656	0.0111834
-0.75	0.3191	0.8533	0.0066803	0.0178637
-0.5	0.5746	1.4279	0.0120291	0.0298928
-0.25	1.1727	2.6006	0.0245503	0.0544431
0	2.063	4.6636	0.0431885	0.0976316
0.25	3.6793	8.3429	0.0770255	0.1746571
0.5	5.0755	13.4184	0.1062547	0.2809118
0.75	4.2963	17.7147	0.0899423	0.3708541
1	6.2501	23.9648	0.1308447	0.5016989
1.25	6.2728	30.2376	0.13132	0.6330188
1.5	5.9294	36.167	0.1241309	0.7571498
1.75	5.0336	41.2006	0.1053775	0.8625273
2	2.6634	43.864	0.0557578	0.9182851
2.25	1.9058	45.7698	0.0398976	0.9581827
2.5	1.4059	47.1757	0.0294323	0.987615
2.75	0.321	47.4967	0.0067201	0.994335
3	0.1528	47.6495	0.0031988	0.9975339
3.25	0.0569	47.7064	0.0011912	0.9987251
3.5	0.0296	47.736	0.0006197	0.9993447
3.75	0.0193	47.7553	0.000404	0.9997488
4	0.012	47.7673	0.0002512	1

Total Wt.	47.7673 gms		
Median Weight	23.88365 gms		
Mean Grain Size	1 phi	0.5 mm	



Cum Wt. % SL2

2'

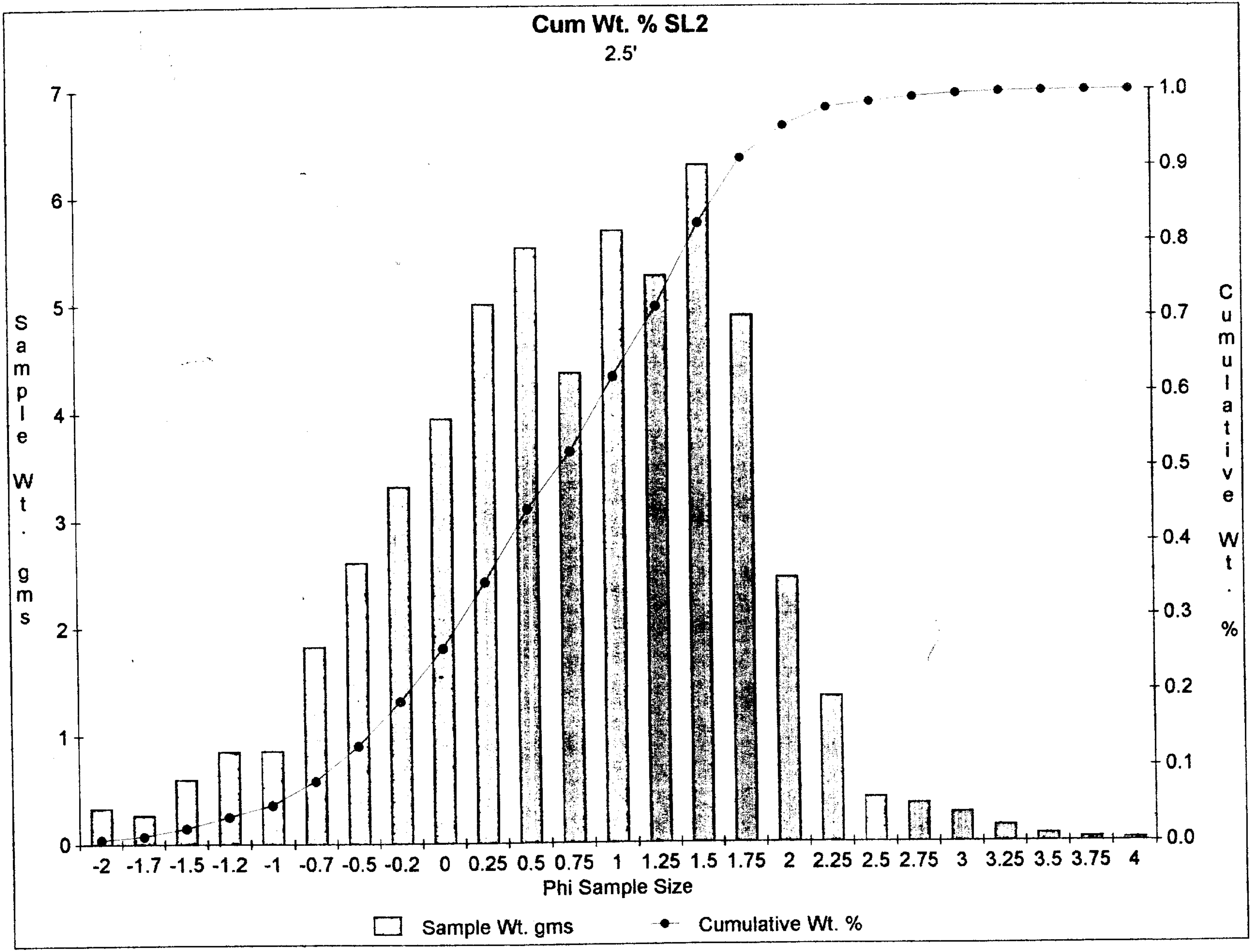
Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.3317	0.3317	0.0058399	0.0058399
-1.75	0.2681	0.5998	0.0047202	0.0105601
-1.5	0.601	1.2008	0.0105812	0.0211413
-1.25	0.8594	2.0602	0.0151306	0.0362719
-1	0.8623	2.9225	0.0151817	0.0514536
-0.75	1.8231	4.7456	0.0320975	0.0835511
-0.5	2.6016	7.3472	0.0458038	0.1293548
-0.25	3.3101	10.6573	0.0582776	0.1876325
0	3.9454	14.6027	0.0694627	0.2570952
0.25	5.0086	19.6113	0.0881814	0.3452767
0.5	5.5301	25.1414	0.097363	0.4426396
0.75	4.368	29.5094	0.076903	0.5195427
1	5.6923	35.2017	0.1002187	0.6197613
1.25	5.2739	40.4756	0.0928523	0.7126136
1.5	6.3049	46.7805	0.1110041	0.8236178
1.75	4.904	51.6845	0.0863399	0.9099576
2	2.4551	54.1396	0.0432245	0.9531821
2.25	1.3479	55.4875	0.0237311	0.9769132
2.5	0.4101	55.8976	0.0072202	0.9841335
2.75	0.3517	56.2493	0.006192	0.9903255
3	0.268	56.5173	0.0047184	0.9950439
3.25	0.1475	56.6648	0.0025969	0.9976408
3.5	0.0718	56.7366	0.0012641	0.9989049
3.75	0.0371	56.7737	0.0006532	0.9995581
4	0.0251	56.7988	0.0004419	1

Total Wt.	56.7988 gms		
Median Weight	28.3994 gms		
Mean Grain Size	0.69 phi	0.6198538 mm	



Cum Wt. % SL2

2.5'

Sample Wt. gms
0
1
2
3
4
5
6
7
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

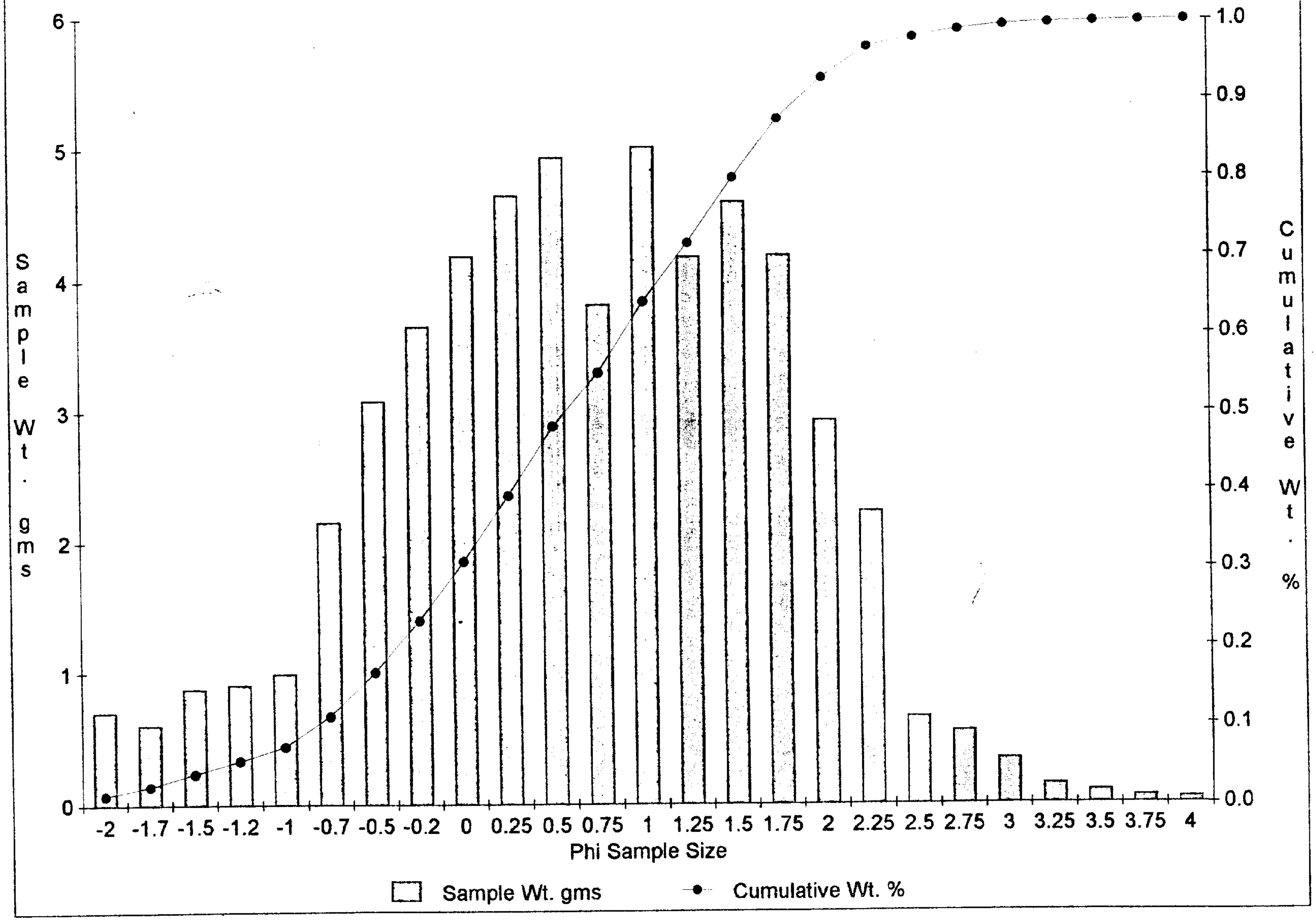
CORE (SL-2)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.7027	0.7027	0.0126404	0.0126404
-1.75	0.6024	1.3051	0.0108362	0.0234767
-1.5	0.8773	2.1824	0.0157812	0.0392579
-1.25	0.9088	3.0912	0.0163479	0.0556057
-1	0.9924	4.0836	0.0178517	0.0734574
-0.75	2.1516	6.2352	0.0387038	0.1121612
-0.5	3.0801	9.3153	0.0554061	0.1675673
-0.25	3.648	12.9633	0.0656217	0.2331889
0	4.1853	17.1486	0.0752868	0.3084758
0.25	4.6498	21.7984	0.0836424	0.3921182
0.5	4.9384	26.7368	0.0888339	0.4809521
0.75	3.8144	30.5512	0.0686149	0.549567
1	5.0213	35.5725	0.0903251	0.6398921
1.25	4.1819	39.7544	0.0752257	0.7151178
1.5	4.6025	44.3569	0.0827916	0.7979094
1.75	4.1898	48.5467	0.0753678	0.8732772
2	2.9279	51.4746	0.0526682	0.9259454
2.25	2.2292	53.7038	0.0400997	0.9660451
2.5	0.658	54.3618	0.0118364	0.9778815
2.75	0.554	54.9158	0.0099656	0.987847
3	0.3403	55.2561	0.0061215	0.9939685
3.25	0.1441	55.4002	0.0025921	0.9965606
3.5	0.0945	55.4947	0.0016999	0.9982605
3.75	0.0547	55.5494	0.000984	0.9992445
4	0.042	55.5914	0.0007555	1

Total Wt.	55.5914 gms	
Median Weight	27.7957 gms	
Mean Grain Size	0.57 phi	0.6736168 mm

Cum Wt. % SL2

3'



Sample Wt. gms
0
1
2
3
4
5
6
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

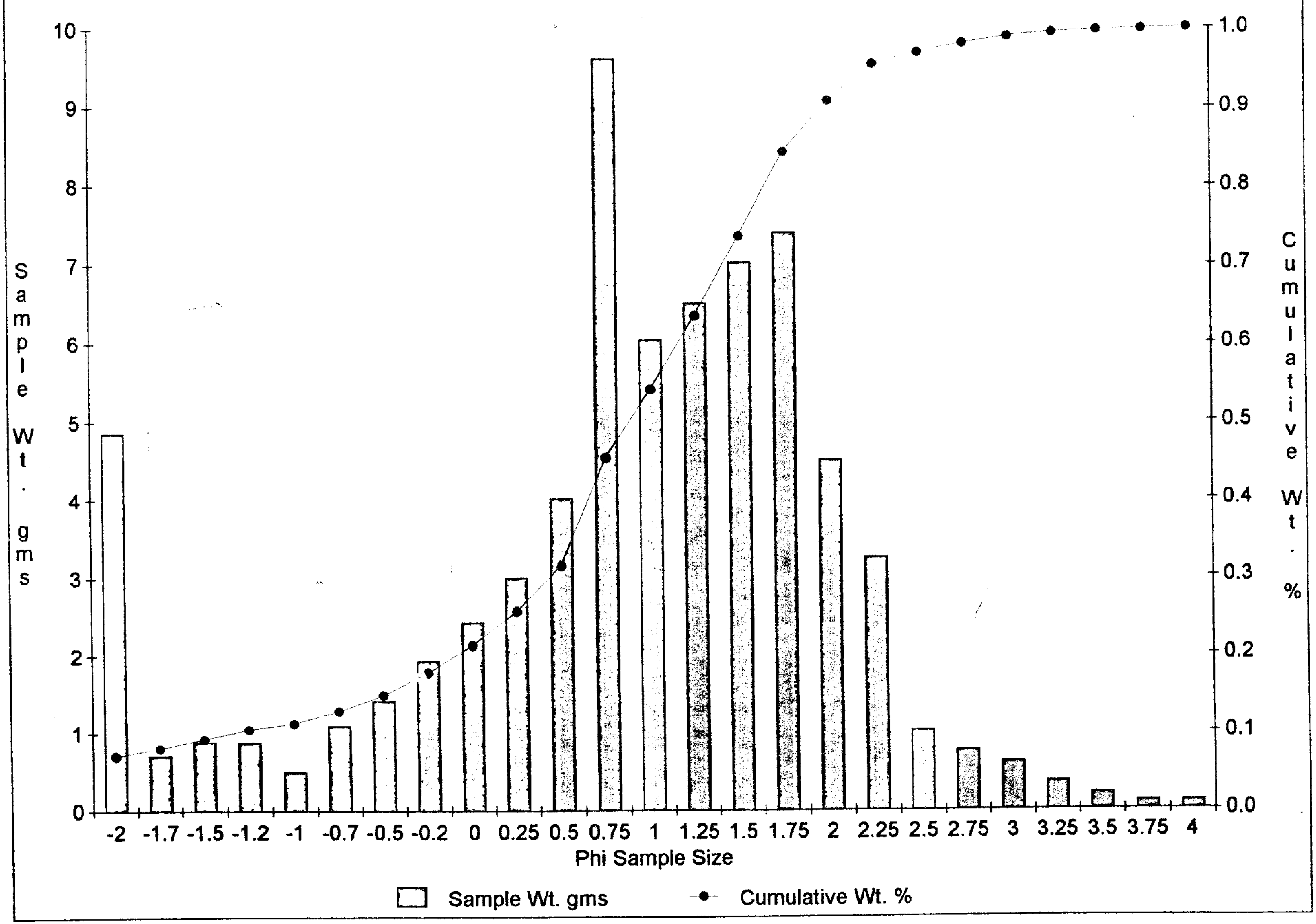
CORE (SL-2)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	4.8609	4.8609	0.0703564	0.0703564
-1.75	0.7047	5.5656	0.0101998	0.0805561
-1.5	0.889	6.4546	0.0128673	0.0934235
-1.25	0.8845	7.3391	0.0128022	0.1062257
-1	0.5004	7.8395	0.0072428	0.1134684
-0.75	1.1014	8.9409	0.0159416	0.12941
-0.5	1.4196	10.3605	0.0205472	0.1499572
-0.25	1.9264	12.2869	0.0278826	0.1778398
0	2.4197	14.7066	0.0350226	0.2128624
0.25	2.9807	17.6873	0.0431425	0.2560049
0.5	3.9978	21.6851	0.0578639	0.3138688
0.75	9.5953	31.2804	0.1388818	0.4527506
1	6.0224	37.3028	0.0871678	0.5399184
1.25	6.4939	43.7967	0.0939923	0.6339107
1.5	7.0121	50.8088	0.1014927	0.7354034
1.75	7.3967	58.2055	0.1070594	0.8424628
2	4.4872	62.6927	0.0649475	0.9074102
2.25	3.2349	65.9276	0.0468217	0.954232
2.5	1.023	66.9506	0.0148068	0.9690388
2.75	0.7689	67.7195	0.011129	0.9801678
3	0.6052	68.3247	0.0087596	0.9889274
3.25	0.3589	68.6836	0.0051947	0.9941221
3.5	0.2003	68.8839	0.0028991	0.9970213
3.75	0.1027	68.9866	0.0014865	0.9985077
4	0.1031	69.0897	0.0014923	1

Total Wt.	69.0897	gms		
Median Weight	34.54485	gms		
Mean Grain Size	0.89	phi	0.5396141	mm

Cum Wt. % SL2

3.5'



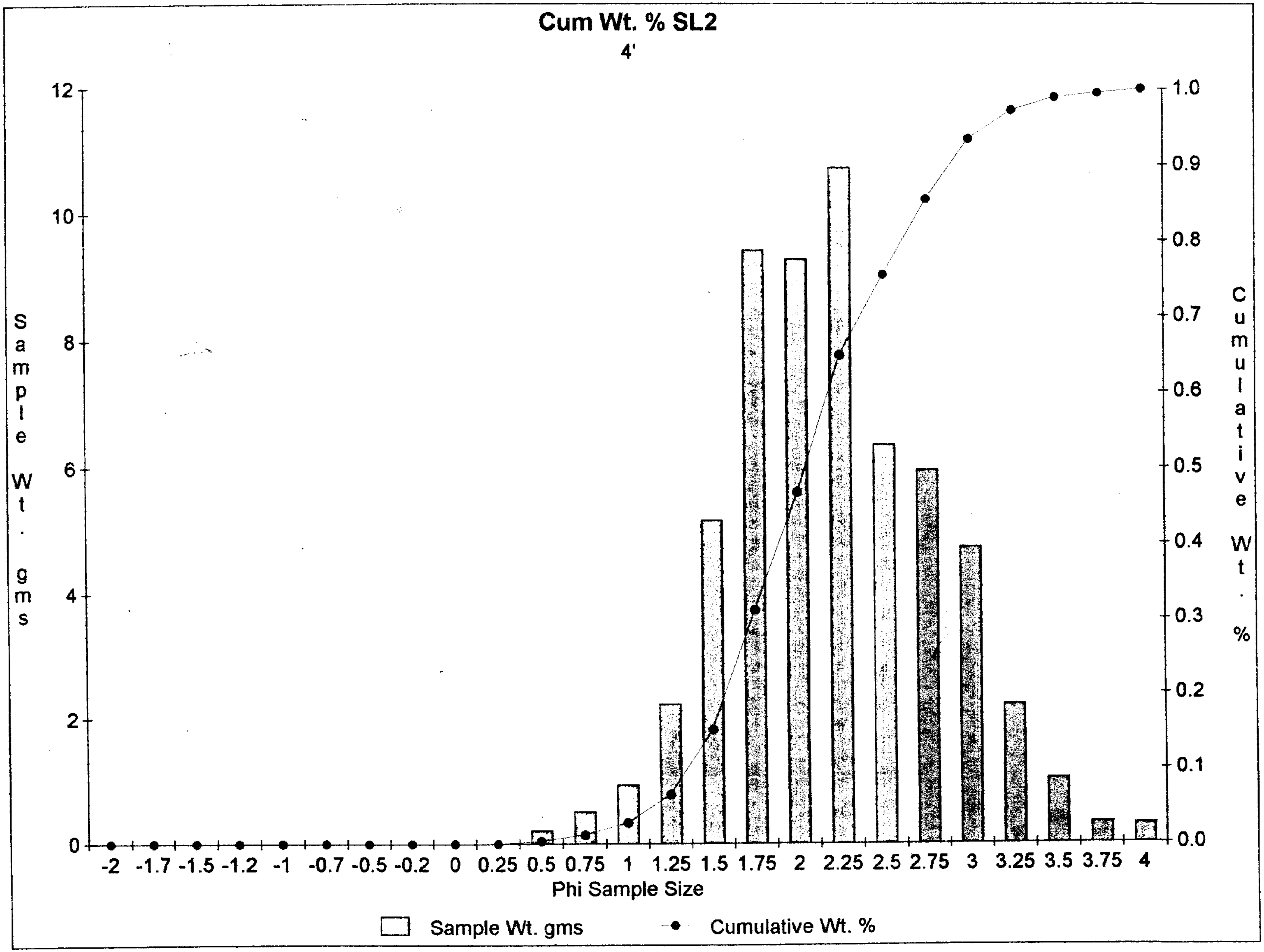
Sample Wt. gms
0
1
2
3
4
5
6
7
8
9
10
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0	0	0	0
0.5	0.2032	0.2032	0.0034192	0.0034192
0.75	0.5046	0.7078	0.0084909	0.0119102
1	0.9284	1.6362	0.0156222	0.0275323
1.25	2.2198	3.856	0.0373526	0.0648849
1.5	5.1492	9.0052	0.0866456	0.1515305
1.75	9.4335	18.4387	0.1587375	0.310268
2	9.2924	27.7311	0.1563632	0.4666312
2.25	10.7499	38.481	0.1808886	0.6475198
2.5	6.3577	44.8387	0.106981	0.7545008
2.75	5.9589	50.7976	0.1002704	0.8547712
3	4.7395	55.5371	0.0797516	0.9345228
3.25	2.223	57.7601	0.0374064	0.9719292
3.5	1.034	58.7941	0.0173991	0.9893283
3.75	0.328	59.1221	0.0055193	0.9948476
4	0.3062	59.4283	0.0051524	1

Total Wt.	59.4283 gms		
Median Weight	29.71415 gms		
Mean Grain Size	2.04 phi	0.2431637 mm	


Cum Wt. % SL2
4'

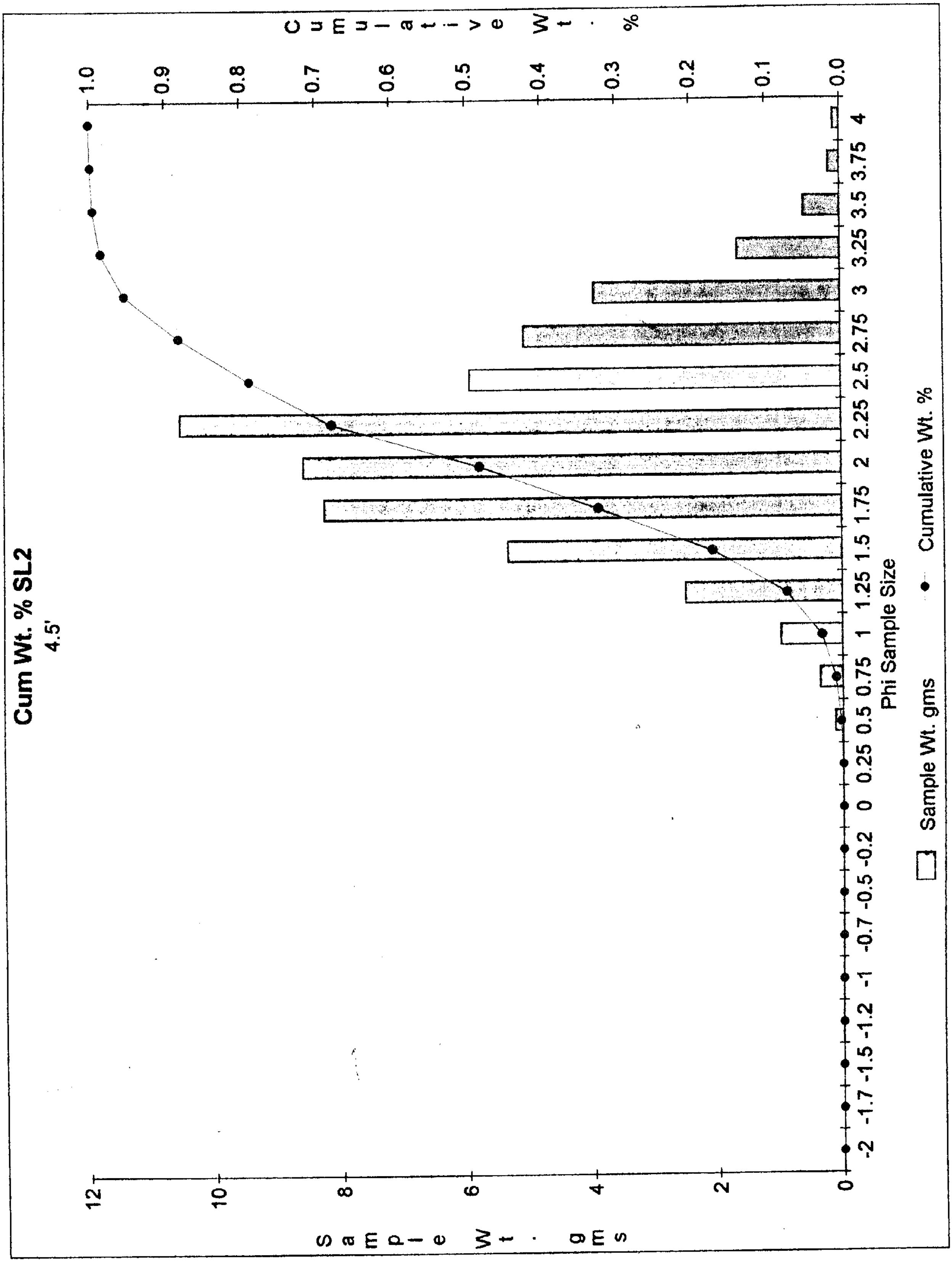
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.008	0.008	0.0001478	0.0001478
-1	0	0.008	0	0.0001478
-0.75	0	0.008	0	0.0001478
-0.5	0	0.008	0	0.0001478
-0.25	0	0.008	0	0.0001478
0	0	0.008	0	0.0001478
0.25	0	0.008	0	0.0001478
0.5	0.122	0.13	0.0022535	0.0024013
0.75	0.3486	0.4786	0.0064392	0.0088405
1	0.9809	1.4595	0.0181188	0.0269594
1.25	2.493	3.9525	0.0460498	0.0730092
1.5	5.3351	9.2876	0.0985481	0.1715573
1.75	8.2551	17.5427	0.1524854	0.3240427
2	8.593	26.1357	0.1587269	0.4827696
2.25	10.5477	36.6834	0.1948335	0.6776031
2.5	5.9449	42.6283	0.1098121	0.7874153
2.75	5.0695	47.6978	0.0936421	0.8810573
3	3.947	51.6448	0.0729076	0.9539649
3.25	1.644	53.2888	0.0303674	0.9843323
3.5	0.5721	53.8609	0.0105676	0.9949
3.75	0.1749	54.0358	0.0032307	0.9981307
4	0.1012	54.137	0.0018693	1

Total Wt.	54.137 gms	
Median Weight	27.0685 gms	
Mean Grain Size	2.02 phi	0.2465582 mm

Cum Wt. % SL2
4.5'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

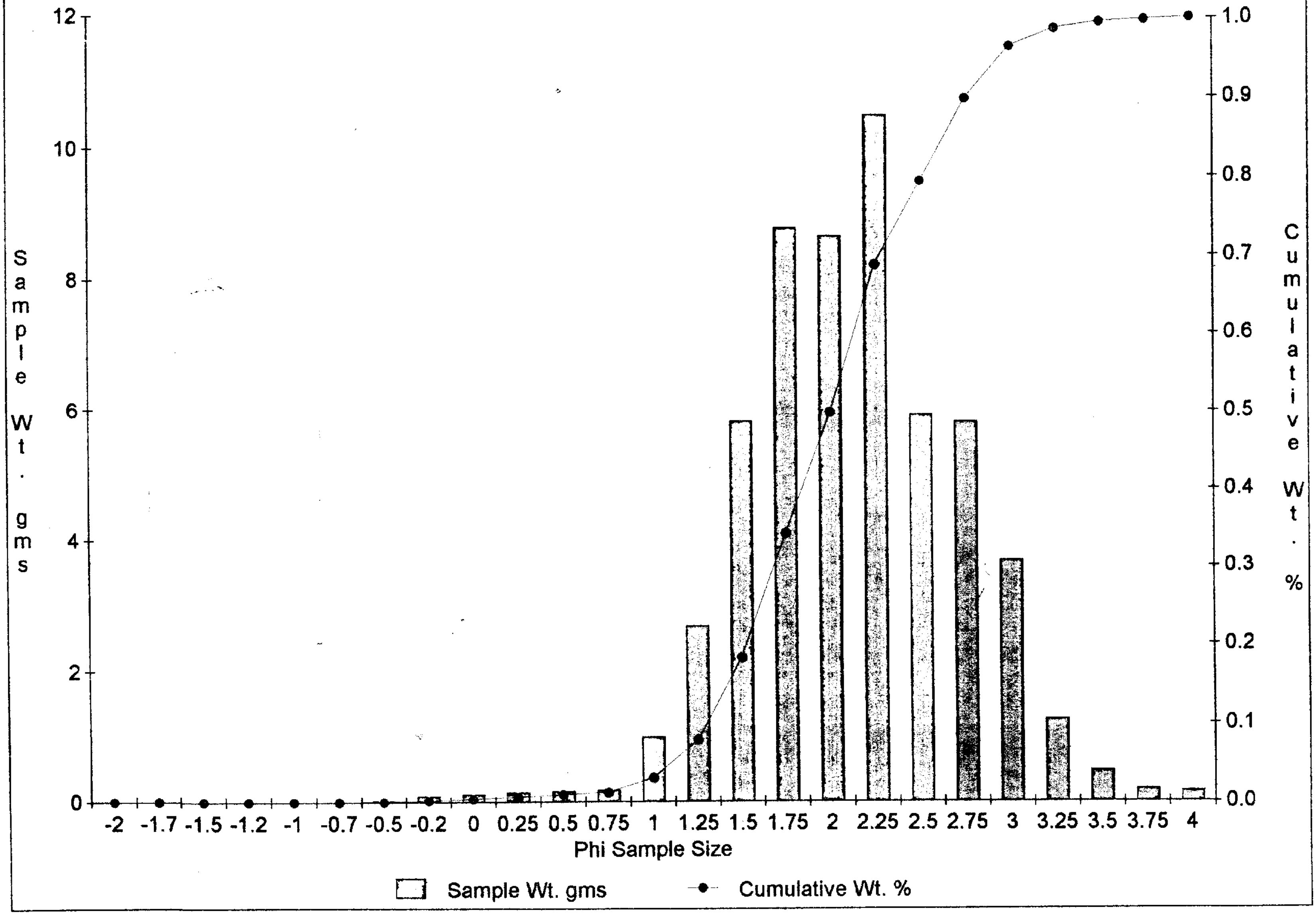
CORE (SL-2)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0113	0.0113	0.0002036	0.0002036
-0.25	0.0852	0.0965	0.001535	0.0017386
0	0.1102	0.2067	0.0019855	0.0037241
0.25	0.1401	0.3468	0.0025242	0.0062482
0.5	0.1512	0.498	0.0027241	0.0089724
0.75	0.1672	0.6652	0.0030124	0.0119848
1	0.9704	1.6356	0.0174836	0.0294684
1.25	2.6637	4.2993	0.0479915	0.0774598
1.5	5.8114	10.1107	0.1047031	0.182163
1.75	8.7838	18.8945	0.1582564	0.3404194
2	8.6572	27.5517	0.1559755	0.4963948
2.25	10.5005	38.0522	0.1891859	0.6855808
2.5	5.917	43.9692	0.1066057	0.7921865
2.75	5.8098	49.779	0.1046743	0.8968607
3	3.6802	53.4592	0.0663056	0.9631664
3.25	1.2516	54.7108	0.0225499	0.9857162
3.5	0.4559	55.1667	0.0082139	0.9939301
3.75	0.1868	55.3535	0.0033655	0.9972957
4	0.1501	55.5036	0.0027043	1

Total Wt.	55.5036 gms		
Median Weight	27.7518 gms		
Mean Grain Size	2 phi	0.25 mm	

Cum Wt. % SL2

5'



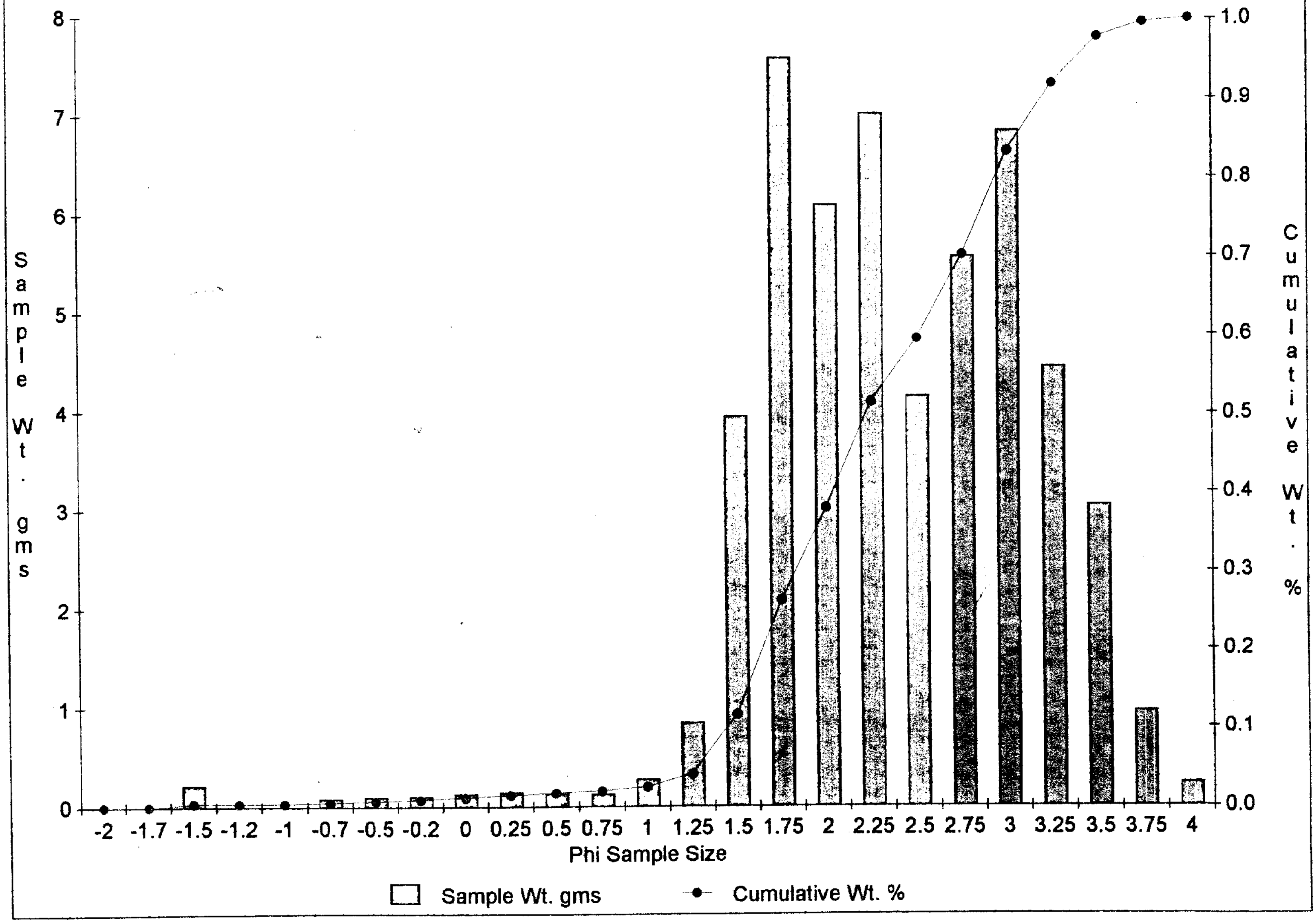
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-2)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.214	0.214	0.004103	0.004103
-1.25	0	0.214	0	0.004103
-1	0	0.214	0	0.004103
-0.75	0.0804	0.2944	0.0015415	0.0056445
-0.5	0.0989	0.3933	0.0018962	0.0075407
-0.25	0.1001	0.4934	0.0019192	0.0094599
0	0.1281	0.6215	0.002456	0.0119159
0.25	0.1434	0.7649	0.0027494	0.0146653
0.5	0.1279	0.8928	0.0024522	0.0171175
0.75	0.1207	1.0135	0.0023142	0.0194316
1	0.2631	1.2766	0.0050444	0.024476
1.25	0.8439	2.1205	0.0161799	0.0406559
1.5	3.9533	6.0738	0.0757959	0.1164518
1.75	7.5991	13.6729	0.1456961	0.2621479
2	6.107	19.7799	0.1170883	0.3792362
2.25	7.036	26.8159	0.1348999	0.5141361
2.5	4.1668	30.9827	0.0798893	0.5940254
2.75	5.5829	36.5656	0.1070399	0.7010652
3	6.8687	43.4343	0.1316923	0.8327575
3.25	4.4652	47.8995	0.0856104	0.9183679
3.5	3.067	50.9665	0.058803	0.9771709
3.75	0.9606	51.9271	0.0184174	0.9955883
4	0.2301	52.1572	0.0044117	1

Total Wt.	52.1572 gms		
Median Weight	26.0786 gms		
Mean Grain Size	2.22 phi	0.2146414 mm	


Cum Wt. % SL2

6'

8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

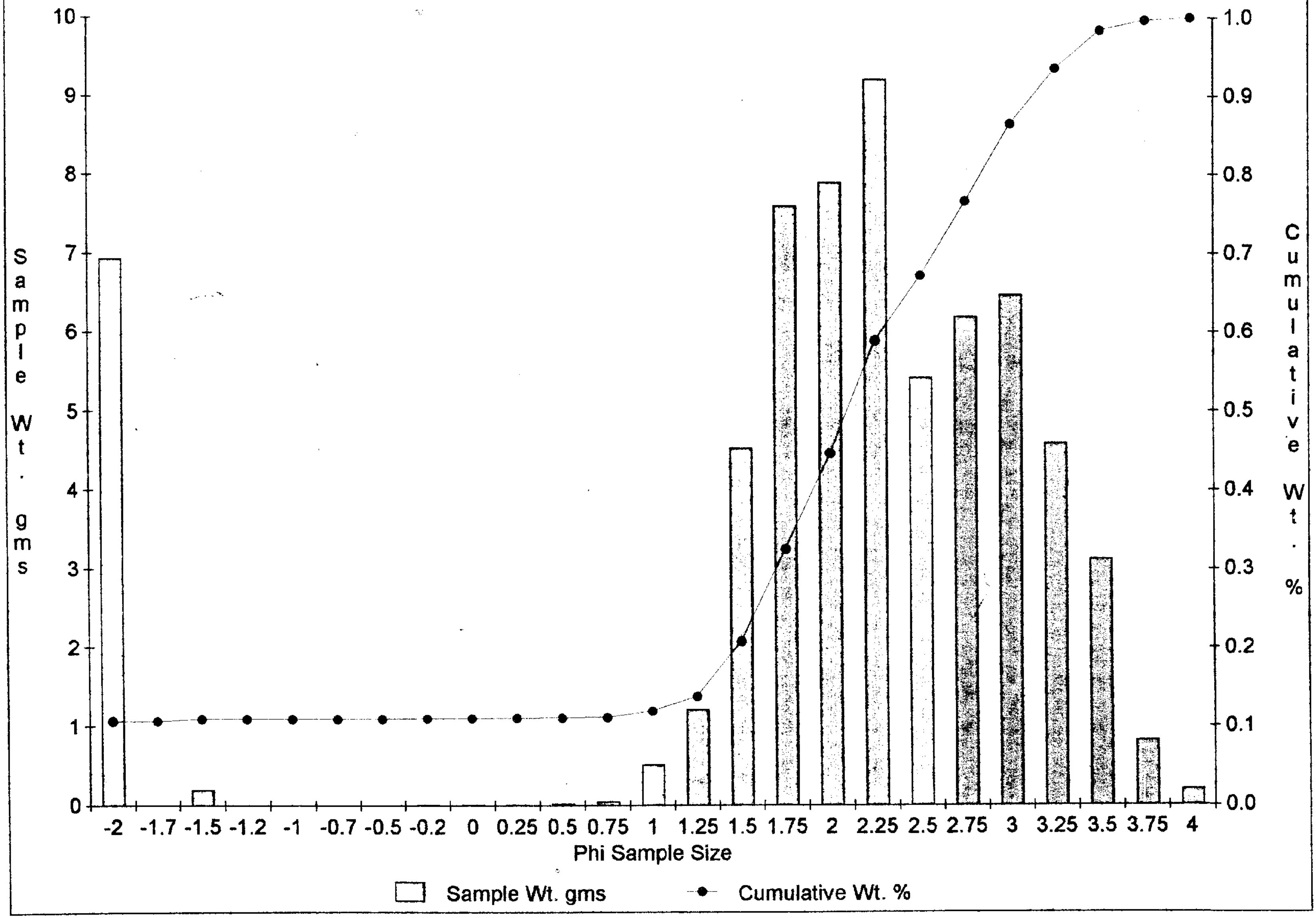
CORE (SL-2)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	6.928	6.928	0.1067818	0.1067818
-1.75	0	6.928	0	0.1067818
-1.5	0.193	7.121	0.0029747	0.1097565
-1.25	0	7.121	0	0.1097565
-1	0	7.121	0	0.1097565
-0.75	0	7.121	0	0.1097565
-0.5	0	7.121	0	0.1097565
-0.25	0.0074	7.1284	0.0001141	0.1098705
0	0.0054	7.1338	8.323E-05	0.1099538
0.25	0.0072	7.141	0.000111	0.1100647
0.5	0.0207	7.1617	0.0003191	0.1103838
0.75	0.0438	7.2055	0.0006751	0.1110589
1	0.5019	7.7074	0.0077358	0.1187947
1.25	1.2016	8.909	0.0185203	0.137315
1.5	4.5094	13.4184	0.0695037	0.2068187
1.75	7.586	21.0044	0.1169236	0.3237423
2	7.8896	28.894	0.121603	0.4453453
2.25	9.2109	38.1049	0.1419682	0.5873135
2.5	5.4047	43.5096	0.083303	0.6706165
2.75	6.1804	49.69	0.0952589	0.7658755
3	6.463	56.153	0.0996147	0.8654901
3.25	4.5866	60.7396	0.0706936	0.9361837
3.5	3.1207	63.8603	0.0480996	0.9842833
3.75	0.82	64.6803	0.0126387	0.996922
4	0.1997	64.88	0.003078	1

Total Wt.	64.88	gms	
Median Weight	32.44	gms	
Mean Grain Size	2.1	phi	0.2332582 mm

Cum Wt. % SL2

7'



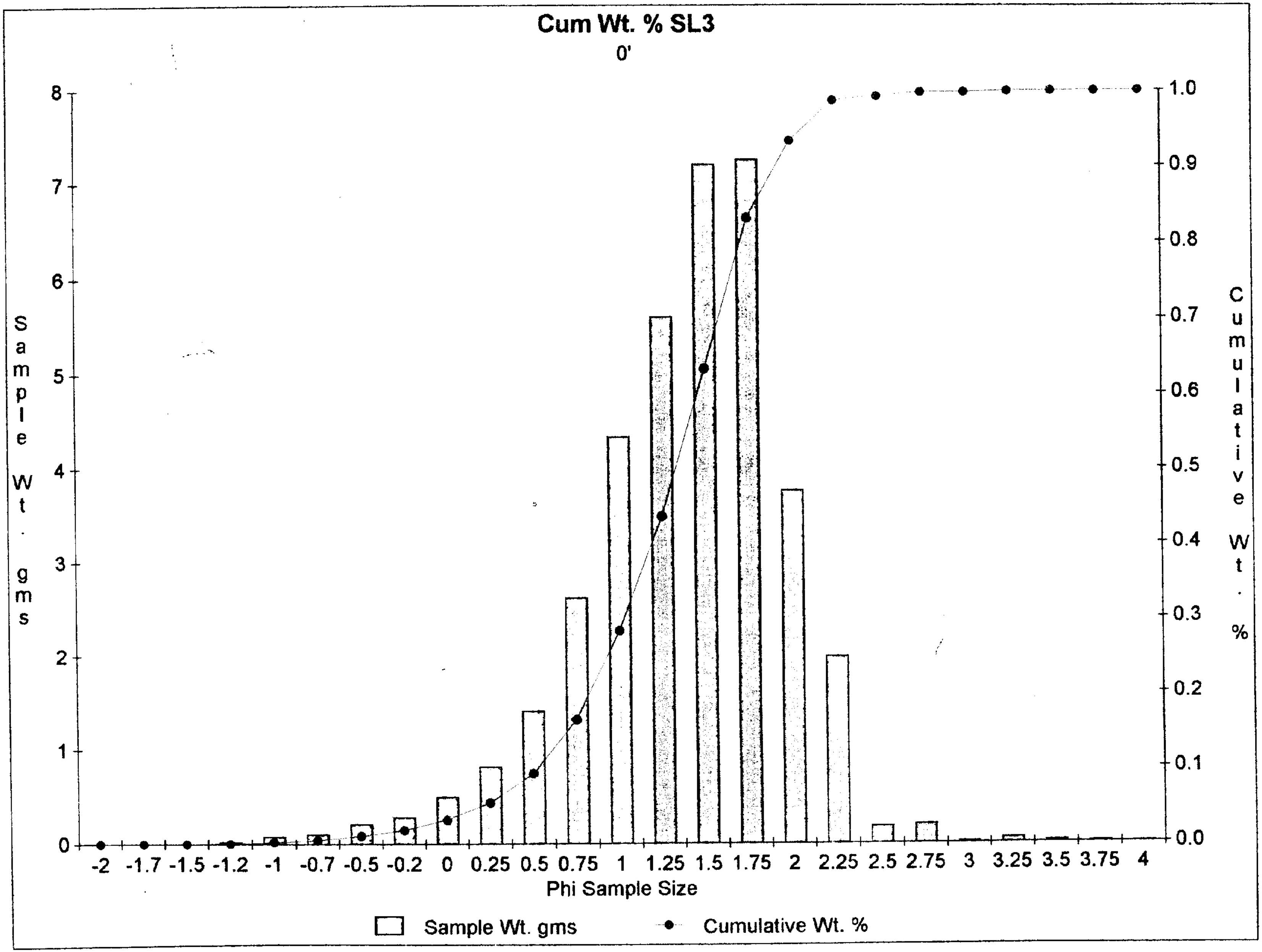
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-3)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0197	0.0197	0.000538	0.000538
-1	0.0742	0.0939	0.0020264	0.0025644
-0.75	0.1001	0.194	0.0027338	0.0052982
-0.5	0.2105	0.4045	0.0057488	0.0110471
-0.25	0.2819	0.6864	0.0076988	0.0187459
0	0.4962	1.1826	0.0135514	0.0322973
0.25	0.813	1.9956	0.0222033	0.0545006
0.5	1.4027	3.3983	0.0383083	0.0928089
0.75	2.6054	6.0037	0.0711545	0.1639634
1	4.3279	10.3316	0.1181966	0.28216
1.25	5.6038	15.9354	0.153042	0.435202
1.5	7.2126	23.148	0.1969789	0.6321809
1.75	7.2601	30.4081	0.1982762	0.8304571
2	3.7542	34.1623	0.1025287	0.9329858
2.25	1.978	36.1403	0.05402	0.9870057
2.5	0.1793	36.3196	0.0048968	0.9919025
2.75	0.2006	36.5202	0.0054785	0.9973809
3	0.0126	36.5328	0.0003441	0.997725
3.25	0.048	36.5808	0.0013109	0.9990359
3.5	0.0196	36.6004	0.0005353	0.9995712
3.75	0.0096	36.61	0.0002622	0.9998334
4	0.0061	36.6161	0.0001666	1

Total Wt.	36.6161 gms		
Median Weight	18.30805 gms		
Mean Grain Size	1.33 phi	0.3977682 mm	


Cum Wt. % SL3
0'
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

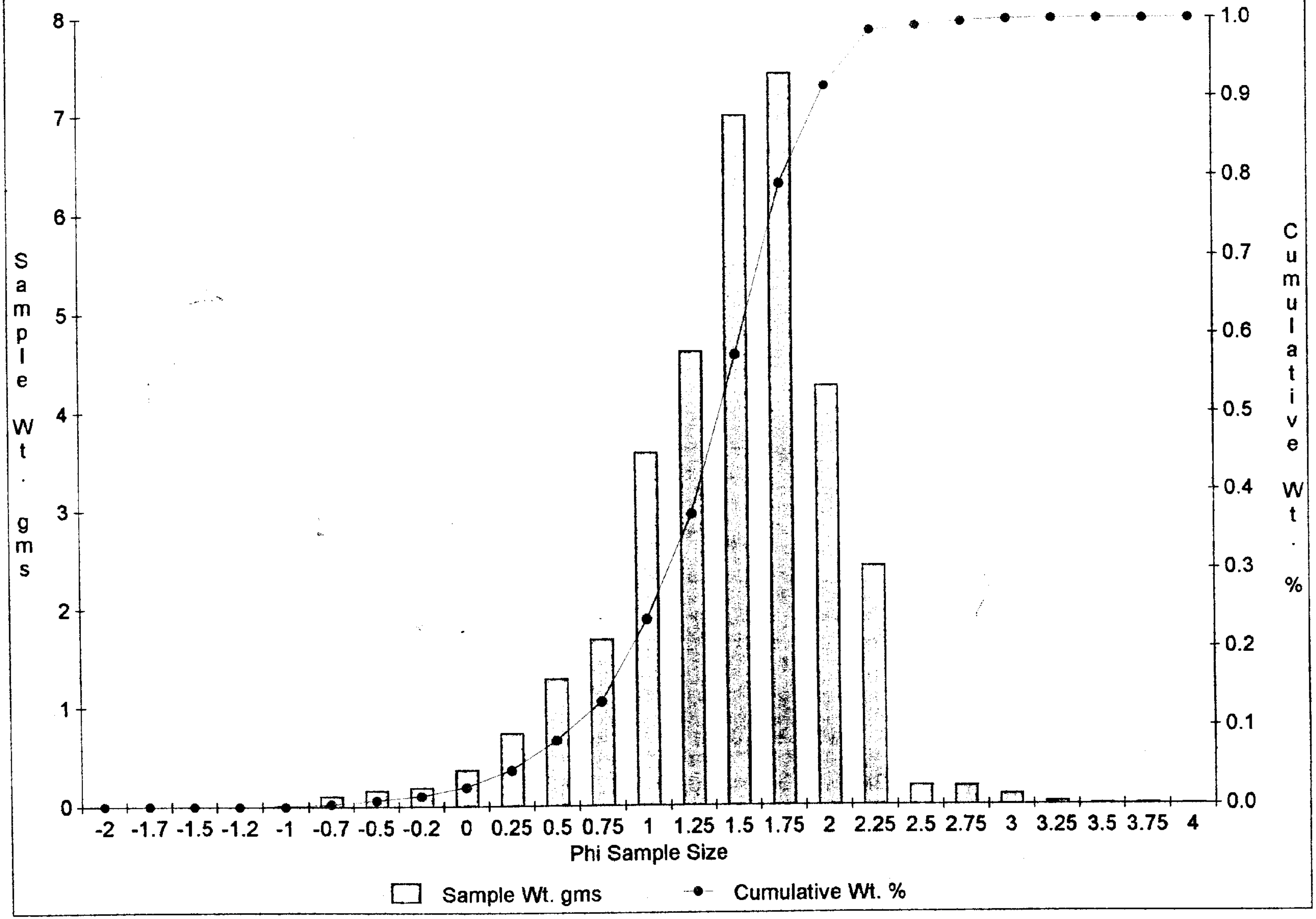
CORE (SL-3)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0084	0.0084	0.0002443	0.0002443
-0.75	0.1038	0.1122	0.0030193	0.0032636
-0.5	0.1601	0.2723	0.0046569	0.0079206
-0.25	0.1859	0.4582	0.0054074	0.013328
0	0.3627	0.8209	0.0105501	0.0238781
0.25	0.7314	1.5523	0.0212747	0.0451528
0.5	1.2804	2.8327	0.0372439	0.0823967
0.75	1.6774	4.5101	0.0487917	0.1311884
1	3.5836	8.0937	0.1042387	0.2354271
1.25	4.615	12.7087	0.1342397	0.3696668
1.5	6.9939	19.7026	0.2034364	0.5731032
1.75	7.4274	27.13	0.2160459	0.7891491
2	4.2746	31.4046	0.1243383	0.9134874
2.25	2.4306	33.8352	0.0707005	0.9841879
2.5	0.1928	34.028	0.0056081	0.989796
2.75	0.1878	34.2158	0.0054627	0.9952587
3	0.1087	34.3245	0.0031618	0.9984205
3.25	0.031	34.3555	0.0009017	0.9993223
3.5	0.0112	34.3667	0.0003258	0.999648
3.75	0.0064	34.3731	0.0001862	0.9998342
4	0.0057	34.3788	0.0001658	1

Total Wt.	34.3788 gms		
Median Weight	17.1894 gms		
Mean Grain Size	1.41 phi	0.3763117 mm	

Cum Wt. % SL3

0.5'

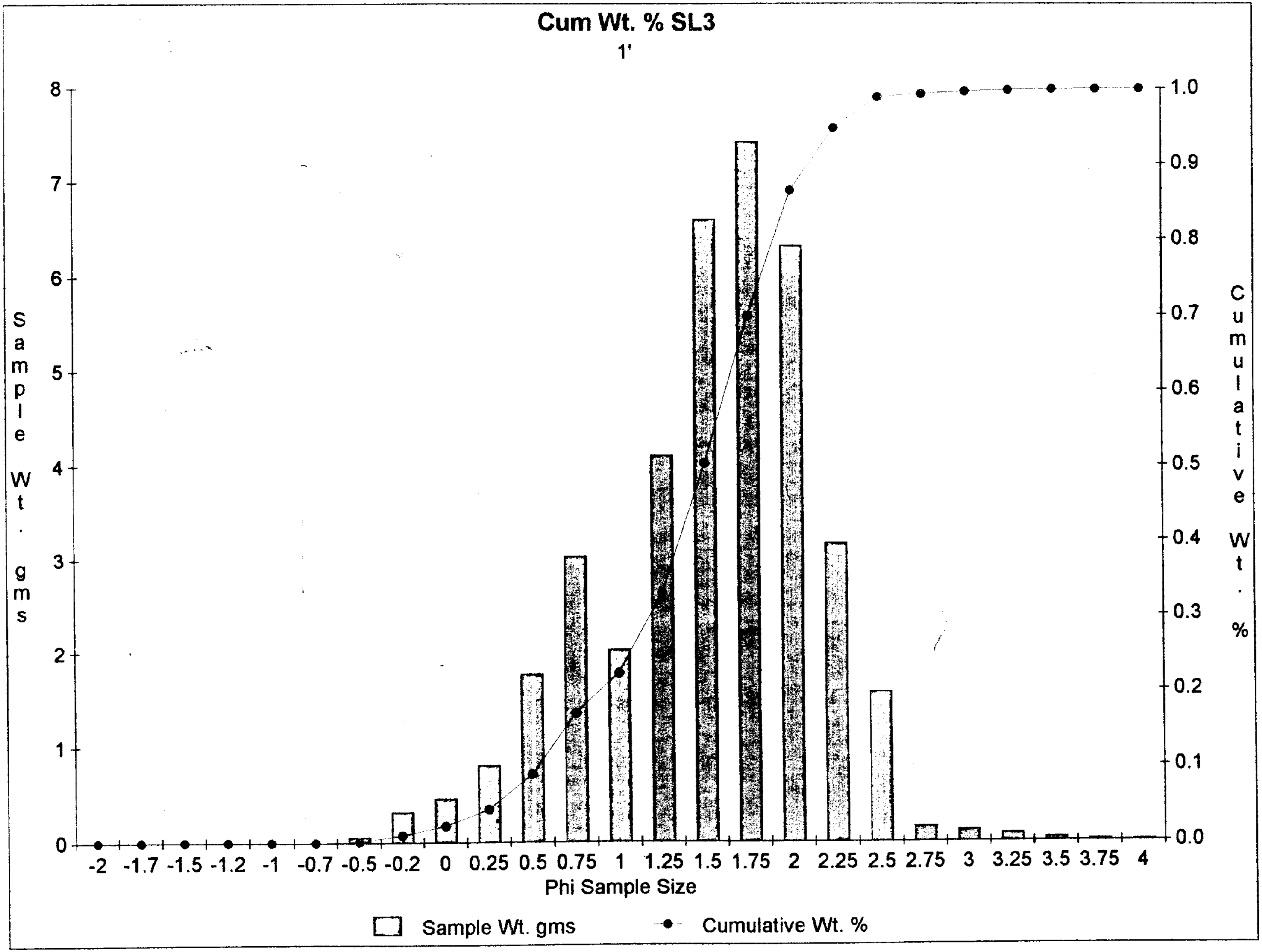

Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-3)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0551	0.0551	0.001448	0.001448
-0.25	0.3146	0.3697	0.0082678	0.0097159
0	0.4562	0.8259	0.0119891	0.021705
0.25	0.8042	1.6301	0.0211347	0.0428396
0.5	1.7623	3.3924	0.0463139	0.0891536
0.75	3.023	6.4154	0.0794456	0.1685992
1	2.021	8.4364	0.0531126	0.2217118
1.25	4.1023	12.5387	0.10781	0.3295218
1.5	6.6063	19.145	0.1736161	0.5031379
1.75	7.4379	26.5829	0.1954708	0.6986087
2	6.3328	32.9157	0.1664284	0.8650371
2.25	3.1648	36.0805	0.0831721	0.9482093
2.5	1.5677	37.6482	0.0411998	0.989409
2.75	0.1506	37.7988	0.0039578	0.9933668
3	0.1149	37.9137	0.0030196	0.9963864
3.25	0.0806	37.9943	0.0021182	0.9985046
3.5	0.0329	38.0272	0.0008646	0.9993693
3.75	0.0165	38.0437	0.0004336	0.9998029
4	0.0075	38.0512	0.0001971	1

Total Wt.	38.0512 gms
Median Weight	19.0256 gms
Mean Grain Size	1.5 phi 0.3535534 mm

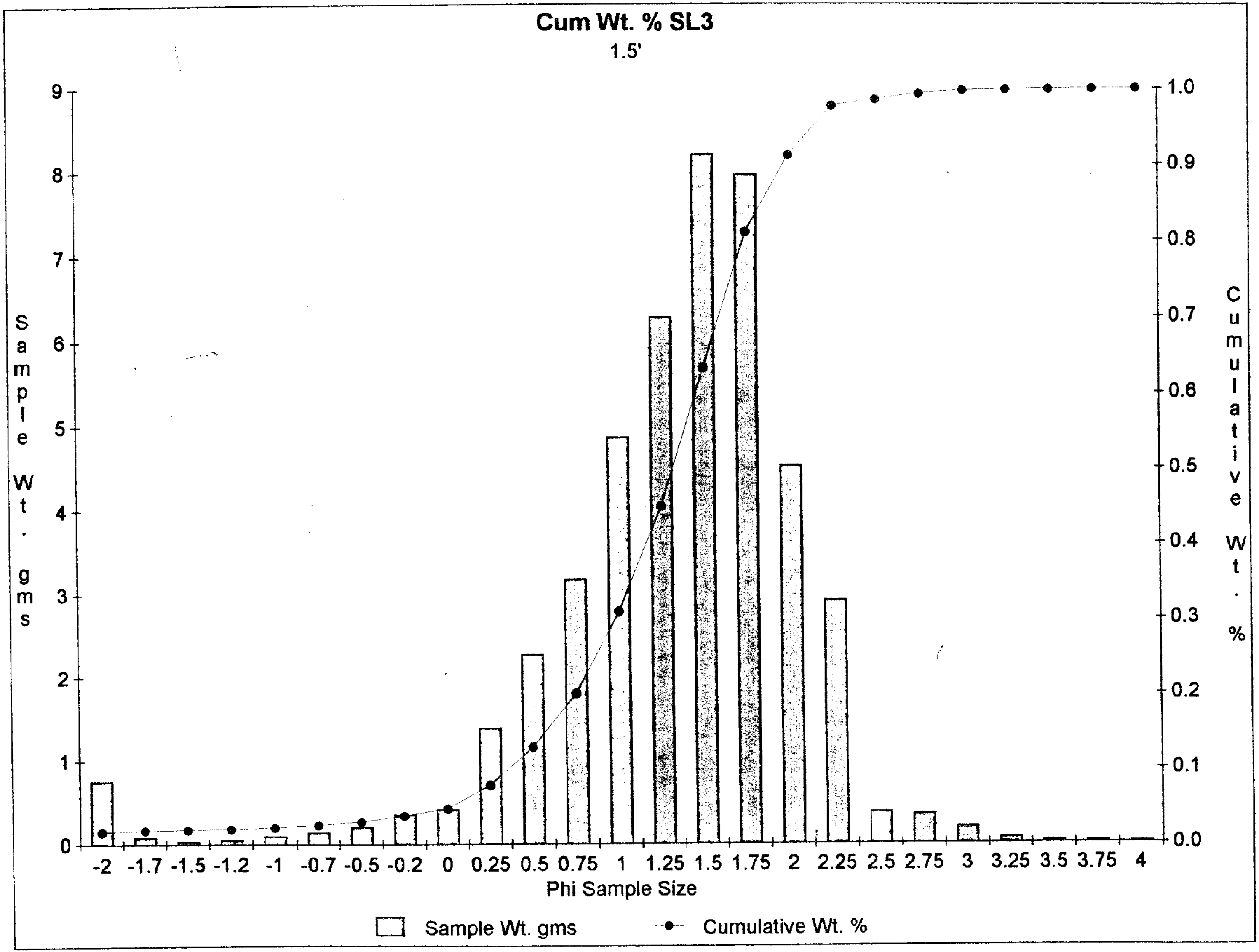

Cum Wt. % SL3
1'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
1
2
3
4
5
6
7
8
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-3)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.754	0.754	0.0168532	0.0168532
-1.75	0.081	0.835	0.0018105	0.0186636
-1.5	0.0315	0.8665	0.0007041	0.0193677
-1.25	0.0529	0.9194	0.0011824	0.0205501
-1	0.0941	1.0135	0.0021033	0.0226534
-0.75	0.145	1.1585	0.003241	0.0258944
-0.5	0.2036	1.3621	0.0045508	0.0304452
-0.25	0.3512	1.7133	0.0078499	0.0382951
0	0.4108	2.1241	0.0091821	0.0474772
0.25	1.3852	3.5093	0.0309615	0.0784387
0.5	2.2646	5.7739	0.0506176	0.1290563
0.75	3.1581	8.932	0.0705888	0.1996451
1	4.862	13.794	0.1086738	0.3083188
1.25	6.2878	20.0818	0.1405428	0.4488616
1.5	8.212	28.2938	0.1835519	0.6324135
1.75	7.9681	36.2619	0.1781003	0.8105138
2	4.5226	40.7845	0.1010876	0.9116014
2.25	2.9148	43.6993	0.0651506	0.976752
2.5	0.3712	44.0705	0.0082969	0.985049
2.75	0.3455	44.416	0.0077225	0.9927715
3	0.193	44.609	0.0043139	0.9970853
3.25	0.0623	44.6713	0.0013925	0.9984779
3.5	0.0281	44.6994	0.0006281	0.9991059
3.75	0.0225	44.7219	0.0005029	0.9996088
4	0.0175	44.7394	0.0003912	1

Total Wt.	44.7394 gms	
Median Weight	22.3697 gms	
Mean Grain Size	1.32 phi	0.4005349 mm


Cum Wt. % SL3
1.5'
Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

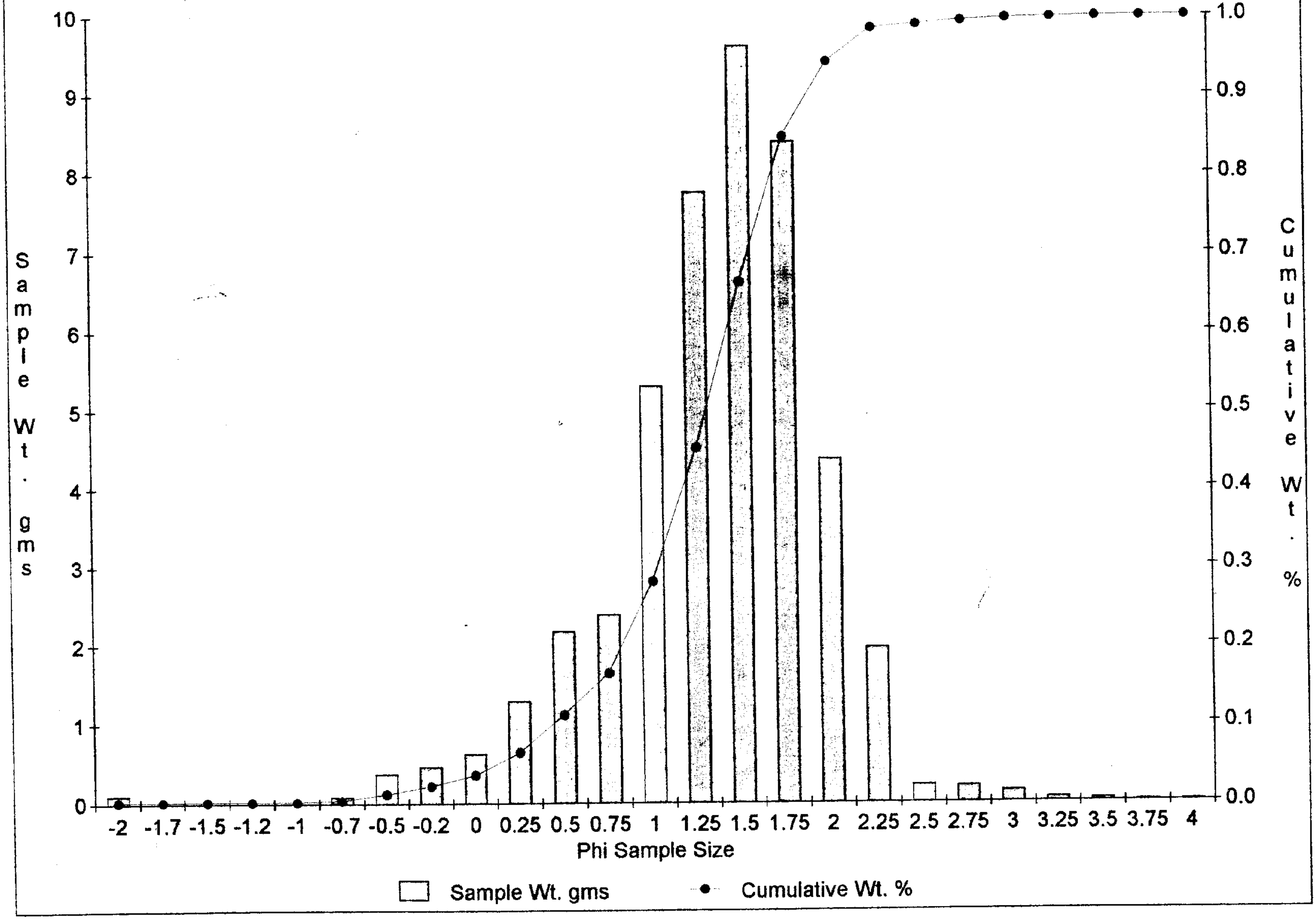
CORE (SL-3)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.1017	0.1017	0.0022352	0.0022352
-1.75	0	0.1017	0	0.0022352
-1.5	0	0.1017	0	0.0022352
-1.25	0	0.1017	0	0.0022352
-1	0	0.1017	0	0.0022352
-0.75	0.082	0.1837	0.0018023	0.0040375
-0.5	0.3707	0.5544	0.0081475	0.012185
-0.25	0.4604	1.0148	0.010119	0.022304
0	0.618	1.6328	0.0135828	0.0358868
0.25	1.2832	2.916	0.0282031	0.0640899
0.5	2.1604	5.0764	0.0474828	0.1115727
0.75	2.3706	7.447	0.0521027	0.1636754
1	5.2925	12.7395	0.1163223	0.2799976
1.25	7.7624	20.5019	0.1706074	0.4506051
1.5	9.628	30.1299	0.2116109	0.662216
1.75	8.4019	38.5318	0.1846628	0.8468788
2	4.3539	42.8857	0.0956931	0.9425719
2.25	1.9485	44.8342	0.0428255	0.9853974
2.5	0.2164	45.0506	0.0047562	0.9901535
2.75	0.2006	45.2512	0.0044089	0.9945625
3	0.1374	45.3886	0.0030199	0.9975823
3.25	0.0518	45.4404	0.0011385	0.9987208
3.5	0.0325	45.4729	0.0007143	0.9994351
3.75	0.0142	45.4871	0.0003121	0.9997472
4	0.0115	45.4986	0.0002528	1

Total Wt.	45.4986 gms		
Median Weight	22.7493 gms		
Mean Grain Size	1.31	phi	0.4033209 mm

Cum Wt. % SL3

2'

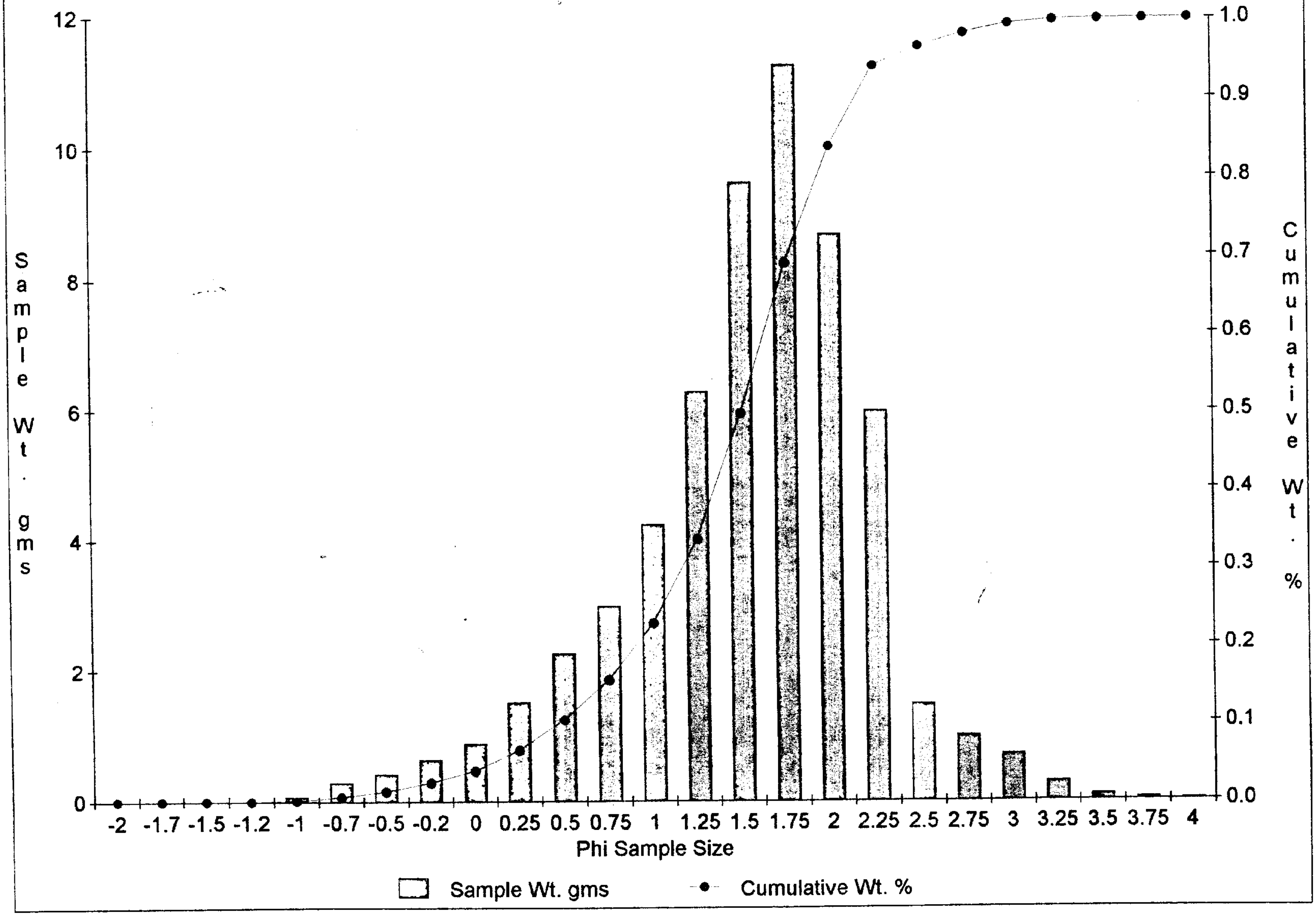

Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-3)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0697	0.0697	0.0011918	0.0011918
-0.75	0.2814	0.3511	0.0048117	0.0060035
-0.5	0.4137	0.7648	0.0070739	0.0130773
-0.25	0.6316	1.3964	0.0107998	0.0238771
0	0.8699	2.2663	0.0148745	0.0387516
0.25	1.5045	3.7708	0.0257255	0.0644771
0.5	2.2504	6.0212	0.0384797	0.1029568
0.75	2.9735	8.9947	0.050844	0.1538008
1	4.2232	13.2179	0.0722127	0.2260135
1.25	6.271	19.4889	0.1072281	0.3332416
1.5	9.4876	28.9765	0.1622289	0.4954705
1.75	11.2742	40.2507	0.192778	0.6882485
2	8.6975	48.9482	0.1487189	0.8369675
2.25	5.9792	54.9274	0.1022386	0.9392061
2.5	1.4728	56.4002	0.0251835	0.9643895
2.75	0.9794	57.3796	0.0167468	0.9811363
3	0.6951	58.0747	0.0118855	0.9930219
3.25	0.2818	58.3565	0.0048185	0.9978404
3.5	0.0794	58.4359	0.0013577	0.9991981
3.75	0.0327	58.4686	0.0005591	0.9997572
4	0.0142	58.4828	0.0002428	1

Total Wt.	58.4828 gms		
Median Weight	29.2414 gms		
Mean Grain Size	1.51 phi	0.3511112	mm



Cum Wt. % SL3

2.5'

12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

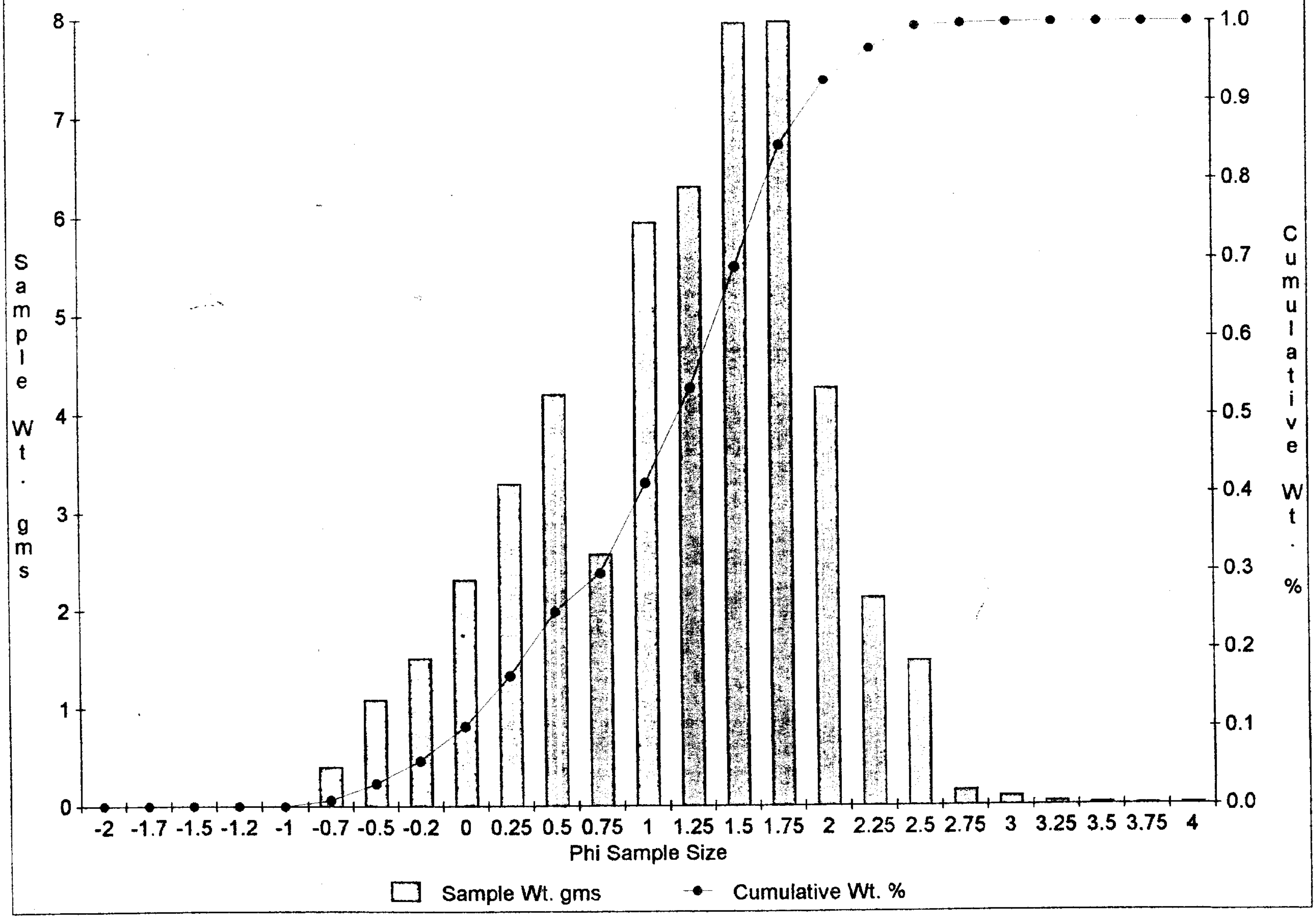
CORE (SL-3)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.4004	0.4004	0.0077392	0.0077392
-0.5	1.0918	1.4922	0.021103	0.0288421
-0.25	1.5043	2.9965	0.029076	0.0579182
0	2.3002	5.2967	0.0444596	0.1023778
0.25	3.2819	8.5786	0.0634345	0.1658123
0.5	4.1983	12.7769	0.0811473	0.2469596
0.75	2.5632	15.3401	0.0495431	0.2965027
1	5.9459	21.286	0.1149259	0.4114286
1.25	6.3082	27.5942	0.1219287	0.5333573
1.5	7.9754	35.5696	0.1541533	0.6875106
1.75	7.9895	43.5591	0.1544259	0.8419365
2	4.2696	47.8287	0.0825254	0.9244619
2.25	2.1178	49.9465	0.0409341	0.965396
2.5	1.4728	51.4193	0.0284672	0.9938632
2.75	0.1536	51.5729	0.0029689	0.996832
3	0.0917	51.6646	0.0017724	0.9986045
3.25	0.0336	51.6982	0.0006494	0.9992539
3.5	0.0176	51.7158	0.0003402	0.9995941
3.75	0.0089	51.7247	0.000172	0.9997661
4	0.0121	51.7368	0.0002339	1

Total Wt.	51.7368 gms	
Median Weight	25.8684 gms	
Mean Grain Size	1.18 phi	0.4413515 mm

Cum Wt. % SL3

3'


8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

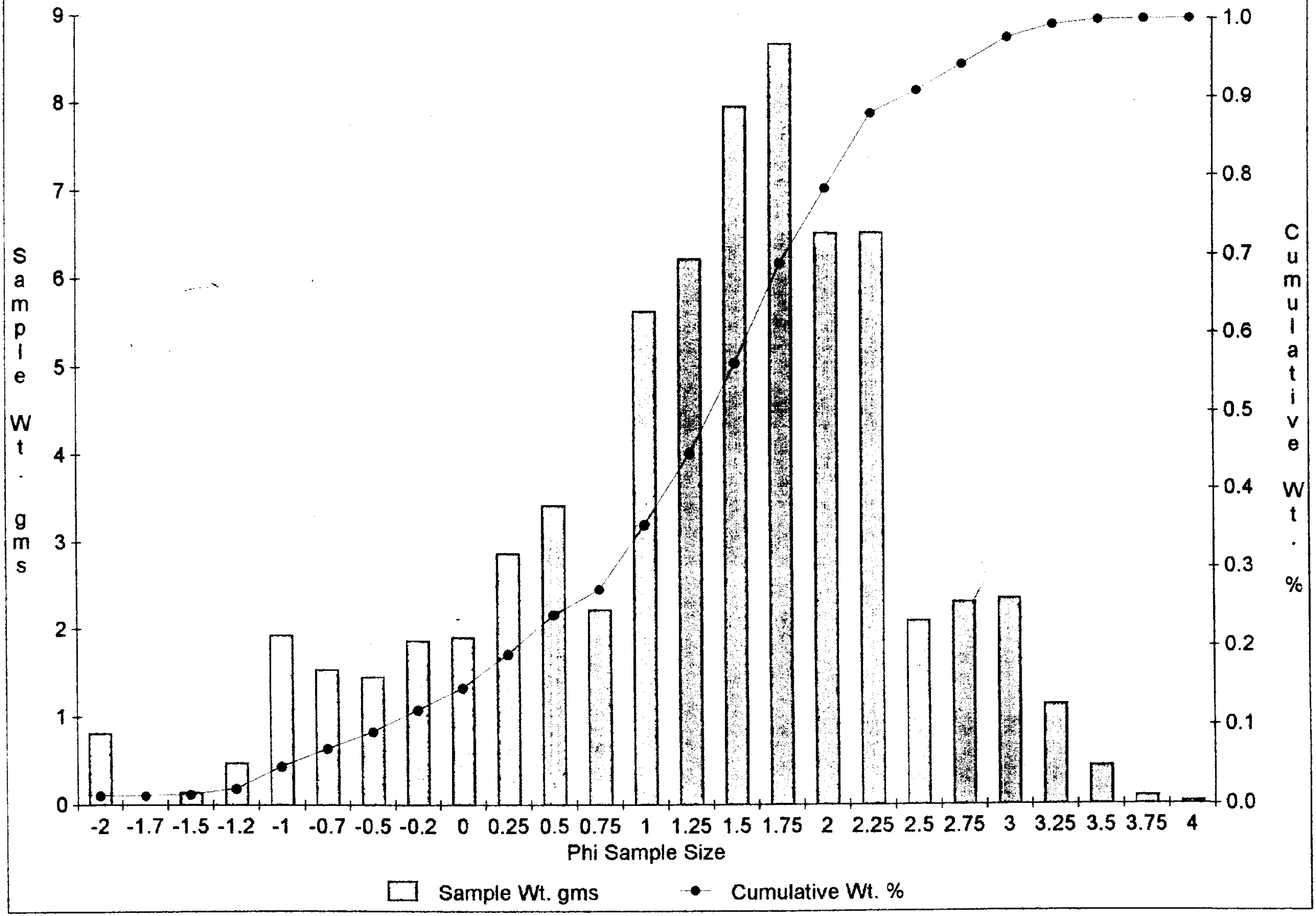
CORE (SL-3)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.8081	0.8081	0.0117879	0.0117879
-1.75	0	0.8081	0	0.0117879
-1.5	0.1417	0.9498	0.002067	0.0138549
-1.25	0.479	1.4288	0.0069873	0.0208422
-1	1.9327	3.3615	0.0281927	0.0490349
-0.75	1.5419	4.9034	0.022492	0.0715269
-0.5	1.454	6.3574	0.0212098	0.0927367
-0.25	1.8595	8.2169	0.0271249	0.1198617
0	1.8909	10.1078	0.027583	0.1474446
0.25	2.8512	12.959	0.0415911	0.1890357
0.5	3.3985	16.3575	0.0495746	0.2386103
0.75	2.2072	18.5647	0.0321969	0.2708072
1	5.6271	24.1918	0.0820837	0.3528909
1.25	6.2251	30.4169	0.0908068	0.4436977
1.5	7.9603	38.3772	0.1161186	0.5598163
1.75	8.689	47.0662	0.1267483	0.6865646
2	6.5276	53.5938	0.0952195	0.7817841
2.25	6.5332	60.127	0.0953012	0.8770852
2.5	2.0819	62.2089	0.0303691	0.9074544
2.75	2.3011	64.51	0.0335666	0.941021
3	2.345	66.855	0.034207	0.975228
3.25	1.1382	67.9932	0.0166032	0.9918312
3.5	0.4363	68.4295	0.0063644	0.9981956
3.75	0.0936	68.5231	0.0013654	0.9995609
4	0.0301	68.5532	0.0004391	1

Total Wt.	68.5532 gms	
Median Weight	34.2766 gms	
Mean Grain Size	1.37 phi	0.3868912 mm

Cum Wt. % SL3

3.5'


Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

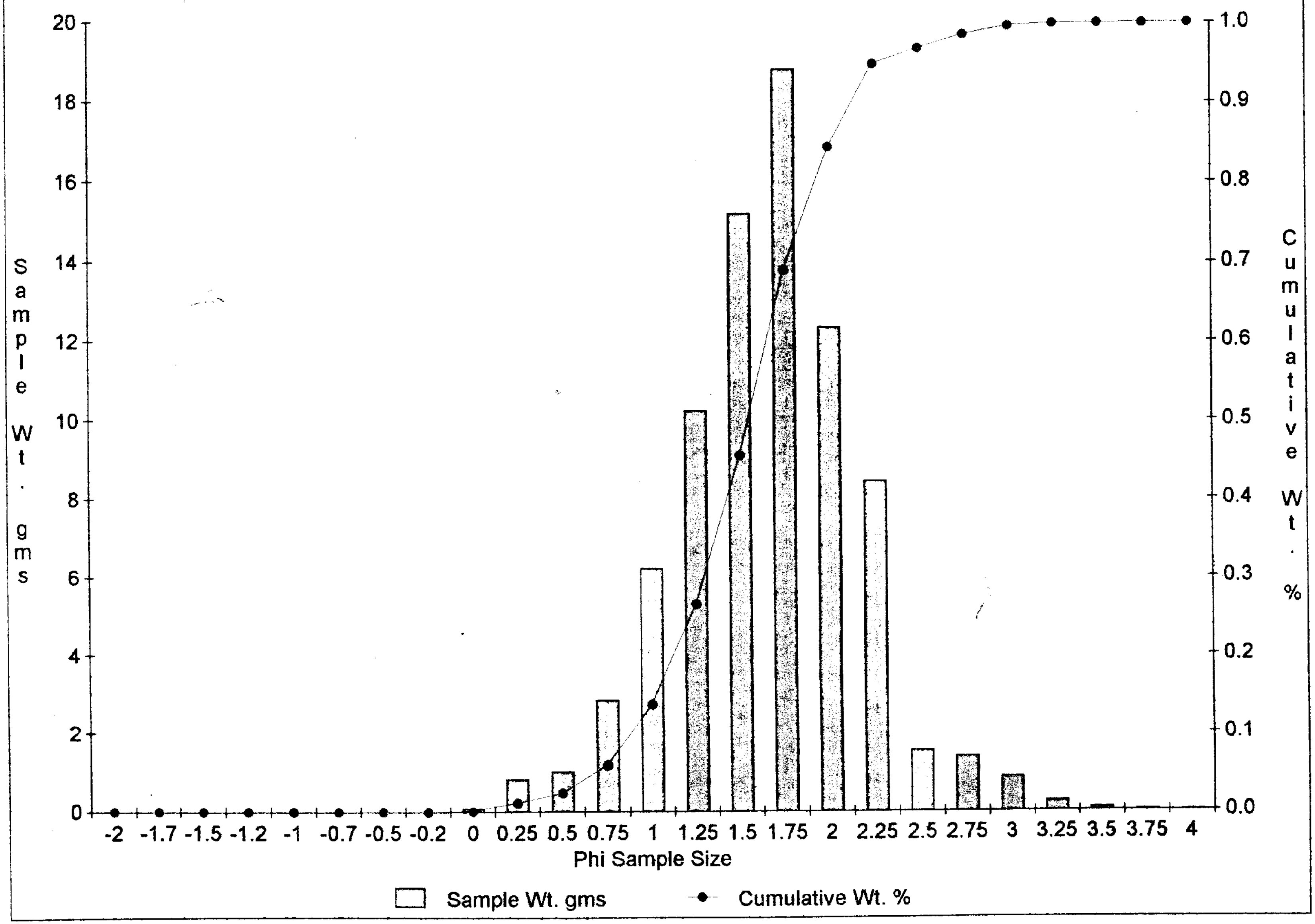
CORE (SL-3)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.071	0.071	0.0008877	0.0008877
0.25	0.8164	0.8874	0.0102074	0.0110951
0.5	1.0147	1.9021	0.0126867	0.0237818
0.75	2.8286	4.7307	0.0353657	0.0591475
1	6.1766	10.9073	0.0772255	0.136373
1.25	10.1972	21.1045	0.1274946	0.2638676
1.5	15.1703	36.2748	0.1896728	0.4535404
1.75	18.8125	55.0873	0.2352109	0.6887514
2	12.3212	67.4085	0.1540508	0.8428022
2.25	8.4122	75.8207	0.105177	0.9479792
2.5	1.5413	77.362	0.0192707	0.9672499
2.75	1.3888	78.7508	0.017364	0.9846139
3	0.8612	79.612	0.0107675	0.9953814
3.25	0.253	79.865	0.0031632	0.9985447
3.5	0.0791	79.9441	0.000989	0.9995336
3.75	0.0259	79.97	0.0003238	0.9998575
4	0.0114	79.9814	0.0001425	1

Total Wt.	79.9814 gms		
Median Weight	39.9907 gms		
Mean Grain Size	1.55	phi	0.3415101 mm

Cum Wt. % SL3

4'



20
18
16
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

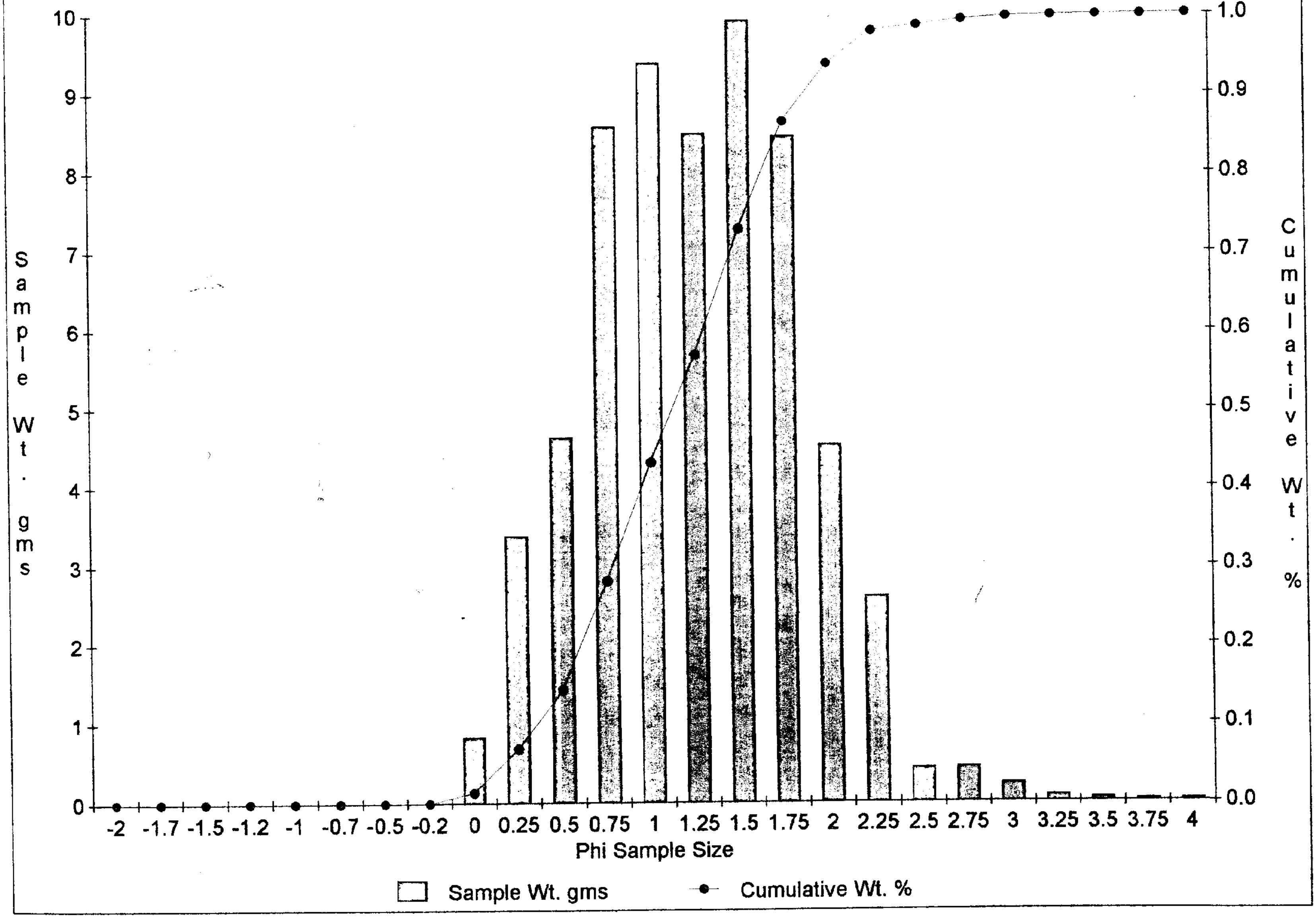
CORE (SL-3)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.8191	0.8191	0.0132041	0.0132041
0.25	3.3725	4.1916	0.0543657	0.0675698
0.5	4.626	8.8176	0.0745725	0.1421423
0.75	8.5784	17.396	0.1382863	0.2804287
1	9.3851	26.7811	0.1512906	0.4317193
1.25	8.49	35.2711	0.1368613	0.5685806
1.5	9.9231	45.1942	0.1599633	0.7285439
1.75	8.4578	53.652	0.1363422	0.8648861
2	4.5368	58.1888	0.0731346	0.9380207
2.25	2.6032	60.792	0.0419644	0.979985
2.5	0.421	61.213	0.0067866	0.9867717
2.75	0.4326	61.6456	0.0069736	0.9937453
3	0.2272	61.8728	0.0036625	0.9974079
3.25	0.0745	61.9473	0.001201	0.9986088
3.5	0.0424	61.9897	0.0006835	0.9992923
3.75	0.0218	62.0115	0.0003514	0.9996437
4	0.0221	62.0336	0.0003563	1

Total Wt.	62.0336	gms	
Median Weight	31.0168	gms	
Mean Grain Size	1.12	phi	0.4600938 mm

Cum Wt. % SL3

4.5'



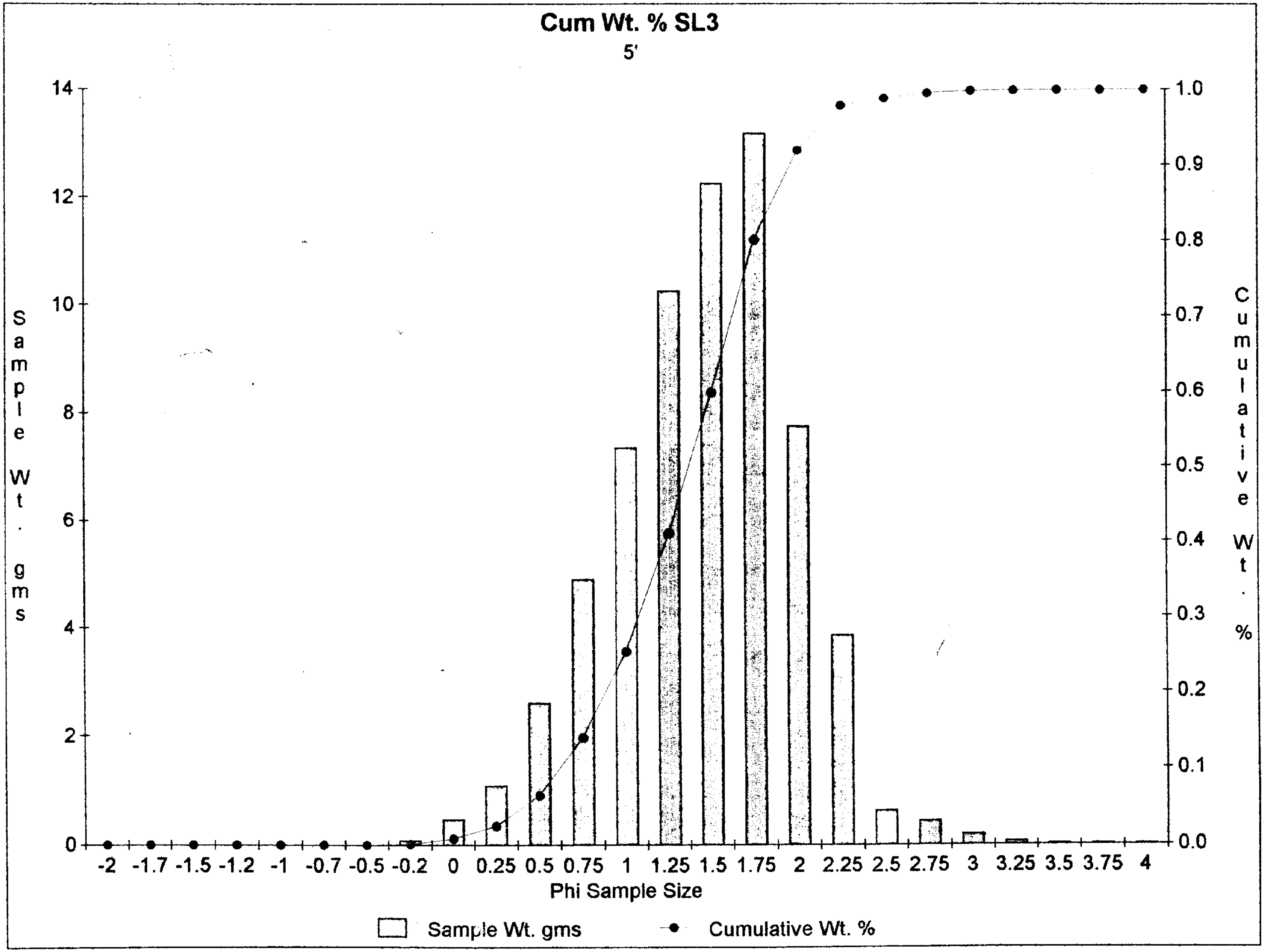
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-3)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.081	0.081	0.0012461	0.0012461
0	0.4631	0.5441	0.0071241	0.0083702
0.25	1.0761	1.6202	0.0165543	0.0249245
0.5	2.5763	4.1965	0.0396328	0.0645573
0.75	4.8618	9.0583	0.074792	0.1393492
1	7.3214	16.3797	0.1126295	0.2519787
1.25	10.2476	26.6273	0.157645	0.4096237
1.5	12.2518	38.8791	0.1884768	0.5981004
1.75	13.1796	52.0587	0.2027497	0.8008501
2	7.7369	59.7956	0.1190214	0.9198715
2.25	3.8349	63.6305	0.0589946	0.978866
2.5	0.6216	64.2521	0.0095624	0.9884285
2.75	0.4375	64.6896	0.0067303	0.9951588
3	0.1995	64.8891	0.003069	0.9982278
3.25	0.0615	64.9506	0.0009461	0.9991739
3.5	0.0196	64.9702	0.0003015	0.9994754
3.75	0.0183	64.9885	0.0002815	0.9997569
4	0.0158	65.0043	0.0002431	1

Total Wt.	65.0043 gms	
Median Weight	32.50215 gms	
Mean Grain Size	1.37 phi	0.3868912 mm



Cum Wt. % SL3

5'

Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
2
4
6
8
10
12
14
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

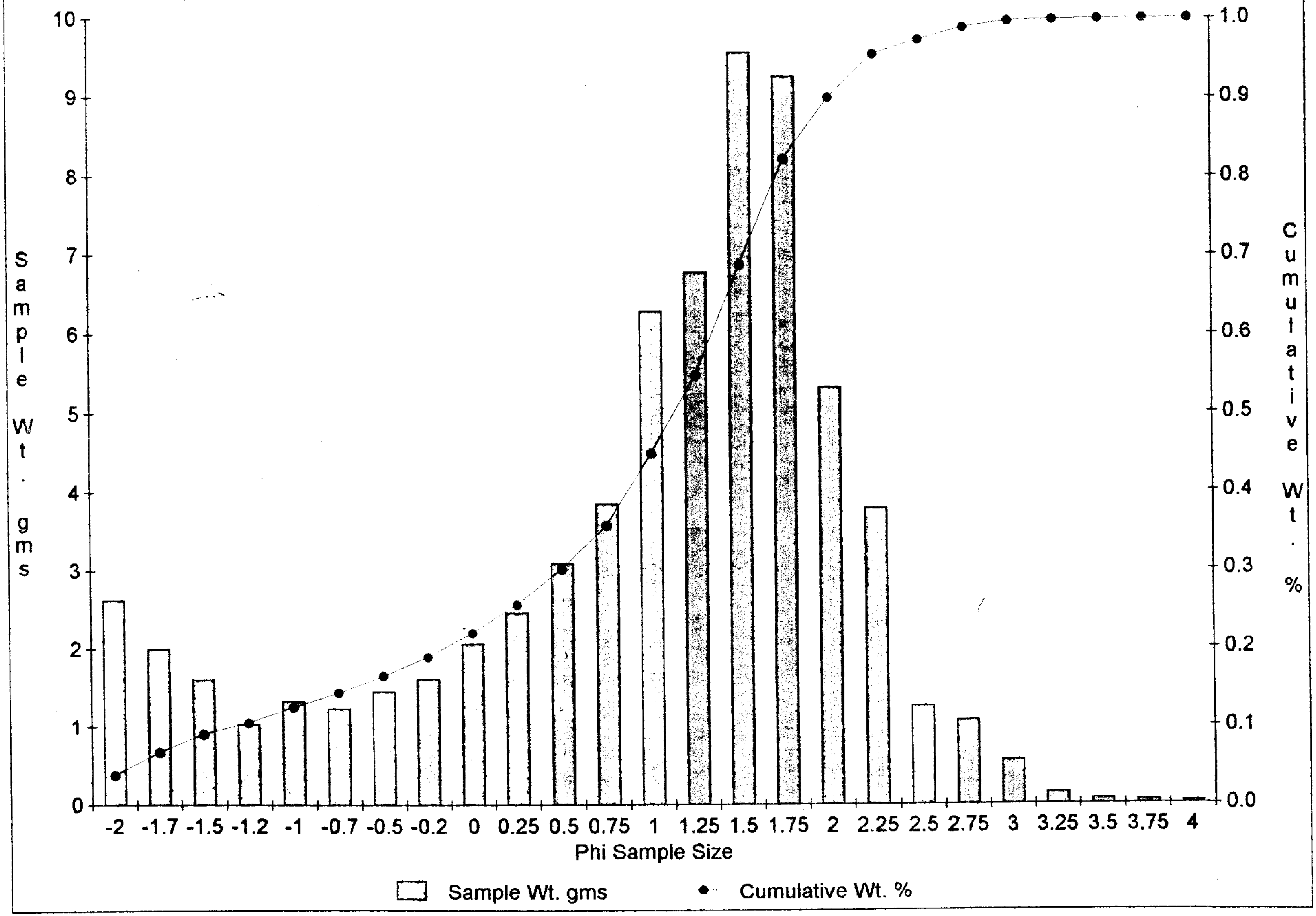
CORE (SL-3)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	2.6217	2.6217	0.0383638	0.0383638
-1.75	2.001	4.6227	0.029281	0.0676448
-1.5	1.6126	6.2353	0.0235975	0.0912423
-1.25	1.0435	7.2788	0.0152697	0.1065121
-1	1.3289	8.6077	0.019446	0.1259581
-0.75	1.2345	9.8422	0.0180647	0.1440228
-0.5	1.4509	11.2931	0.0212313	0.1652541
-0.25	1.6032	12.8963	0.0234599	0.188714
0	2.0437	14.94	0.0299059	0.2186199
0.25	2.436	17.376	0.0356465	0.2542663
0.5	3.066	20.442	0.0448654	0.2991317
0.75	3.8229	24.2649	0.0559412	0.3550729
1	6.2675	30.5324	0.0917135	0.4467864
1.25	6.7599	37.2923	0.0989189	0.5457053
1.5	9.5499	46.8422	0.1397455	0.6854508
1.75	9.2476	56.0898	0.1353219	0.8207727
2	5.3039	61.3937	0.077613	0.8983857
2.25	3.7672	65.1609	0.0551262	0.9535118
2.5	1.2504	66.4113	0.0182973	0.9718092
2.75	1.077	67.4883	0.0157599	0.9875691
3	0.5612	68.0495	0.0082121	0.9957813
3.25	0.1465	68.196	0.0021438	0.997925
3.5	0.0649	68.2609	0.0009497	0.9988747
3.75	0.0452	68.3061	0.0006614	0.9995361
4	0.0317	68.3378	0.0004639	1

Total Wt.	68.3378 gms
Median Weight	34.1689 gms
Mean Grain Size	1.13 phi 0.4569157 mm

Cum Wt. % SL3

6'

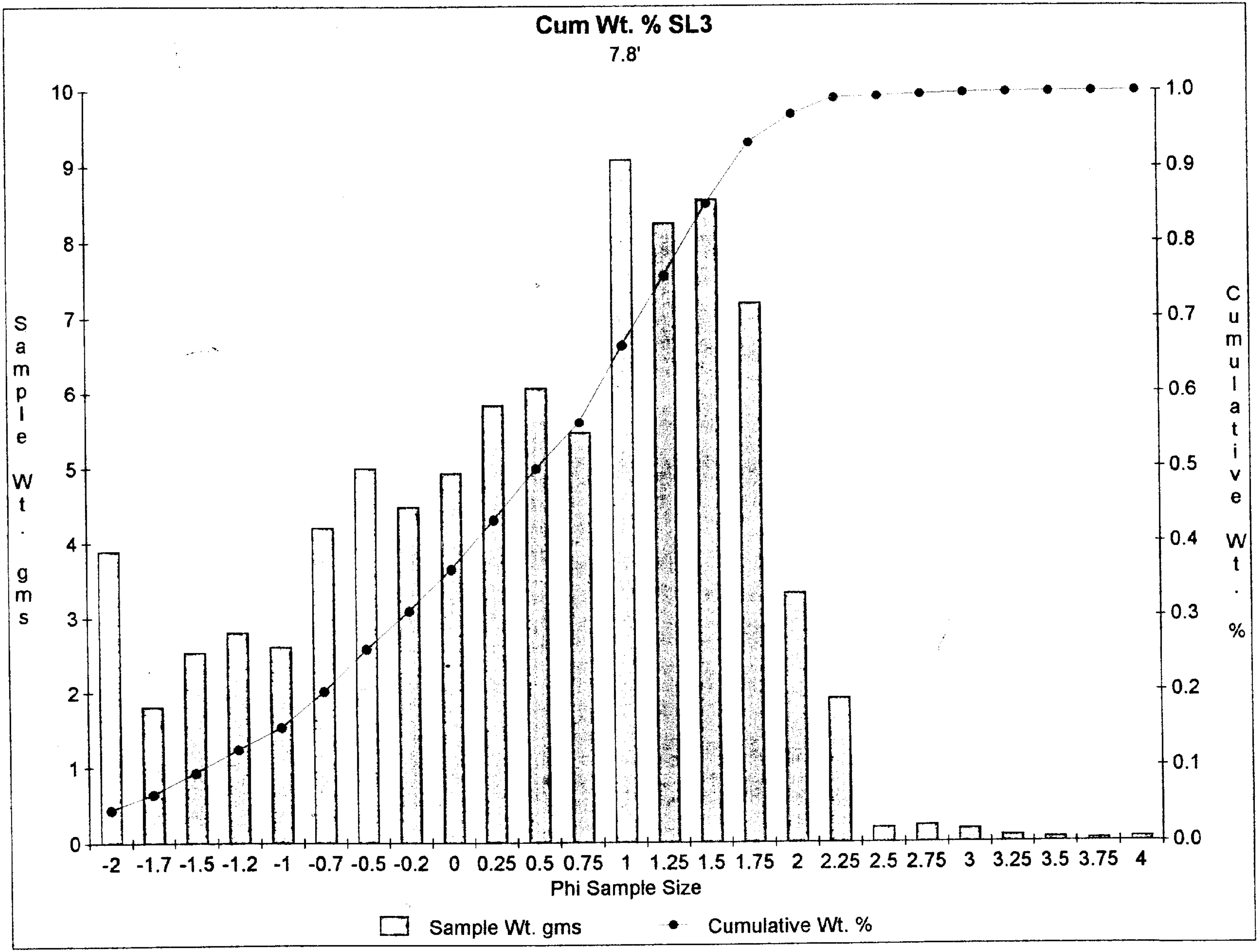

Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-3)
DEPTH (7.8 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	3.8986	3.8986	0.0439591	0.0439591
-1.75	1.8128	5.7114	0.0204404	0.0643996
-1.5	2.536	8.2474	0.028595	0.0929946
-1.25	2.8088	11.0562	0.031671	0.1246655
-1	2.6191	13.6753	0.029532	0.1541975
-0.75	4.2023	17.8776	0.0473835	0.2015811
-0.5	4.9914	22.869	0.0562811	0.2578622
-0.25	4.4708	27.3398	0.0504111	0.3082733
0	4.9198	32.2596	0.0554738	0.3637471
0.25	5.8204	38.08	0.0656286	0.4293757
0.5	6.0533	44.1333	0.0682547	0.4976304
0.75	5.4535	49.5868	0.0614916	0.559122
1	9.0918	58.6786	0.1025157	0.6616377
1.25	8.2465	66.9251	0.0929844	0.7546222
1.5	8.5565	75.4816	0.0964799	0.851102
1.75	7.1813	82.6629	0.0809736	0.9320757
2	3.3075	85.9704	0.0372941	0.9693698
2.25	1.8966	87.867	0.0213853	0.9907551
2.5	0.1918	88.0588	0.0021627	0.9929178
2.75	0.2232	88.282	0.0025167	0.9954345
3	0.1709	88.4529	0.001927	0.9973615
3.25	0.0849	88.5378	0.0009573	0.9983188
3.5	0.0571	88.5949	0.0006438	0.9989626
3.75	0.0379	88.6328	0.0004273	0.99939
4	0.0541	88.6869	0.00061	1

Total Wt.	88.6869	gms		
Median Weight	44.34345	gms		
Mean Grain Size	0.51	phi	0.7022224	mm


Cum Wt. % SL3
7.8'
Sample Wt. gms
0
1
2
3
4
5
6
7
8
9
10
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

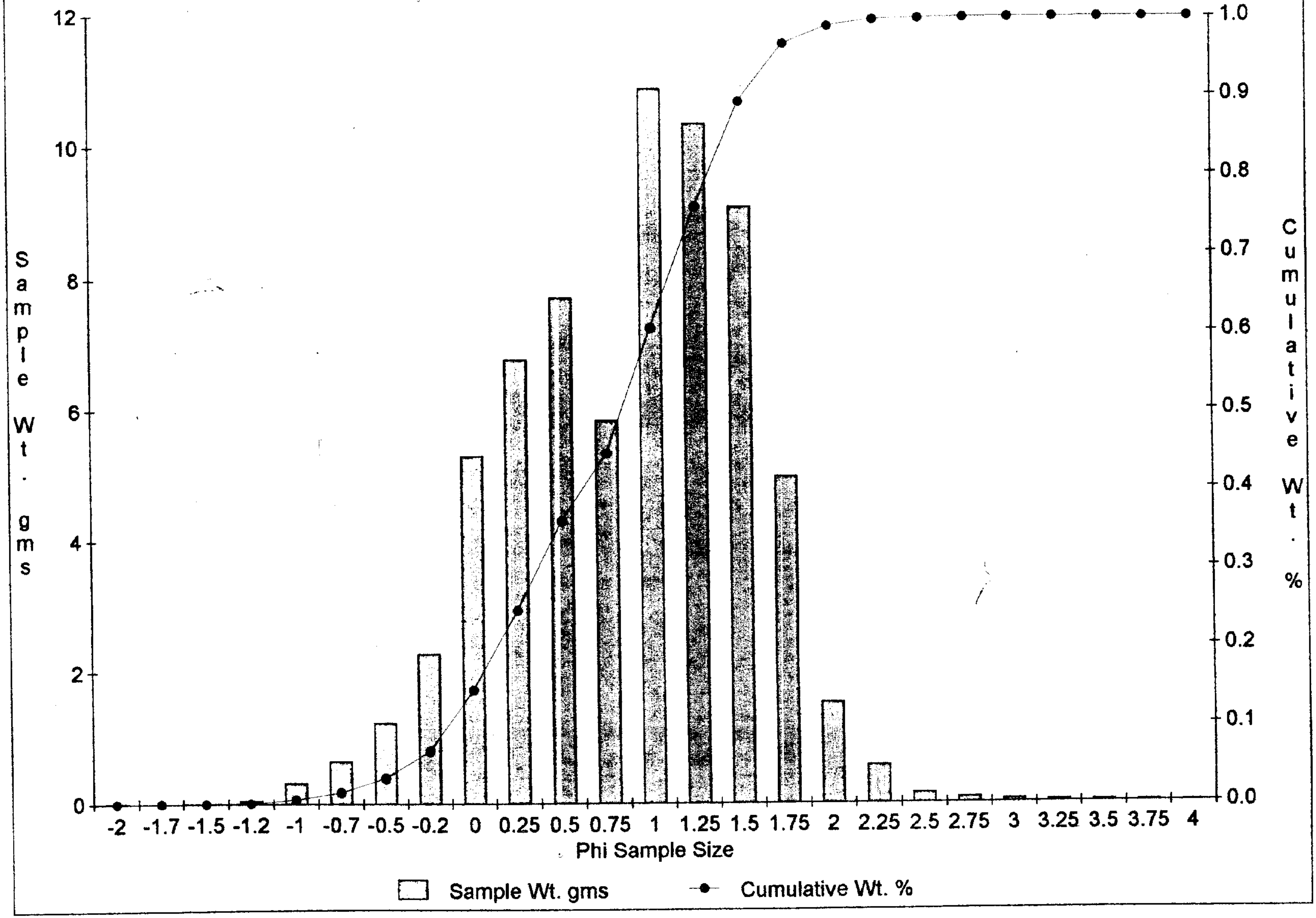
CORE (SL-4)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0062	0.0062	9.144E-05	9.144E-05
-1.75	0	0.0062	0	9.144E-05
-1.5	0.006	0.0122	8.849E-05	0.0001799
-1.25	0.0407	0.0529	0.0006003	0.0007802
-1	0.3107	0.3636	0.0045825	0.0053627
-0.75	0.6464	1.01	0.0095337	0.0148964
-0.5	1.2303	2.2403	0.0181456	0.033042
-0.25	2.2789	4.5192	0.0336113	0.0666533
0	5.2867	9.8059	0.0779731	0.1446264
0.25	6.76	16.5659	0.0997027	0.244329
0.5	7.706	24.2719	0.1136551	0.3579842
0.75	5.8293	30.1012	0.0859758	0.44396
1	10.8771	40.9783	0.1604254	0.6043854
1.25	10.3497	51.328	0.1526468	0.7570323
1.5	9.0822	60.4102	0.1339526	0.8909849
1.75	4.9697	65.3799	0.0732977	0.9642826
2	1.5286	66.9085	0.0225452	0.9868277
2.25	0.5682	67.4767	0.0083803	0.9952081
2.5	0.1408	67.6175	0.0020766	0.9972847
2.75	0.0727	67.6902	0.0010722	0.998357
3	0.0441	67.7343	0.0006504	0.9990074
3.25	0.0298	67.7641	0.0004395	0.9994469
3.5	0.021	67.7851	0.0003097	0.9997566
3.75	0.0104	67.7955	0.0001534	0.99991
4	0.0061	67.8016	8.997E-05	1

Total Wt.	67.8016 gms		
Median Weight	33.9008 gms		
Mean Grain Size	0.84 phi	0.5586436 mm	

Cum Wt. % SL4

0'

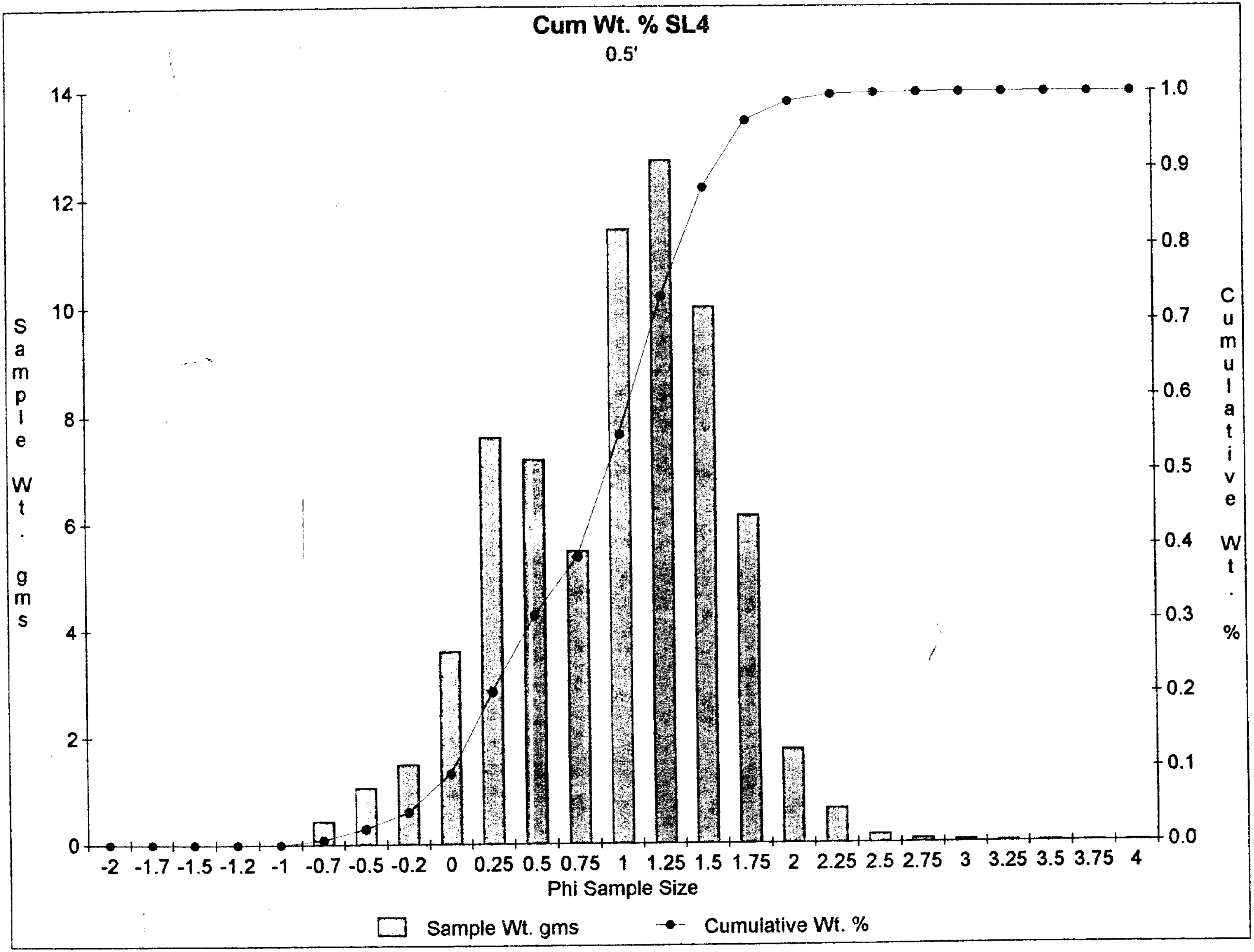

Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.4251	0.4251	0.0060831	0.0060831
-0.5	1.0323	1.4574	0.014772	0.0208551
-0.25	1.4799	2.9373	0.0211771	0.0420322
0	3.5918	6.5291	0.051398	0.0934302
0.25	7.6123	14.1414	0.1089306	0.2023608
0.5	7.1974	21.3388	0.1029935	0.3053543
0.75	5.4927	26.8315	0.0785995	0.3839538
1	11.4576	38.2891	0.1639561	0.54791
1.25	12.7299	51.019	0.1821625	0.7300725
1.5	10.0244	61.0434	0.1434473	0.8735198
1.75	6.1386	67.182	0.0878422	0.9613621
2	1.7502	68.9322	0.025045	0.9864071
2.25	0.6307	69.5629	0.0090252	0.9954323
2.5	0.1478	69.7107	0.002115	0.9975473
2.75	0.0691	69.7798	0.0009888	0.9985361
3	0.0457	69.8255	0.000654	0.9991901
3.25	0.0268	69.8523	0.0003835	0.9995736
3.5	0.0204	69.8727	0.0002919	0.9998655
3.75	0.0057	69.8784	8.157E-05	0.9999471
4	0.0037	69.8821	5.295E-05	1

Total Wt. 69.8821 gms
Median Weight 34.94105 gms
Mean Grain Size 0.93 phi 0.5248583 mm



Cum Wt. % SL4

0.5'

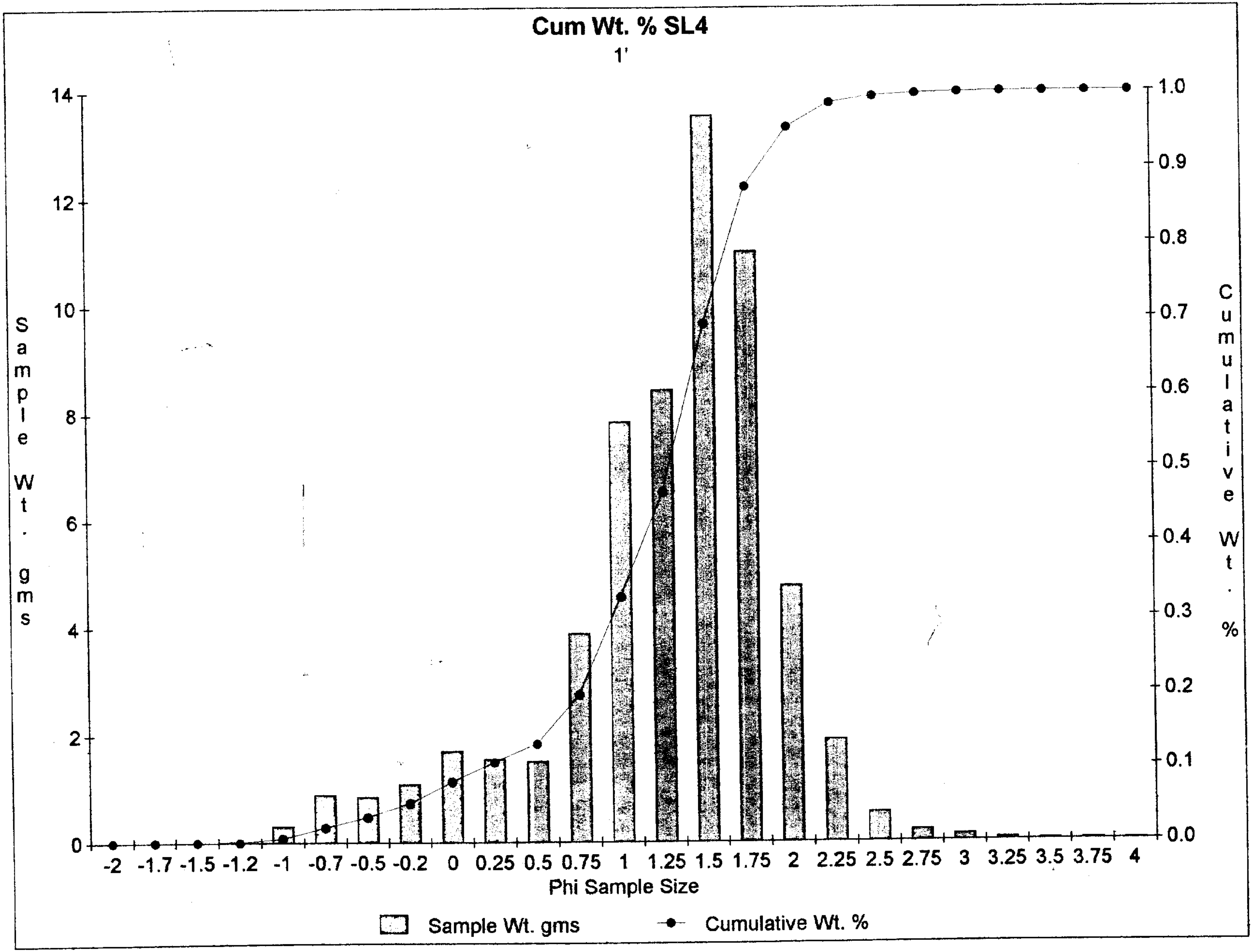
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0171	0.0171	0.0002842	0.0002842
-1	0.3052	0.3223	0.0050728	0.005357
-0.75	0.8821	1.2044	0.0146616	0.0200186
-0.5	0.8527	2.0571	0.0141729	0.0341915
-0.25	1.0833	3.1404	0.0180058	0.0521972
0	1.7011	4.8415	0.0282743	0.0804716
0.25	1.5409	6.3824	0.0256116	0.1060832
0.5	1.496	7.8784	0.0248653	0.1309485
0.75	3.8692	11.7476	0.0643108	0.1952593
1	7.825	19.5726	0.1300609	0.3253202
1.25	8.4221	27.9947	0.1399855	0.4653057
1.5	13.5541	41.5488	0.2252855	0.6905912
1.75	11.016	52.5648	0.1830992	0.8736905
2	4.7677	57.3325	0.0792449	0.9529354
2.25	1.9043	59.2368	0.0316518	0.9845872
2.5	0.5335	59.7703	0.0088674	0.9934546
2.75	0.2008	59.9711	0.0033375	0.9967921
3	0.1124	60.0835	0.0018682	0.9986603
3.25	0.041	60.1245	0.0006815	0.9993418
3.5	0.0201	60.1446	0.0003341	0.9996759
3.75	0.0124	60.157	0.0002061	0.999882
4	0.0071	60.1641	0.000118	1

Total Wt.	60.1641 gms		
Median Weight	30.08205 gms		
Mean Grain Size	1.29 phi	0.408951 mm	


Cum Wt. % SL4
1'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

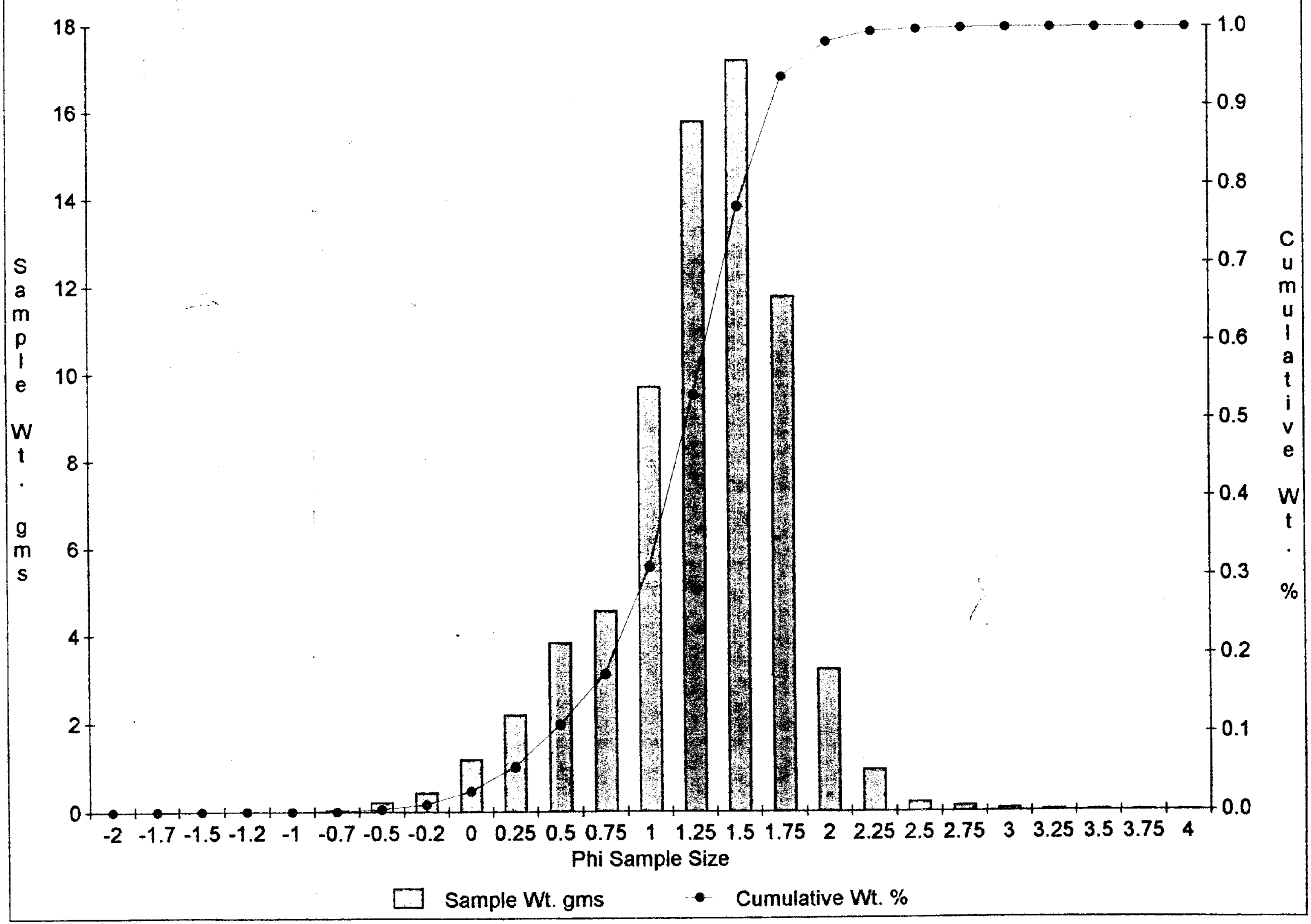
CORE (SL-4)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0298	0.0298	0.0004161	0.0004161
-0.5	0.2173	0.2471	0.0030342	0.0034503
-0.25	0.4322	0.6793	0.006035	0.0094853
0	1.1842	1.8635	0.0165354	0.0260207
0.25	2.1945	4.058	0.0306426	0.0566632
0.5	3.8347	7.8927	0.0535452	0.1102085
0.75	4.5538	12.4465	0.0635863	0.1737947
1	9.7241	22.1706	0.1357809	0.3095756
1.25	15.7969	37.9675	0.2205775	0.5301531
1.5	17.2103	55.1778	0.2403133	0.7704664
1.75	11.7995	66.9773	0.1647604	0.9352269
2	3.2284	70.2057	0.0450792	0.9803061
2.25	0.9444	71.1501	0.013187	0.9934931
2.5	0.2098	71.3599	0.0029295	0.9964226
2.75	0.1247	71.4846	0.0017412	0.9981638
3	0.0649	71.5495	0.0009062	0.99907
3.25	0.0304	71.5799	0.0004245	0.9994945
3.5	0.0192	71.5991	0.0002681	0.9997626
3.75	0.0099	71.609	0.0001382	0.9999009
4	0.0071	71.6161	9.914E-05	1

Total Wt.	71.6161 gms		
Median Weight	35.80805 gms		
Mean Grain Size	1.22 phi	0.4292827	mm

Cum Wt. % SL4

1.5'

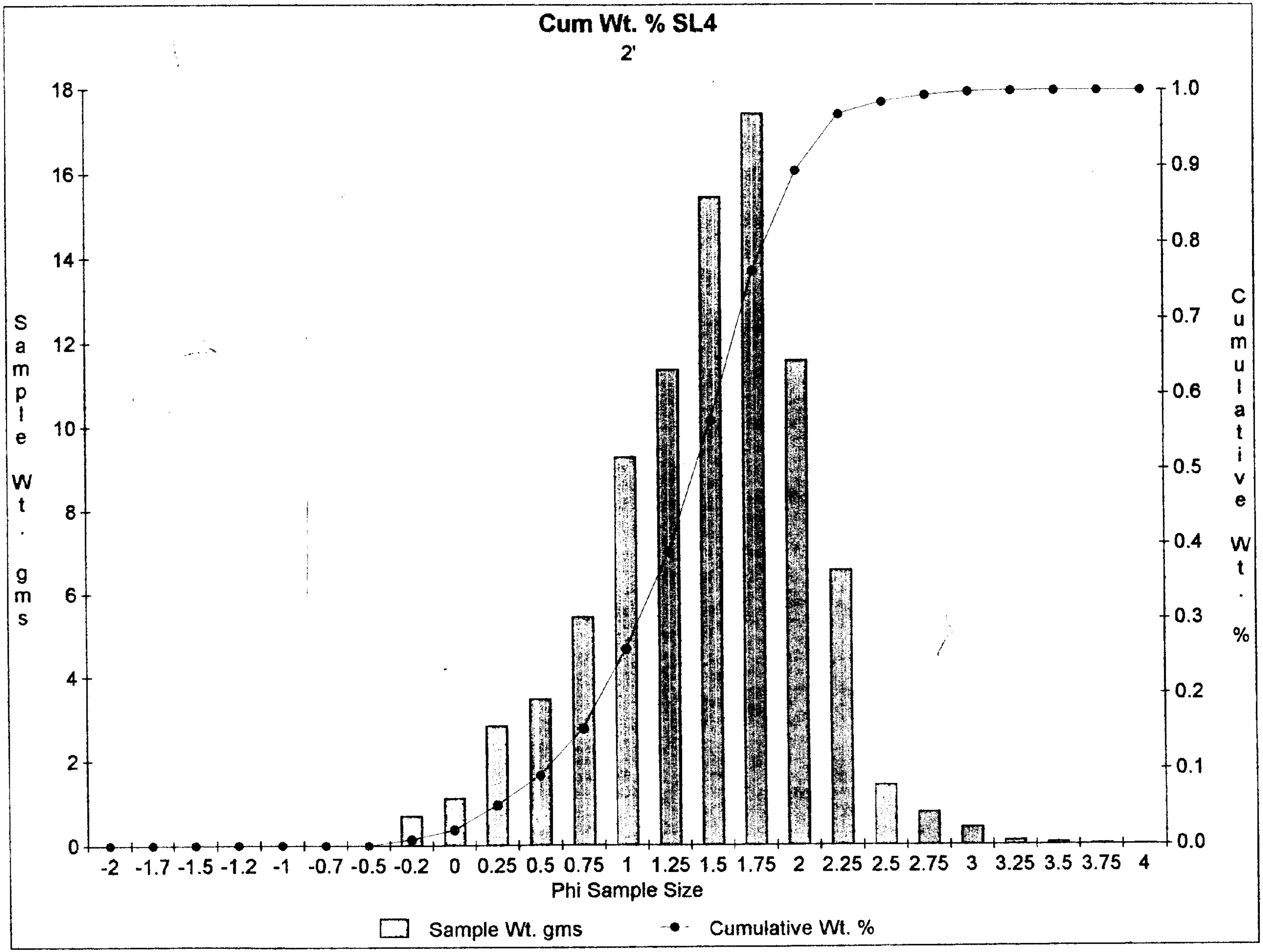

18
16
14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.7014	0.7014	0.0079682	0.0079682
0	1.1102	1.8116	0.0126123	0.0205804
0.25	2.8269	4.6385	0.0321146	0.052695
0.5	3.4584	8.0969	0.0392887	0.0919837
0.75	5.4335	13.5304	0.0617265	0.1537102
1	9.2854	22.8158	0.1054855	0.2591956
1.25	11.3723	34.1881	0.1291934	0.388389
1.5	15.4662	49.6543	0.1757016	0.5640906
1.75	17.4389	67.0932	0.1981121	0.7622027
2	11.5902	78.6834	0.1316688	0.8938715
2.25	6.5628	85.2462	0.0745558	0.9684273
2.5	1.4142	86.6604	0.0160658	0.9844931
2.75	0.7665	87.4269	0.0087077	0.9932008
3	0.4104	87.8373	0.0046623	0.9978631
3.25	0.1066	87.9439	0.001211	0.9990741
3.5	0.0531	87.997	0.0006032	0.9996774
3.75	0.0186	88.0156	0.0002113	0.9998887
4	0.0098	88.0254	0.0001113	1

Total Wt.	88.0254	gms	
Median Weight	44.0127	gms	
Mean Grain Size	1.41	phi	0.3763117 mm

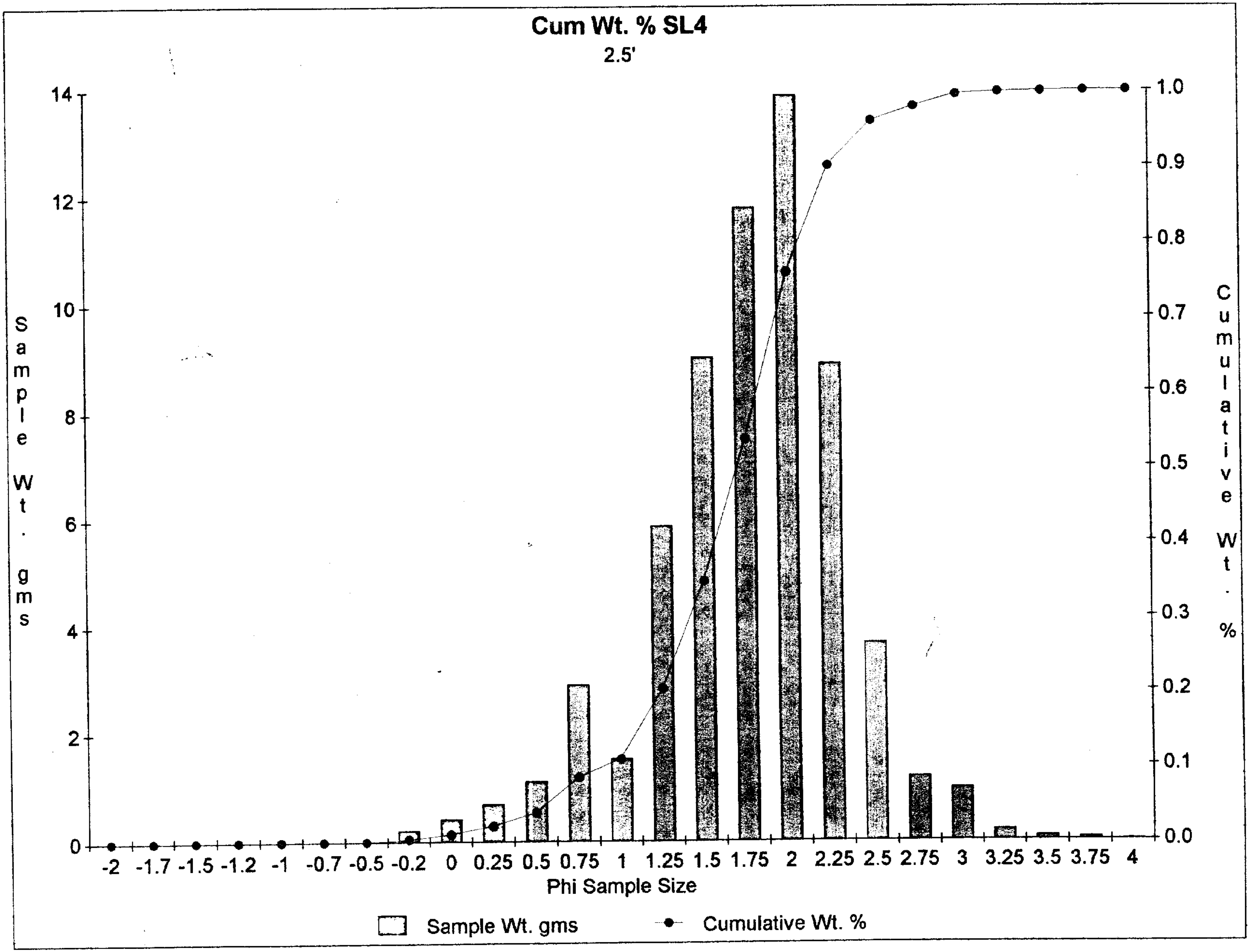

Cum Wt. % SL4
2'
Sample Wt. gms
Cumulative Wt. %
18
16
14
12
10
8
6
4
2
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.204	0.204	0.0032576	0.0032576
0	0.4101	0.6141	0.0065488	0.0098065
0.25	0.6866	1.3007	0.0109642	0.0207707
0.5	1.1116	2.4123	0.017751	0.0385216
0.75	2.919	5.3313	0.046613	0.0851346
1	1.5311	6.8624	0.0244499	0.1095845
1.25	5.8881	12.7505	0.0940261	0.2036106
1.5	9.0382	21.7887	0.1443295	0.34794
1.75	11.8201	33.6088	0.1887532	0.5366932
2	13.913	47.5218	0.2221743	0.7588675
2.25	8.9196	56.4414	0.1424356	0.9013031
2.5	3.7034	60.1448	0.059139	0.960442
2.75	1.1939	61.3387	0.0190652	0.9795072
3	0.9776	62.3163	0.0156111	0.9951183
3.25	0.1892	62.5055	0.0030213	0.9981396
3.5	0.0663	62.5718	0.0010587	0.9991984
3.75	0.0438	62.6156	0.0006994	0.9998978
4	0.0064	62.622	0.0001022	1

Total Wt.	62.622 gms	
Median Weight	31.311 gms	
Mean Grail Size	1.7 phi	0.3077861 mm


Cum Wt. % SL4

2.5'

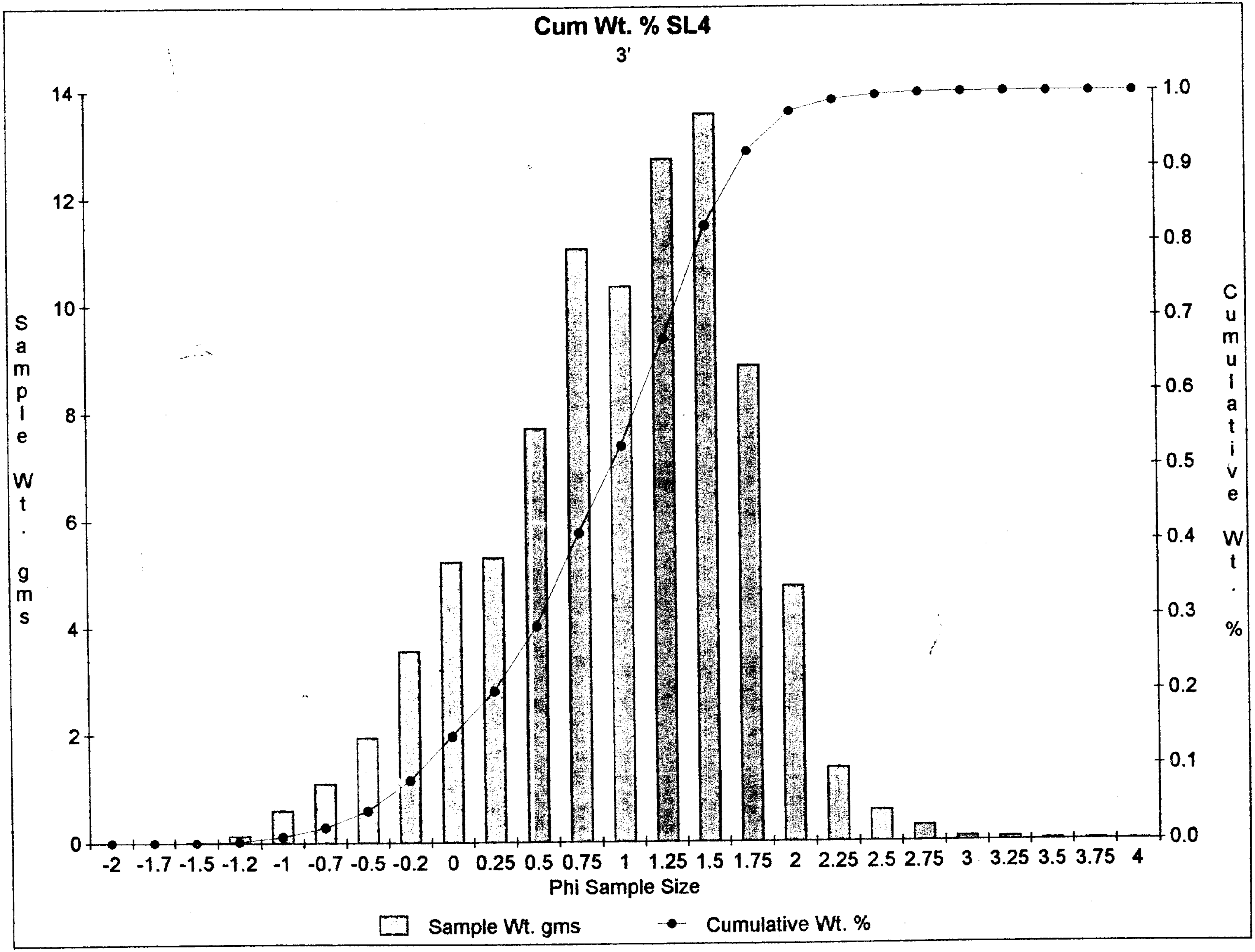
Sample Wt. gms
0
2
4
6
8
10
12
14
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0087	0.0087	9.756E-05	9.756E-05
-1.25	0.1302	0.1389	0.00146	0.0015576
-1	0.6017	0.7406	0.0067472	0.0083048
-0.75	1.0944	1.835	0.0122721	0.0205769
-0.5	1.9407	3.7757	0.0217622	0.0423391
-0.25	3.5455	7.3212	0.0397577	0.0820968
0	5.2028	12.524	0.0583419	0.1404387
0.25	5.281	17.805	0.0592188	0.1996575
0.5	7.6797	25.4847	0.0861168	0.2857744
0.75	11.0512	36.5359	0.1239234	0.4096977
1	10.3426	46.8785	0.1159774	0.5256751
1.25	12.7325	59.611	0.1427767	0.6684519
1.5	13.5735	73.1845	0.1522073	0.8206592
1.75	8.8573	82.0418	0.0993219	0.9199811
2	4.7387	86.7805	0.0531377	0.9731188
2.25	1.3571	88.1376	0.0152179	0.9883368
2.5	0.5722	88.7098	0.0064164	0.9947532
2.75	0.2863	88.9961	0.0032104	0.9979636
3	0.0787	89.0748	0.0008825	0.9988461
3.25	0.0596	89.1344	0.0006683	0.9995145
3.5	0.0229	89.1573	0.0002568	0.9997712
3.75	0.014	89.1713	0.000157	0.9999282
4	0.0064	89.1777	7.177E-05	1

Total Wt.	89.1777 gms		
Median Weight	44.58885 gms		
Mean Grain Size	0.94 phi	0.5212329 mm	

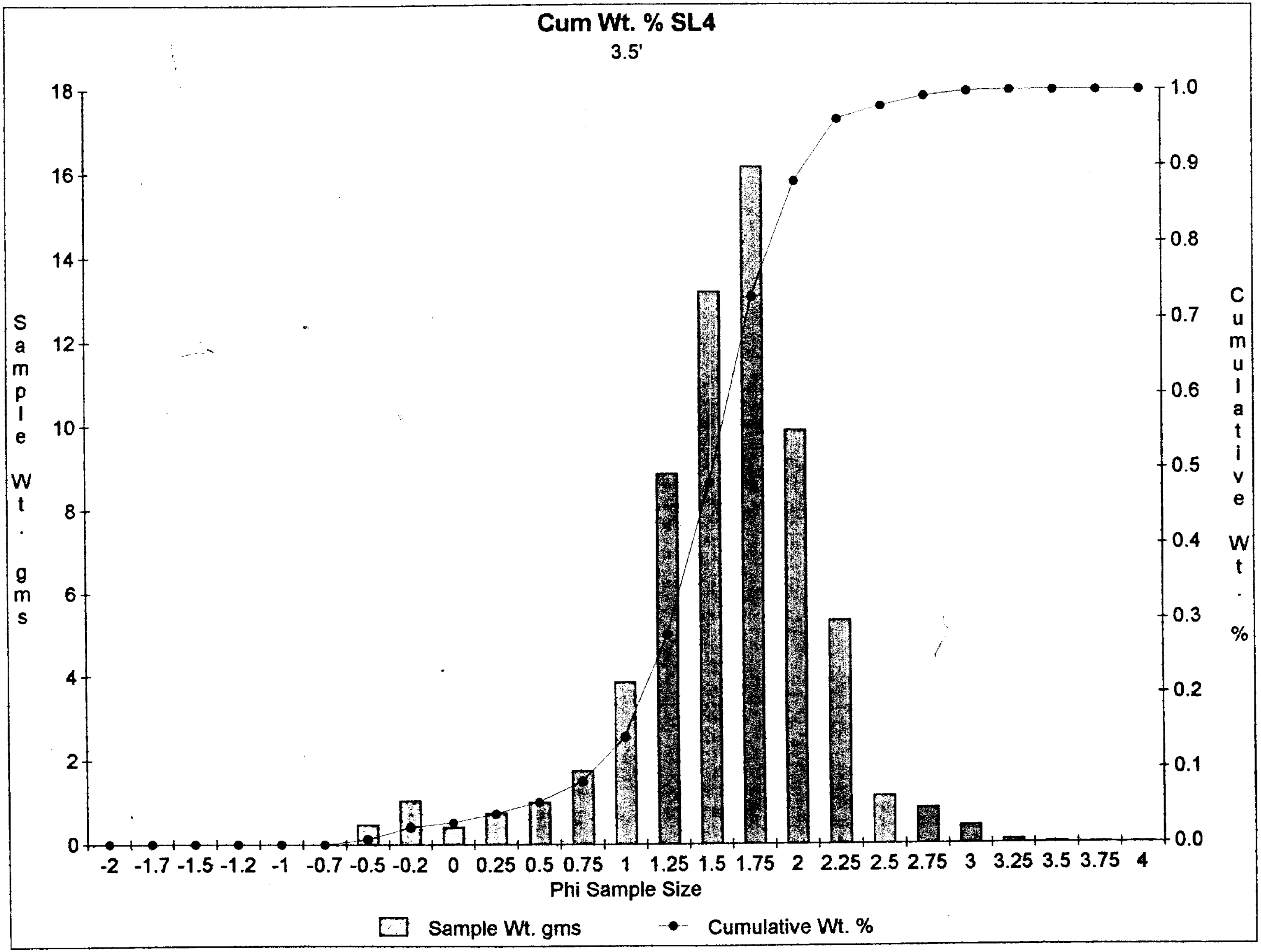

Cum Wt. % SL4
3'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.4661	0.4661	0.0071419	0.0071419
-0.25	1.0413	1.5074	0.0159556	0.0230975
0	0.4091	1.9165	0.0062685	0.029366
0.25	0.7494	2.6659	0.0114829	0.0408489
0.5	1.0036	3.6695	0.0153779	0.0562268
0.75	1.7612	5.4307	0.0269864	0.0832132
1	3.8524	9.2831	0.0590293	0.1422425
1.25	8.8385	18.1216	0.13543	0.2776725
1.5	13.1945	31.3161	0.2021758	0.4798483
1.75	16.1414	47.4575	0.2473304	0.7271787
2	9.8998	57.3573	0.151692	0.8788707
2.25	5.3466	62.7039	0.0819245	0.9607952
2.5	1.1405	63.8444	0.0174756	0.9782708
2.75	0.8486	64.693	0.0130029	0.9912737
3	0.4243	65.1173	0.0065014	0.9977751
3.25	0.0958	65.2131	0.0014679	0.9992431
3.5	0.0319	65.245	0.0004888	0.9997319
3.75	0.0094	65.2544	0.000144	0.9998759
4	0.0081	65.2625	0.0001241	1

Total Wt.	65.2625	gms		
Median Weight	32.63125	gms		
Mean Grain Size	1.52	phi	0.3486859	mm


Cum Wt. % SL4
3.5'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
18
16
14
12
10
8
6
4
2
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

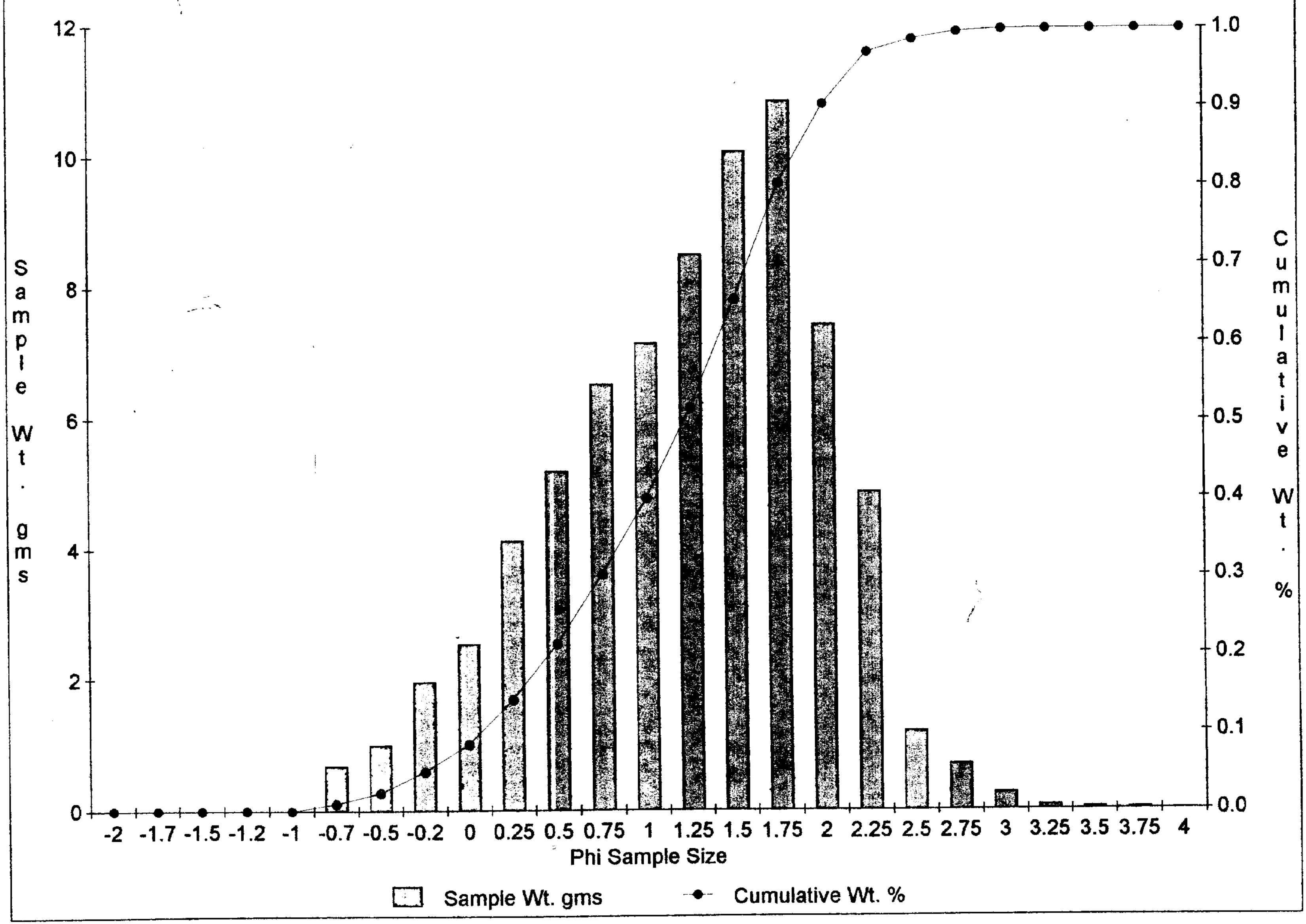
CORE (SL-4)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.6804	0.6804	0.0092936	0.0092936
-0.5	0.9949	1.6753	0.0135894	0.022883
-0.25	1.9548	3.6301	0.0267007	0.0495836
0	2.533	6.1631	0.0345983	0.0841819
0.25	4.114	10.2771	0.0561932	0.1403751
0.5	5.1876	15.4647	0.0708575	0.2112326
0.75	6.5234	21.9881	0.0891032	0.3003359
1	7.1541	29.1422	0.097718	0.3980539
1.25	8.5051	37.6473	0.1161713	0.5142252
1.5	10.0946	47.7419	0.1378823	0.6521075
1.75	10.8666	58.6085	0.1484271	0.8005346
2	7.448	66.0565	0.1017324	0.902267
2.25	4.8716	70.9281	0.0665413	0.9688083
2.5	1.2065	72.1346	0.0164796	0.9852879
2.75	0.6996	72.8342	0.0095558	0.9948437
3	0.257	73.0912	0.0035104	0.9983541
3.25	0.0596	73.1508	0.0008141	0.9991682
3.5	0.0314	73.1822	0.0004289	0.9995971
3.75	0.0208	73.203	0.0002841	0.9998812
4	0.0087	73.2117	0.0001188	1

Total Wt.	73.2117	gms		
Median Weight	36.60585	gms		
Mean Grain Size	1.22	phi	0.4292827	mm

Cum Wt. % SL4

4'


12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

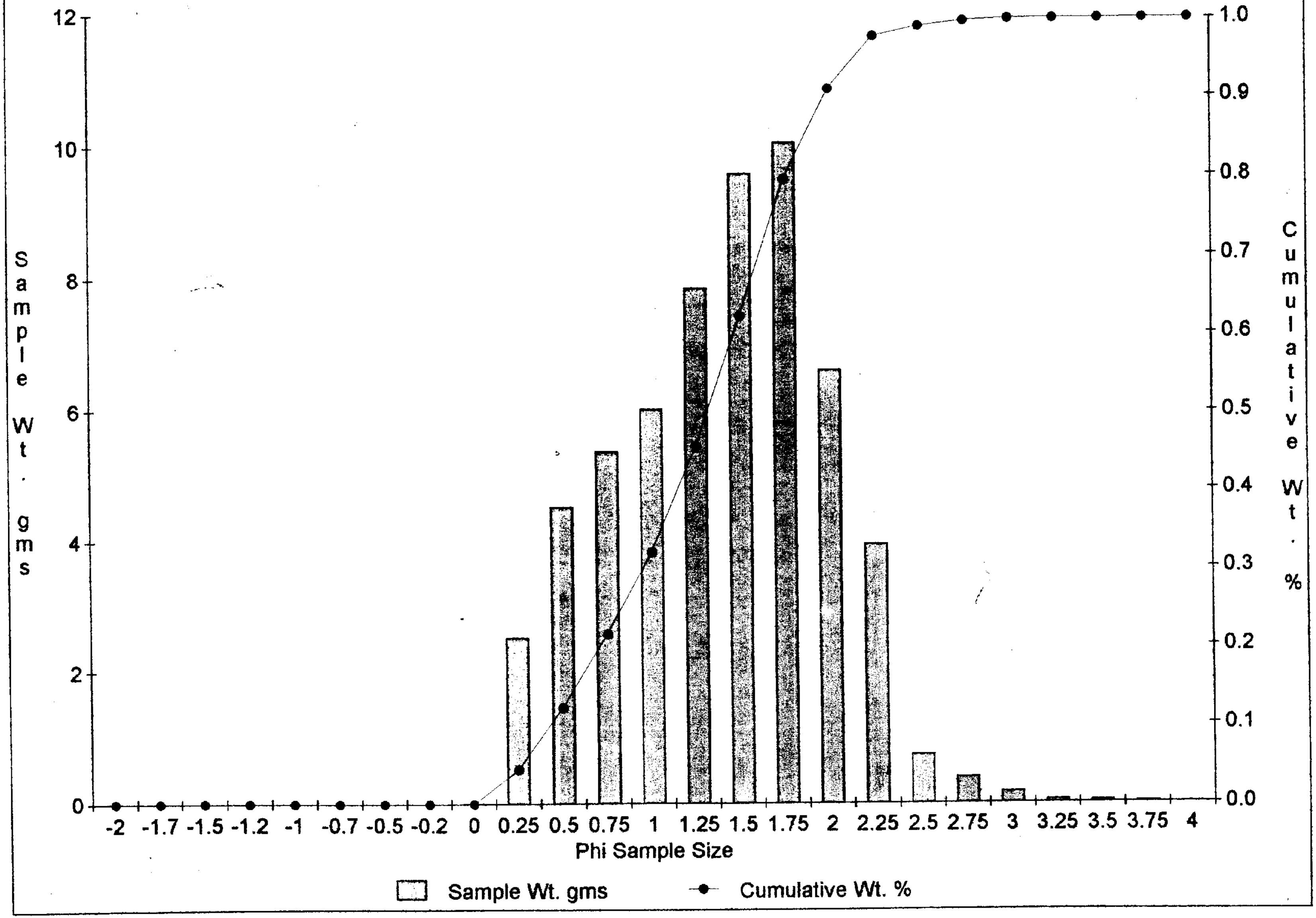
CORE (SL-4)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.0076	0.0076	0.0001313	0.0001313
0.25	2.5104	2.518	0.0433813	0.0435127
0.5	4.5059	7.0239	0.0778649	0.1213775
0.75	5.3588	12.3827	0.0926035	0.2139811
1	6.0116	18.3943	0.1038843	0.3178654
1.25	7.8603	26.2546	0.1358311	0.4536965
1.5	9.6006	35.8552	0.1659046	0.6196011
1.75	10.0739	45.9291	0.1740835	0.7936846
2	6.6054	52.5345	0.1141456	0.9078302
2.25	3.9362	56.4707	0.0680201	0.9758503
2.5	0.7371	57.2078	0.0127376	0.9885879
2.75	0.3929	57.6007	0.0067896	0.9953774
3	0.1675	57.7682	0.0028945	0.9982719
3.25	0.0477	57.8159	0.0008243	0.9990962
3.5	0.0289	57.8448	0.0004994	0.9995956
3.75	0.0163	57.8611	0.0002817	0.9998773
4	0.0071	57.8682	0.0001227	1

Total Wt.	57.8682 gms		
Median Weight	28.9341 gms		
Mean Grain Size	1.32 phi	0.4005349 mm	

Cum Wt. % SL4

4.5'



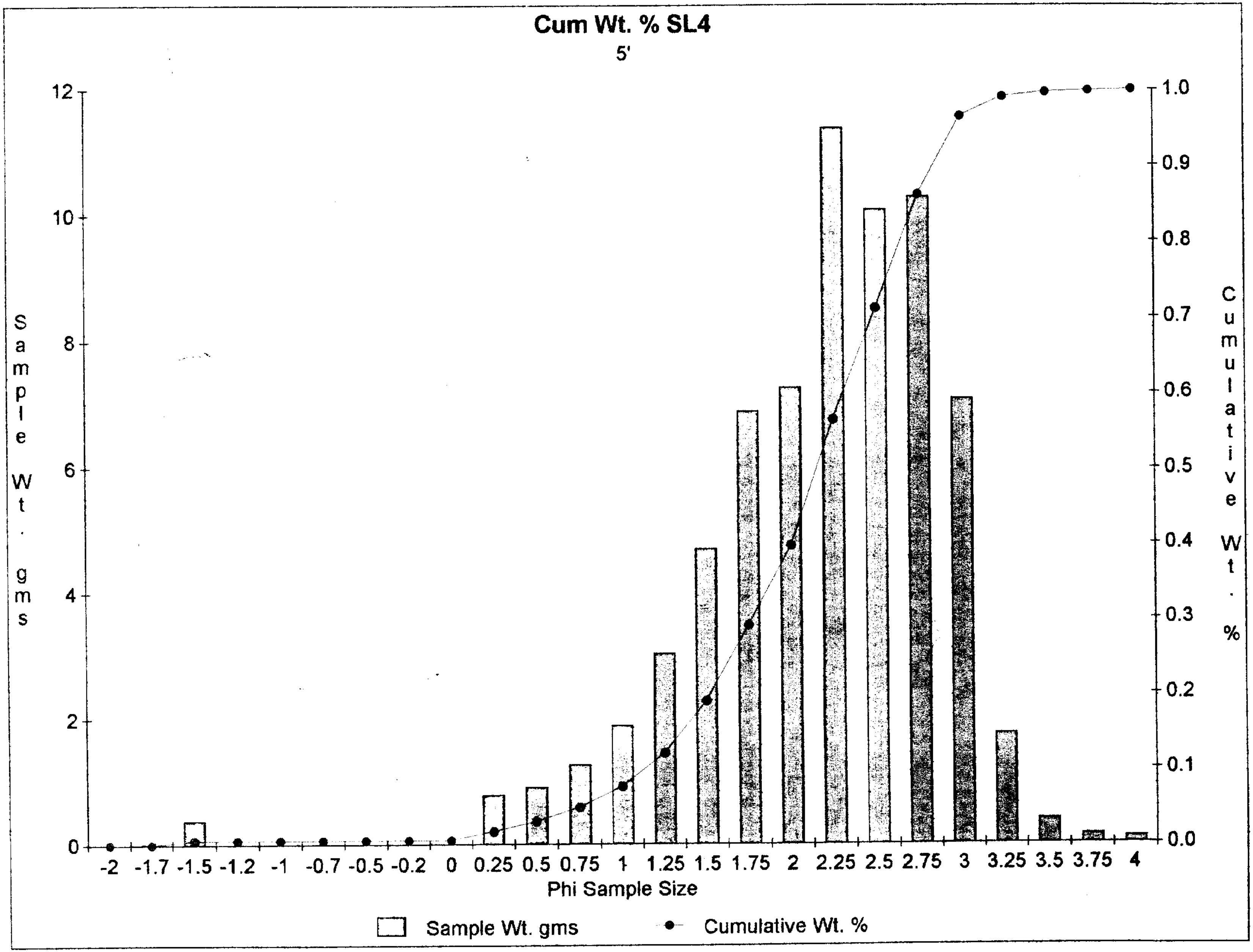
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.0114	0.0114	0.0001669	0.0001669
-1.5	0.3764	0.3878	0.0055092	0.005676
-1.25	0	0.3878	0	0.005676
-1	0	0.3878	0	0.005676
-0.75	0	0.3878	0	0.005676
-0.5	0	0.3878	0	0.005676
-0.25	0	0.3878	0	0.005676
0	0	0.3878	0	0.005676
0.25	0.7769	1.1647	0.0113711	0.0170471
0.5	0.8965	2.0612	0.0131216	0.0301687
0.75	1.2568	3.318	0.0183951	0.0485639
1	1.8821	5.2001	0.0275473	0.0761112
1.25	3.0256	8.2257	0.0442842	0.1203954
1.5	4.6998	12.9255	0.0687886	0.1891839
1.75	6.8854	19.8109	0.1007781	0.289962
2	7.2635	27.0744	0.1063121	0.3962741
2.25	11.3955	38.4699	0.1667901	0.5630642
2.5	10.0895	48.5594	0.1476748	0.7107391
2.75	10.2966	58.856	0.1507061	0.8614451
3	7.0913	65.9473	0.1037917	0.9652369
3.25	1.7557	67.703	0.0256973	0.9909342
3.5	0.3816	68.0846	0.0055853	0.9965194
3.75	0.1397	68.2243	0.0020447	0.9985642
4	0.0981	68.3224	0.0014358	1

Total Wt.	68.3224 gms
Median Weight	34.1612 gms
Mean Grain Size	2.16 phi 0.2237563 mm



Cum Wt. % SL4

5'

Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
2
4
6
8
10
12
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

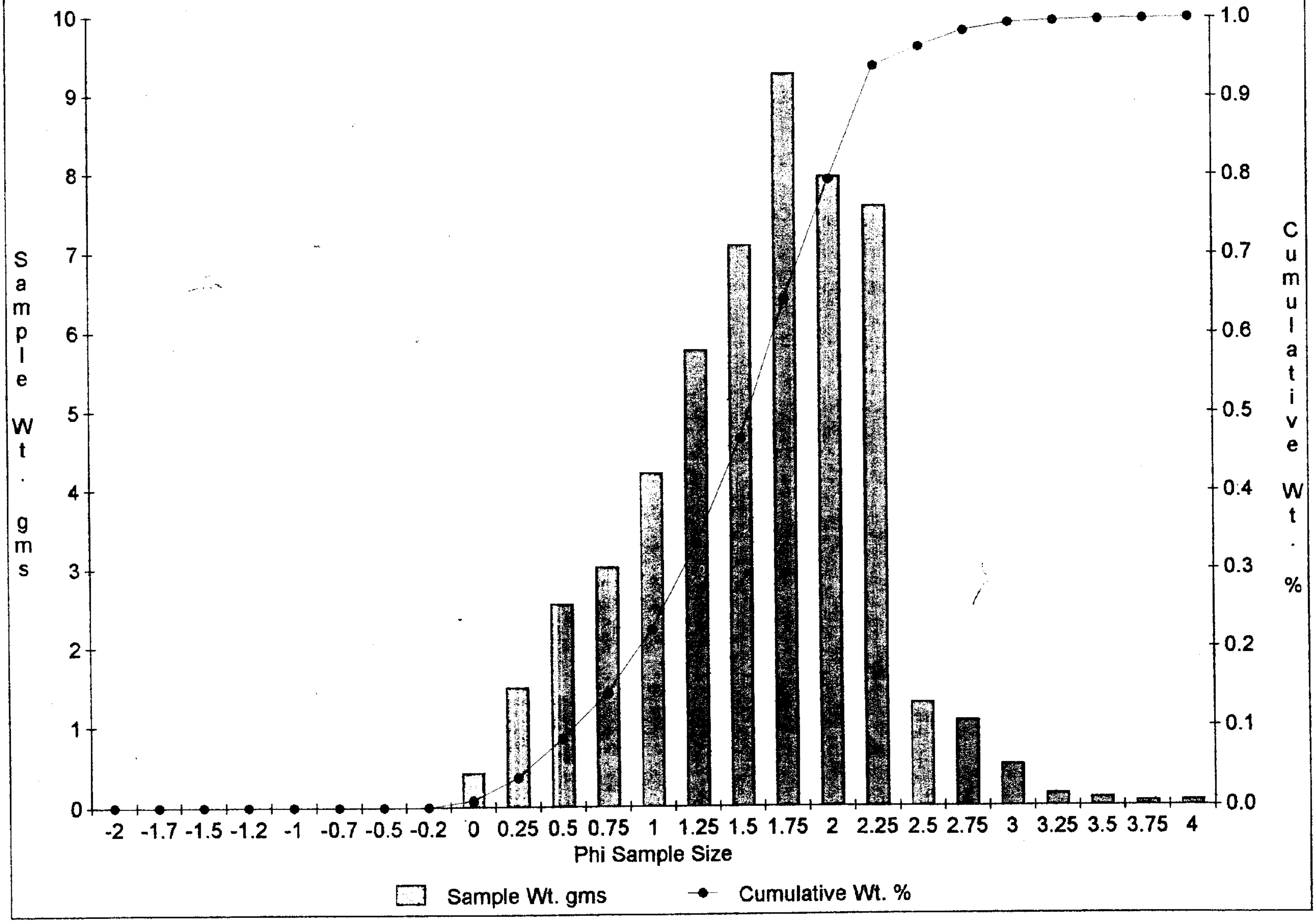
CORE (SL-4)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.4228	0.4228	0.0080315	0.0080315
0.25	1.4889	1.9117	0.0282832	0.0363148
0.5	2.5411	4.4528	0.0482709	0.0845856
0.75	3.0108	7.4636	0.0571933	0.141779
1	4.2133	11.6769	0.0800361	0.2218151
1.25	5.7735	17.4504	0.1096737	0.3314888
1.5	7.0954	24.5458	0.1347846	0.4662734
1.75	9.2745	33.8203	0.1761789	0.6424524
2	7.9687	41.789	0.1513739	0.7938263
2.25	7.5949	49.3839	0.1442732	0.9380994
2.5	1.2987	50.6826	0.0246702	0.9627696
2.75	1.0705	51.7531	0.0203353	0.9831049
3	0.5183	52.2714	0.0098457	0.9929506
3.25	0.1521	52.4235	0.0028893	0.9958399
3.5	0.0998	52.5233	0.0018958	0.9977357
3.75	0.0571	52.5804	0.0010847	0.9988203
4	0.0621	52.6425	0.0011797	1

Total Wt.	52.6425	gms		
Median Weight	26.32125	gms		
Mean Grain Size	1.55	phi	0.3415101	mm

Cum Wt. % SL4

6'


Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

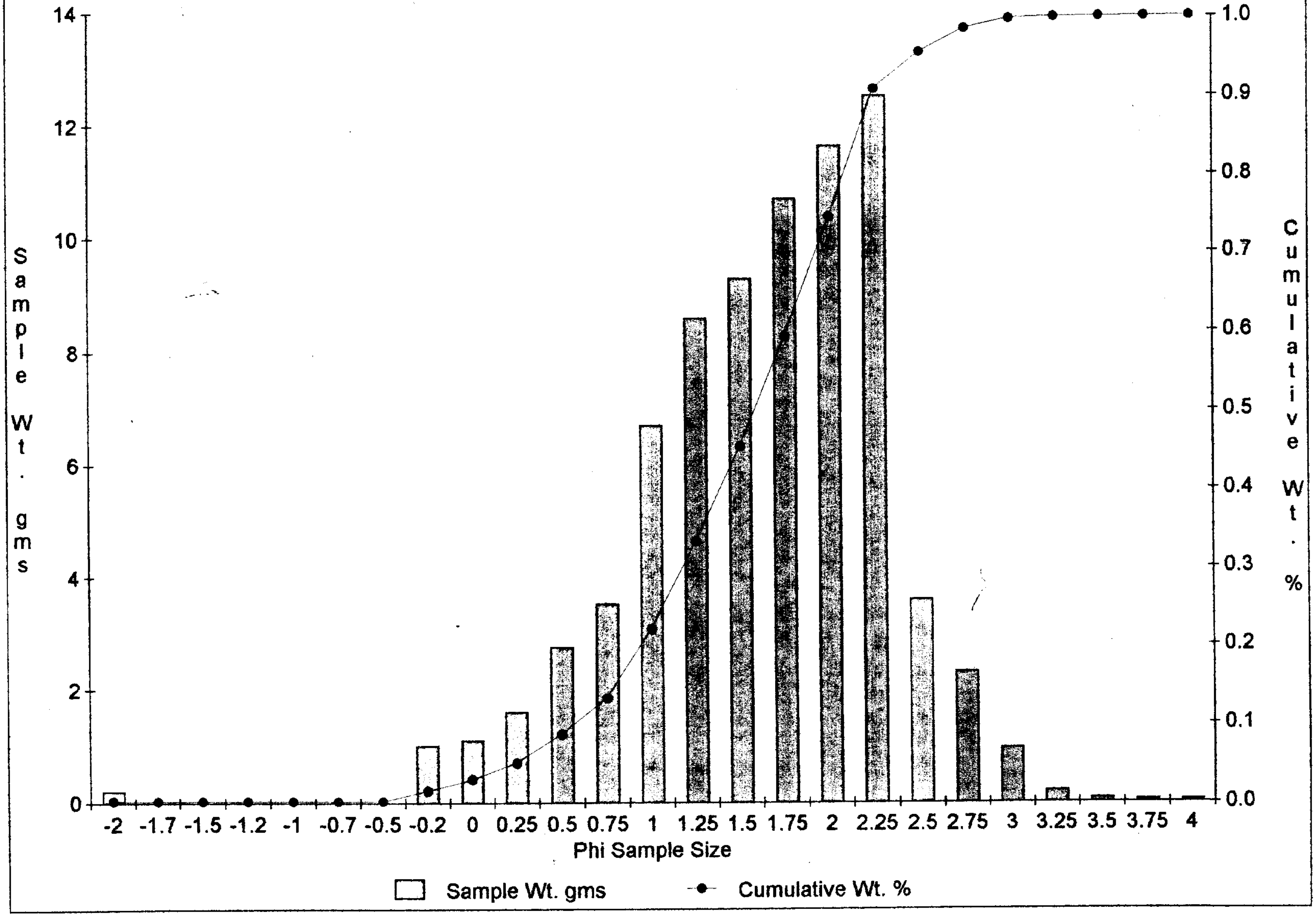
CORE (SL-4)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.2034	0.2034	0.0026451	0.0026451
-1.75	0	0.2034	0	0.0026451
-1.5	0	0.2034	0	0.0026451
-1.25	0	0.2034	0	0.0026451
-1	0	0.2034	0	0.0026451
-0.75	0	0.2034	0	0.0026451
-0.5	0	0.2034	0	0.0026451
-0.25	1.014	1.2174	0.0131865	0.0158315
0	1.0989	2.3163	0.0142905	0.0301221
0.25	1.6043	3.9206	0.0208629	0.050985
0.5	2.7364	6.657	0.0355852	0.0865702
0.75	3.5077	10.1647	0.0456155	0.1321857
1	6.6916	16.8563	0.0870202	0.2192059
1.25	8.5848	25.4411	0.1116401	0.330846
1.5	9.2902	34.7313	0.1208134	0.4516594
1.75	10.7244	45.4557	0.1394643	0.5911237
2	11.6578	57.1135	0.1516026	0.7427263
2.25	12.5545	69.668	0.1632636	0.90599
2.5	3.599	73.267	0.0468028	0.9527928
2.75	2.3051	75.5721	0.0299764	0.9827692
3	0.9619	76.534	0.0125089	0.9952781
3.25	0.2056	76.7396	0.0026737	0.9979518
3.5	0.0733	76.8129	0.0009532	0.998905
3.75	0.0401	76.853	0.0005215	0.9994265
4	0.0441	76.8971	0.0005735	1

Total Wt.	76.8971	gms		
Median Weight	38.44855	gms		
Mean Grain Size	1.59	phi	0.3321715	mm

Cum Wt. % SL4

7'

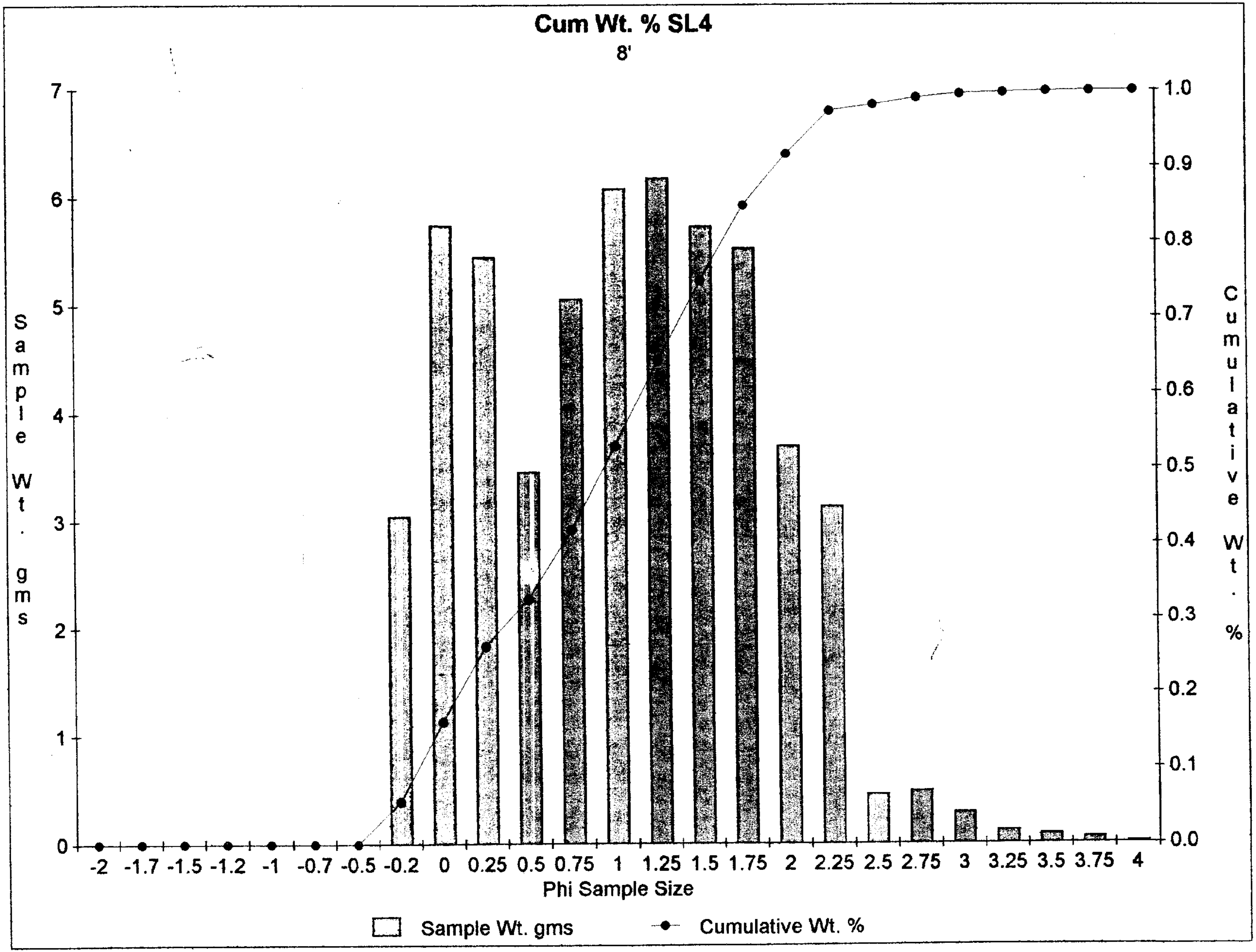

14
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (SL-4)
DEPTH (8 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	3.0394	3.0394	0.0557111	0.0557111
0	5.7401	8.7795	0.1052139	0.1609249
0.25	5.4436	14.2231	0.0997791	0.260704
0.5	3.4501	17.6732	0.063239	0.3239431
0.75	5.0542	22.7274	0.0926416	0.4165846
1	6.0791	28.8065	0.1114276	0.5280122
1.25	6.1781	34.9846	0.1132422	0.6412545
1.5	5.7331	40.7177	0.1050856	0.74634
1.75	5.5262	46.2439	0.1012932	0.8476332
2	3.6952	49.9391	0.0677316	0.9153648
2.25	3.1329	53.072	0.0574249	0.9727897
2.5	0.4505	53.5225	0.0082575	0.9810472
2.75	0.4844	54.0069	0.0088789	0.989926
3	0.2879	54.2948	0.0052771	0.9952031
3.25	0.1147	54.4095	0.0021024	0.9973055
3.5	0.0823	54.4918	0.0015085	0.9988141
3.75	0.051	54.5428	0.0009348	0.9997489
4	0.0137	54.5565	0.0002511	1

Total Wt. 54.5565 gms
Median Weight 27.27825 gms
Mean Grain Size 0.94 phi 0.5212329 mm

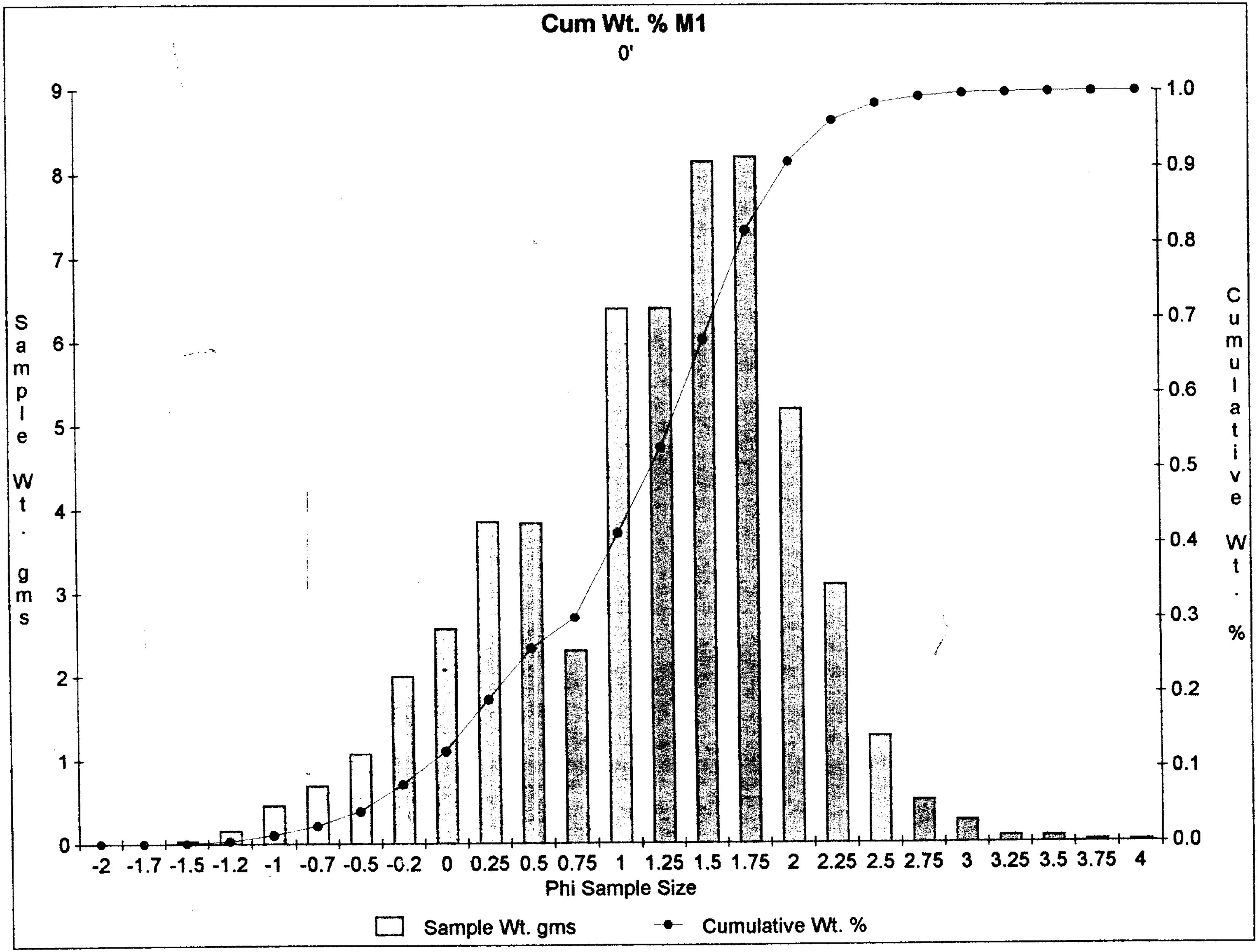

Cum Wt. % SL4
8'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
1
2
3
4
5
6
7
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4

Grain Size Distribution Chart

CORE (M-1)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0307	0.0307	0.0005421	0.0005421
-1.25	0.1549	0.1856	0.0032771	0.0032771
-1	0.4554	0.641	0.0113182	0.0113182
-0.75	0.6886	1.3296	0.0121586	0.0234768
-0.5	1.0818	2.4114	0.0191014	0.0425782
-0.25	1.9997	4.4111	0.0353088	0.077887
0	2.5655	6.9766	0.0452992	0.1231862
0.25	3.8434	10.82	0.0678631	0.1910493
0.5	3.8303	14.6503	0.0676318	0.2586811
0.75	2.3044	16.9547	0.0406889	0.29937
1	6.3895	23.3442	0.1128197	0.4121897
1.25	6.3984	29.7426	0.1129769	0.5251666
1.5	8.1464	37.889	0.1438414	0.669008
1.75	8.2051	46.0941	0.1448779	0.8138859
2	5.1906	51.2847	0.0916507	0.9055365
2.25	3.0982	54.3829	0.0547051	0.9602416
2.5	1.2815	55.6644	0.0226275	0.9828691
2.75	0.5061	56.1705	0.0089362	0.9918054
3	0.2658	56.4363	0.0046932	0.9964986
3.25	0.0771	56.5134	0.0013614	0.99786
3.5	0.0716	56.585	0.0012642	0.9991242
3.75	0.0286	56.6136	0.000505	0.9996292
4	0.021	56.6346	0.0003708	1

Total Wt.	56.6346 gms	
Median Weight	28.3173 gms	
Mean Grain Size	1.19 phi	0.4383029 mm

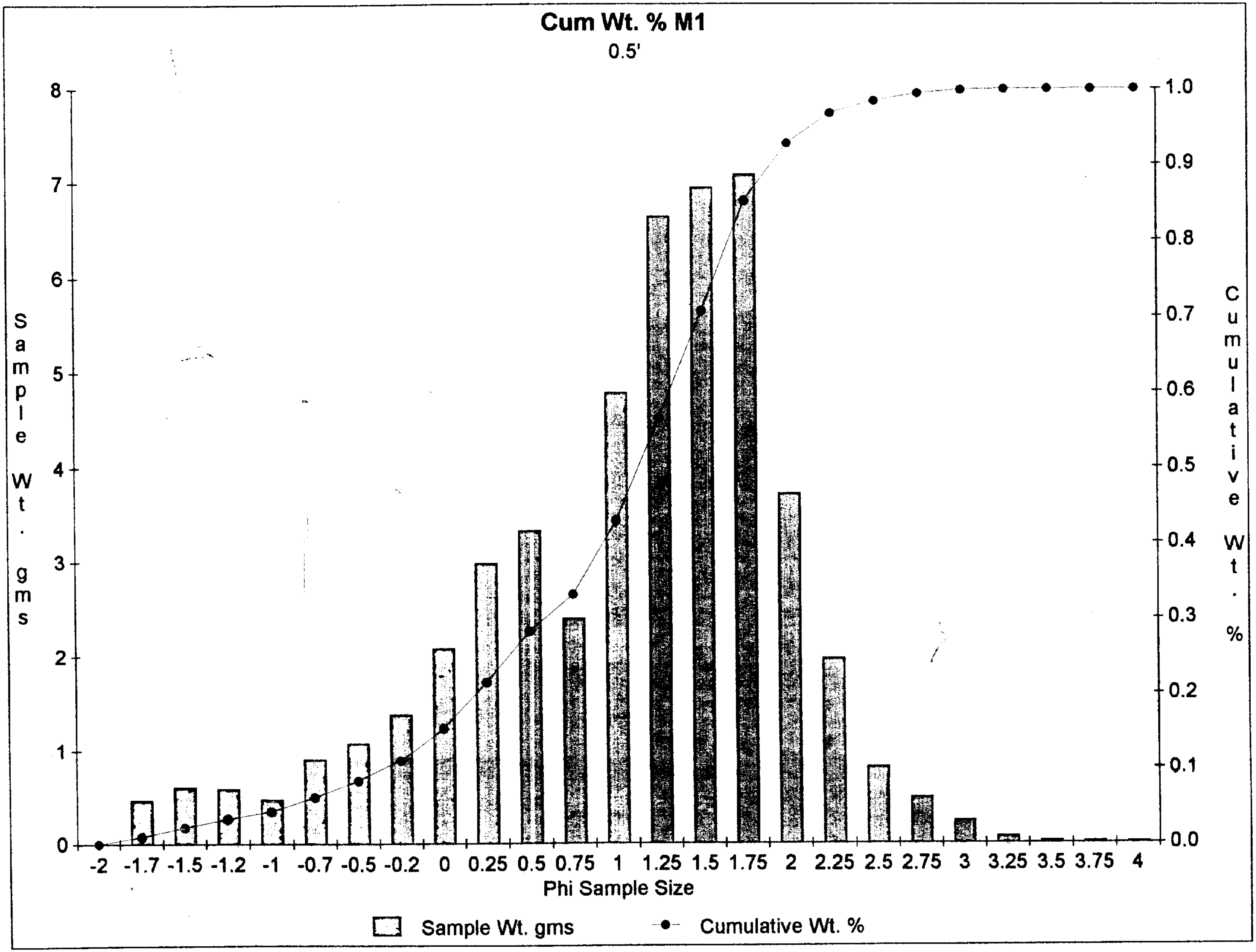

Cum Wt. % M1
0'
Sample Wt. gms
0
1
2
3
4
5
6
7
8
9
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.4596	0.4596	0.0093889	0.0093889
-1.5	0.592	1.0516	0.0120936	0.0214825
-1.25	0.5793	1.6309	0.0333167	0.0333167
-1	0.463	2.0939	0.0427751	0.0427751
-0.75	0.9021	2.996	0.0184285	0.0612036
-0.5	1.0724	4.0684	0.0219074	0.083111
-0.25	1.3774	5.4458	0.0281381	0.1112491
0	2.0717	7.5175	0.0423216	0.1535707
0.25	2.9705	10.488	0.0606826	0.2142533
0.5	3.3224	13.8104	0.0678714	0.2821247
0.75	2.3913	16.2017	0.0488505	0.3309752
1	4.7864	20.9881	0.0977786	0.4287538
1.25	6.6378	27.6259	0.1355998	0.5643536
1.5	6.9369	34.5628	0.1417099	0.7060636
1.75	7.0783	41.6411	0.1445985	0.8506621
2	3.7163	45.3574	0.0759182	0.9265802
2.25	1.9663	47.3237	0.0401684	0.9667487
2.5	0.8053	48.129	0.016451	0.9831997
2.75	0.4784	48.6074	0.009773	0.9929726
3	0.2355	48.8429	0.0048109	0.9977835
3.25	0.0654	48.9083	0.001336	0.9991195
3.5	0.0207	48.929	0.0004229	0.9995424
3.75	0.0157	48.9447	0.0003207	0.9998631
4	0.0067	48.9514	0.0001369	1

Total Wt. 48.9514 gms
Median Weight 24.4757 gms
Mean Grain Size 1.13 phi 0.4569157 mm



Cum Wt. % M1

0.5'

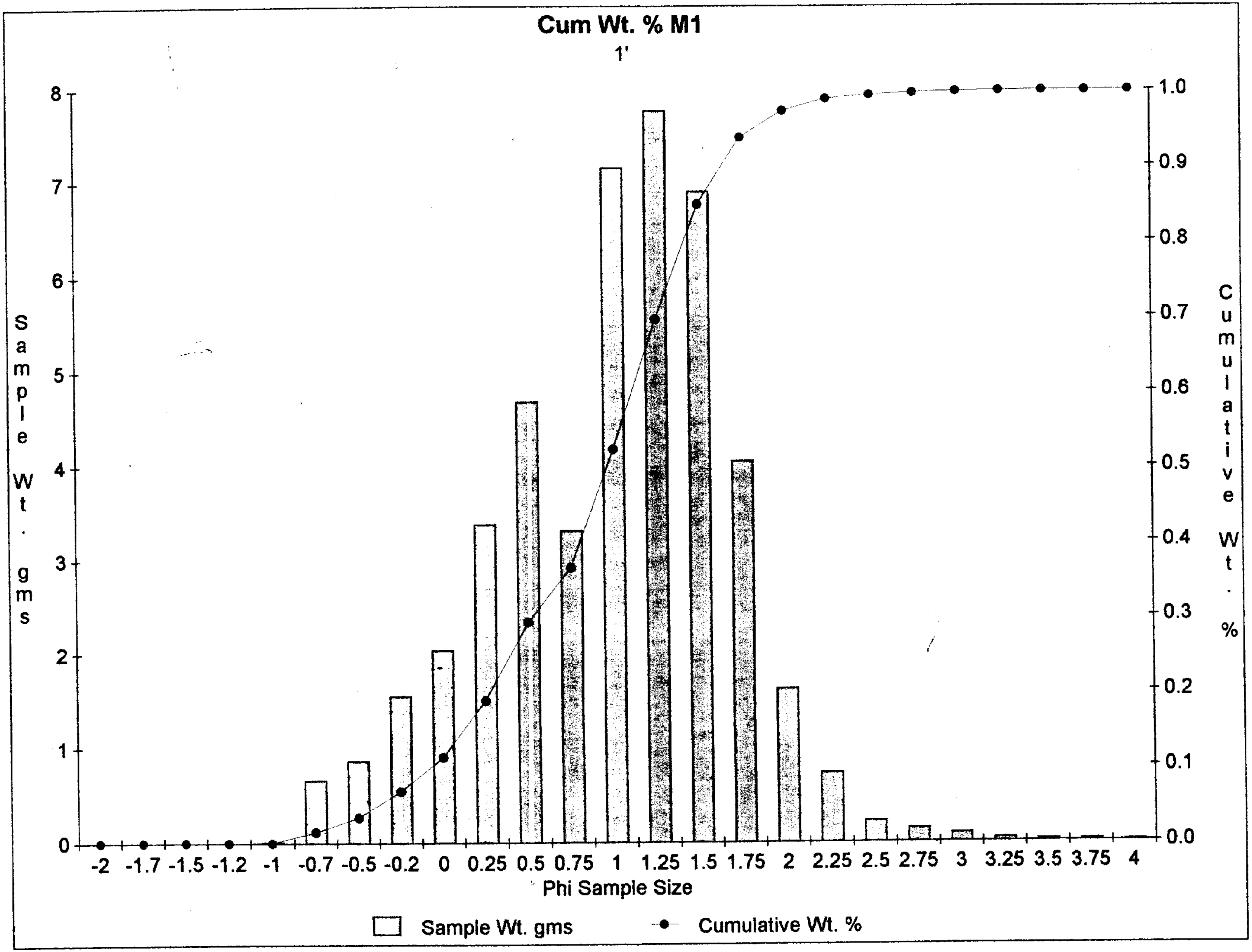
Sample Wt. gms
0
1
2
3
4
5
6
7
8
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.0087	0.0087	0.0001921	0.0001921
-0.75	0.6641	0.6728	0.0146654	0.0148575
-0.5	0.8707	1.5435	0.0192278	0.0340853
-0.25	1.5497	3.0932	0.0342223	0.0683076
0	2.034	5.1272	0.0449171	0.1132247
0.25	3.3767	8.5039	0.0745682	0.1877929
0.5	4.6842	13.1881	0.1034419	0.2912348
0.75	3.3122	16.5003	0.0731438	0.3643786
1	7.1585	23.6588	0.1580822	0.5224608
1.25	7.772	31.4308	0.1716302	0.694091
1.5	6.908	38.3388	0.1525504	0.8466414
1.75	4.0475	42.3863	0.0893815	0.9360229
2	1.6238	44.0101	0.0358586	0.9718815
2.25	0.7349	44.745	0.0162289	0.9881104
2.5	0.2229	44.9679	0.0049223	0.9930328
2.75	0.1399	45.1078	0.0030894	0.9961222
3	0.091	45.1988	0.0020096	0.9981318
3.25	0.036	45.2348	0.000795	0.9989268
3.5	0.0193	45.2541	0.0004262	0.999353
3.75	0.0207	45.2748	0.0004571	0.9998101
4	0.0086	45.2834	0.0001899	1

Total Wt.	45.2834	gms	
Median Weight	22.6417	gms	
Mean Grain Size	0.99	phi	0.5034778 mm



Cum Wt. % M1

1'

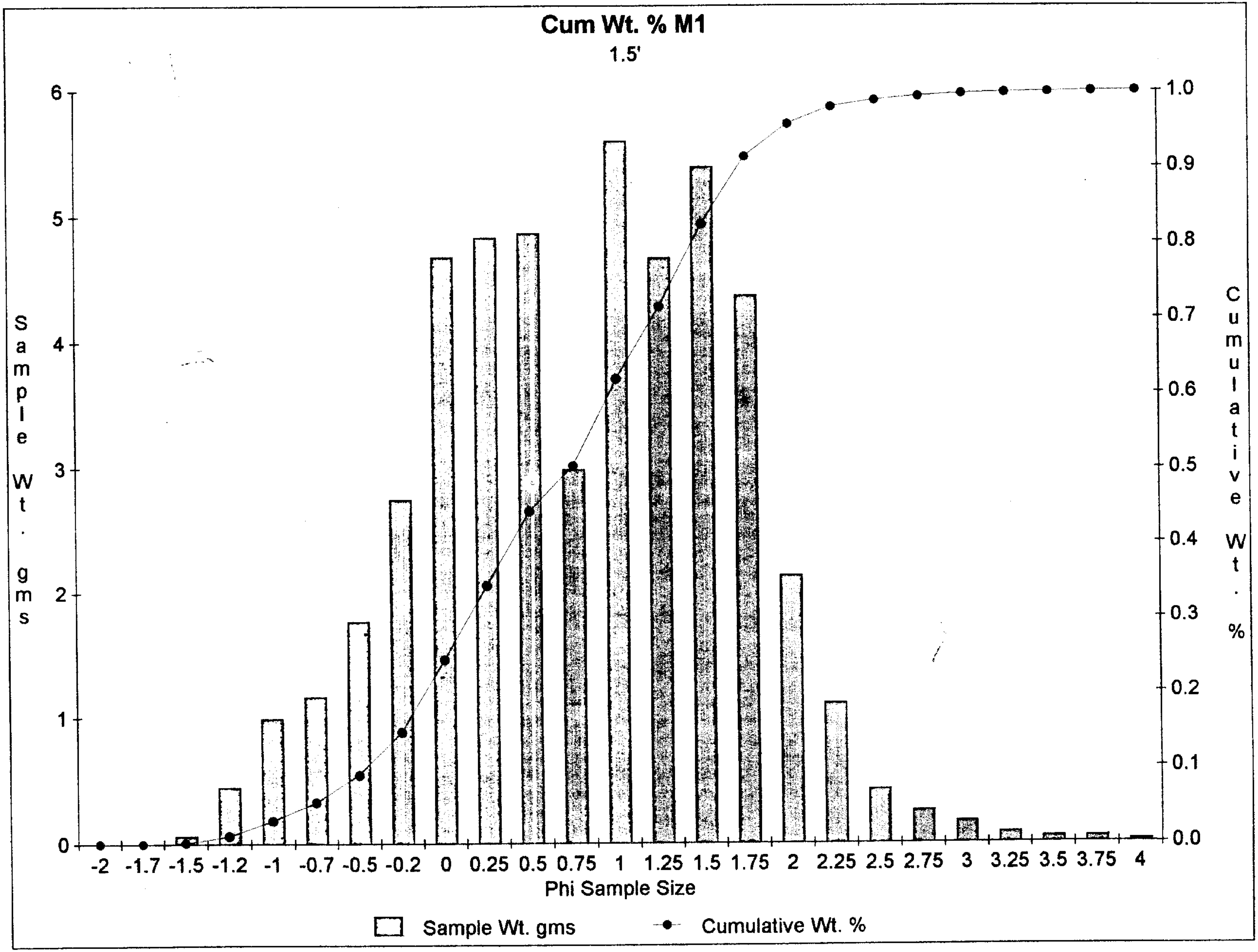
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0597	0.0597	0.0012242	0.0012242
-1.25	0.4434	0.5031	0.0103166	0.0103166
-1	0.9906	1.4937	0.03063	0.03063
-0.75	1.1623	2.656	0.0238343	0.0544643
-0.5	1.7634	4.4194	0.0361605	0.0906248
-0.25	2.7399	7.1593	0.0561848	0.1468096
0	4.6713	11.8306	0.0957903	0.2425998
0.25	4.8239	16.6545	0.0989195	0.3415194
0.5	4.8611	21.5156	0.0996824	0.4412017
0.75	2.9774	24.493	0.061055	0.5022567
1	5.5965	30.0895	0.1147626	0.6170193
1.25	4.6629	34.7524	0.095618	0.7126373
1.5	5.3904	40.1428	0.1105363	0.8231736
1.75	4.3657	44.5085	0.0895236	0.9126972
2	2.1246	46.6331	0.0435673	0.9562645
2.25	1.1036	47.7367	0.0226306	0.9788951
2.5	0.4226	48.1593	0.0086659	0.987561
2.75	0.2534	48.4127	0.0051963	0.9927572
3	0.1698	48.5825	0.0034819	0.9962392
3.25	0.0776	48.6601	0.0015913	0.9978305
3.5	0.0436	48.7037	0.0008941	0.9987245
3.75	0.0452	48.7489	0.0009269	0.9996514
4	0.017	48.7659	0.0003486	1

Total Wt.	48.7659	gms		
Median Weight	24.38295	gms		
Mean Grain Size	0.74	phi	0.5987394	mm


Cum Wt. % M1
1.5'
Sample Wt. gms
0
1
2
3
4
5
6
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

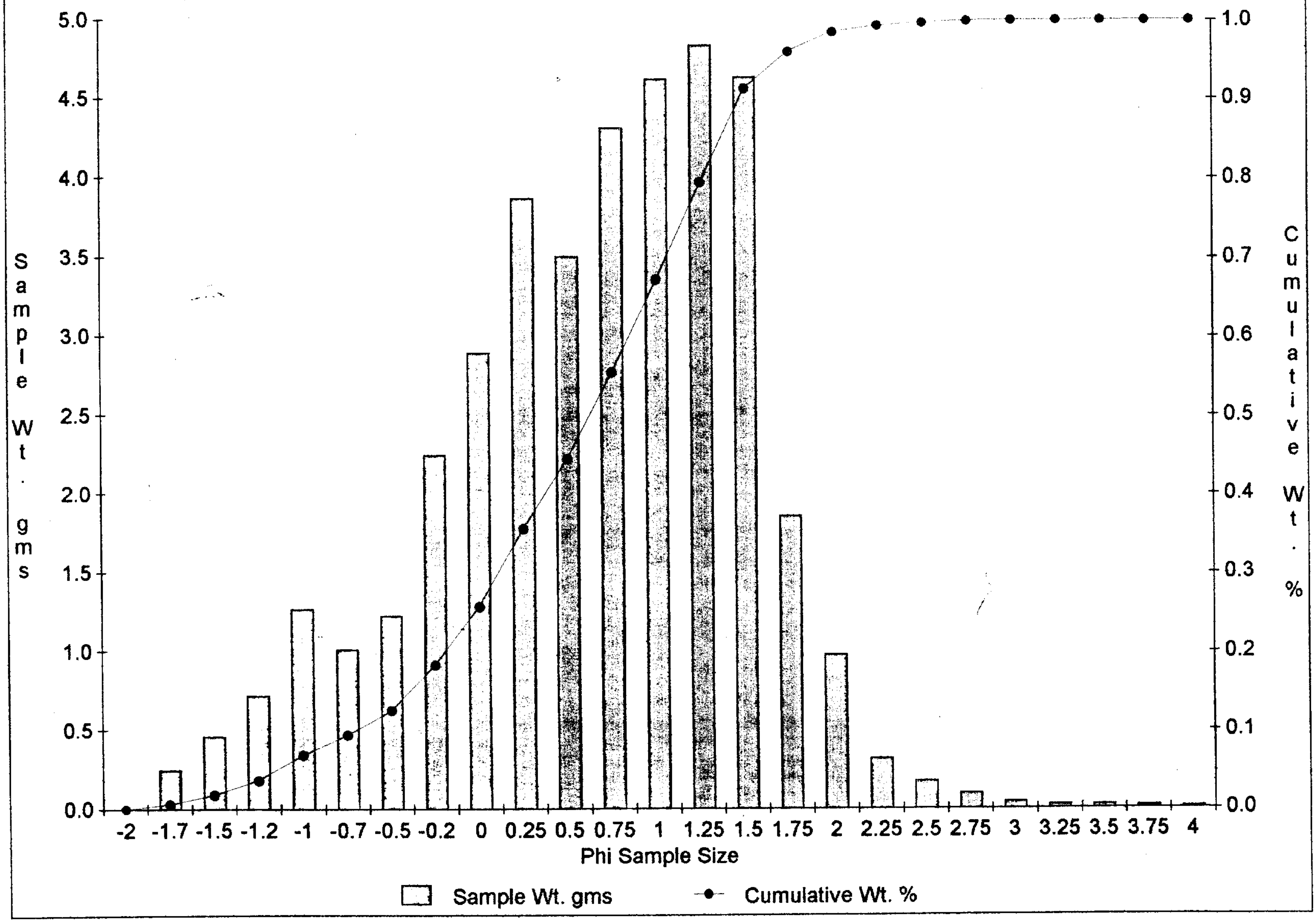
CORE (M-1)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0.2451	0.2451	0.0062389	0.0062389
-1.5	0.4608	0.7059	0.0117295	0.0179685
-1.25	0.7179	1.4238	0.0362424	0.0362424
-1	1.2661	2.6899	0.0684706	0.0684706
-0.75	1.0092	3.6991	0.0256889	0.0941594
-0.5	1.2218	4.9209	0.0311005	0.12526
-0.25	2.2391	7.16	0.0569956	0.1822555
0	2.8857	10.0457	0.0734546	0.2557101
0.25	3.86	13.9057	0.0982551	0.3539652
0.5	3.4949	17.4006	0.0889616	0.4429268
0.75	4.3036	21.7042	0.1095468	0.5524736
1	4.6112	26.3154	0.1173766	0.6698502
1.25	4.8269	31.1423	0.1228672	0.7927174
1.5	4.6253	35.7676	0.1177356	0.910453
1.75	1.8508	37.6184	0.0471115	0.9575645
2	0.9742	38.5926	0.024798	0.9823624
2.25	0.3159	38.9085	0.0080411	0.9904036
2.5	0.1712	39.0797	0.0043578	0.9947614
2.75	0.096	39.1757	0.0024436	0.9972051
3	0.0424	39.2181	0.0010793	0.9982844
3.25	0.0219	39.24	0.0005575	0.9988418
3.5	0.0208	39.2608	0.0005295	0.9993713
3.75	0.0153	39.2761	0.0003895	0.9997607
4	0.0094	39.2855	0.0002393	1

Total Wt.	39.2855	gms		
Median Weight	19.64275	gms		
Mean Grain Size	0.63	phi	0.6461764	mm

Cum Wt. % M1

2'



Sample Wt. gms
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

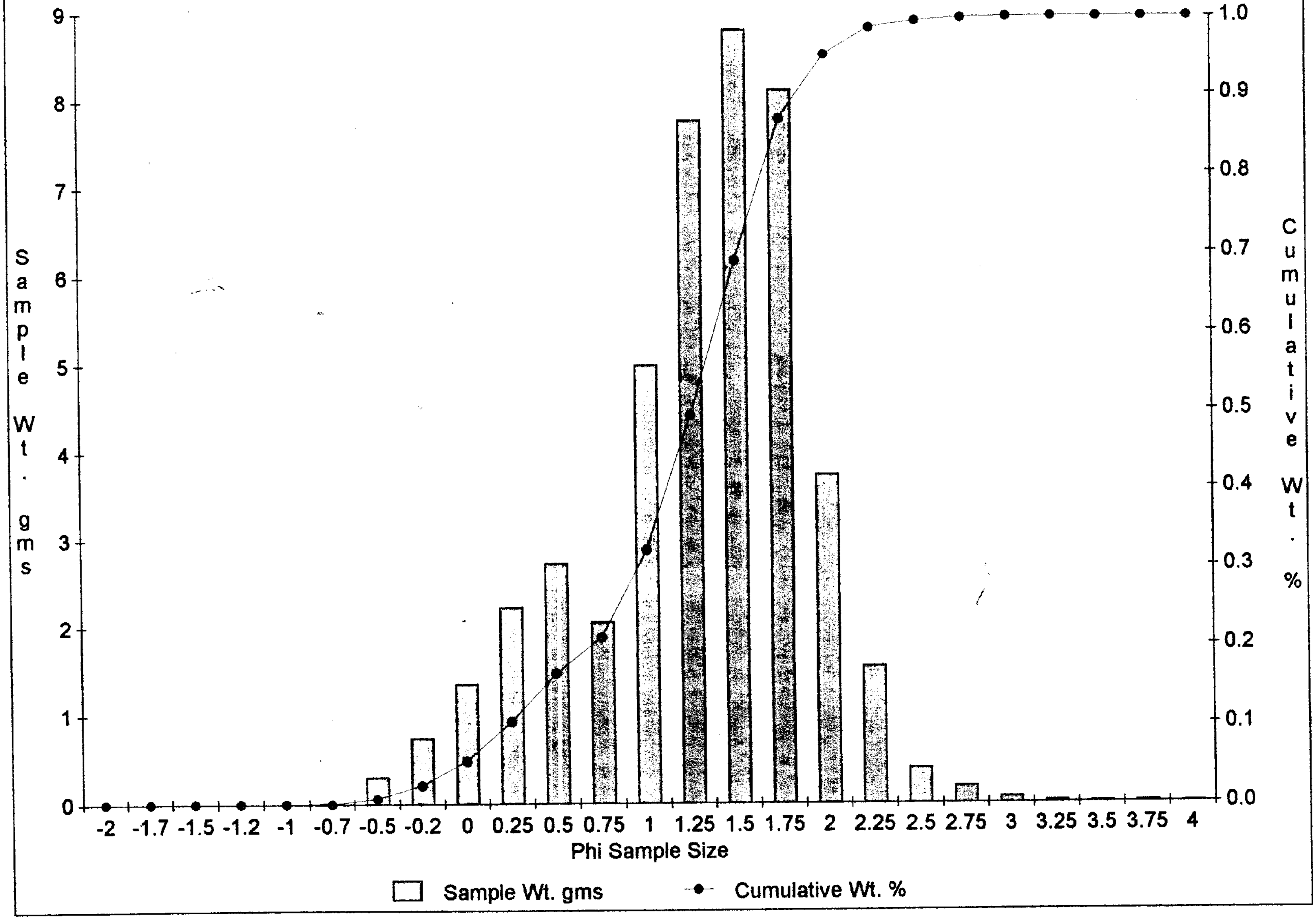
CORE (M-1)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.0094	0.0094	0.0002083	0.0002083
-0.5	0.3041	0.3135	0.0067402	0.0069486
-0.25	0.7428	1.0563	0.0164638	0.0234124
0	1.3494	2.4057	0.0299088	0.0533211
0.25	2.215	4.6207	0.0490944	0.1024155
0.5	2.7164	7.3371	0.0602076	0.1626231
0.75	2.0513	9.3884	0.045466	0.2080892
1	4.9903	14.3787	0.1106075	0.3186966
1.25	7.7808	22.1595	0.1724575	0.4911541
1.5	8.8316	30.9911	0.195748	0.6869021
1.75	8.136	39.1271	0.1803303	0.8672325
2	3.7367	42.8638	0.0828221	0.9500545
2.25	1.5459	44.4097	0.0342641	0.9843186
2.5	0.3955	44.8052	0.0087661	0.9930847
2.75	0.1889	44.9941	0.0041869	0.9972716
3	0.0699	45.064	0.0015493	0.9988208
3.25	0.0238	45.0878	0.0005275	0.9993484
3.5	0.0106	45.0984	0.0002349	0.9995833
3.75	0.0141	45.1125	0.0003125	0.9998958
4	0.0047	45.1172	0.0001042	1

Total Wt.	45.1172 gms	
Median Weight	22.5586 gms	
Mean Grain Size	1.26 phi	0.417544 mm

Cum Wt. % M1

2.5'

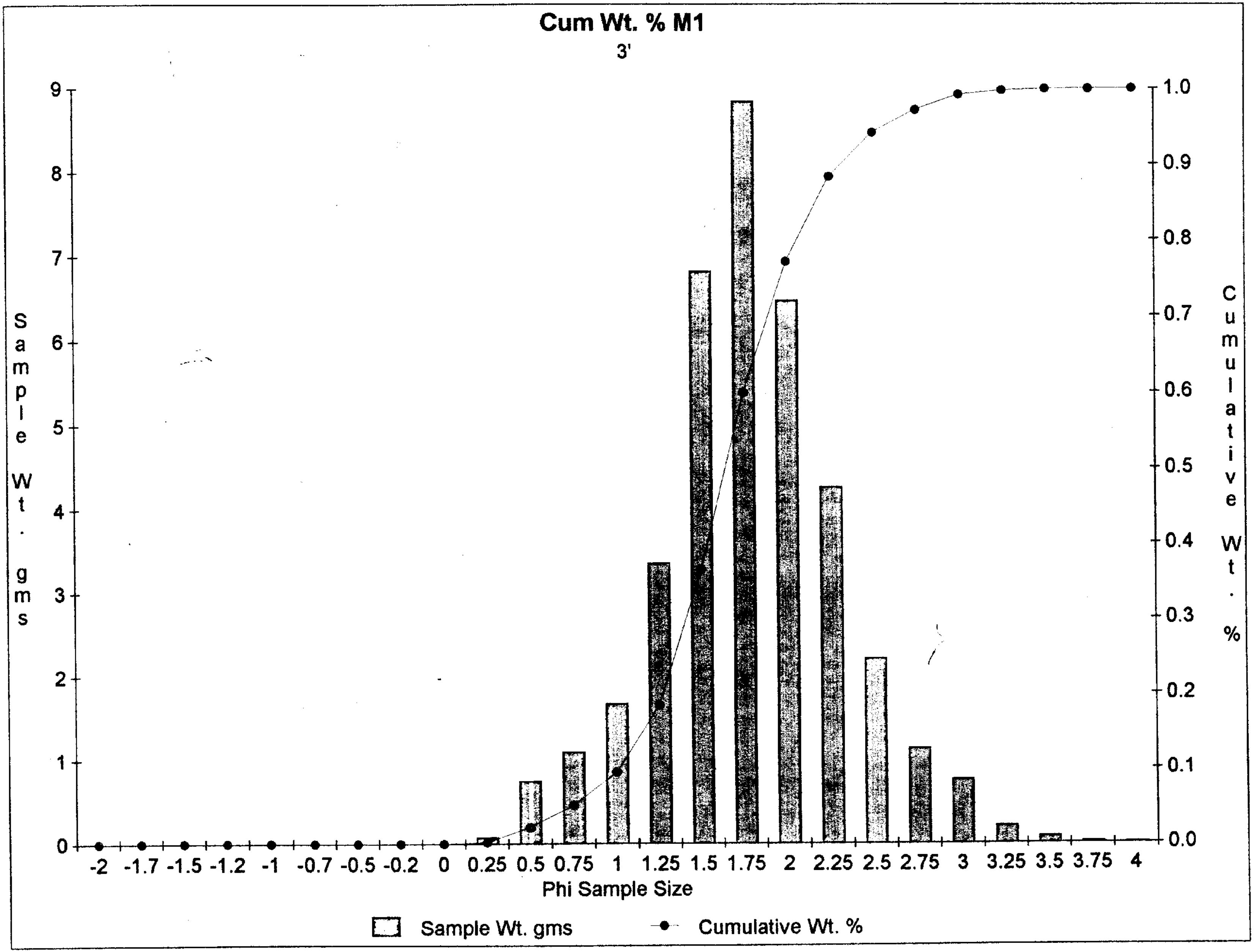

Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.0719	0.0719	0.0019062	0.0019062
0.5	0.7397	0.8116	0.0196107	0.0215168
0.75	1.0943	1.9059	0.0290117	0.0505285
1	1.6688	3.5747	0.0442426	0.0947711
1.25	3.3498	6.9245	0.0888086	0.1835798
1.5	6.8129	13.7374	0.1806211	0.3642008
1.75	8.8368	22.5742	0.2342779	0.5984788
2	6.4656	29.0398	0.1714136	0.7698923
2.25	4.2585	33.2983	0.1128998	0.8827921
2.5	2.2093	35.5076	0.0585721	0.9413642
2.75	1.1415	36.6491	0.030263	0.9716273
3	0.7627	37.4118	0.0202204	0.9918477
3.25	0.2086	37.6204	0.0055303	0.997378
3.5	0.0789	37.6993	0.0020918	0.9994698
3.75	0.0137	37.713	0.0003632	0.999833
4	0.0063	37.7193	0.000167	1

Total Wt.	37.7193 gms		
Median Weight	18.85965 gms		
Mean Grain Size	1.64 phi	0.3208565 mm	


Cum Wt. % M1
3'
Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

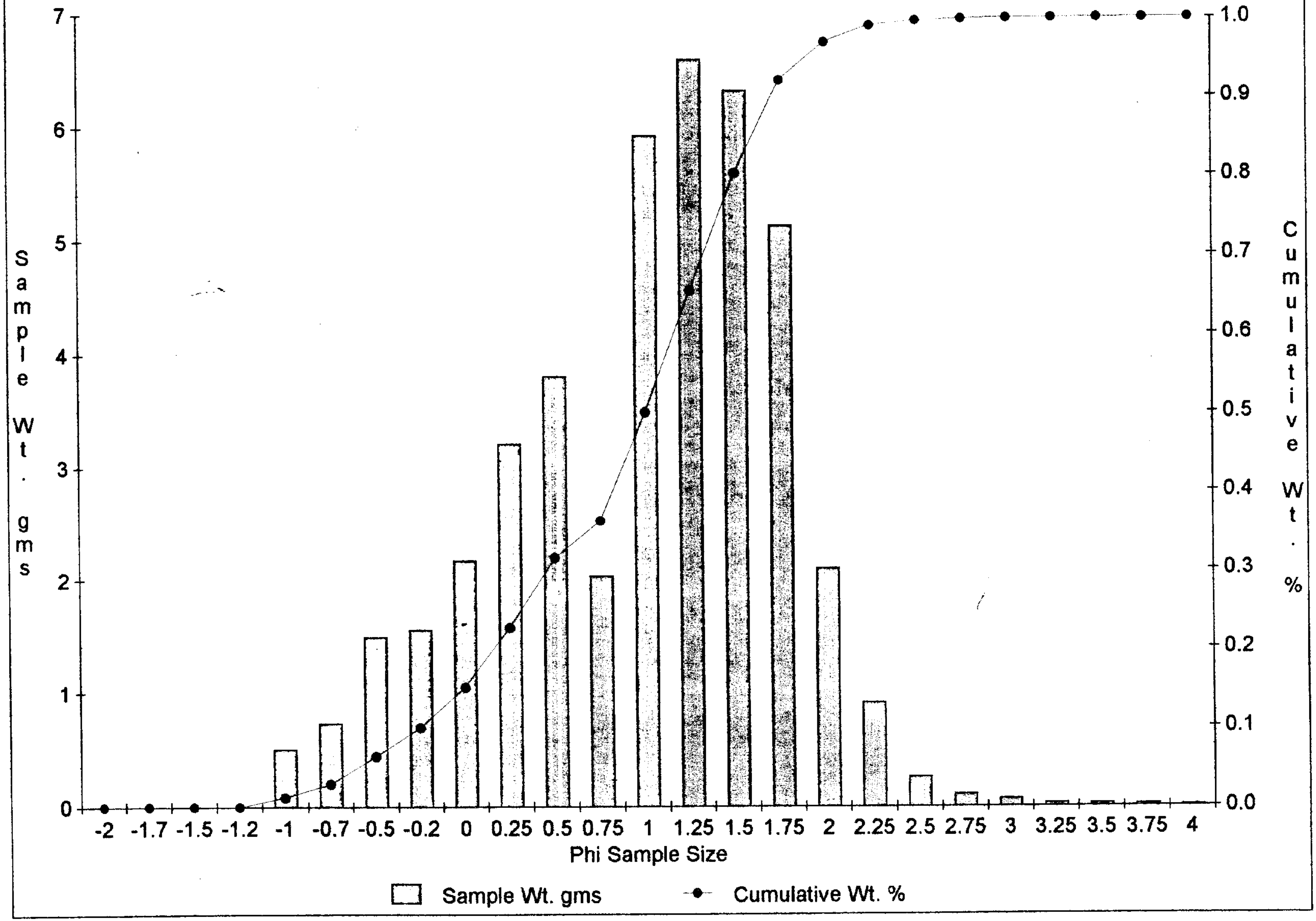
CORE (M-1)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.5058	0.5058	0.0117647	0.0117647
-0.75	0.7349	1.2407	0.0170934	0.0288581
-0.5	1.4892	2.7299	0.034638	0.0634961
-0.25	1.5513	4.2812	0.0360825	0.0995785
0	2.1692	6.4504	0.0504545	0.150033
0.25	3.2052	9.6556	0.0745513	0.2245844
0.5	3.8013	13.4569	0.0884163	0.3130007
0.75	2.0263	15.4832	0.0471307	0.3601314
1	5.9277	21.4109	0.1378753	0.4980067
1.25	6.6101	28.021	0.1537476	0.6517542
1.5	6.333	34.354	0.1473024	0.7990566
1.75	5.1309	39.4849	0.1193421	0.9183987
2	2.0943	41.5792	0.0487124	0.9671111
2.25	0.9119	42.4911	0.0212103	0.9883214
2.5	0.259	42.7501	0.0060242	0.9943456
2.75	0.1072	42.8573	0.0024934	0.996839
3	0.0648	42.9221	0.0015072	0.9983463
3.25	0.0237	42.9458	0.0005512	0.9988975
3.5	0.0215	42.9673	0.0005001	0.9993976
3.75	0.0165	42.9838	0.0003838	0.9997814
4	0.0094	42.9932	0.0002186	1

Total Wt.	42.9932 gms		
Median Weight	21.4966 gms		
Mean Grain Size	1 phi	0.5 mm	

Cum Wt. % M1

3.5'



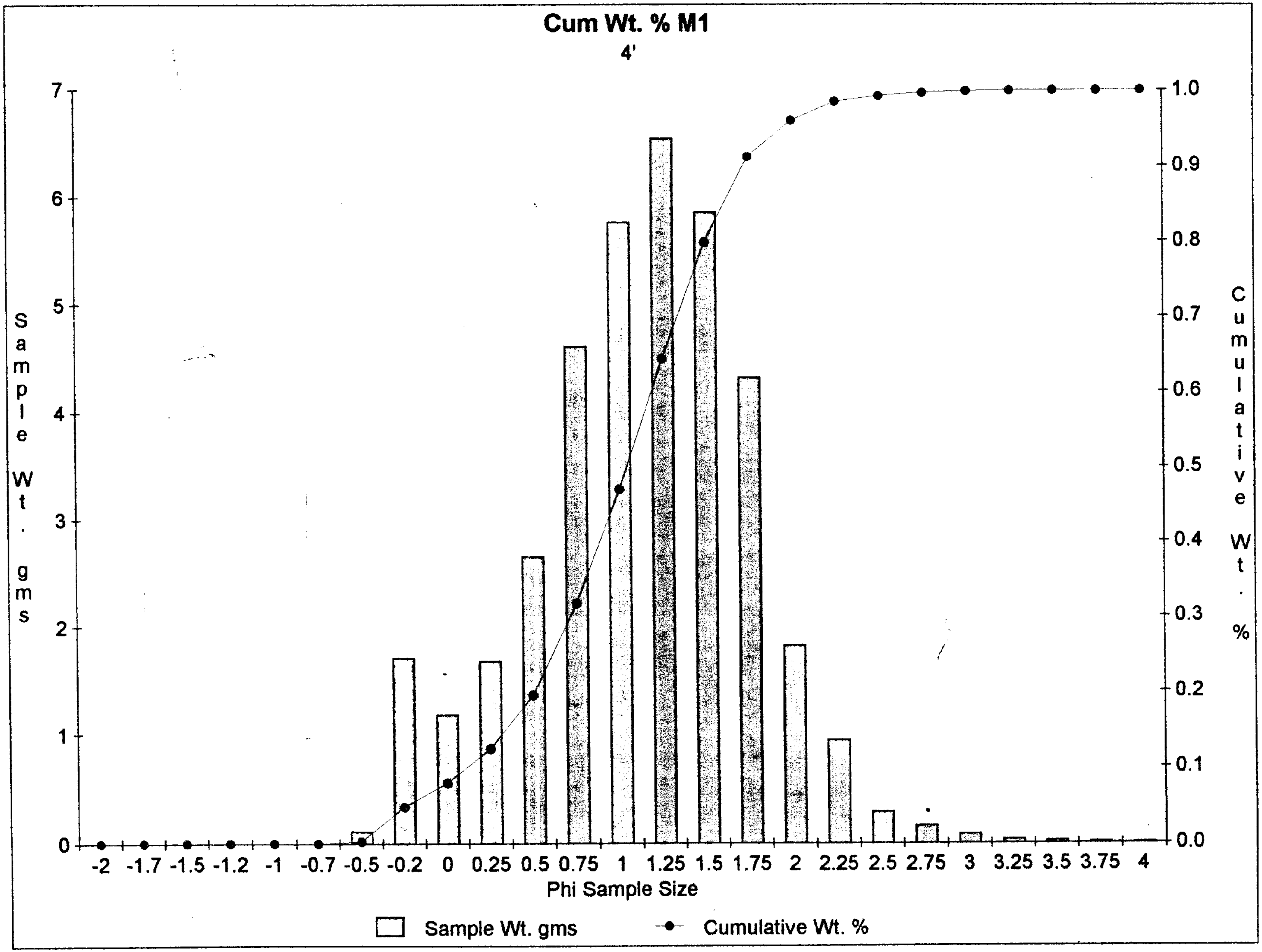
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
7
6
5
4
3
2
1
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.1108	0.1108	0.0029343	0.0029343
-0.25	1.7049	1.8157	0.0451511	0.0480854
0	1.178	2.9937	0.0311971	0.0792825
0.25	1.6755	4.6692	0.0443725	0.123655
0.5	2.6454	7.3146	0.0700584	0.1937134
0.75	4.6024	11.917	0.1218859	0.3155994
1	5.764	17.681	0.1526487	0.4682481
1.25	6.5463	24.2273	0.1733665	0.6416145
1.5	5.8579	30.0852	0.1551355	0.79675
1.75	4.316	34.4012	0.1143012	0.9110511
2	1.8167	36.2179	0.0481119	0.959163
2.25	0.9421	37.16	0.0249497	0.9841128
2.5	0.2858	37.4458	0.0075689	0.9916817
2.75	0.1577	37.6035	0.0041764	0.995858
3	0.0837	37.6872	0.0022166	0.9980747
3.25	0.0337	37.7209	0.0008925	0.9989672
3.5	0.0199	37.7408	0.000527	0.9994942
3.75	0.0105	37.7513	0.0002781	0.9997722
4	0.0086	37.7599	0.0002278	1

Total Wt.	37.7599 gms		
Median Weight	18.87995 gms		
Mean Grain Size	1.05 phi	0.4829682 mm	


Cum Wt. % M1
4'
Sample Wt. gms
Cumulative Wt. %
Phi Sample Size
0
1
2
3
4
5
6
7
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

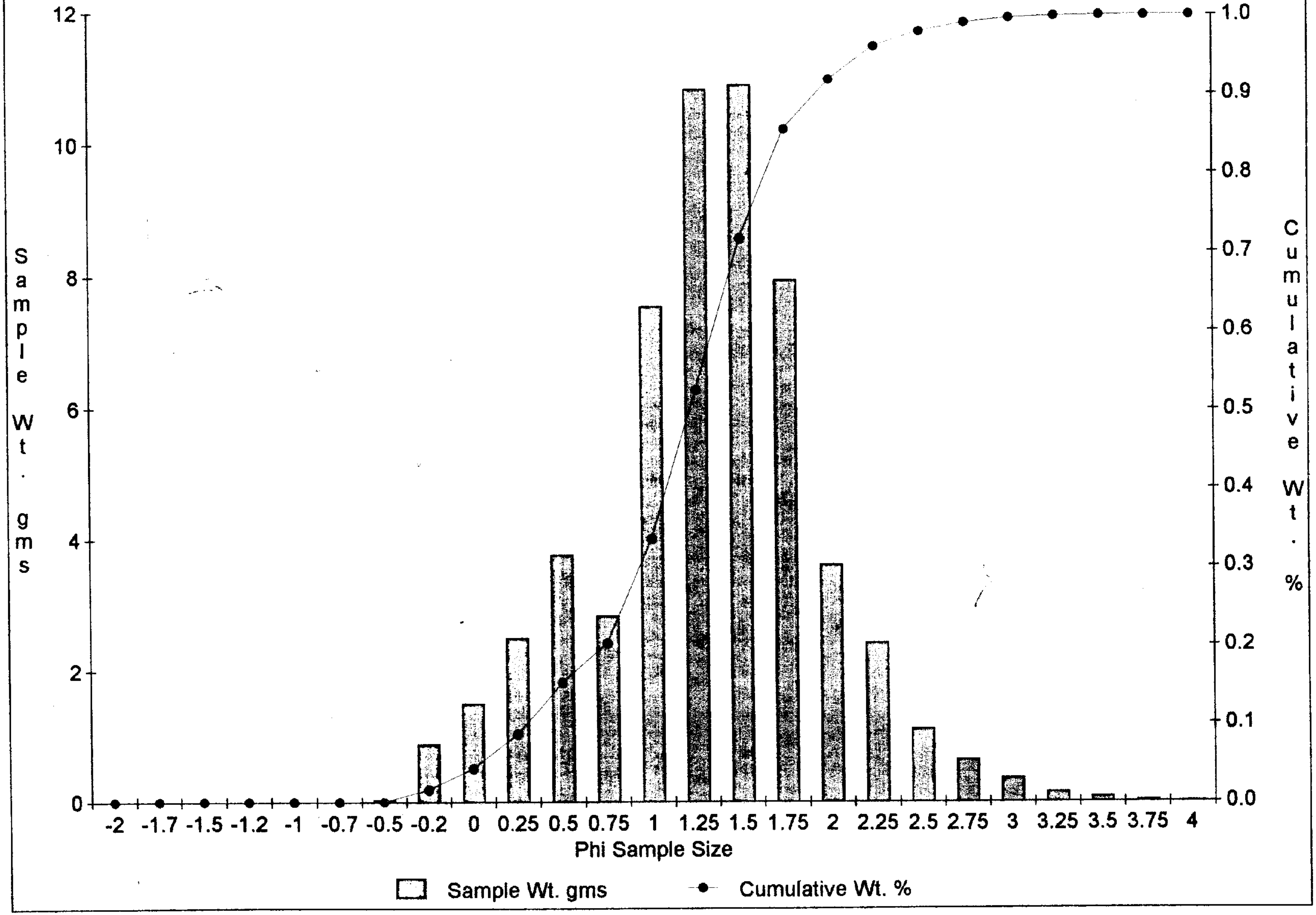
CORE (M-1)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.0309	0.0309	0.0005412	0.0005412
-0.25	0.8708	0.9017	0.0152523	0.0157936
0	1.5061	2.4078	0.0263798	0.0421734
0.25	2.4948	4.9026	0.0436972	0.0858706
0.5	3.7507	8.6533	0.0656947	0.1515653
0.75	2.8347	11.488	0.0496507	0.2012159
1	7.536	19.024	0.1319954	0.3332113
1.25	10.8369	29.8609	0.1898117	0.523023
1.5	10.9086	40.7695	0.1910675	0.7140905
1.75	7.9388	48.7083	0.1390506	0.8531411
2	3.6079	52.3162	0.0631935	0.9163346
2.25	2.4238	54.74	0.0424536	0.9587882
2.5	1.1032	55.8432	0.0193229	0.9781111
2.75	0.639	56.4822	0.0111923	0.9893034
3	0.3613	56.8435	0.0063283	0.9956317
3.25	0.1448	56.9883	0.0025362	0.9981679
3.5	0.0768	57.0651	0.0013452	0.9995131
3.75	0.0184	57.0835	0.0003223	0.9998354
4	0.0094	57.0929	0.0001646	1

Total Wt.	57.0929 gms		
Median Weight	28.54645 gms		
Mean Grain Size	1.22 phi	0.4292827	mm

Cum Wt. % M1

4.5'

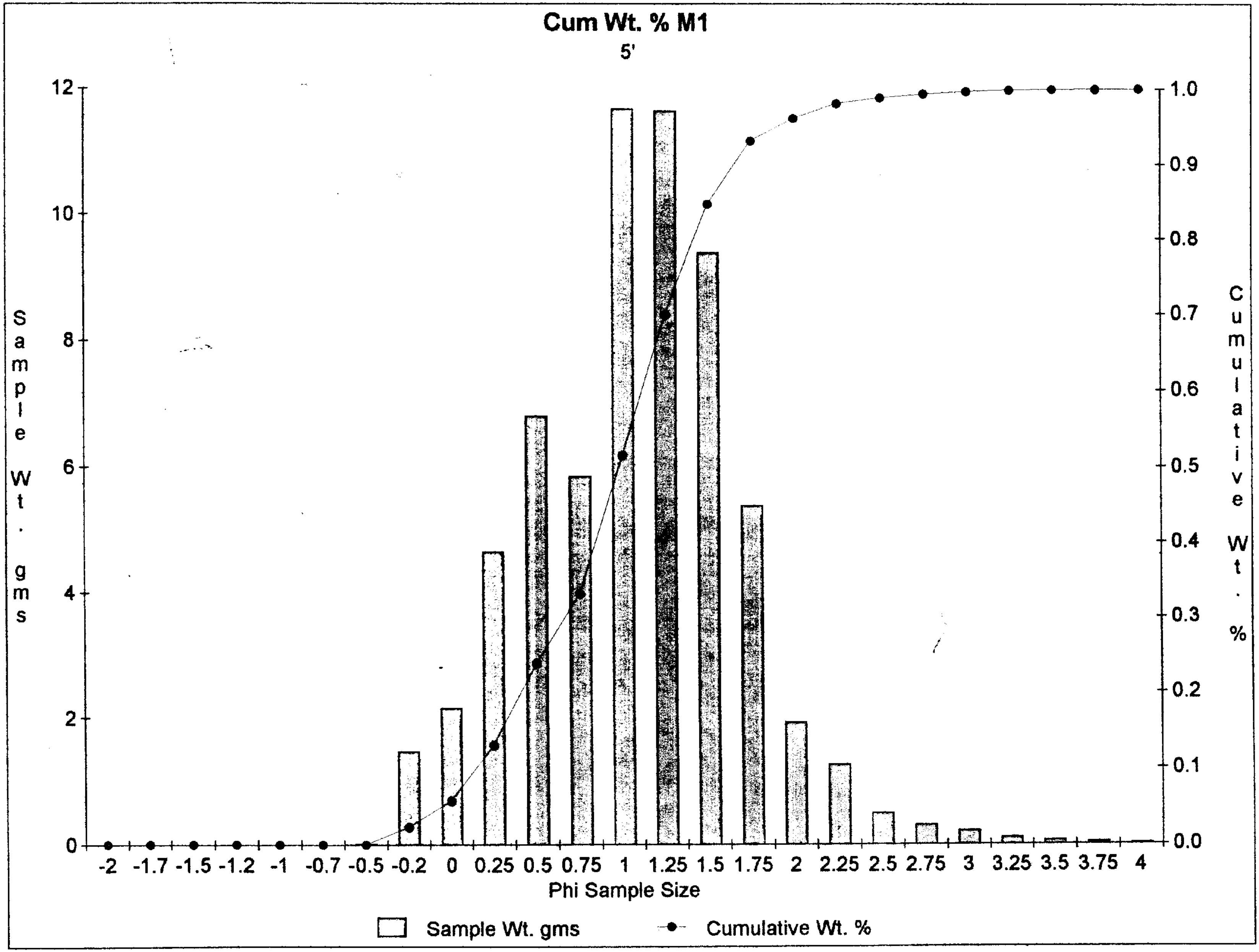

Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.017	0.017	0.0002686	0.0002686
-0.25	1.4654	1.4824	0.0231495	0.0234181
0	2.1401	3.6225	0.033808	0.0572261
0.25	4.6245	8.247	0.0730551	0.1302813
0.5	6.7883	15.0353	0.1072376	0.2375189
0.75	5.8363	20.8716	0.0921984	0.3297173
1	11.6758	32.5474	0.1844474	0.5141648
1.25	11.6426	44.19	0.183923	0.6980877
1.5	9.3629	53.5529	0.1479096	0.8459973
1.75	5.3622	58.9151	0.0847089	0.9307062
2	1.907	60.8221	0.0301257	0.9608319
2.25	1.2519	62.074	0.0197768	0.9806087
2.5	0.4905	62.5645	0.0077486	0.9883573
2.75	0.3031	62.8676	0.0047882	0.9931455
3	0.2165	63.0841	0.0034201	0.9965656
3.25	0.1096	63.1937	0.0017314	0.998297
3.5	0.0578	63.2515	0.0009131	0.9992101
3.75	0.0388	63.2903	0.0006129	0.9998231
4	0.0112	63.3015	0.0001769	1

Total Wt.	63.3015	gms		
Median Weight	31.65075	gms		
Mean Grain Size	0.98	phi	0.5069797	mm

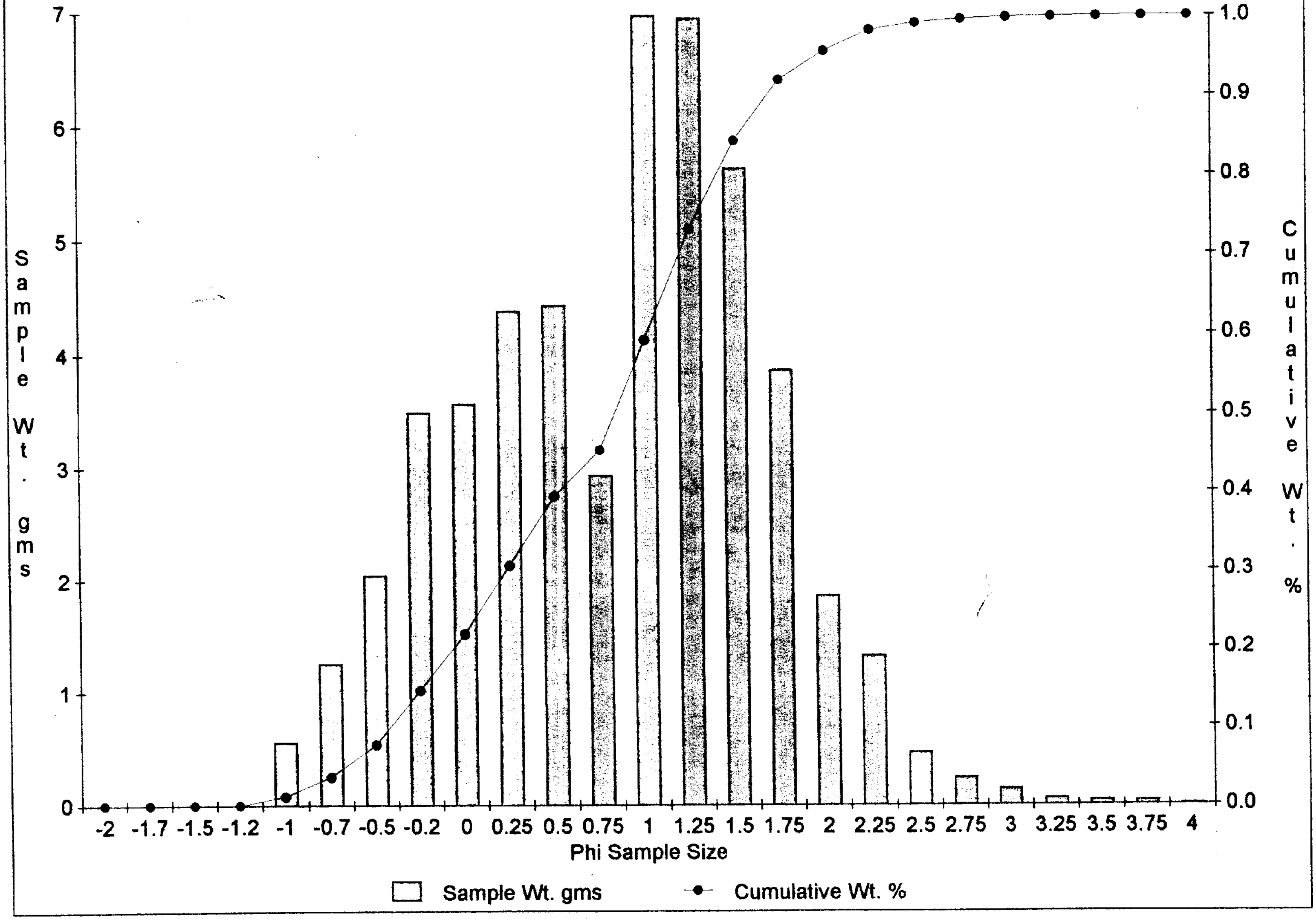

Cum Wt. % M1
5'
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0.5599	0.5599	0.0111406	0.0111406
-0.75	1.2568	1.8167	0.0250072	0.0361478
-0.5	2.0424	3.8591	0.0406386	0.0767864
-0.25	3.4869	7.346	0.0693806	0.1461669
0	3.5662	10.9122	0.0709584	0.2171254
0.25	4.3795	15.2917	0.087141	0.3042664
0.5	4.4301	19.7218	0.0881479	0.3924143
0.75	2.9262	22.648	0.058224	0.4506383
1	6.9841	29.6321	0.138966	0.5896044
1.25	6.9575	36.5896	0.1384368	0.7280411
1.5	5.632	42.2216	0.1120627	0.8401038
1.75	3.8665	46.0881	0.0769336	0.9170374
2	1.8586	47.9467	0.0369815	0.9540189
2.25	1.3238	49.2705	0.0263403	0.9803592
2.5	0.4637	49.7342	0.0092265	0.9895857
2.75	0.2434	49.9776	0.004843	0.9944287
3	0.1404	50.118	0.0027936	0.9972223
3.25	0.0568	50.1748	0.0011302	0.9983525
3.5	0.0392	50.214	0.00078	0.9991325
3.75	0.0352	50.2492	0.0007004	0.9998329
4	0.0084	50.2576	0.0001671	1

Total Wt.	50.2576 gms	
Median Weight	25.1288 gms	
Mean Grain Size	0.84 phi	0.5586436 mm



Cum Wt. % M1

6'

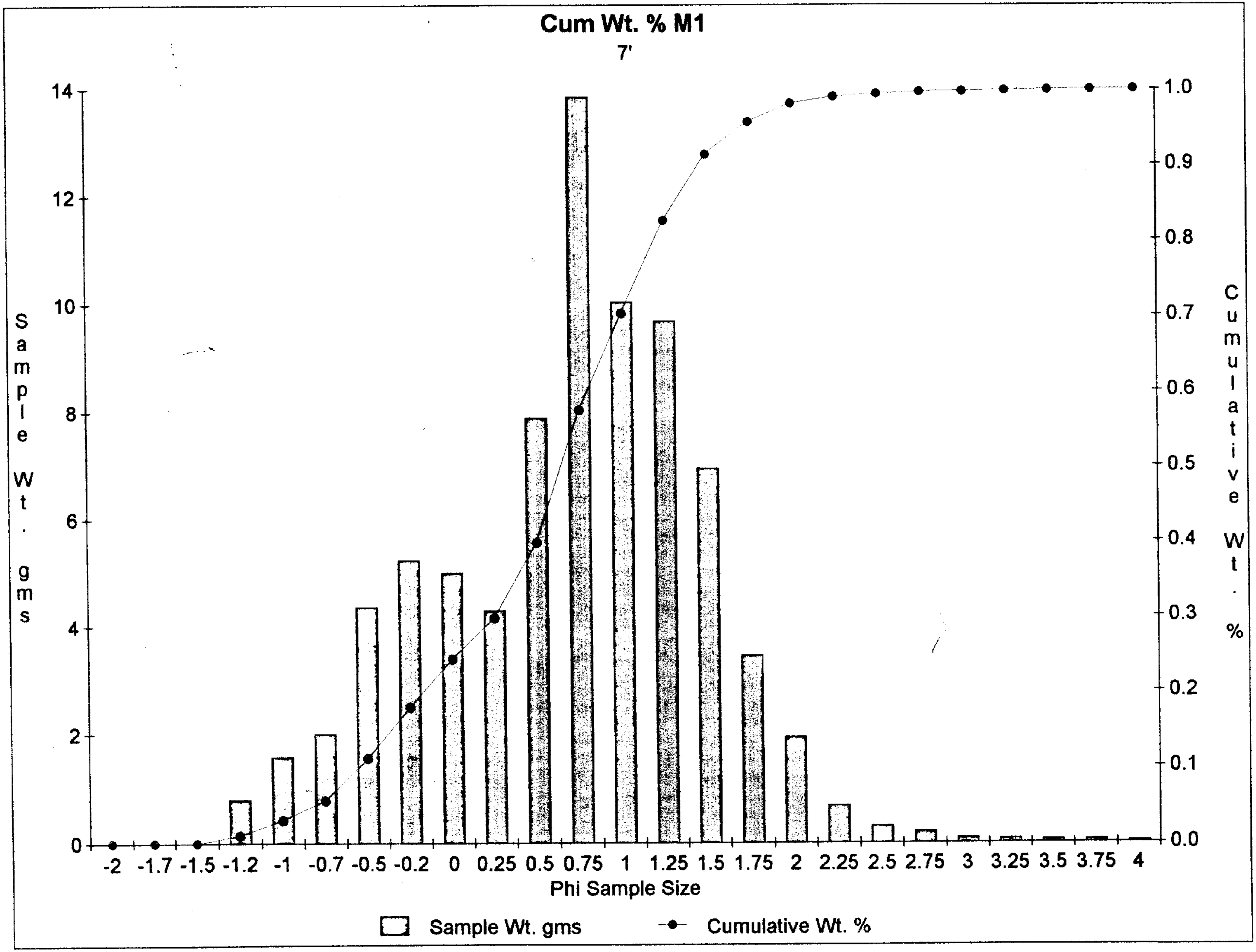
Sample Wt. gms
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.7925	0.7925	0.0101091	0.0101091
-1	1.5836	2.3761	0.0303095	0.0303095
-0.75	2.0072	4.3833	0.0256038	0.0559133
-0.5	4.3469	8.7302	0.055449	0.1113623
-0.25	5.2199	13.9501	0.0665849	0.1779472
0	4.9779	18.928	0.063498	0.2414452
0.25	4.2762	23.2042	0.0545471	0.2959923
0.5	7.8732	31.0774	0.1004304	0.3964227
0.75	13.8439	44.9213	0.1765925	0.5730152
1	10.0185	54.9398	0.1277958	0.700811
1.25	9.667	64.6068	0.1233121	0.8241231
1.5	6.9349	71.5417	0.0884615	0.9125845
1.75	3.4344	74.9761	0.0438091	0.9563937
2	1.9318	76.9079	0.024642	0.9810357
2.25	0.6829	77.5908	0.0087111	0.9897467
2.5	0.3024	77.8932	0.0038574	0.9936042
2.75	0.204	78.0972	0.0026022	0.9962064
3	0.0878	78.185	0.00112	0.9973263
3.25	0.072	78.257	0.0009184	0.9982448
3.5	0.0557	78.3127	0.0007105	0.9989553
3.75	0.0541	78.3668	0.0006901	0.9996454
4	0.0278	78.3946	0.0003546	1

Total Wt.	78.3946 gms		
Median Weight	39.1973 gms		
Mean Grain Size	0.65 phi	0.6372803 mm	

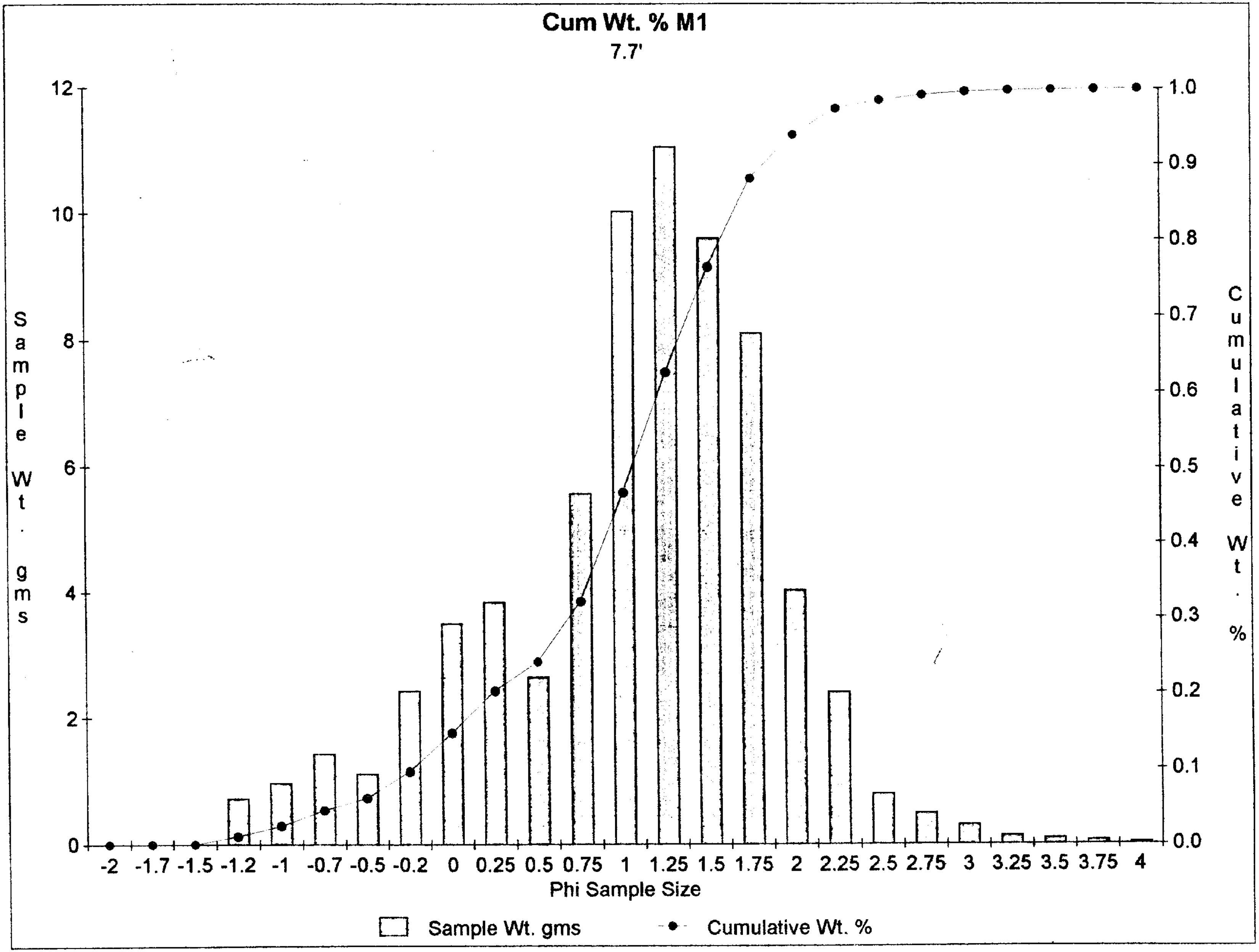

Cum Wt. % M1
7'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-1)
DEPTH (7.7 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.725	0.725	0.0104552	0.0104552
-1	0.9716	1.6966	0.0244665	0.0244665
-0.75	1.437	3.1336	0.0207228	0.0451893
-0.5	1.121	4.2546	0.0161658	0.0613552
-0.25	2.423	6.6776	0.0349418	0.096297
0	3.4898	10.1674	0.0503261	0.1466231
0.25	3.8335	14.0009	0.0552825	0.2019056
0.5	2.6415	16.6424	0.0380928	0.2399984
0.75	5.5673	22.2097	0.0802855	0.3202839
1	10.0314	32.2411	0.1446618	0.4649457
1.25	11.0601	43.3012	0.1594966	0.6244423
1.5	9.6143	52.9155	0.1386469	0.7630891
1.75	8.1097	61.0252	0.1169492	0.8800383
2	4.0258	65.051	0.0580557	0.938094
2.25	2.4001	67.4511	0.0346116	0.9727056
2.5	0.7938	68.2449	0.0114473	0.9841529
2.75	0.492	68.7369	0.0070951	0.991248
3	0.3056	69.0425	0.004407	0.995655
3.25	0.1267	69.1692	0.0018271	0.9974821
3.5	0.0879	69.2571	0.0012676	0.9987497
3.75	0.0563	69.3134	0.0008119	0.9995616
4	0.0304	69.3438	0.0004384	1

Total Wt.	69.3438 gms		
Median Weight	34.6719 gms		
Mean Grain Size	1.05 phi	0.4829682 mm	


Cum Wt. % M1
7.7'
12
10
8
6
4
2
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

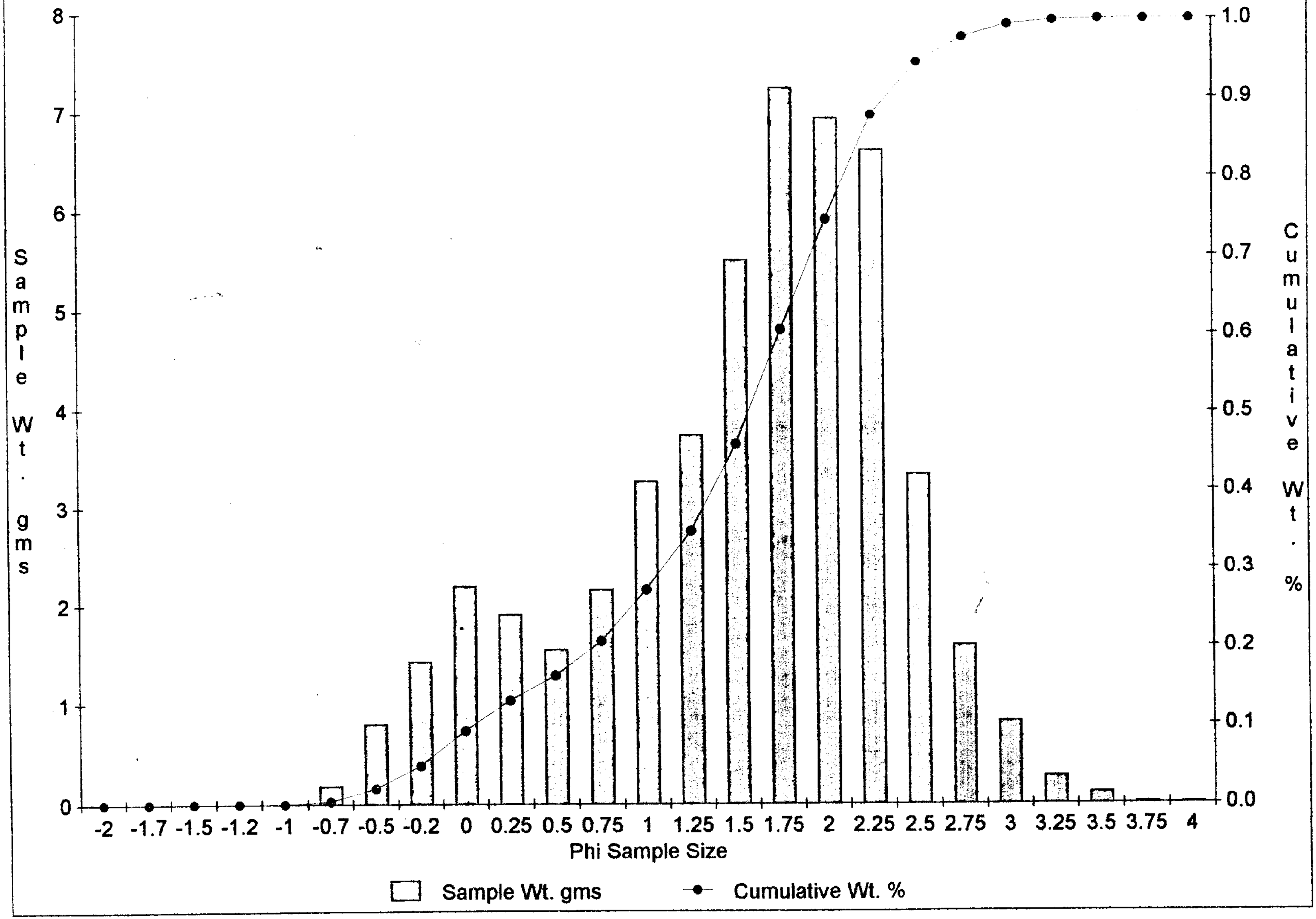
CORE (M-2)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.1771	0.1771	0.0035516	0.0035516
-0.5	0.8049	0.982	0.0161415	0.0196931
-0.25	1.4302	2.4122	0.0286813	0.0483744
0	2.2001	4.6123	0.044121	0.0924954
0.25	1.9159	6.5282	0.0384216	0.130917
0.5	1.5535	8.0817	0.031154	0.1620709
0.75	2.1642	10.2459	0.043401	0.205472
1	3.2701	13.516	0.0655788	0.2710508
1.25	3.7431	17.2591	0.0750644	0.3461151
1.5	5.5243	22.7834	0.1107847	0.4568998
1.75	7.2718	30.0552	0.1458292	0.602729
2	6.9704	37.0256	0.1397849	0.7425138
2.25	6.6461	43.6717	0.1332813	0.8757951
2.5	3.3501	47.0218	0.0671831	0.9429783
2.75	1.6057	48.6275	0.0322008	0.9751791
3	0.8317	49.4592	0.016679	0.991858
3.25	0.2734	49.7326	0.0054828	0.9973408
3.5	0.1093	49.8419	0.0021919	0.9995327
3.75	0.0147	49.8566	0.0002948	0.9998275
4	0.0086	49.8652	0.0001725	1

Total Wt.	49.8652	gms	
Median Weight	24.9326	gms	
Mean Grain Size	1.57	phi	0.3368084 mm

Cum Wt. % M2

0'

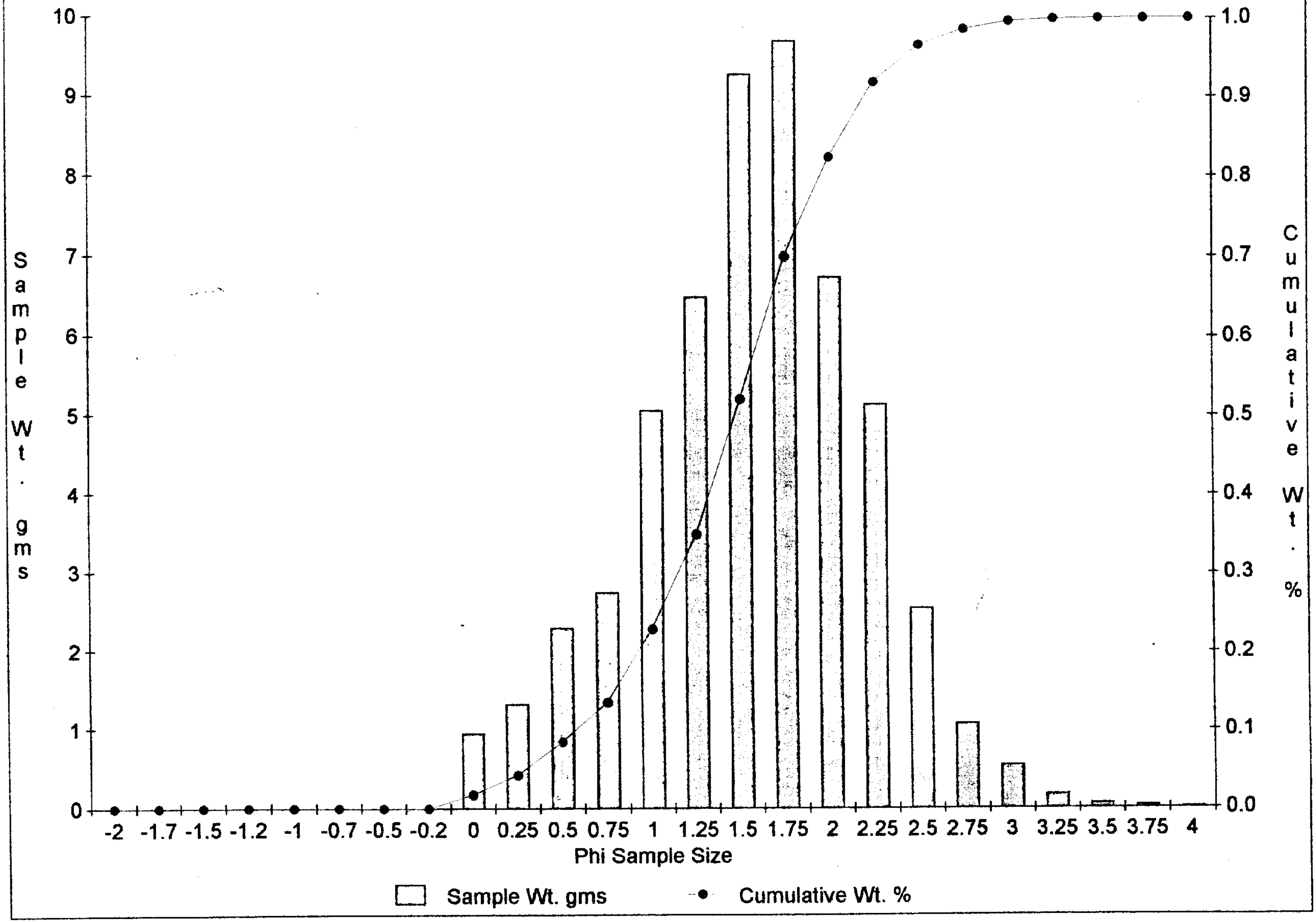

Sample Wt. gms
0
1
2
3
4
5
6
7
8
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.9467	0.9467	0.017503	0.017503
0.25	1.3257	2.2724	0.0245101	0.0420132
0.5	2.2877	4.5601	0.042296	0.0843092
0.75	2.7381	7.2982	0.0506232	0.1349325
1	5.0442	12.3424	0.0932595	0.2281919
1.25	6.4808	18.8232	0.11982	0.3480119
1.5	9.2712	28.0944	0.1714102	0.5194221
1.75	9.6911	37.7855	0.1791735	0.6985956
2	6.7321	44.5176	0.1244661	0.8230618
2.25	5.1297	49.6473	0.0948402	0.917902
2.5	2.5466	52.1939	0.0470827	0.9649847
2.75	1.0786	53.2725	0.0199417	0.9849264
3	0.5426	53.8151	0.0100318	0.9949582
3.25	0.1734	53.9885	0.0032059	0.9981641
3.5	0.0592	54.0477	0.0010945	0.9992586
3.75	0.0298	54.0775	0.000551	0.9998096
4	0.0103	54.0878	0.0001904	1

Total Wt.	54.0878 gms	
Median Weight	27.0439 gms	
Mean Grain Size	1.47 phi	0.3609823 mm



Cum Wt. % M2

0.5'

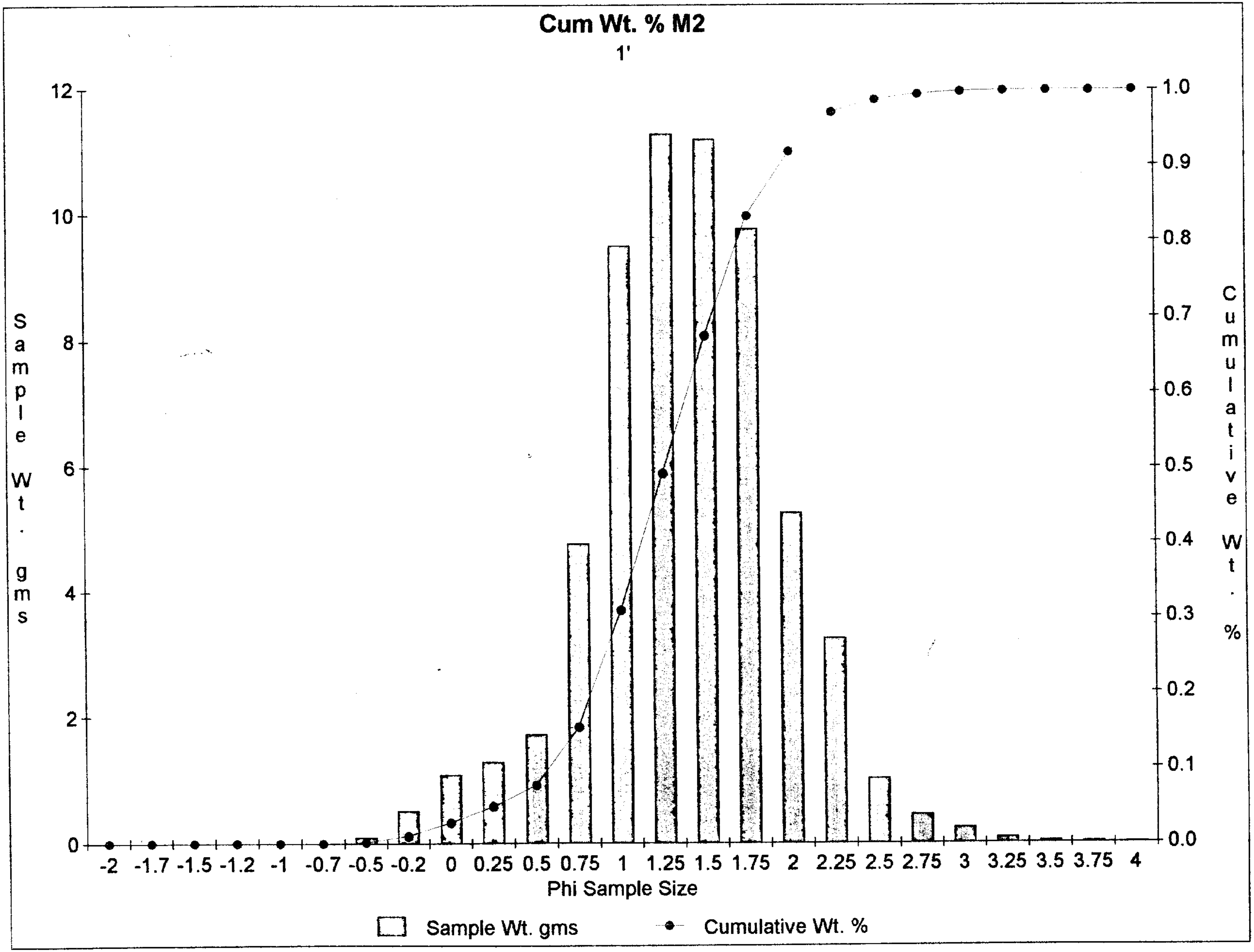
10
9
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.094	0.094	0.0015279	0.0015279
-0.25	0.5076	0.6016	0.0082506	0.0097784
0	1.074	1.6756	0.0174569	0.0272353
0.25	1.2803	2.9559	0.0208101	0.0480454
0.5	1.7218	4.6777	0.0279862	0.0760316
0.75	4.7603	9.438	0.0773742	0.1534058
1	9.4964	18.9344	0.154355	0.3077608
1.25	11.2824	30.2168	0.1833848	0.4911456
1.5	11.203	41.4198	0.1820942	0.6732398
1.75	9.7755	51.1953	0.1588915	0.8321313
2	5.2554	56.4507	0.0854216	0.9175529
2.25	3.2447	59.6954	0.0527395	0.9702925
2.5	1.0189	60.7143	0.0165613	0.9868537
2.75	0.442	61.1563	0.0071843	0.994038
3	0.2341	61.3904	0.0038051	0.9978431
3.25	0.0831	61.4735	0.0013507	0.9991938
3.5	0.0256	61.4991	0.0004161	0.9996099
3.75	0.0146	61.5137	0.0002373	0.9998472
4	0.0094	61.5231	0.0001528	1

Total Wt.	61.5231 gms		
Median Weight	30.76155 gms		
Mean Grain Size	1.26 phi	0.417544 mm	


Cum Wt. % M2
1'
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

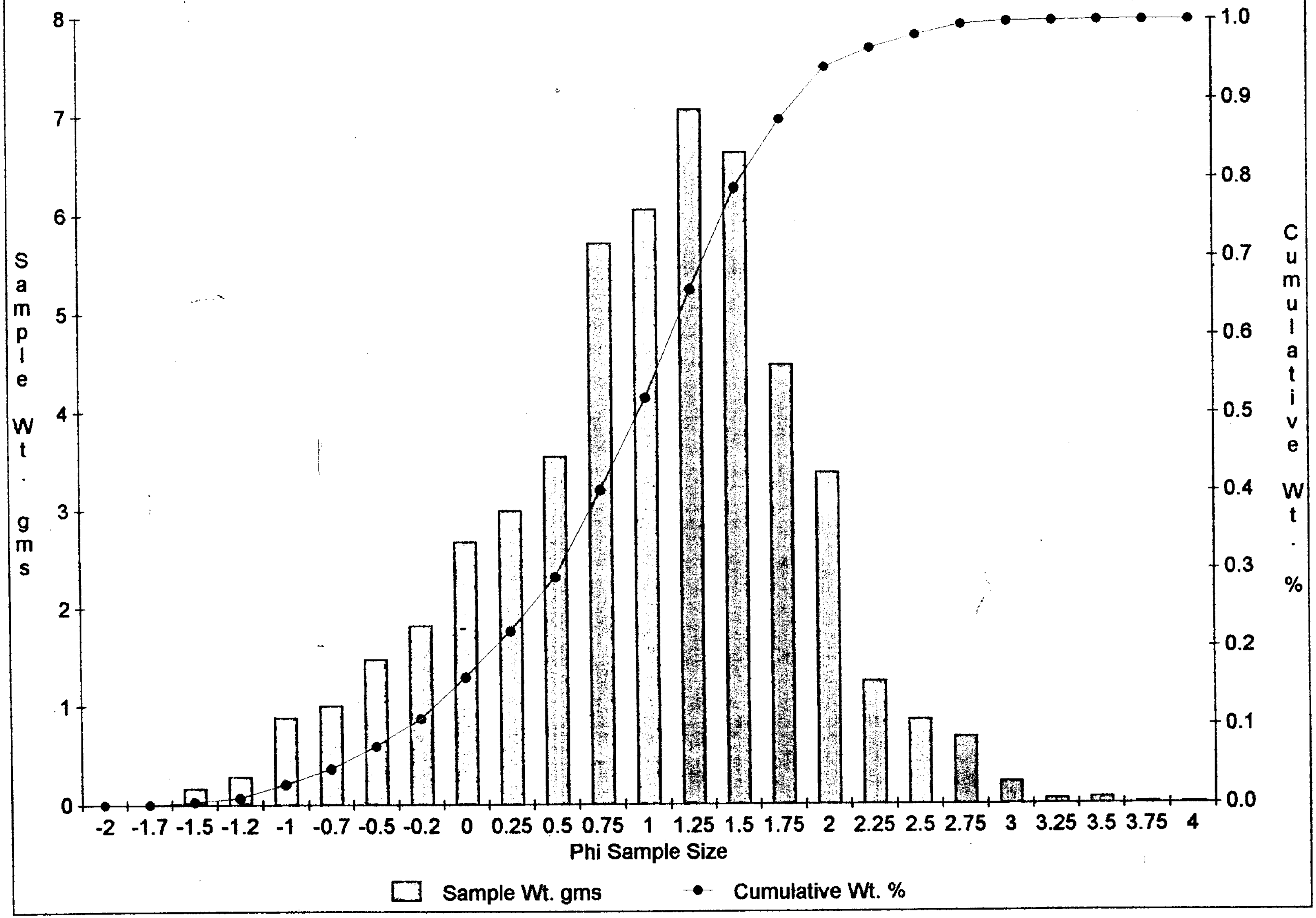
CORE (M-2)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.1646	0.1646	0.0032061	0.0032061
-1.25	0.2801	0.4447	0.0054559	0.008662
-1	0.8837	1.3284	0.0172129	0.0258749
-0.75	1.0091	2.3375	0.0196555	0.0455304
-0.5	1.4714	3.8089	0.0286603	0.0741907
-0.25	1.8162	5.6251	0.0353764	0.1095671
0	2.6713	8.2964	0.0520323	0.1615994
0.25	2.9904	11.2868	0.0582478	0.2198472
0.5	3.546	14.8328	0.0690699	0.2889171
0.75	5.7142	20.547	0.1113026	0.4002197
1	6.0601	26.6071	0.1180402	0.5182599
1.25	7.0757	33.6828	0.1378223	0.6560822
1.5	6.642	40.3248	0.1293746	0.7854568
1.75	4.4812	44.806	0.087286	0.8727427
2	3.3819	48.1879	0.0658735	0.9386162
2.25	1.2492	49.4371	0.0243322	0.9629485
2.5	0.8616	50.2987	0.0167825	0.9797309
2.75	0.6784	50.9771	0.013214	0.992945
3	0.2221	51.1992	0.0043261	0.9972711
3.25	0.051	51.2502	0.0009934	0.9982645
3.5	0.0671	51.3173	0.001307	0.9995715
3.75	0.0149	51.3322	0.0002902	0.9998617
4	0.0071	51.3393	0.0001383	1

Total Wt.	51.3393 gms		
Median Weight	25.66965 gms		
Mean Grain Size	0.96 phi	0.5140569 mm	

Cum Wt. % M2

1.5'



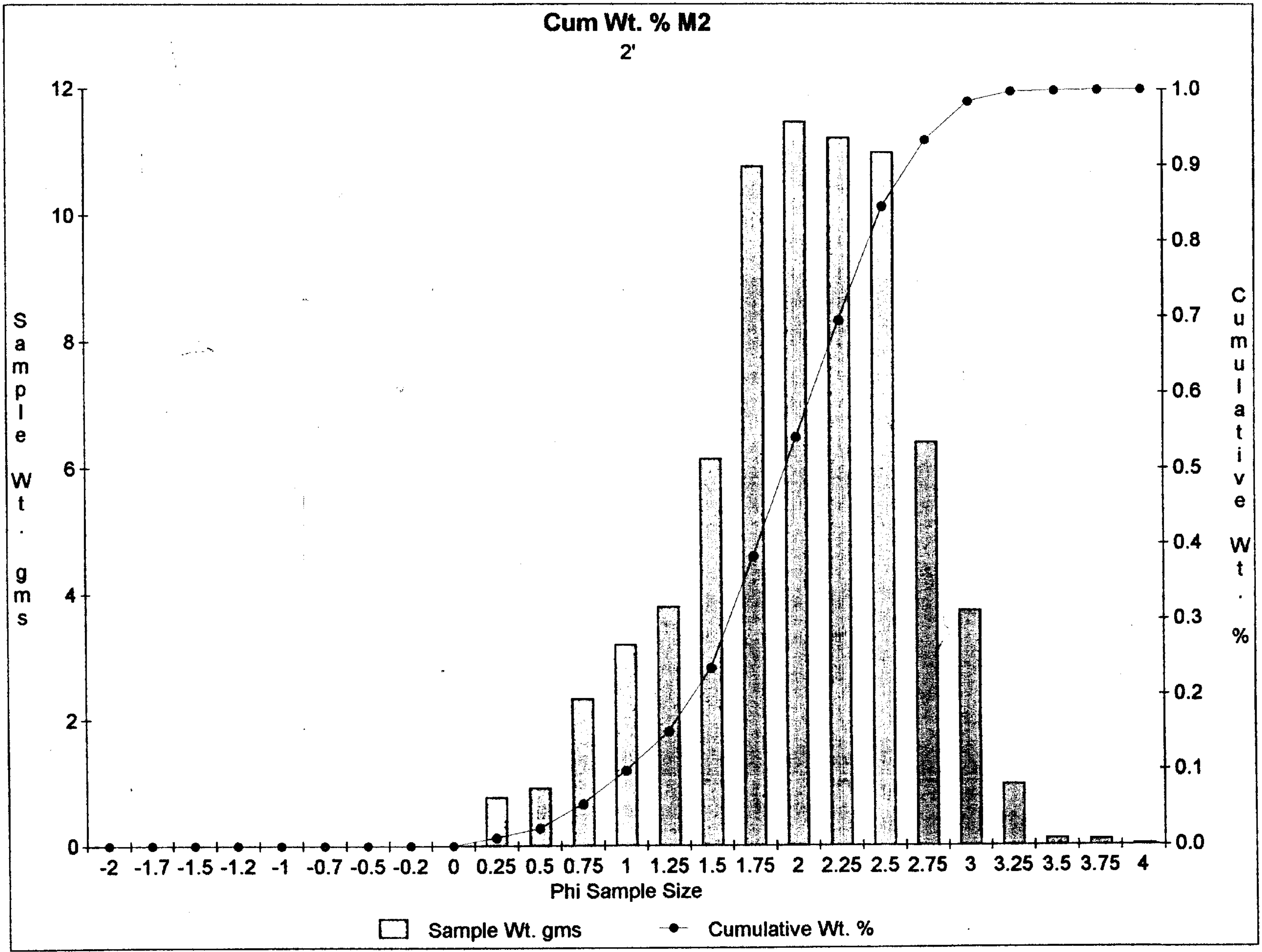
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.7617	0.7617	0.010454	0.010454
0.5	0.9045	1.6662	0.0124138	0.0228678
0.75	2.3254	3.9916	0.031915	0.0547829
1	3.1854	7.177	0.0437181	0.098501
1.25	3.7805	10.9575	0.0518856	0.1503866
1.5	6.1335	17.091	0.0841795	0.2345661
1.75	10.7703	27.8613	0.1478174	0.3823835
2	11.4761	39.3374	0.1575042	0.5398876
2.25	11.2249	50.5623	0.1540566	0.6939442
2.5	10.9961	61.5584	0.1509164	0.8448606
2.75	6.402	67.9604	0.0878645	0.9327251
3	3.7261	71.6865	0.051139	0.9838641
3.25	0.9615	72.648	0.0131961	0.9970602
3.5	0.1037	72.7517	0.0014232	0.9984834
3.75	0.0901	72.8418	0.0012366	0.99972
4	0.0204	72.8622	0.00028	1

Total Wt.	72.8622 gms		
Median Weight	36.4311 gms		
Mean Grain Size	1.94	phi 0.2606164	mm

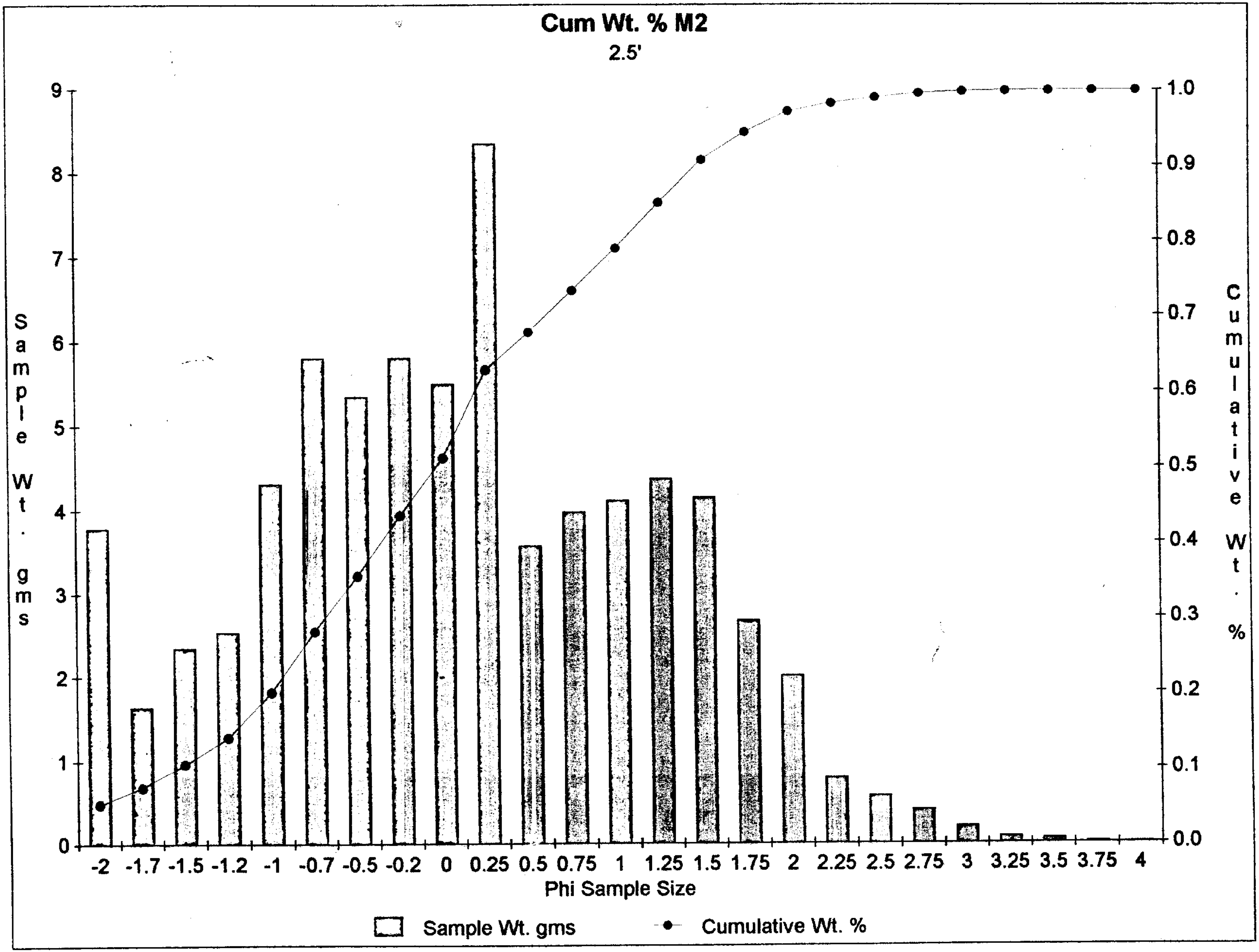

Cum Wt. % M2
2'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	3.7843	3.7843	0.0524113	0.0524113
-1.75	1.6401	5.4244	0.0227148	0.0751261
-1.5	2.3458	7.7702	0.0324885	0.1076147
-1.25	2.5332	10.3034	0.035084	0.1426987
-1	4.3067	14.6101	0.0596464	0.202345
-0.75	5.7964	20.4065	0.0802782	0.2826232
-0.5	5.3355	25.742	0.0738949	0.3565181
-0.25	5.7983	31.5403	0.0803045	0.4368227
0	5.4875	37.0278	0.076	0.5128227
0.25	8.3492	45.377	0.1156336	0.6284564
0.5	3.5568	48.9338	0.0492605	0.6777169
0.75	3.9623	52.8961	0.0548765	0.7325934
1	4.1002	56.9963	0.0567864	0.7893798
1.25	4.3552	61.3515	0.0603181	0.8496979
1.5	4.1324	65.4839	0.0572324	0.9069302
1.75	2.6588	68.1427	0.0368235	0.9437537
2	1.9998	70.1425	0.0276966	0.9714503
2.25	0.7833	70.9258	0.0108484	0.9822987
2.5	0.556	71.4818	0.0077004	0.9899992
2.75	0.3887	71.8705	0.0053834	0.9953825
3	0.1935	72.064	0.0026799	0.9980624
3.25	0.073	72.137	0.001011	0.9990735
3.5	0.0495	72.1865	0.0006856	0.999759
3.75	0.0111	72.1976	0.0001537	0.9999127
4	0.0063	72.2039	8.725E-05	1

Total Wt.	72.2039	gms		
Median Weight	36.10195	gms		
Mean Grain Size	-0.04	phi	1.0281138	mm



Cum Wt. % M2

2.5'

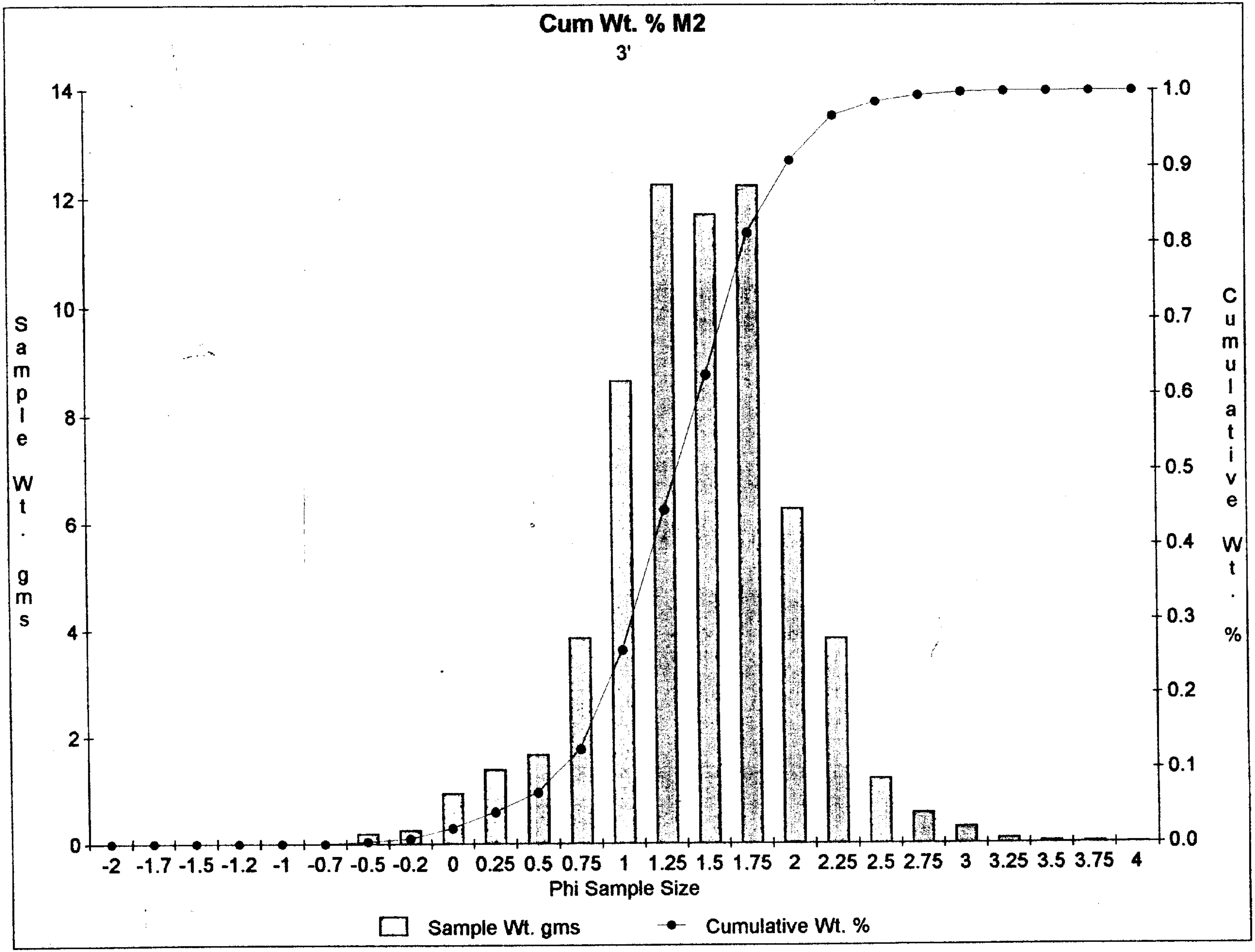
Sample Wt. gms
0
1
2
3
4
5
6
7
8
9
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0.1858	0.1858	0.0028429	0.0028429
-0.25	0.2489	0.4347	0.0038084	0.0066513
0	0.93	1.3647	0.0142299	0.0208812
0.25	1.3781	2.7428	0.0210862	0.0419674
0.5	1.6674	4.4102	0.0255128	0.0674802
0.75	3.8424	8.2526	0.0587923	0.1262725
1	8.6255	16.8781	0.1319782	0.2582506
1.25	12.2497	29.1278	0.1874318	0.4456825
1.5	11.6958	40.8236	0.1789566	0.6246391
1.75	12.231	53.0546	0.1871457	0.8117848
2	6.2573	59.3119	0.0957425	0.9075273
2.25	3.8332	63.1451	0.0586515	0.9661788
2.5	1.2006	64.3457	0.0183703	0.9845491
2.75	0.5587	64.9044	0.0085486	0.9930977
3	0.3009	65.2053	0.0046041	0.9977018
3.25	0.0868	65.2921	0.0013281	0.9990299
3.5	0.0354	65.3275	0.0005417	0.9995716
3.75	0.0231	65.3506	0.0003535	0.999925
4	0.0049	65.3555	7.497E-05	1

Total Wt.	65.3555 gms	
Median Weight	32.67775 gms	
Mean Grain Size	1.33 phi	0.3977682 mm

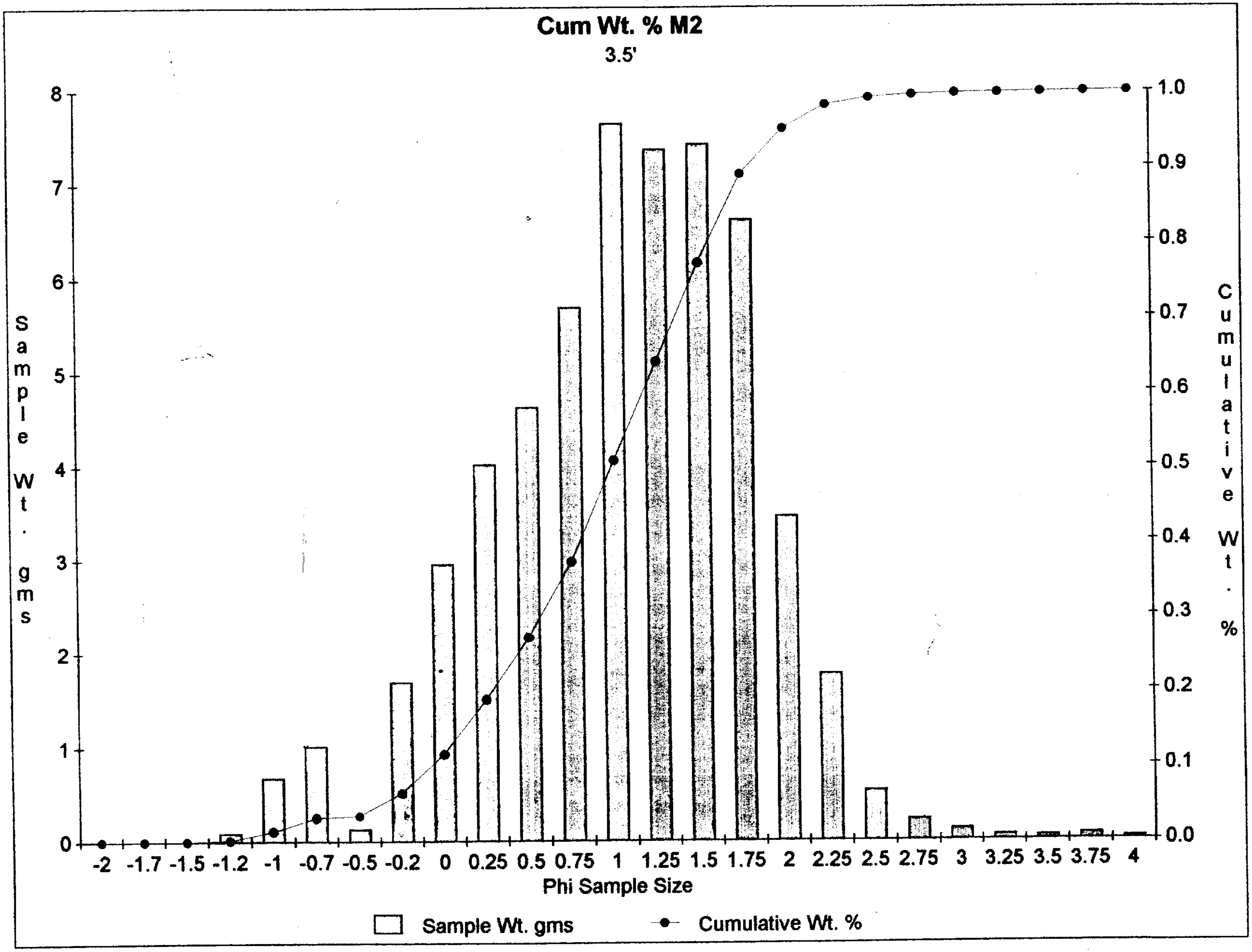

Cum Wt. % M2
3'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.0847	0.0847	0.0015078	0.0015078
-1	0.6724	0.7571	0.0119702	0.013478
-0.75	1.0139	1.771	0.0180496	0.0315276
-0.5	0.129	1.9	0.0022965	0.0338241
-0.25	1.6807	3.5807	0.0299201	0.0637441
0	2.9419	6.5226	0.0523721	0.1161163
0.25	4.0114	10.534	0.0714115	0.1875278
0.5	4.6216	15.1556	0.0822744	0.2698022
0.75	5.6865	20.8421	0.1012319	0.3710341
1	7.6529	28.495	0.1362381	0.5072722
1.25	7.3752	35.8702	0.1312944	0.6385666
1.5	7.4308	43.301	0.1322842	0.7708508
1.75	6.623	49.924	0.1179036	0.8887544
2	3.4544	53.3784	0.0614957	0.9502501
2.25	1.7641	55.1425	0.0314048	0.9816549
2.5	0.5265	55.669	0.0093728	0.9910277
2.75	0.2167	55.8857	0.0038577	0.9948854
3	0.1161	56.0018	0.0020668	0.9969523
3.25	0.0488	56.0506	0.0008687	0.997821
3.5	0.0417	56.0923	0.0007423	0.9985634
3.75	0.058	56.1503	0.0010325	0.9995959
4	0.0227	56.173	0.0004041	1

Total Wt.	56.173 gms	
Median Weight	28.0865 gms	
Mean Grain Size	0.99 phi	0.5034778 mm

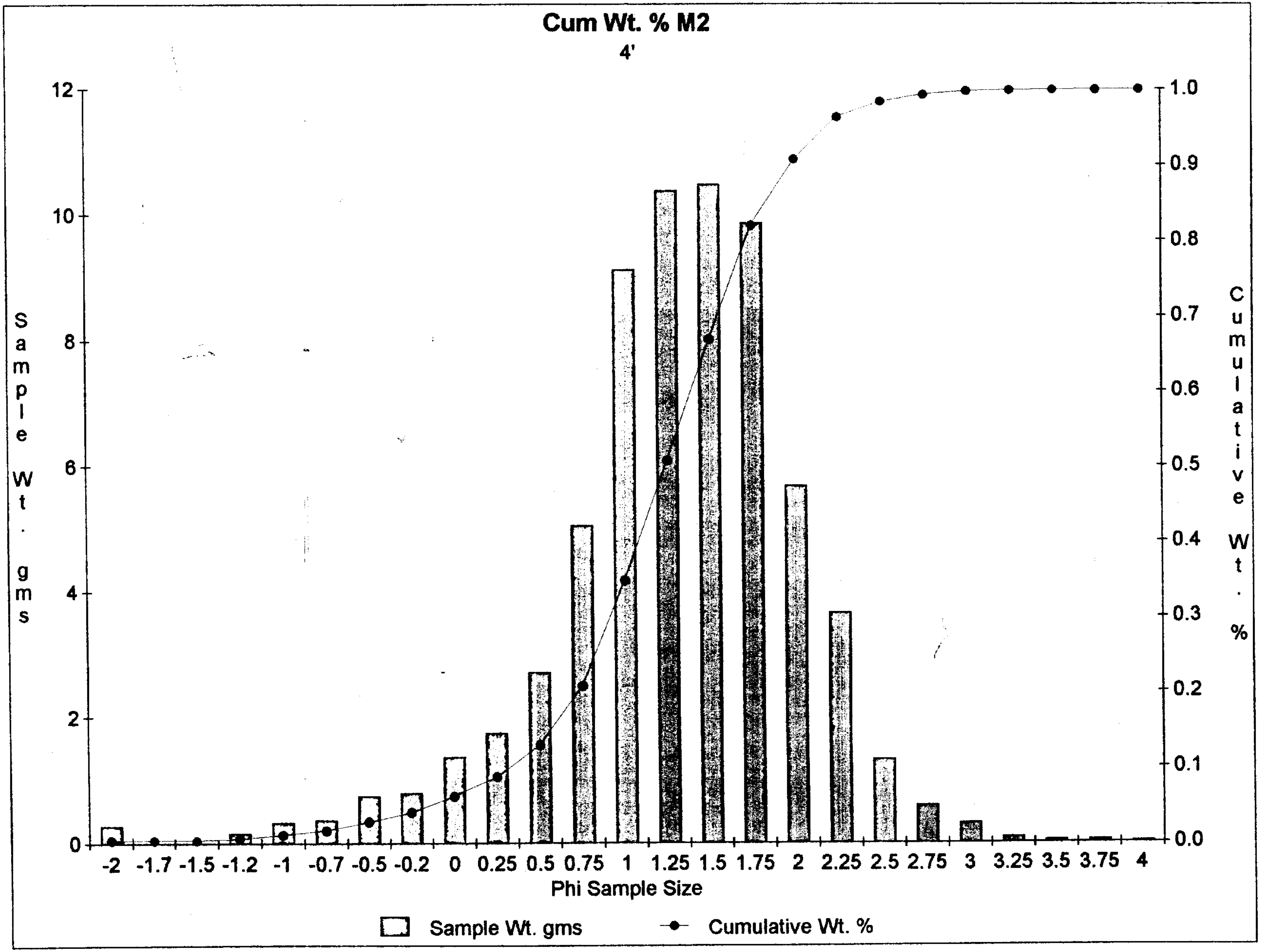

Cum Wt. % M2
3.5'
Sample Wt. gms
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.268	0.268	0.0041241	0.0041241
-1.75	0	0.268	0	0.0041241
-1.5	0	0.268	0	0.0041241
-1.25	0.1522	0.4202	0.0023421	0.0064662
-1	0.3233	0.7435	0.0049751	0.0114413
-0.75	0.3606	1.1041	0.0055491	0.0169904
-0.5	0.733	1.8371	0.0112797	0.0282701
-0.25	0.785	2.6221	0.0120799	0.0403501
0	1.3547	3.9768	0.0208467	0.0611968
0.25	1.7315	5.7083	0.0266451	0.0878419
0.5	2.6927	8.401	0.0414365	0.1292784
0.75	5.0379	13.4389	0.0775255	0.2068038
1	9.1198	22.5587	0.1403396	0.3471434
1.25	10.3822	32.9409	0.159766	0.5069094
1.5	10.477	43.4179	0.1612248	0.6681342
1.75	9.8635	53.2814	0.151784	0.8199182
2	5.6749	58.9563	0.0873279	0.9072461
2.25	3.6436	62.5999	0.0560694	0.9633155
2.5	1.3173	63.9172	0.0202712	0.9835867
2.75	0.585	64.5022	0.0090022	0.9925889
3	0.3084	64.8106	0.0047458	0.9973347
3.25	0.0836	64.8942	0.0012865	0.9986212
3.5	0.0398	64.934	0.0006125	0.9992337
3.75	0.0381	64.9721	0.0005863	0.99982
4	0.0117	64.9838	0.00018	1

Total Wt. 64.9838 gms
Median Weight 32.4919 gms
Mean Grain Size 1.24 phi 0.4233727 mm


Cum Wt. % M2

4'

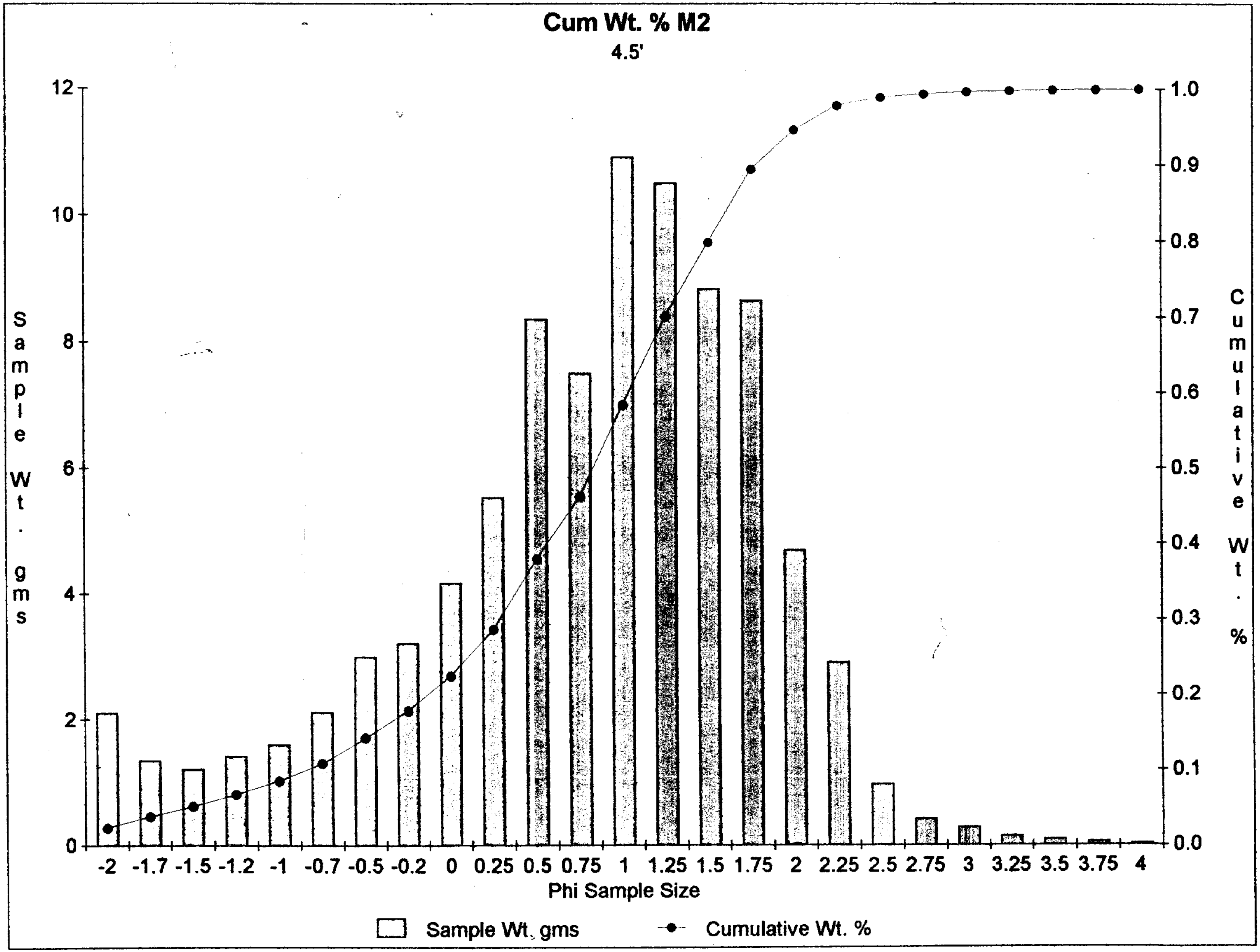
Sample Wt. gms
0
2
4
6
8
10
12
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	2.1012	2.1012	0.0233631	0.0233631
-1.75	1.3505	3.4517	0.0150161	0.0383792
-1.5	1.2121	4.6638	0.0134772	0.0518564
-1.25	1.417	6.0808	0.0157555	0.0676119
-1	1.6019	7.6827	0.0178114	0.0854233
-0.75	2.1095	9.7922	0.0234554	0.1088787
-0.5	2.9823	12.7745	0.03316	0.1420386
-0.25	3.2005	15.975	0.0355861	0.1776247
0	4.1485	20.1235	0.0461268	0.2237516
0.25	5.5207	25.6442	0.0613842	0.2851358
0.5	8.3461	33.9903	0.0927996	0.3779354
0.75	7.4948	41.4851	0.0833341	0.4612695
1	10.9071	52.3922	0.1212752	0.5825446
1.25	10.502	62.8942	0.1167709	0.6993155
1.5	8.8309	71.7251	0.0981901	0.7975056
1.75	8.6451	80.3702	0.0961242	0.8936297
2	4.6843	85.0545	0.0520844	0.9457141
2.25	2.9001	87.9546	0.032246	0.9779601
2.5	0.9662	88.9208	0.0107431	0.9887032
2.75	0.4167	89.3375	0.0046333	0.9933364
3	0.2796	89.6171	0.0031088	0.9964453
3.25	0.1485	89.7656	0.0016512	0.9980964
3.5	0.0915	89.8571	0.0010174	0.9991138
3.75	0.0556	89.9127	0.0006182	0.999732
4	0.0241	89.9368	0.000268	1

Total Wt.	89.9368 gms		
Median Weight	44.9684 gms		
Mean Grain Size	0.83 phi	0.5625292	mm



Cum Wt. % M2
4.5'

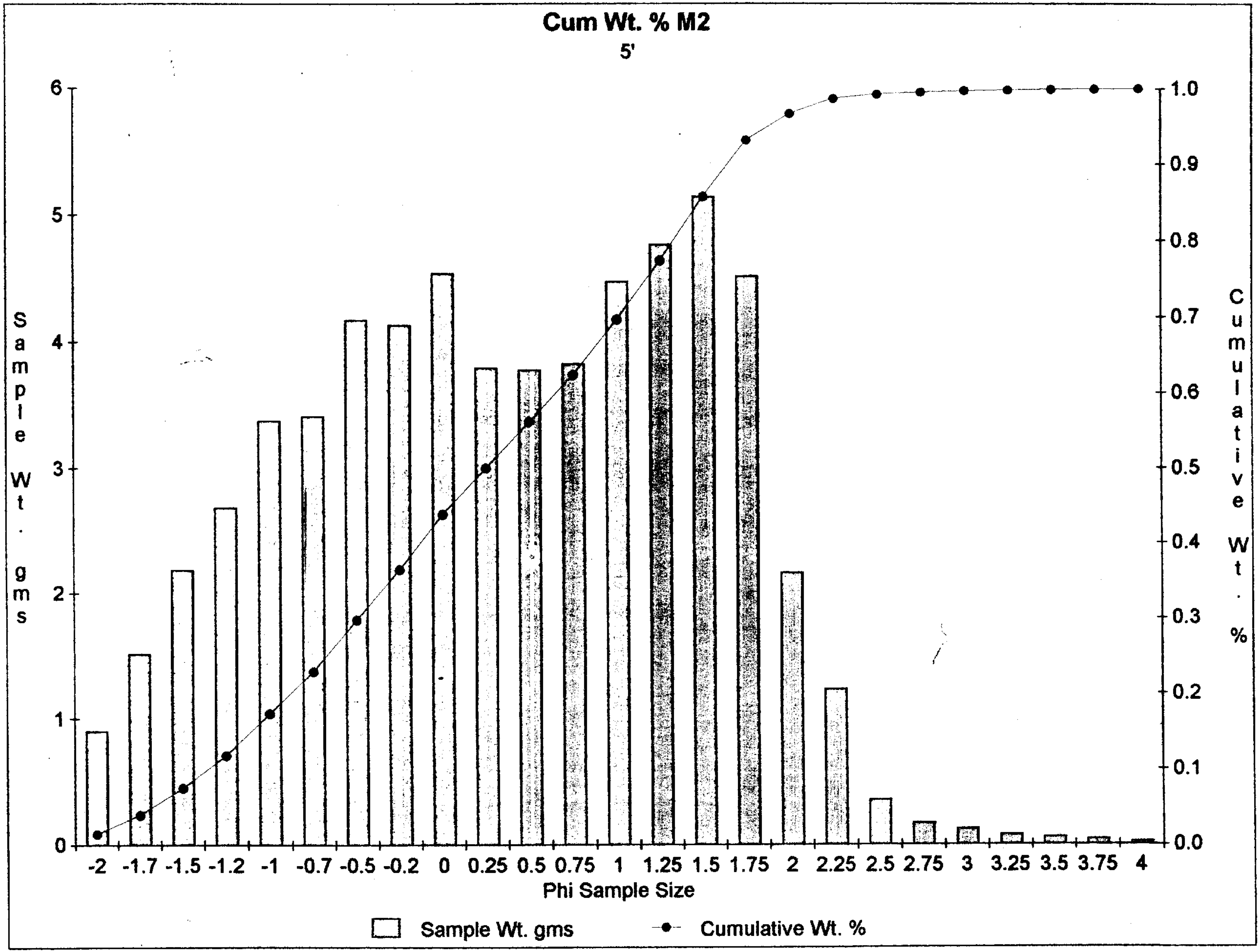
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.9004	0.9004	0.0146611	0.0146611
-1.75	1.5149	2.4153	0.0246669	0.039328
-1.5	2.1827	4.598	0.0355406	0.0748686
-1.25	2.6817	7.2797	0.0436657	0.1185343
-1	3.3733	10.653	0.0549269	0.1734612
-0.75	3.4101	14.0631	0.0555262	0.2289874
-0.5	4.1694	18.2325	0.0678897	0.2968771
-0.25	4.1305	22.363	0.0672563	0.3641334
0	4.535	26.898	0.0738427	0.4379762
0.25	3.7905	30.6885	0.0617202	0.4996963
0.5	3.7775	34.466	0.0615085	0.5612048
0.75	3.8248	38.2908	0.0622787	0.6234835
1	4.4764	42.7672	0.0728886	0.696372
1.25	4.769	47.5362	0.0776529	0.7740249
1.5	5.1401	52.6763	0.0836955	0.8577204
1.75	4.5163	57.1926	0.0735382	0.9312587
2	2.1576	59.3502	0.0351319	0.9663906
2.25	1.2273	60.5775	0.0199839	0.9863745
2.5	0.352	60.9295	0.0057316	0.9921061
2.75	0.1696	61.0991	0.0027616	0.9948676
3	0.1218	61.2209	0.0019833	0.9968509
3.25	0.0746	61.2955	0.0012147	0.9980656
3.5	0.0571	61.3526	0.0009298	0.9989953
3.75	0.0407	61.3933	0.0006627	0.9996581
4	0.021	61.4143	0.0003419	1

Total Wt. 61.4143 gms
Median Weight 30.70715 gms
Mean Grain Size 0.25 phi 0.8408964 mm

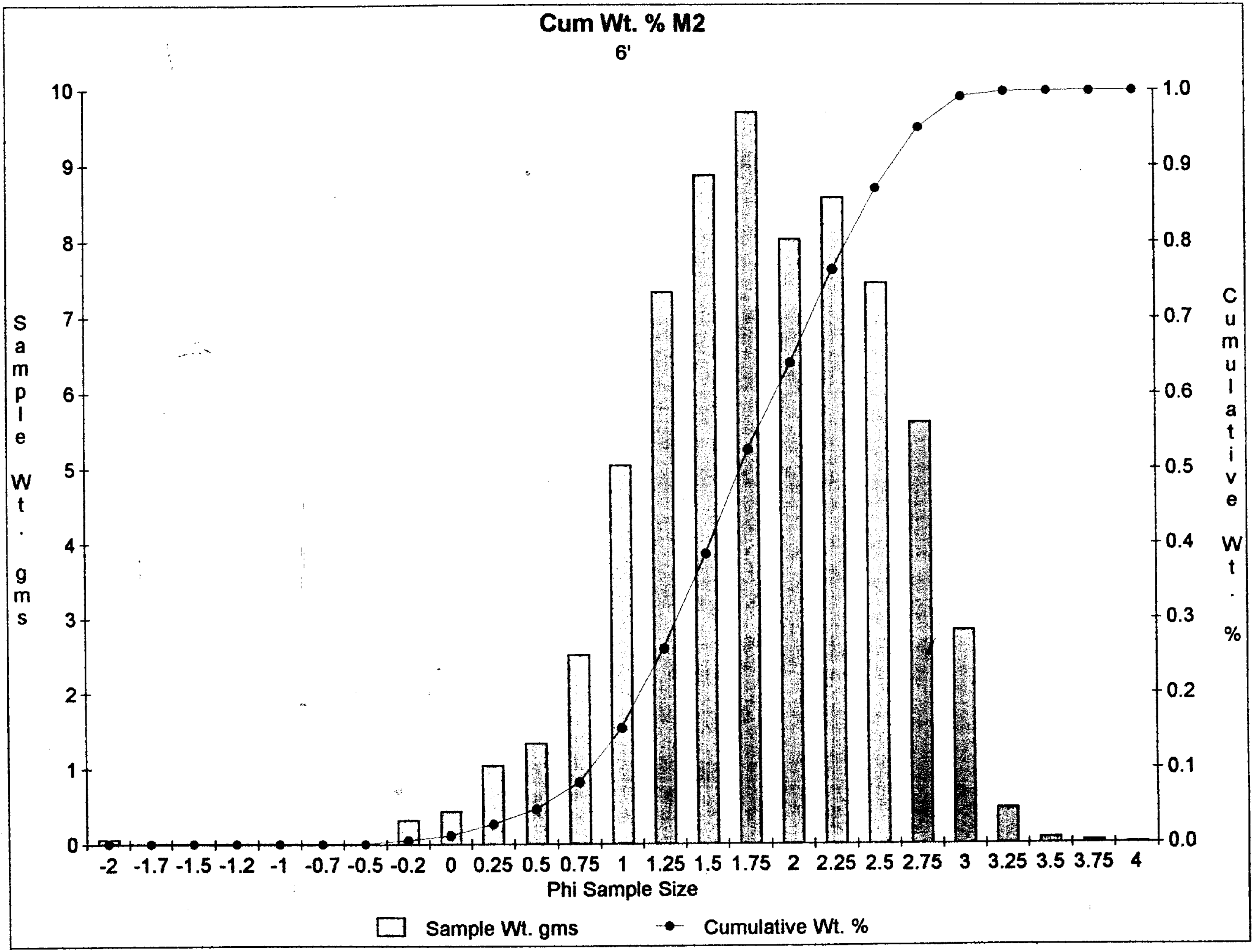

Cum Wt. % M2
5'
Sample Wt. gms
0
1
2
3
4
5
6
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0.0633	0.0633	0.0009066	0.0009066
-1.75	0	0.0633	0	0.0009066
-1.5	0	0.0633	0	0.0009066
-1.25	0	0.0633	0	0.0009066
-1	0	0.0633	0	0.0009066
-0.75	0	0.0633	0	0.0009066
-0.5	0	0.0633	0	0.0009066
-0.25	0.318	0.3813	0.0045544	0.005461
0	0.4345	0.8158	0.0062229	0.0116839
0.25	1.0481	1.8639	0.0150109	0.0266947
0.5	1.3446	3.2085	0.0192573	0.045952
0.75	2.5165	5.725	0.0360412	0.0819933
1	5.0433	10.7683	0.07223	0.1542233
1.25	7.3399	18.1082	0.1051218	0.2593451
1.5	8.8731	26.9813	0.1270803	0.3864254
1.75	9.706	36.6873	0.139009	0.5254344
2	8.0327	44.72	0.1150441	0.6404785
2.25	8.5814	53.3014	0.1229025	0.763381
2.5	7.4592	60.7606	0.1068304	0.8702114
2.75	5.616	66.3766	0.0804322	0.9506436
3	2.8472	69.2238	0.0407775	0.9914211
3.25	0.4709	69.6947	0.0067442	0.9981654
3.5	0.0779	69.7726	0.0011157	0.999281
3.75	0.0357	69.8083	0.0005113	0.9997923
4	0.0145	69.8228	0.0002077	1

Total Wt.	69.8228	gms	
Median Weight	34.9114	gms	
Mean Grain Size	1.7	phi	0.3077861 mm

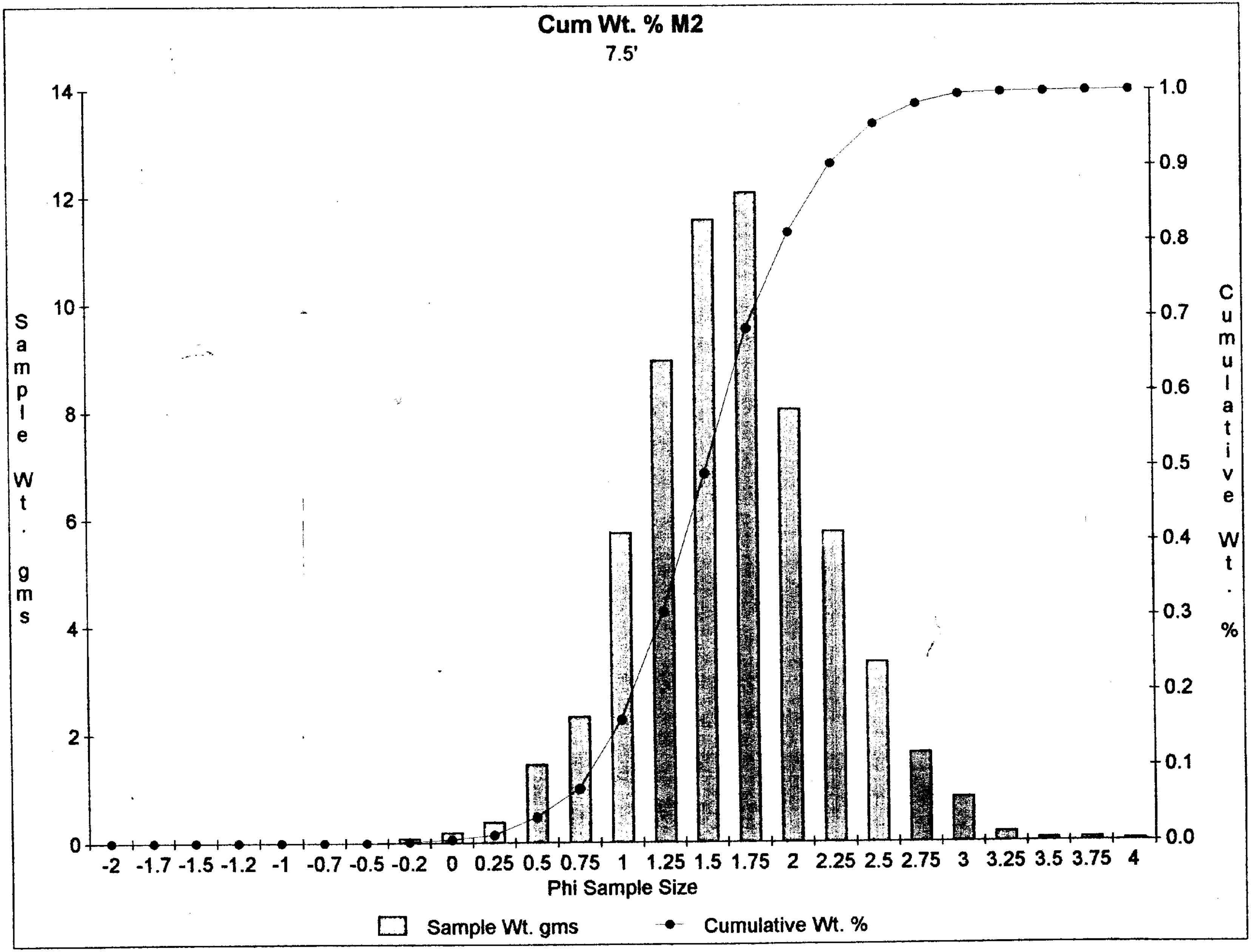

Cum Wt. % M2
6'
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-2)
DEPTH (7.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.0781	0.0781	0.0012465	0.0012465
0	0.1838	0.2619	0.0029335	0.00418
0.25	0.3783	0.6402	0.0060377	0.0102177
0.5	1.4319	2.0721	0.0228534	0.0330711
0.75	2.3145	4.3866	0.0369398	0.0700109
1	5.7329	10.1195	0.091498	0.1615089
1.25	8.9479	19.0674	0.1428099	0.3043188
1.5	11.5746	30.642	0.1847325	0.4890513
1.75	12.0818	42.7238	0.1928275	0.6818788
2	8.04	50.7638	0.1283197	0.8101985
2.25	5.7547	56.5185	0.091846	0.9020445
2.5	3.3172	59.8357	0.0529431	0.9549876
2.75	1.6552	61.4909	0.0264173	0.9814048
3	0.8235	62.3144	0.0131432	0.994548
3.25	0.1802	62.4946	0.002876	0.997424
3.5	0.0642	62.5588	0.0010246	0.9984487
3.75	0.0603	62.6191	0.0009624	0.9994111
4	0.0369	62.656	0.0005889	1

Total Wt.	62.656 gms	
Median Weight	31.328 gms	
Mean Grain Size	1.51 phi	0.3511112 mm

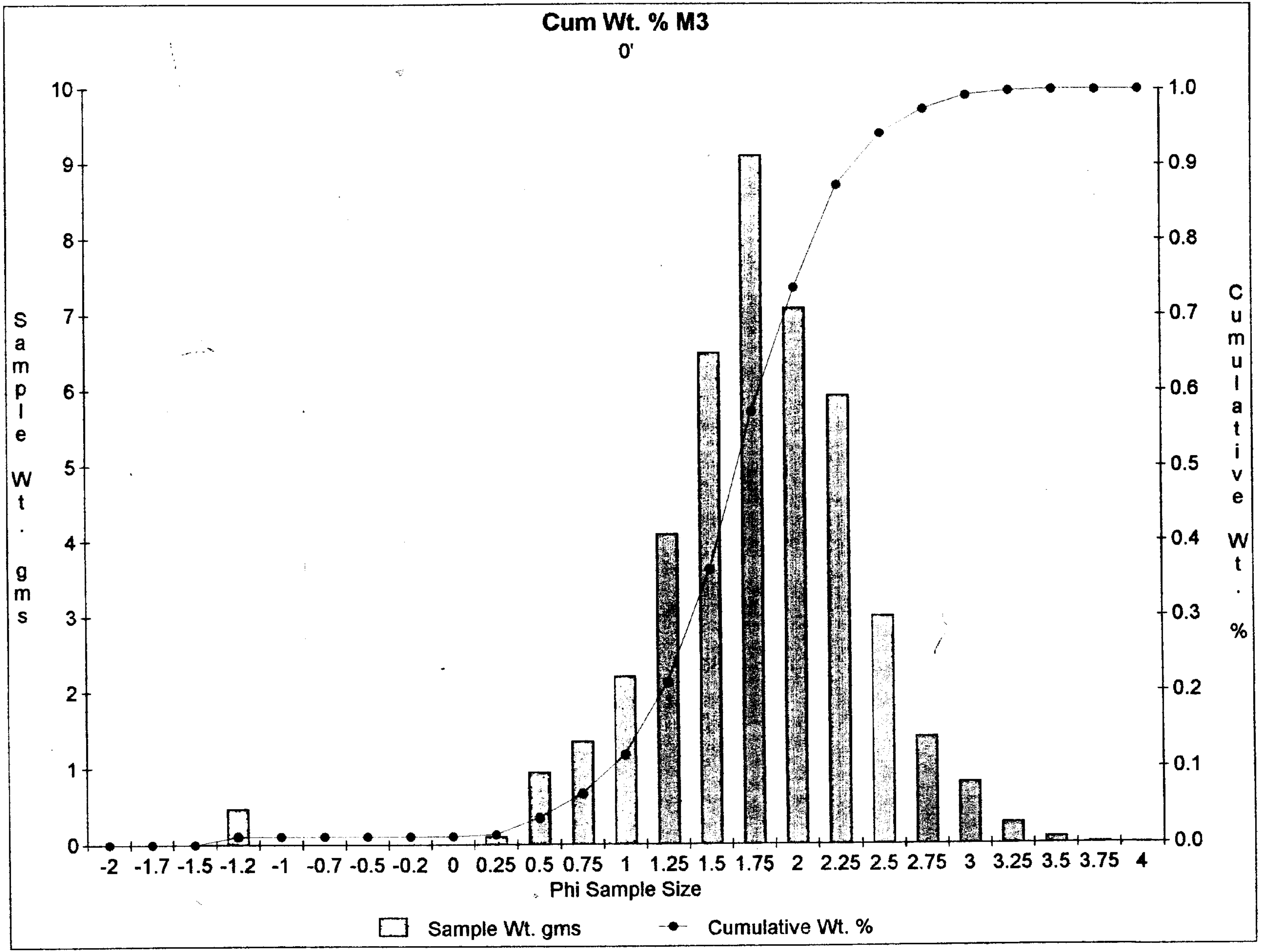

Cum Wt. % M2
7.5'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0.4738	0.4738	0.0109495	0.0109495
-1	0	0.4738	0	0.0109495
-0.75	0	0.4738	0	0.0109495
-0.5	0	0.4738	0	0.0109495
-0.25	0	0.4738	0	0.0109495
0	0	0.4738	0	0.0109495
0.25	0.101	0.5748	0.0023341	0.0132837
0.5	0.941	1.5158	0.0217466	0.0350302
0.75	1.3428	2.8586	0.0310322	0.0660624
1	2.1891	5.0477	0.0505902	0.1166526
1.25	4.0811	9.1288	0.0943145	0.2109671
1.5	6.4865	15.6153	0.1499034	0.3608705
1.75	9.1024	24.7177	0.210357	0.5712275
2	7.0715	31.7892	0.1634228	0.7346503
2.25	5.9221	37.7113	0.1368601	0.8715104
2.5	2.9856	40.6969	0.0689974	0.9405078
2.75	1.3979	42.0948	0.0323056	0.9728133
3	0.8038	42.8986	0.0185759	0.9913892
3.25	0.2711	43.1697	0.0062651	0.9976543
3.5	0.0848	43.2545	0.0019597	0.9996141
3.75	0.0108	43.2653	0.0002496	0.9998637
4	0.0059	43.2712	0.0001363	1

Total Wt.	43.2712 gms	
Median Weight	21.6356 gms	
Mean Grain Size	1.67 phi	0.3142533 mm


Cum Wt. % M3
0'
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

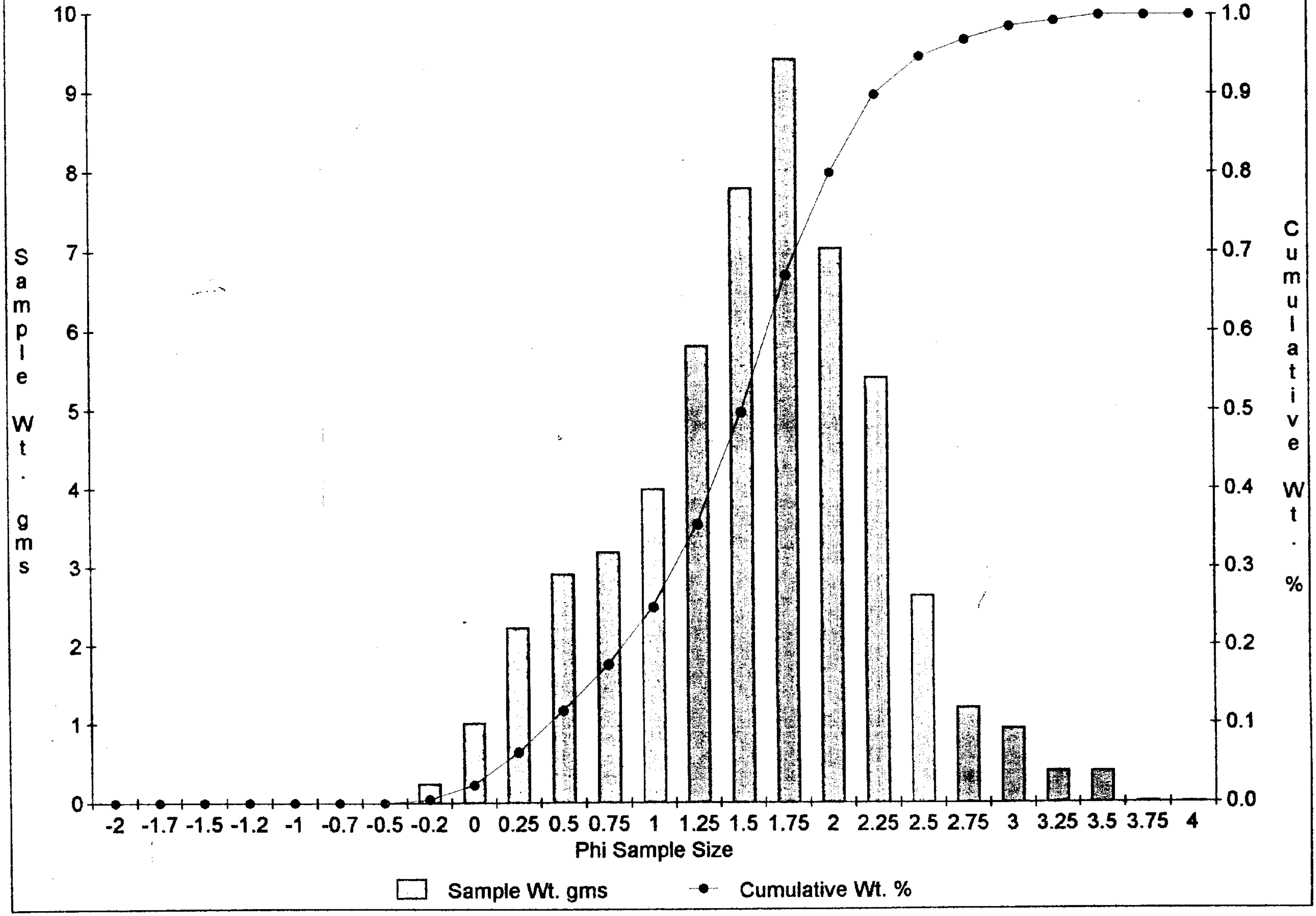
CORE (M-3)
DEPTH (0.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.2441	0.2441	0.0044742	0.0044742
0	1.003	1.2471	0.0183843	0.0228585
0.25	2.2105	3.4576	0.040517	0.0633756
0.5	2.9001	6.3577	0.053157	0.1165325
0.75	3.1774	9.5351	0.0582397	0.1747722
1	3.9868	13.5219	0.0730755	0.2478477
1.25	5.8006	19.3225	0.1063212	0.3541689
1.5	7.7871	27.1096	0.1427325	0.4969014
1.75	9.4191	36.5287	0.172646	0.6695474
2	7.0284	43.5571	0.128826	0.7983735
2.25	5.4073	48.9644	0.0991123	0.8974858
2.5	2.6307	51.5951	0.048219	0.9457048
2.75	1.2088	52.8039	0.0221565	0.9678613
3	0.9381	53.742	0.0171948	0.9850561
3.25	0.4001	54.1421	0.0073336	0.9923897
3.5	0.395	54.5371	0.0072401	0.9996297
3.75	0.0127	54.5498	0.0002328	0.9998625
4	0.0075	54.5573	0.0001375	1

Total Wt.	54.5573 gms		
Median Weight	27.27865 gms		
Mean Grain Size	1.5 phi	0.3535534	mm

Cum Wt. % M3

0.5'

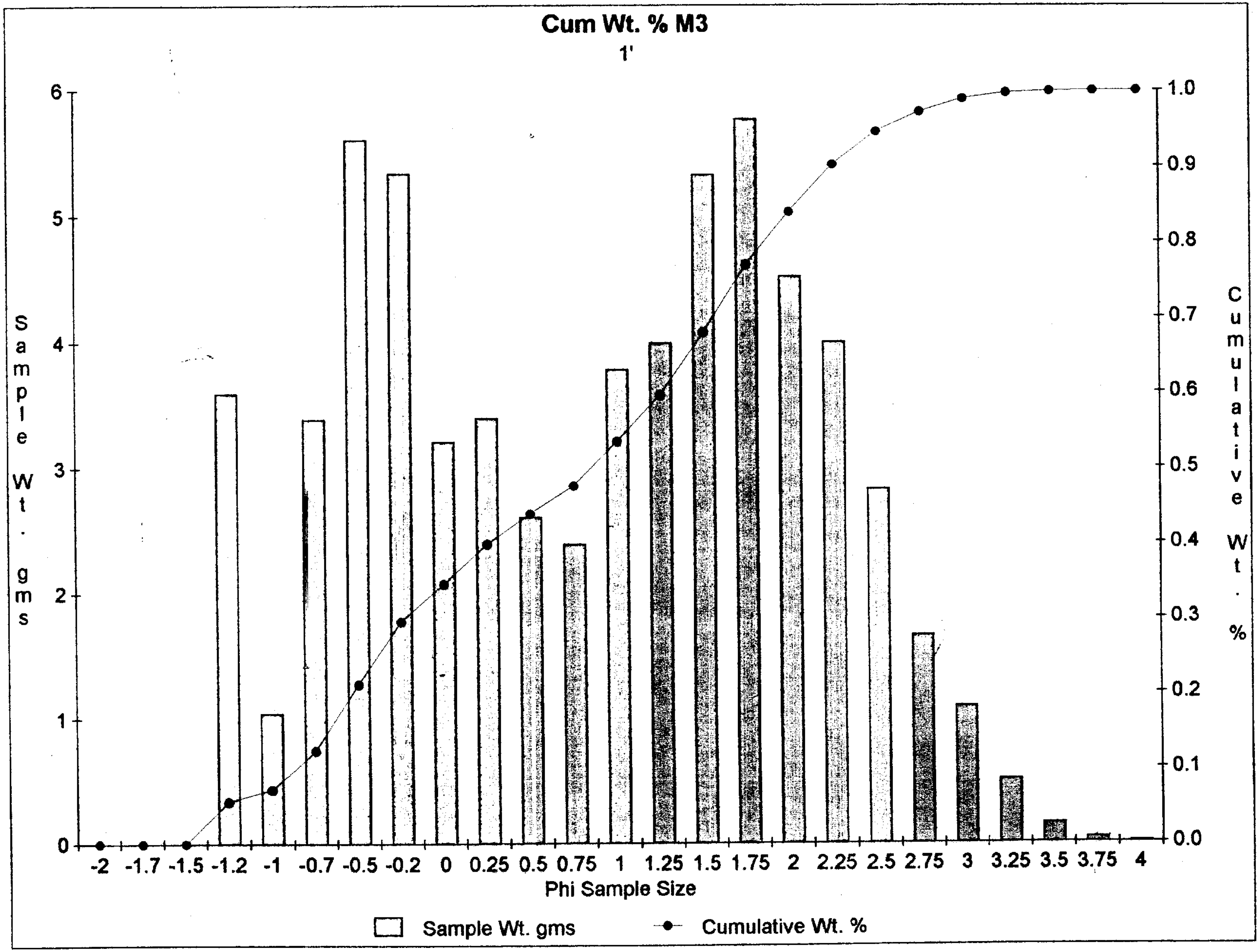

Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (1 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	3.594	3.594	0.0559557	0.0559557
-1	1.044	4.638	0.0162542	0.0722099
-0.75	3.3839	8.0219	0.0526846	0.1248945
-0.5	5.6058	13.6277	0.0872778	0.2121723
-0.25	5.3401	18.9678	0.0831411	0.2953134
0	3.2053	22.1731	0.0499039	0.3452173
0.25	3.3915	25.5646	0.0528029	0.3980202
0.5	2.6023	28.1669	0.0405157	0.4385359
0.75	2.3817	30.5486	0.0370811	0.4756171
1	3.7801	34.3287	0.0588531	0.5344702
1.25	3.9923	38.321	0.0621569	0.5966271
1.5	5.3321	43.6531	0.0830165	0.6796436
1.75	5.7718	49.4249	0.0898623	0.7695059
2	4.5202	53.9451	0.0703759	0.8398817
2.25	3.9981	57.9432	0.0622472	0.9021289
2.5	2.8263	60.7695	0.0440032	0.9461321
2.75	1.6574	62.4269	0.0258044	0.9719365
3	1.0945	63.5214	0.0170405	0.988977
3.25	0.5107	64.0321	0.0079512	0.9969282
3.5	0.1526	64.1847	0.0023759	0.9993041
3.75	0.0367	64.2214	0.0005714	0.9998754
4	0.008	64.2294	0.0001246	1

Total Wt.	64.2294	gms		
Median Weight	32.1147	gms		
Mean Grain Size	0.85	phi	0.5547847	mm



Cum Wt. % M3
1'
Sample Wt. gms
Cumulative Wt. %
6
5
4
3
2
1
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

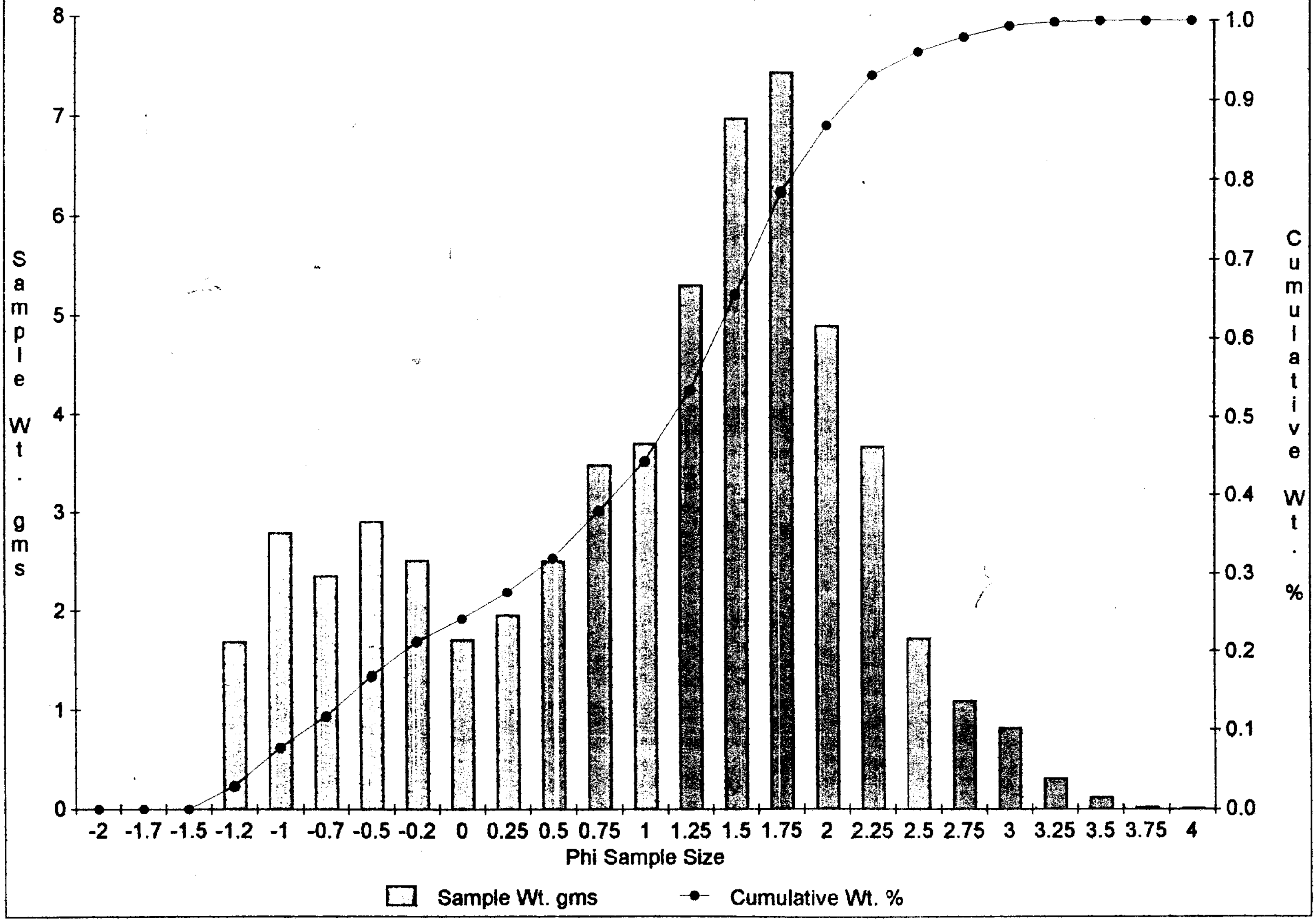
CORE (M-3)
DEPTH (1.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	1.6876	1.6876	0.0290602	0.0290602
-1	2.7955	4.4831	0.048138	0.0771982
-0.75	2.3608	6.8439	0.0406526	0.1178508
-0.5	2.906	9.7499	0.0500408	0.1678916
-0.25	2.5125	12.2624	0.0432648	0.2111564
0	1.7084	13.9708	0.0294183	0.2405747
0.25	1.9602	15.931	0.0337543	0.274329
0.5	2.5067	18.4377	0.0431649	0.317494
0.75	3.4839	21.9216	0.0599921	0.3774861
1	3.7041	25.6257	0.063784	0.4412701
1.25	5.3187	30.9444	0.0915871	0.5328571
1.5	6.9982	37.9426	0.1205078	0.6533649
1.75	7.4628	45.4054	0.1285081	0.781873
2	4.9129	50.3183	0.0845993	0.8664723
2.25	3.6812	53.9995	0.0633896	0.9298619
2.5	1.7162	55.7157	0.0295527	0.9594146
2.75	1.0918	56.8075	0.0188006	0.9782152
3	0.8105	57.618	0.0139567	0.9921719
3.25	0.3051	57.9231	0.0052538	0.9974256
3.5	0.1194	58.0425	0.002056	0.9994817
3.75	0.0207	58.0632	0.0003565	0.9998381
4	0.0094	58.0726	0.0001619	1

Total Wt.	58.0726 gms	
Median Weight	29.0363 gms	
Mean Grain Size	1.16 phi	0.4475125 mm

Cum Wt. % M3

1.5'



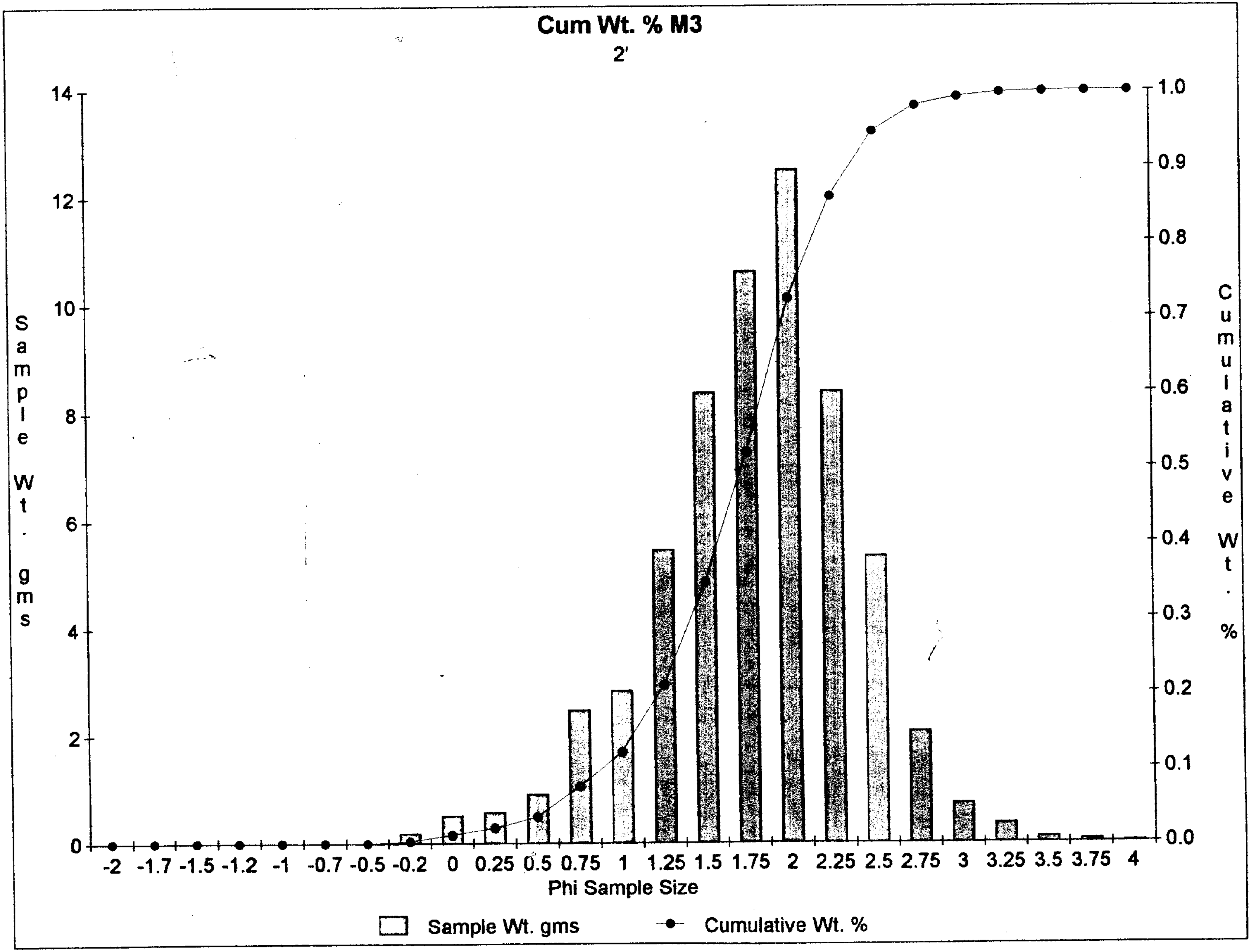
8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0.1746	0.1746	0.0028419	0.0028419
0	0.5118	0.6864	0.0083305	0.0111724
0.25	0.5764	1.2628	0.009382	0.0205544
0.5	0.901	2.1638	0.0146654	0.0352198
0.75	2.4654	4.6292	0.0401289	0.0753487
1	2.8316	7.4608	0.0460895	0.1214382
1.25	5.4437	12.9045	0.0886062	0.2100444
1.5	8.3666	21.2711	0.1361818	0.3462262
1.75	10.6197	31.8908	0.1728551	0.5190813
2	12.5236	44.4144	0.2038446	0.7229259
2.25	8.389	52.8034	0.1365464	0.8594723
2.5	5.3287	58.1321	0.0867344	0.9462067
2.75	2.068	60.2001	0.0336605	0.9798672
3	0.7261	60.9262	0.0118186	0.9916858
3.25	0.3536	61.2798	0.0057555	0.9974413
3.5	0.0927	61.3725	0.0015089	0.9989501
3.75	0.0503	61.4228	0.0008187	0.9997689
4	0.0142	61.437	0.0002311	1

Total Wt.	61.437	gms	
Median Weight	30.7185	gms	
Mean Grain Size	1.72	phi	0.3035487 mm


Cum Wt. % M3
2'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (2.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0.322	0.322	0.0044065	0.0044065
0.25	0.7934	1.1154	0.0108575	0.0152641
0.5	2.1486	3.264	0.0294032	0.0446673
0.75	5.2213	8.4853	0.0714526	0.1161199
1	9.1315	17.6168	0.1249631	0.241083
1.25	13.1214	30.7382	0.1795642	0.4206471
1.5	14.6192	45.3574	0.2000613	0.6207084
1.75	13.5241	58.8815	0.185075	0.8057835
2	7.9396	66.8211	0.1086521	0.9144356
2.25	3.9359	70.757	0.0538621	0.9682977
2.5	1.2756	72.0326	0.0174564	0.9857541
2.75	0.5995	72.6321	0.0082041	0.9939581
3	0.2954	72.9275	0.0040425	0.9980006
3.25	0.0856	73.0131	0.0011714	0.9991721
3.5	0.0314	73.0445	0.0004297	0.9996018
3.75	0.0197	73.0642	0.0002696	0.9998714
4	0.0094	73.0736	0.0001286	1

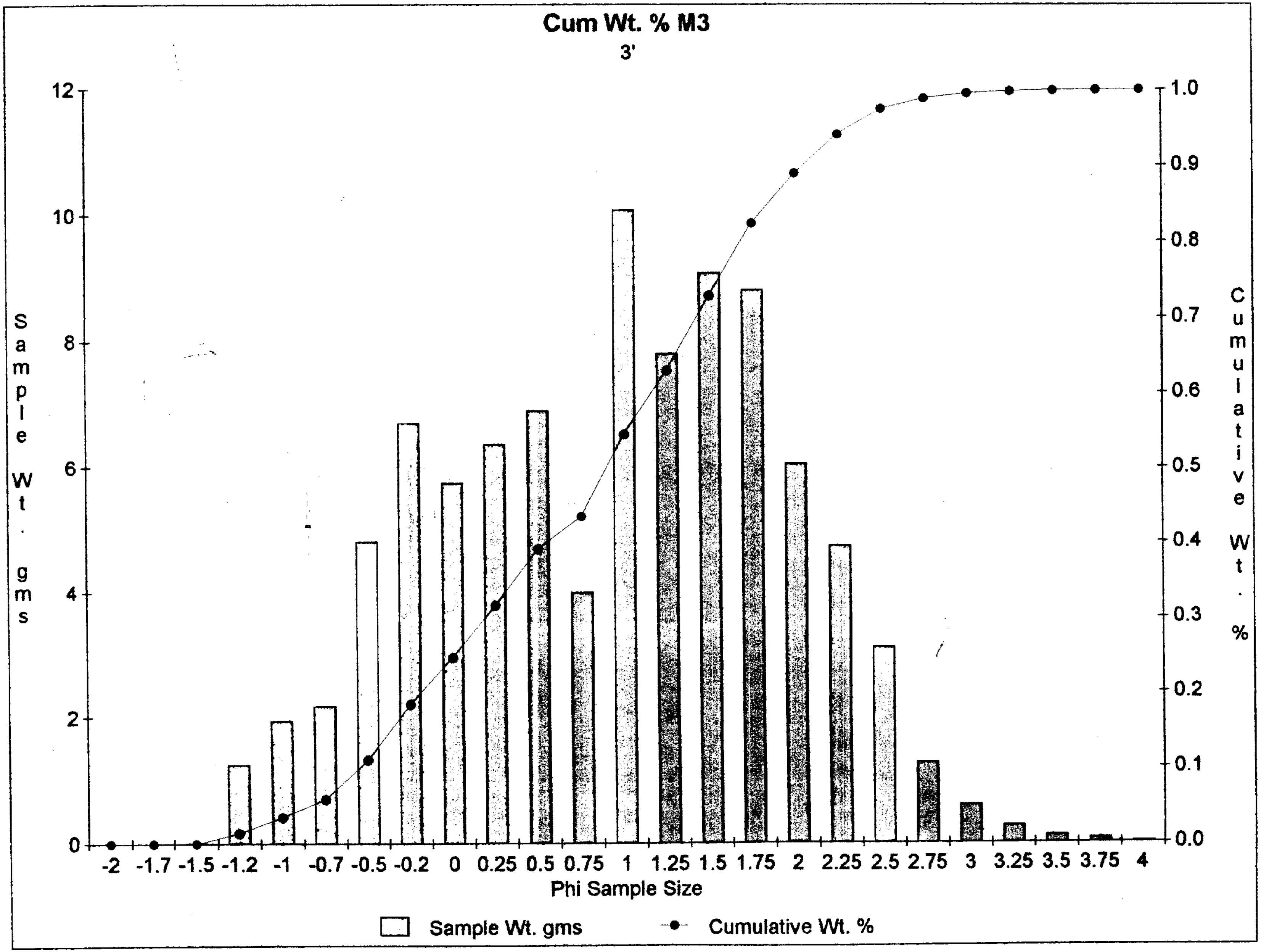
Total Wt.	73.0736 gms	
Median Weight	36.5368 gms	
Mean Grain Size	1.35 phi	0.392292 mm

Grain Size Distribution Chart

CORE (M-3)
DEPTH (3 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.0074	0.0074	8.052E-05	8.052E-05
-1.25	1.2501	1.2575	0.0136029	0.0136835
-1	1.9457	3.2032	0.0211721	0.0348556
-0.75	2.1798	5.383	0.0237195	0.058575
-0.5	4.8011	10.1841	0.0522431	0.1108182
-0.25	6.7001	16.8842	0.0729071	0.1837252
0	5.739	22.6232	0.0624489	0.2461741
0.25	6.3664	28.9896	0.0692759	0.31545
0.5	6.8989	35.8885	0.0750703	0.3905203
0.75	3.988	39.8765	0.0433954	0.4339156
1	10.0914	49.9679	0.1098094	0.5437251
1.25	7.8058	57.7737	0.0849387	0.6286638
1.5	9.0866	66.8603	0.0988757	0.7275395
1.75	8.8232	75.6835	0.0960095	0.8235491
2	6.0488	81.7323	0.0658199	0.889369
2.25	4.7285	86.4608	0.0514531	0.9408221
2.5	3.1028	89.5636	0.0337631	0.9745852
2.75	1.275	90.8386	0.0138739	0.9884591
3	0.5973	91.4359	0.0064995	0.9949586
3.25	0.2646	91.7005	0.0028792	0.9978378
3.5	0.1111	91.8116	0.0012089	0.9990468
3.75	0.0709	91.8825	0.0007715	0.9998183
4	0.0167	91.8992	0.0001817	1

Total Wt. 91.8992 gms
Median Weight 45.9496 gms
Mean Grain Size 0.9 phi 0.5358867 mm


Cum Wt. % M3
3'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (3.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	1.661	1.661	0.0255721	0.0255721
-1.75	0.6285	2.2895	0.0096761	0.0352482
-1.5	1.5451	3.8346	0.0237877	0.0590359
-1.25	1.6242	5.4588	0.0250055	0.0840414
-1	2.0013	7.4601	0.0308112	0.1148526
-0.75	1.1377	8.5978	0.0175156	0.1323681
-0.5	1.3501	9.9479	0.0207856	0.1531537
-0.25	2.7736	12.7215	0.0427012	0.1958549
0	4.2923	17.0138	0.0660825	0.2619373
0.25	5.608	22.6218	0.0863384	0.3482758
0.5	6.9495	29.5713	0.1069916	0.4552674
0.75	6.1403	35.7116	0.0945335	0.5498009
1	7.3183	43.0299	0.1126695	0.6624703
1.25	5.6883	48.7182	0.0875747	0.750045
1.5	4.7162	53.4344	0.0726086	0.8226537
1.75	3.3501	56.7845	0.0515767	0.8742304
2	1.9849	58.7694	0.0305587	0.9047891
2.25	1.3468	60.1162	0.0207348	0.9255239
2.5	0.5829	60.6991	0.0089741	0.934498
2.75	1.3277	62.0268	0.0204407	0.9549387
3	2.68	64.7068	0.0412602	0.9961988
3.25	0.1447	64.8515	0.0022277	0.9984266
3.5	0.0642	64.9157	0.0009884	0.999415
3.75	0.0285	64.9442	0.0004388	0.9998537
4	0.0095	64.9537	0.0001463	1

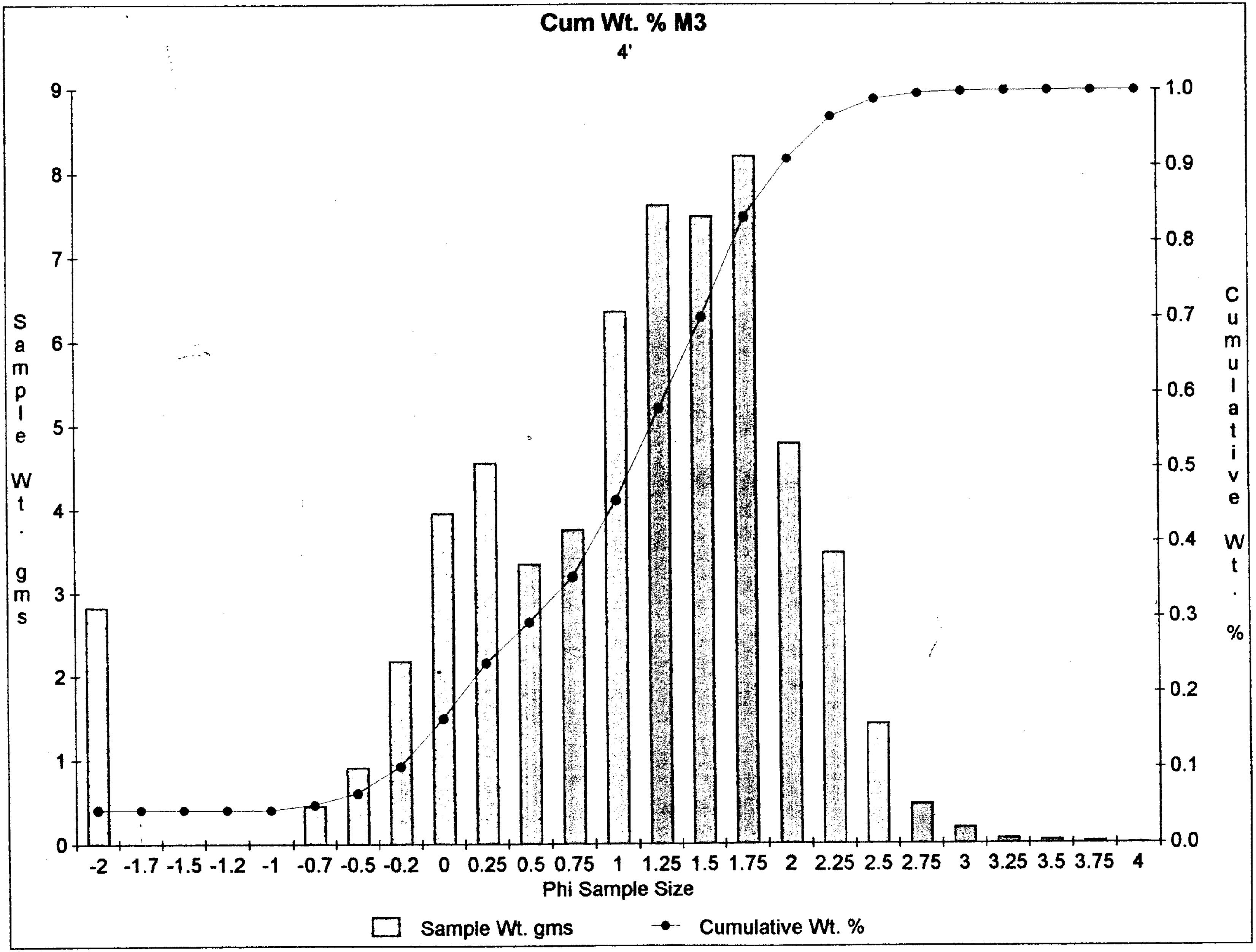
Total Wt. 64.9537 gms
Median Weight 32.47685 gms
Mean Grain Size 0.62 phi 0.6506709 mm

Grain Size Distribution Chart

CORE (M-3)
DEPTH (4 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	2.8268	2.8268	0.045552	0.045552
-1.75	0	2.8268	0	0.045552
-1.5	0	2.8268	0	0.045552
-1.25	0	2.8268	0	0.045552
-1	0	2.8268	0	0.045552
-0.75	0.455	3.2818	0.007332	0.0528841
-0.5	0.9075	4.1893	0.0146238	0.0675078
-0.25	2.1761	6.3654	0.0350664	0.1025743
0	3.9448	10.3102	0.0635679	0.1661421
0.25	4.5502	14.8604	0.0733235	0.2394656
0.5	3.332	18.1924	0.053693	0.2931587
0.75	3.7421	21.9345	0.0603015	0.3534602
1	6.3538	28.2883	0.1023873	0.4558475
1.25	7.6193	35.9076	0.12278	0.5786275
1.5	7.4838	43.3914	0.1205966	0.6992241
1.75	8.2046	51.596	0.1322118	0.8314359
2	4.784	56.38	0.077091	0.9085269
2.25	3.4633	59.8433	0.0558088	0.9643357
2.5	1.4223	61.2656	0.0229194	0.9872552
2.75	0.4725	61.7381	0.007614	0.9948692
3	0.1889	61.927	0.003044	0.9979132
3.25	0.0572	61.9842	0.0009217	0.9988349
3.5	0.0419	62.0261	0.0006752	0.9995101
3.75	0.025	62.0511	0.0004029	0.999913
4	0.0054	62.0565	8.702E-05	1

Total Wt.	62.0565	gms	
Median Weight	31.02825	gms	
Mean Grain Size	1.09	phi	0.4697614 mm

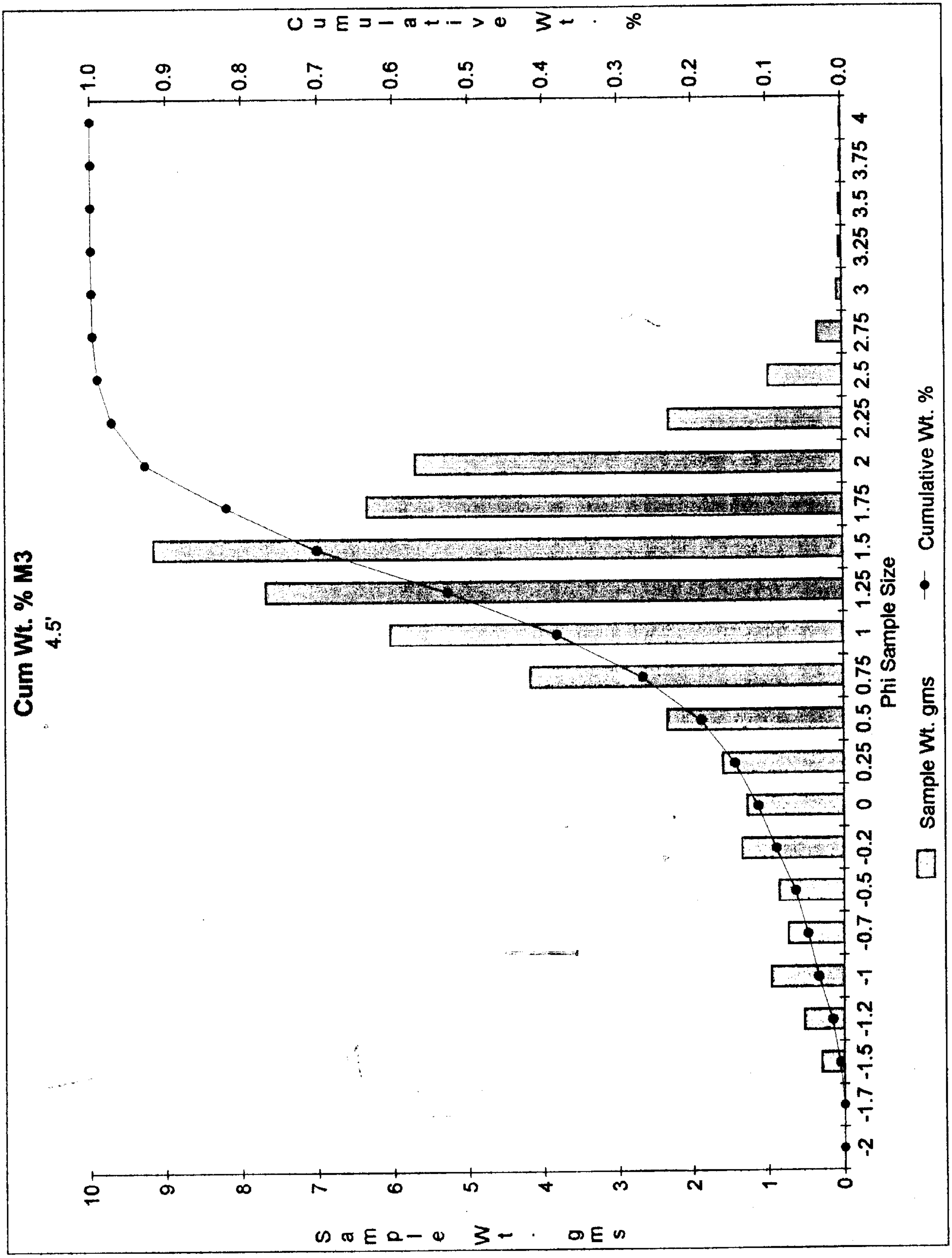

Cum Wt. % M3
4'
Sample Wt. gms
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (4.5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0.3017	0.3017	0.0057046	0.0057046
-1.25	0.5305	0.8322	0.0100308	0.0157354
-1	0.9714	1.8036	0.0183674	0.0341028
-0.75	0.7384	2.542	0.0139618	0.0480647
-0.5	0.8642	3.4062	0.0163405	0.0644051
-0.25	1.3552	4.7614	0.0256244	0.0900295
0	1.2856	6.047	0.0243084	0.1143379
0.25	1.6055	7.6525	0.0303571	0.144695
0.5	2.3381	9.9906	0.0442093	0.1889043
0.75	4.1755	14.1661	0.0789512	0.2678555
1	6.0387	20.2048	0.114181	0.3820365
1.25	7.6832	27.888	0.1452755	0.527312
1.5	9.1662	37.0542	0.1733164	0.7006283
1.75	6.3424	43.3966	0.1199234	0.8205517
2	5.7044	49.101	0.10786	0.9284117
2.25	2.3049	51.4059	0.0435815	0.9719932
2.5	0.9845	52.3904	0.0186151	0.9906083
2.75	0.3306	52.721	0.0062511	0.9968593
3	0.0715	52.7925	0.0013519	0.9982113
3.25	0.0384	52.8309	0.0007261	0.9989374
3.5	0.0321	52.863	0.000607	0.9995443
3.75	0.0154	52.8784	0.0002912	0.9998355
4	0.0087	52.8871	0.0001645	1

Total Wt.	52.8871 gms	
Median Weight	26.44355 gms	
Mean Grain Size	1.2 phi	0.4352753 mm


Cum Wt. % M3
4.5'
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

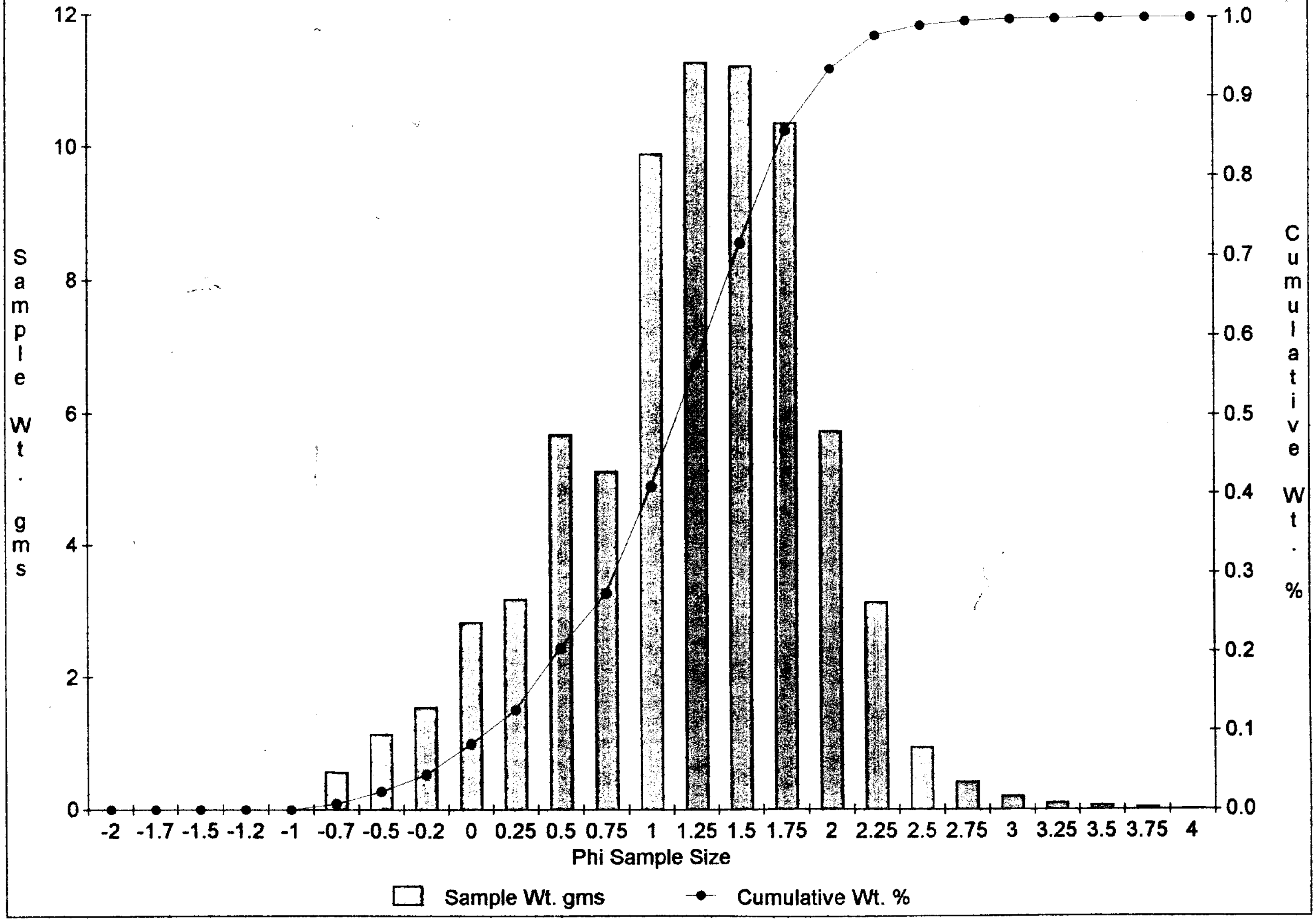
CORE (M-3)
DEPTH (5 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0.5651	0.5651	0.0076945	0.0076945
-0.5	1.1318	1.6969	0.0154108	0.0231053
-0.25	1.5494	3.2463	0.0210969	0.0442022
0	2.8208	6.0671	0.0384085	0.0826107
0.25	3.1745	9.2416	0.0432245	0.1258352
0.5	5.6708	14.9124	0.0772146	0.2030497
0.75	5.1108	20.0232	0.0695895	0.2726393
1	9.9005	29.9237	0.1348069	0.4074461
1.25	11.2955	41.2192	0.1538014	0.5612476
1.5	11.2378	52.457	0.1530158	0.7142633
1.75	10.372	62.829	0.1412269	0.8554902
2	5.7317	68.5607	0.0780438	0.933534
2.25	3.1286	71.6893	0.0425995	0.9761336
2.5	0.9368	72.6261	0.0127556	0.9888892
2.75	0.4124	73.0385	0.0056153	0.9945045
3	0.197	73.2355	0.0026824	0.9971869
3.25	0.0961	73.3316	0.0013085	0.9984954
3.5	0.0627	73.3943	0.0008537	0.9993491
3.75	0.0387	73.433	0.0005269	0.9998761
4	0.0091	73.4421	0.0001239	1

Total Wt.	73.4421	gms		
Median Weight	36.72105	gms		
Mean Grain Size	1.15	phi	0.4506252	mm

Cum Wt. % M3

5'



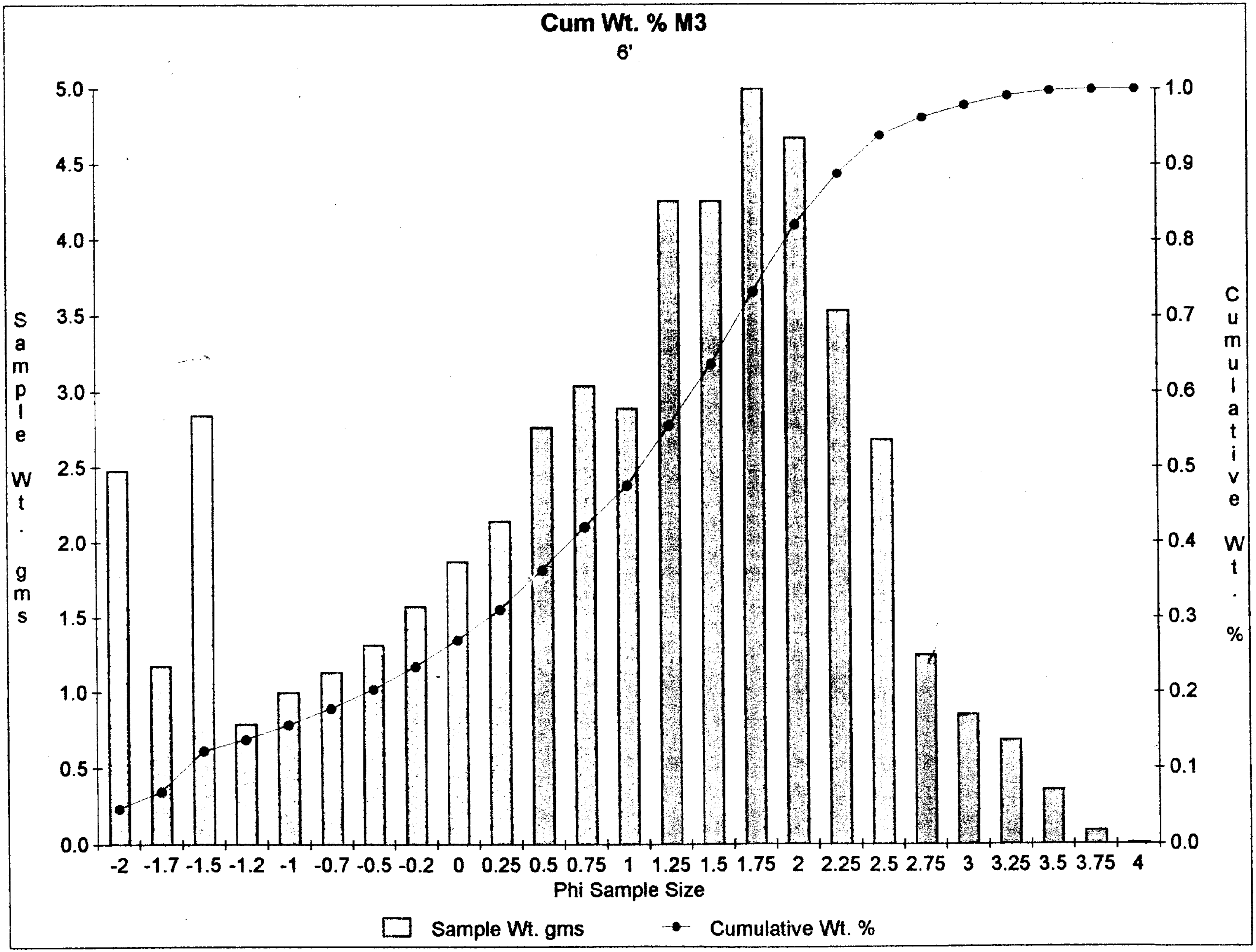
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2 -1.7 -1.5 -1.2 -1 -0.7 -0.5 -0.2 0 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 2.75 3 3.25 3.5 3.75 4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

CORE (M-3)
DEPTH (6 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	2.4784	2.4784	0.0470879	0.0470879
-1.75	1.1758	3.6542	0.0223394	0.0694273
-1.5	2.8435	6.4977	0.0540245	0.1234518
-1.25	0.7931	7.2908	0.0150684	0.1385201
-1	1.0003	8.2911	0.019005	0.1575252
-0.75	1.1309	9.422	0.0214863	0.1790115
-0.5	1.3149	10.7369	0.0249822	0.2039937
-0.25	1.5689	12.3058	0.029808	0.2338017
0	1.8682	14.174	0.0354945	0.2692962
0.25	2.1352	16.3092	0.0405673	0.3098635
0.5	2.7605	19.0697	0.0524476	0.3623111
0.75	3.0347	22.1044	0.0576572	0.4199683
1	2.8887	24.9931	0.0548833	0.4748516
1.25	4.2576	29.2507	0.0808914	0.555743
1.5	4.2564	33.5071	0.0808686	0.6366117
1.75	4.9983	38.5054	0.0949642	0.7315759
2	4.6776	43.183	0.0888712	0.8204471
2.25	3.5337	46.7167	0.0671378	0.8875849
2.5	2.6817	49.3984	0.0509504	0.9385353
2.75	1.2444	50.6428	0.0236427	0.9621781
3	0.8488	51.4916	0.0161266	0.9783047
3.25	0.6845	52.1761	0.013005	0.9913097
3.5	0.3574	52.5335	0.0067904	0.9981001
3.75	0.0903	52.6238	0.0017156	0.9998157
4	0.0097	52.6335	0.0001843	1

Total Wt. 52.6335 gms
Median Weight 26.31675 gms
Mean Grain Size 1.08 phi 0.4730288 mm


Cum Wt. % M3
6'
Sample Wt. gms
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

Grain Size Distribution Chart

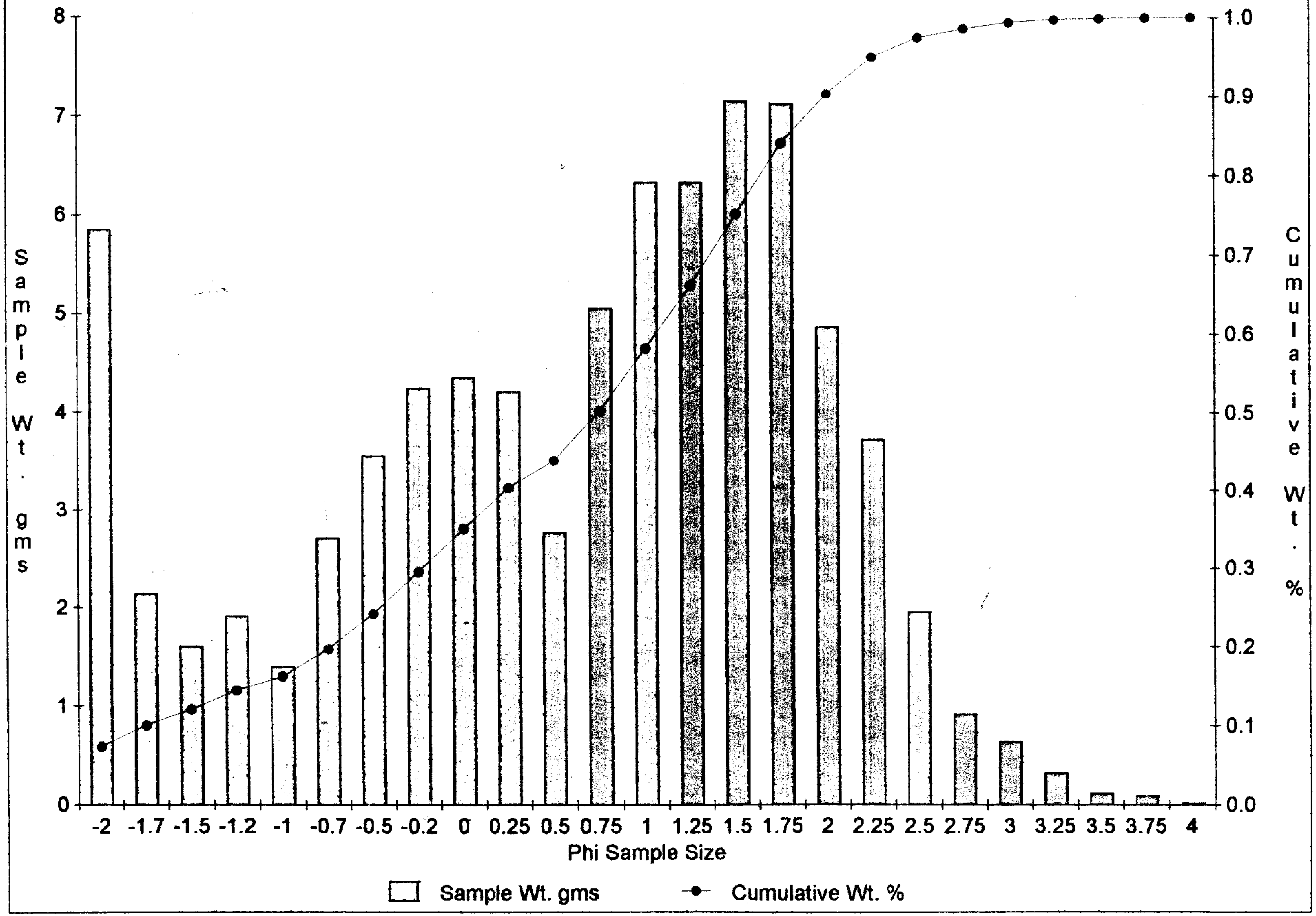
CORE (M-3)
DEPTH (7.2 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	5.8491	5.8491	0.073821	0.073821
-1.75	2.1396	7.9887	0.0270037	0.1008247
-1.5	1.6025	9.5912	0.020225	0.1210497
-1.25	1.9074	11.4986	0.0240731	0.1451228
-1	1.3964	12.895	0.0176238	0.1627466
-0.75	2.7083	15.6033	0.0341812	0.1969278
-0.5	3.5464	19.1497	0.0447588	0.2416866
-0.25	4.238	23.3877	0.0534874	0.295174
0	4.3445	27.7322	0.0548315	0.3500056
0.25	4.2001	31.9323	0.0530091	0.4030146
0.5	2.7561	34.6884	0.0347845	0.4377991
0.75	5.051	39.7394	0.0637482	0.5015473
1	6.3249	46.0643	0.079826	0.5813733
1.25	6.323	52.3873	0.079802	0.6611753
1.5	7.146	59.5333	0.090189	0.7513643
1.75	7.1161	66.6494	0.0898116	0.841176
2	4.8658	71.5152	0.0614108	0.9025868
2.25	3.7125	75.2277	0.0468551	0.9494419
2.5	1.9436	77.1713	0.02453	0.9739719
2.75	0.9037	78.075	0.0114055	0.9853774
3	0.6331	78.7081	0.0079903	0.9933677
3.25	0.3138	79.0219	0.0039604	0.9973282
3.5	0.1113	79.1332	0.0014047	0.9987329
3.75	0.0857	79.2189	0.0010816	0.9998145
4	0.0147	79.2336	0.0001855	1

Total Wt.	79.2336	gms		
Median Weight	39.6168	gms		
Mean Grain Size	0.74	phi	0.5987394	mm

Cum Wt. % M3

7.2'


8
7
6
5
4
3
2
1
0
Sample Wt. gms
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Wt. %
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION OF SILICA FRACTIONS

Grain Size Distribution Chart

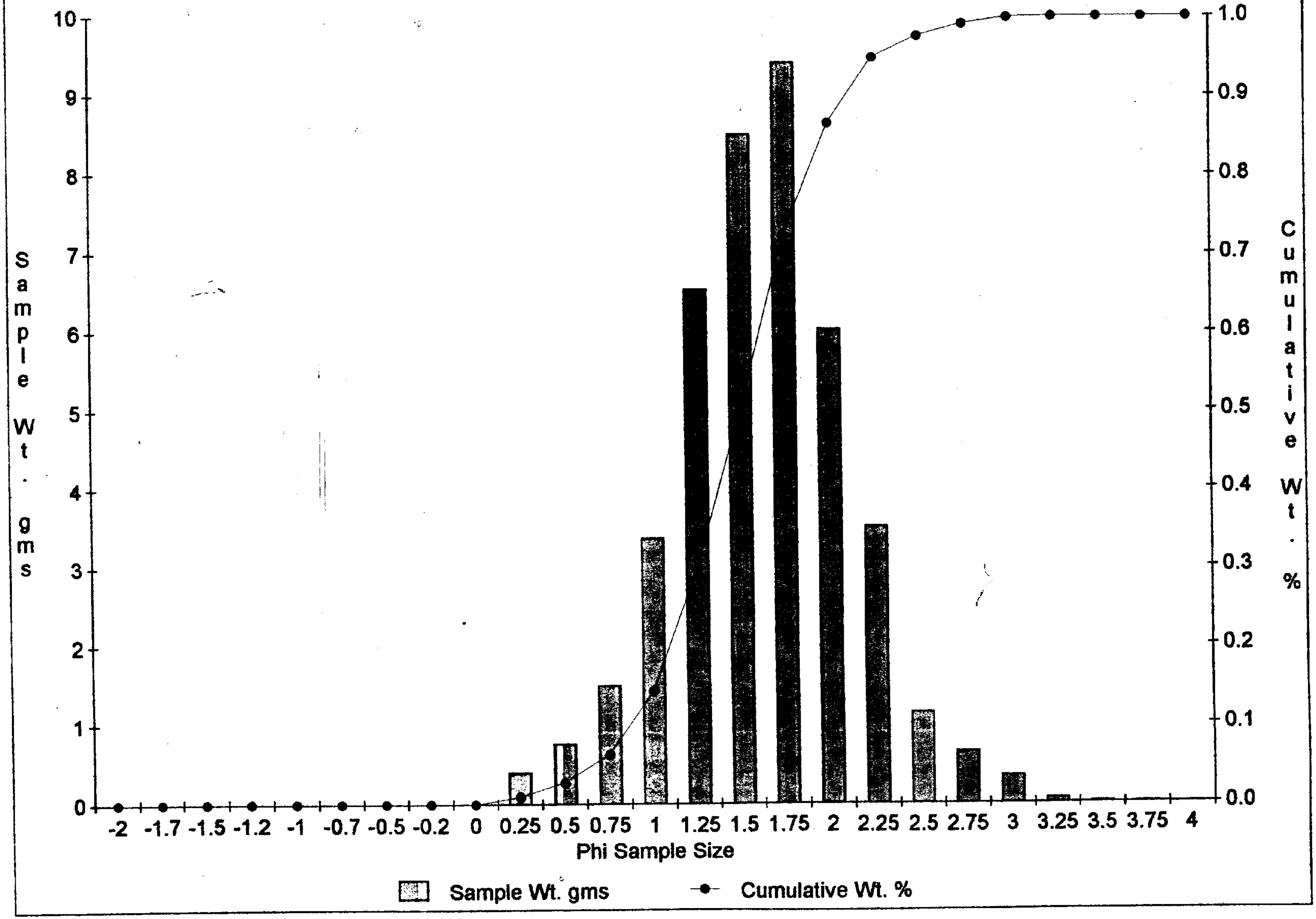
AFTER SECOND DIGESTION
CORE (B-1)
DEPTH (0 FEET BLS)

Phi	Wt	Cum. Wt.	Wt. %	Cum.Wt.%
-2	0	0	0	0
-1.75	0	0	0	0
-1.5	0	0	0	0
-1.25	0	0	0	0
-1	0	0	0	0
-0.75	0	0	0	0
-0.5	0	0	0	0
-0.25	0	0	0	0
0	0	0	0	0
0.25	0.3969	0.3969	0.0094102	0.0094102
0.5	0.7526	1.1495	0.0178435	0.0272537
0.75	1.4864	2.6359	0.0352413	0.062495
1	3.3566	5.9925	0.0795821	0.1420771
1.25	6.5277	12.5202	0.1547663	0.2968434
1.5	8.5017	21.0219	0.2015681	0.4984115
1.75	9.4128	30.4347	0.2231695	0.721581
2	6.0274	36.4621	0.1429046	0.8644856
2.25	3.5051	39.9672	0.083103	0.9475885
2.5	1.1469	41.1141	0.027192	0.9747806
2.75	0.6497	41.7638	0.0154038	0.9901844
3	0.3453	42.1091	0.0081868	0.9983712
3.25	0.0554	42.1645	0.0013135	0.9996847
3.5	0.0103	42.1748	0.0002442	0.9999289
3.75	0.0023	42.1771	5.453E-05	0.9999834
4	0.0007	42.1778	1.66E-05	1

Total Wt.	42.1778 gms	
Median Weight	21.0889 gms	
Mean Grain Size	1.5 phi	0.3535534 mm

Cum Wt. % B1

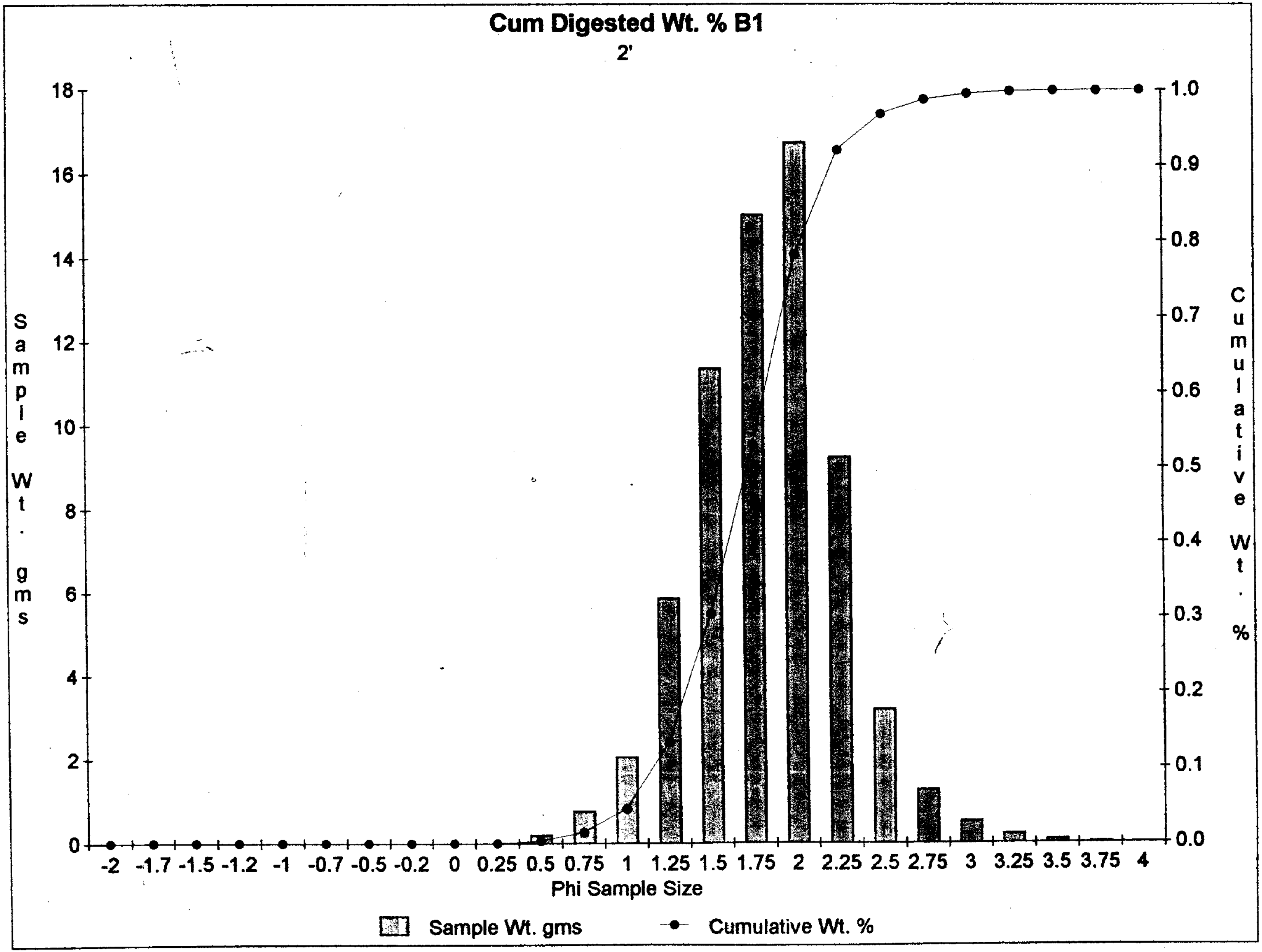
0' - AFTER SECOND DIGESTION



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0.0014	0	0.0014	0.0014	0	0
-1	0.0701	0	0.0701	0.0715	0	0
-0.75	0.0881	0	0.0881	0.1596	0	0
-0.5	0.1318	0	0.1318	0.2914	0	0
-0.25	0.1849	0	0.1849	0.4763	0	0
0	0.5348	0	0.5348	1.0111	0	0
0.25	1.1759	0	1.1759	2.187	0	0
0.5	2.1838	0.1894	1.9944	4.3708	0.002849757	0.002849757
0.75	4.3208	0.7611	3.5597	8.6916	0.011451691	0.014301448
1	9.5579	2.0469	7.511	18.2495	0.030798143	0.045099591
1.25	13.8366	5.8372	7.9994	32.0861	0.087827895	0.132927486
1.5	21.2438	11.3517	9.8921	53.3299	0.17080037	0.303727856
1.75	24.0138	15.0183	8.9955	77.3437	0.225968902	0.529696758
2	16.7462	16.7462	0	94.0899	0.251967295	0.781664054
2.25	9.2292	9.2292	0	103.3191	0.138864731	0.920528785
2.5	3.1739	3.1739	0	106.493	0.047755252	0.968284037
2.75	1.2599	1.2599	0	107.7529	0.018956754	0.987240791
3	0.5187	0.5187	0	108.2716	0.007804483	0.995045274
3.25	0.223	0.223	0	108.4946	0.003355311	0.998400585
3.5	0.0742	0.0742	0	108.5688	0.001116431	0.999517016
3.75	0.0561	0.022	0.0341	108.6249	0.000331017	0.999848033
4	0.0215	0.0101	0.0114	108.6464	0.000151967	1

Total Wt.	108.6464
Digest Wt.	66.4618
Sample % Silica	61.172575



Cum Digested Wt. % B1

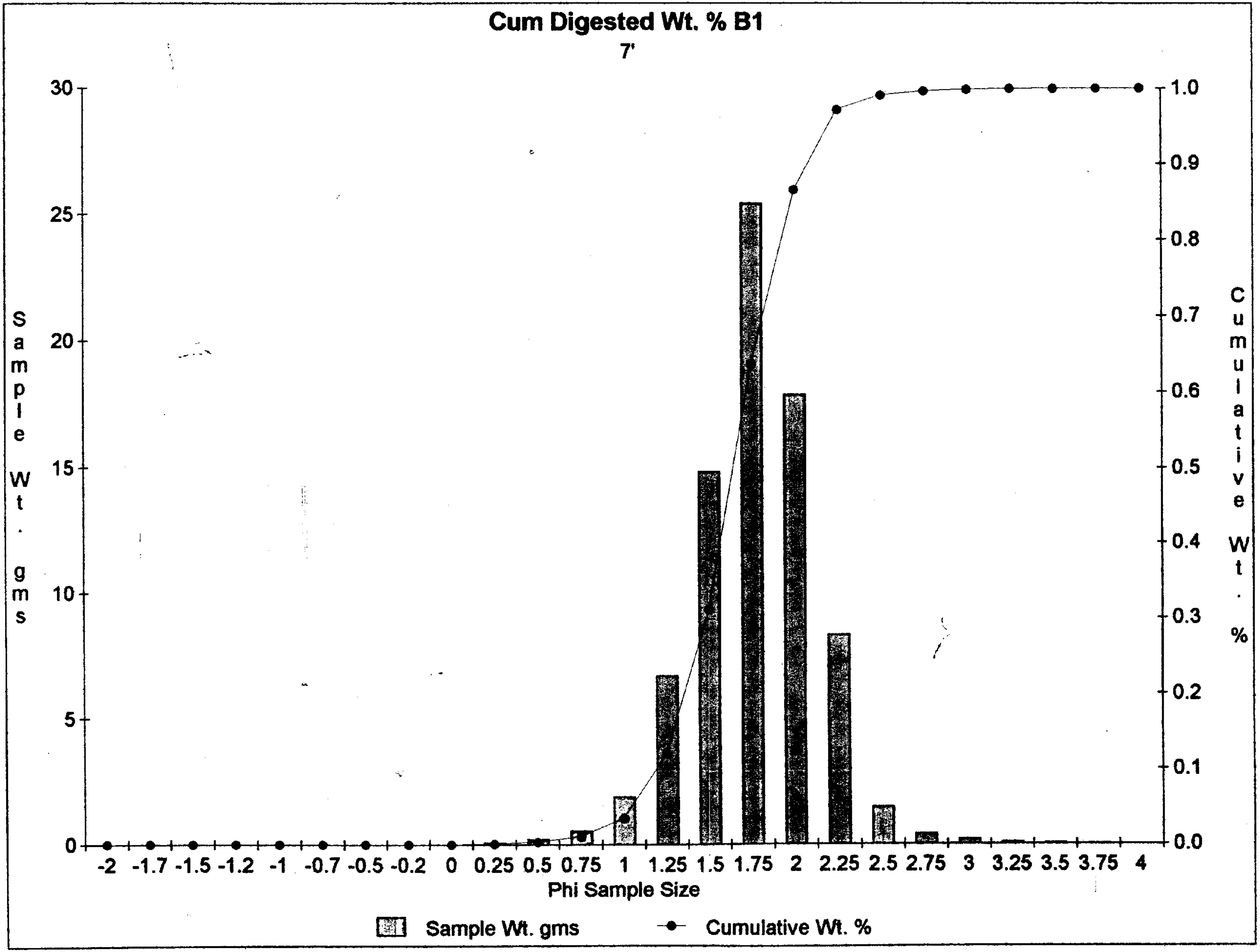
2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-1)
DEPTH (7 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.025	0	0.025	0.025	0	0
0	0.0803	0	0.0803	0.1053	0	0
0.25	0.4402	0.0714	0.3688	0.5455	0.000915245	0.000915245
0.5	0.5015	0.2031	0.2984	1.047	0.002603449	0.003518694
0.75	1.0069	0.5399	0.467	2.0539	0.006920739	0.010439433
1	2.6214	1.8997	0.7217	4.6753	0.024351413	0.034790846
1.25	6.6774	6.6774	0	11.3527	0.085594634	0.12038548
1.5	16.2571	14.8205	1.4366	27.6098	0.189977427	0.310362906
1.75	25.8116	25.4039	0.4077	53.4214	0.325641344	0.636004251
2	23.7579	17.8635	5.8944	77.1793	0.228984296	0.864988547
2.25	14.587	8.3266	6.2604	91.7663	0.106734998	0.971723545
2.5	4.8731	1.4971	3.376	96.6394	0.019190662	0.990914207
2.75	1.3322	0.405	0.9272	97.9716	0.005191516	0.996105722
3	0.4879	0.183	0.3049	98.4595	0.002345796	0.998451518
3.25	0.1807	0.0792	0.1015	98.6402	0.00101523	0.999466748
3.5	0.0729	0.0287	0.0442	98.7131	0.000367893	0.999834641
3.75	0.0305	0.0098	0.0207	98.7436	0.000125622	0.999960262
4	0.0187	0.0031	0.0156	98.7623	3.97375E-05	1

Total Wt. 98.7623
Digest Wt. 78.0119

Sample % Silica 78.989554



Cum Digested Wt. % B1

7'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-1)
DEPTH (8 FEET BLS)

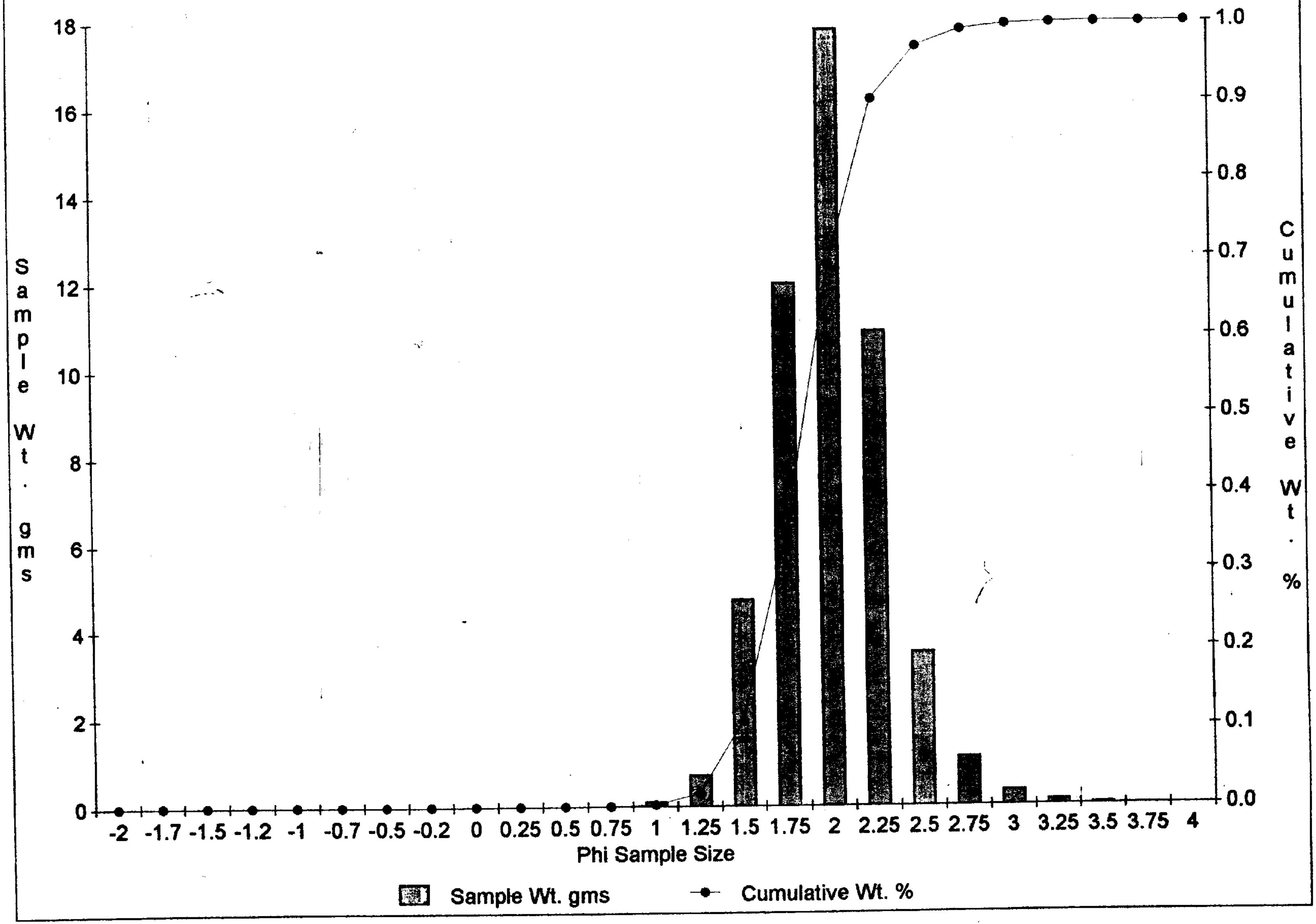
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum. Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0	0	0	0	0	0
0.25	0	0	0	0	0	0
0.5	0	0	0	0	0	0
0.75	0	0	0	0	0	0
1	0.2004	0.1013	0.0991	0.2004	0.001976273	0.001976273
1.25	0.7002	0.7002	0	0.9006	0.01366028	0.015636553
1.5	4.6871	4.6871	0	5.5877	0.091441158	0.107077711
1.75	11.9745	11.9745	0	17.5622	0.233611858	0.340689569
2	23.2339	17.8434	5.3905	40.7961	0.348108884	0.688798453
2.25	15.1105	10.8806	4.2299	55.9066	0.212270841	0.901069294
2.5	4.65	3.4803	1.1697	60.5566	0.067897562	0.968966856
2.75	1.7049	1.0951	0.6098	62.2615	0.021364428	0.990331284
3	0.3353	0.3353	0	62.5968	0.006541405	0.996872689
3.25	0.4329	0.1135	0.3194	63.0297	0.002214284	0.999086974
3.5	0.0548	0.0376	0.0172	63.0845	0.000733543	0.999820516
3.75	0.0259	0.0082	0.0177	63.1104	0.000159975	0.999980491
4	0.0158	0.001	0.0148	63.1262	1.95091E-05	1

Total Wt.	63.1262
Digest Wt.	51.2581

Sample % Silica 81.199407

Cum Digested Wt. % B1

8'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-1)
DEPTH (8.5 FEET BLS)

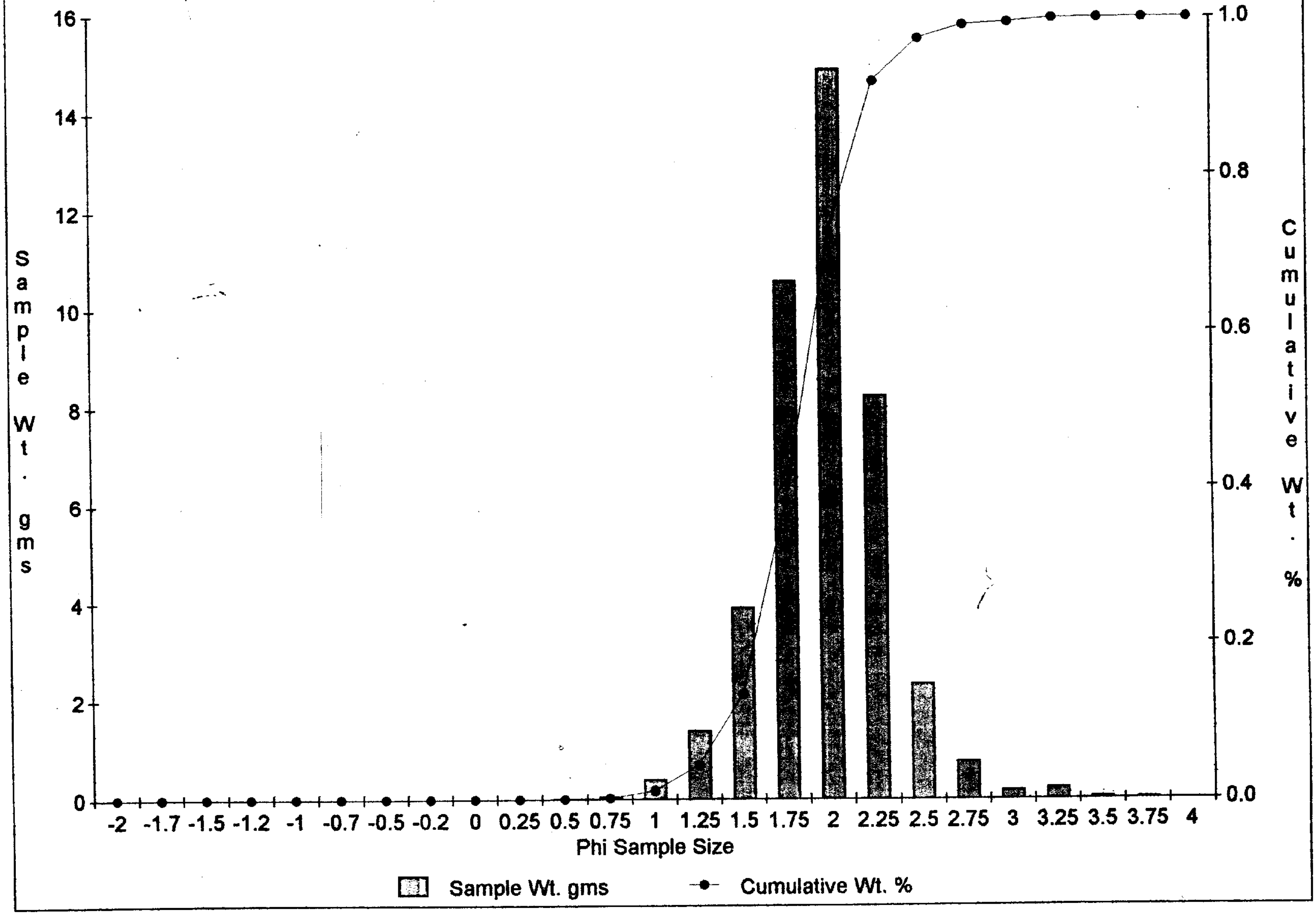
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.0467	0	0.0467	0.0467	0	0
0.25	0.1128	0	0.1128	0.1595	0	0
0.5	0.2945	0.0032	0.2913	0.454	7.44652E-05	7.44652E-05
0.75	0.7321	0.0513	0.6808	1.1861	0.00119377	0.001268235
1	2.18	0.3901	1.7899	3.3661	0.009077772	0.010346007
1.25	4.4554	1.3803	3.0751	7.8215	0.032120094	0.042466101
1.5	12.9498	3.8764	9.0734	20.7713	0.090205268	0.132671369
1.75	14.8255	10.5729	4.2526	35.5968	0.24603531	0.378706679
2	17.0319	14.9244	2.1075	52.6287	0.347296332	0.726003011
2.25	8.2463	8.2463	0	60.875	0.191894464	0.917897475
2.5	2.3322	2.3322	0	63.2072	0.05427116	0.972168636
2.75	0.7532	0.7532	0	63.9604	0.017527244	0.98969588
3	0.1678	0.1678	0	64.1282	0.003904768	0.993600648
3.25	0.2317	0.2193	0.0124	64.3599	0.005103192	0.99870384
3.5	0.0383	0.0383	0	64.3982	0.000891255	0.999595096
3.75	0.0258	0.0163	0.0095	64.424	0.000379307	0.999974403
4	0.0168	0.0011	0.0157	64.4408	2.55974E-05	1

Total Wt.	64.4408
Digest Wt.	42.9731

Sample % Silica	66.686168

Cum Digested Wt. % B1

8.5'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (0 FEET BLS)

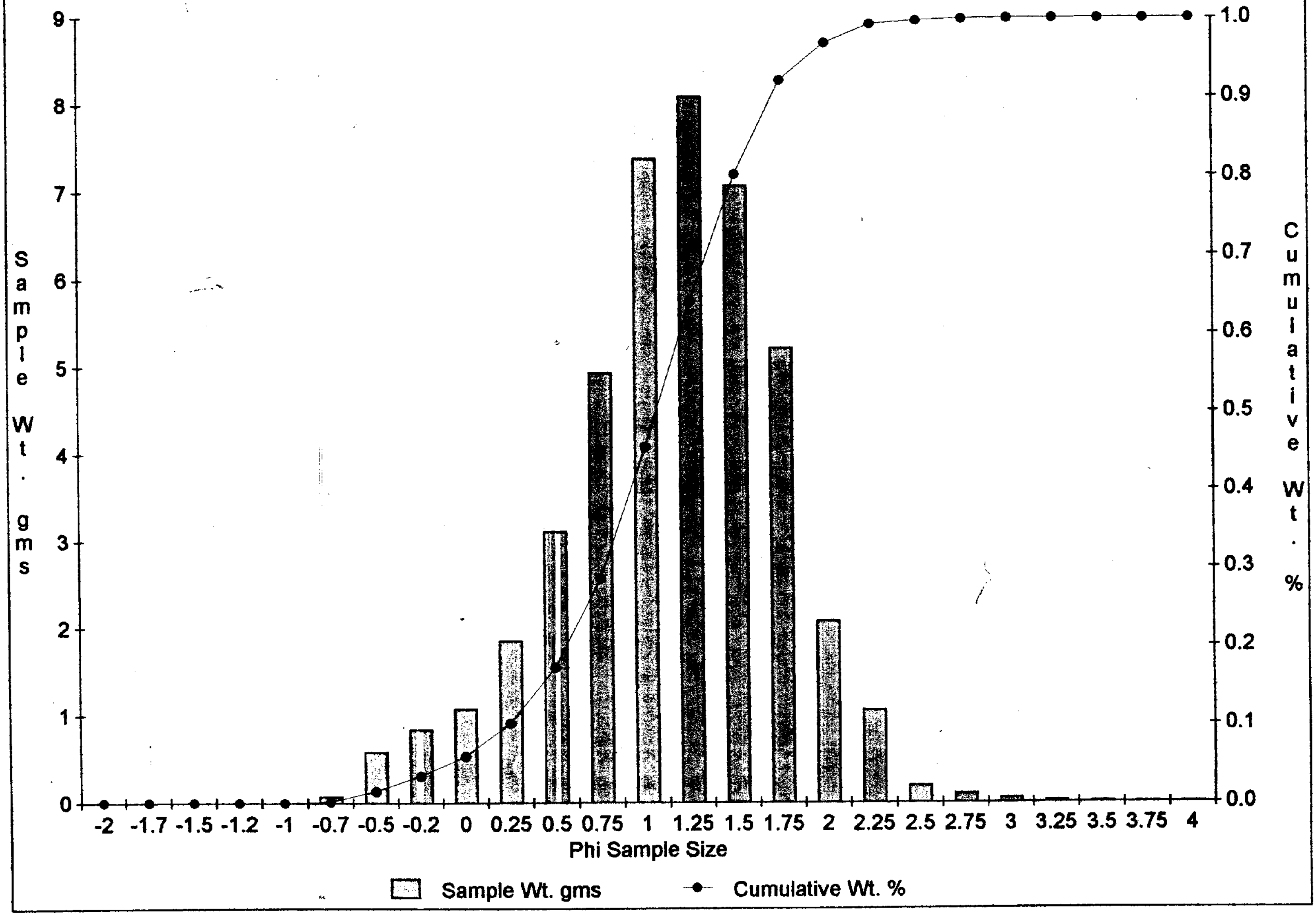
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0.1242	0	0.1242	0.1242	0	0
-1.5	0.297	0	0.297	0.4212	0	0
-1.25	0.5627	0	0.5627	0.9839	0	0
-1	0.9766	0	0.9766	1.9605	0	0
-0.75	2.0332	0.0721	1.9611	3.9937	0.001648995	0.001648995
-0.5	4.3702	0.5807	3.7895	8.3639	0.013281157	0.014930152
-0.25	5.0015	0.8421	4.1594	13.3654	0.019259622	0.034189774
0	7.799	1.0726	6.7264	21.1644	0.024531374	0.058721148
0.25	10.0019	1.8458	8.1561	31.1663	0.042215188	0.100936336
0.5	9.8906	3.102	6.7886	41.0569	0.070945668	0.171882004
0.75	9.9981	4.9292	5.0689	51.055	0.112735456	0.284617461
1	10.2686	7.3818	2.8868	61.3236	0.168828733	0.453446194
1.25	12.1012	8.0872	4.014	73.4248	0.184961897	0.638408091
1.5	12.4281	7.0704	5.3577	85.8529	0.161706721	0.800114812
1.75	7.1337	5.216	1.9177	92.9866	0.119294843	0.919409655
2	5.1544	2.0729	3.0815	98.141	0.047409179	0.966818835
2.25	1.6452	1.0575	0.5877	99.7862	0.024186023	0.991004858
2.5	0.2904	0.1955	0.0949	100.0766	0.00447127	0.995476127
2.75	0.1429	0.1032	0.0397	100.2195	0.002360281	0.997836409
3	0.0532	0.0532	0	100.2727	0.001216734	0.999053143
3.25	0.0372	0.0239	0.0133	100.3099	0.000546616	0.999599758
3.5	0.0098	0.0098	0	100.3197	0.000224135	0.999823894
3.75	0.0113	0.005	0.0063	100.331	0.000114355	0.999938248
4	0.004	0.0027	0.0013	100.335	6.17515E-05	1

Total Wt. 100.335
Digest Wt. 43.7236

Sample % Silica 43.577615

Cum Digested Wt. % B2

0'

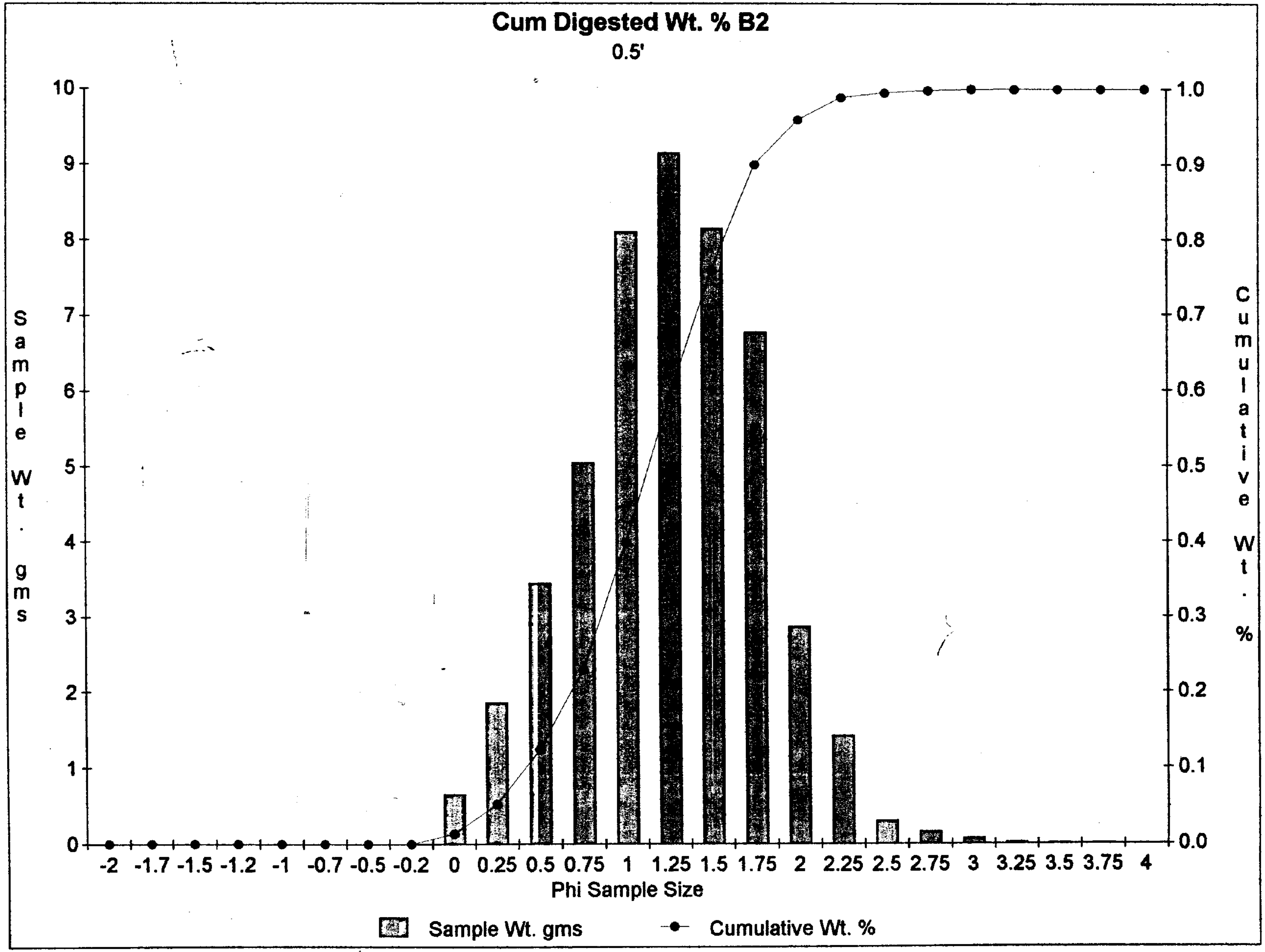


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (0.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0.2579	0	0.2579	0.2579	0	0
-1.75	0.0722	0	0.0722	0.3301	0	0
-1.5	0.2131	0	0.2131	0.5432	0	0
-1.25	0.1375	0	0.1375	0.6807	0	0
-1	0.2329	0	0.2329	0.9136	0	0
-0.75	0.6685	0	0.6685	1.5821	0	0
-0.5	1.1472	0	1.1472	2.7293	0	0
-0.25	2.0237	0	2.0237	4.753	0	0
0	3.4647	0.6412	2.8235	8.2177	0.01338312	0.01338312
0.25	5.3735	1.8491	3.5244	13.5912	0.038594397	0.051977517
0.5	7.3174	3.4271	3.8903	20.9086	0.071530397	0.123507914
0.75	10.2101	5.0338	5.1763	31.1187	0.105065423	0.228573337
1	9.135	8.1003	1.0347	40.2537	0.169069381	0.397642717
1.25	12.3042	9.148	3.1562	52.5579	0.190936965	0.588579682
1.5	12.9156	8.1406	4.775	65.4735	0.169910522	0.758490204
1.75	8.1247	6.7579	1.3668	73.5982	0.141050821	0.899541025
2	5.9133	2.8499	3.0634	79.5115	0.059483084	0.959024109
2.25	2.0019	1.4097	0.5922	81.5134	0.029423244	0.988447354
2.5	0.3527	0.2982	0.0545	81.8661	0.006224027	0.994671381
2.75	0.175	0.1561	0.0189	82.0411	0.003258118	0.997929499
3	0.0699	0.0699	0	82.111	0.001458952	0.999388451
3.25	0.0299	0.0165	0.0134	82.1409	0.000344388	0.999732839
3.5	0.0112	0.007	0.0042	82.1521	0.000146104	0.999878942
3.75	0.0087	0.0047	0.004	82.1608	9.80984E-05	0.999977041
4	0.0084	0.0011	0.0073	82.1692	2.29592E-05	1

Total Wt.	82.1692
Digest Wt.	47.9111

Sample % Silica	58.307857

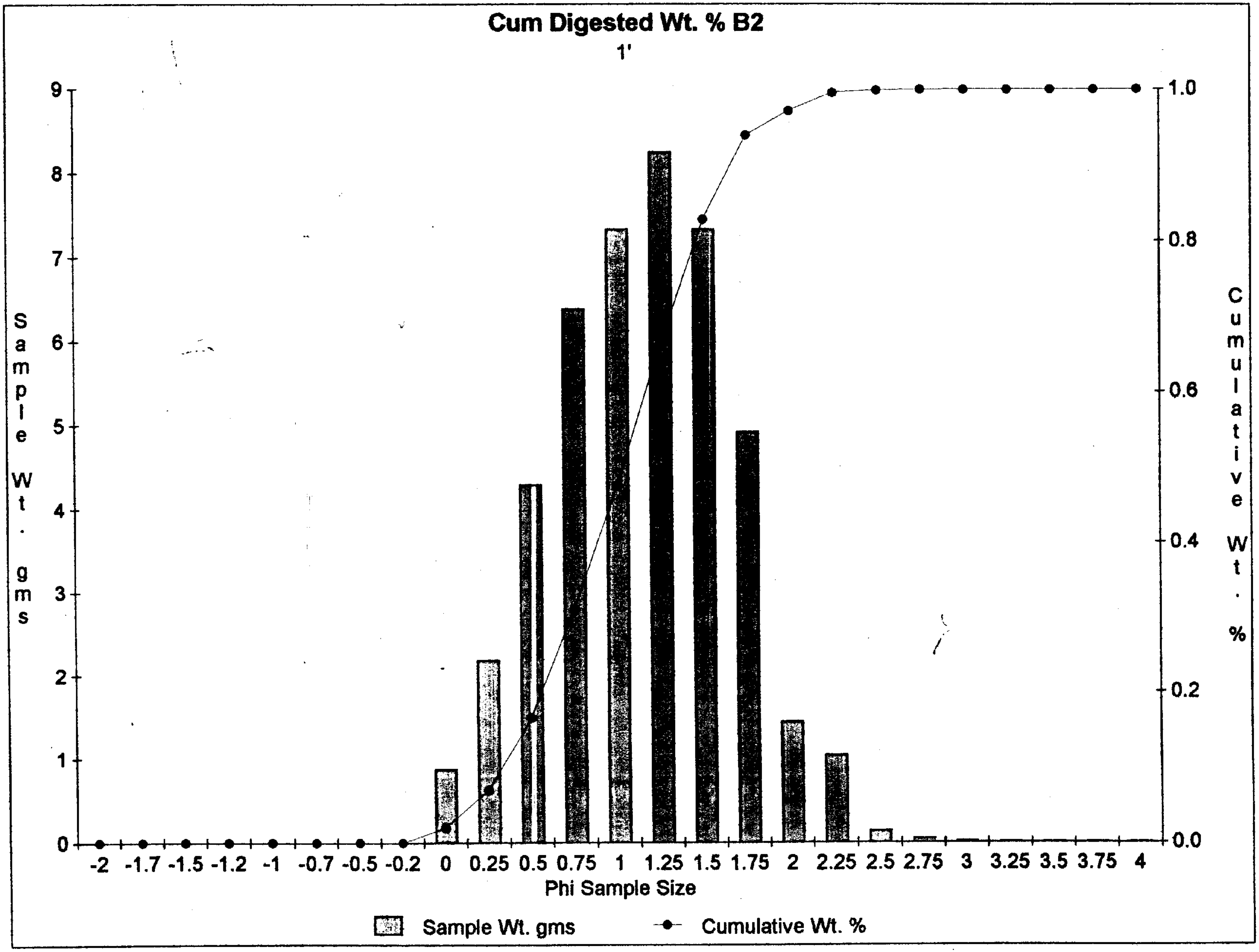

Cum Digested Wt. % B2
0.5'
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (1 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0.0553	0	0.0553	0.0553	0	0
-1.75	0.2105	0	0.2105	0.2658	0	0
-1.5	0.2826	0	0.2826	0.5484	0	0
-1.25	0.3655	0	0.3655	0.9139	0	0
-1	1.0006	0	1.0006	1.9145	0	0
-0.75	2.2697	0	2.2697	4.1842	0	0
-0.5	3.3782	0	3.3782	7.5624	0	0
-0.25	4.3925	0	4.3925	11.9549	0	0
0	11.9549	0.8686	11.0863	23.9098	0.019633549	0.019633549
0.25	6.8535	2.1769	4.6766	30.7633	0.049205933	0.068839482
0.5	6.6701	4.2817	2.3884	37.4334	0.096782141	0.165621624
0.75	7.4172	6.3841	1.0331	44.8506	0.144304101	0.309925724
1	7.3359	7.3359	0	52.1865	0.165818276	0.475744
1.25	10.5058	8.248	2.2578	62.6923	0.186435085	0.662179084
1.5	11.6125	7.3372	4.2753	74.3048	0.16584766	0.828026745
1.75	7.8544	4.9191	2.9353	82.1592	0.111189722	0.939216466
2	6.4804	1.437	5.0434	88.6396	0.032481476	0.971697943
2.25	3.0246	1.037	1.9876	91.6642	0.023440008	0.99513795
2.5	0.6731	0.1401	0.533	92.3373	0.003166774	0.998304725
2.75	0.5008	0.0468	0.454	92.8381	0.001057852	0.999362576
3	0.2184	0.0165	0.2019	93.0565	0.000372961	0.999735537
3.25	0.0816	0.0049	0.0767	93.1381	0.000110758	0.999846295
3.5	0.019	0.0029	0.0161	93.1571	6.55506E-05	0.999911846
3.75	0.0125	0.0027	0.0098	93.1696	6.10299E-05	0.999972876
4	0.0012	0.0012	0	93.1708	2.71244E-05	1

Total Wt.	93.1708
Digest Wt.	44.2406

Sample % Silica	47.483332



Cum Digested Wt. % B2

1'

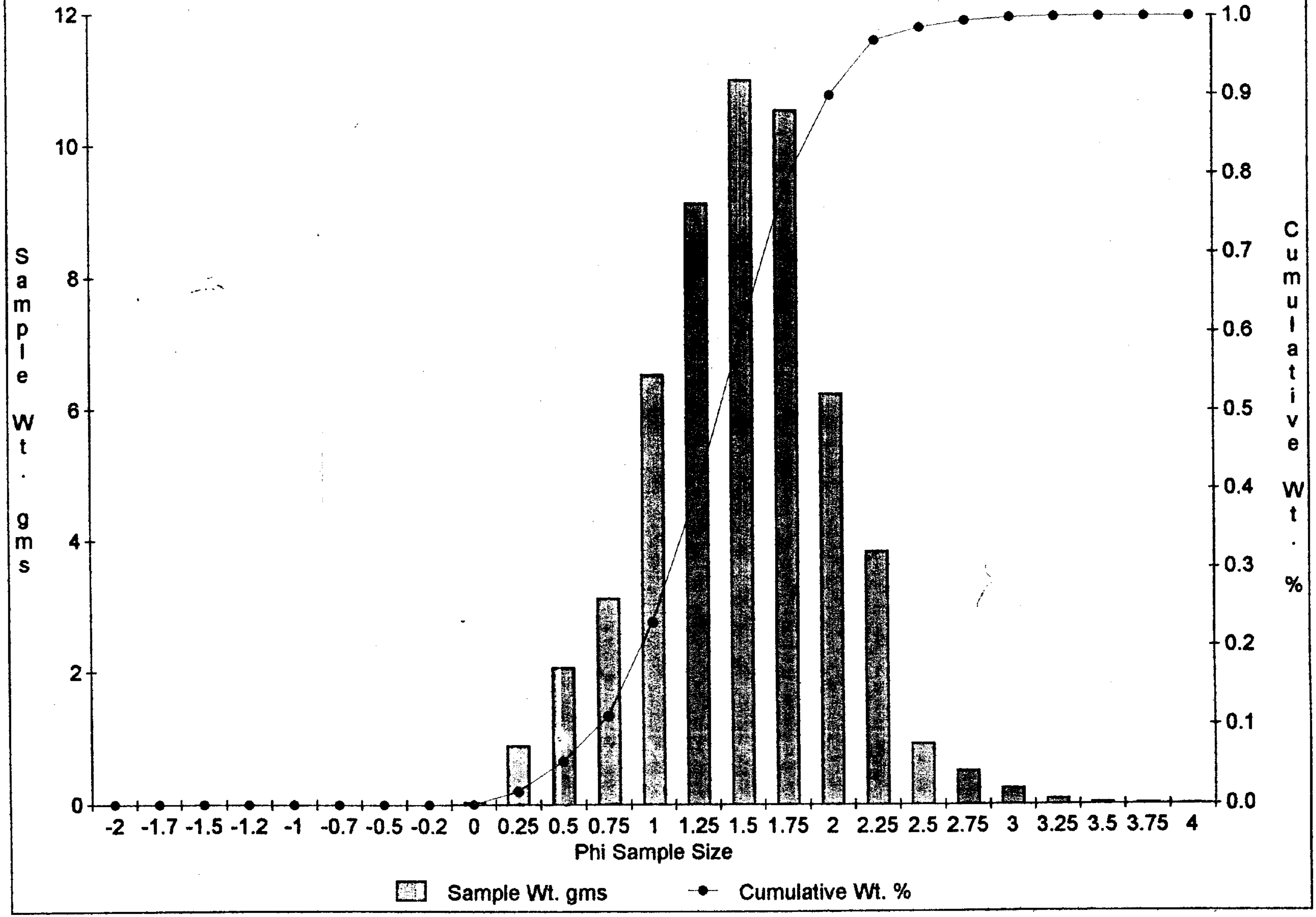
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (1.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	9.2878	0.0366	9.2512	9.2878	0.000664037	0.000664037
0.25	3.4728	0.8794	2.5934	12.7606	0.015955034	0.016619071
0.5	4.7493	2.0541	2.6952	17.5099	0.037267723	0.053886794
0.75	6.0352	3.1109	2.9243	23.5451	0.056441342	0.110328136
1	9.0032	6.5241	2.4791	32.5483	0.11836734	0.228695475
1.25	11.7481	9.126	2.6221	44.2964	0.165573848	0.394269323
1.5	15.2911	10.9988	4.2923	59.5875	0.199552229	0.593821552
1.75	11.7433	10.5404	1.2029	71.3308	0.191235436	0.785056987
2	11.3074	6.2306	5.0768	82.6382	0.113042342	0.89809933
2.25	5.903	3.8242	2.0788	88.5412	0.069382808	0.967482138
2.5	1.6451	0.9109	0.7342	90.1863	0.016526542	0.98400868
2.75	0.6407	0.5052	0.1355	90.827	0.00916589	0.993174569
3	0.244	0.244	0	91.071	0.004426914	0.997601483
3.25	0.1206	0.0794	0.0412	91.1916	0.001440561	0.999042045
3.5	0.0312	0.0312	0	91.2228	0.000566064	0.999608109
3.75	0.0169	0.0169	0	91.2397	0.000306618	0.999914727
4	0.0051	0.0047	0.0004	91.2448	8.52725E-05	1

Total Wt.	91.2448
Digest Wt.	55.1174
Sample % Silica	60.406072

Cum Digested Wt. % B2

1.5'

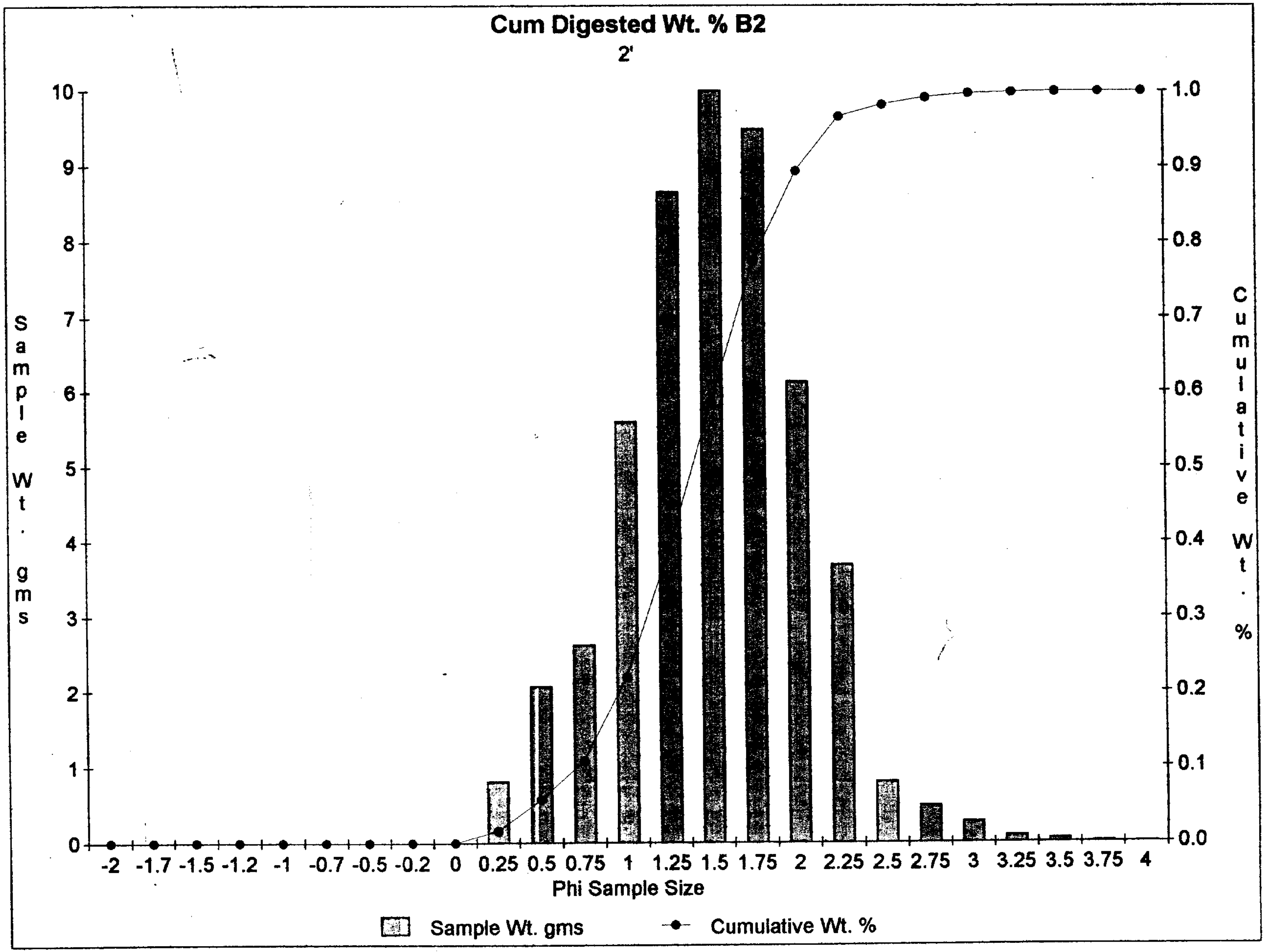


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	10.003	0	10.003	10.003	0	0
0	2.1013	0	2.1013	12.1043	0	0
0.25	3.5025	0.8047	2.6978	15.6068	0.015858095	0.015858095
0.5	4.1786	2.0561	2.1225	19.7854	0.040519236	0.056377331
0.75	5.8271	2.6165	3.2106	25.6125	0.05156295	0.10794028
1	6.8087	5.5943	1.2144	32.4212	0.110245981	0.218186261
1.25	10.3662	8.6549	1.7113	42.7874	0.170560738	0.388747
1.5	13.7864	9.9987	3.7877	56.5738	0.197042791	0.585789791
1.75	10.7109	9.4958	1.2151	67.2847	0.187132221	0.772922012
2	10.3447	6.1191	4.2256	77.6294	0.120588131	0.893510143
2.25	5.4178	3.6831	1.7347	83.0472	0.072582266	0.966092409
2.5	0.9915	0.8041	0.1874	84.0387	0.015846271	0.98193868
2.75	0.6035	0.4861	0.1174	84.6422	0.009579495	0.991518176
3	0.2756	0.2756	0	84.9178	0.005431205	0.996949381
3.25	0.1342	0.0919	0.0423	85.052	0.001811059	0.99876044
3.5	0.0501	0.0485	0.0016	85.1021	0.000955782	0.999716221
3.75	0.0254	0.0109	0.0145	85.1275	0.000214805	0.999931026
4	0.0135	0.0035	0.01	85.141	6.89739E-05	1

Total Wt.	85.141
Digest Wt.	50.7438

Sample % Silica	59.599723



Cum Digested Wt. % B2

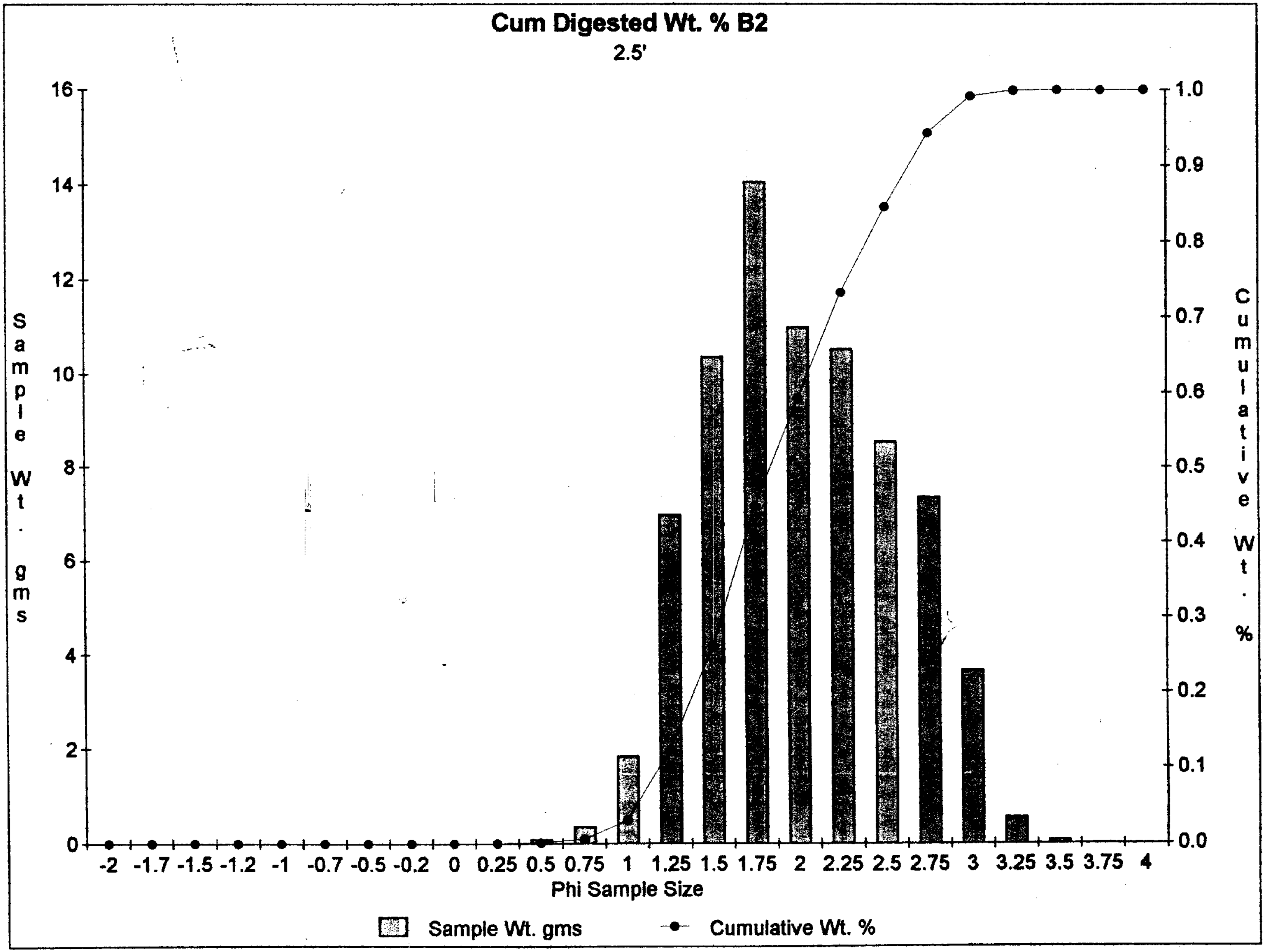
2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (2.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.2437	0	0.2437	0.2437	0	0
0.25	0.2454	0	0.2454	0.4891	0	0
0.5	0.5443	0.0771	0.4672	1.0334	0.001024144	0.001024144
0.75	1.2385	0.3492	0.8893	2.2719	0.004638534	0.005662678
1	4.2747	1.8331	2.4416	6.5466	0.024349649	0.030012327
1.25	7.3375	6.9612	0.3763	13.8841	0.092467828	0.122480155
1.5	15.068	10.3459	4.7221	28.9521	0.137427872	0.259908026
1.75	15.6513	14.0518	1.5995	44.6034	0.186654517	0.446562543
2	18.0598	10.9671	7.0927	62.6632	0.145679468	0.592242011
2.25	13.8387	10.5136	3.3251	76.5019	0.139655484	0.731897495
2.5	8.5417	8.5417	0	85.0436	0.113462111	0.845359606
2.75	8.0974	7.3484	0.749	93.141	0.097611128	0.942970734
3	3.6638	3.6638	0	96.8048	0.048667418	0.991638152
3.25	2.3494	0.5529	1.7965	99.1542	0.007344346	0.998982498
3.5	0.0676	0.0676	0	99.2218	0.000897952	0.99988045
3.75	0.0079	0.0079	0	99.2297	0.000104938	0.999985388
4	0.0011	0.0011	0	99.2308	1.46116E-05	1

Total Wt.	99.2308
Digest Wt.	75.2824

Sample % Silica 75.865961



Cum Digested Wt. % B2

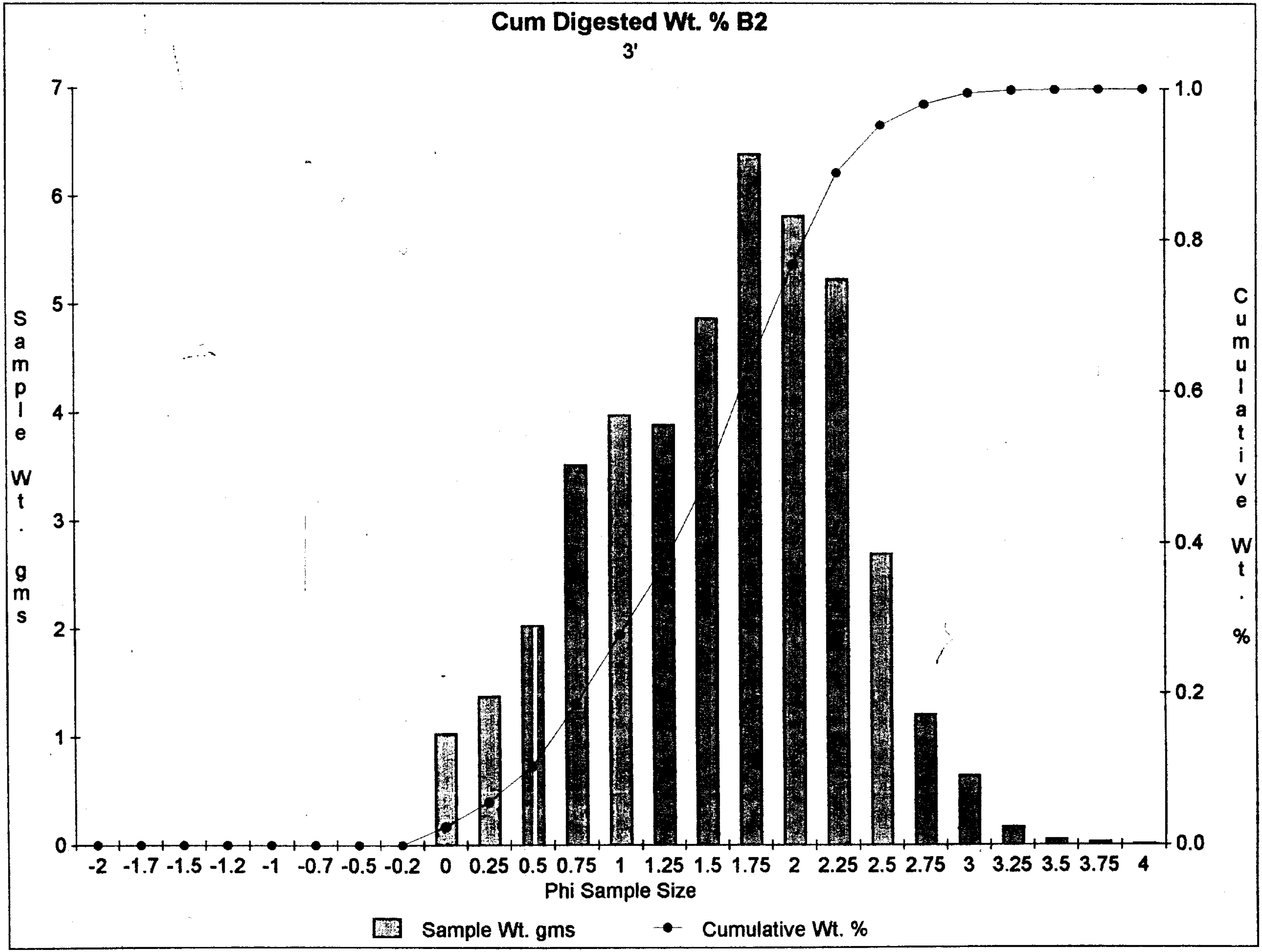
2.5'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (3 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	17.3791	1.0281	16.351	17.3791	0.024169092	0.024169092
0.25	6.1783	1.3701	4.8082	23.5574	0.032209	0.056378092
0.5	7.1703	2.0214	5.1489	30.7277	0.047520088	0.10389818
0.75	6.2708	3.5128	2.758	36.9985	0.082580669	0.186478849
1	4.7811	3.9722	0.8089	41.7796	0.093380476	0.279859325
1.25	6.5121	3.8809	2.6312	48.2917	0.091234149	0.371093475
1.5	6.7211	4.8674	1.8537	55.0128	0.114425288	0.485518762
1.75	6.0545	6.0545	0	61.0673	0.142332232	0.627850994
2	8.9064	5.8176	3.0888	69.9737	0.136763067	0.764614061
2.25	6.5716	5.2341	1.3375	76.5453	0.123045856	0.887659917
2.5	2.6964	2.6945	0.0019	79.2417	0.063343661	0.951003578
2.75	1.4716	1.204	0.2676	80.7133	0.028304238	0.979307816
3	0.7154	0.638	0.0774	81.4287	0.014998425	0.994306241
3.25	0.1766	0.1644	0.0122	81.6053	0.003864798	0.998171038
3.5	0.0485	0.048	0.0005	81.6538	0.001128408	0.999299447
3.75	0.0246	0.0241	0.0005	81.6784	0.000566555	0.999866002
4	0.0115	0.0057	0.0058	81.6899	0.000133998	1

Total Wt.	81.6899
Digest Wt.	42.5378

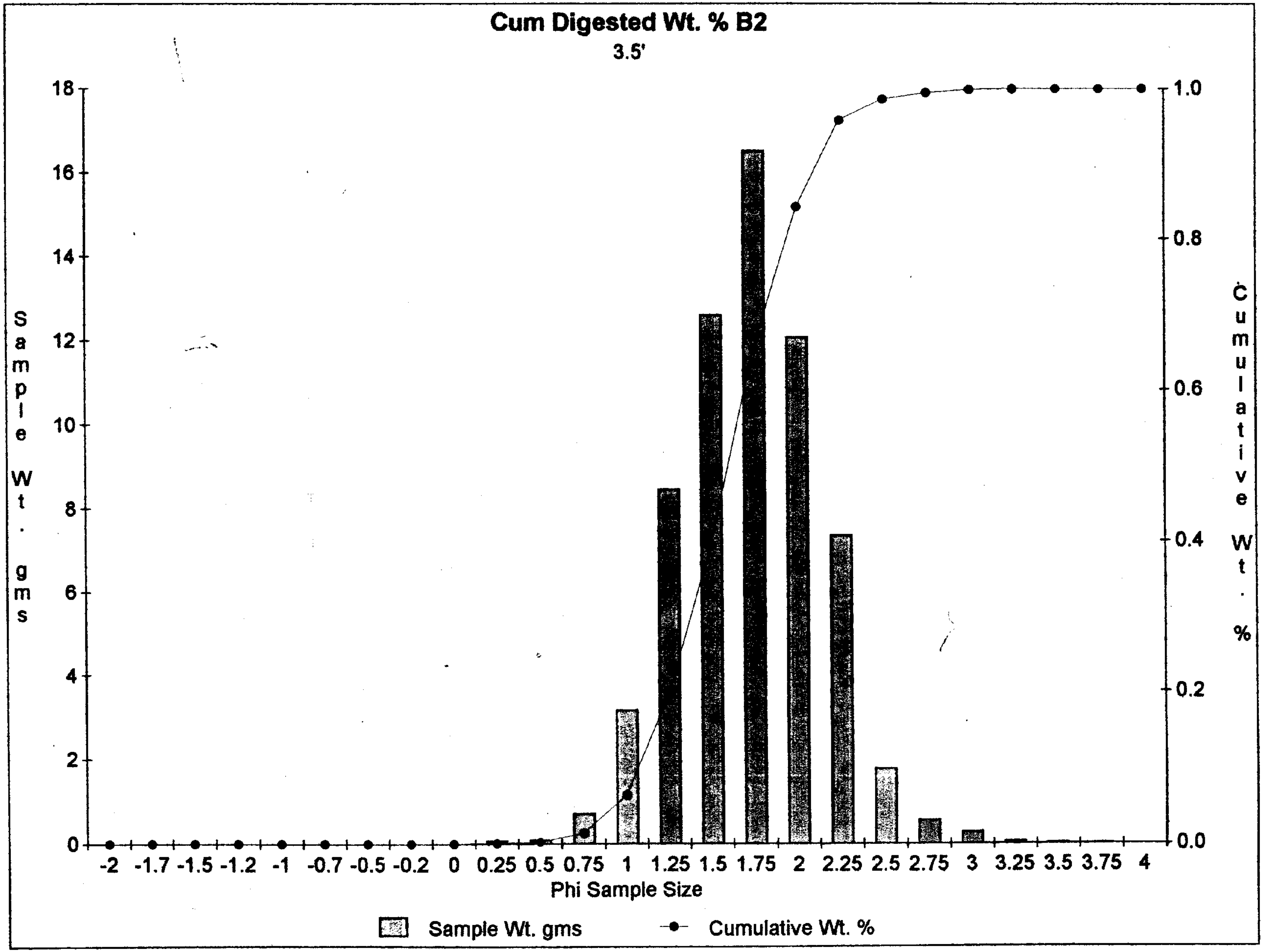
Sample % Silica	52.072288


Cum Digested Wt. % B2
3'
Sample Wt. gms
Cumulative Wt. %
7
6
5
4
3
2
1
0
1.0
0.8
0.6
0.4
0.2
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (3.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.2592	0	0.2592	0.2592	0	0
0.25	0.496	0.0608	0.4352	0.7552	0.000956748	0.000956748
0.5	1.1691	0.0941	1.075	1.9243	0.001480756	0.002437505
0.75	1.9994	0.7051	1.2943	3.9237	0.011095445	0.01353295
1	5.3188	3.1442	2.1746	9.2425	0.049477093	0.063010043
1.25	9.5584	8.4323	1.1261	18.8009	0.132690571	0.195700613
1.5	15.7984	12.5708	3.2276	34.5993	0.197813957	0.39351457
1.75	16.5116	16.5116	0	51.1109	0.259826338	0.653340908
2	20.4328	12.036	8.3968	71.5437	0.18939835	0.842739258
2.25	11.0767	7.3261	3.7506	82.6204	0.115283421	0.958022679
2.5	3.0602	1.7664	1.2938	85.6806	0.027796049	0.985818728
2.75	0.9249	0.5536	0.3713	86.6055	0.008711443	0.994530171
3	0.2891	0.2711	0.018	86.8946	0.004266026	0.998796197
3.25	0.0801	0.0562	0.0239	86.9747	0.000884363	0.999680559
3.5	0.0244	0.0145	0.0099	86.9991	0.000228172	0.999908731
3.75	0.0146	0.0041	0.0105	87.0137	6.45176E-05	0.999973249
4	0.004	0.0017	0.0023	87.0177	2.67512E-05	1

Total Wt.	87.0177
Digest Wt.	63.5486
Sample % Silica	73.02951



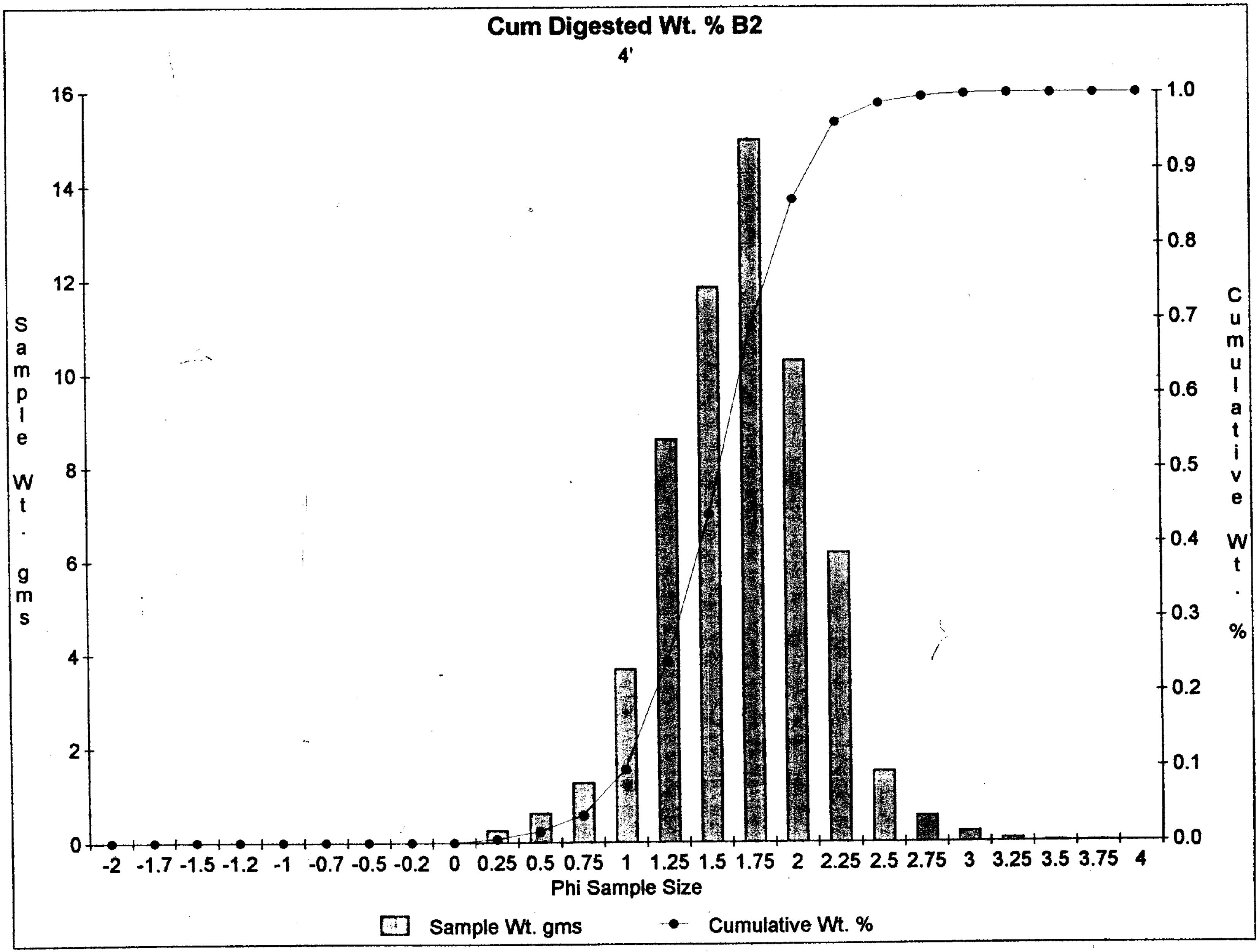
Cum Digested Wt. % B2

3.5'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (4 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	3.8264	0	3.8264	3.8264	0	0
0.25	1.7654	0.2503	1.5151	5.5918	0.004166174	0.004166174
0.5	2.3064	0.6119	1.6945	7.8982	0.010184906	0.01435108
0.75	3.0523	1.2603	1.792	10.9505	0.020977345	0.035328425
1	6.5182	3.6769	2.8413	17.4687	0.061200983	0.096529409
1.25	10.1515	8.5998	1.5517	27.6202	0.143141292	0.239670701
1.5	16.237	11.8577	4.3793	43.8572	0.197368136	0.437038837
1.75	15.1079	14.9947	0.1132	58.9651	0.249582634	0.686621471
2	17.6238	10.2878	7.336	76.5889	0.171237585	0.857859056
2.25	8.8124	6.1694	2.643	85.4013	0.102687956	0.960547012
2.5	2.2798	1.5013	0.7785	87.6811	0.024988723	0.985535735
2.75	0.6182	0.5538	0.0644	88.2993	0.009217848	0.994753583
3	0.2251	0.2251	0	88.5244	0.003746727	0.99850031
3.25	0.0943	0.0667	0.0276	88.6187	0.001110203	0.999610513
3.5	0.0183	0.0135	0.0048	88.637	0.000224704	0.999835217
3.75	0.0093	0.0089	0.0004	88.6463	0.000148138	0.999983355
4	0.001	0.001	0	88.6473	1.66447E-05	1

Total Wt.	88.6473
Digest Wt.	60.0791
Sample % Silica	67.773187


Cum Digested Wt. % B2

4'

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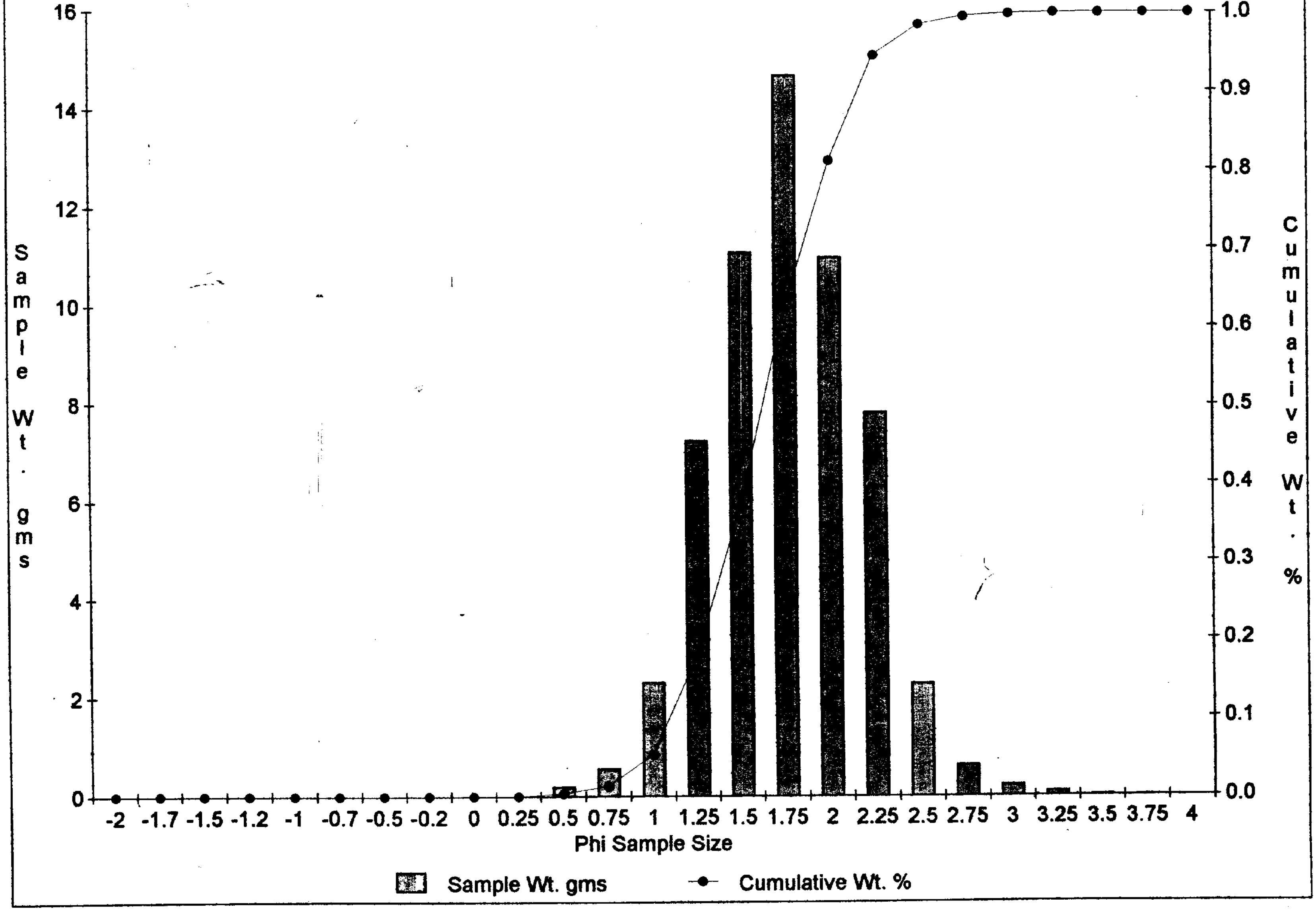
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (4.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.5251	0	0.5251	0.5251	0	0
0.25	0.4776	0	0.4776	1.0027	0	0
0.5	0.9067	0.1947	0.712	1.9094	0.003351465	0.003351465
0.75	1.5285	0.5535	0.975	3.4379	0.009527662	0.012879127
1	4.1903	2.2935	1.8968	7.6282	0.03947912	0.052358247
1.25	7.2319	7.2319	0	14.8601	0.124486178	0.176844425
1.5	14.0601	11.0869	2.9732	28.9202	0.190844149	0.367688574
1.75	15.0966	14.6907	0.4059	44.0168	0.252878094	0.620566668
2	19.7832	10.9777	8.8055	63.8	0.188964437	0.809531105
2.25	11.963	7.8195	4.1435	75.763	0.134600819	0.944131924
2.5	5.5381	2.2798	3.2583	81.3011	0.039243295	0.983375219
2.75	3.8305	0.6182	3.2123	85.1316	0.010641374	0.994016594
3	0.9064	0.2251	0.6813	86.038	0.003874755	0.997891349
3.25	1.4386	0.0943	1.3443	87.4766	0.001623231	0.99951458
3.5	0.0384	0.0183	0.0201	87.515	0.000315007	0.999829587
3.75	0.0102	0.0089	0.0013	87.5252	0.0001532	0.999982787
4	0.0051	0.001	0.0041	87.5303	1.72135E-05	1

Total Wt.	87.5303
Digest Wt.	58.094
Sample % Silica	66.37016

Cum Digested Wt. % B2

4.5'



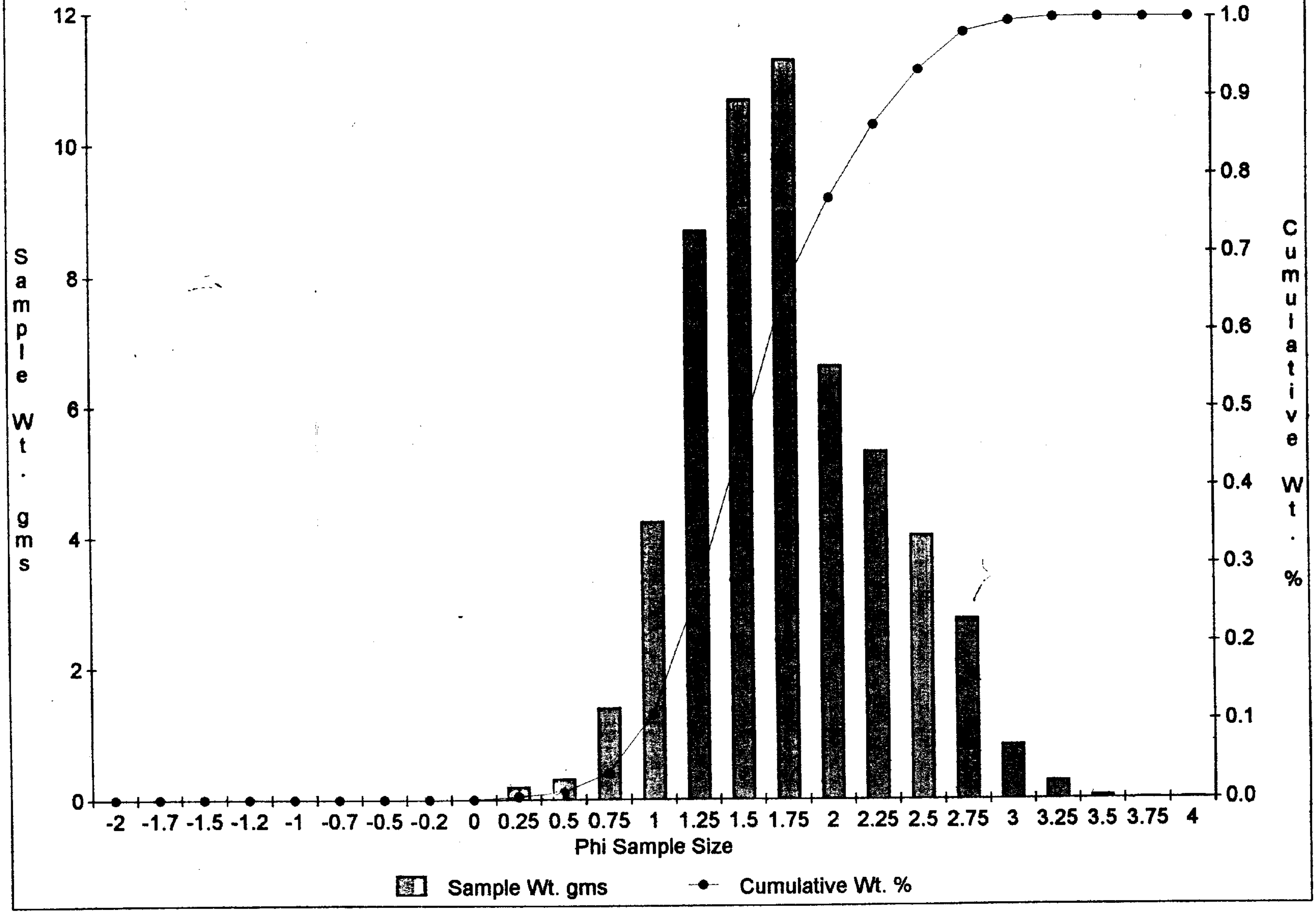
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	2.0422	0	2.0422	2.0422	0	0
0.25	1.6447	0.1894	1.4553	3.6869	0.003342162	0.003342162
0.5	2.1939	0.3033	1.8906	5.8808	0.005352048	0.00869421
0.75	3.7686	1.3774	2.3912	9.6494	0.024305672	0.032999882
1	5.8393	4.2229	1.6164	15.4887	0.074517513	0.107517395
1.25	8.6999	8.6999	0	24.1886	0.153518887	0.261036282
1.5	16.2174	10.7123	5.5051	40.406	0.189029802	0.450066084
1.75	12.5209	11.3241	1.1968	52.9269	0.199825657	0.649891741
2	12.3605	6.6287	5.7318	65.2874	0.116970385	0.766862126
2.25	7.0915	5.3115	1.78	72.3789	0.093727005	0.860589131
2.5	4.3695	4.0186	0.3509	76.7484	0.070912424	0.931501555
2.75	3.3433	2.7456	0.5977	80.0917	0.048449	0.979950556
3	0.8177	0.8177	0	80.9094	0.014429177	0.994379732
3.25	1.3672	0.2641	1.1031	82.2766	0.004660322	0.999040055
3.5	0.053	0.0447	0.0083	82.3296	0.000788779	0.999828833
3.75	0.0175	0.0078	0.0097	82.3471	0.000137639	0.999966473
4	0.0045	0.0019	0.0026	82.3516	3.35275E-05	1

Total Wt.	82.3516
Digest Wt.	56.6699
Sample % Silica	68.814571

Cum Digested Wt. % B2

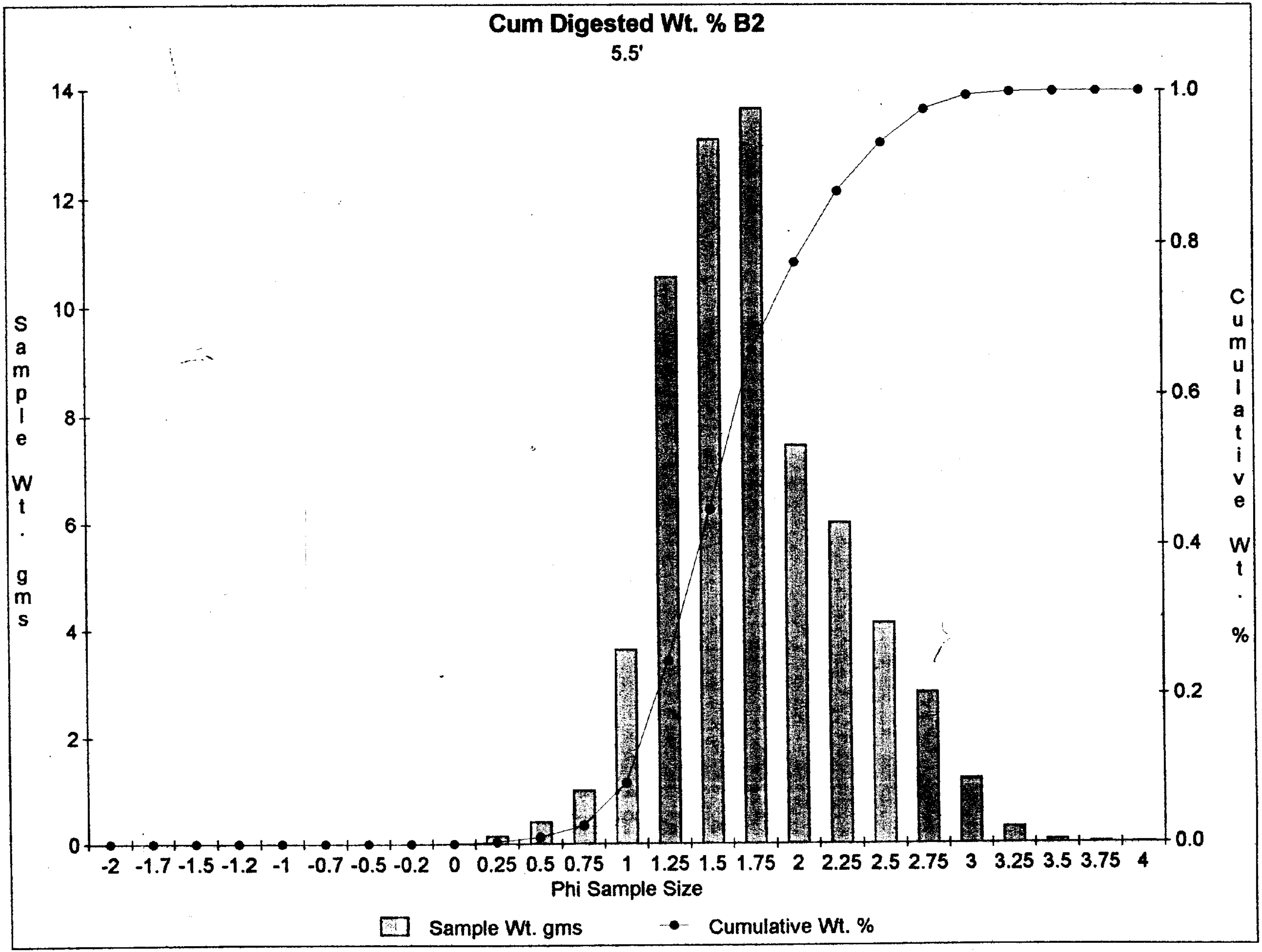
5'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (5.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	2.8176	0	2.8176	2.8176	0	0
0.25	1.1037	0.1407	0.963	3.9213	0.002181761	0.002181761
0.5	1.9239	0.4018	1.5221	5.8452	0.006230501	0.008412261
0.75	3.1552	0.9837	2.1715	9.0004	0.015253717	0.023665978
1	5.7643	3.6257	2.1386	14.7647	0.056221817	0.079887795
1.25	10.6051	10.562	0.0431	25.3698	0.163779362	0.243667157
1.5	20.2951	13.0899	7.2052	45.6649	0.202978173	0.44664533
1.75	15.9824	13.6711	2.3113	61.6473	0.211990535	0.658635865
2	14.5882	7.4389	7.1493	76.2355	0.115351098	0.773986962
2.25	7.5714	6.0107	1.5607	83.8069	0.093204754	0.867191716
2.5	4.7652	4.1356	0.6296	88.5721	0.064128567	0.931320283
2.75	3.4367	2.8414	0.5953	92.0088	0.044060091	0.975380374
3	1.2082	1.2082	0	93.217	0.01873492	0.994115294
3.25	0.9591	0.2969	0.6622	94.1761	0.004603872	0.998719165
3.5	0.0593	0.0572	0.0021	94.2354	0.00088697	0.999606136
3.75	0.032	0.0169	0.0151	94.2674	0.000262059	0.999868195
4	0.018	0.0085	0.0095	94.2854	0.000131805	1

Total Wt.	94.2854
Digest Wt.	64.4892
Sample % Silica	68.397864


Cum Digested Wt. % B2
5.5'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.8
0.6
0.4
0.2
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-2)
DEPTH (6 FEET BLS)

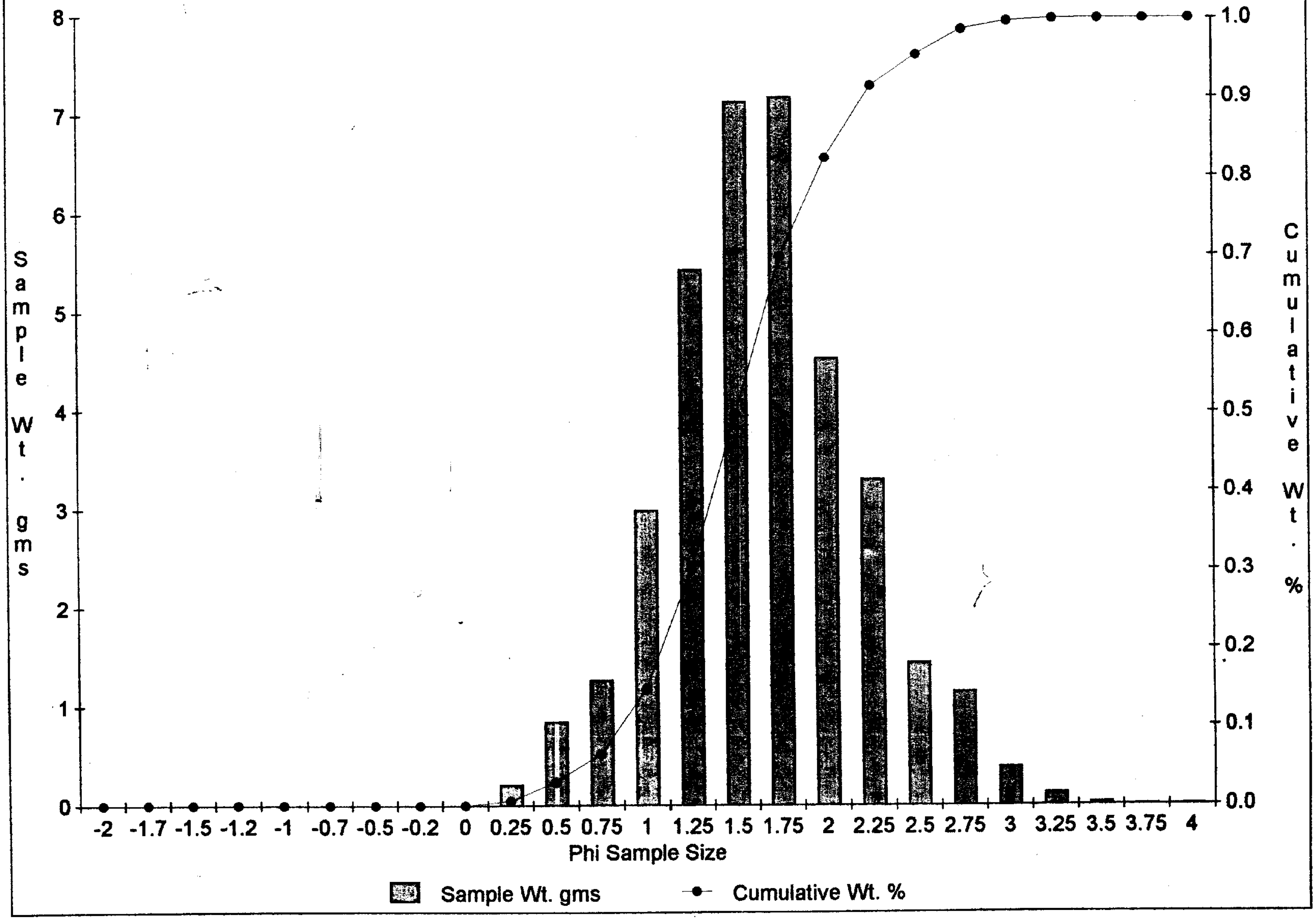
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	4.3685	0	4.3685	4.3685	0	0
0.25	1.666	0.204	1.462	6.0345	0.005664118	0.005664118
0.5	2.255	0.8411	1.4139	8.2895	0.02335338	0.029017498
0.75	2.9222	1.2654	1.6568	11.2117	0.03513419	0.064151687
1	4.6883	2.9806	1.7077	15.9	0.082757204	0.146908891
1.25	5.4317	5.4317	0	21.3317	0.15081269	0.297721581
1.5	10.5614	7.1392	3.4222	31.8931	0.198221911	0.495943492
1.75	7.5461	7.1868	0.3593	39.4392	0.199543539	0.695487031
2	13.1211	4.5343	8.5868	52.5603	0.125896125	0.821383155
2.25	4.6462	3.3061	1.3401	57.2065	0.091794803	0.913177959
2.5	2.2813	1.4411	0.8402	59.4878	0.04001255	0.953190509
2.75	1.4241	1.1504	0.2737	60.9119	0.031941182	0.985131691
3	0.3816	0.3816	0	61.2935	0.010595232	0.995726923
3.25	0.4985	0.122	0.3765	61.792	0.003387365	0.999114287
3.5	0.0456	0.0241	0.0215	61.8376	0.000669143	0.999783431
3.75	0.0295	0.0058	0.0237	61.8671	0.000161039	0.999944469
4	0.0226	0.002	0.0206	61.8897	5.55306E-05	1

Total Wt.	61.8897
Digest Wt.	36.0162

Sample % Silica	58.194174

Cum Digested Wt. % B2

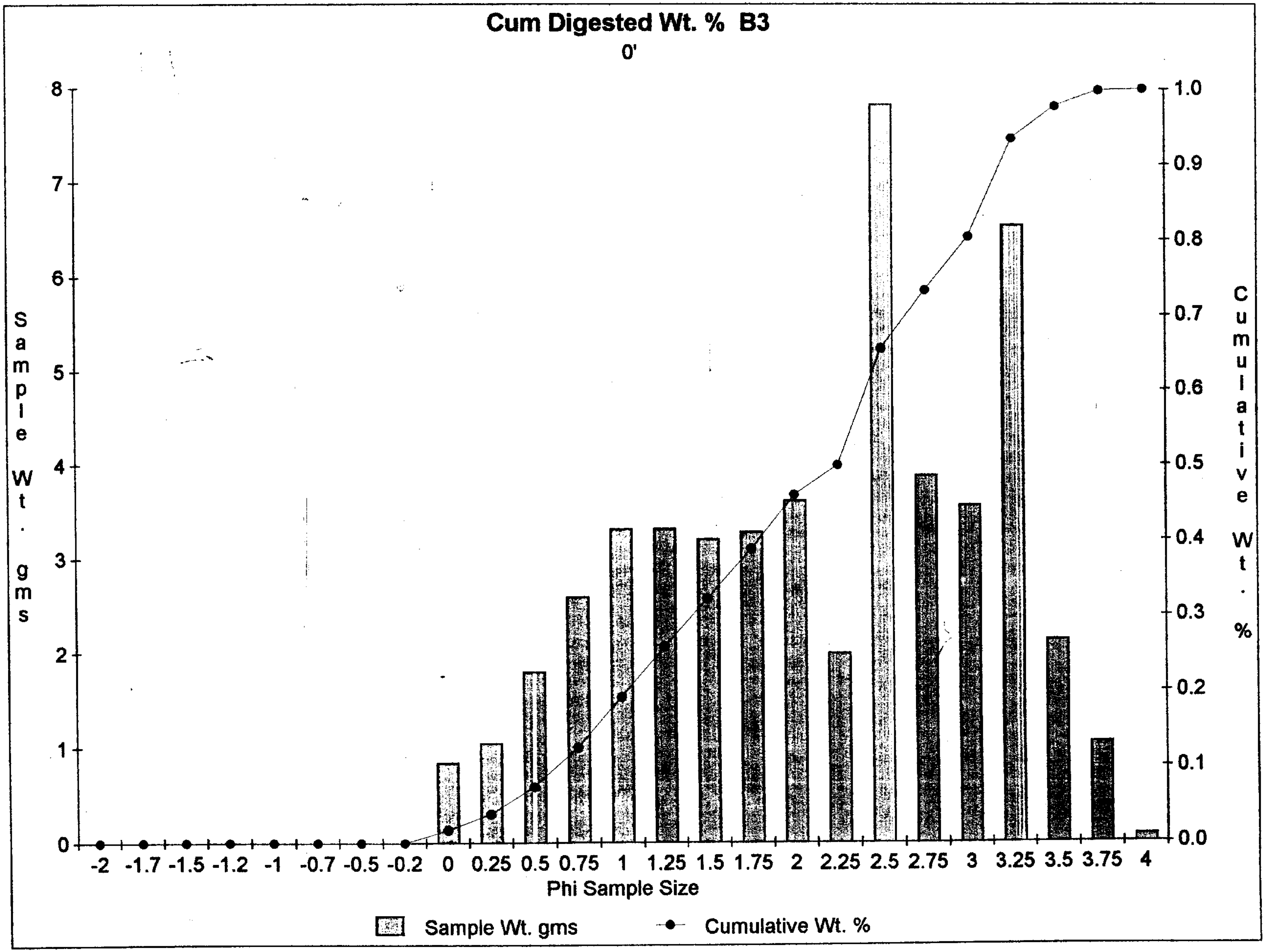
6'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-3)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	1.2379	0	1.2379	1.2379	0	0
-1.75	0.8319	0	0.8319	2.0698	0	0
-1.5	1.6804	0	1.6804	3.7502	0	0
-1.25	1.794	0	1.794	5.5442	0	0
-1	4.916	0	4.916	10.4602	0	0
-0.75	3.4249	0	3.4249	13.8851	0	0
-0.5	1.6612	0	1.6612	15.5463	0	0
-0.25	2.6972	0	2.6972	18.2435	0	0
0	2.2591	0.8391	1.42	20.5026	0.020031655	0.020031655
0.25	0.8335	0.8335	0	21.3361	0.019897968	0.039929623
0.5	1.119	1.116	0.003	22.4551	0.02664203	0.066571653
0.75	2.2046	2.2046	0	24.6597	0.052629946	0.119201599
1	5.4162	3.3029	2.1133	30.0759	0.078849427	0.198051026
1.25	5.4543	3.3094	2.1449	35.5302	0.0790046	0.277055626
1.5	4.9969	3.1992	1.7977	40.5271	0.076373819	0.353429445
1.75	4.5267	3.275	1.2517	45.0538	0.078183376	0.431612822
2	4.2797	3.6068	0.6729	49.3335	0.086104367	0.517717189
2.25	2.492	1.9851	0.5069	51.8255	0.047389869	0.565107058
2.5	2.464	2.464	0	54.2895	0.058822546	0.623929604
2.75	2.3718	2.3718	0	56.6613	0.056621475	0.680551079
3	4.0953	3.5612	0.5341	60.7566	0.085015768	0.765566847
3.25	7.8866	6.5493	1.3373	68.6432	0.156350042	0.921916889
3.5	6.7722	2.1364	4.6358	75.4154	0.051001821	0.972918711
3.75	3.6151	1.0543	2.5608	79.0305	0.025169079	0.99808779
4	0.3701	0.0801	0.29	79.4006	0.00191221	1

Total Wt.	79.4006
Digest Wt.	41.8887
Sample % Silica	52.75615



Cum Digested Wt. % B3

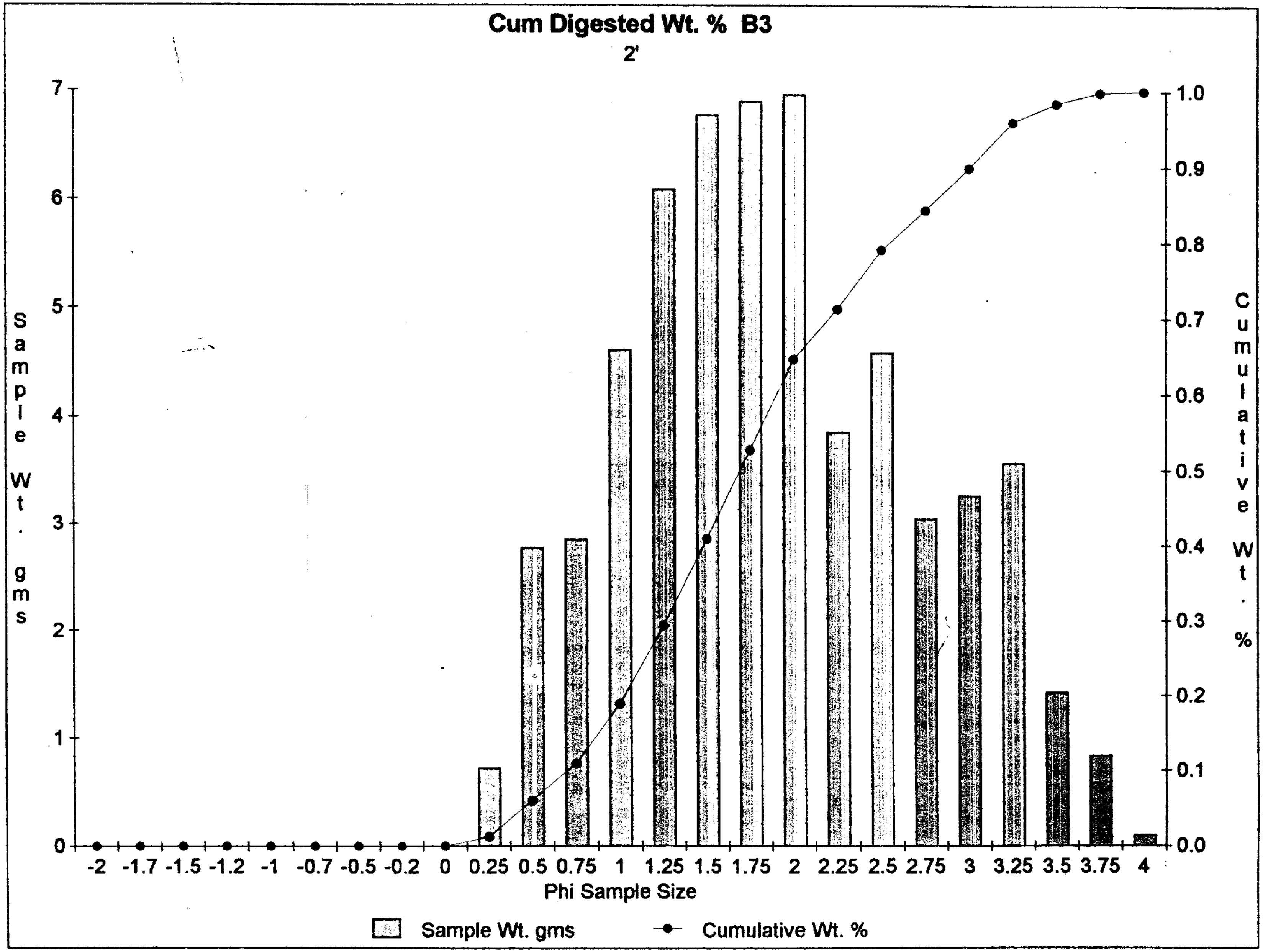
0'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-3)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	1.5299	0	1.5299	1.5299	0	0
-1.75	2.482	0	2.482	4.0119	0	0
-1.5	3.1662	0	3.1662	7.1781	0	0
-1.25	4.1027	0	4.1027	11.2808	0	0
-1	2.7682	0	2.7682	14.049	0	0
-0.75	2.5753	0	2.5753	16.6243	0	0
-0.5	1.4649	0	1.4649	18.0892	0	0
-0.25	1.0618	0	1.0618	19.151	0	0
0	0.6867	0	0.6867	19.8377	0	0
0.25	1.5857	0.7175	0.8682	21.4234	0.012303002	0.012303002
0.5	3.0787	2.7688	0.3099	24.5021	0.047476727	0.059779729
0.75	5.432	2.8456	2.5864	29.9341	0.04879362	0.108573349
1	8.4765	4.6031	3.8734	38.4106	0.078929545	0.187502894
1.25	9.5879	6.0857	3.5022	47.9985	0.104351748	0.291854641
1.5	9.3761	6.7733	2.6028	57.3746	0.116142053	0.407996694
1.75	8.7545	6.9017	1.8528	66.1291	0.118343733	0.526340427
2	7.9866	6.9652	1.0214	74.1157	0.11943257	0.645772997
2.25	5.445	3.8476	1.5974	79.5607	0.065974955	0.711747952
2.5	4.5779	4.5779	0	84.1386	0.078497439	0.790245391
2.75	3.1876	3.0451	0.1425	87.3262	0.052214455	0.842459846
3	3.9341	3.2605	0.6736	91.2603	0.055907927	0.898367773
3.25	3.6475	3.5635	0.084	94.9078	0.061103481	0.959471254
3.5	1.8306	1.428	0.4026	96.7384	0.024485975	0.983957228
3.75	0.8369	0.8369	0	97.5753	0.014350359	0.998307587
4	0.1987	0.0987	0.1	97.774	0.001692413	1

Total Wt. 97.774
Digest Wt. 58.3191

Sample % Silica 59.646839



Cum Digested Wt. % B3

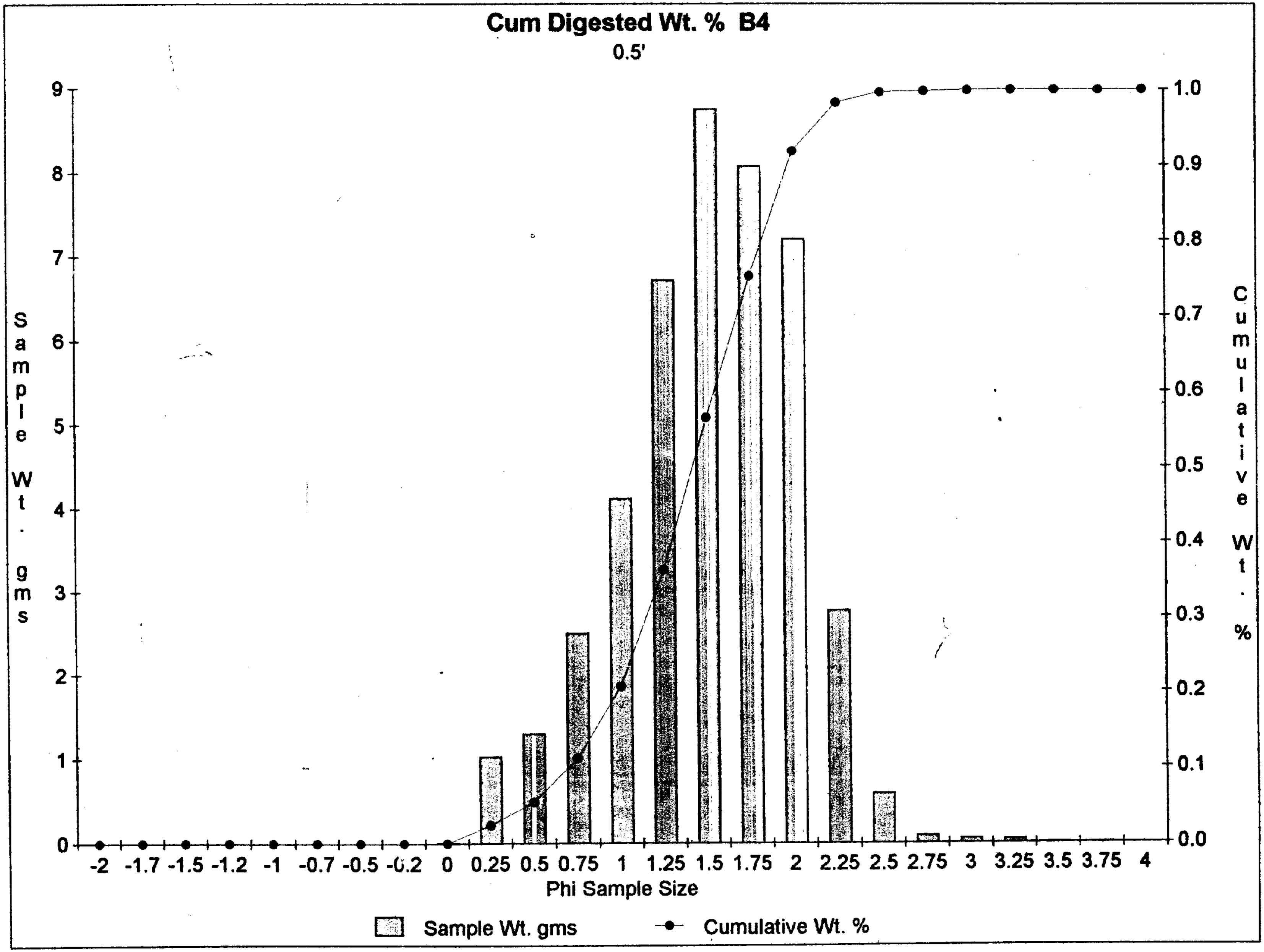
2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-4)
DEPTH (0.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0.3886	0	0.3886	0.3886	0	0
-1.75	0.9107	0	0.9107	1.2993	0	0
-1.5	0.841	0	0.841	2.1403	0	0
-1.25	1.7596	0	1.7596	3.8999	0	0
-1	2.0919	0	2.0919	5.9918	0	0
-0.75	3.9094	0	3.9094	9.9012	0	0
-0.5	3.4194	0	3.4194	13.3206	0	0
-0.25	3.1061	0	3.1061	16.4267	0	0
0	1.9007	0.0049	1.8958	18.3274	0.00011337	0.00011337
0.25	1.8841	1.0261	0.858	20.2115	0.023740664	0.023854035
0.5	1.294	1.294	0	21.5055	0.029939011	0.053793046
0.75	2.9224	2.4898	0.4326	24.4279	0.05760599	0.111399036
1	5.32	4.1099	1.2101	29.7479	0.09508991	0.206488945
1.25	8.2997	6.7154	1.5843	38.0476	0.155372826	0.361861772
1.5	9.6127	8.7541	0.8586	47.6603	0.202541808	0.56440358
1.75	10.6734	8.0797	2.5937	58.3337	0.186938354	0.751341934
2	8.8795	7.2054	1.6741	67.2132	0.166709855	0.918051789
2.25	3.1874	2.7704	0.417	70.4006	0.064098174	0.982149963
2.5	0.5884	0.5884	0	70.989	0.01361369	0.995763653
2.75	0.0849	0.0849	0	71.0739	0.001964314	0.997727967
3	0.0523	0.0523	0	71.1262	0.001210054	0.998938021
3.25	0.0367	0.0367	0	71.1629	0.00084912	0.999787141
3.5	0.0055	0.0055	0	71.1684	0.000127252	0.999914394
3.75	0.0041	0.0031	0.001	71.1725	7.17241E-05	0.999986118
4	0.0008	0.0006	0.0002	71.1733	1.38821E-05	1

Total Wt. 71.1733
Digest Wt. 43.2212

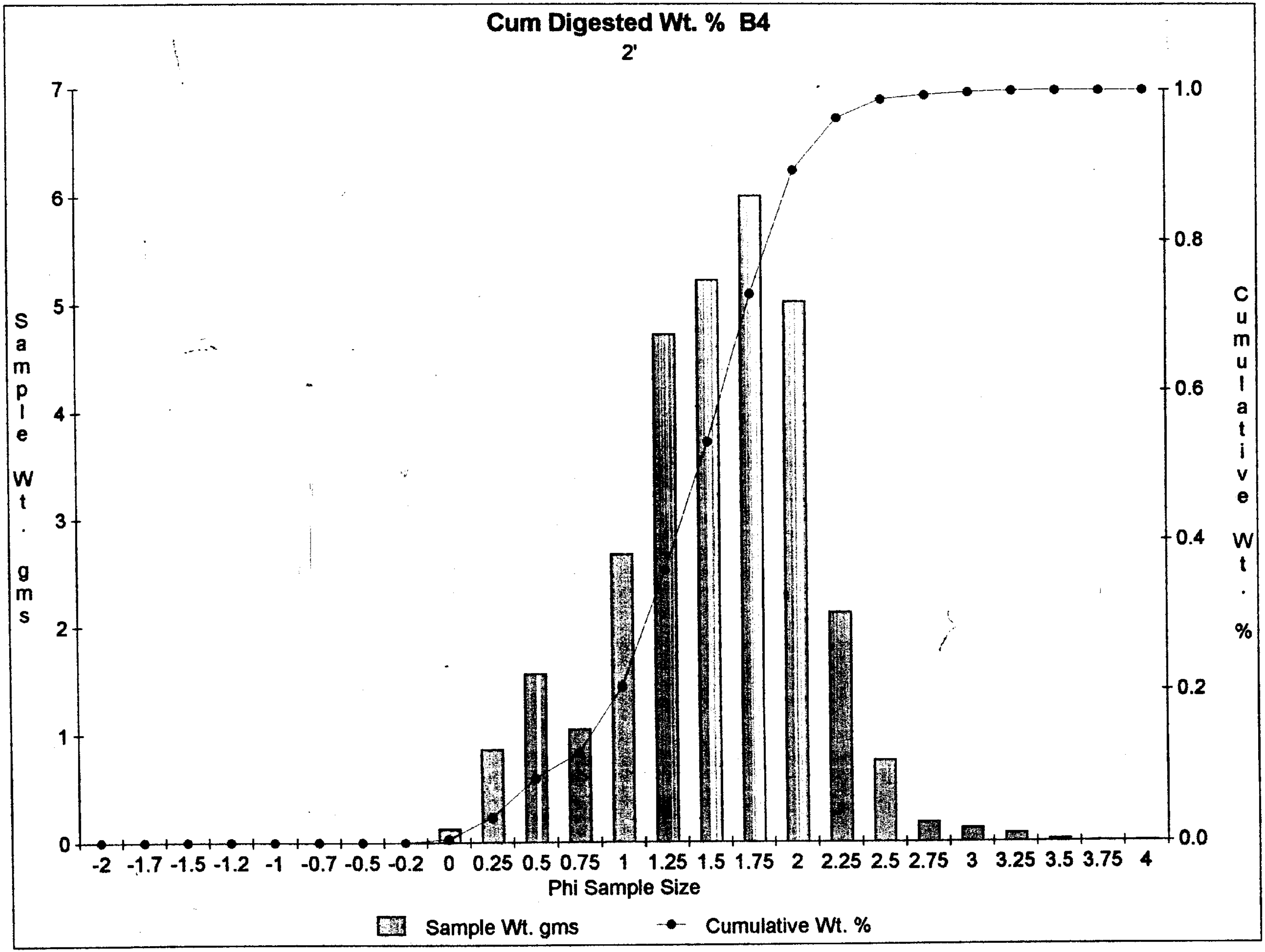
Sample % Silica 60.726705


Cum Digested Wt. % B4
0.5'
Sample Wt. gms
Cumulative Wt. %
9
8
7
6
5
4
3
2
1
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-4)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	3.2218	0	3.2218	3.2218	0	0
-1.75	1.5282	0	1.5282	4.75	0	0
-1.5	1.689	0	1.689	6.439	0	0
-1.25	3.1091	0	3.1091	9.5481	0	0
-1	4.0706	0	4.0706	13.6187	0	0
-0.75	2.722	0	2.722	16.3407	0	0
-0.5	2.4079	0	2.4079	18.7486	0	0
-0.25	2.0489	0	2.0489	20.7975	0	0
0	2.6616	0.1232	2.5384	23.4591	0.004039463	0.004039463
0.25	2.9643	0.8595	2.1048	26.4234	0.028181159	0.032220623
0.5	2.0081	1.5516	0.4565	28.4315	0.050873632	0.083094255
0.75	1.0448	1.0448	0	29.4763	0.034256749	0.117351004
1	3.8803	2.663	1.2173	33.3566	0.087314052	0.204665056
1.25	5.8614	4.7189	1.1425	39.218	0.154722598	0.359387654
1.5	6.4482	5.2279	1.2203	45.6662	0.171411615	0.530799269
1.75	6.0094	6.0094	0	51.6756	0.197035322	0.727834592
2	5.3467	5.0249	0.3218	57.0223	0.164755681	0.892590273
2.25	2.4151	2.1243	0.2908	59.4374	0.069651236	0.962241509
2.5	1.1697	0.752	0.4177	60.6071	0.024656465	0.986897974
2.75	0.3414	0.1782	0.1632	60.9485	0.005842795	0.992740769
3	0.1828	0.1228	0.06	61.1313	0.004026348	0.996767118
3.25	0.1111	0.0738	0.0373	61.2424	0.002419744	0.999186861
3.5	0.0203	0.0203	0	61.2627	0.000665593	0.999852455
3.75	0.0201	0.0033	0.0168	61.2828	0.0001082	0.999960655
4	0.0049	0.0012	0.0037	61.2877	3.93454E-05	1

Total Wt.	61.2877
Digest Wt.	30.4991
Sample % Silica	49.763819



Cum Digested Wt. % B4

2'

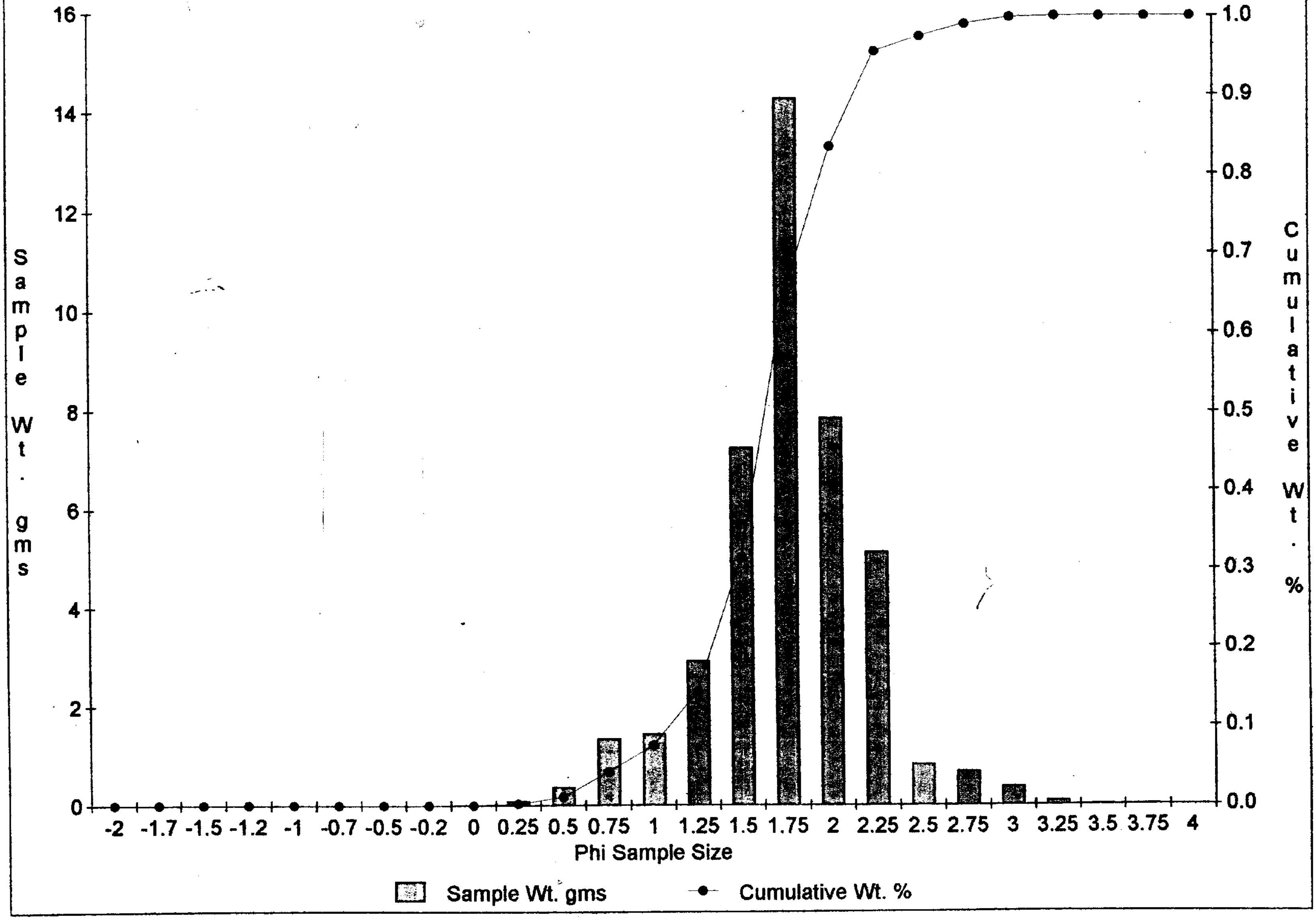
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-5)
DEPTH (0.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.0045	0	0.0045	0.0045	0	0
0	0.0984	0.0057	0.0927	0.1029	0.000133843	0.000133843
0.25	0.3961	0.0777	0.3184	0.499	0.001824488	0.00195833
0.5	0.693	0.3578	0.3352	1.192	0.008401566	0.010359896
0.75	1.4232	1.3256	0.0976	2.6152	0.03112665	0.041486546
1	1.4272	1.4272	0	4.0424	0.033512338	0.074998885
1.25	2.9088	2.9088	0	6.9512	0.068302052	0.143300937
1.5	7.2489	7.2489	0	14.2001	0.170212716	0.313513653
1.75	14.9709	14.2965	0.6744	29.171	0.335698671	0.649212324
2	15.126	7.8453	7.2807	44.297	0.184216891	0.833429215
2.25	17.7801	5.127	12.6531	62.0771	0.120388003	0.953817218
2.5	9.8807	0.8168	9.0639	71.9578	0.019179427	0.972996645
2.75	5.0975	0.6757	4.4218	77.0553	0.015866232	0.988862877
3	1.2042	0.371	0.8332	78.2595	0.008711517	0.997574394
3.25	0.7031	0.0813	0.6218	78.9626	0.00190902	0.999483414
3.5	0.3875	0.0102	0.3773	79.3501	0.000239508	0.999722922
3.75	0.0141	0.0097	0.0044	79.3642	0.000227767	0.99995069
4	0.0057	0.0021	0.0036	79.3699	4.93105E-05	1

Total Wt.	79.3699
Digest Wt.	42.5873
Sample % Silica	53.656739

Cum Digested Wt. % B5

0.5'



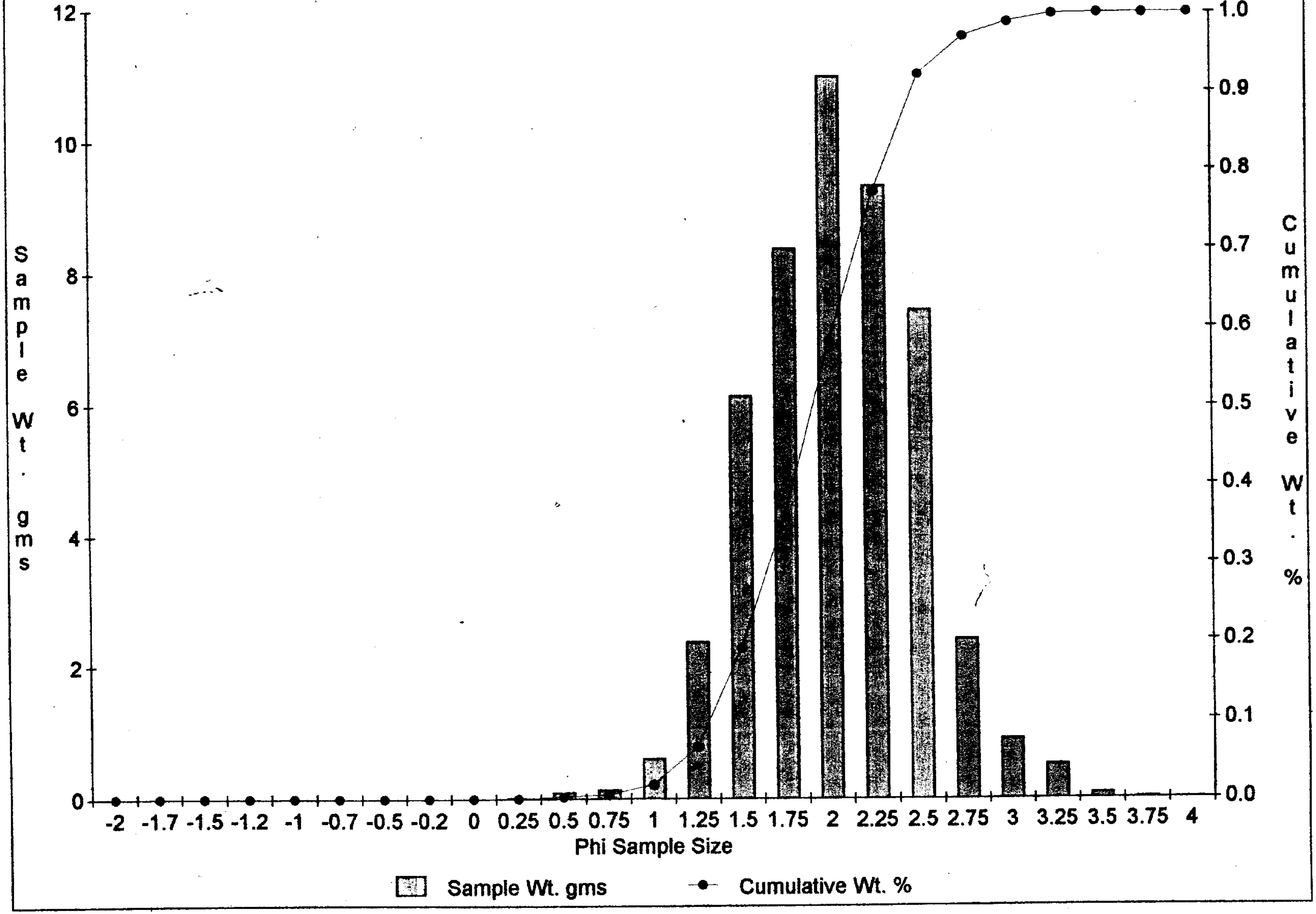
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-5)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0	0	0	0	0	0
0.25	0.2833	0.0147	0.2686	0.2833	0.000297653	0.000297653
0.5	0.5572	0.0929	0.4643	0.8405	0.001881088	0.002178742
0.75	1.3137	0.13	1.1837	2.1542	0.002632309	0.004811051
1	1.8797	0.5959	1.2838	4.0339	0.012066099	0.01687715
1.25	4.3865	2.3554	2.0311	8.4204	0.047693389	0.064570539
1.5	9.2702	6.1301	3.1401	17.6906	0.124125517	0.188696055
1.75	10.6125	8.366	2.2465	28.3031	0.169399206	0.358095261
2	14.0572	11.0094	3.0478	42.3603	0.222924171	0.581019433
2.25	10.102	9.3251	0.7769	52.4623	0.188819571	0.769839004
2.5	7.9789	7.4446	0.5343	60.4412	0.15074221	0.920581214
2.75	2.4067	2.4067	0	62.8479	0.048732138	0.969313352
3	0.9067	0.9067	0	63.7546	0.018359343	0.987672695
3.25	0.5122	0.5122	0	64.2668	0.010371297	0.998043992
3.5	0.0748	0.0748	0	64.3416	0.00151459	0.999558582
3.75	0.0213	0.0146	0.0067	64.3629	0.000295629	0.999854211
4	0.0097	0.0072	0.0025	64.3726	0.000145789	1

Total Wt.	64.3726
Digest Wt.	49.3863
Sample % Silica	76.719443

Cum Digested Wt. % B5

2'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-6)
DEPTH (0 FEET BLS)

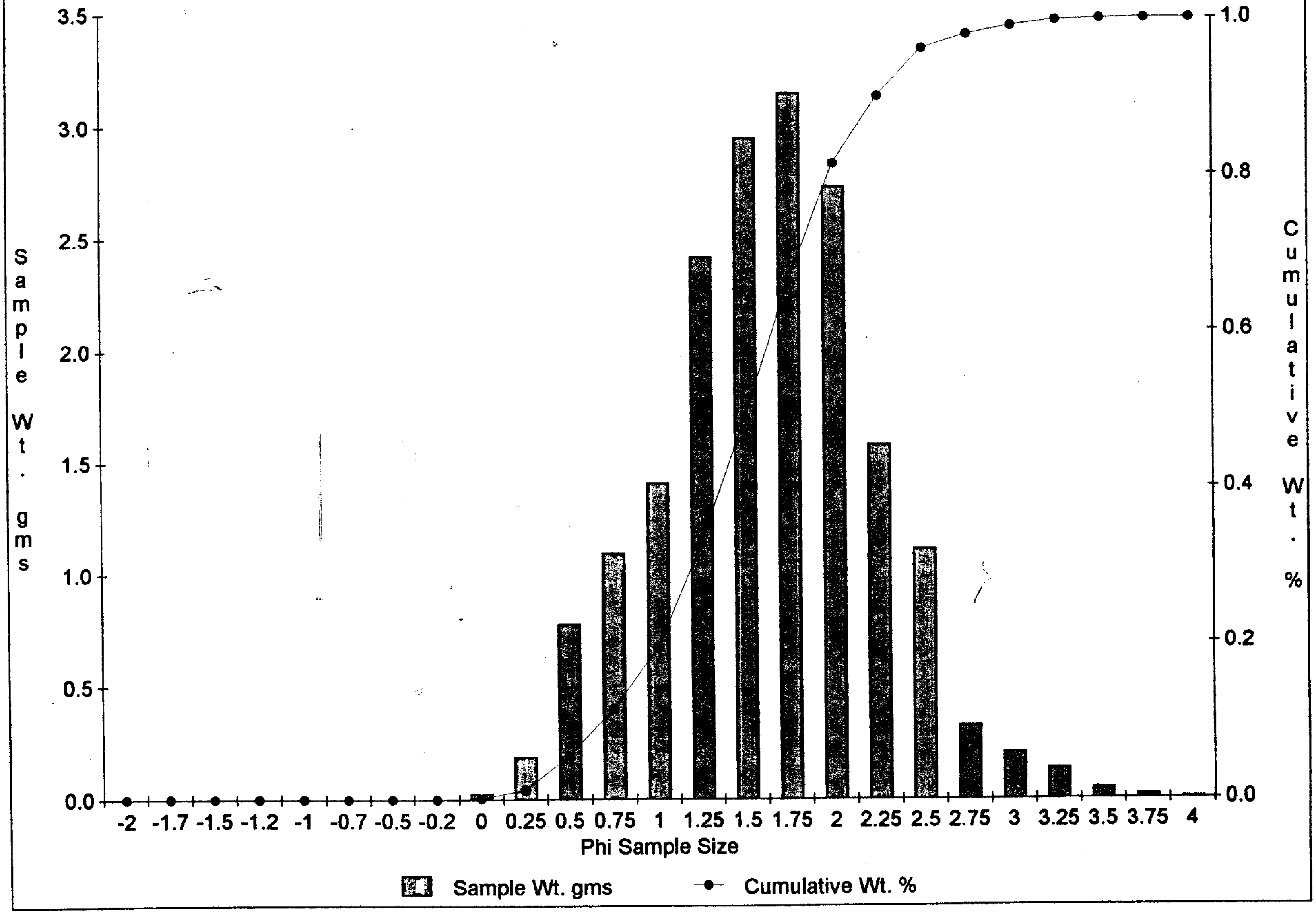
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0.419	0	0.419	0.419	0	0
-1.75	2.1893	0	2.1893	2.6083	0	0
-1.5	7.643	0	7.643	10.2513	0	0
-1.25	3.8005	0	3.8005	14.0518	0	0
-1	3.1507	0	3.1507	17.2025	0	0
-0.75	2.3807	0	2.3807	19.5832	0	0
-0.5	2.2358	0	2.2358	21.819	0	0
-0.25	1.8709	0	1.8709	23.6899	0	0
0	1.6509	0.0243	1.6266	25.3408	0.001336692	0.001336692
0.25	0.5278	0.1837	0.3441	25.8686	0.010104955	0.011441648
0.5	0.991	0.7754	0.2156	26.8596	0.042653142	0.05409479
0.75	1.7408	1.0941	0.6467	28.6004	0.060184167	0.114278956
1	4.4581	1.4071	3.051	33.0585	0.077401646	0.191680602
1.25	6.2096	2.4197	3.7899	39.2681	0.133102667	0.324783269
1.5	6.8749	2.9536	3.9213	46.143	0.162471396	0.487254665
1.75	6.1844	3.1548	3.0296	52.3274	0.17353899	0.660793654
2	4.8929	2.738	2.1549	57.2203	0.150611688	0.811405342
2.25	2.5382	1.5837	0.9545	59.7585	0.087116045	0.898521387
2.5	1.6883	1.1158	0.5725	61.4468	0.061377838	0.959899225
2.75	0.394	0.3248	0.0692	61.8408	0.017866573	0.977765798
3	0.3024	0.204	0.0984	62.1432	0.011221616	0.988987414
3.25	0.1689	0.1347	0.0342	62.3121	0.007409567	0.996396981
3.5	0.0472	0.0458	0.0014	62.3593	0.002519363	0.998916344
3.75	0.0405	0.015	0.0255	62.3998	0.000825119	0.999741463
4	0.0201	0.0047	0.0154	62.4199	0.000258537	1

Total Wt.	62.4199
Digest Wt.	18.1792

Sample % Silica	29.124045

Cum Digested Wt. % B6

0'

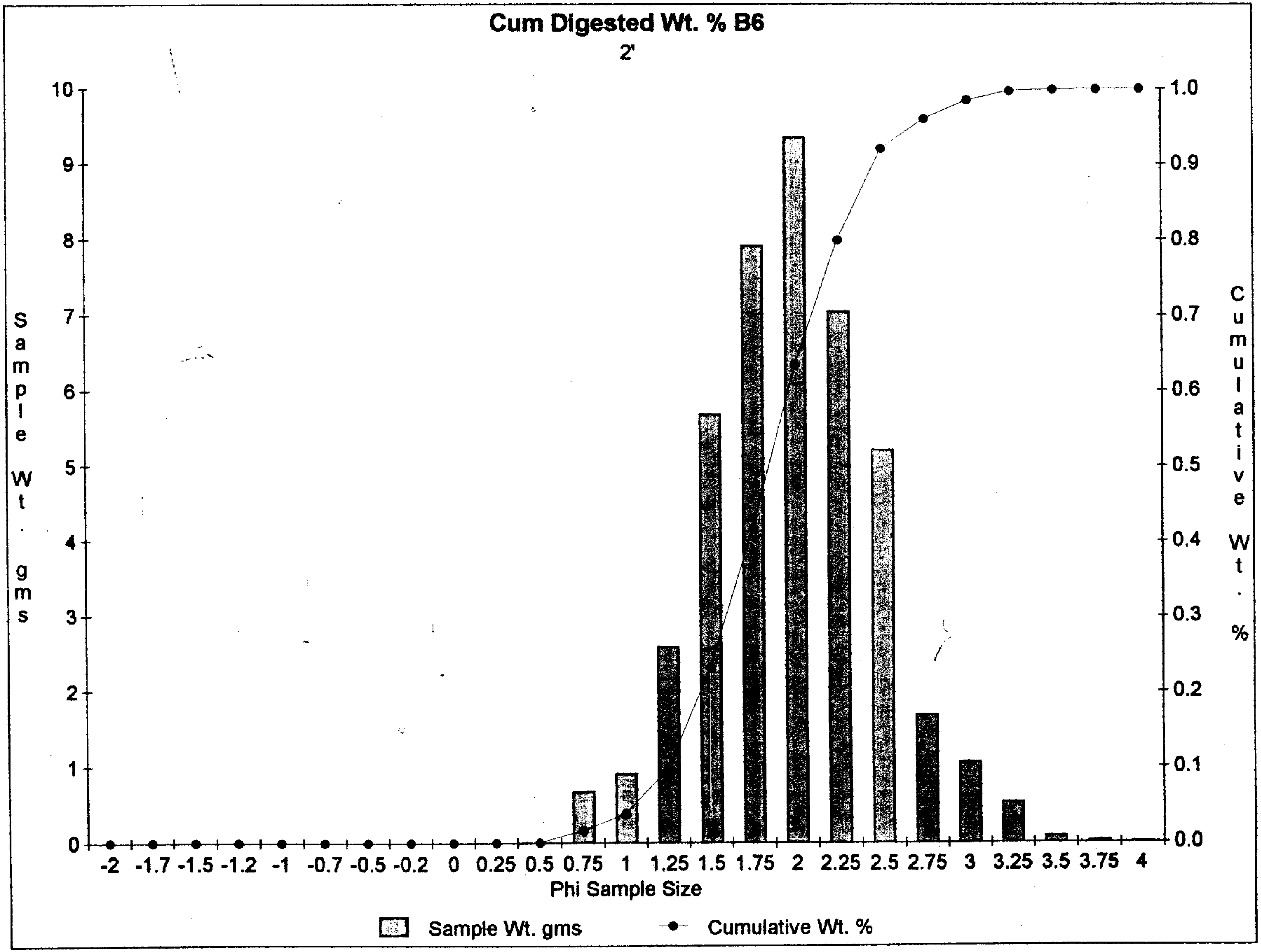


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (B-6)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.0305	0	0.0305	0.0305	0	0
-0.5	0.2041	0	0.2041	0.2346	0	0
-0.25	0.0301	0	0.0301	0.2647	0	0
0	0.1877	0	0.1877	0.4524	0	0
0.25	1.5914	0	1.5914	2.0438	0	0
0.5	1.4947	0.0071	1.4876	3.5385	0.000166043	0.000166043
0.75	1.5574	0.6651	0.8923	5.0959	0.015554256	0.015720299
1	2.8359	0.9091	1.9268	7.9318	0.021260524	0.036980823
1.25	6.0574	2.5808	3.4766	13.9892	0.060355472	0.097336296
1.5	9.9553	5.6829	4.2724	23.9445	0.132902245	0.230238541
1.75	11.6852	7.9116	3.7736	35.6297	0.185023386	0.415261927
2	12.5148	9.3508	3.164	48.1445	0.21868101	0.633942937
2.25	9.5855	7.0421	2.5434	57.73	0.164688962	0.798631899
2.5	6.7976	5.2102	1.5874	64.5276	0.121847521	0.92047942
2.75	2.6631	1.6874	0.9757	67.1907	0.039462114	0.959941534
3	1.0684	1.0684	0	68.2591	0.024985968	0.984927502
3.25	0.5336	0.5272	0.0064	68.7927	0.01232928	0.997256782
3.5	0.0809	0.0809	0	68.8736	0.001891955	0.999148737
3.75	0.0257	0.0257	0	68.8993	0.000601029	0.999749766
4	0.0107	0.0107	0	68.91	0.000250234	1

Total Wt.	68.91
Digest Wt.	42.76

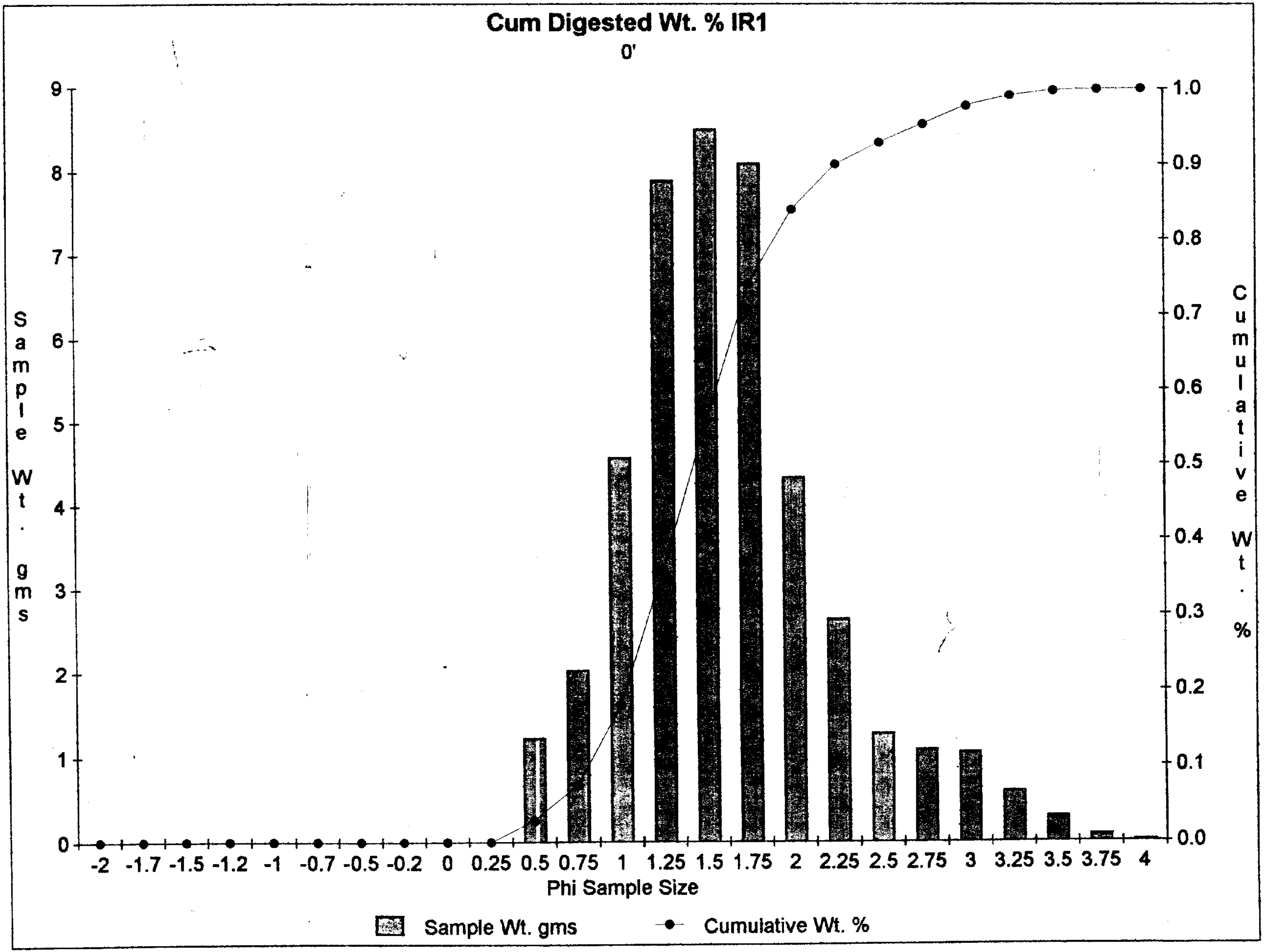
Sample % Silica	62.051952


Cum Digested Wt. % B6
2'
Sample Wt. gms
Cumulative Wt. %
0
1
2
3
4
5
6
7
8
9
10
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-1)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0.0205	0	0.0205	0.0205	0	0
-1.75	0	0	0	0.0205	0	0
-1.5	0.0704	0	0.0704	0.0909	0	0
-1.25	0.1007	0	0.1007	0.1916	0	0
-1	0.1746	0	0.1746	0.3662	0	0
-0.75	0.2508	0	0.2508	0.617	0	0
-0.5	0.3841	0	0.3841	1.0011	0	0
-0.25	0.6248	0	0.6248	1.6259	0	0
0	0.9919	0	0.9919	2.6178	0	0
0.25	1.755	0	1.755	4.3728	0	0
0.5	3.1848	1.2201	1.9647	7.5576	0.027932692	0.027932692
0.75	3.9884	2.0209	1.9675	11.546	0.046266026	0.074198718
1	7.6254	4.5662	3.0592	19.1714	0.104537546	0.178736264
1.25	9.5988	7.894	1.7048	28.7702	0.180723443	0.359459707
1.5	12.3535	8.5074	3.8461	41.1237	0.194766484	0.55422619
1.75	11.4451	8.0986	3.3465	52.5688	0.185407509	0.7396337
2	6.4455	4.3268	2.1187	59.0143	0.099056777	0.838690476
2.25	3.6456	2.6337	1.0119	62.6599	0.06029533	0.898985806
2.5	1.5572	1.2781	0.2791	64.2171	0.029260531	0.928246337
2.75	1.3303	1.0873	0.243	65.5474	0.024892399	0.953138736
3	1.1989	1.0585	0.1404	66.7463	0.024233059	0.977371795
3.25	0.772	0.5953	0.1767	67.5183	0.013628663	0.991000458
3.5	0.4243	0.2975	0.1268	67.9426	0.006810897	0.997811355
3.75	0.1812	0.0809	0.1003	68.1238	0.001852106	0.999663462
4	0.1001	0.0147	0.0854	68.2239	0.000336538	1

Total Wt.	68.2239
Digest Wt.	43.68
Sample % Silica	64.024484



Cum Digested Wt. % IR1

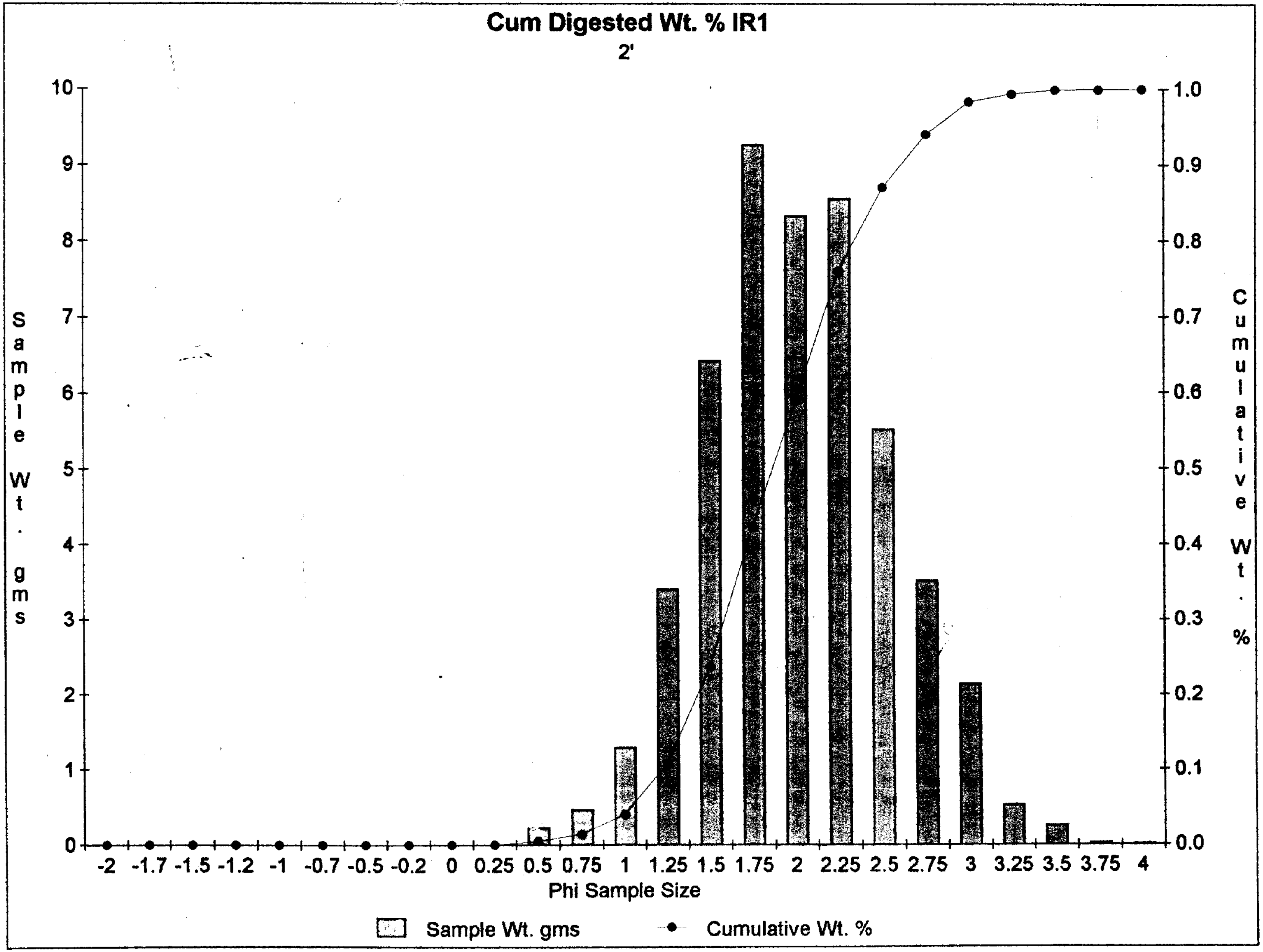
0'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.0169	0	0.0169	0.0169	0	0
-0.5	0.0527	0	0.0527	0.0696	0	0
-0.25	0.073	0	0.073	0.1426	0	0
0	0.1383	0	0.1383	0.2809	0	0
0.25	0.2592	0	0.2592	0.5401	0	0
0.5	0.5049	0.2219	0.283	1.045	0.004446252	0.004446252
0.75	1.0988	0.46	0.6388	2.1438	0.009217107	0.013663359
1	2.0885	1.2928	0.7957	4.2323	0.025904078	0.039567437
1.25	3.9334	3.3937	0.5397	8.1657	0.068000208	0.107567646
1.5	7.3812	6.4129	0.9683	15.5469	0.128496489	0.236064135
1.75	10.7313	9.2646	1.4667	26.2782	0.185636541	0.421700676
2	11.0581	8.3211	2.737	37.3363	0.166731454	0.58843213
2.25	11.2999	8.5562	2.7437	48.6362	0.171442197	0.759874327
2.5	6.8509	5.5061	1.3448	55.4871	0.110326766	0.870201093
2.75	4.677	3.5093	1.1677	60.1641	0.070316507	0.940517601
3	2.7379	2.1397	0.5982	62.902	0.042873573	0.983391174
3.25	1.5465	0.5326	1.0139	64.4485	0.010671807	0.994062981
3.5	0.3234	0.2572	0.0662	64.7719	0.005153565	0.999216546
3.75	0.1278	0.0279	0.0999	64.8997	0.000559038	0.999775583
4	0.0661	0.0112	0.0549	64.9658	0.000224417	1

Total Wt.	64.9658
Digest Wt.	49.9072

Sample % Silica	76.820727

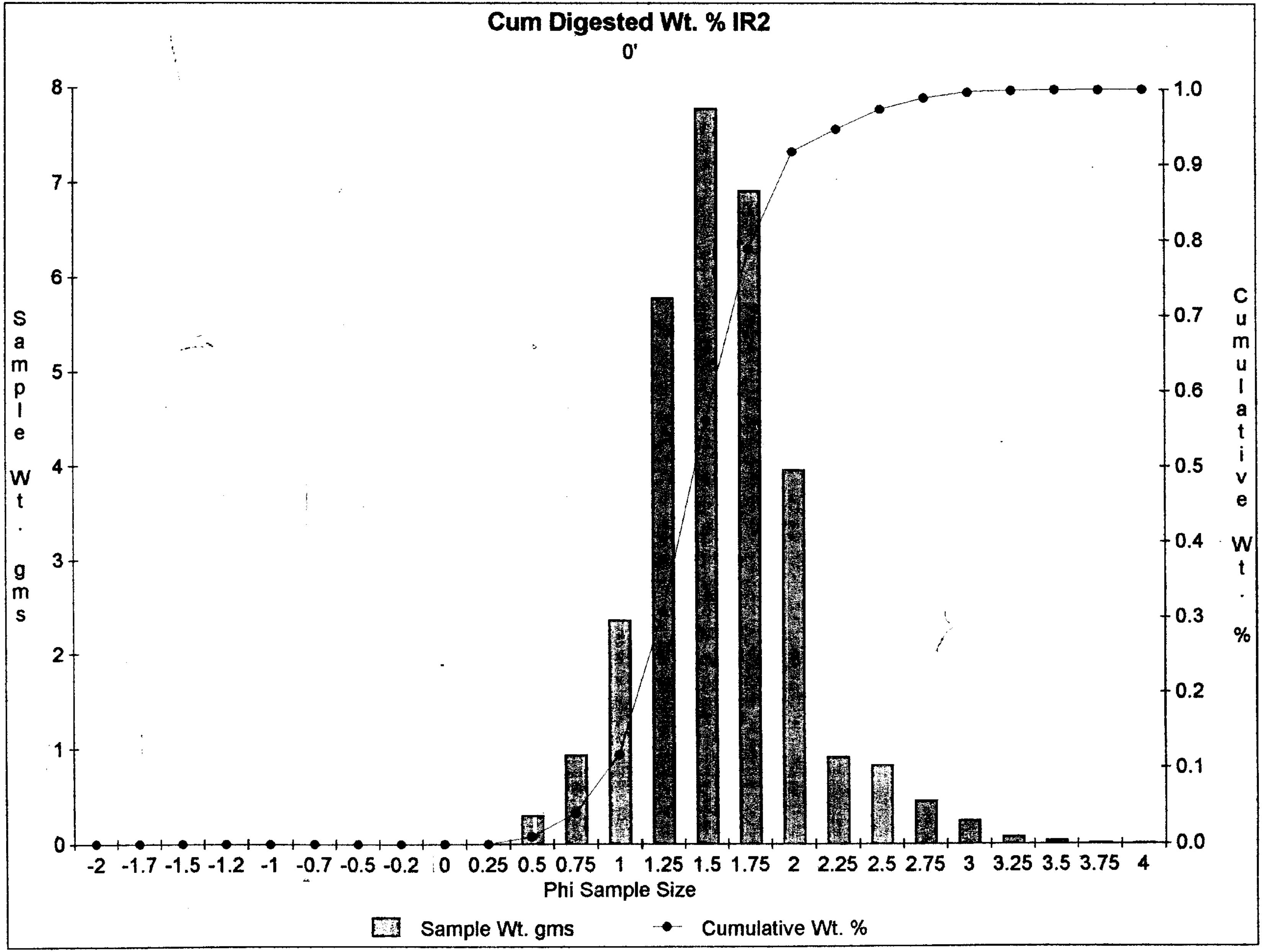

Cum Digested Wt. % IR1
2'
Sample Wt. gms
Cumulative Wt. %
10
9
8
7
6
5
4
3
2
1
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-2)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot.Cum.Digest Wt.%
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0.0248	0	0.0248	0.0248	0	0
-0.75	0.0648	0	0.0648	0.0896	0	0
-0.5	0.1618	0	0.1618	0.2514	0	0
-0.25	0.4079	0	0.4079	0.6593	0	0
0	0.6808	0	0.6808	1.3401	0	0
0.25	1.4704	0	1.4704	2.8105	0	0
0.5	1.6794	0.2964	1.383	4.4899	0.009693814	0.009693814
0.75	4.0782	0.9318	3.1464	8.5681	0.030474683	0.040168497
1	6.8654	2.359	4.5064	15.4335	0.07715151	0.117320007
1.25	10.6068	5.7797	4.8271	26.0403	0.189026105	0.306346112
1.5	11.3072	7.7876	3.5196	37.3475	0.254694828	0.56104094
1.75	6.9155	6.9155	0	44.263	0.226172644	0.787213584
2	3.9558	3.9558	0	48.2188	0.129375135	0.916588719
2.25	0.9081	0.9081	0	49.1269	0.02969957	0.94628829
2.5	0.8225	0.8225	0	49.9494	0.026900007	0.973188297
2.75	0.449	0.449	0	50.3984	0.014684624	0.987872921
3	0.2448	0.2448	0	50.6432	0.008006227	0.995879148
3.25	0.0764	0.0764	0	50.7196	0.002498675	0.998377823
3.5	0.0342	0.0342	0	50.7538	0.001118517	0.99949634
3.75	0.0219	0.0107	0.0112	50.7757	0.000349945	0.999846286
4	0.011	0.0047	0.0063	50.7867	0.000153714	1

Total Wt.	50.7867
Digest Wt.	30.5762

Sample % Silica	60.205132



Cum Digested Wt. % IR2

0'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-2)
DEPTH (2 FEET BLS)

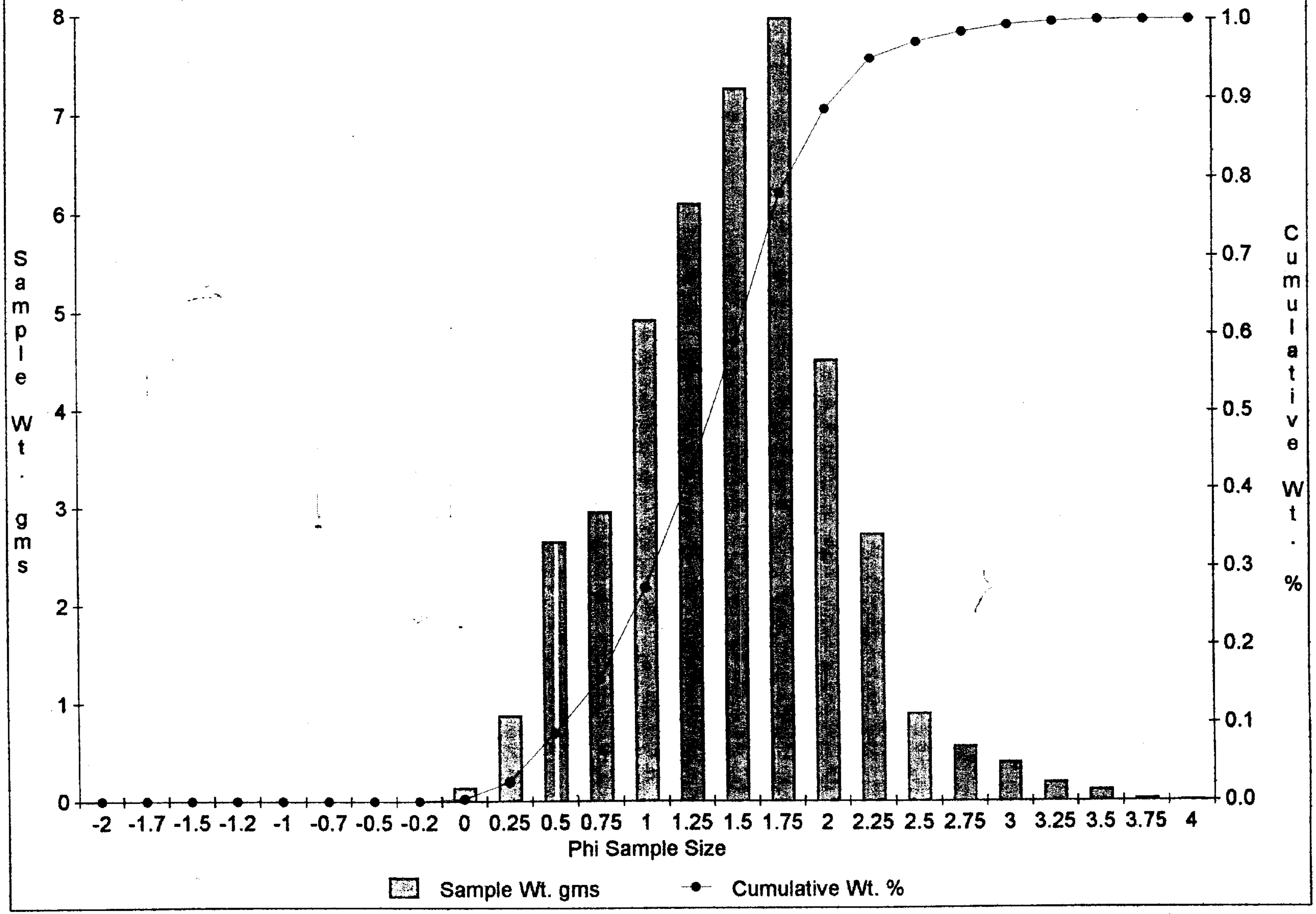
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0.5949	0	0.5949	0.5949	0	0
-1.25	0.9409	0	0.9409	1.5358	0	0
-1	1.0027	0	1.0027	2.5385	0	0
-0.75	1.5049	0	1.5049	4.0434	0	0
-0.5	2.5028	0	2.5028	6.5462	0	0
-0.25	3.3561	0	3.3561	9.9023	0	0
0	4.1639	0.1294	4.0345	14.0662	0.003058639	0.003058639
0.25	5.105	0.8709	4.2341	19.1712	0.020585538	0.023644177
0.5	5.7307	2.6392	3.0915	24.9019	0.062382996	0.086027173
0.75	2.9469	2.9469	0	27.8488	0.069656128	0.155683301
1	7.7697	4.9283	2.8414	35.6185	0.116490649	0.27217395
1.25	7.731	6.1084	1.6226	43.3495	0.144384774	0.416558724
1.5	9.8841	7.2832	2.6009	53.2336	0.172153622	0.588712346
1.75	10.1152	7.9953	2.1199	63.3488	0.188985591	0.777697937
2	6.1479	4.5136	1.6343	69.4967	0.10668835	0.884386287
2.25	3.6268	2.7211	0.9057	73.1235	0.064318874	0.94870516
2.5	0.8955	0.8955	0	74.019	0.02116701	0.969872171
2.75	0.6547	0.5513	0.1034	74.6737	0.013031125	0.982903296
3	0.3939	0.3939	0	75.0676	0.009310648	0.992213944
3.25	0.2076	0.1901	0.0175	75.2752	0.00449341	0.996707354
3.5	0.1182	0.1135	0.0047	75.3934	0.002682809	0.999390163
3.75	0.0357	0.0217	0.014	75.4291	0.000512925	0.999903088
4	0.0041	0.0041	0	75.4332	9.69121E-05	1

Total Wt. 75.4332
Digest Wt. 42.3064

Sample % Silica 56.084589

Cum Digested Wt. % IR2

2'

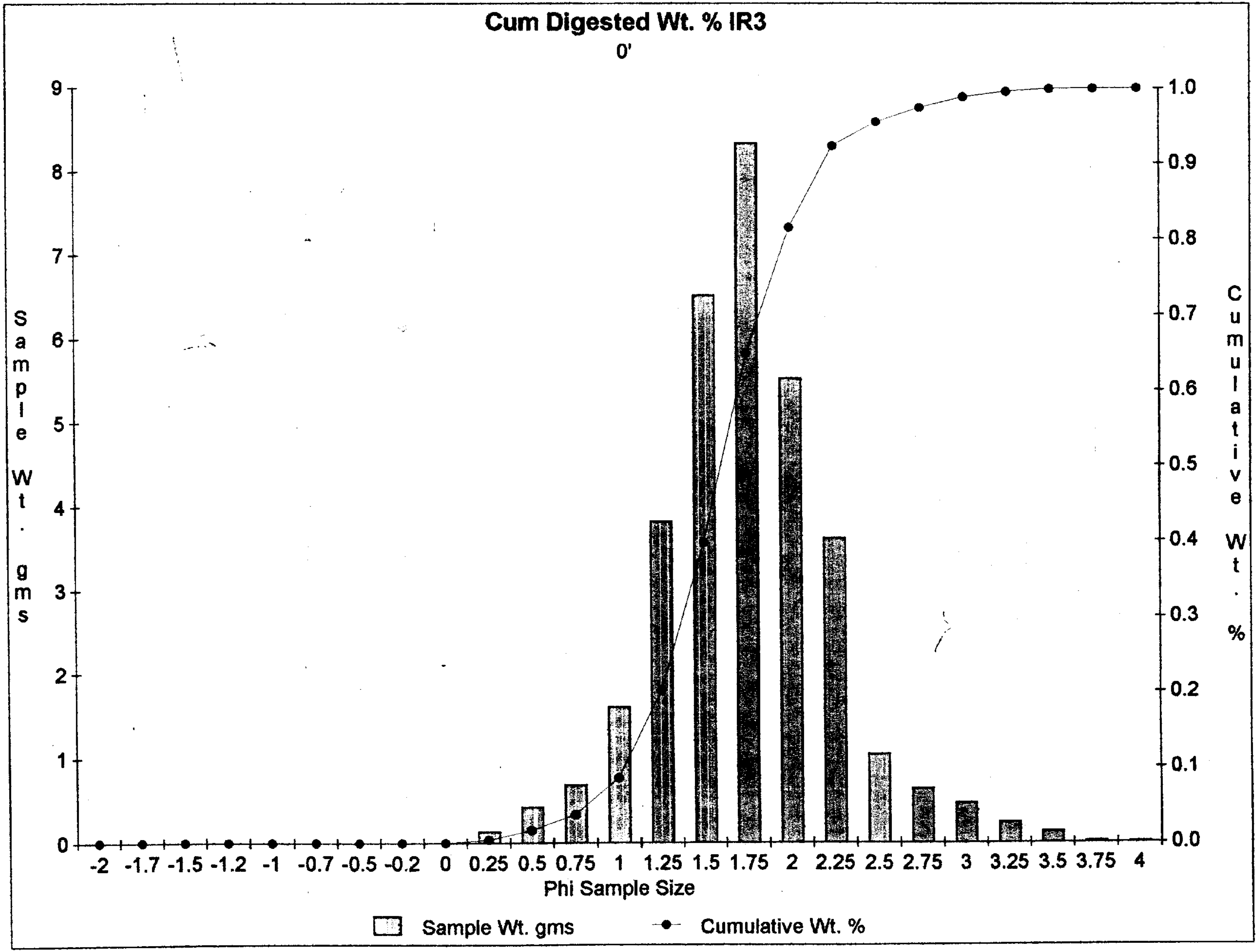


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-3)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0.8133	0	0.8133	0.8133	0	0
-1.75	0	0	0	0.8133	0	0
-1.5	0	0	0	0.8133	0	0
-1.25	0	0	0	0.8133	0	0
-1	0	0	0	0.8133	0	0
-0.75	0	0	0	0.8133	0	0
-0.5	0.3536	0	0.3536	1.1669	0	0
-0.25	0.953	0	0.953	2.1199	0	0
0	0.593	0	0.593	2.7129	0	0
0.25	0.831	0.1307	0.7003	3.5439	0.00393298	0.00393298
0.5	1.2241	0.4165	0.8076	4.768	0.012533176	0.016466156
0.75	1.5247	0.6837	0.841	6.2927	0.020573667	0.037039823
1	2.8571	1.6132	1.2439	9.1498	0.048543865	0.085583688
1.25	4.6487	3.8256	0.8231	13.7985	0.115118651	0.200702339
1.5	8.6436	6.5147	2.1289	22.4421	0.196038132	0.396740471
1.75	10.7992	8.335	2.4642	33.2413	0.250813979	0.647554451
2	8.0907	5.5326	2.5581	41.332	0.166485114	0.814039565
2.25	5.1728	3.6194	1.5534	46.5048	0.108913751	0.922953316
2.5	1.4904	1.0511	0.4393	47.9952	0.031629343	0.954582659
2.75	0.7083	0.6366	0.0717	48.7035	0.01915635	0.973739009
3	0.472	0.472	0	49.1755	0.014203263	0.987942272
3.25	0.3496	0.2426	0.107	49.5251	0.007300237	0.995242509
3.5	0.1319	0.1313	0.0006	49.657	0.003951035	0.999193544
3.75	0.0517	0.018	0.0337	49.7087	0.00054165	0.999735193
4	0.0101	0.0088	0.0013	49.7188	0.000264807	1

Total Wt. 49.7188
Digest Wt. 33.2318

Sample % Silica 66.839505



Cum Digested Wt. % IR3

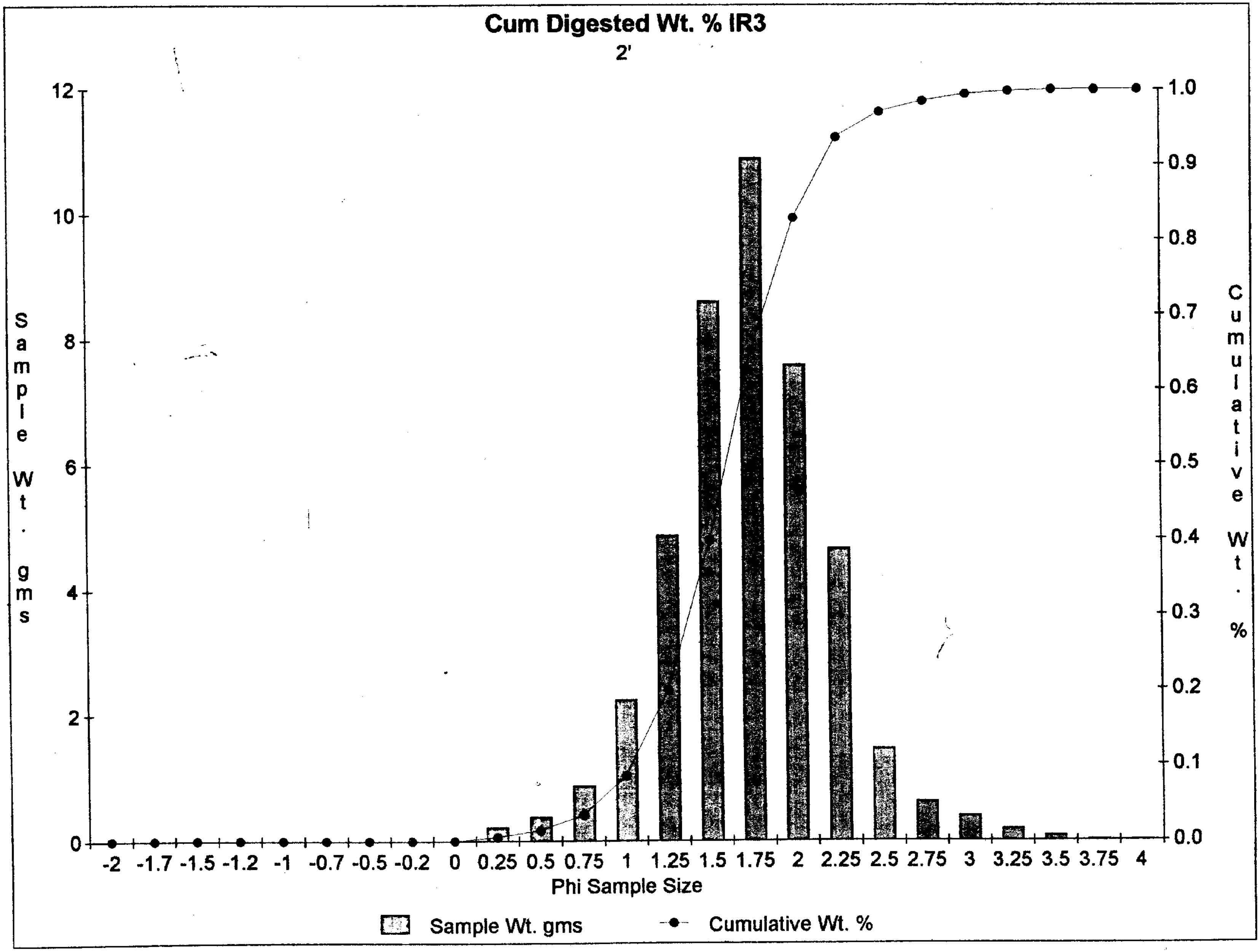
0'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-3)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.1881	0	0.1881	0.1881	0	0
-0.5	0.2341	0	0.2341	0.4222	0	0
-0.25	0.4551	0	0.4551	0.8773	0	0
0	0.6977	0	0.6977	1.575	0	0
0.25	1.0439	0.2116	0.8323	2.6189	0.004917762	0.004917762
0.5	1.4506	0.3789	1.0717	4.0695	0.008805955	0.013723718
0.75	1.9539	0.8693	1.0846	6.0234	0.020203264	0.033926982
1	3.9331	2.2347	1.6984	9.9565	0.051936311	0.085863293
1.25	6.7961	4.86	1.9361	16.7526	0.112950495	0.198813787
1.5	11.6054	8.5989	3.0065	28.358	0.199845681	0.398659468
1.75	13.9828	10.8962	3.0866	42.3408	0.253236868	0.651896337
2	10.3712	7.5864	2.7848	52.712	0.176314328	0.828210664
2.25	6.3855	4.6523	1.7332	59.0975	0.108123372	0.936334036
2.5	2.0252	1.4586	0.5666	61.1227	0.033899093	0.970233129
2.75	0.7747	0.6114	0.1633	61.8974	0.014209451	0.98444258
3	0.3898	0.3898	0	62.2872	0.00905928	0.99350186
3.25	0.2133	0.1815	0.0318	62.5005	0.004218213	0.997720073
3.5	0.0781	0.0781	0	62.5786	0.00181511	0.999535183
3.75	0.0295	0.0126	0.0169	62.6081	0.000292835	0.999828018
4	0.0103	0.0074	0.0029	62.6184	0.000171982	1

Total Wt.	62.6184
Digest Wt.	43.0277

Sample % Silica	68.714148



Cum Digested Wt. % IR3

2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-4)
DEPTH (0 FEET BLS)

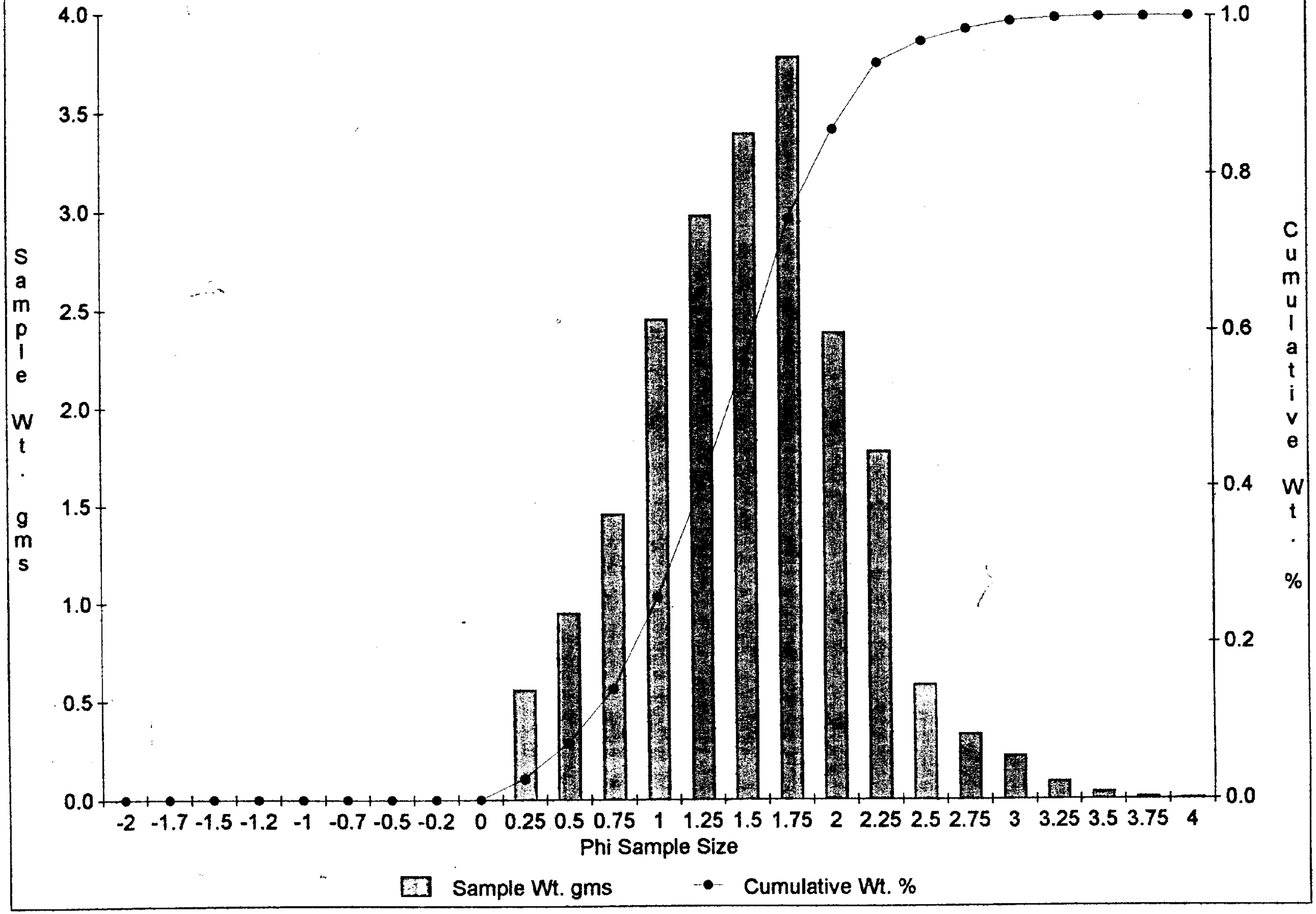
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0.1254	0	0.1254	0.1254	0	0
-1.25	0.0979	0	0.0979	0.2233	0	0
-1	0.227	0	0.227	0.4503	0	0
-0.75	0.6168	0	0.6168	1.0671	0	0
-0.5	0.947	0	0.947	2.0141	0	0
-0.25	1.2547	0	1.2547	3.2688	0	0
0	1.7274	0	1.7274	4.9962	0	0
0.25	2.2585	0.5549	1.7036	7.2547	0.026427459	0.026427459
0.5	2.6908	0.9456	1.7452	9.9455	0.045034791	0.07146225
0.75	2.7883	1.4536	1.3347	12.7338	0.069228608	0.140690857
1	3.76	2.4501	1.3099	16.4938	0.116687543	0.2573784
1.25	4.2115	2.9805	1.231	20.7053	0.141948174	0.399326574
1.5	4.8239	3.3972	1.4267	25.5292	0.161793772	0.561120345
1.75	4.9352	3.7869	1.1483	30.4644	0.180353477	0.741473823
2	3.3213	2.386	0.9353	33.7857	0.11363474	0.855108563
2.25	2.3415	1.7748	0.5667	36.1272	0.084525958	0.939634521
2.5	0.584	0.5791	0.0049	36.7112	0.027579999	0.96721452
2.75	0.356	0.3294	0.0266	37.0672	0.015687881	0.982902401
3	0.2187	0.2187	0	37.2859	0.010415724	0.993318125
3.25	0.089	0.089	0	37.3749	0.004238681	0.997556805
3.5	0.0357	0.0357	0	37.4106	0.001700235	0.99925704
3.75	0.0199	0.0107	0.0092	37.4305	0.000509594	0.999766634
4	0.0186	0.0049	0.0137	37.4491	0.000233366	1

Total Wt.	37.4491
Digest Wt.	20.9971

Sample % Silica	56.06837

Cum Digested Wt. % IR4

0'

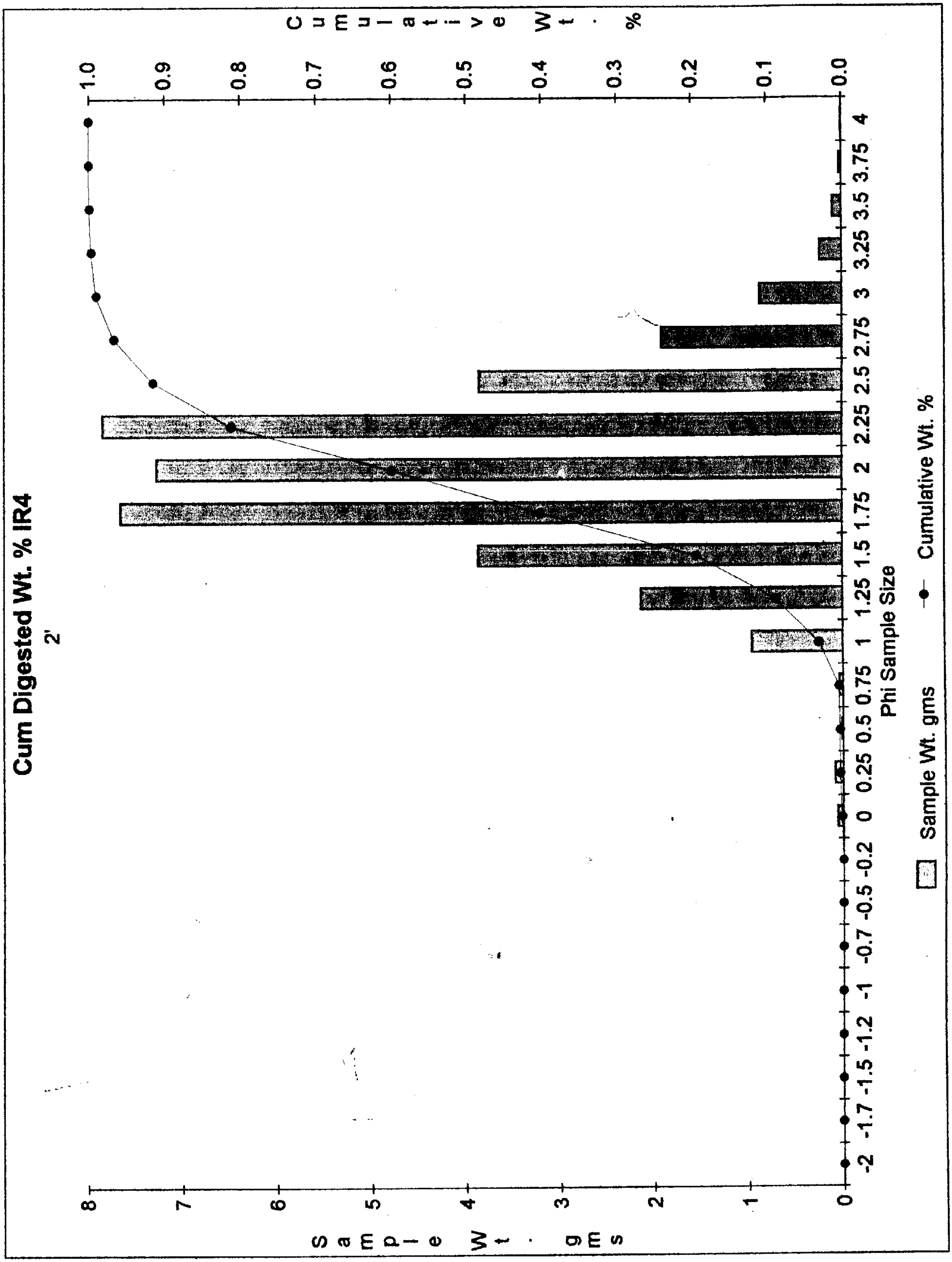


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (IR-4)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0.2608	0	0.2608	0.2608	0	0
-0.25	0.413	0	0.413	0.6738	0	0
0	0.5311	0.0576	0.4735	1.2049	0.001557334	0.001557334
0.25	0.7008	0.0841	0.6167	1.9057	0.002273816	0.003831149
0.5	1.0221	0.01513	1.00697	2.9278	0.00040907	0.00424022
0.75	0.6293	0.03746	0.59184	3.5571	0.001012808	0.005253028
1	1.9613	0.9669	0.9944	5.5184	0.026142119	0.031395147
1.25	3.0662	2.1368	0.9294	8.5846	0.057772759	0.089167905
1.5	5.9169	3.8684	2.0485	14.5015	0.104590106	0.193758011
1.75	9.6358	7.6694	1.9664	24.1373	0.207357916	0.401115927
2	9.8506	7.2839	2.5667	33.9879	0.196935135	0.598051062
2.25	11.5226	7.856	3.6666	45.5105	0.212403028	0.81045409
2.5	3.8594	3.8594	0	49.3699	0.104346773	0.914800863
2.75	2.346	1.9134	0.4326	51.7159	0.051732683	0.966533545
3	0.8762	0.8762	0	52.5921	0.023689859	0.990223404
3.25	0.2401	0.2329	0.0072	52.8322	0.006296928	0.996520332
3.5	0.0995	0.098	0.0015	52.9317	0.00264963	0.999169963
3.75	0.0258	0.0258	0	52.9575	0.000697556	0.999867518
4	0.0247	0.0049	0.0198	52.9822	0.000132482	1

Total Wt.	52.9822
Digest Wt.	36.98629

Sample % Silica	69.808898



Cum Digested Wt. % IR4

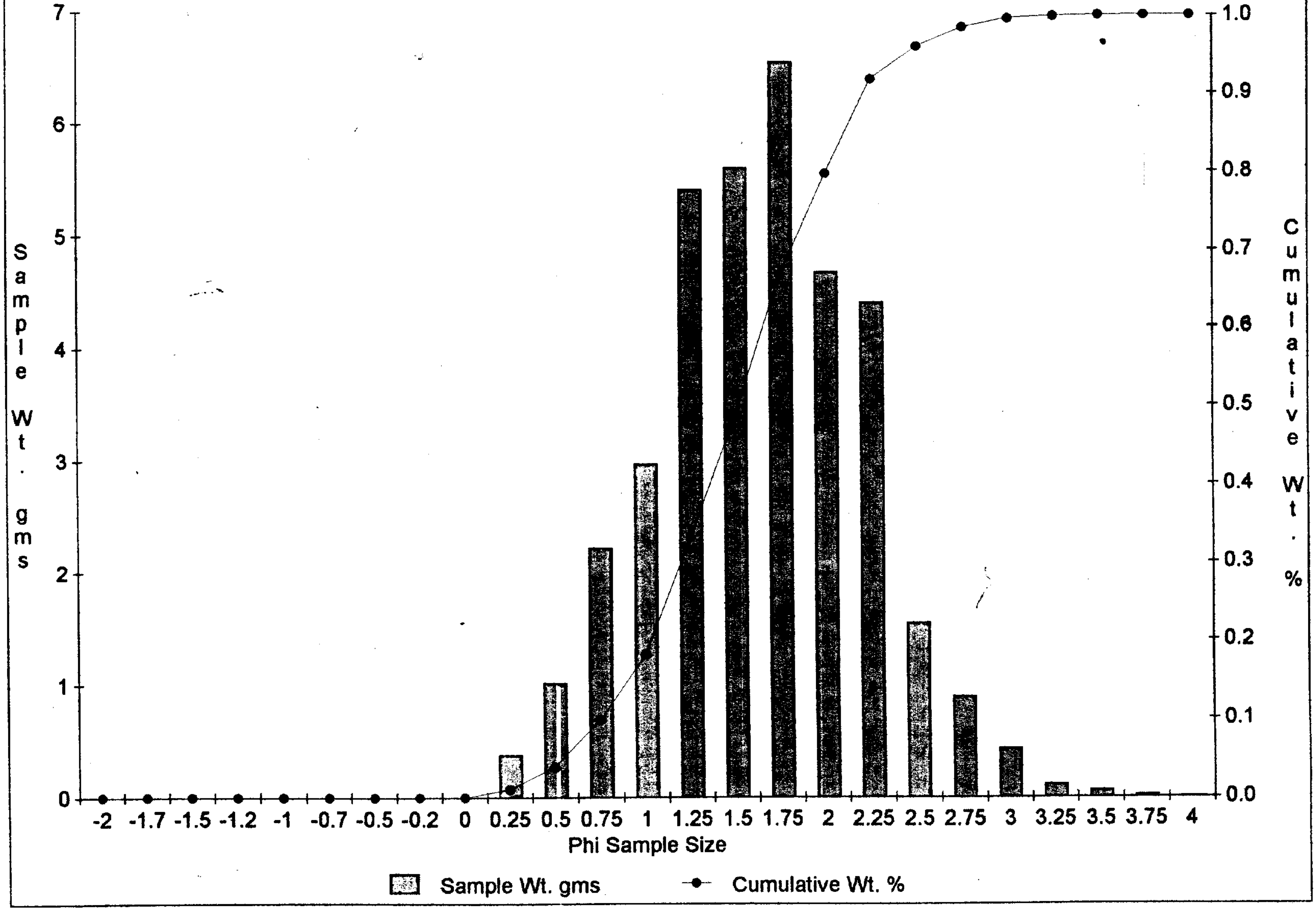
2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-1)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0.0876	0	0.0876	0.0876	0	0
-0.25	0.5014	0	0.5014	0.589	0	0
0	1.2645	0	1.2645	1.8535	0	0
0.25	1.7949	0.3689	1.426	3.6484	0.010168557	0.010168557
0.5	2.6555	1.0107	1.6448	6.3039	0.027859476	0.038028033
0.75	3.9981	2.2125	1.7856	10.302	0.060986535	0.099014568
1	2.964	2.964	0	13.266	0.081701283	0.180715851
1.25	7.0144	5.4156	1.5988	20.2804	0.149278498	0.329994349
1.5	8.0362	5.6081	2.4281	28.3166	0.154584671	0.484579021
1.75	7.6627	6.5639	1.0988	35.9793	0.180930854	0.665509875
2	6.7895	4.6809	2.1086	42.7688	0.129026834	0.794536709
2.25	7.0761	4.4056	2.6705	49.8449	0.121438317	0.915975027
2.5	1.5383	1.5383	0	51.3832	0.042402525	0.958377551
2.75	1.1974	0.8893	0.3081	52.5806	0.024513141	0.982890693
3	0.4514	0.4291	0.0223	53.032	0.011827942	0.994718635
3.25	0.1131	0.1118	0.0013	53.1451	0.003081715	0.99780035
3.5	0.0661	0.0574	0.0087	53.2112	0.001582204	0.999382554
3.75	0.0243	0.0186	0.0057	53.2355	0.0005127	0.999895255
4	0.0057	0.0038	0.0019	53.2412	0.000104745	1

Total Wt.	53.2412
Digest Wt.	36.2785

Sample % Silica	68.139899



Cum Digested Wt. % SL1

0'

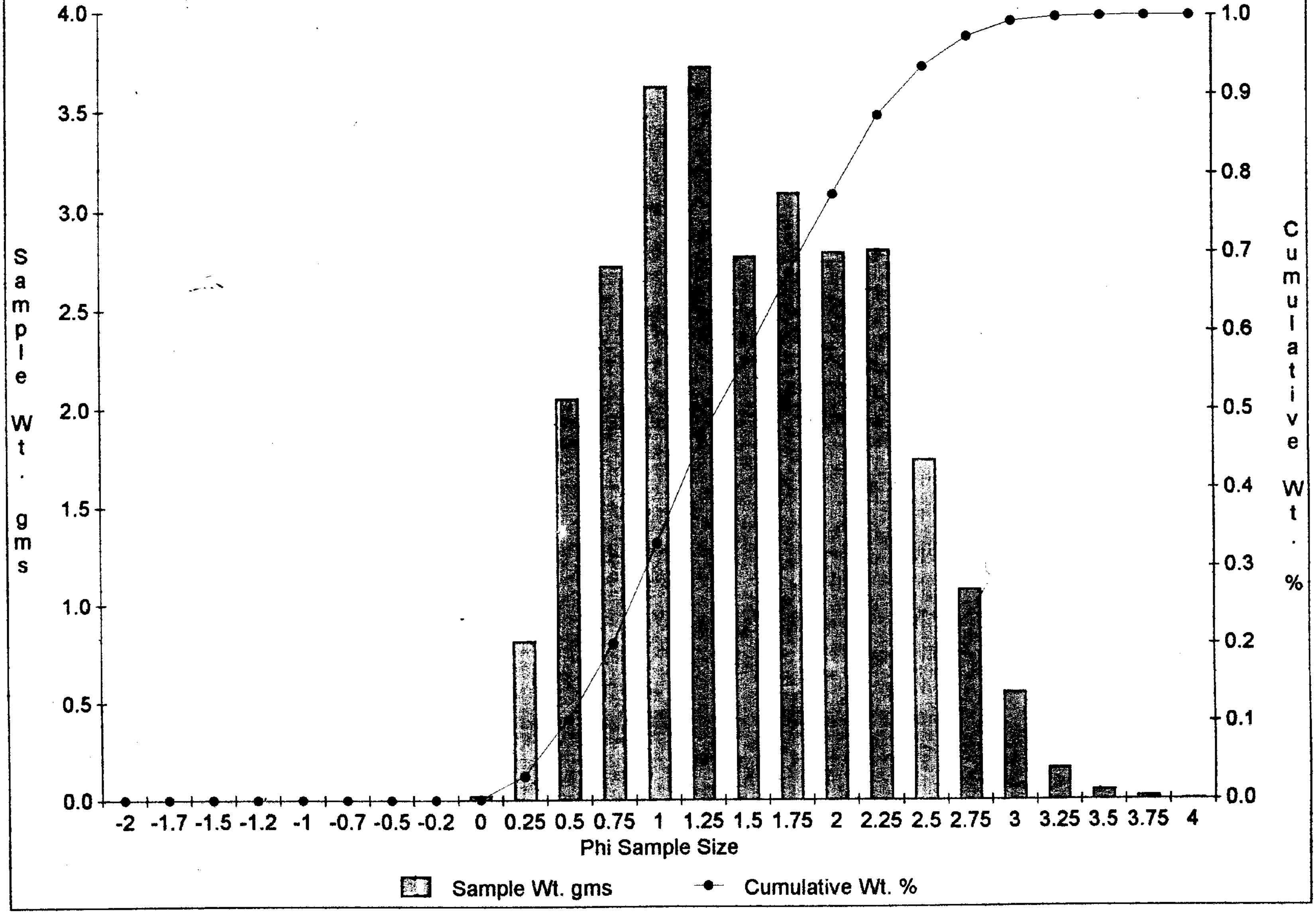
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0.0061	0	0.0061	0.0061	0	0
-0.75	0.4401	0	0.4401	0.4462	0	0
-0.5	1.5793	0	1.5793	2.0255	0	0
-0.25	2.7783	0	2.7783	4.8038	0	0
0	3.8564	0.0207	3.8357	8.6602	0.000738877	0.000738877
0.25	4.6846	0.8107	3.8739	13.3448	0.028937552	0.029676429
0.5	4.7612	2.0482	2.713	18.106	0.073109529	0.102785958
0.75	3.0394	2.7196	0.3198	21.1454	0.097074834	0.199860791
1	5.1811	3.6278	1.5533	26.3265	0.129492602	0.329353394
1.25	4.7361	3.7301	1.006	31.0626	0.133144152	0.462497546
1.5	4.4241	2.7723	1.6518	35.4867	0.098955935	0.561453481
1.75	3.8514	3.0911	0.7603	39.3381	0.11033535	0.671788831
2	3.9587	2.7905	1.1682	43.2968	0.099605575	0.771394407
2.25	6.4858	2.8051	3.6807	49.7826	0.100126716	0.871521122
2.5	1.8191	1.7403	0.0788	51.6017	0.062119184	0.933640306
2.75	2.4492	1.0781	1.3711	54.0509	0.038482269	0.972122575
3	1.4532	0.5526	0.9006	55.5041	0.019724795	0.99184737
3.25	0.4219	0.1599	0.262	55.926	0.005707555	0.997554925
3.5	0.1422	0.049	0.0932	56.0682	0.001749032	0.999303957
3.75	0.0517	0.0169	0.0348	56.1199	0.000603237	0.999907194
4	0.0259	0.0026	0.0233	56.1458	9.28058E-05	1

Total Wt.	56.1458
Digest Wt.	28.0155
Sample % Silica	49.897766

Cum Digested Wt. % SL1

2'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-2)
DEPTH (0 FEET BLS)

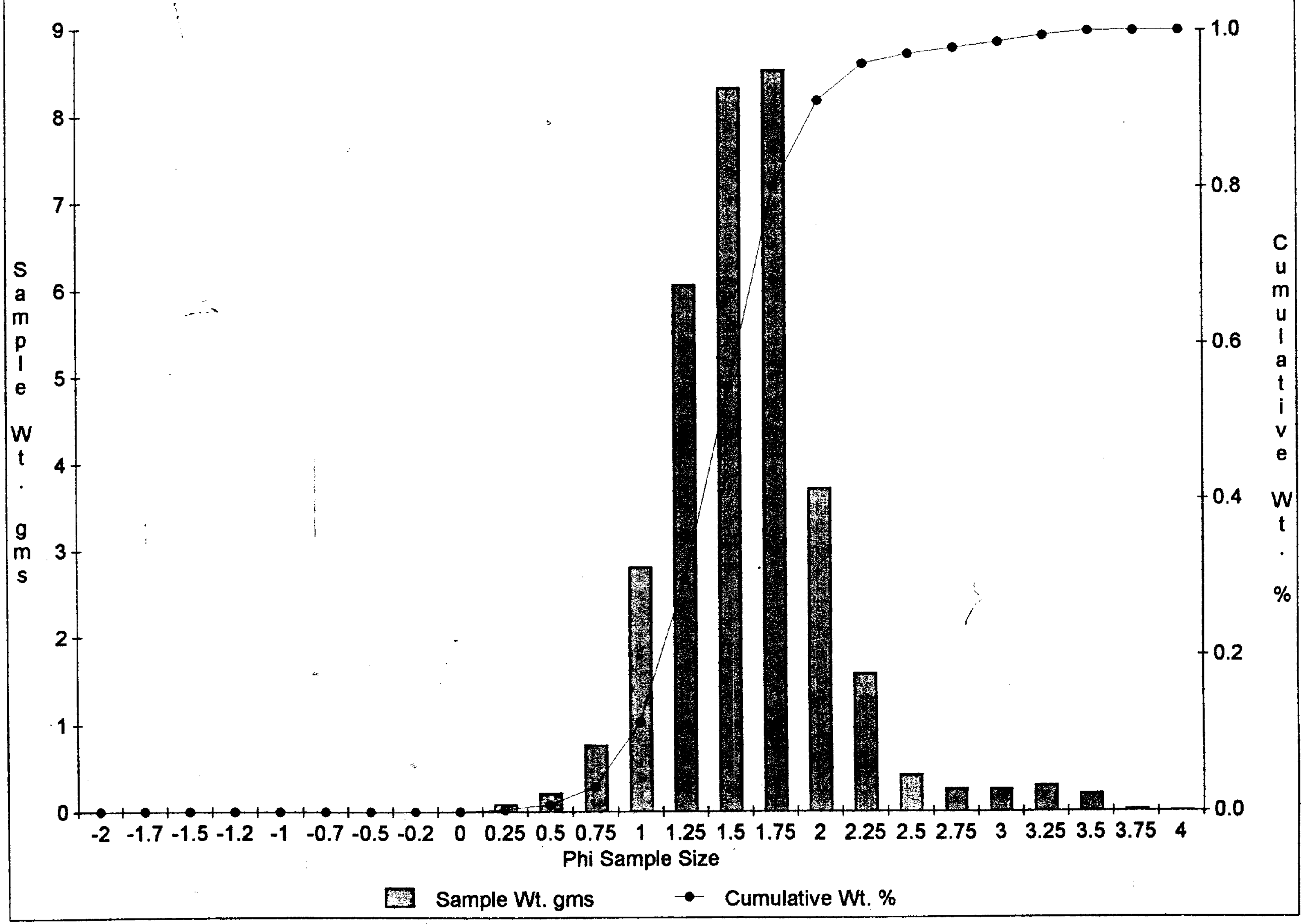
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0.0131	0	0.0131	0.0131	0	0
-0.75	0.0847	0	0.0847	0.0978	0	0
-0.5	0.1969	0	0.1969	0.2947	0	0
-0.25	0.3032	0	0.3032	0.5979	0	0
0	0.4142	0	0.4142	1.0121	0	0
0.25	0.9639	0.0811	0.8828	1.976	0.002419617	0.002419617
0.5	1.6162	0.206	1.4102	3.5922	0.006146006	0.008565624
0.75	1.5792	0.7588	0.8204	5.1714	0.022638785	0.031204408
1	5.4253	2.8028	2.6225	10.5967	0.08362149	0.114825898
1.25	8.8685	6.065	2.8035	19.4652	0.18094917	0.295775068
1.5	12.2721	8.3332	3.9389	31.7373	0.248620878	0.544395946
1.75	11.3224	8.5366	2.7858	43.0597	0.254689313	0.799085259
2	5.6208	3.7123	1.9085	48.6805	0.110756406	0.909841666
2.25	2.2808	1.5843	0.6965	50.9613	0.047267563	0.957109229
2.5	0.4871	0.4143	0.0728	51.4484	0.012360633	0.969469862
2.75	0.3581	0.254	0.1041	51.8065	0.007578086	0.977047948
3	0.2534	0.2534	0	52.0599	0.007560185	0.984608132
3.25	0.5091	0.2898	0.2193	52.569	0.008646178	0.99325431
3.5	0.2248	0.2003	0.0245	52.7938	0.005975947	0.999230257
3.75	0.0868	0.0207	0.0661	52.8806	0.000617584	0.999847842
4	0.0231	0.0051	0.018	52.9037	0.000152158	1

Total Wt. 52.9037
Digest Wt. 33.5177

Sample % Silica 63.35606

Cum Digested Wt. % SL2

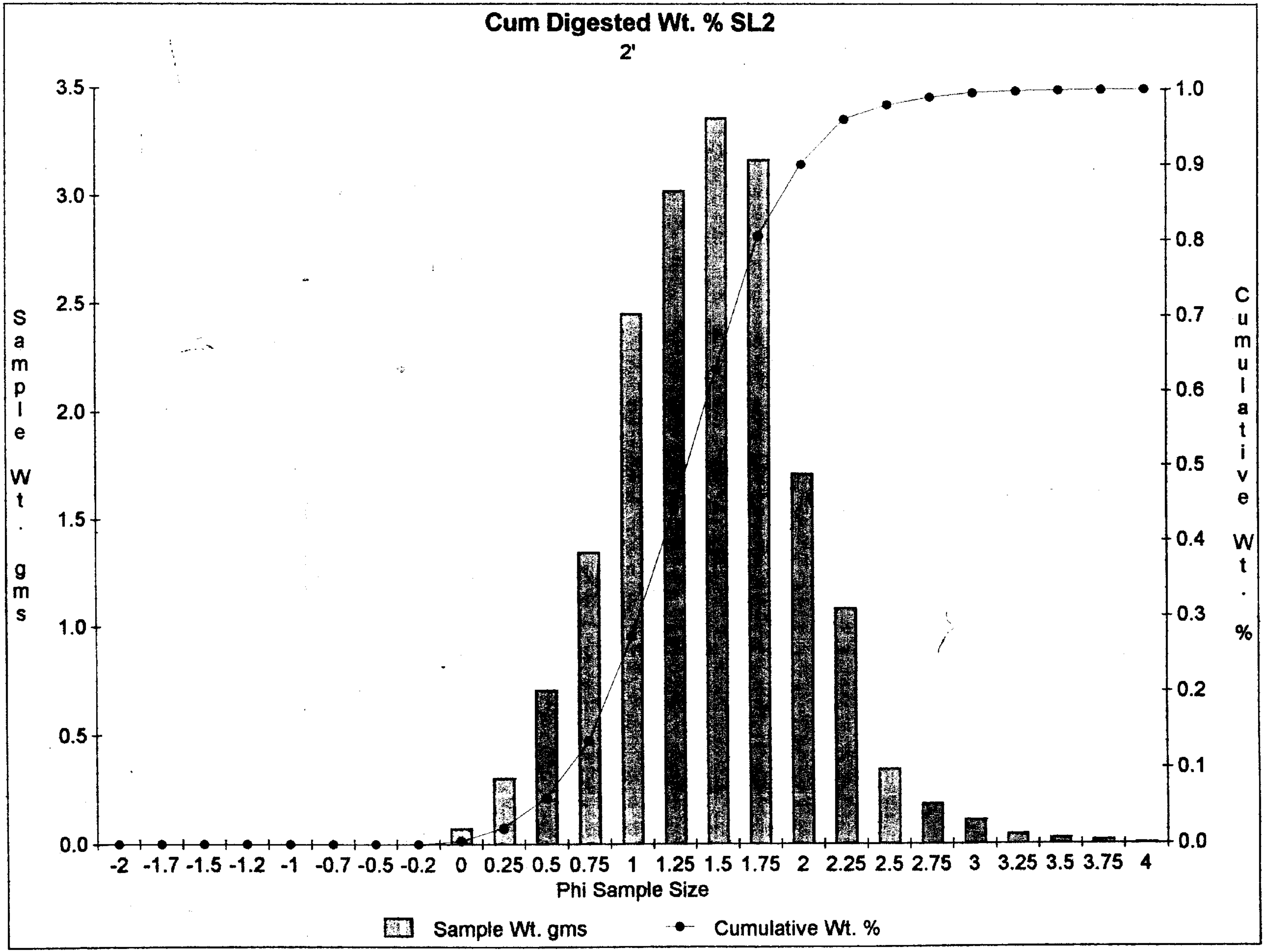
0'



GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-2)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0.3011	0	0.3011	0.3011	0	0
-1.75	0	0	0	0.3011	0	0
-1.5	0.032	0	0.032	0.3331	0	0
-1.25	0.0881	0	0.0881	0.4212	0	0
-1	0.113	0	0.113	0.5342	0	0
-0.75	0.3191	0	0.3191	0.8533	0	0
-0.5	0.5746	0	0.5746	1.4279	0	0
-0.25	1.1727	0	1.1727	2.6006	0	0
0	2.063	0.071	1.992	4.6636	0.003958276	0.003958276
0.25	3.6793	0.3021	3.3772	8.3429	0.016842187	0.020800464
0.5	5.0755	0.7034	4.3721	13.4184	0.039214812	0.060015276
0.75	4.2963	1.3411	2.9552	17.7147	0.074766824	0.1347821
1	6.2501	2.4523	3.7978	23.9648	0.136716638	0.271498737
1.25	6.2728	3.0235	3.2493	30.2376	0.16856125	0.440059987
1.5	5.9294	3.3622	2.5672	36.167	0.187443901	0.627503889
1.75	5.0336	3.1688	1.8648	41.2006	0.176661779	0.804165668
2	2.6634	1.7053	0.9581	43.864	0.09507111	0.899236777
2.25	1.9058	1.0805	0.8253	45.7698	0.060238277	0.959475054
2.5	1.4059	0.3413	1.0646	47.1757	0.019027602	0.978502657
2.75	0.321	0.182	0.139	47.4967	0.010146568	0.988649224
3	0.1528	0.1099	0.0429	47.6495	0.006126966	0.99477619
3.25	0.0569	0.0434	0.0135	47.7064	0.002419566	0.997195756
3.5	0.0296	0.027	0.0026	47.736	0.00150526	0.998701016
3.75	0.0193	0.0186	0.0007	47.7553	0.001036957	0.999737973
4	0.012	0.0047	0.0073	47.7673	0.000262027	1

Total Wt.	47.7673
Digest Wt.	17.9371
Sample % Silica	37.551002



Cum Digested Wt. % SL2

2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-3)
DEPTH (0 FEET BLS)

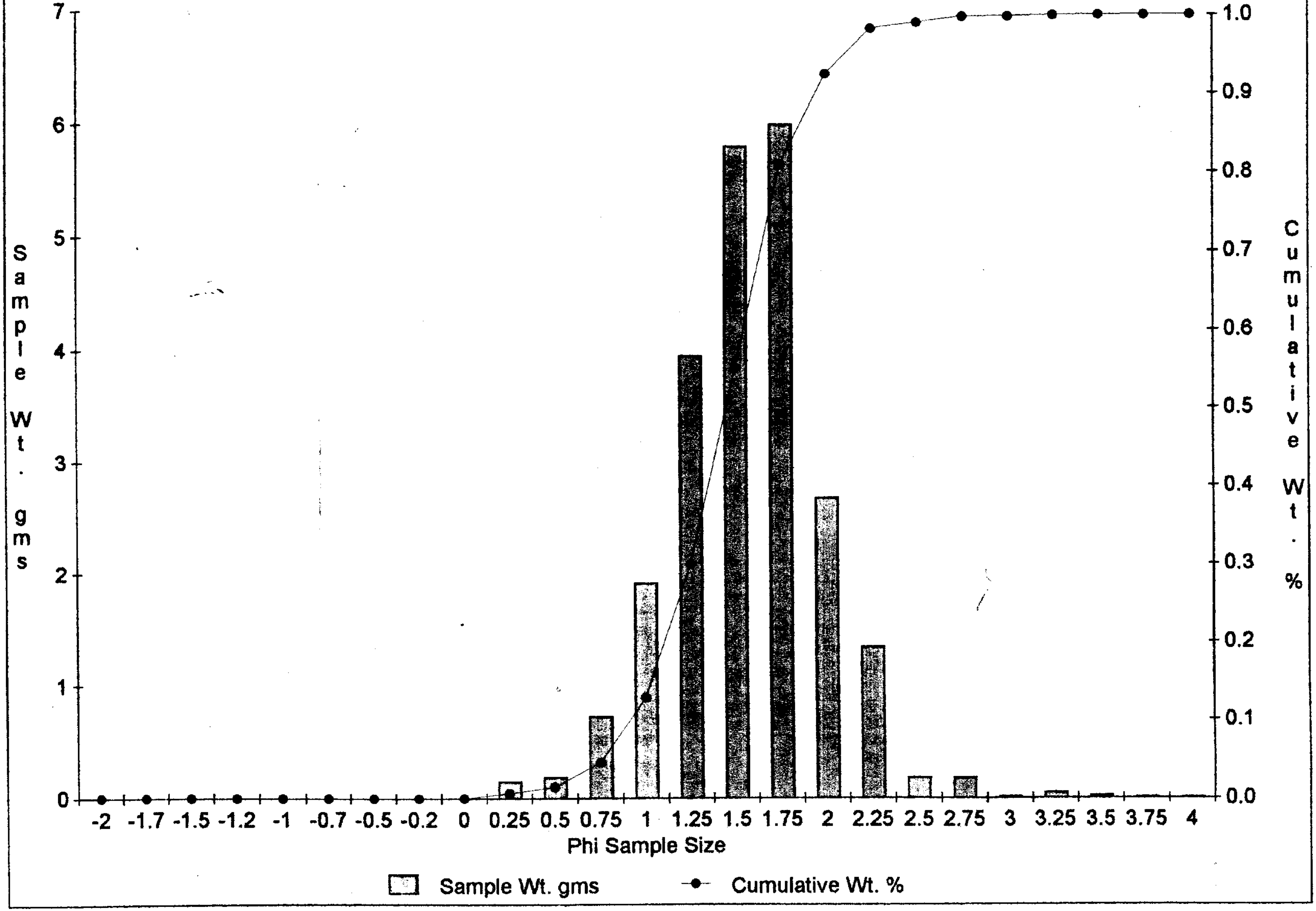
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0.0197	0	0.0197	0.0197	0	0
-1	0.0742	0	0.0742	0.0939	0	0
-0.75	0.1001	0	0.1001	0.194	0	0
-0.5	0.2105	0	0.2105	0.4045	0	0
-0.25	0.2819	0	0.2819	0.6864	0	0
0	0.4962	0	0.4962	1.1826	0	0
0.25	0.813	0.148	0.665	1.9956	0.006373871	0.006373871
0.5	1.4027	0.1802	1.2225	3.3983	0.007760618	0.014134489
0.75	2.6054	0.7247	1.8807	6.0037	0.031210432	0.045344921
1	4.3279	1.9175	2.4104	10.3316	0.082580384	0.127925305
1.25	5.6038	3.9506	1.6532	15.9354	0.170139278	0.298064583
1.5	7.2126	5.8094	1.4032	23.148	0.250191647	0.54825623
1.75	7.2601	6.0067	1.2534	30.4081	0.258688705	0.806944935
2	3.7542	2.6837	1.0705	34.1623	0.115578084	0.922523019
2.25	1.978	1.3457	0.6323	36.1403	0.057954849	0.980477868
2.5	0.1793	0.1793	0	36.3196	0.007721858	0.988199726
2.75	0.2006	0.1781	0.0225	36.5202	0.007670178	0.995869904
3	0.0126	0.0126	0	36.5328	0.00054264	0.996412544
3.25	0.048	0.048	0	36.5808	0.002067201	0.998479746
3.5	0.0196	0.0196	0	36.6004	0.000844107	0.999323853
3.75	0.0096	0.0096	0	36.61	0.00041344	0.999737293
4	0.0061	0.0061	0	36.6161	0.000262707	1

Total Wt.	36.6161
Digest Wt.	23.2198

Sample % Silica	63.414181

Cum Digested Wt. % SL3

0'

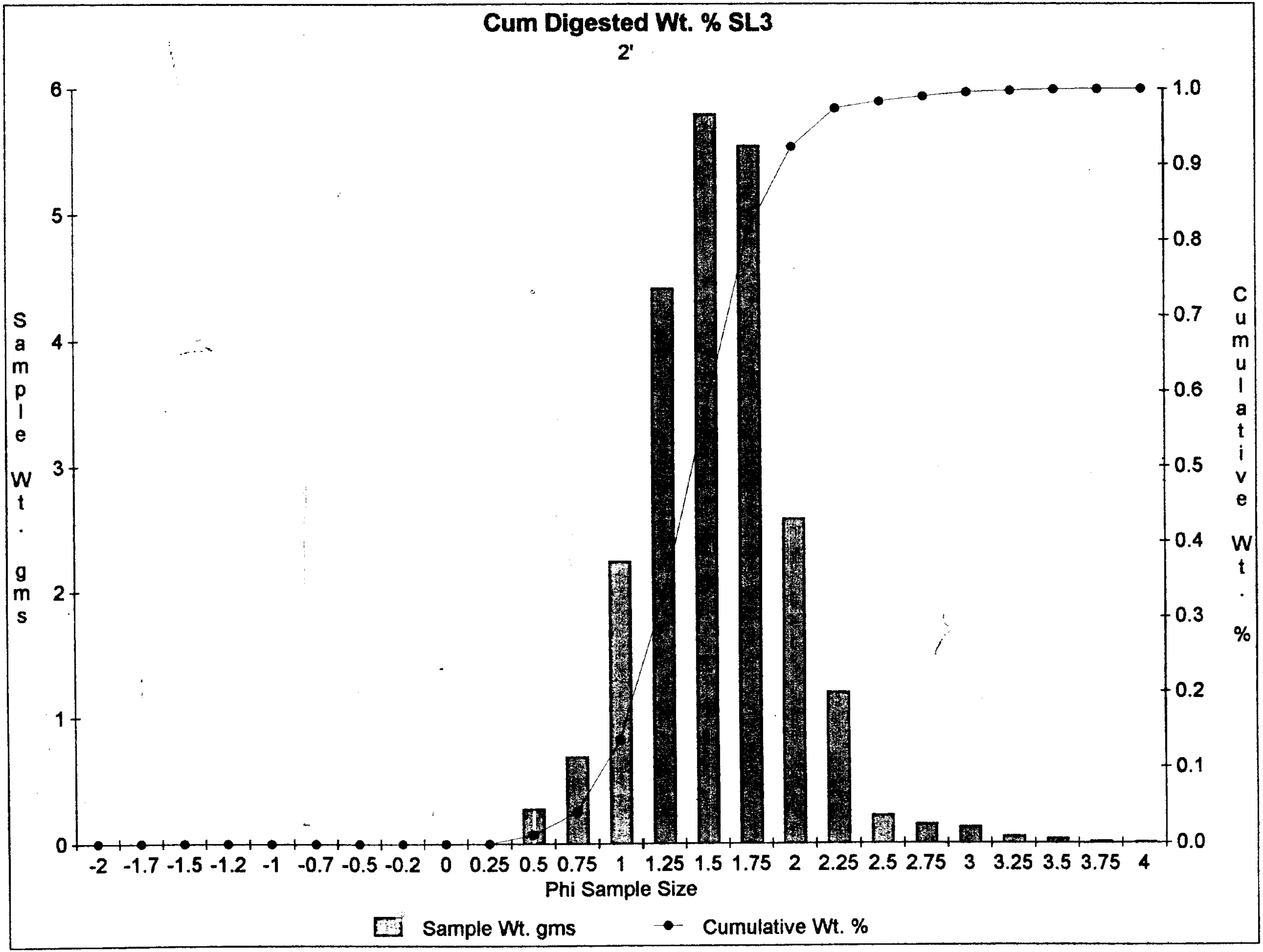


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-3)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.082	0	0.082	0.082	0	0
-0.5	0.3707	0	0.3707	0.4527	0	0
-0.25	0.4604	0	0.4604	0.9131	0	0
0	0.618	0	0.618	1.5311	0	0
0.25	1.2832	0	1.2832	2.8143	0	0
0.5	2.1604	0.2698	1.8906	4.9747	0.011566939	0.011566939
0.75	2.3706	0.6867	1.6839	7.3453	0.029440388	0.041007327
1	5.2925	2.2425	3.05	12.6378	0.096141067	0.137148394
1.25	7.7624	4.4098	3.3526	20.4002	0.189058139	0.326206533
1.5	9.628	5.7992	3.8288	30.0282	0.248624872	0.574831405
1.75	8.4019	5.5478	2.8541	38.4301	0.237846783	0.812678188
2	4.3539	2.5816	1.7723	42.784	0.110679054	0.923357242
2.25	1.9485	1.195	0.7535	44.7325	0.051232863	0.974589605
2.5	0.2164	0.2164	0	44.9489	0.009277559	0.983867165
2.75	0.2006	0.1497	0.0509	45.1495	0.006417979	0.990285143
3	0.1374	0.125	0.0124	45.2869	0.005359034	0.995644177
3.25	0.0518	0.0518	0	45.3387	0.002220784	0.997864961
3.5	0.0325	0.0325	0	45.3712	0.001393349	0.99925831
3.75	0.0142	0.0101	0.0041	45.3854	0.00043301	0.99969132
4	0.0115	0.0072	0.0043	45.3969	0.00030868	1

Total Wt.	45.3969
Digest Wt.	23.3251

Sample % Silica 51.380381


Cum Digested Wt. % SL3
2'
Sample Wt. gms
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-4)
DEPTH (0 FEET BLS)

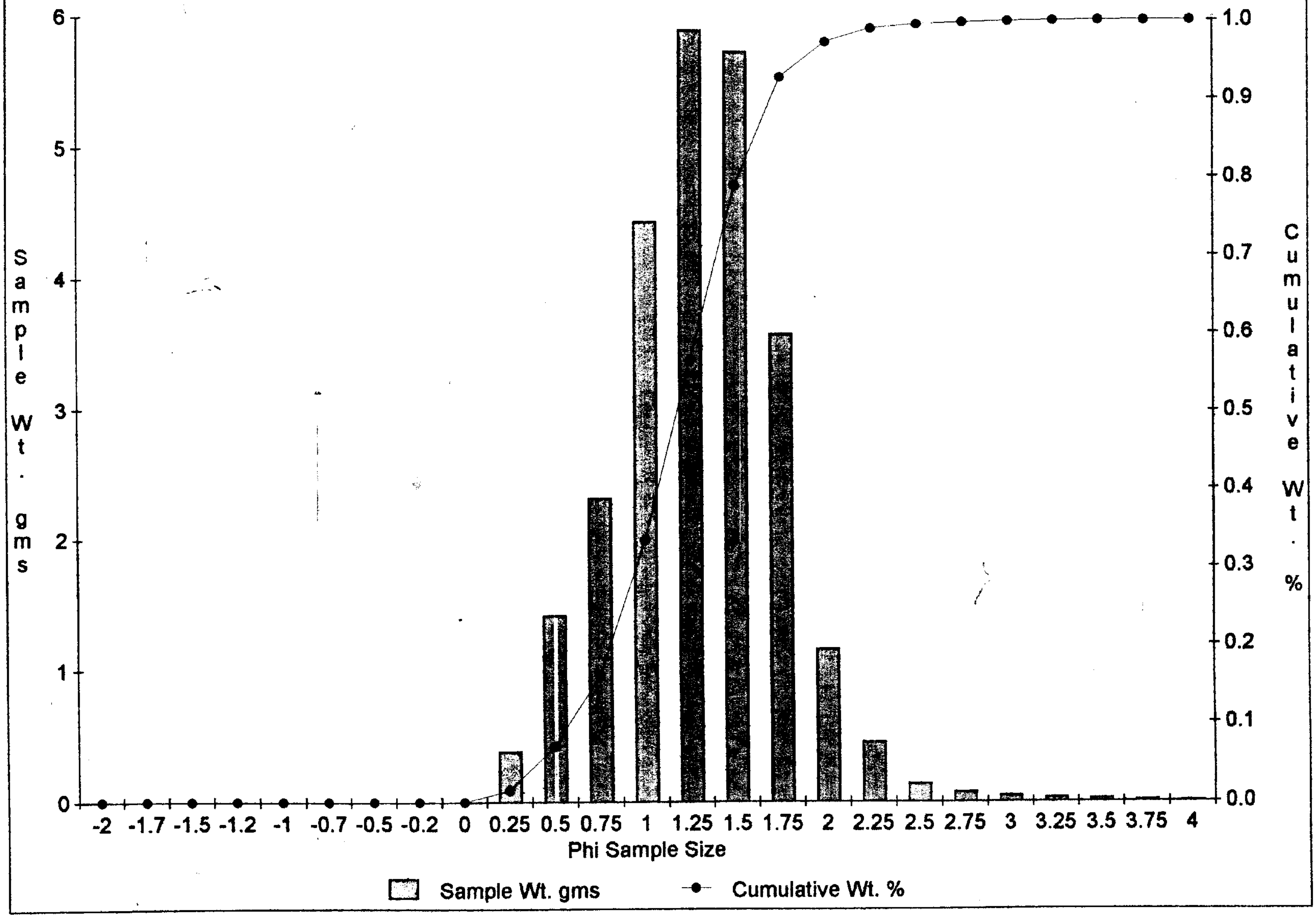
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0.0062	0	0.0062	0.0062	0	0
-1.75	0	0	0	0.0062	0	0
-1.5	0.006	0	0.006	0.0122	0	0
-1.25	0.0407	0	0.0407	0.0529	0	0
-1	0.3107	0	0.3107	0.3636	0	0
-0.75	0.6464	0	0.6464	1.01	0	0
-0.5	1.2303	0	1.2303	2.2403	0	0
-0.25	2.2789	0	2.2789	4.5192	0	0
0	5.2867	0	5.2867	9.8059	0	0
0.25	6.76	0.3804	6.3796	16.5659	0.014798217	0.014798217
0.5	7.706	1.4151	6.2909	24.2719	0.055049833	0.06984805
0.75	5.8293	2.316	3.5133	30.1012	0.090096398	0.159944448
1	10.8771	4.4384	6.4387	40.9783	0.172661423	0.332605871
1.25	10.3497	5.9071	4.4426	51.328	0.229796388	0.562402259
1.5	9.0822	5.7429	3.3393	60.4102	0.223408725	0.785810984
1.75	4.9697	3.5795	1.3902	65.3799	0.13924873	0.925059714
2	1.5286	1.1601	0.3685	66.9085	0.045129893	0.970189607
2.25	0.5682	0.4488	0.1194	67.4767	0.017459095	0.987648702
2.5	0.1408	0.1334	0.0074	67.6175	0.00518949	0.992838192
2.75	0.0727	0.0727	0	67.6902	0.002828156	0.995666348
3	0.0441	0.0441	0	67.7343	0.001715566	0.997381914
3.25	0.0298	0.0298	0	67.7641	0.001159271	0.998541185
3.5	0.021	0.021	0	67.7851	0.000816936	0.999358122
3.75	0.0104	0.0104	0	67.7955	0.000404578	0.999762699
4	0.0061	0.0061	0	67.8016	0.000237301	1

Total Wt.	67.8016
Digest Wt.	25.7058

Sample % Silica	37.913265

Cum Digested Wt. % SL4

0'

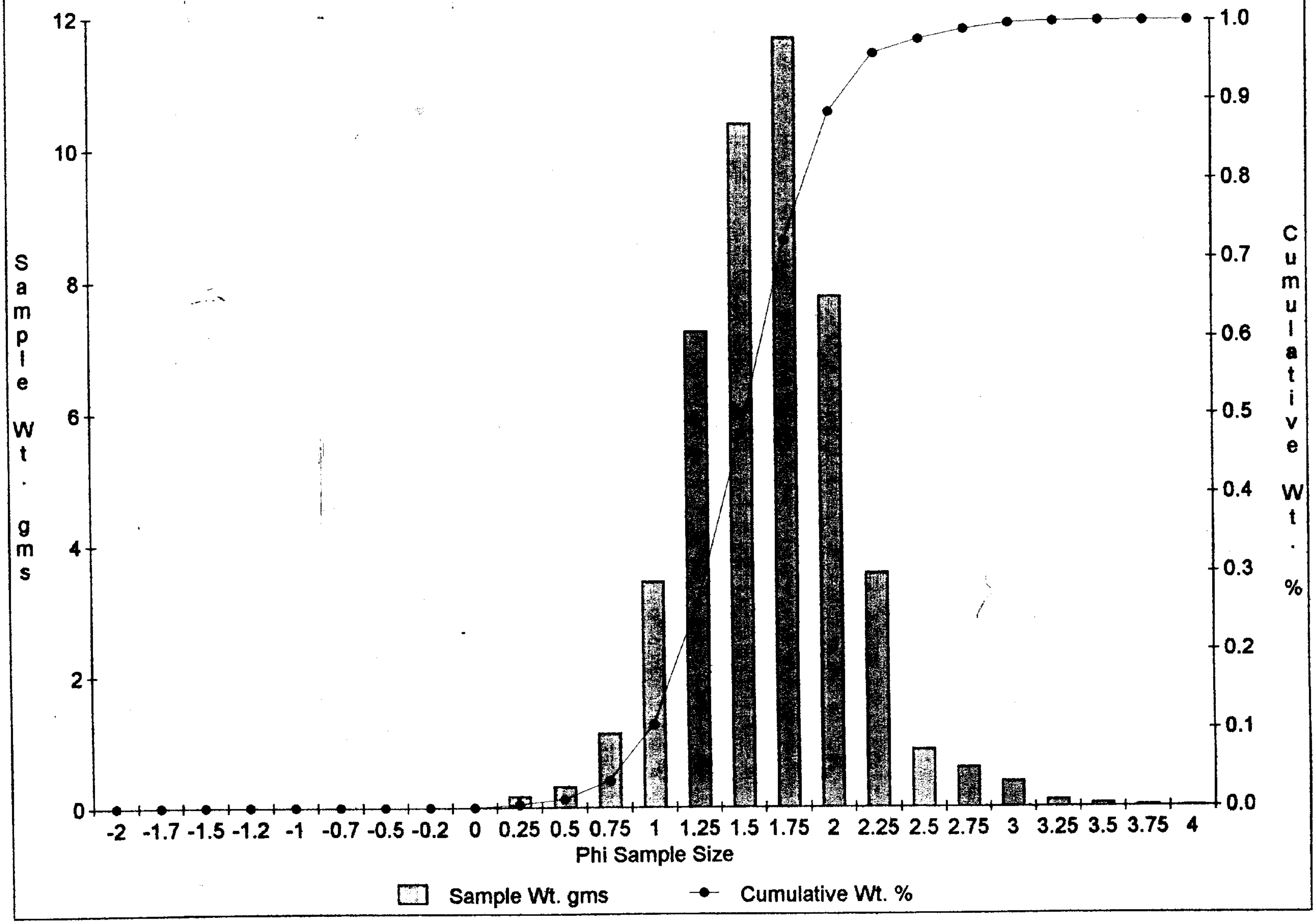


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (SL-4)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.7014	0	0.7014	0.7014	0	0
0	1.1102	0	1.1102	1.8116	0	0
0.25	2.8269	0.1684	2.6585	4.6385	0.003518802	0.003518802
0.5	3.4584	0.3128	3.1456	8.0969	0.006536112	0.010054913
0.75	5.4335	1.1269	4.3066	13.5304	0.023547136	0.033602049
1	9.2854	3.4391	5.8463	22.8158	0.071861705	0.105463755
1.25	11.3723	7.2611	4.1112	34.1881	0.151724296	0.257188051
1.5	15.4662	10.4048	5.0614	49.6543	0.217413472	0.474601523
1.75	17.4389	11.7207	5.7182	67.0932	0.244909857	0.71951138
2	11.5902	7.7916	3.7986	78.6834	0.162809358	0.882320738
2.25	6.5628	3.5751	2.9877	85.2462	0.074703493	0.95702423
2.5	1.4142	0.8776	0.5366	86.6604	0.018337889	0.975362119
2.75	0.7665	0.6047	0.1618	87.4269	0.012635507	0.987997626
3	0.4104	0.3886	0.0218	87.8373	0.00811999	0.996117617
3.25	0.1066	0.1066	0	87.9439	0.00222746	0.998345077
3.5	0.0531	0.0531	0	87.997	0.001109551	0.999454628
3.75	0.0186	0.0186	0	88.0156	0.000388656	0.999843284
4	0.0098	0.0075	0.0023	88.0254	0.000156716	1

Total Wt.	88.0254
Digest Wt.	47.8572

Sample % Silica 54.367489



Cum Digested Wt. % SL4

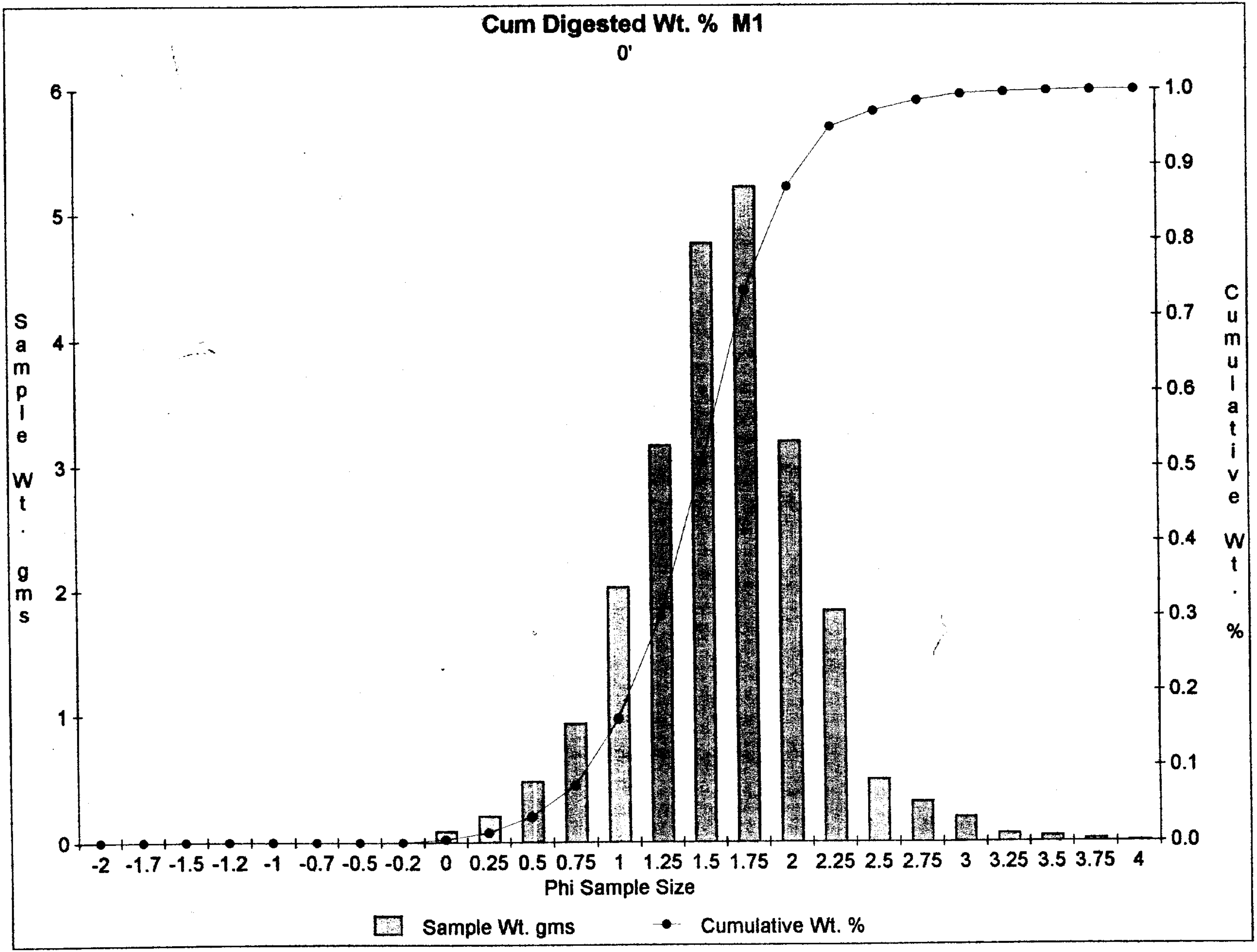
2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-1)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0.0307	0	0.0307	0.0307	0	0
-1.25	0.1549	0	0.1549	0.1856	0	0
-1	0.4554	0	0.4554	0.641	0	0
-0.75	0.6886	0	0.6886	1.3296	0	0
-0.5	1.0818	0	1.0818	2.4114	0	0
-0.25	1.9997	0	1.9997	4.4111	0	0
0	2.5655	0.0867	2.4788	6.9766	0.003758502	0.003758502
0.25	3.8464	0.2077	3.6387	10.823	0.009003932	0.012762434
0.5	3.8303	0.4802	3.3501	14.6533	0.020816987	0.033579421
0.75	2.3044	0.9344	1.37	16.9577	0.040506856	0.074086276
1	6.3895	2.0267	4.3628	23.3472	0.087858781	0.161945057
1.25	6.3984	3.1613	3.2371	29.7456	0.137044439	0.298989496
1.5	8.1464	4.7688	3.3776	37.892	0.206730623	0.505720119
1.75	8.2051	5.2197	2.9854	46.0971	0.226277436	0.731997555
2	5.1906	3.1959	1.9947	51.2877	0.138544372	0.870541927
2.25	3.0982	1.8388	1.2594	54.3859	0.079713192	0.950255119
2.5	1.2815	0.4928	0.7887	55.6674	0.021363205	0.971618323
2.75	0.5061	0.3183	0.1878	56.1735	0.013798515	0.985416838
3	0.2658	0.1956	0.0702	56.4393	0.008479389	0.993896227
3.25	0.0771	0.0658	0.0113	56.5164	0.002852473	0.996748701
3.5	0.0716	0.0448	0.0268	56.588	0.00194211	0.99869081
3.75	0.0286	0.0215	0.0071	56.6166	0.000932039	0.999622849
4	0.021	0.0087	0.0123	56.6376	0.000377151	1

Total Wt. 56.6376
Digest Wt. 23.0677

Sample % Silica 40.728597



Cum Digested Wt. % M1

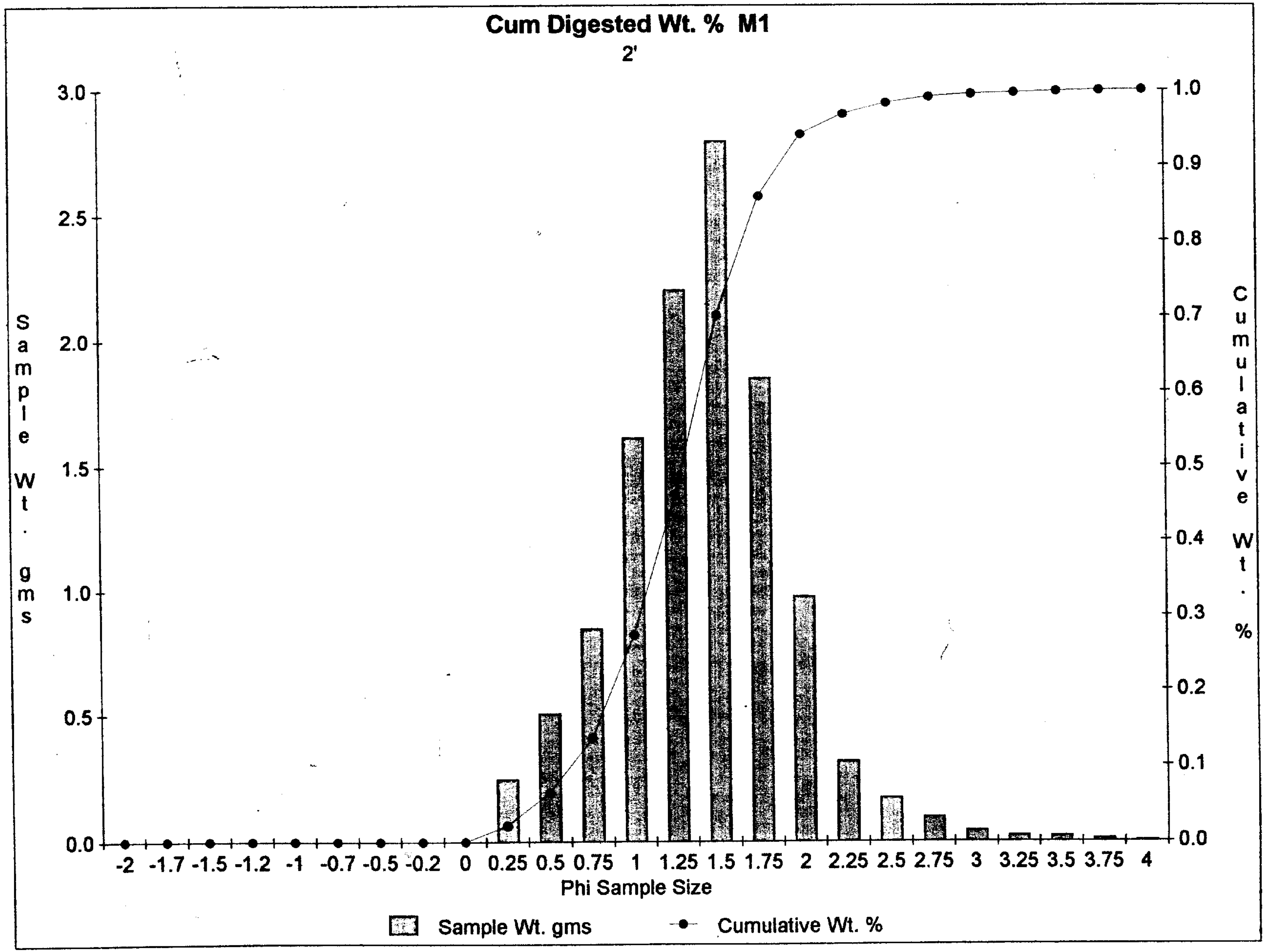
0'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0.2451	0	0.2451	0.2451	0	0
-1.5	0.4608	0	0.4608	0.7059	0	0
-1.25	0.7179	0	0.7179	1.4238	0	0
-1	1.2661	0	1.2661	2.6899	0	0
-0.75	1.0092	0	1.0092	3.6991	0	0
-0.5	1.2218	0	1.2218	4.9209	0	0
-0.25	2.2391	0	2.2391	7.16	0	0
0	2.8857	0	2.8857	10.0457	0	0
0.25	3.86	0.2453	3.6147	13.9057	0.020937359	0.020937359
0.5	3.4949	0.5074	2.9875	17.4006	0.043308666	0.064246025
0.75	4.3036	0.8465	3.4571	21.7042	0.072252238	0.136498263
1	4.6112	1.6103	3.0009	26.3154	0.137445693	0.273943957
1.25	4.8269	2.2014	2.6255	31.1423	0.187898497	0.461842453
1.5	4.0253	2.797	1.2283	35.1676	0.238735394	0.700577847
1.75	1.8508	1.8508	0	37.0184	0.157973352	0.8585512
2	0.9742	0.9742	0	37.9926	0.083151956	0.941703156
2.25	0.3159	0.3159	0	38.3085	0.026963357	0.968666513
2.5	0.1712	0.1712	0	38.4797	0.01461262	0.983279133
2.75	0.096	0.096	0	38.5757	0.008193993	0.991473126
3	0.0424	0.0424	0	38.6181	0.003619013	0.99509214
3.25	0.0219	0.0219	0	38.64	0.001869255	0.996961394
3.5	0.0208	0.0208	0	38.6608	0.001775365	0.998736759
3.75	0.0153	0.0107	0.0046	38.6761	0.000913289	0.999650048
4	0.0094	0.0041	0.0053	38.6855	0.000349952	1

Total Wt.	38.6855
Digest Wt.	11.7159

Sample % Silica 30.284991



Cum Digested Wt. % M1

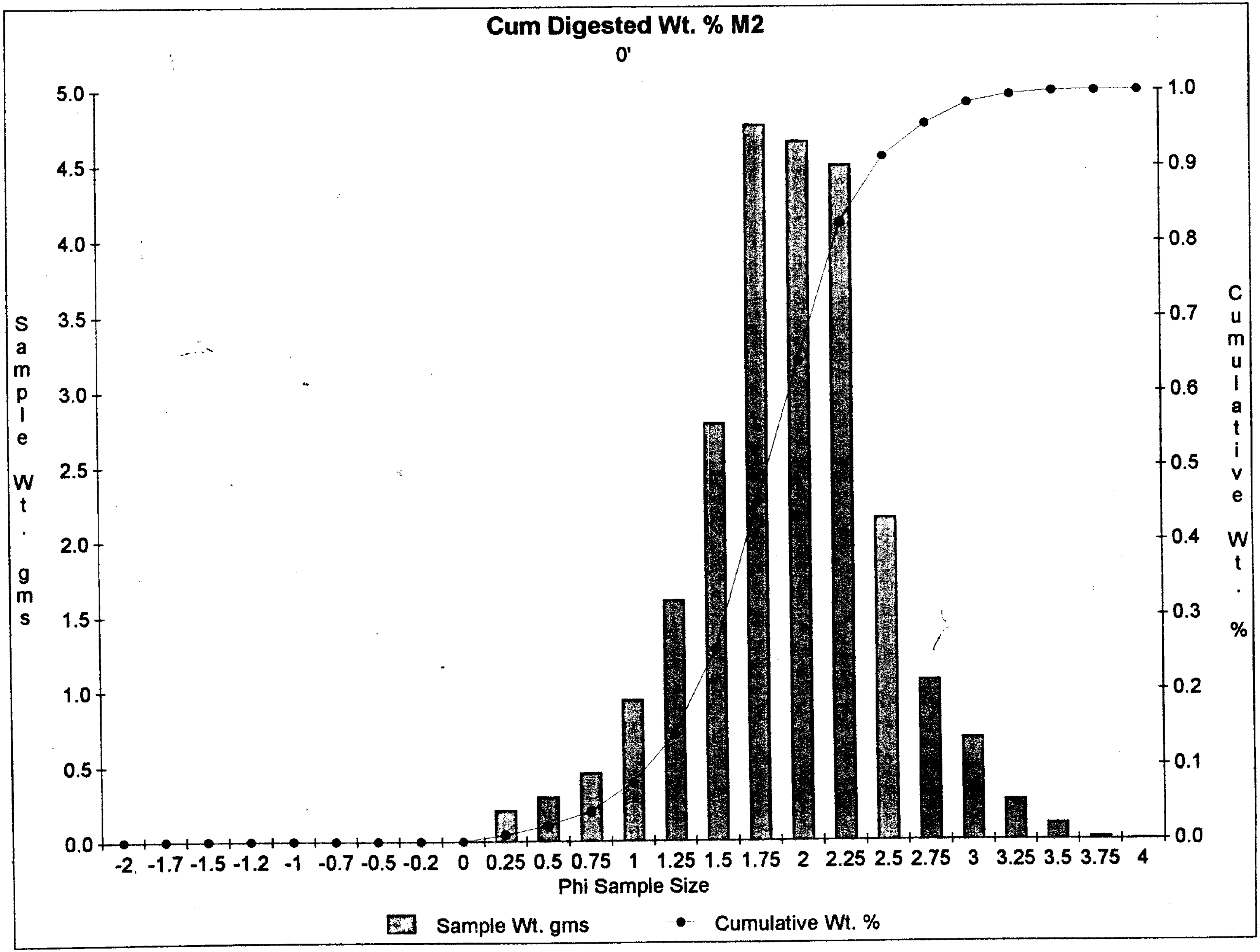
2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-2)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.1771	0	0.1771	0.1771	0	0
-0.5	0.8049	0	0.8049	0.982	0	0
-0.25	1.4302	0	1.4302	2.4122	0	0
0	2.2001	0	2.2001	4.6123	0	0
0.25	1.9159	0.205	1.7109	6.5282	0.008361511	0.008361511
0.5	1.5535	0.2914	1.2621	8.0817	0.011885582	0.020247093
0.75	2.1642	0.4519	1.7123	10.2459	0.018432033	0.038679126
1	3.2701	0.9393	2.3308	13.516	0.038312035	0.076991161
1.25	3.7431	1.6027	2.1404	17.2591	0.0653707	0.142361862
1.5	5.5243	2.7848	2.7395	22.7834	0.113586028	0.255947889
1.75	7.2718	4.7727	2.4991	30.0552	0.194668211	0.450616101
2	6.6907	4.6644	2.0263	36.7459	0.190250886	0.640866987
2.25	6.6461	4.5027	2.1434	43.392	0.183655489	0.824522476
2.5	3.3501	2.1538	1.1963	46.7421	0.087848889	0.912371365
2.75	1.6057	1.0701	0.5356	48.3478	0.043647087	0.956018452
3	0.8317	0.686	0.1457	49.1795	0.027980471	0.983998923
3.25	0.2734	0.2644	0.009	49.4529	0.01078431	0.994783233
3.5	0.1093	0.1093	0	49.5622	0.004458113	0.999241346
3.75	0.0147	0.0147	0	49.5769	0.000599582	0.999840927
4	0.0086	0.0039	0.0047	49.5855	0.000159073	1

Total Wt.	49.5855
Digest Wt.	24.5171

Sample % Silica	49.444092



Cum Digested Wt. % M2

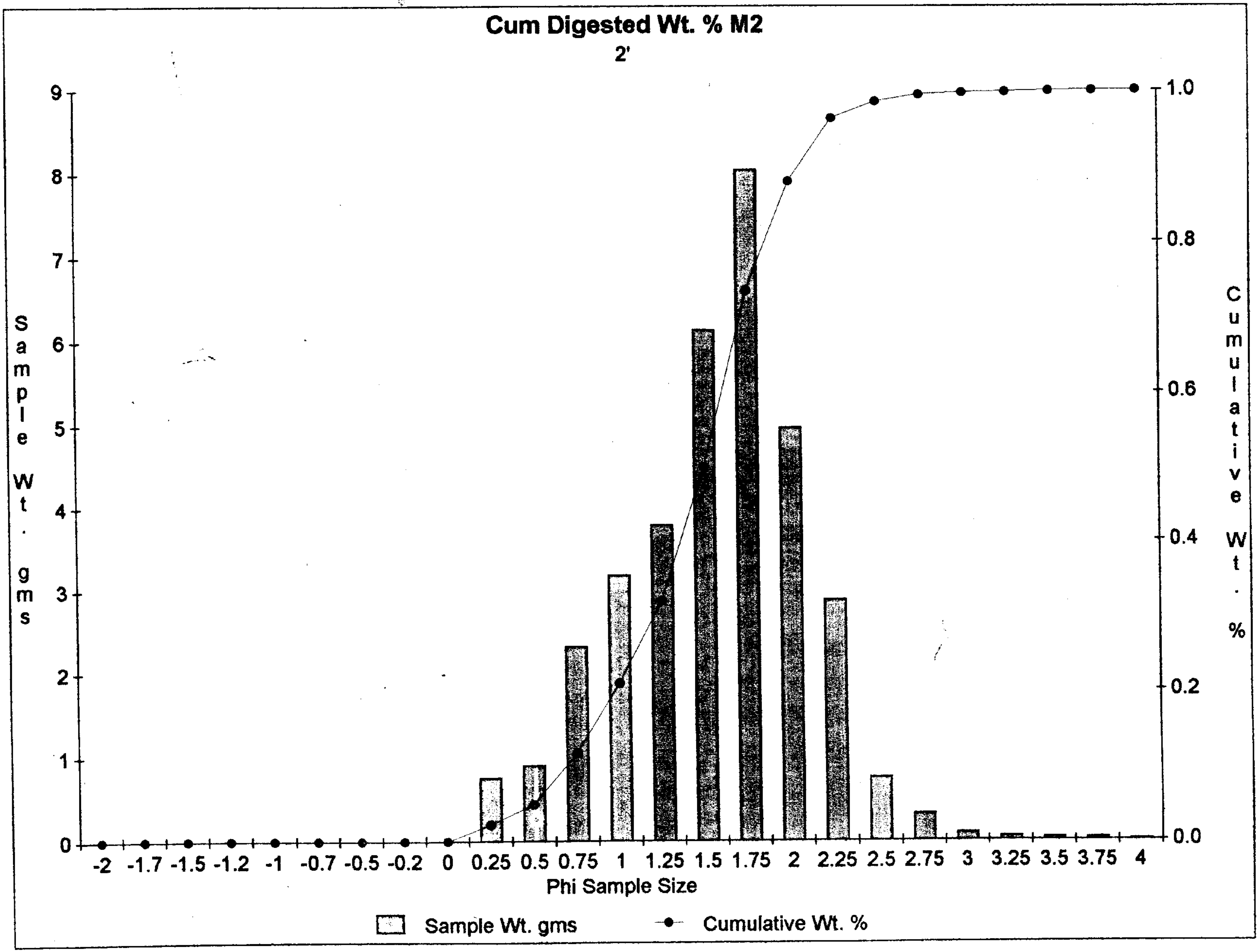
0'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-2)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0	0	0	0	0	0
0.25	0.7617	0.753	0.0087	0.7617	0.021991309	0.021991309
0.5	0.9045	0.9045	0	1.6662	0.026415855	0.048407163
0.75	2.3254	2.3254	0	3.9916	0.067913133	0.116320296
1	3.1854	3.1854	0	7.177	0.093029368	0.209349665
1.25	3.7805	3.7805	0	10.9575	0.110409219	0.319758884
1.5	6.1335	6.1335	0	17.091	0.179128408	0.498887292
1.75	10.7703	8.0421	2.7282	27.8613	0.234868928	0.733756221
2	11.4761	4.9595	6.5166	39.3374	0.144841826	0.878598047
2.25	11.2249	2.8861	8.3388	50.5623	0.084288334	0.962886381
2.5	10.9961	0.7527	10.2434	61.5584	0.021982547	0.984868928
2.75	6.402	0.3169	6.0851	67.9604	0.009255041	0.994123969
3	3.7261	0.0889	3.6372	71.6865	0.002596318	0.996720287
3.25	0.9615	0.0434	0.9181	72.648	0.001267494	0.997987781
3.5	0.1037	0.0336	0.0701	72.7517	0.000981285	0.998969066
3.75	0.0901	0.0267	0.0634	72.8418	0.000779772	0.999748838
4	0.0204	0.0086	0.0118	72.8622	0.000251162	1

Total Wt. 72.8622
Digest Wt. 34.2408

Sample % Silica 46.993915



Cum Digested Wt. % M2

2'

GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-2)
DEPTH (2.5 FEET BLS)

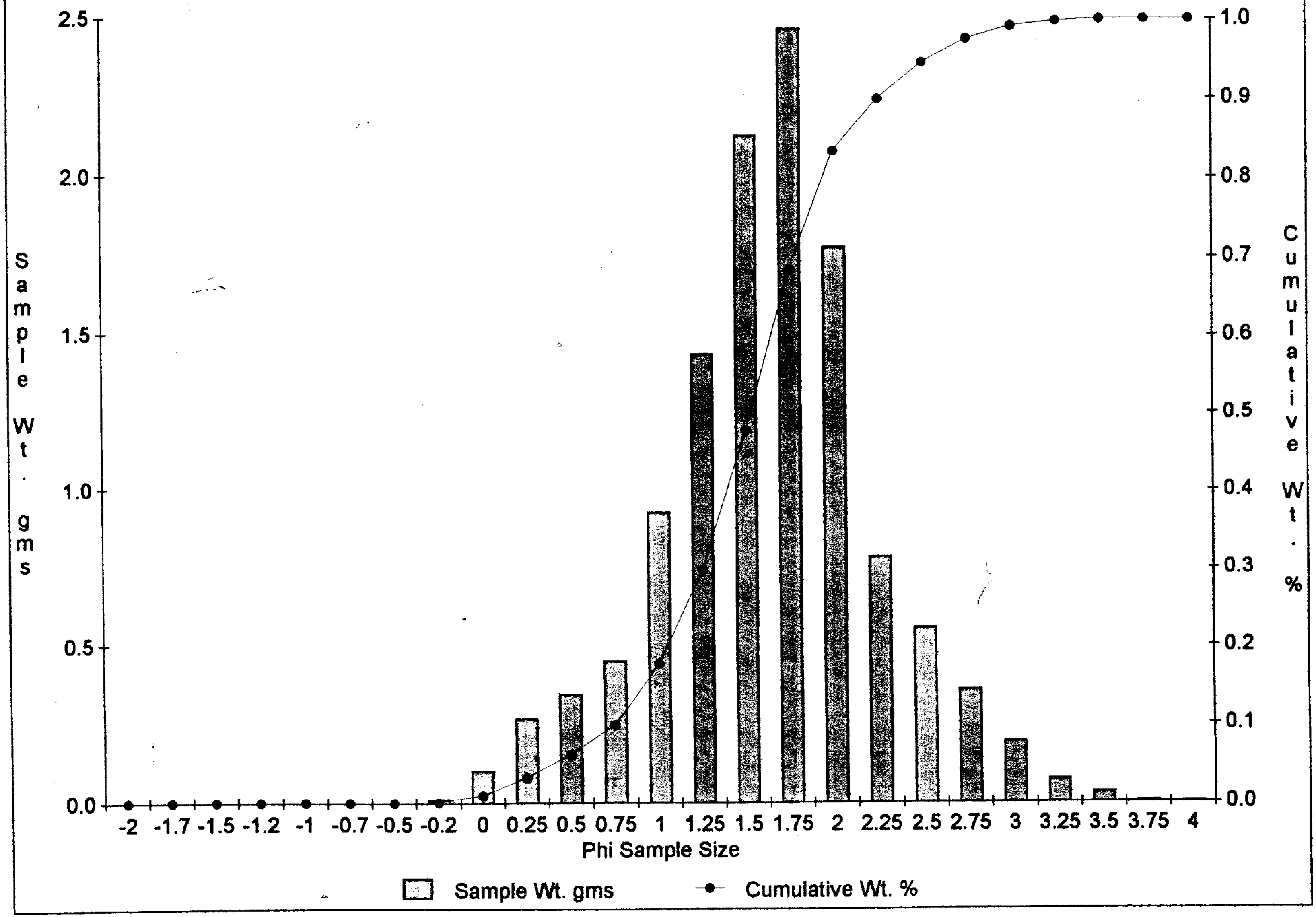
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	3.7843	0	3.7843	3.7843	0	0
-1.75	1.6401	0	1.6401	5.4244	0	0
-1.5	2.3458	0	2.3458	7.7702	0	0
-1.25	2.5332	0	2.5332	10.3034	0	0
-1	4.3067	0	4.3067	14.6101	0	0
-0.75	5.7964	0	5.7964	20.4065	0	0
-0.5	5.3355	0	5.3355	25.742	0	0
-0.25	5.7983	0.0102	5.7881	31.5403	0.000857042	0.000857042
0	5.4875	0.1001	5.3874	37.0278	0.008410775	0.009267817
0.25	8.3492	0.2664	8.0828	45.377	0.022383921	0.031651738
0.5	3.5568	0.3437	3.2131	48.9338	0.028878955	0.060530694
0.75	3.9623	0.4498	3.5125	52.8961	0.037793873	0.098324567
1	4.1002	0.9237	3.1765	56.9963	0.077612718	0.175937285
1.25	4.3552	1.4342	2.921	61.3515	0.120506831	0.296444116
1.5	4.1324	2.1275	2.0049	65.4839	0.178760482	0.475204598
1.75	2.6588	2.4663	0.1925	68.1427	0.207227721	0.682432319
2	1.9998	1.7771	0.2227	70.1425	0.149318568	0.831750886
2.25	0.7833	0.7833	0	70.9258	0.065815786	0.897566673
2.5	0.556	0.556	0	71.4818	0.046717193	0.944283866
2.75	0.3887	0.36	0.0287	71.8705	0.030248542	0.974532408
3	0.1935	0.1935	0	72.064	0.016258591	0.990790999
3.25	0.073	0.073	0	72.137	0.006133732	0.996924732
3.5	0.0495	0.0319	0.0176	72.1865	0.002680357	0.999605088
3.75	0.0111	0.0037	0.0074	72.1976	0.000310888	0.999915976
4	0.0063	0.001	0.0053	72.2039	8.40237E-05	1

Total Wt. 72.2039
Digest Wt. 11.9014

Sample % Silica 16.483043

Cum Digested Wt. % M2

2.5'

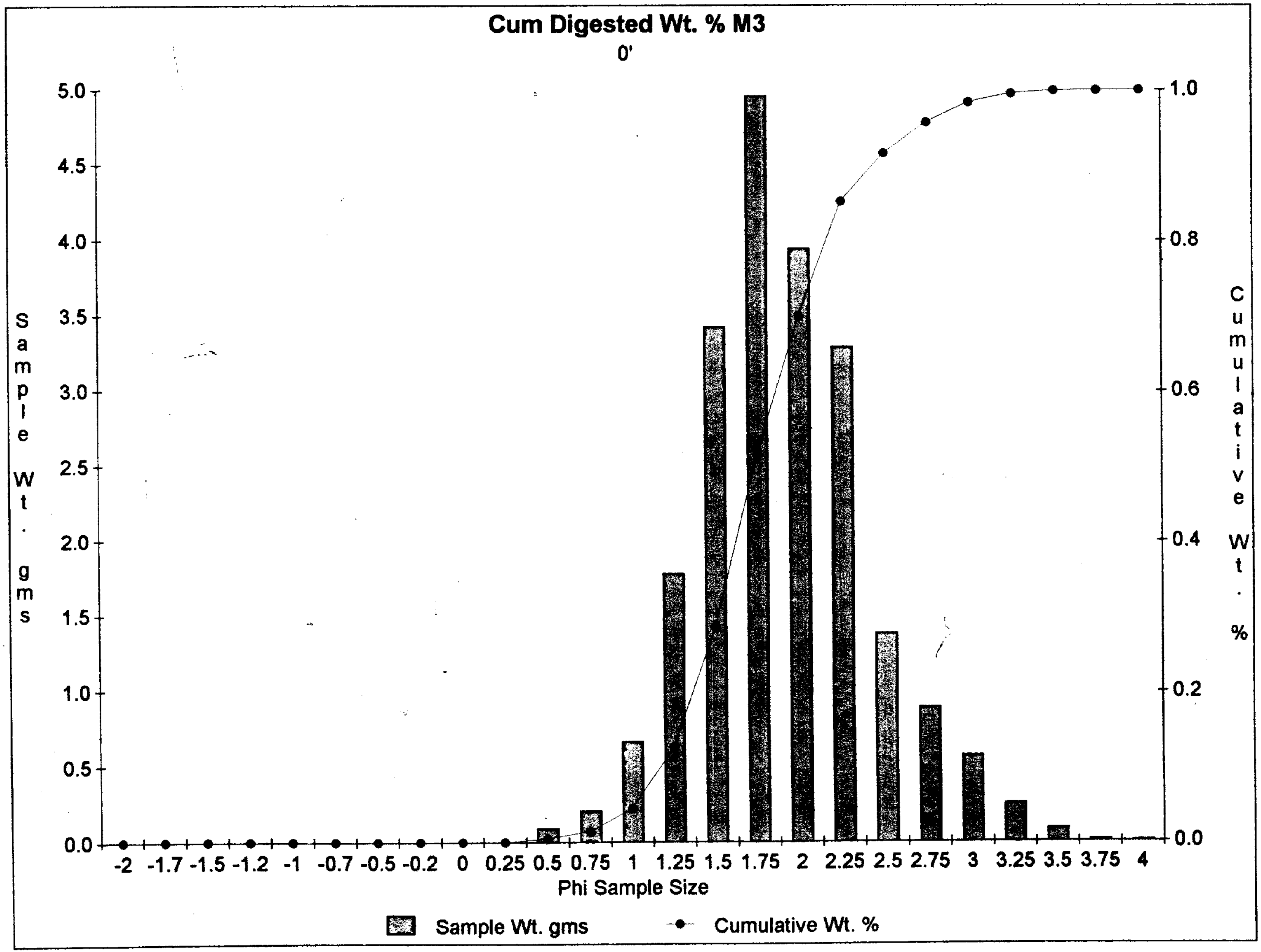


GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-3)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0.4738	0	0.4738	0.4738	0	0
-1	0	0	0	0.4738	0	0
-0.75	0	0	0	0.4738	0	0
-0.5	0	0	0	0.4738	0	0
-0.25	0	0	0	0.4738	0	0
0	0	0	0	0.4738	0	0
0.25	0.101	0	0.101	0.5748	0	0
0.5	0.941	0.0901	0.8509	1.5158	0.004179384	0.004179384
0.75	1.3428	0.2031	1.1397	2.8586	0.009421009	0.013600393
1	2.1891	0.6689	1.5202	5.0477	0.031027637	0.04462803
1.25	4.0811	1.7776	2.3035	9.1288	0.082455864	0.127083894
1.5	6.4865	3.4196	3.0669	15.6153	0.158621777	0.285705671
1.75	9.1024	4.9584	4.144	24.7177	0.230000649	0.515706321
2	7.0715	3.939	3.1325	31.7892	0.182714698	0.698421018
2.25	5.9221	3.289	2.6331	37.7113	0.152563758	0.850984776
2.5	2.9856	1.3845	1.6011	40.6969	0.064221503	0.915206279
2.75	1.3979	0.8964	0.5015	42.0948	0.041580466	0.956786745
3	0.8038	0.5784	0.2254	42.8986	0.026829698	0.983616443
3.25	0.2711	0.2517	0.0194	43.1697	0.011675372	0.995291815
3.5	0.0848	0.0848	0	43.2545	0.003933538	0.999225353
3.75	0.0108	0.0108	0	43.2653	0.000500969	0.999726322
4	0.0059	0.0059	0	43.2712	0.000273678	1

Total Wt. 43.2712
Digest Wt. 21.5582

Sample % Silica 49.821128



Cum Digested Wt. % M3

0'

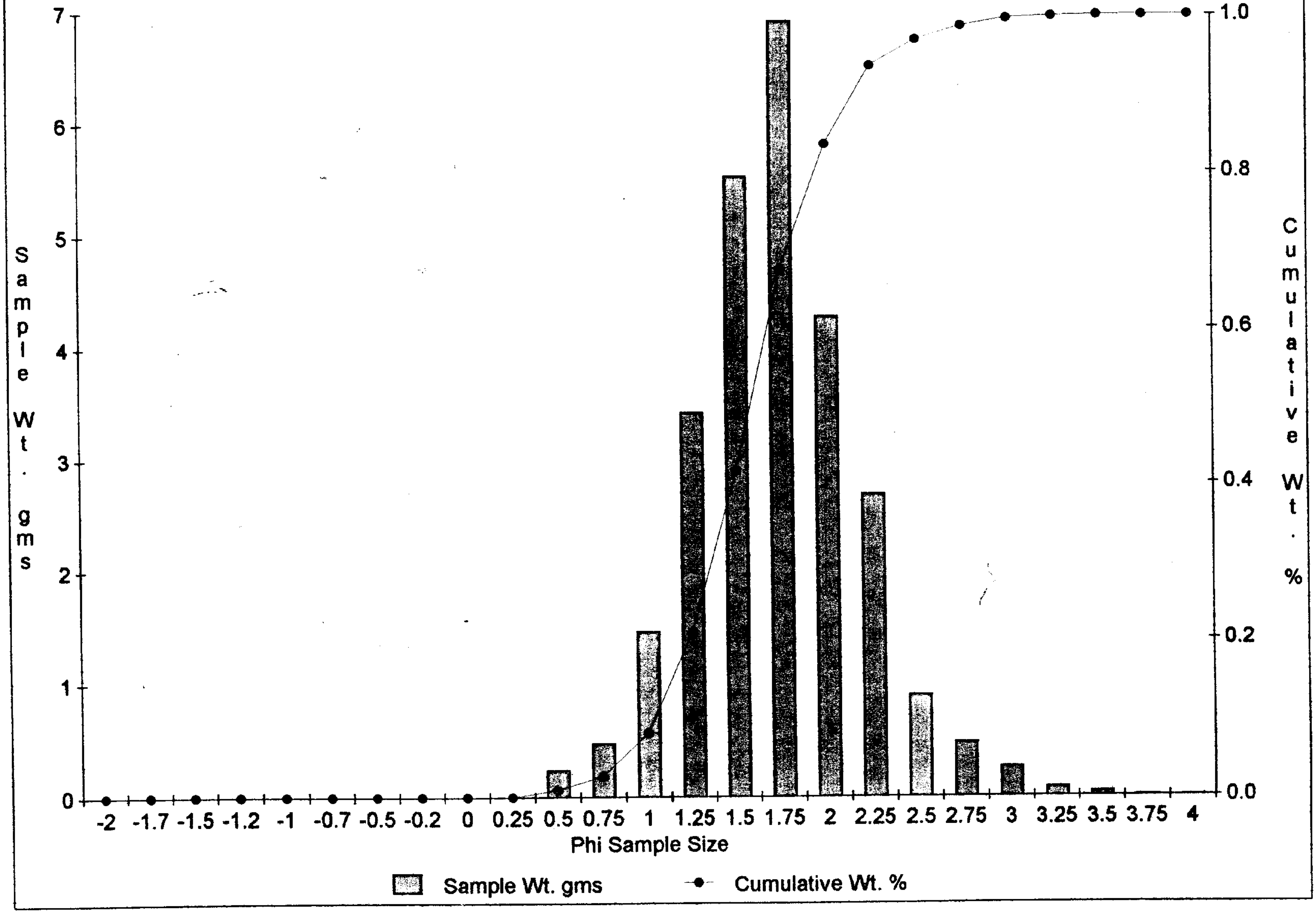
GRAIN SIZE DISTRIBUTION CHART
AFTER DIGESTION
CORE (M-3)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	Digested Wt. %	Tot. Cum. Digest Wt. %
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.1746	0	0.1746	0.1746	0	0
0	0.5118	0	0.5118	0.6864	0	0
0.25	0.5764	0	0.5764	1.2628	0	0
0.5	0.901	0.2369	0.6641	2.1638	0.008831117	0.008831117
0.75	2.4654	0.4676	1.9978	4.6292	0.017431111	0.026262227
1	2.8316	1.458	1.3736	7.4608	0.054351068	0.080613295
1.25	5.4437	3.4224	2.0213	12.9045	0.127579625	0.20819292
1.5	8.3666	5.5447	2.8219	21.2711	0.206694352	0.414887272
1.75	10.6197	6.9347	3.685	31.8908	0.258510527	0.673397799
2	12.5236	4.2956	8.228	44.4144	0.160130621	0.833528421
2.25	8.389	2.6974	5.6916	52.8034	0.100553203	0.934081624
2.5	5.3287	0.8982	4.4305	58.1321	0.033482942	0.967564565
2.75	2.068	0.4775	1.5905	60.2001	0.017800161	0.985364726
3	0.7261	0.2616	0.4645	60.9262	0.009751879	0.995116605
3.25	0.3536	0.0796	0.274	61.2798	0.002967315	0.99808392
3.5	0.0927	0.0391	0.0536	61.3725	0.001457563	0.999541483
3.75	0.0503	0.0082	0.0421	61.4228	0.000305678	0.999847161
4	0.0142	0.0041	0.0101	61.437	0.000152839	1

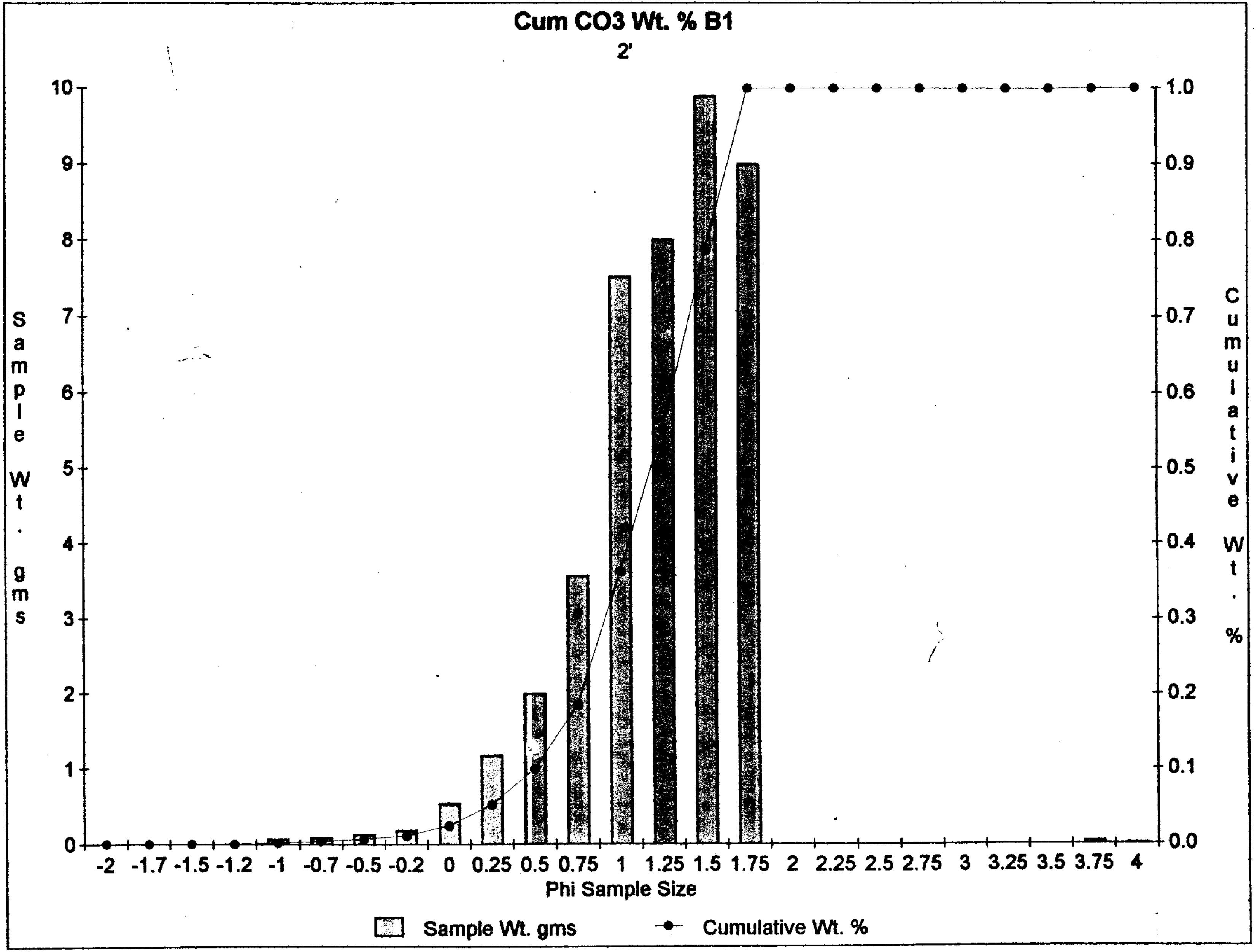
Total Wt.	61.437
Digest Wt.	26.8256
Sample % Silica	43.66359

Cum Digested Wt. % M3

2'



GRAIN SIZE DISTRIBUTION OF CARBONATE FRACTIONS


Cum CO3 Wt. % B1
2'
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-1)
DEPTH (7 FEET BLS)

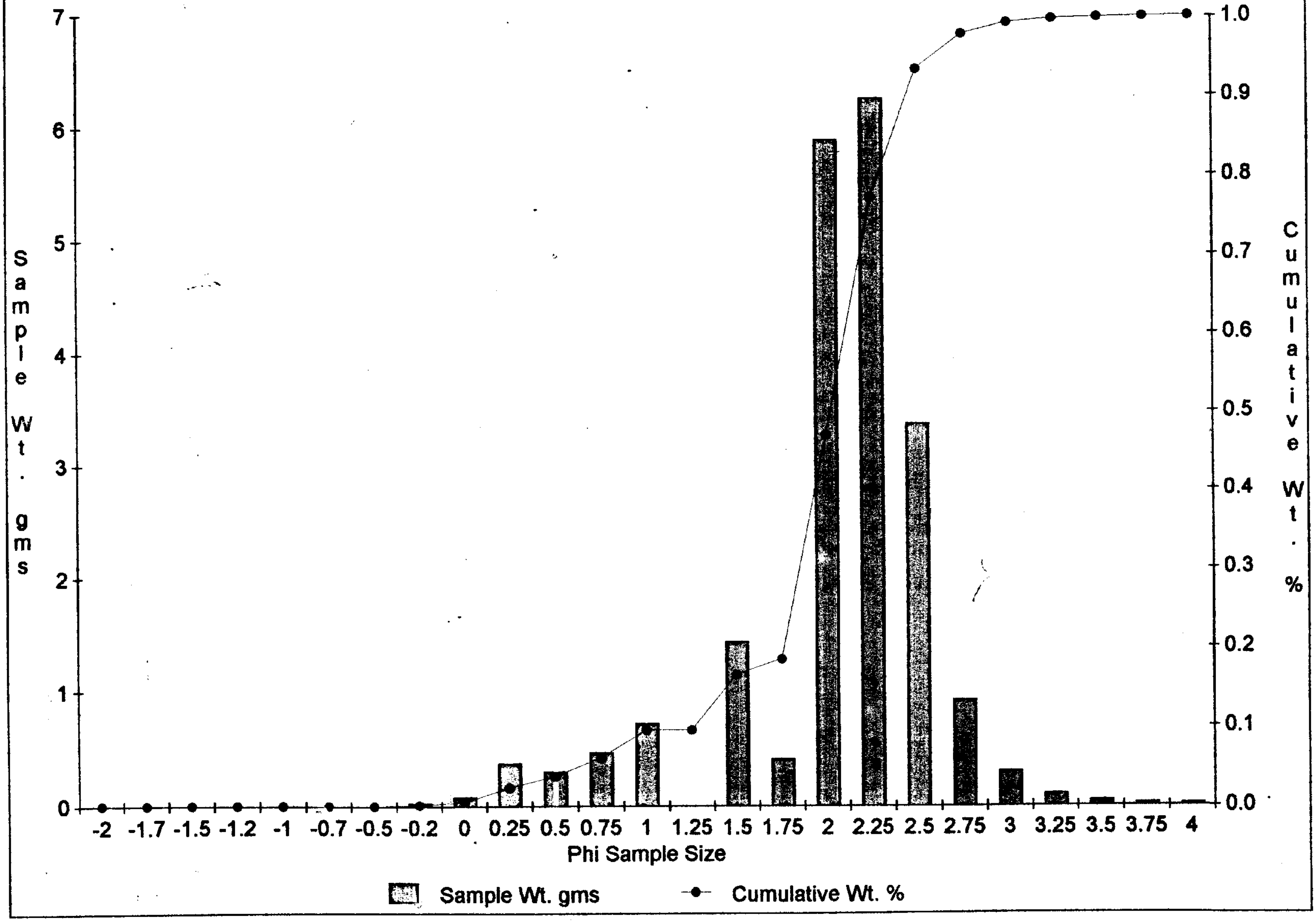
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.025	0	0.025	0.025	0.0012048	0.001204796
0	0.0803	0	0.0803	0.1053	0.0038698	0.005074601
0.25	0.4402	0.0714	0.3688	0.5455	0.0177732	0.022847752
0.5	0.5015	0.2031	0.2984	1.047	0.0143804	0.037228198
0.75	1.0069	0.5399	0.467	2.0539	0.0225056	0.059733788
1	2.6214	1.8997	0.7217	4.6753	0.0347801	0.094513841
1.25	6.6774	6.6774	0	11.3527	0	0.094513841
1.5	16.2571	14.8205	1.4366	27.6098	0.0692324	0.163746241
1.75	25.8116	25.4039	0.4077	53.4214	0.0196478	0.183394055
2	23.7579	17.8635	5.8944	77.1793	0.284062	0.467456049
2.25	14.587	8.3266	6.2604	91.7663	0.3017002	0.769156257
2.5	4.8731	1.4971	3.376	96.6394	0.1626957	0.931851916
2.75	1.3322	0.405	0.9272	97.9716	0.0446835	0.976535392
3	0.4879	0.183	0.3049	98.4595	0.0146937	0.991229085
3.25	0.1807	0.0792	0.1015	98.6402	0.0048915	0.996120557
3.5	0.0729	0.0287	0.0442	98.7131	0.0021301	0.998250636
3.75	0.0305	0.0098	0.0207	98.7436	0.0009976	0.999248207
4	0.0187	0.0031	0.0156	98.7623	0.0007518	1

Total Wt.	98.7623
CO3 Wt.	20.7504

Sample % Carbonate	21.010446

Cum CO3 Wt. % B1

7'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0.0014	0	0.0014	0.0014	3.319E-05	3.31875E-05
-1	0.0701	0	0.0701	0.0715	0.0016617	0.001694931
-0.75	0.0881	0	0.0881	0.1596	0.0020884	0.003783371
-0.5	0.1318	0	0.1318	0.2914	0.0031244	0.006907734
-0.25	0.1849	0	0.1849	0.4763	0.0043831	0.01129085
0	0.5348	0	0.5348	1.0111	0.0126776	0.023968462
0.25	1.1759	0	1.1759	2.187	0.0278751	0.051843564
0.5	2.1838	0.1894	1.9944	4.3708	0.0472779	0.09912148
0.75	4.3208	0.7611	3.5597	8.6916	0.0843839	0.183505355
1	9.5579	2.0469	7.511	18.2495	0.1780508	0.361556113
1.25	13.8366	5.8372	7.9994	32.0861	0.1896284	0.551184556
1.5	21.2438	11.3517	9.8921	53.3299	0.2344955	0.785680082
1.75	24.0138	15.0183	8.9955	77.3437	0.2132413	0.998921407
2	16.7462	16.7462	0	94.0899	0	0.998921407
2.25	9.2292	9.2292	0	103.3191	0	0.998921407
2.5	3.1739	3.1739	0	106.493	0	0.998921407
2.75	1.2599	1.2599	0	107.7529	0	0.998921407
3	0.5187	0.5187	0	108.2716	0	0.998921407
3.25	0.223	0.223	0	108.4946	0	0.998921407
3.5	0.0742	0.0742	0	108.5688	0	0.998921407
3.75	0.0561	0.022	0.0341	108.6249	0.0008084	0.999729759
4	0.0215	0.0101	0.0114	108.6464	0.0002702	1

Total Wt.	108.6464
CO3 Wt.	42.1846

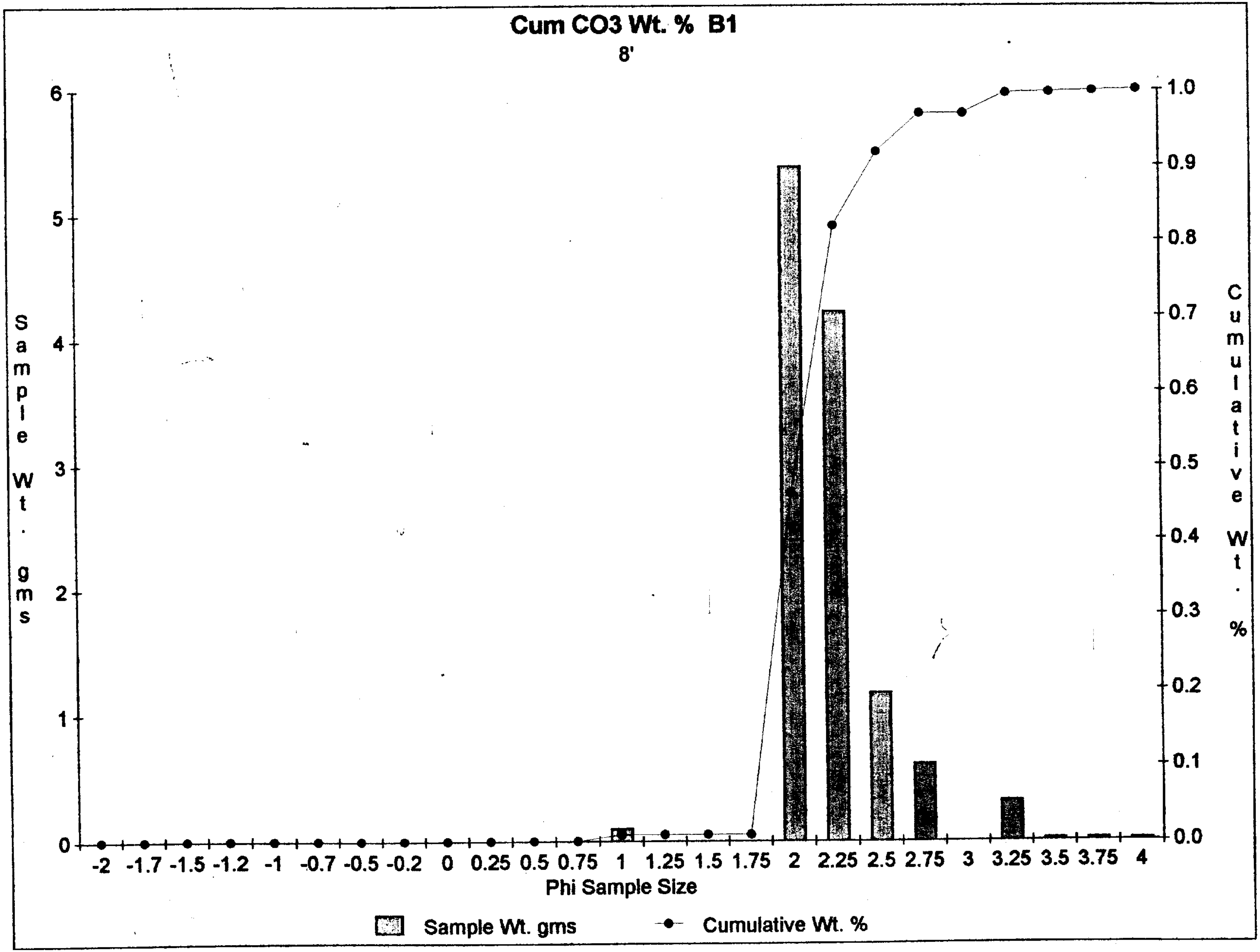
Sample % Carbonate 38.827425

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-1)
DEPTH (8 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0	0	0	0	0	0
0.25	0	0	0	0	0	0
0.5	0	0	0	0	0	0
0.75	0.0063	0.0063	0	0.0063	0	0
1	0.2004	0.1013	0.0991	0.2067	0.0083501	0.008350115
1.25	0.7002	0.7002	0	0.9069	0	0.008350115
1.5	4.6871	4.6871	0	5.594	0	0.008350115
1.75	11.9745	11.9745	0	17.5685	0	0.008350115
2	23.2339	17.8434	5.3905	40.8024	0.4542008	0.462550872
2.25	15.1105	10.8806	4.2299	55.9129	0.3564092	0.818960069
2.5	4.65	3.4803	1.1697	60.5629	0.0985583	0.91751839
2.75	1.7049	1.0951	0.6098	62.2678	0.0513814	0.968899824
3	0.3353	0.3353	0	62.6031	0	0.968899824
3.25	0.4329	0.1135	0.3194	63.036	0.0269125	0.995812304
3.5	0.0548	0.0376	0.0172	63.0908	0.0014493	0.997261567
3.75	0.0259	0.0082	0.0177	63.1167	0.0014914	0.99875296
4	0.0158	0.001	0.0148	63.1325	0.001247	1

Total Wt.	63.1325
CO3 Wt.	11.8681
Sample % Carbonate	18.798717


Cum CO3 Wt. % B1

8'

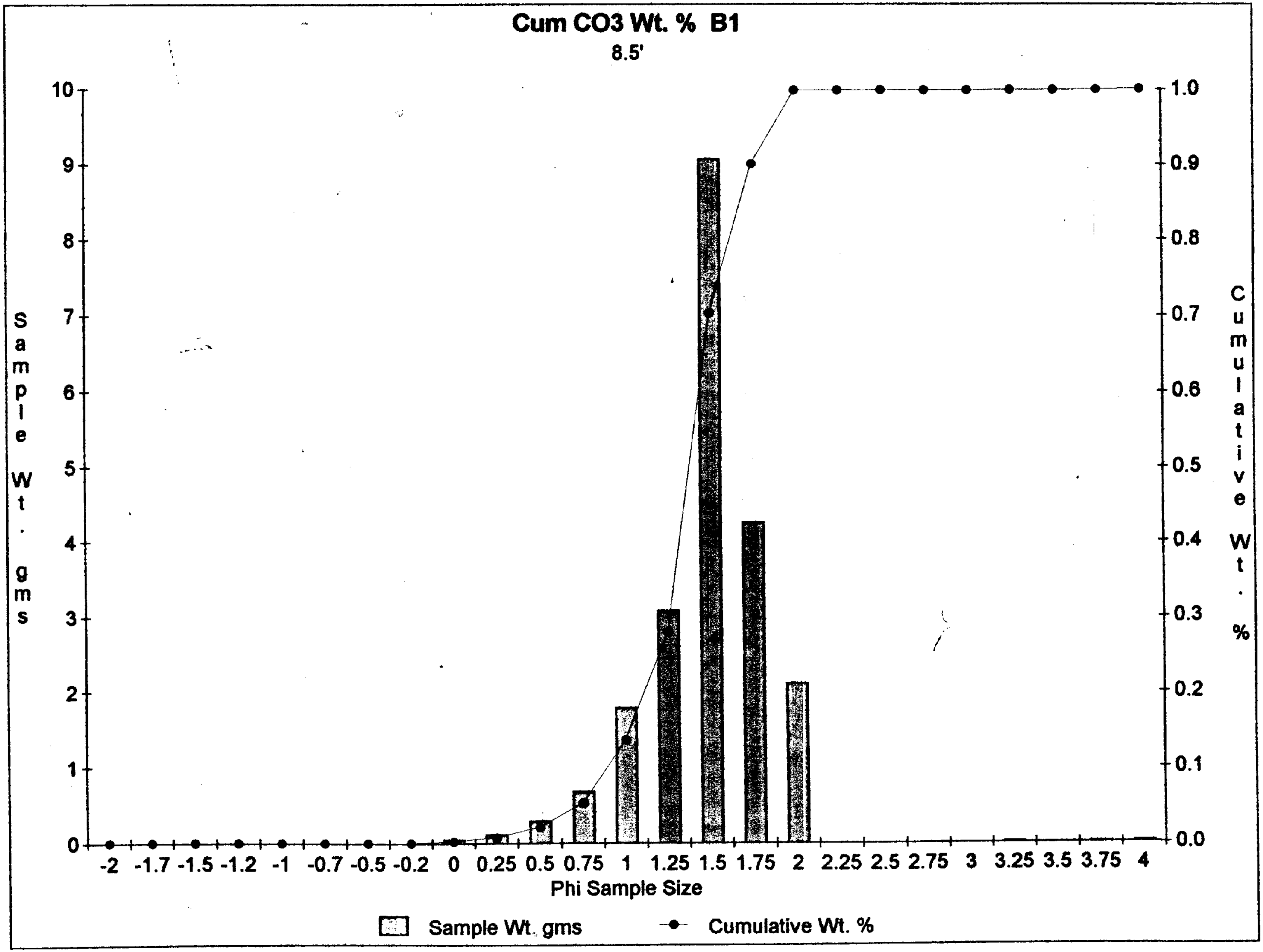
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-1)
DEPTH (8.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.0467	0	0.0467	0.0467	0.0021754	0.002175361
0.25	0.1128	0	0.1128	0.1595	0.0052544	0.007429767
0.5	0.2945	0.0032	0.2913	0.454	0.0135692	0.020998989
0.75	0.7321	0.0513	0.6808	1.1861	0.0317128	0.052711748
1	2.18	0.3901	1.7899	3.3661	0.0833764	0.13608817
1.25	4.4554	1.3803	3.0751	7.8215	0.1432431	0.279331274
1.5	12.9498	3.8764	9.0734	20.7713	0.4226536	0.701984842
1.75	14.8255	10.5729	4.2526	35.5968	0.1980929	0.900077791
2	17.0319	14.9244	2.1075	52.6287	0.0981707	0.998248532
2.25	8.2463	8.2463	0	60.875	0	0.998248532
2.5	2.3322	2.3322	0	63.2072	0	0.998248532
2.75	0.7532	0.7532	0	63.9604	0	0.998248532
3	0.1678	0.1678	0	64.1282	0	0.998248532
3.25	0.2317	0.2193	0.0124	64.3599	0.0005776	0.998826143
3.5	0.0383	0.0383	0	64.3982	0	0.998826143
3.75	0.0258	0.0163	0.0095	64.424	0.0004425	0.999268669
4	0.0168	0.0011	0.0157	64.4408	0.0007313	1

Total Wt.	64.4408
CO3 Wt.	21.4677

Sample % Carbonate	33.313832


Cum CO3 Wt. % B1
8.5'
Sample Wt. gms
10
9
8
7
6
5
4
3
2
1
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (0 FEET BLS)

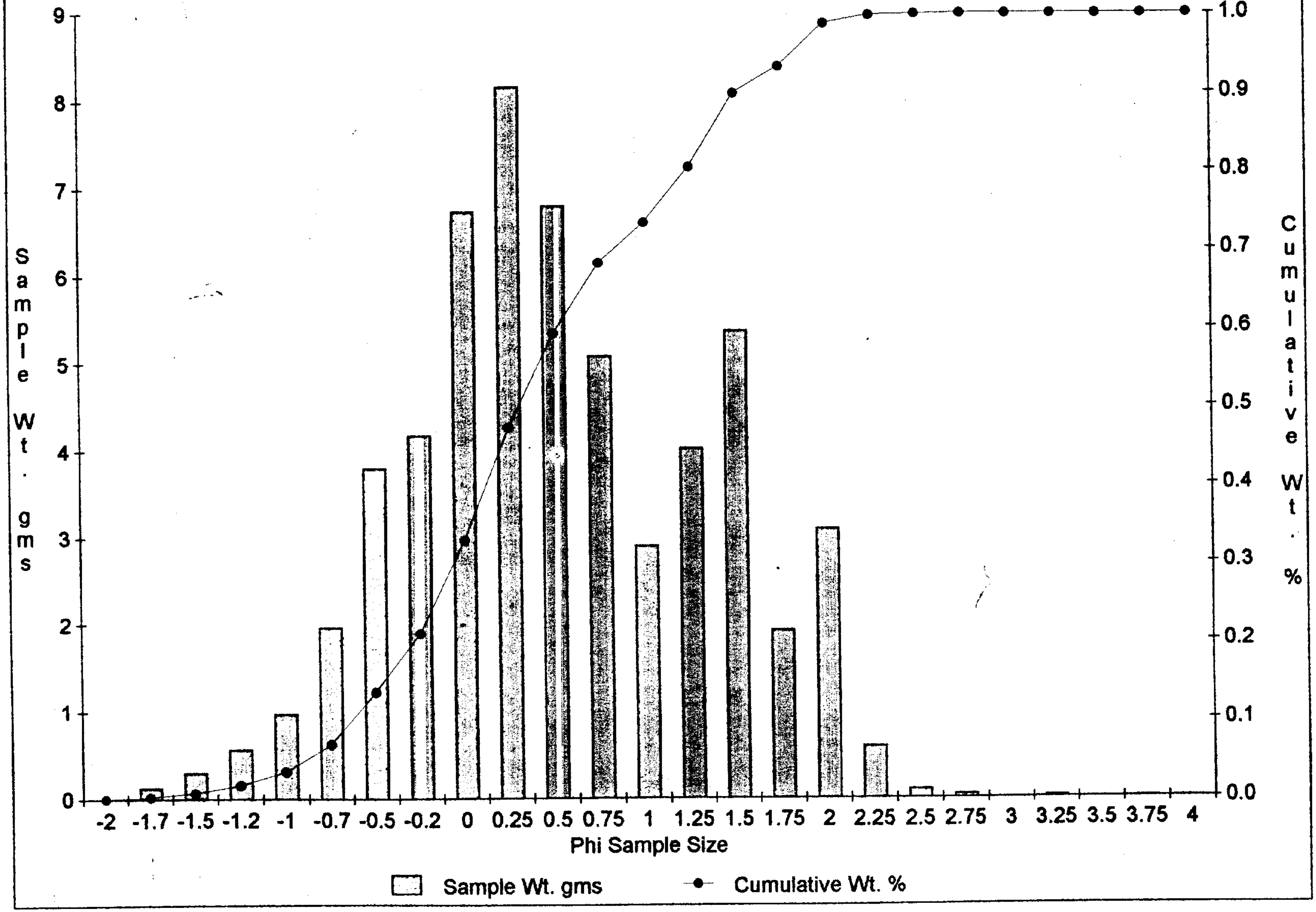
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0.1242	0	0.1242	0.1242	0.0021939	0.002193904
-1.5	0.297	0	0.297	0.4212	0.0052463	0.007440198
-1.25	0.5627	0	0.5627	0.9839	0.0099397	0.017379892
-1	0.9766	0	0.9766	1.9605	0.0172509	0.034630834
-0.75	2.0332	0.0721	1.9611	3.9937	0.0346414	0.069272267
-0.5	4.3702	0.5807	3.7895	8.3639	0.0669388	0.136211081
-0.25	5.0015	0.8421	4.1594	13.3654	0.0734728	0.209683915
0	7.799	1.0726	6.7264	21.1644	0.1188171	0.328500973
0.25	10.0019	1.8458	8.1561	31.1663	0.1440717	0.472572662
0.5	9.8906	3.102	6.7886	41.0569	0.1199158	0.592488439
0.75	9.9981	4.9292	5.0689	51.055	0.0895385	0.682026942
1	10.2686	7.3818	2.8868	61.3236	0.0509933	0.733020204
1.25	12.1012	8.0872	4.014	73.4248	0.0709044	0.803924651
1.5	12.4281	7.0704	5.3577	85.8529	0.0946399	0.8985646
1.75	7.1337	5.216	1.9177	92.9866	0.0338748	0.932439403
2	5.1544	2.0729	3.0815	98.141	0.0544325	0.986871902
2.25	1.6452	1.0575	0.5877	99.7862	0.0103813	0.997253203
2.5	0.2904	0.1955	0.0949	100.0766	0.0016763	0.998929544
2.75	0.1429	0.1032	0.0397	100.2195	0.0007013	0.999630816
3	0.0532	0.0532	0	100.2727	0	0.999630816
3.25	0.0372	0.0239	0.0133	100.3099	0.0002349	0.999865751
3.5	0.0098	0.0098	0	100.3197	0	0.999865751
3.75	0.0113	0.005	0.0063	100.331	0.0001113	0.999977036
4	0.004	0.0027	0.0013	100.335	2.296E-05	1

Total Wt.	100.335
CO3 Wt.	56.6114

Sample % Carbonate	56.422385

Cum CO3 Wt. % B2

0'



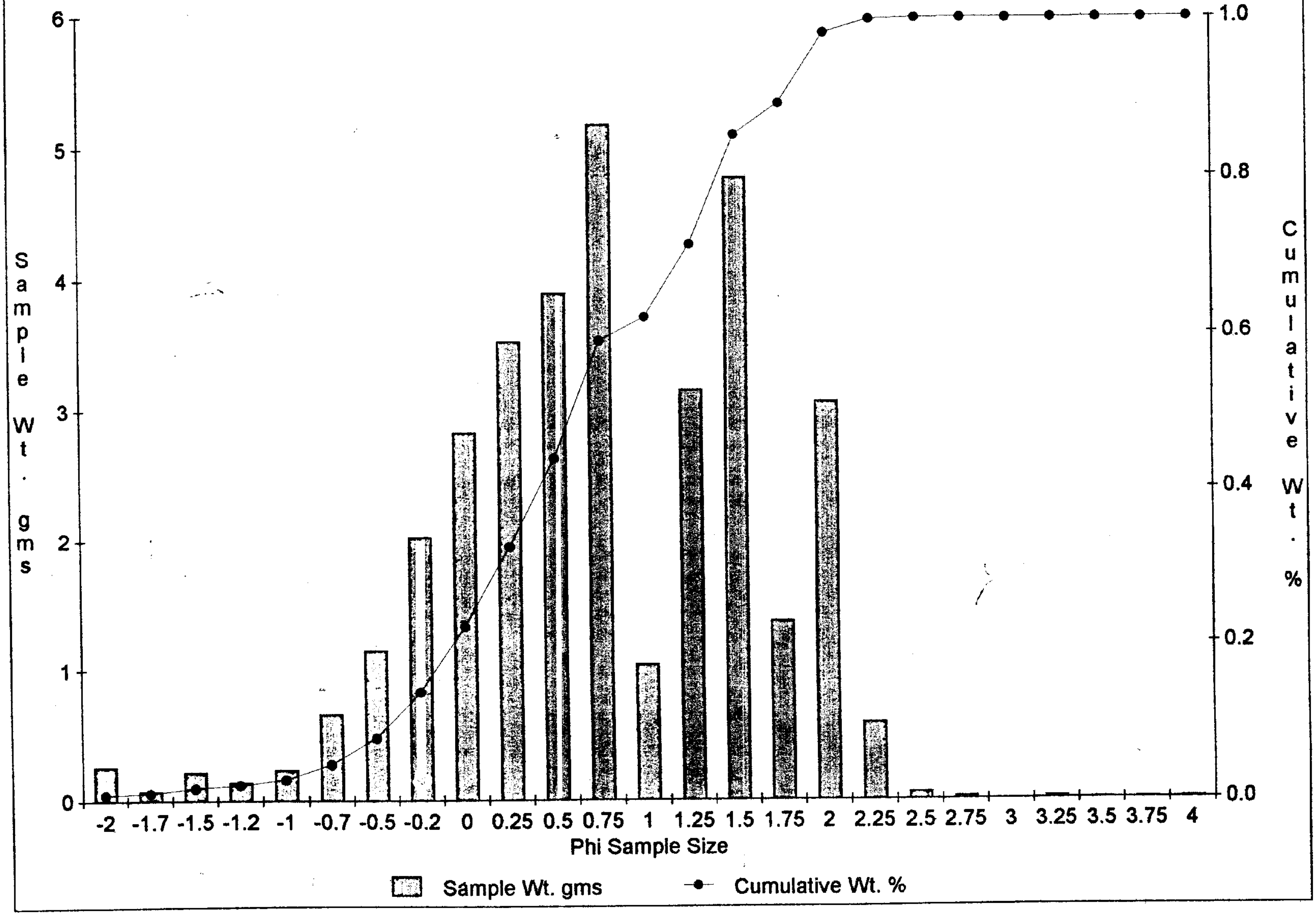
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (0.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.2579	0	0.2579	0.2579	0.0075281	0.007528147
-1.75	0.0722	0	0.0722	0.3301	0.0021075	0.009635677
-1.5	0.2131	0	0.2131	0.5432	0.0062204	0.015856104
-1.25	0.1375	0	0.1375	0.6807	0.0040136	0.019869753
-1	0.2329	0	0.2329	0.9136	0.0067984	0.026668146
-0.75	0.6685	0	0.6685	1.5821	0.0195136	0.046181779
-0.5	1.1472	0	1.1472	2.7293	0.033487	0.07966875
-0.25	2.0237	0	2.0237	4.753	0.0590722	0.138740911
0	3.4647	0.6412	2.8235	8.2177	0.0824185	0.221159375
0.25	5.3735	1.8491	3.5244	13.5912	0.1028779	0.324037235
0.5	7.3174	3.4271	3.8903	20.9086	0.1135585	0.43759578
0.75	10.2101	5.0338	5.1763	31.1187	0.1510971	0.588692893
1	9.135	8.1003	1.0347	40.2537	0.0302031	0.618895969
1.25	12.3042	9.148	3.1562	52.5579	0.09213	0.711026006
1.5	12.9156	8.1406	4.775	65.4735	0.1393831	0.8504091
1.75	8.1247	6.7579	1.3668	73.5982	0.0398971	0.890306234
2	5.9133	2.8499	3.0634	79.5115	0.0894212	0.979727422
2.25	2.0019	1.4097	0.5922	81.5134	0.0172864	0.997013845
2.5	0.3527	0.2982	0.0545	81.8661	0.0015909	0.99860471
2.75	0.175	0.1561	0.0189	82.0411	0.0005517	0.999156404
3	0.0699	0.0699	0	82.111	0	0.999156404
3.25	0.0299	0.0165	0.0134	82.1409	0.0003911	0.999547552
3.5	0.0112	0.007	0.0042	82.1521	0.0001226	0.999670151
3.75	0.0087	0.0047	0.004	82.1608	0.0001168	0.999786912
4	0.0084	0.0011	0.0073	82.1692	0.0002131	1

Total Wt.	82.1692
CO3 Wt.	34.2581

Sample % Carbonate	41.692143



Cum CO3 Wt. % B2

0.5'

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (1 FEET BLS)

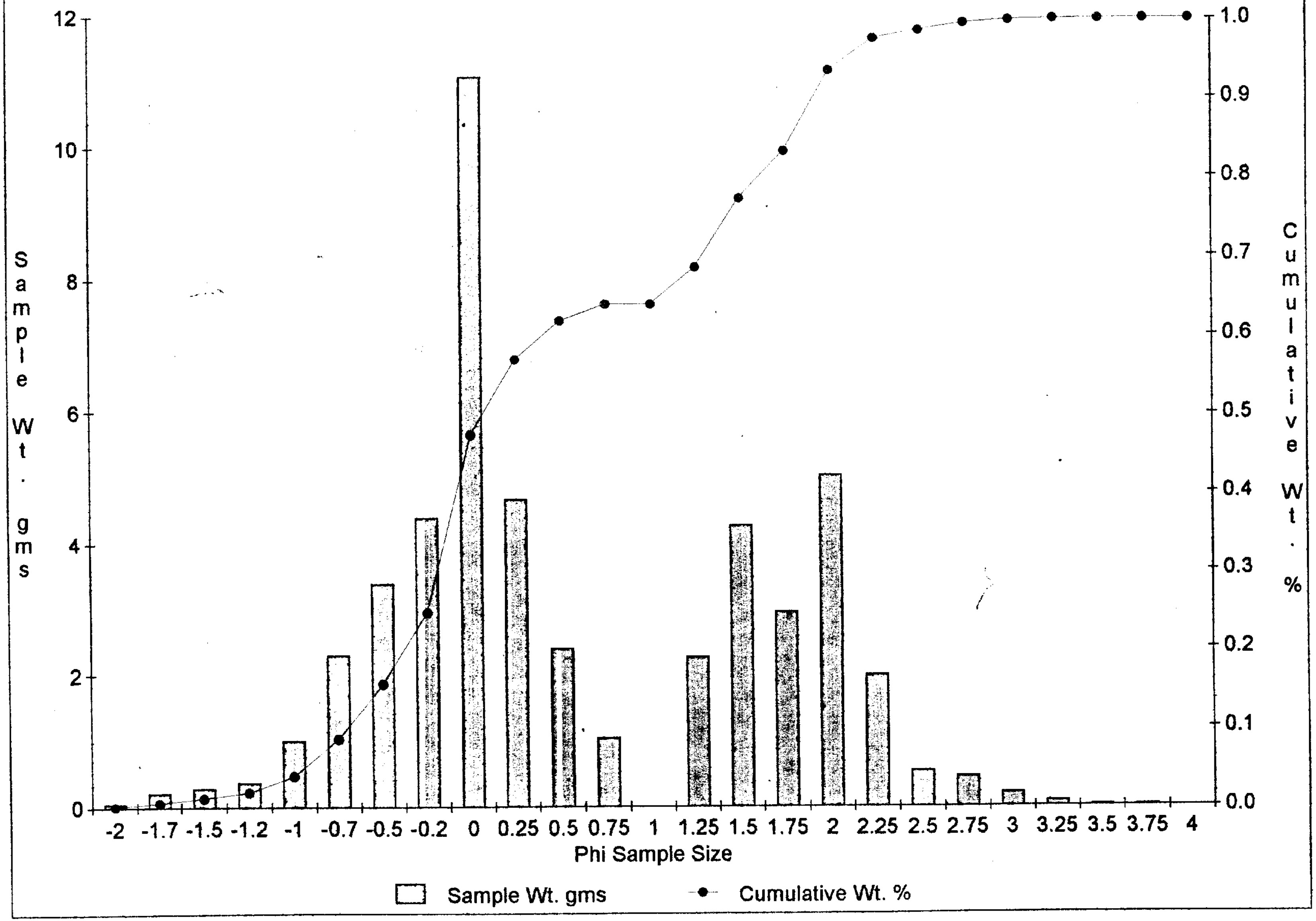
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.0553	0	0.0553	0.0553	0.0011302	0.001130181
-1.75	0.2105	0	0.2105	0.2658	0.004302	0.005432228
-1.5	0.2826	0	0.2826	0.5484	0.0057756	0.011207802
-1.25	0.3655	0	0.3655	0.9139	0.0074698	0.018677626
-1	1.0006	0	1.0006	1.9145	0.0204495	0.039127165
-0.75	2.2697	0	2.2697	4.1842	0.0463865	0.08551365
-0.5	3.3782	0	3.3782	7.5624	0.0690412	0.154554856
-0.25	4.3925	0	4.3925	11.9549	0.0897707	0.24432559
0	11.9549	0.8686	11.0863	23.9098	0.2265738	0.470899363
0.25	6.8535	2.1769	4.6766	30.7633	0.095577	0.566476328
0.5	6.6701	4.2817	2.3884	37.4334	0.0488124	0.615288717
0.75	7.4172	6.3841	1.0331	44.8506	0.0211137	0.636402467
1	7.3359	7.3359	0	52.1865	0	0.636402467
1.25	10.5058	8.248	2.2578	62.6923	0.0461433	0.682545749
1.5	11.6125	7.3372	4.2753	74.3048	0.0873755	0.769921235
1.75	7.8544	4.9191	2.9353	82.1592	0.0599895	0.829910771
2	6.4804	1.437	5.0434	88.6396	0.1030734	0.932984128
2.25	3.0246	1.037	1.9876	91.6642	0.0406211	0.973605258
2.5	0.6731	0.1401	0.533	92.3373	0.0108931	0.984498326
2.75	0.5008	0.0468	0.454	92.8381	0.0092785	0.993776849
3	0.2184	0.0165	0.2019	93.0565	0.0041263	0.997903135
3.25	0.0816	0.0049	0.0767	93.1381	0.0015675	0.999470675
3.5	0.019	0.0029	0.0161	93.1571	0.000329	0.999799715
3.75	0.0125	0.0027	0.0098	93.1696	0.0002003	1
4	0.0012	0.0012	0	93.1708	0	1

Total Wt. 93.1708
CO3 Wt. 48.9302

Sample % Carbonate 52.516668

Cum CO3 Wt. % B2

1'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (1.5 FEET BLS)

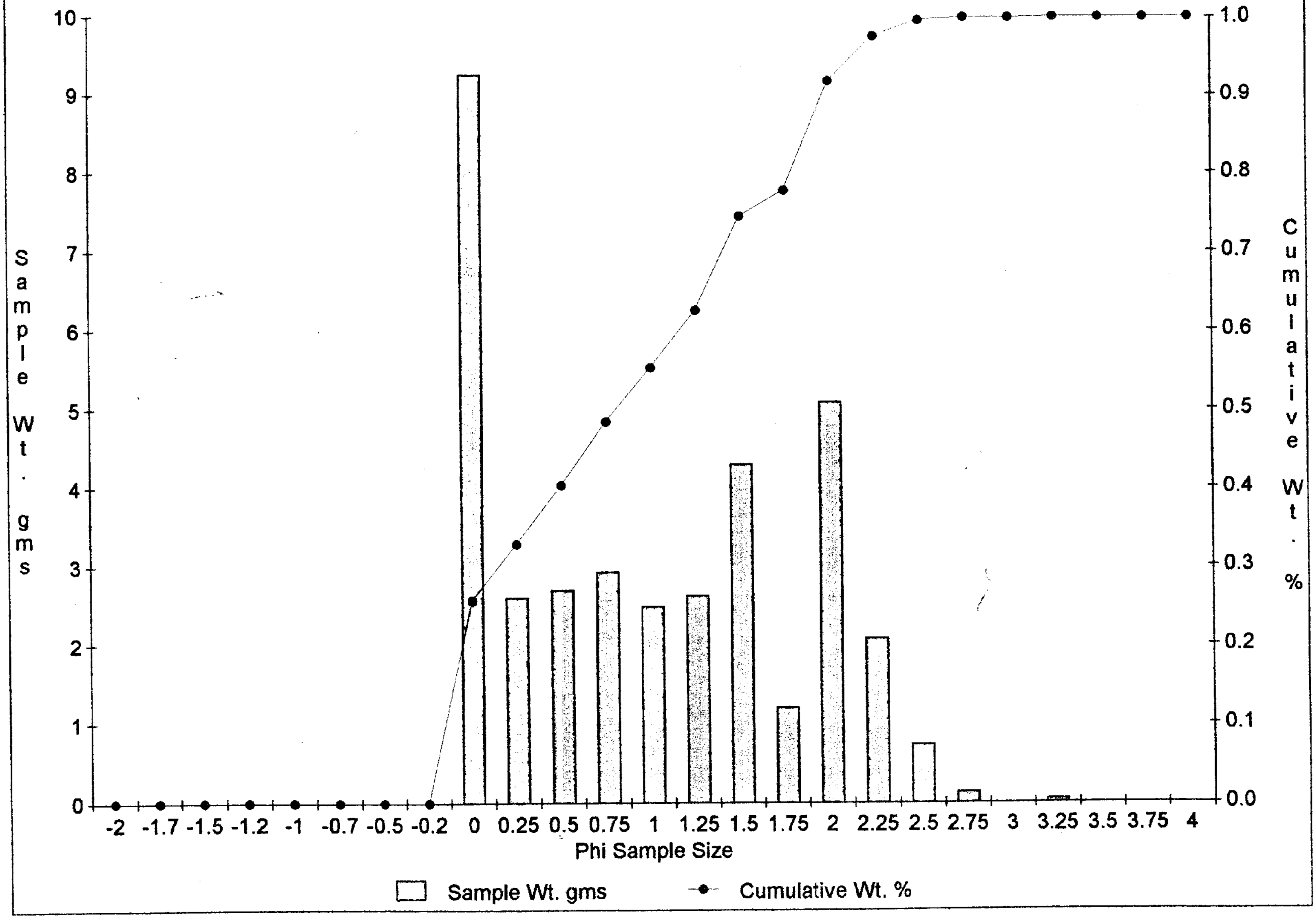
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	9.2878	0.0366	9.2512	9.2878	0.2560716	0.256071569
0.25	3.4728	0.8794	2.5934	12.7606	0.0717849	0.327856419
0.5	4.7493	2.0541	2.6952	17.5099	0.0746027	0.402459075
0.75	6.0352	3.1109	2.9243	23.5451	0.0809441	0.483403179
1	9.0032	6.5241	2.4791	32.5483	0.068621	0.552024225
1.25	11.7481	9.126	2.6221	44.2964	0.0725793	0.624603487
1.5	15.2911	10.9988	4.2923	59.5875	0.1188101	0.743413586
1.75	11.7433	10.5404	1.2029	71.3308	0.0332961	0.776709644
2	11.3074	6.2306	5.0768	82.6382	0.1405249	0.917234564
2.25	5.903	3.8242	2.0788	88.5412	0.0575408	0.974775378
2.5	1.6451	0.9109	0.7342	90.1863	0.0203225	0.995097904
2.75	0.6407	0.5052	0.1355	90.827	0.0037506	0.998848519
3	0.244	0.244	0	91.071	0	0.998848519
3.25	0.1206	0.0794	0.0412	91.1916	0.0011404	0.999988928
3.5	0.0312	0.0312	0	91.2228	0	0.999988928
3.75	0.0169	0.0169	0	91.2397	0	0.999988928
4	0.0051	0.0047	0.0004	91.2448	1.107E-05	1

Total Wt.	91.2448
CO3 Wt.	36.1274

Sample % Carbonate	39.593928

Cum CO3 Wt. % B2

1.5'



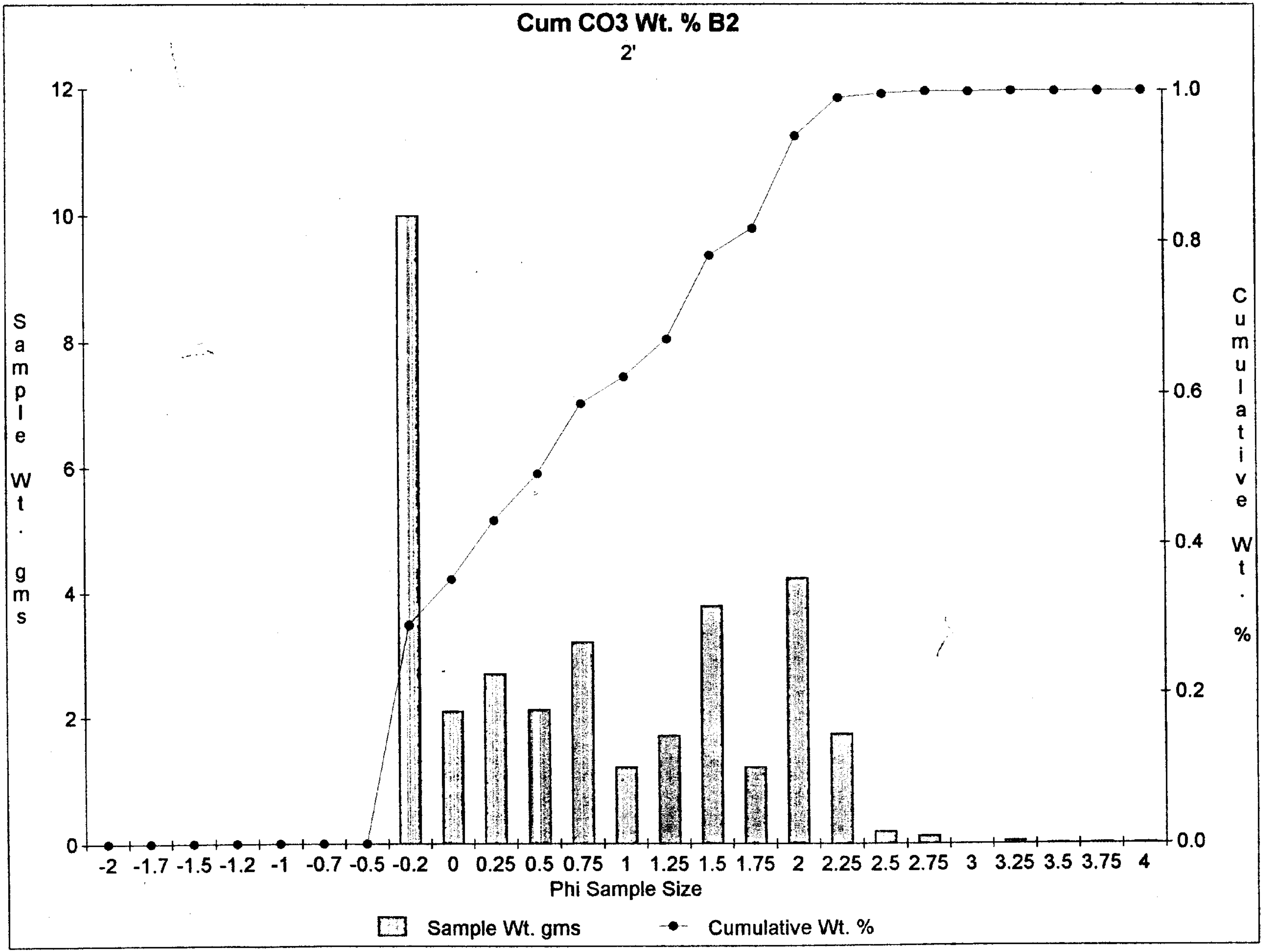
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	10.003	0	10.003	10.003	0.2908086	0.290808554
0	2.1013	0	2.1013	12.1043	0.0610893	0.351897829
0.25	3.5025	0.8047	2.6978	15.6068	0.0784308	0.430328631
0.5	4.1786	2.0561	2.1225	19.7854	0.0617056	0.492034235
0.75	5.8271	2.6165	3.2106	25.6125	0.093339	0.585373228
1	6.8087	5.5943	1.2144	32.4212	0.0353052	0.620678427
1.25	10.3662	8.6549	1.7113	42.7874	0.0497511	0.67042957
1.5	13.7864	9.9987	3.7877	56.5738	0.1101165	0.780546091
1.75	10.7109	9.4958	1.2151	67.2847	0.0353255	0.815871641
2	10.3447	6.1191	4.2256	77.6294	0.1228472	0.938718849
2.25	5.4178	3.6831	1.7347	83.0472	0.0504314	0.98915028
2.5	0.9915	0.8041	0.1874	84.0387	0.0054481	0.994598398
2.75	0.6035	0.4861	0.1174	84.6422	0.0034131	0.998011466
3	0.2756	0.2756	0	84.9178	0	0.998011466
3.25	0.1342	0.0919	0.0423	85.052	0.0012298	0.999241217
3.5	0.0501	0.0485	0.0016	85.1021	4.652E-05	0.999287733
3.75	0.0254	0.0109	0.0145	85.1275	0.0004215	0.999709279
4	0.0135	0.0035	0.01	85.141	0.0002907	1

Total Wt.	85.141
CO3 Wt.	34.3972

Sample % Carbonate	40.400277


Cum CO3 Wt. % B2
2'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.8
0.6
0.4
0.2
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (2.5 FEET BLS)

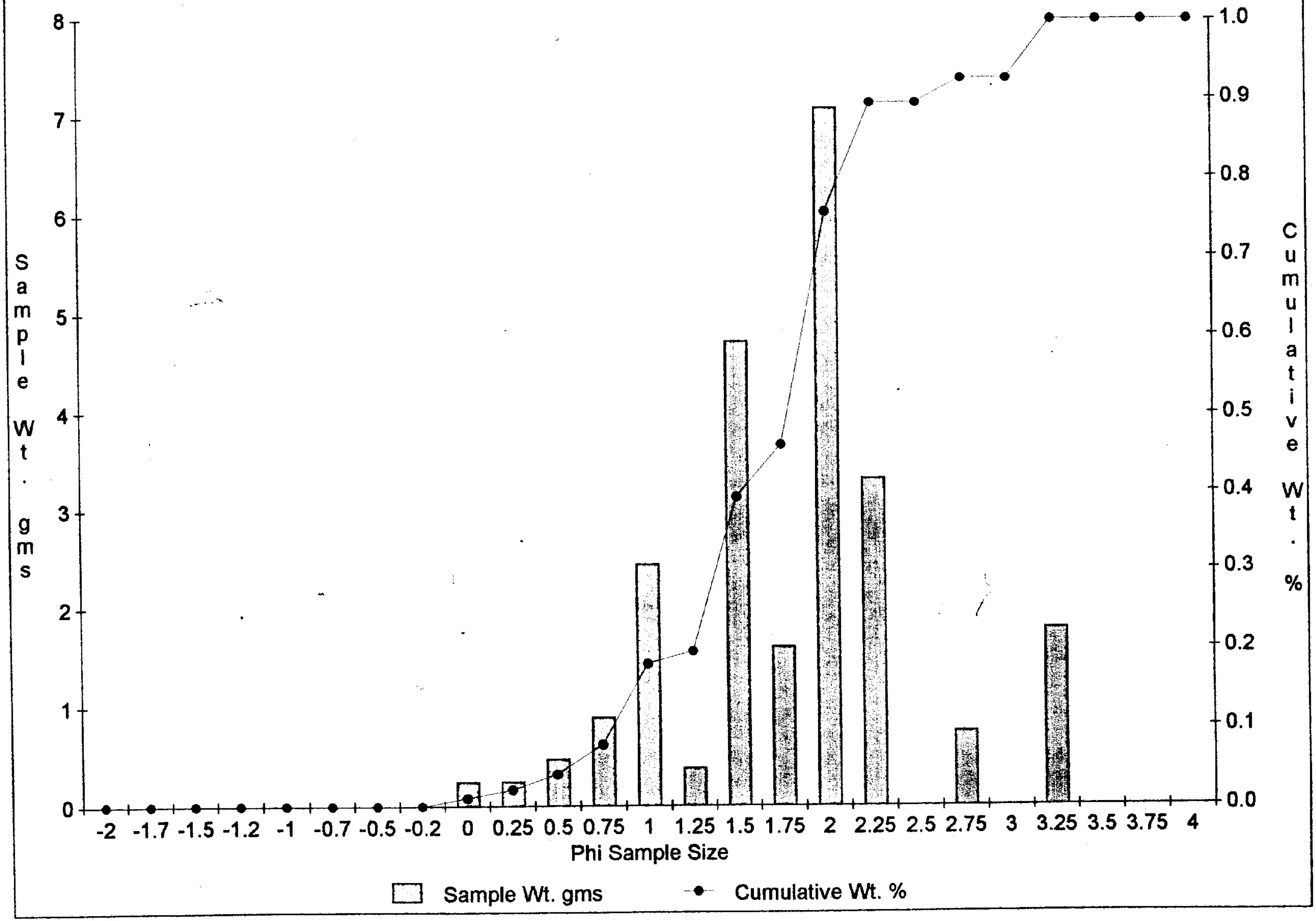
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.2437	0	0.2437	0.2437	0.010176	0.010176045
0.25	0.2454	0	0.2454	0.4891	0.010247	0.020423076
0.5	0.5443	0.0771	0.4672	1.0334	0.0195086	0.039931686
0.75	1.2385	0.3492	0.8893	2.2719	0.037134	0.077065691
1	4.2747	1.8331	2.4416	6.5466	0.1019525	0.179018223
1.25	7.3375	6.9612	0.3763	13.8841	0.0157129	0.194731172
1.5	15.068	10.3459	4.7221	28.9521	0.1971781	0.391909272
1.75	15.6513	14.0518	1.5995	44.6034	0.0667894	0.458698702
2	18.0598	10.9671	7.0927	62.6632	0.2961659	0.754864626
2.25	13.8387	10.5136	3.3251	76.5019	0.1388443	0.893708974
2.5	8.5417	8.5417	0	85.0436	0	0.893708974
2.75	8.0974	7.3484	0.749	93.141	0.0312756	0.92498455
3	3.6638	3.6638	0	96.8048	0	0.92498455
3.25	2.3494	0.5529	1.7965	99.1542	0.0750154	1
3.5	0.0676	0.0676	0	99.2218	0	1
3.75	0.0079	0.0079	0	99.2297	0	1
4	0.0011	0.0011	0	99.2308	0	1

Total Wt.	99.2308
CO3 Wt.	23.9484

Sample % Carbonate 24.134039

Cum CO3 Wt. % B2

2.5'



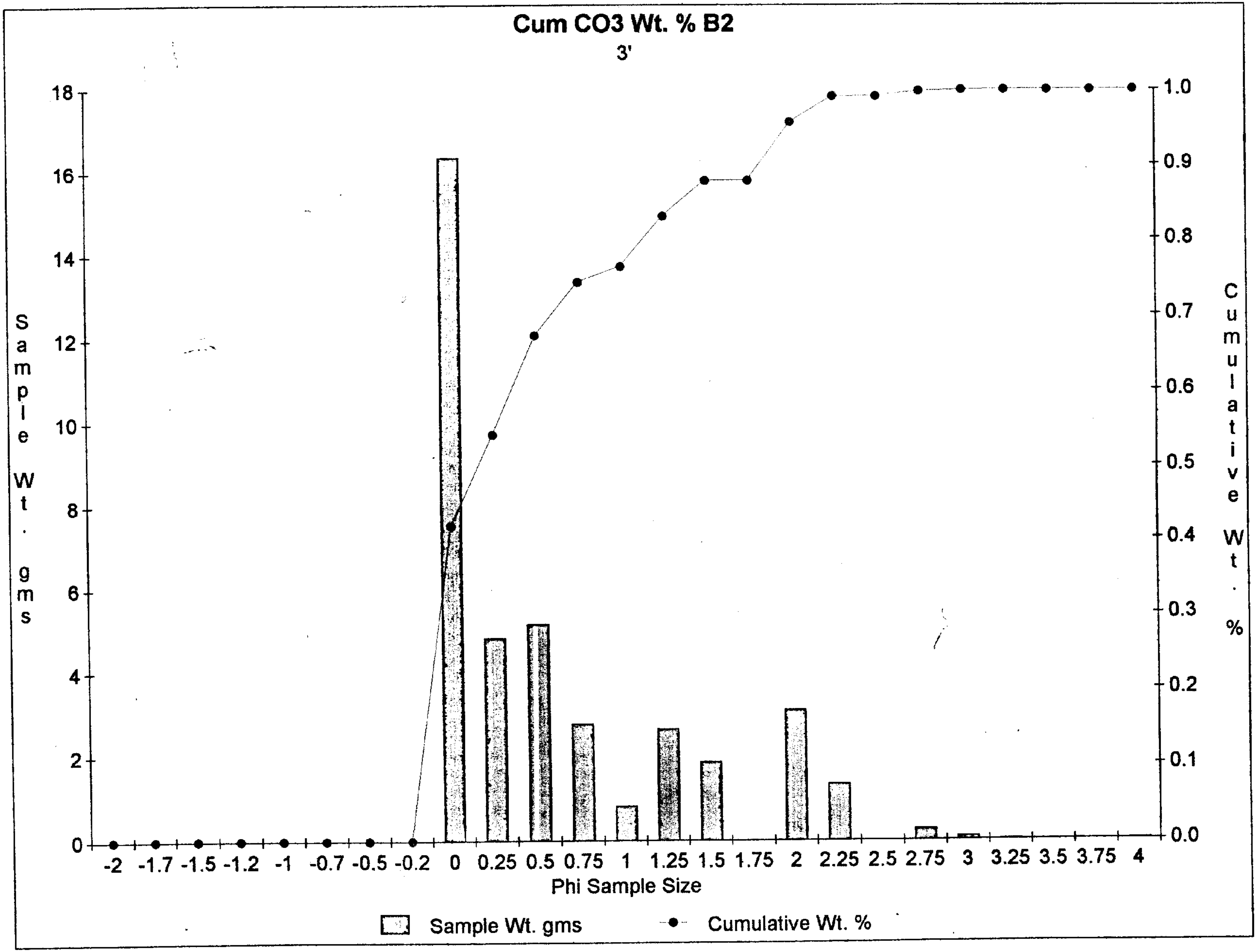
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (3 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	17.3791	1.0281	16.351	17.3791	0.4176277	0.417627662
0.25	6.1783	1.3701	4.8082	23.5574	0.1228082	0.54043589
0.5	7.1703	2.0214	5.1489	30.7277	0.1315102	0.671946077
0.75	6.2708	3.5128	2.758	36.9985	0.0704432	0.742389297
1	4.7811	3.9722	0.8089	41.7796	0.0206604	0.763049747
1.25	6.5121	3.8809	2.6312	48.2917	0.0672046	0.830254316
1.5	6.7211	4.8674	1.8537	55.0128	0.0473461	0.877600435
1.75	6.0545	6.0545	0	61.0673	0	0.877600435
2	8.9064	5.8176	3.0888	69.9737	0.0788923	0.956492755
2.25	6.5716	5.2341	1.3375	76.5453	0.0341616	0.990654397
2.5	2.6964	2.6945	0.0019	79.2417	4.853E-05	0.990702925
2.75	1.4716	1.204	0.2676	80.7133	0.0068349	0.997537808
3	0.7154	0.638	0.0774	81.4287	0.0019769	0.999514713
3.25	0.1766	0.1644	0.0122	81.6053	0.0003116	0.999826318
3.5	0.0485	0.048	0.0005	81.6538	1.277E-05	0.999839089
3.75	0.0246	0.0241	0.0005	81.6784	1.277E-05	0.99985186
4	0.0115	0.0057	0.0058	81.6899	0.0001481	1

Total Wt.	81.6899
CO3 Wt.	39.1521

Sample % Carbonate	47.927712


Cum CO3 Wt. % B2
3'
Sample Wt. gms
18
16
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

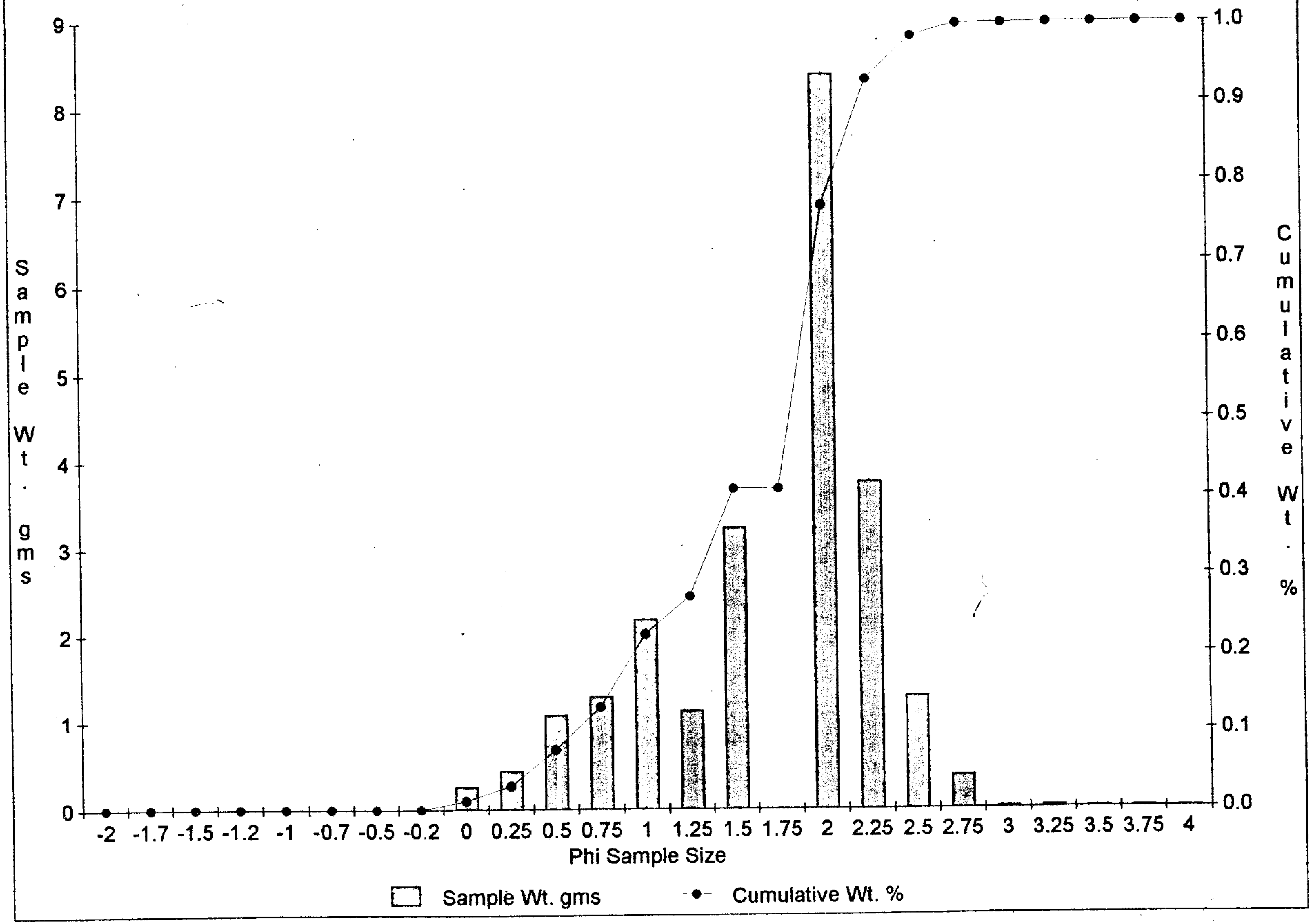
CORE (B-2)
DEPTH (3.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.2592	0	0.2592	0.2592	0.0110443	0.011044309
0.25	0.496	0.0608	0.4352	0.7552	0.0185435	0.029587841
0.5	1.1691	0.0941	1.075	1.9243	0.0458049	0.07539275
0.75	1.9994	0.7051	1.2943	3.9237	0.0551491	0.130541861
1	5.3188	3.1442	2.1746	9.2425	0.092658	0.223199867
1.25	9.5584	8.4323	1.1261	18.8009	0.0479822	0.271182108
1.5	15.7984	12.5708	3.2276	34.5993	0.1375255	0.40870762
1.75	16.5116	16.5116	0	51.1109	0	0.40870762
2	20.4328	12.036	8.3968	71.5437	0.3577811	0.766488702
2.25	11.0767	7.3261	3.7506	82.6204	0.1598101	0.926298835
2.5	3.0602	1.7664	1.2938	85.6806	0.0551278	0.981426642
2.75	0.9249	0.5536	0.3713	86.6055	0.0158208	0.997247445
3	0.2891	0.2711	0.018	86.8946	0.000767	0.99801441
3.25	0.0801	0.0562	0.0239	86.9747	0.0010184	0.999032771
3.5	0.0244	0.0145	0.0099	86.9991	0.0004218	0.999454602
3.75	0.0146	0.0041	0.0105	87.0137	0.0004474	0.999901999
4	0.004	0.0017	0.0023	87.0177	9.8E-05	1

Total Wt.	87.0177
CO3 Wt.	23.4691
Sample % Carbonate	26.97049

Cum CO3 Wt. % B2

3.5'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (4 FEET BLS)

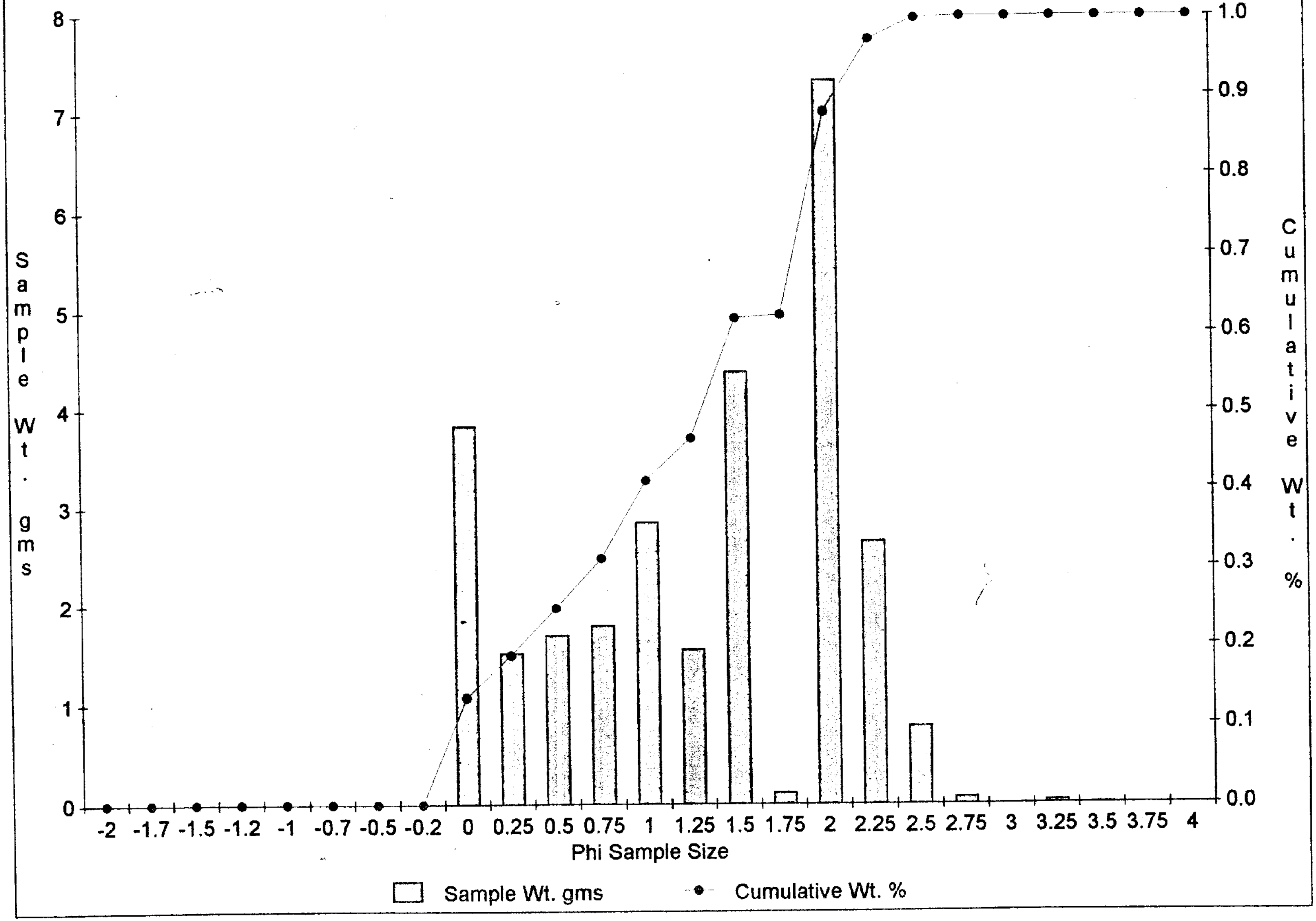
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	3.8264	0	3.8264	3.8264	0.1339391	0.133939135
0.25	1.7654	0.2503	1.5151	5.5918	0.0530345	0.186973628
0.5	2.3064	0.6119	1.6945	7.8982	0.0593142	0.246287831
0.75	3.0523	1.2603	1.792	10.9505	0.0627271	0.309014919
1	6.5182	3.6769	2.8413	17.4687	0.0994567	0.408471657
1.25	10.1515	8.5998	1.5517	27.6202	0.0543156	0.462787295
1.5	16.237	11.8577	4.3793	43.8572	0.1532928	0.616080117
1.75	15.1079	14.9947	0.1132	58.9651	0.0039624	0.620042565
2	17.6238	10.2878	7.336	76.5889	0.256789	0.876831582
2.25	8.8124	6.1694	2.643	85.4013	0.0925155	0.969347036
2.5	2.2798	1.5013	0.7785	87.6811	0.0272506	0.996597616
2.75	0.6182	0.5538	0.0644	88.2993	0.0022543	0.99885187
3	0.2251	0.2251	0	88.5244	0	0.99885187
3.25	0.0943	0.0667	0.0276	88.6187	0.0009661	0.999817979
3.5	0.0183	0.0135	0.0048	88.637	0.000168	0.999985998
3.75	0.0093	0.0089	0.0004	88.6463	1.4E-05	1
4	0.001	0.001	0	88.6473	0	1

Total Wt. 88.6473
CO3 Wt. 28.5682

Sample % Carbonate 32.226813

Cum CO3 Wt. % B2

4'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (4.5 FEET BLS)

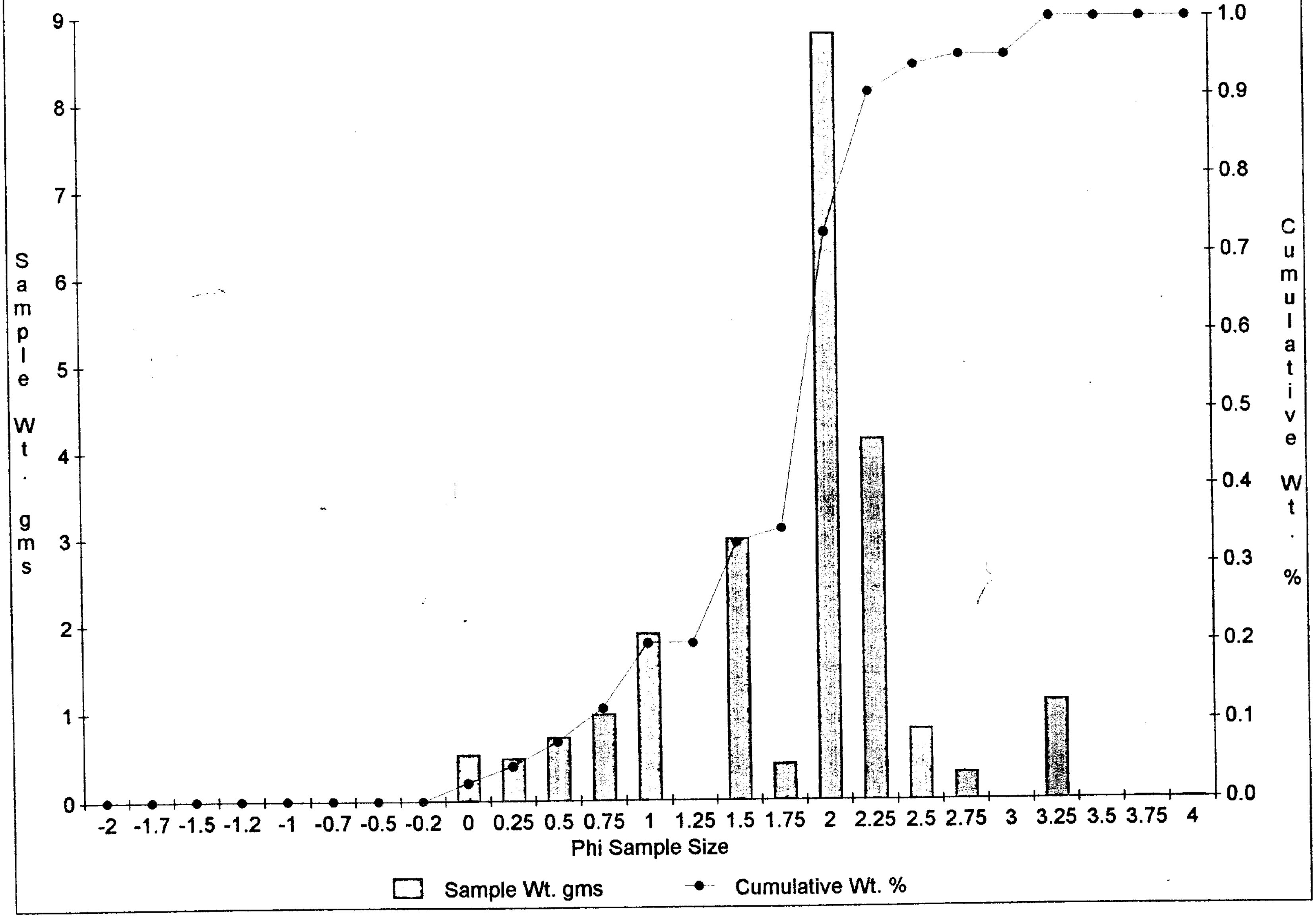
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0.5251	0	0.5251	0.5251	0.022686	0.022686033
0.25	0.4776	0	0.4776	1.0027	0.0206339	0.043319912
0.5	0.9067	0.1947	0.712	1.9094	0.0307607	0.074080635
0.75	1.5285	0.5535	0.975	3.4379	0.0421232	0.116203816
1	4.1903	2.2935	1.8968	7.6282	0.0819479	0.198151764
1.25	7.2319	7.2319	0	14.8601	0	0.198151764
1.5	14.0601	11.0869	2.9732	28.9202	0.1284519	0.326603705
1.75	15.0966	14.6907	0.4059	44.0168	0.0175362	0.344139909
2	19.7832	10.9777	8.8055	63.8	0.3804263	0.724566239
2.25	11.963	7.8195	4.1435	75.763	0.1790127	0.903578958
2.5	5.5381	4.7357	0.8024	81.3011	0.0346663	0.938245256
2.75	3.8305	3.5259	0.3046	85.1316	0.0131597	0.95140497
3	0.9064	0.9064	0	86.038	0	0.95140497
3.25	1.4386	0.3172	1.1214	87.4766	0.0484481	0.999853109
3.5	0.0384	0.0384	0	87.515	0	0.999853109
3.75	0.0102	0.0089	0.0013	87.5252	5.616E-05	0.999909273
4	0.0051	0.003	0.0021	87.5303	9.073E-05	1

Total Wt. 87.5303
CO3 Wt. 23.1464

Sample % Carbonate 26.443871

Cum CO3 Wt. % B2

4.5'



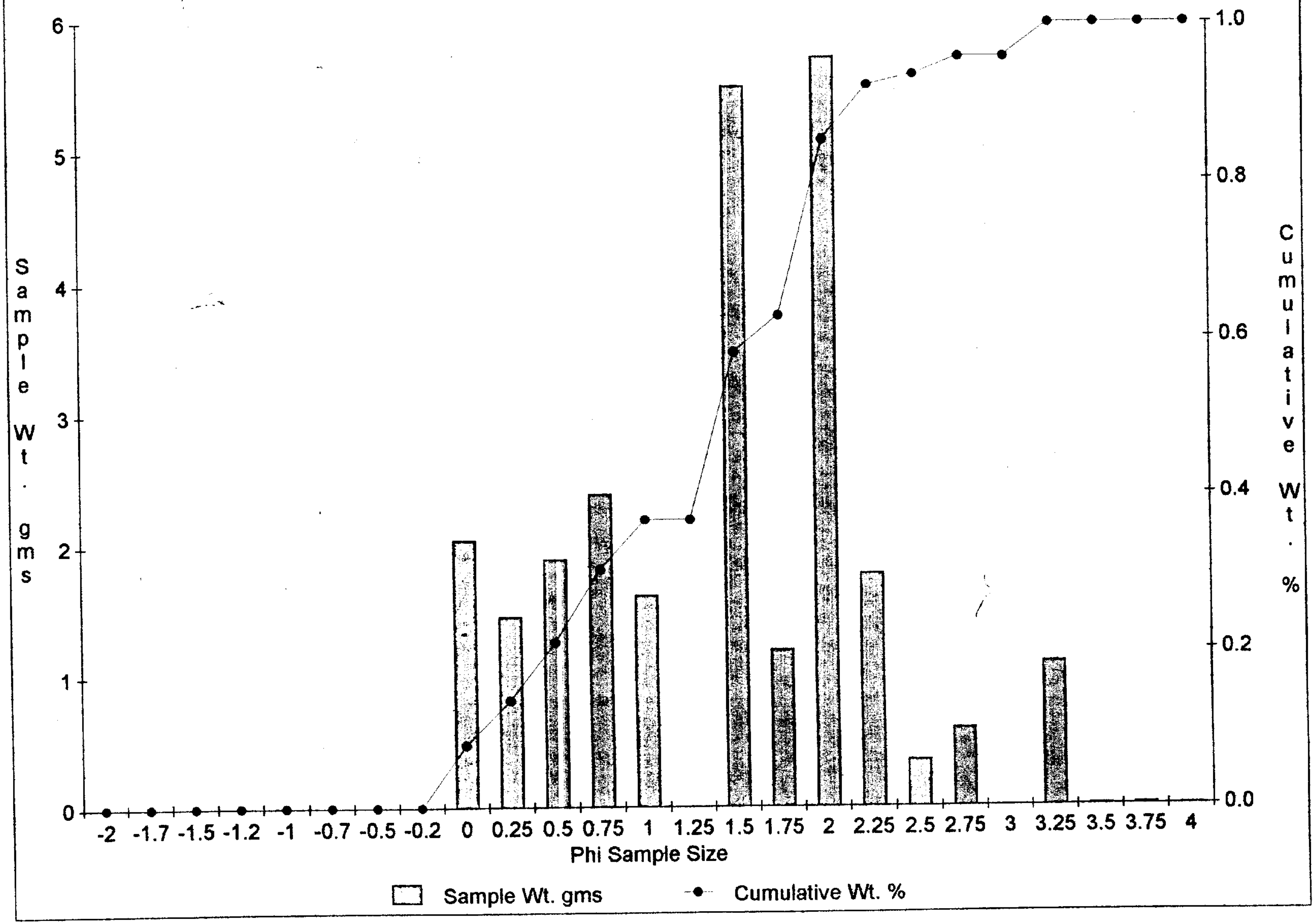
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	2.0422	0	2.0422	2.0422	0.0795197	0.079519658
0.25	1.6447	0.1894	1.4553	3.6869	0.0566668	0.136186467
0.5	2.1939	0.3033	1.8906	5.8808	0.0736166	0.209803089
0.75	3.7686	1.3774	2.3912	9.6494	0.0931091	0.30291219
1	5.8393	4.2229	1.6164	15.4887	0.0629398	0.365851949
1.25	8.6999	8.6999	0	24.1886	0	0.365851949
1.5	16.2174	10.7123	5.5051	40.406	0.2143589	0.580210812
1.75	12.5209	11.3241	1.1968	52.9269	0.0466013	0.626812088
2	12.3605	6.6287	5.7318	65.2874	0.2231862	0.849998248
2.25	7.0915	5.3115	1.78	72.3789	0.0693101	0.919308301
2.5	4.3695	4.0186	0.3509	76.7484	0.0136634	0.932971727
2.75	3.3433	2.7456	0.5977	80.0917	0.0232734	0.956245108
3	0.8177	0.8177	0	80.9094	0	0.956245108
3.25	1.3672	0.2641	1.1031	82.2766	0.0429528	0.999197872
3.5	0.053	0.0447	0.0083	82.3296	0.0003232	0.99952106
3.75	0.0175	0.0078	0.0097	82.3471	0.0003777	0.999898761
4	0.0045	0.0019	0.0026	82.3516	0.0001012	1

Total Wt. 82.3516
CO3 Wt. 25.6817

Sample % Carbonate 31.185429



Cum CO3 Wt. % B2

5'

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (5.5 FEET BLS)

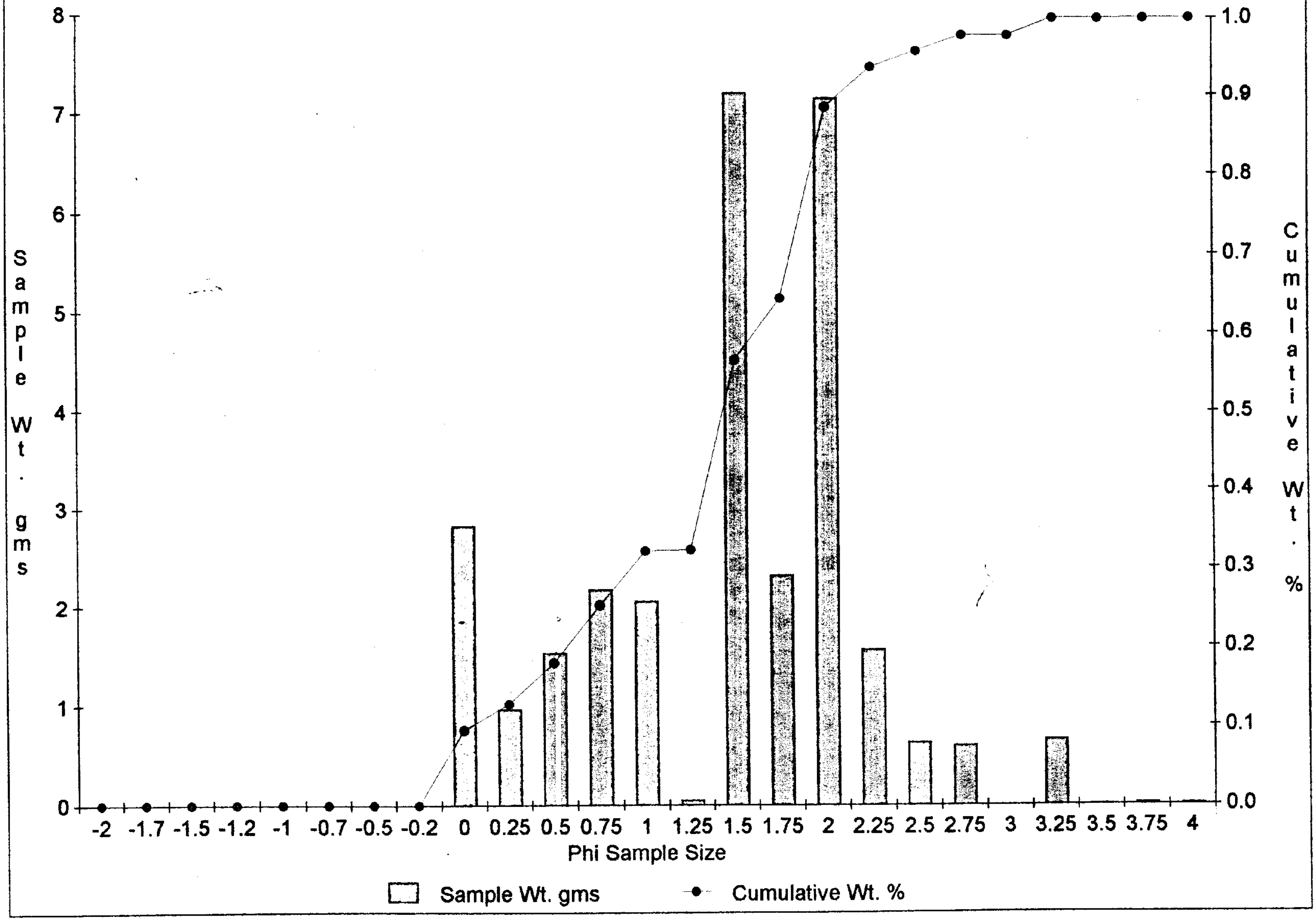
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	2.8176	0	2.8176	2.8176	0.0945624	0.094562394
0.25	1.1037	0.1407	0.963	3.9213	0.0323196	0.126881951
0.5	1.9239	0.4018	1.5221	5.8452	0.0510837	0.177965647
0.75	3.1552	0.9837	2.1715	9.0004	0.0728784	0.250844067
1	5.7643	3.6257	2.1386	14.7647	0.0717743	0.32261832
1.25	10.6051	10.562	0.0431	25.3698	0.0014465	0.324064814
1.5	20.2951	13.0899	7.2052	45.6649	0.2418161	0.565880884
1.75	15.9824	13.6711	2.3113	61.6473	0.0775703	0.643451178
2	14.5882	7.4389	7.1493	76.2355	0.23994	0.883391171
2.25	7.5714	6.0107	1.5607	83.8069	0.0523792	0.935770333
2.5	4.7652	4.1356	0.6296	88.5721	0.0211302	0.956900544
2.75	3.4367	2.8414	0.5953	92.0088	0.0199791	0.976879602
3	1.2082	1.2082	0	93.217	0	0.976879602
3.25	0.9591	0.2969	0.6622	94.1761	0.0222243	0.999103913
3.5	0.0593	0.0572	0.0021	94.2354	7.048E-05	0.999174391
3.75	0.032	0.0169	0.0151	94.2674	0.0005068	0.999681167
4	0.018	0.0085	0.0095	94.2854	0.0003188	1

Total Wt. 94.2854
CO3 Wt. 29.7962

Sample % Carbonate 31.602136

Cum CO3 Wt. % B2

5.5'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-2)
DEPTH (6 FEET BLS)

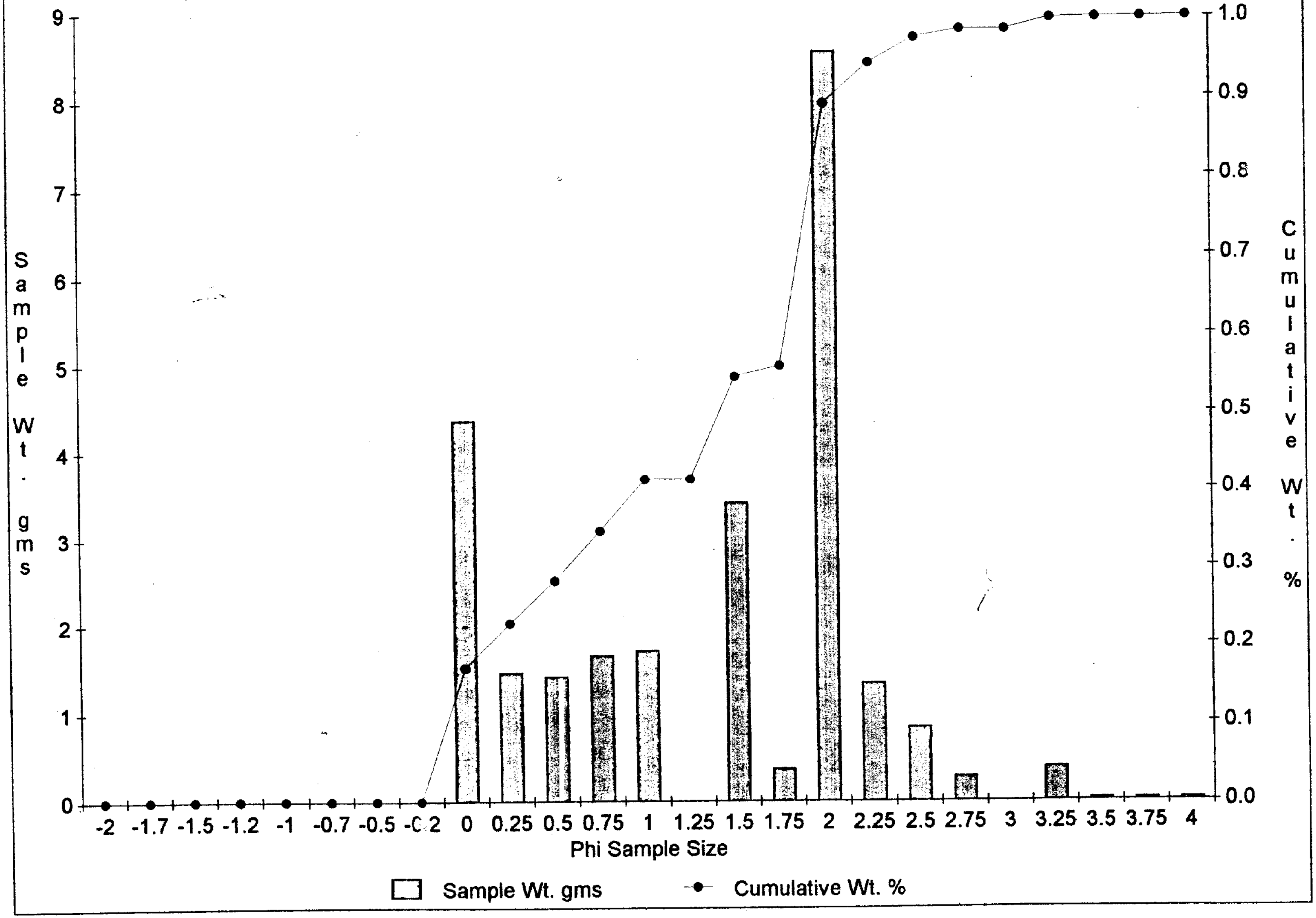
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	4.3685	0	4.3685	4.3685	0.1688407	0.168840706
0.25	1.666	0.204	1.462	6.0345	0.0565057	0.225346397
0.5	2.255	0.8411	1.4139	8.2895	0.0546466	0.279993043
0.75	2.9222	1.2654	1.6568	11.2117	0.0640346	0.344027673
1	4.6883	2.9806	1.7077	15.9	0.0660019	0.410029567
1.25	5.4317	5.4317	0	21.3317	0	0.410029567
1.5	10.5614	7.1392	3.4222	31.8931	0.1322666	0.542296172
1.75	7.5461	7.1868	0.3593	39.4392	0.0138868	0.556182967
2	13.1211	4.5343	8.5868	52.5603	0.3318762	0.888059211
2.25	4.6462	3.3061	1.3401	57.2065	0.0517943	0.939853518
2.5	2.2813	1.4411	0.8402	59.4878	0.0324734	0.972326898
2.75	1.4241	1.1504	0.2737	60.9119	0.0105784	0.982905289
3	0.3816	0.3816	0	61.2935	0	0.982905289
3.25	0.4985	0.122	0.3765	61.792	0.0145516	0.997456857
3.5	0.0456	0.0241	0.0215	61.8376	0.000831	0.998287823
3.75	0.0295	0.0058	0.0237	61.8671	0.000916	0.999203819
4	0.0226	0.002	0.0206	61.8897	0.0007962	1

Total Wt.	61.8897
CO3 Wt.	25.8735

Sample % Carbonate	41.805826

Cum CO3 Wt. % B2

6'

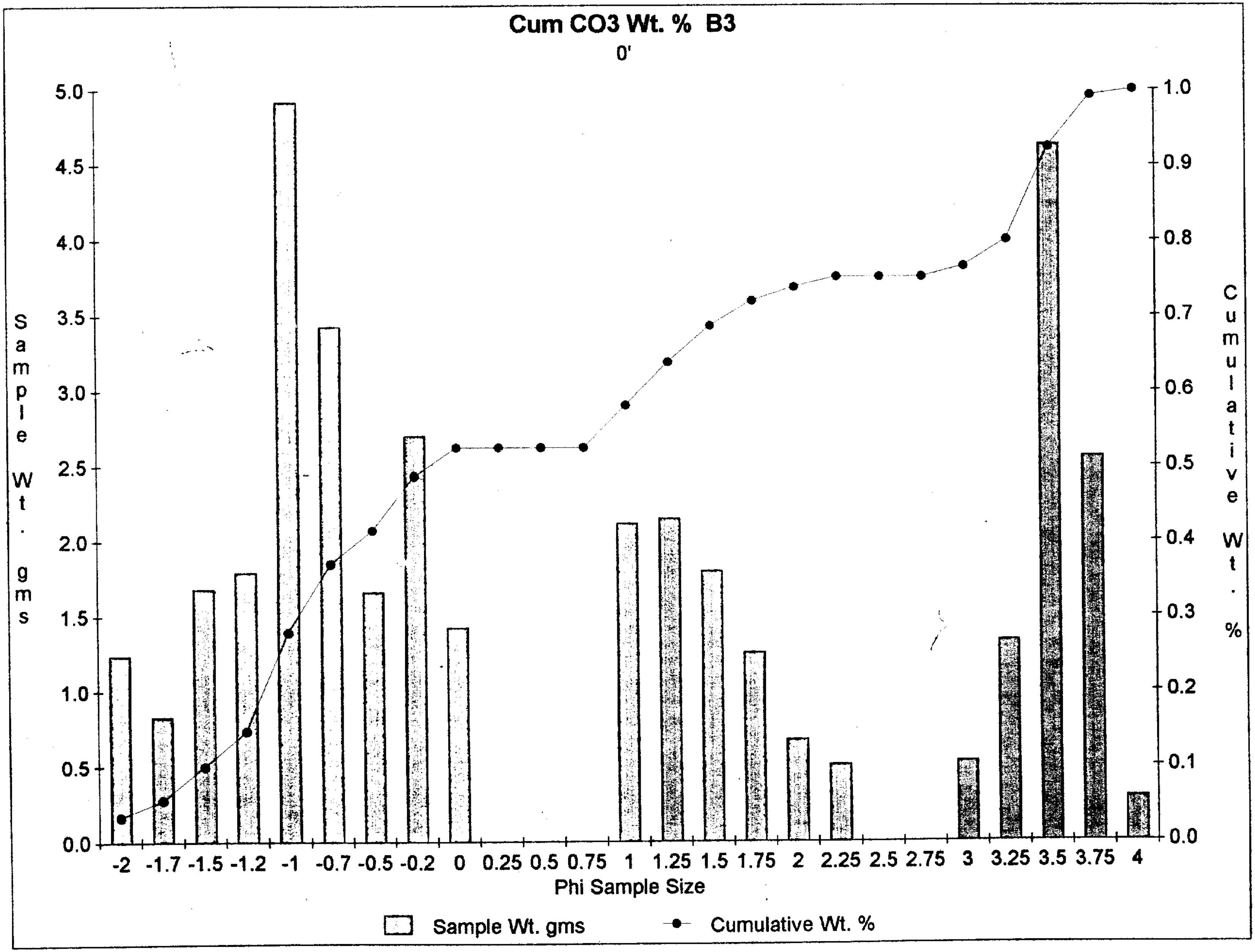


CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-3)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	1.2379	0	1.2379	1.2379	0.0330002	0.033000195
-1.75	0.8319	0	0.8319	2.0698	0.022177	0.055177157
-1.5	1.6804	0	1.6804	3.7502	0.0447965	0.099973608
-1.25	1.794	0	1.794	5.5442	0.0478248	0.147798432
-1	4.916	0	4.916	10.4602	0.1310517	0.278850178
-0.75	3.4249	0	3.4249	13.8851	0.0913017	0.370151872
-0.5	1.6612	0	1.6612	15.5463	0.0442846	0.414436485
-0.25	2.6972	0	2.6972	18.2435	0.0719025	0.486339002
0	2.2591	0.8391	1.42	20.5026	0.0378547	0.524193656
0.25	0.8335	0.8335	0	21.3361	0	0.524193656
0.5	1.119	1.116	0.003	22.4551	7.997E-05	0.524273631
0.75	2.2046	2.2046	0	24.6597	0	0.524273631
1	5.4162	3.3029	2.1133	30.0759	0.0563368	0.58061042
1.25	5.4543	3.3094	2.1449	35.5302	0.0571792	0.637789608
1.5	4.9969	3.1992	1.7977	40.5271	0.0479235	0.685713067
1.75	4.5267	3.275	1.2517	45.0538	0.0333681	0.719081145
2	4.2797	3.6068	0.6729	49.3335	0.0179383	0.737019452
2.25	2.492	1.9851	0.5069	51.8255	0.013513	0.750532498
2.5	2.464	2.464	0	54.2895	0	0.750532498
2.75	2.3718	2.3718	0	56.6613	0	0.750532498
3	4.0953	3.5612	0.5341	60.7566	0.0142381	0.764770646
3.25	7.8866	6.5493	1.3373	68.6432	0.03565	0.800420667
3.5	6.7722	2.1364	4.6358	75.4154	0.1235821	0.924002783
3.75	3.6151	1.0543	2.5608	79.0305	0.0682663	0.99226912
4	0.3701	0.0801	0.29	79.4006	0.0077309	1

Total Wt.	79.4006
CO3 Wt.	37.5119
Sample % Carbonate	47.24385


Cum CO3 Wt. % B3
0'
Sample Wt. gms
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-3)
DEPTH (2 FEET BLS)

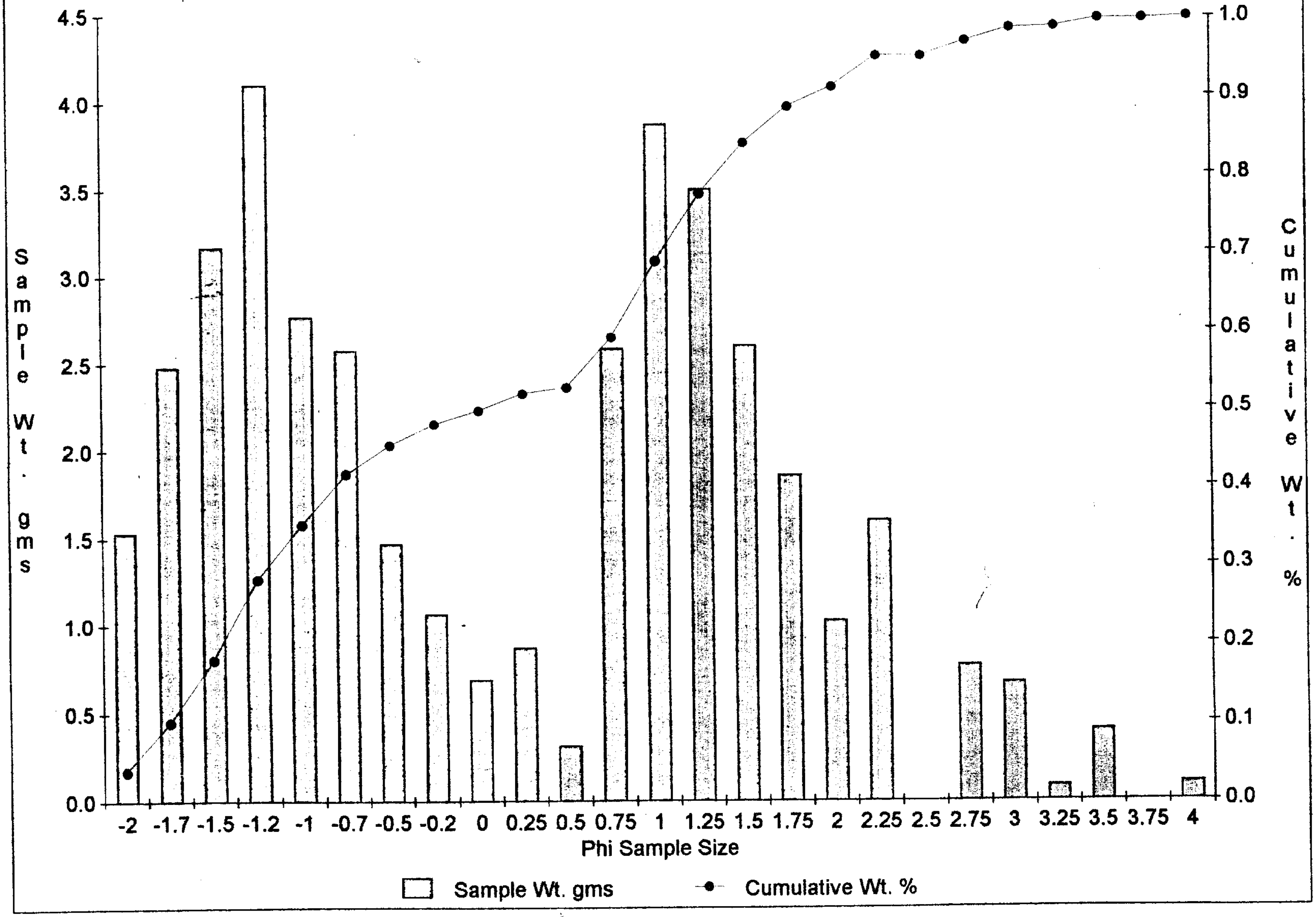
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	1.5299	0	1.5299	1.5299	0.0387759	0.038775919
-1.75	2.482	0	2.482	4.0119	0.0629073	0.101683188
-1.5	3.1662	0	3.1662	7.1781	0.0802486	0.181931775
-1.25	4.1027	0	4.1027	11.2808	0.1039845	0.285916325
-1	2.7682	0	2.7682	14.049	0.0701611	0.356077445
-0.75	2.5753	0	2.5753	16.6243	0.065272	0.421349439
-0.5	1.4649	0	1.4649	18.0892	0.0371285	0.458477908
-0.25	1.0618	0	1.0618	19.151	0.0269117	0.485389647
0	0.6867	0	0.6867	19.8377	0.0174047	0.50279433
0.25	1.5857	0.7175	0.8682	21.4234	0.0220049	0.524799201
0.5	3.0787	2.7688	0.3099	24.5021	0.0078545	0.532653739
0.75	5.432	2.8456	2.5864	29.9341	0.0655533	0.598207067
1	8.4765	4.6031	3.8734	38.4106	0.0981729	0.696379917
1.25	9.5879	6.0857	3.5022	47.9985	0.0887646	0.785144557
1.5	9.3761	6.7733	2.6028	57.3746	0.065969	0.85111355
1.75	8.7545	6.9017	1.8528	66.1291	0.0469599	0.898073497
2	7.9866	6.9652	1.0214	74.1157	0.0258878	0.923961282
2.25	5.445	3.8476	1.5974	79.5607	0.0404867	0.964448015
2.5	4.5779	4.5779	0	84.1386	0	0.964448015
2.75	3.1876	3.0451	0.1425	87.3262	0.0036117	0.968059734
3	3.9341	3.2605	0.6736	91.2603	0.0170727	0.985132392
3.25	3.6475	3.5635	0.084	94.9078	0.002129	0.987261405
3.5	1.8306	1.428	0.4026	96.7384	0.0102041	0.997465461
3.75	0.8369	0.8369	0	97.5753	0	0.997465461
4	0.1987	0.0987	0.1	97.774	0.0025345	1

Total Wt.	97.774
CO3 Wt.	39.4549

Sample % Carbonate	40.353161

Cum CO3 Wt. % B3

2'



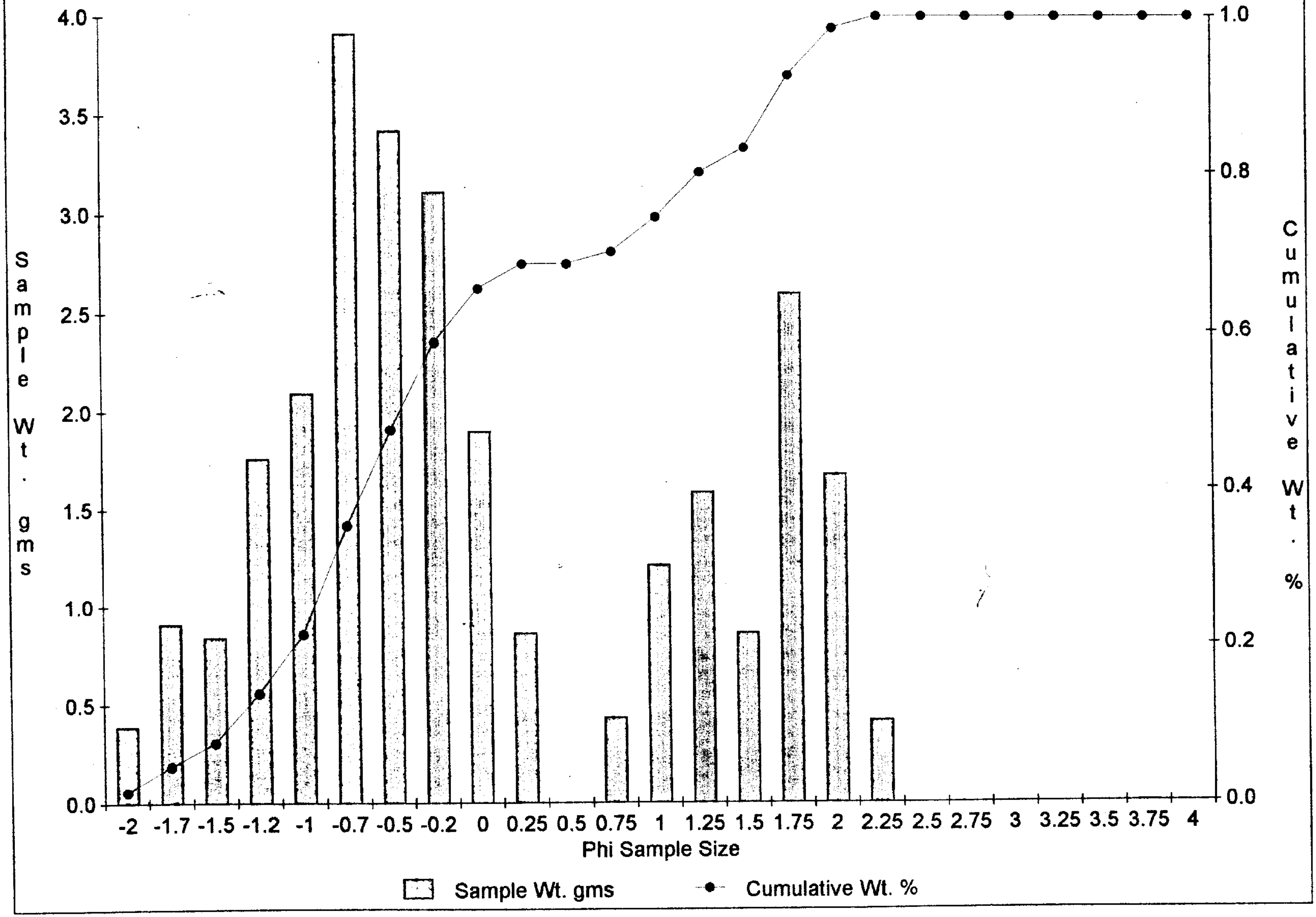
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-4)
DEPTH (0.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.3886	0	0.3886	0.3886	0.0139024	0.013902354
-1.75	0.9107	0	0.9107	1.2993	0.0325807	0.046483091
-1.5	0.841	0	0.841	2.1403	0.0300872	0.076570276
-1.25	1.7596	0	1.7596	3.8999	0.0629505	0.139520823
-1	2.0919	0	2.0919	5.9918	0.0748387	0.214359565
-0.75	3.9094	0	3.9094	9.9012	0.1398607	0.354220255
-0.5	3.4194	0	3.4194	13.3206	0.1223307	0.476550957
-0.25	3.1061	0	3.1061	16.4267	0.1111222	0.587673198
0	1.9007	0.0049	1.8958	18.3274	0.0678232	0.655496367
0.25	1.8841	1.0261	0.858	20.2115	0.0306954	0.686191735
0.5	1.294	1.294	0	21.5055	0	0.686191735
0.75	2.9224	2.4898	0.4326	24.4279	0.0154765	0.701668211
1	5.32	4.1099	1.2101	29.7479	0.0432919	0.744960128
1.25	8.2997	6.7154	1.5843	38.0476	0.0566791	0.801639233
1.5	9.6127	8.7541	0.8586	47.6603	0.0307168	0.832356066
1.75	10.6734	8.0797	2.5937	58.3337	0.0927909	0.925146948
2	8.8795	7.2054	1.6741	67.2132	0.0598917	0.985038691
2.25	3.1874	2.7704	0.417	70.4006	0.0149184	0.999957069
2.5	0.5884	0.5884	0	70.989	0	0.999957069
2.75	0.0849	0.0849	0	71.0739	0	0.999957069
3	0.0523	0.0523	0	71.1262	0	0.999957069
3.25	0.0367	0.0367	0	71.1629	0	0.999957069
3.5	0.0055	0.0055	0	71.1684	0	0.999957069
3.75	0.0041	0.0031	0.001	71.1725	3.578E-05	0.999992845
4	0.0008	0.0006	0.0002	71.1733	7.155E-06	1

Total Wt.	71.1733
CO3 Wt.	27.9521

Sample % Carbonate 39.273295



Cum CO3 Wt. % B4

0.5'

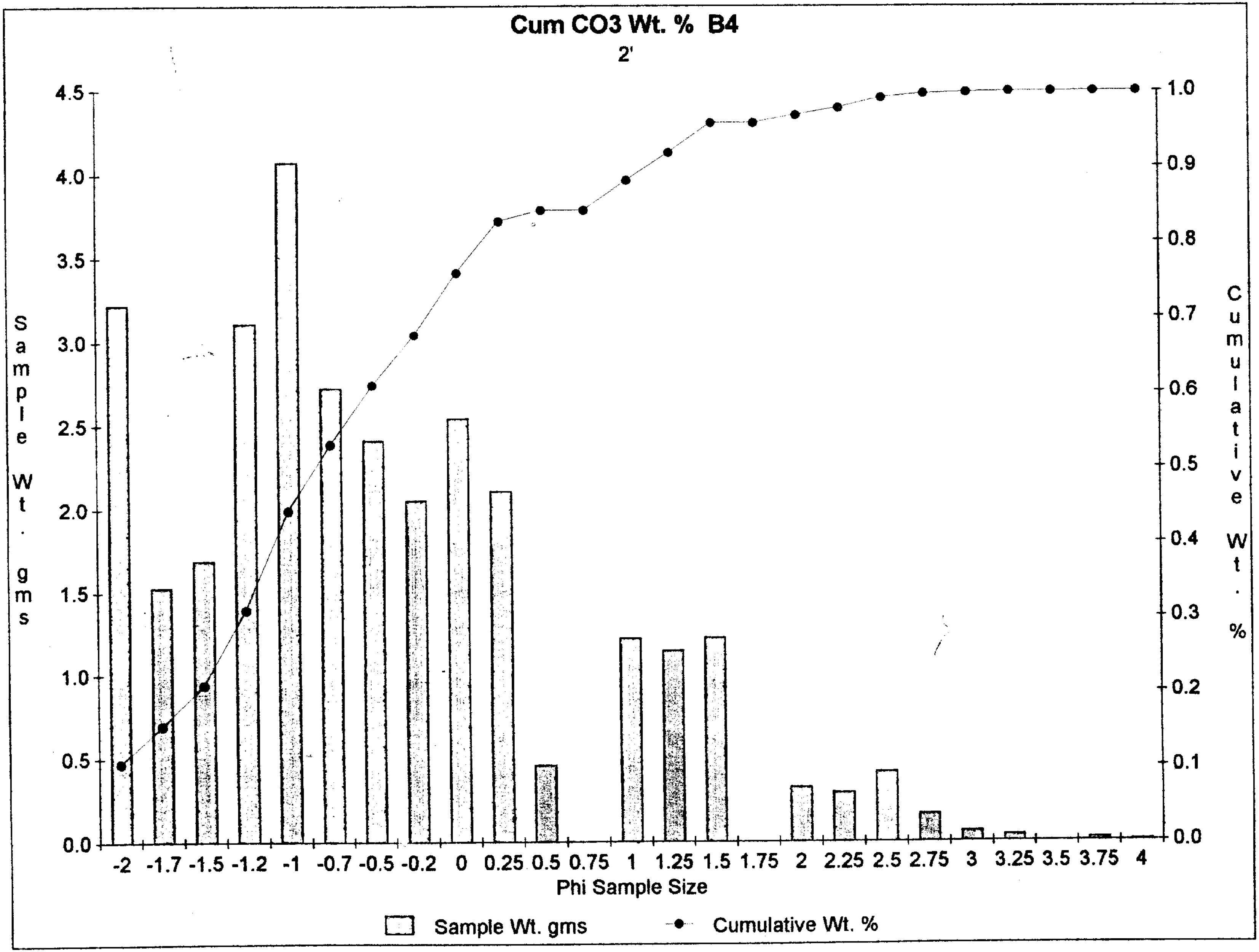
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-4)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	3.2218	0	3.2218	3.2218	0.1046426	0.104642627
-1.75	1.5282	0	1.5282	4.75	0.0496353	0.154277882
-1.5	1.689	0	1.689	6.439	0.054858	0.209135849
-1.25	3.1091	0	3.1091	9.5481	0.1009822	0.310118031
-1	4.0706	0	4.0706	13.6187	0.1322113	0.442329304
-0.75	2.722	0	2.722	16.3407	0.0884093	0.53073865
-0.5	2.4079	0	2.4079	18.7486	0.0782075	0.608946168
-0.25	2.0489	0	2.0489	20.7975	0.0665474	0.675493527
0	2.6616	0.1232	2.5384	23.4591	0.0824461	0.757939627
0.25	2.9643	0.8595	2.1048	26.4234	0.068363	0.826302593
0.5	2.0081	1.5516	0.4565	28.4315	0.0148269	0.841129509
0.75	1.0448	1.0448	0	29.4763	0	0.841129509
1	3.8803	2.663	1.2173	33.3566	0.0395374	0.88066687
1.25	5.8614	4.7189	1.1425	39.218	0.0371079	0.917774761
1.5	6.4482	5.2279	1.2203	45.6662	0.0396348	0.957409561
1.75	6.0094	6.0094	0	51.6756	0	0.957409561
2	5.3467	5.0249	0.3218	57.0223	0.0104519	0.967861481
2.25	2.4151	2.1243	0.2908	59.4374	0.0094451	0.977306536
2.5	1.1697	0.752	0.4177	60.6071	0.0135667	0.990873245
2.75	0.3414	0.1782	0.1632	60.9485	0.0053007	0.996173909
3	0.1828	0.1228	0.06	61.1313	0.0019488	0.998122682
3.25	0.1111	0.0738	0.0373	61.2424	0.0012115	0.999334169
3.5	0.0203	0.0203	0	61.2627	0	0.999334169
3.75	0.0201	0.0033	0.0168	61.2828	0.0005457	0.999879826
4	0.0049	0.0012	0.0037	61.2877	0.0001202	1

Total Wt.	61.2877
CO3 Wt.	30.7886

Sample % Carbonate	50.236181



Cum CO3 Wt. % B4

2'

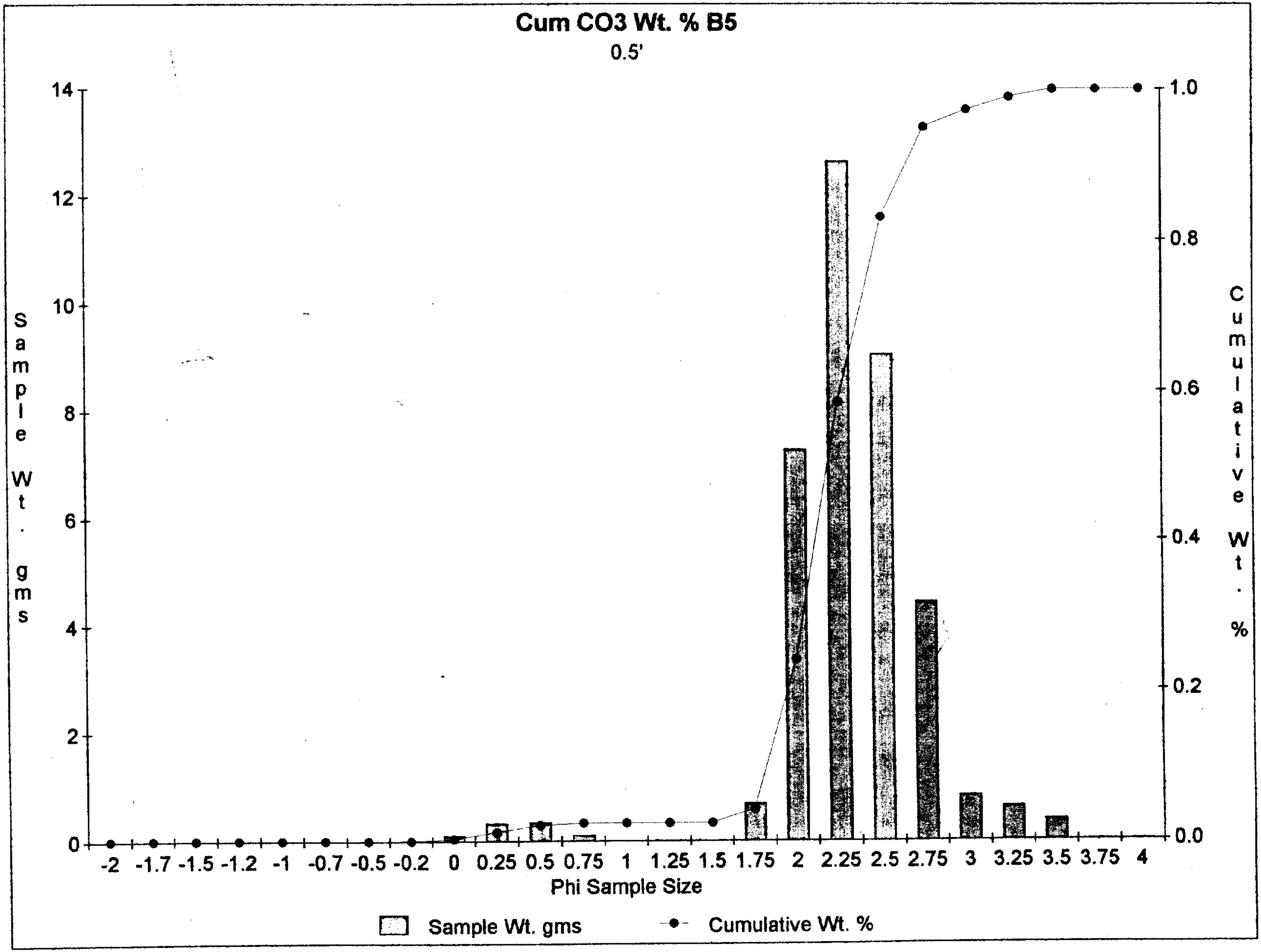
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-5)
DEPTH (0.5 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.0045	0	0.0045	0.0045	0.0001223	0.00012234
0	0.0984	0.0057	0.0927	0.1029	0.0025202	0.002642554
0.25	0.3961	0.0777	0.3184	0.499	0.0086563	0.011298821
0.5	0.693	0.3578	0.3352	1.192	0.009113	0.020411825
0.75	1.4232	1.3256	0.0976	2.6152	0.0026534	0.023065254
1	1.4272	1.4272	0	4.0424	0	0.023065254
1.25	2.9088	2.9088	0	6.9512	0	0.023065254
1.5	7.2489	7.2489	0	14.2001	0	0.023065254
1.75	14.9709	14.2965	0.6744	29.171	0.0183348	0.04140001
2	15.126	7.8453	7.2807	44.297	0.1979387	0.239338709
2.25	17.7801	5.127	12.6531	62.0771	0.3439969	0.583335599
2.5	9.8807	0.8168	9.0639	71.9578	0.2464181	0.829753742
2.75	5.0975	0.6757	4.4218	77.0553	0.1202144	0.949968191
3	1.2042	0.371	0.8332	78.2595	0.022652	0.972620206
3.25	0.7031	0.0813	0.6218	78.9626	0.0169047	0.989524938
3.5	0.3875	0.0102	0.3773	79.3501	0.0102576	0.999782506
3.75	0.0141	0.0097	0.0044	79.3642	0.0001196	0.999902128
4	0.0057	0.0021	0.0036	79.3699	9.787E-05	1

Total Wt.	79.3699
CO3 Wt.	36.7826

Sample % Carbonate 46.343261


Cum CO3 Wt. % B5
0.5'
Sample Wt. gms
14
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.8
0.6
0.4
0.2
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

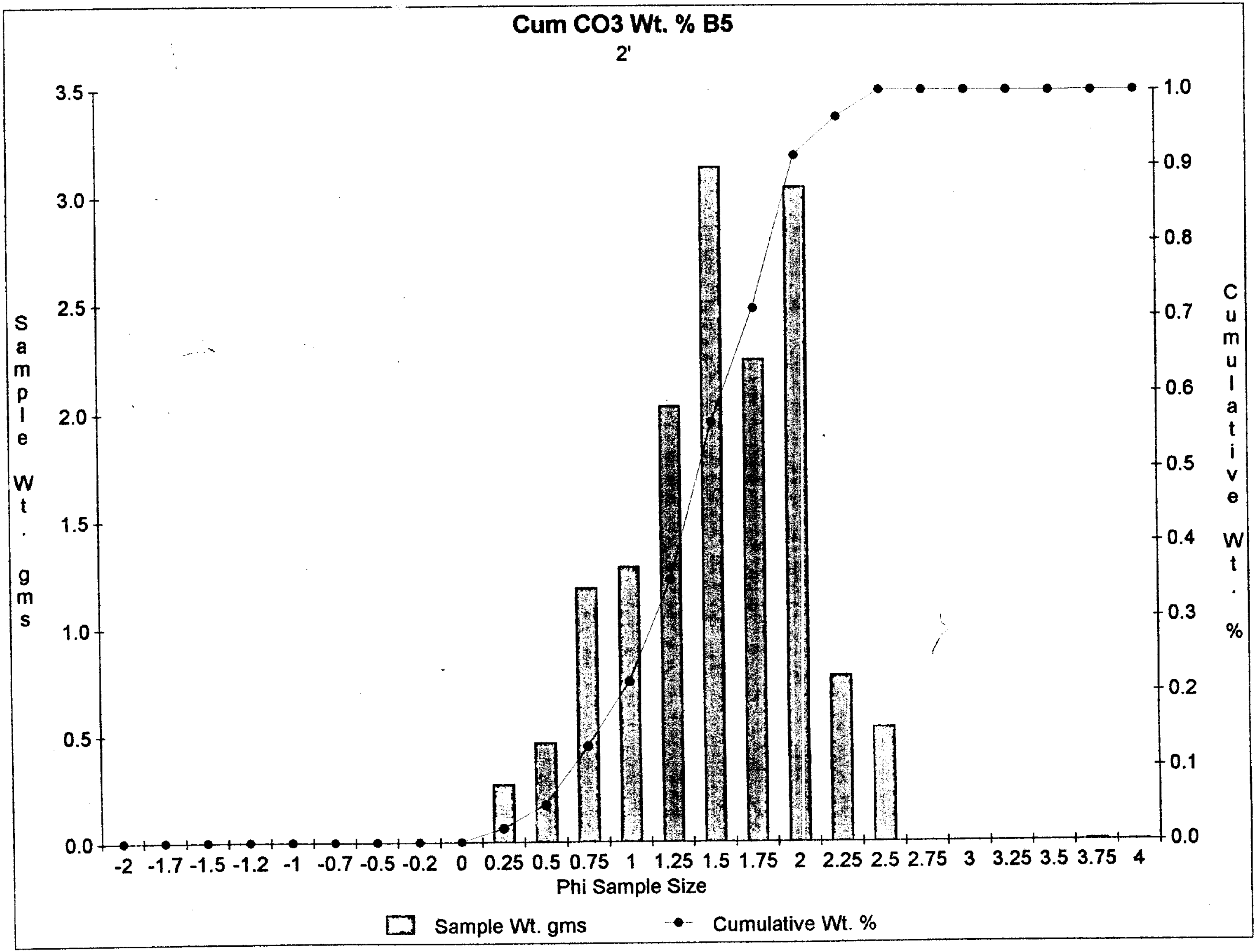
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-5)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0	0	0	0	0	0
0.25	0.2833	0.0147	0.2686	0.2833	0.017923	0.017923036
0.5	0.5572	0.0929	0.4643	0.8405	0.0309816	0.048904666
0.75	1.3137	0.13	1.1837	2.1542	0.0789855	0.12789014
1	1.8797	0.5959	1.2838	4.0339	0.0856649	0.213555047
1.25	4.3865	2.3554	2.0311	8.4204	0.1355305	0.349085498
1.5	9.2702	6.1301	3.1401	17.6906	0.2095314	0.55861687
1.75	10.6125	8.366	2.2465	28.3031	0.1499036	0.708520449
2	14.0572	11.0094	3.0478	42.3603	0.2033724	0.911892862
2.25	10.102	9.3251	0.7769	52.4623	0.0518407	0.963733543
2.5	7.9789	7.4446	0.5343	60.4412	0.0356526	0.999386106
2.75	2.4067	2.4067	0	62.8479	0	0.999386106
3	0.9067	0.9067	0	63.7546	0	0.999386106
3.25	0.5122	0.5122	0	64.2668	0	0.999386106
3.5	0.0748	0.0748	0	64.3416	0	0.999386106
3.75	0.0213	0.0146	0.0067	64.3629	0.0004471	0.999833181
4	0.0097	0.0072	0.0025	64.3726	0.0001668	1

Total Wt. 64.3726
CO3 Wt. 14.9863

Sample % Carbonate 23.280557


Cum CO3 Wt. % B5

2'

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-6)
DEPTH (0 FEET BLS)

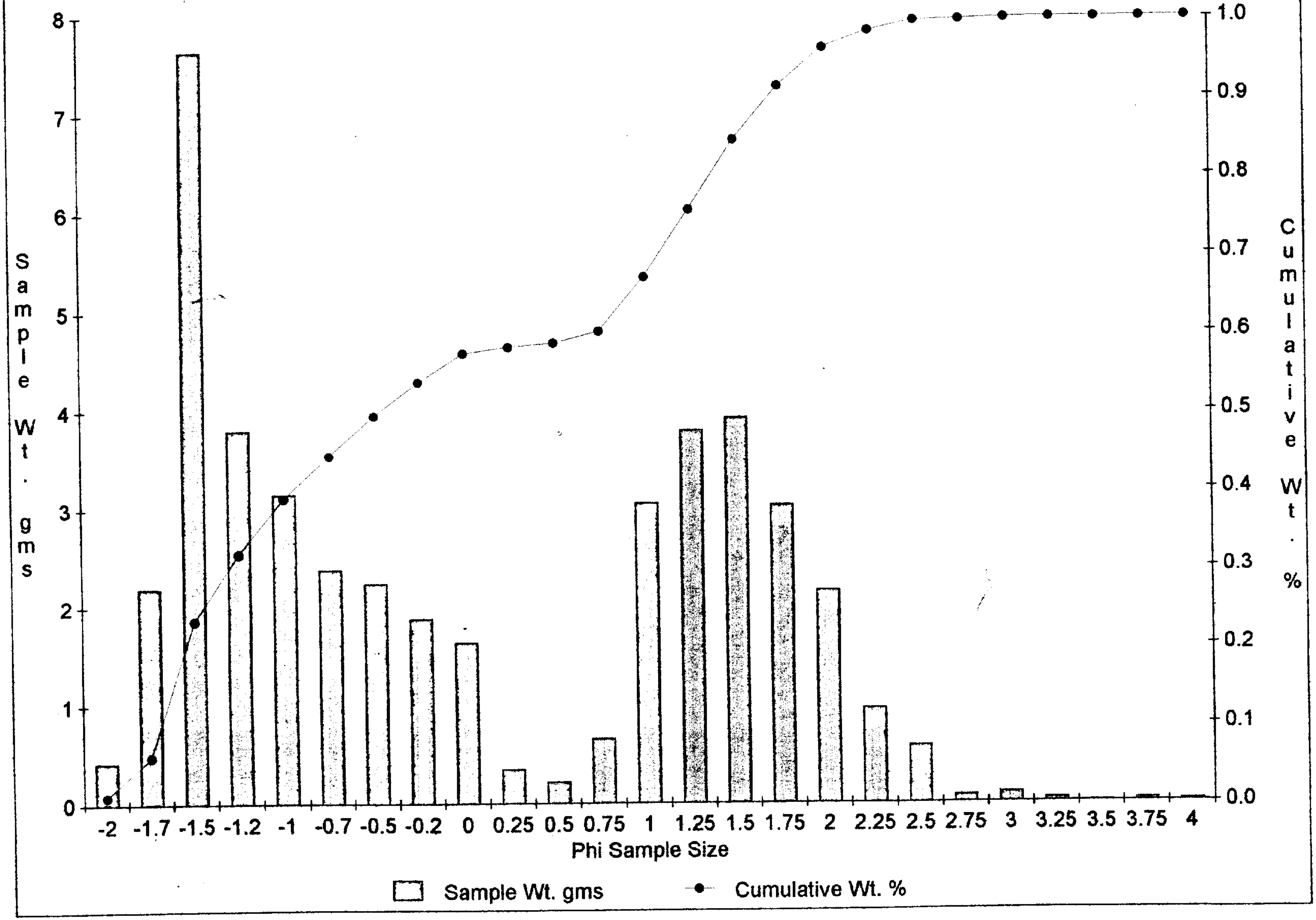
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.419	0	0.419	0.419	0.0094709	0.009470917
-1.75	2.1893	0	2.1893	2.6083	0.0494861	0.058957024
-1.5	7.643	0	7.643	10.2513	0.1727595	0.231716496
-1.25	3.8005	0	3.8005	14.0518	0.0859051	0.317621557
-1	3.1507	0	3.1507	17.2025	0.0712172	0.388838784
-0.75	2.3807	0	2.3807	19.5832	0.0538124	0.442651224
-0.5	2.2358	0	2.2358	21.819	0.0505372	0.493188399
-0.25	1.8709	0	1.8709	23.6899	0.0422891	0.535477513
0	1.6509	0.0243	1.6266	25.3408	0.036767	0.572244562
0.25	0.5278	0.1837	0.3441	25.8686	0.0077779	0.580022468
0.5	0.991	0.7754	0.2156	26.8596	0.0048733	0.584895809
0.75	1.7408	1.0941	0.6467	28.6004	0.0146178	0.59951357
1	4.4581	1.4071	3.051	33.0585	0.0689636	0.668477217
1.25	6.2096	2.4197	3.7899	39.2681	0.0856655	0.754142679
1.5	6.8749	2.9536	3.9213	46.143	0.0886356	0.842778256
1.75	6.1844	3.1548	3.0296	52.3274	0.0684799	0.911258185
2	4.8929	2.738	2.1549	57.2203	0.0487085	0.959966727
2.25	2.5382	1.5837	0.9545	59.7585	0.0215752	0.981541883
2.5	1.6883	1.1158	0.5725	61.4468	0.0129406	0.994482456
2.75	0.394	0.3248	0.0692	61.8408	0.0015642	0.996046627
3	0.3024	0.204	0.0984	62.1432	0.0022242	0.998270823
3.25	0.1689	0.1347	0.0342	62.3121	0.000773	0.999043867
3.5	0.0472	0.0458	0.0014	62.3593	3.165E-05	0.999075512
3.75	0.0405	0.015	0.0255	62.3998	0.0005764	0.999651904
4	0.0201	0.0047	0.0154	62.4199	0.0003481	1

Total Wt.	62.4199
CO3 Wt.	44.2407

Sample % Carbonate 70.875955

Cum CO3 Wt. % B6

0'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (B-6)
DEPTH (2 FEET BLS)

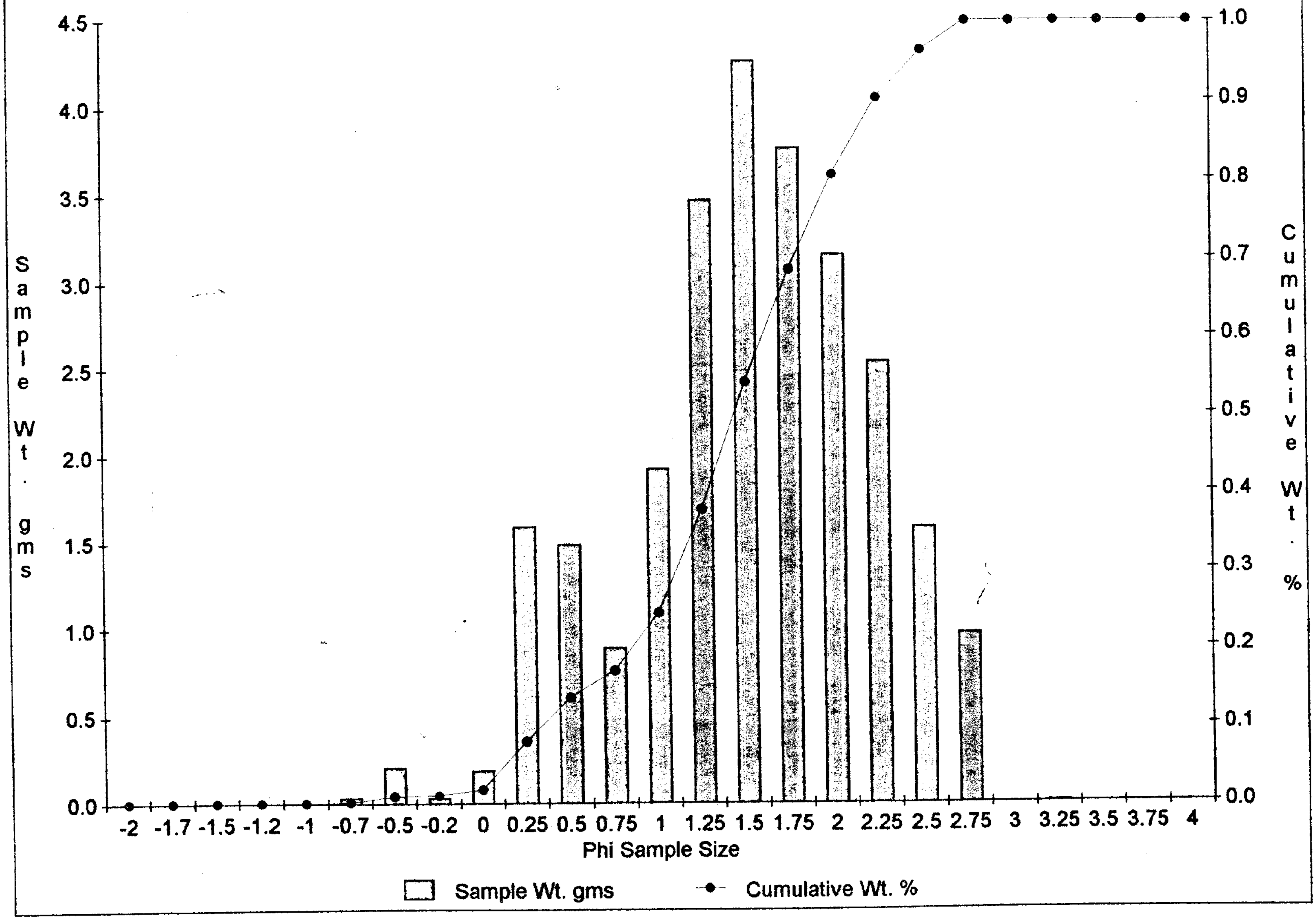
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.0305	0	0.0305	0.0305	0.0011663	0.001166348
-0.5	0.2041	0	0.2041	0.2346	0.007805	0.008971319
-0.25	0.0301	0	0.0301	0.2647	0.0011511	0.010122371
0	0.1877	0	0.1877	0.4524	0.0071778	0.017300191
0.25	1.5914	0	1.5914	2.0438	0.0608566	0.078156788
0.5	1.4947	0.0071	1.4876	3.5385	0.0568872	0.135043977
0.75	1.5574	0.6651	0.8923	5.0959	0.0341224	0.169166348
1	2.8359	0.9091	1.9268	7.9318	0.0736826	0.242848948
1.25	6.0574	2.5808	3.4766	13.9892	0.1329484	0.375797323
1.5	9.9553	5.6829	4.2724	23.9445	0.1633805	0.53917782
1.75	11.6852	7.9116	3.7736	35.6297	0.1443059	0.683483748
2	12.5148	9.3508	3.164	48.1445	0.1209943	0.804478011
2.25	9.5855	7.0421	2.5434	57.73	0.097262	0.901739962
2.5	6.7976	5.2102	1.5874	64.5276	0.0607036	0.962443595
2.75	2.6631	1.6874	0.9757	67.1907	0.0373117	0.999755258
3	1.0684	1.0684	0	68.2591	0	0.999755258
3.25	0.5336	0.5272	0.0064	68.7927	0.0002447	1
3.5	0.0809	0.0809	0	68.8736	0	1
3.75	0.0257	0.0257	0	68.8993	0	1
4	0.0107	0.0107	0	68.91	0	1

Total Wt.	68.91
CO3 Wt.	26.15

Sample % Carbonate 37.948048

Cum CO3 Wt. % B6

2'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

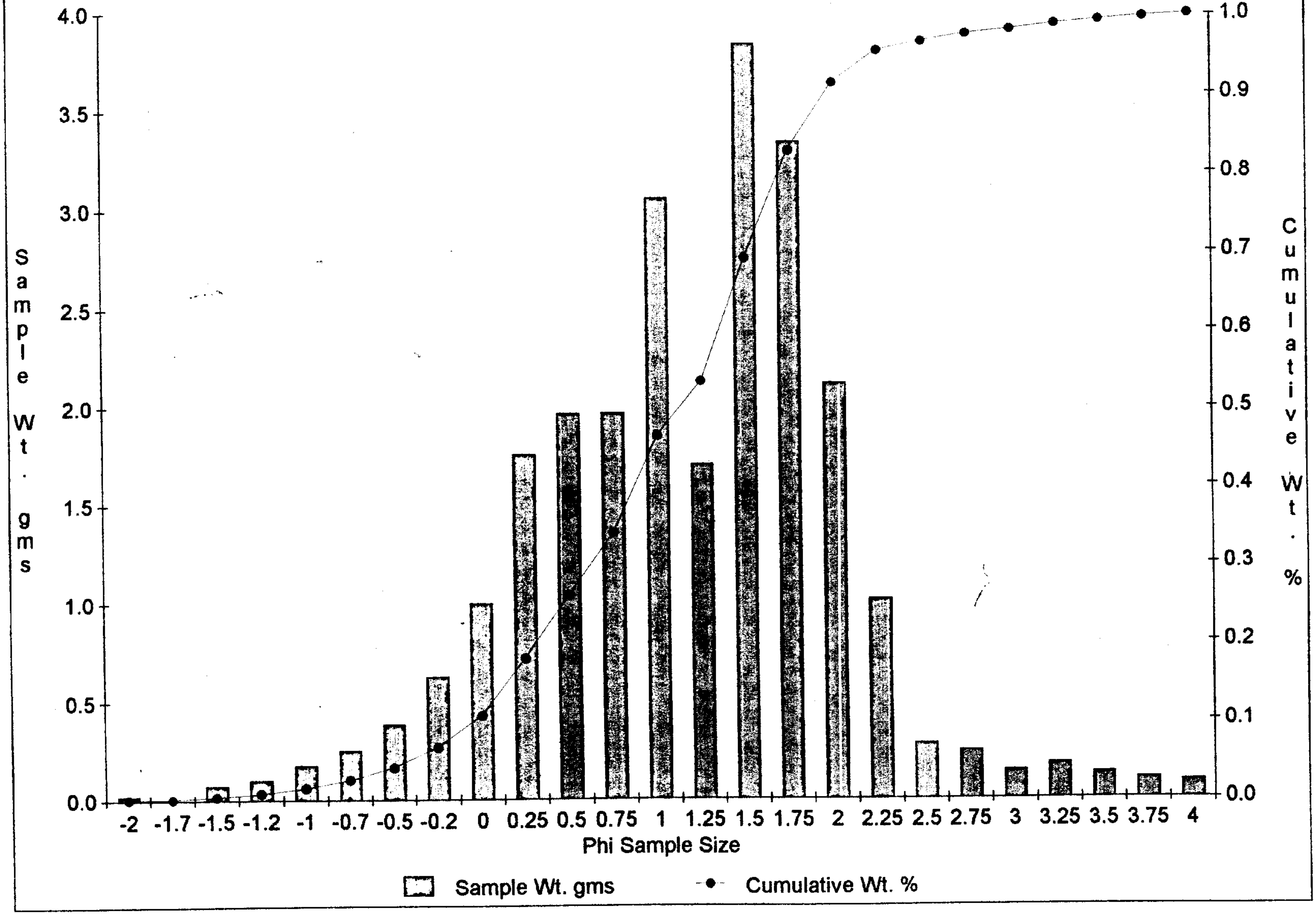
CORE (IR-1)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.0205	0	0.0205	0.0205	0.0008352	0.000835238
-1.75	0	0	0	0.0205	0	0.000835238
-1.5	0.0704	0	0.0704	0.0909	0.0028683	0.003703568
-1.25	0.1007	0	0.1007	0.1916	0.0041029	0.00780642
-1	0.1746	0	0.1746	0.3662	0.0071138	0.014920204
-0.75	0.2508	0	0.2508	0.617	0.0102184	0.025138629
-0.5	0.3841	0	0.3841	1.0011	0.0156495	0.040788139
-0.25	0.6248	0	0.6248	1.6259	0.0254564	0.066244566
0	0.9919	0	0.9919	2.6178	0.0404133	0.106657866
0.25	1.755	0	1.755	4.3728	0.0715045	0.178162395
0.5	3.1848	1.2201	1.9647	7.5576	0.0800484	0.258210798
0.75	3.9884	2.0209	1.9675	11.546	0.0801625	0.338373282
1	7.6254	4.5662	3.0592	19.1714	0.124642	0.46301525
1.25	9.5988	7.894	1.7048	28.7702	0.0694592	0.532474464
1.5	12.3535	8.5074	3.8461	41.1237	0.1567029	0.689177352
1.75	11.4451	8.0986	3.3465	52.5688	0.1363475	0.825524876
2	6.4455	4.3268	2.1187	59.0143	0.0863229	0.91184775
2.25	3.6456	2.6337	1.0119	62.6599	0.0412282	0.953075917
2.5	1.5572	1.2781	0.2791	64.2171	0.0113715	0.964447378
2.75	1.3303	1.0873	0.243	65.5474	0.0099006	0.974348005
3	1.1989	1.0585	0.1404	66.7463	0.0057204	0.980068367
3.25	0.772	0.5953	0.1767	67.5183	0.0071993	0.987267712
3.5	0.4243	0.2975	0.1268	67.9426	0.0051663	0.992433965
3.75	0.1812	0.0809	0.1003	68.1238	0.0040866	0.99652052
4	0.1001	0.0147	0.0854	68.2239	0.0034795	1

Total Wt.	68.2239
CO3 Wt.	24.5439
Sample % Carbonate	35.975516

Cum CO3 Wt. % IR1

0'



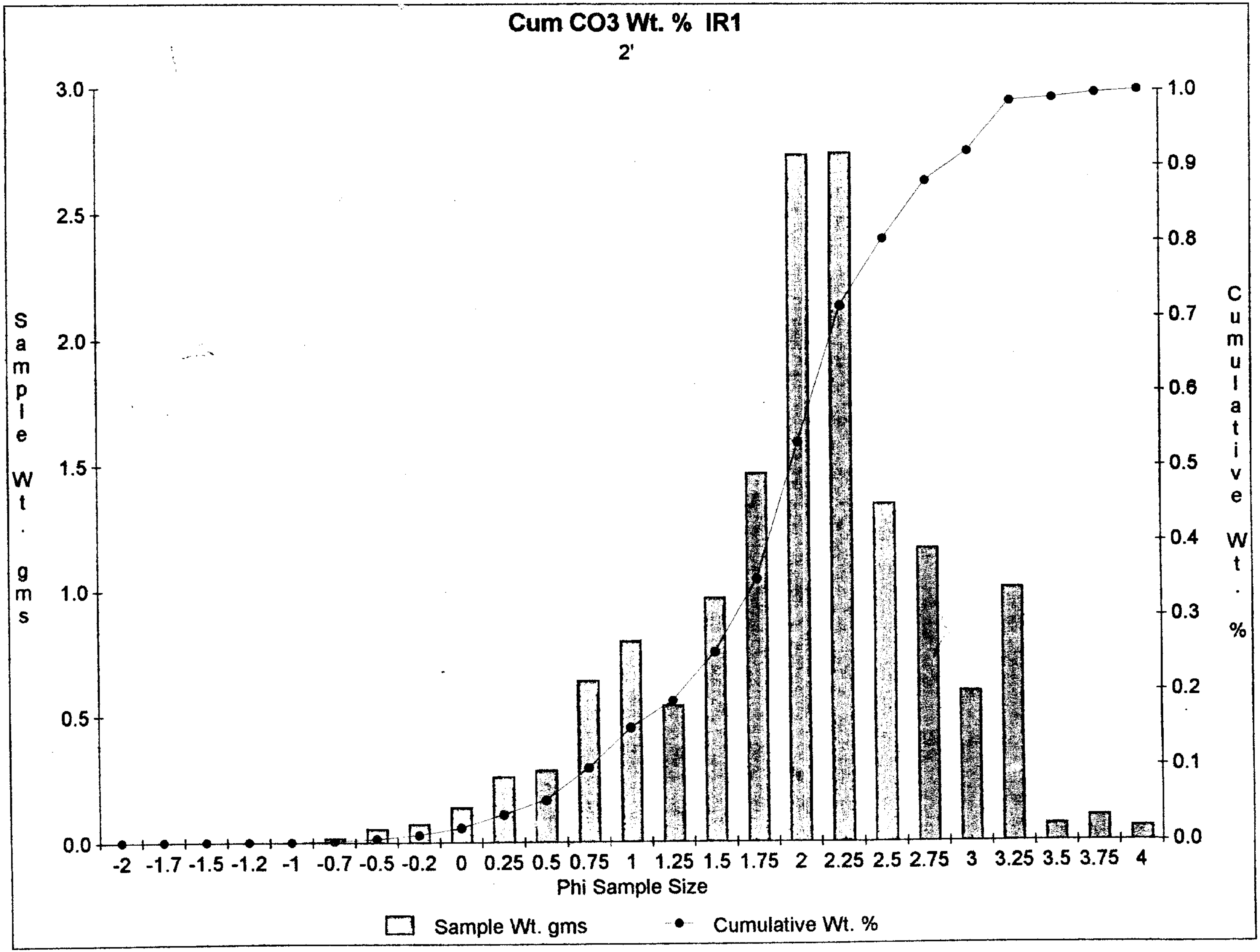
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (IR-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.0169	0	0.0169	0.0169	0.0011223	0.001122282
-0.5	0.0527	0	0.0527	0.0696	0.0034997	0.004621944
-0.25	0.073	0	0.073	0.1426	0.0048477	0.009469672
0	0.1383	0	0.1383	0.2809	0.0091841	0.018653793
0.25	0.2592	0	0.2592	0.5401	0.0172128	0.035866548
0.5	0.5049	0.2219	0.283	1.045	0.0187932	0.054659796
0.75	1.0988	0.46	0.6388	2.1438	0.0424209	0.097080738
1	2.0885	1.2928	0.7957	4.2323	0.0528402	0.149920975
1.25	3.9334	3.3937	0.5397	8.1657	0.03584	0.185760961
1.5	7.3812	6.4129	0.9683	15.5469	0.0643021	0.250063087
1.75	10.7313	9.2646	1.4667	26.2782	0.0973995	0.34746258
2	11.0581	8.3211	2.737	37.3363	0.1817566	0.529219184
2.25	11.2999	8.5562	2.7437	48.6362	0.1822015	0.711420716
2.5	6.8509	5.5061	1.3448	55.4871	0.0893045	0.800725167
2.75	4.677	3.5093	1.1677	60.1641	0.0775437	0.878268896
3	2.7379	2.1397	0.5982	62.902	0.0397248	0.917993705
3.25	1.5465	0.5326	1.0139	64.4485	0.0673303	0.985324001
3.5	0.3234	0.2572	0.0662	64.7719	0.0043962	0.98972016
3.75	0.1278	0.0279	0.0999	64.8997	0.0066341	0.996354243
4	0.0661	0.0112	0.0549	64.9658	0.0036458	1

Total Wt.	64.9658
CO3 Wt.	15.0586

Sample % Carbonate 23.179273


Cum CO3 Wt. % IR1
2'
Sample Wt. gms
Cumulative Wt. %
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

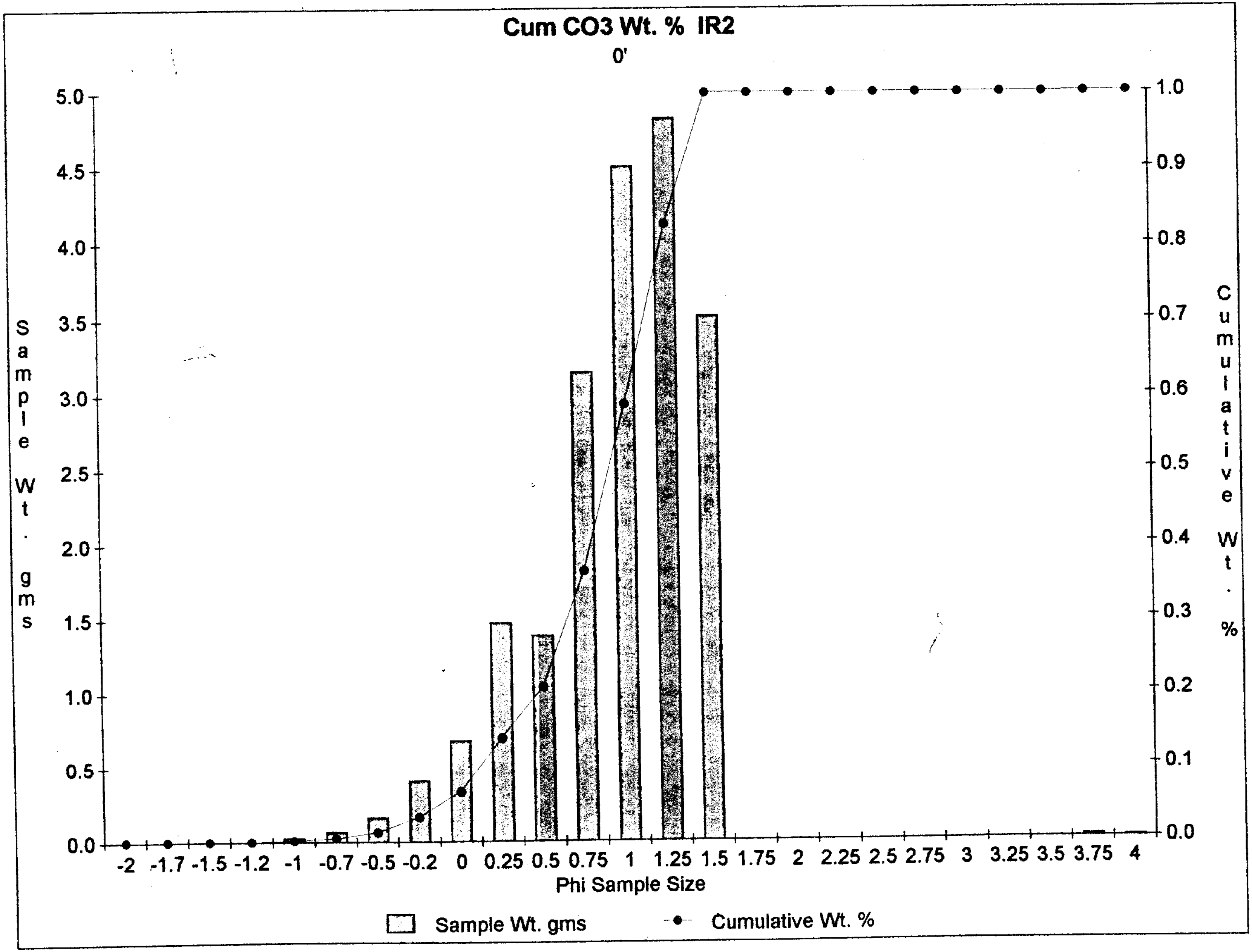
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (IR-2)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0.0248	0	0.0248	0.0248	0.0012271	0.001227085
-0.75	0.0648	0	0.0648	0.0896	0.0032063	0.004433339
-0.5	0.1618	0	0.1618	0.2514	0.0080057	0.012439079
-0.25	0.4079	0	0.4079	0.6593	0.0201826	0.032621657
0	0.6808	0	0.6808	1.3401	0.0336855	0.066307118
0.25	1.4704	0	1.4704	2.8105	0.0727543	0.139061379
0.5	1.6794	0.2964	1.383	4.4899	0.0684298	0.207491156
0.75	4.0782	0.9318	3.1464	8.5681	0.1556815	0.363172608
1	6.8654	2.359	4.5064	15.4335	0.2229732	0.586145815
1.25	10.6068	5.7797	4.8271	26.0403	0.2388412	0.824987012
1.5	11.3072	7.7876	3.5196	37.3475	0.1741471	0.999134113
1.75	6.9155	6.9155	0	44.263	0	0.999134113
2	3.9558	3.9558	0	48.2188	0	0.999134113
2.25	0.9081	0.9081	0	49.1269	0	0.999134113
2.5	0.8225	0.8225	0	49.9494	0	0.999134113
2.75	0.449	0.449	0	50.3984	0	0.999134113
3	0.2448	0.2448	0	50.6432	0	0.999134113
3.25	0.0764	0.0764	0	50.7196	0	0.999134113
3.5	0.0342	0.0342	0	50.7538	0	0.999134113
3.75	0.0219	0.0107	0.0112	50.7757	0.0005542	0.999688281
4	0.011	0.0047	0.0063	50.7867	0.0003117	1

Total Wt. 50.7867
CO3 Wt. 20.2105

Sample % Carbonate 39.794868


Cum CO3 Wt. % IR2
0'
Sample Wt. gms
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (IR-2)
DEPTH (2 FEET BLS)

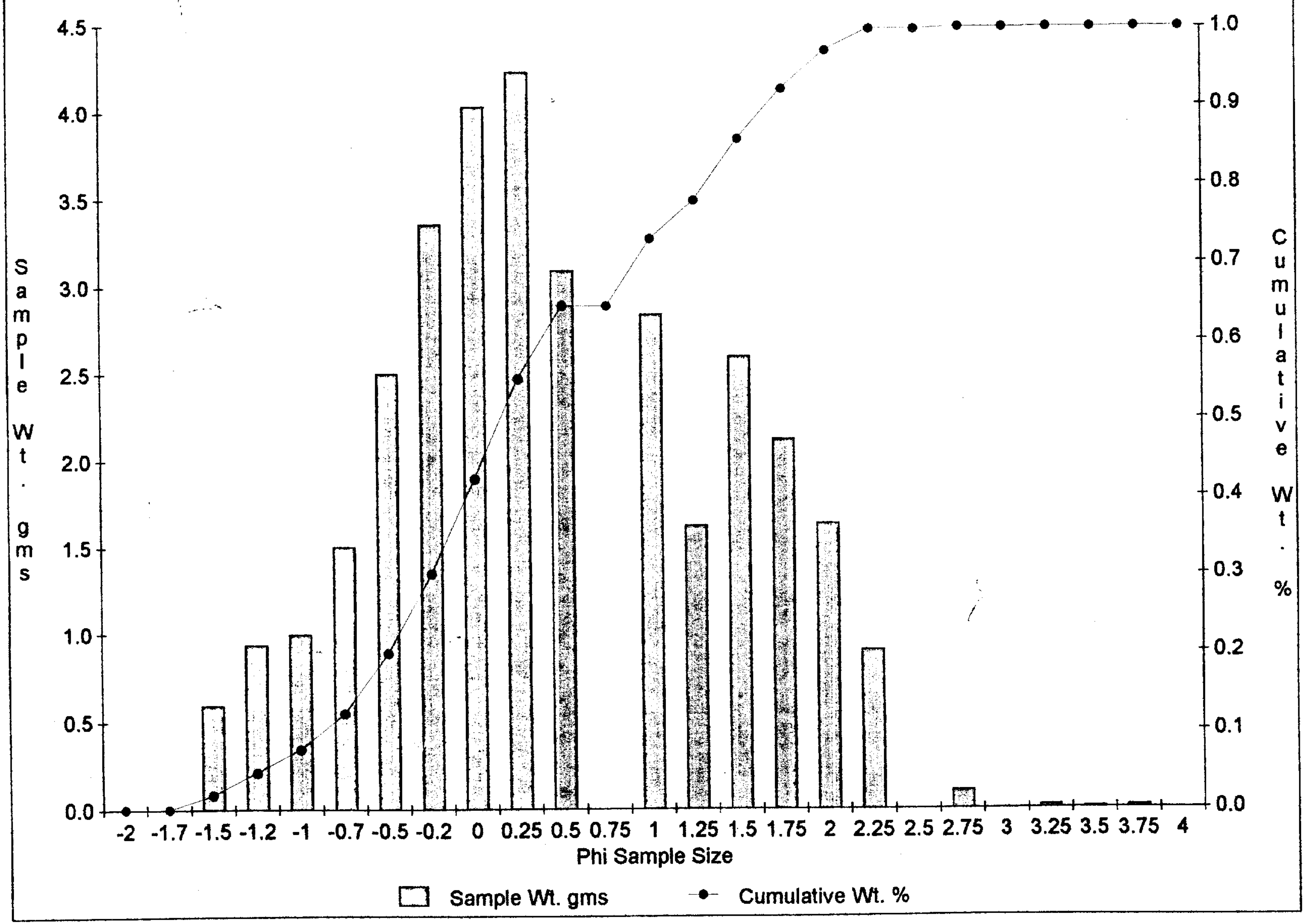
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0.5949	0	0.5949	0.5949	0.0179583	0.017958269
-1.25	0.9409	0	0.9409	1.5358	0.028403	0.046361254
-1	1.0027	0	1.0027	2.5385	0.0302685	0.076629798
-0.75	1.5049	0	1.5049	4.0434	0.0454285	0.122058273
-0.5	2.5028	0	2.5028	6.5462	0.0755521	0.197610394
-0.25	3.3561	0	3.3561	9.9023	0.1013107	0.298921115
0	4.1639	0.1294	4.0345	14.0662	0.1217896	0.420710724
0.25	5.105	0.8709	4.2341	19.1712	0.1278149	0.548525665
0.5	5.7307	2.6392	3.0915	24.9019	0.0933232	0.641848896
0.75	2.9469	2.9469	0	27.8488	0	0.641848896
1	7.7697	4.9283	2.8414	35.6185	0.0857735	0.727622348
1.25	7.731	6.1084	1.6226	43.3495	0.0489815	0.776603837
1.5	9.8841	7.2832	2.6009	53.2336	0.0785135	0.855117307
1.75	10.1152	7.9953	2.1199	63.3488	0.0639935	0.919110811
2	6.1479	4.5136	1.6343	69.4967	0.0493347	0.968445488
2.25	3.6268	2.7211	0.9057	73.1235	0.0273404	0.995785889
2.5	0.8955	0.8955	0	74.019	0	0.995785889
2.75	0.6547	0.5513	0.1034	74.6737	0.0031213	0.998907229
3	0.3939	0.3939	0	75.0676	0	0.998907229
3.25	0.2076	0.1901	0.0175	75.2752	0.0005283	0.999435502
3.5	0.1182	0.1135	0.0047	75.3934	0.0001419	0.999577381
3.75	0.0357	0.0217	0.014	75.4291	0.0004226	1
4	0.0041	0.0041	0	75.4332	0	1

Total Wt.	75.4332
CO3 Wt.	33.1268

Sample % Carbonate 43.915411

Cum CO3 Wt. % IR2

2'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (IR-3)
DEPTH (0 FEET BLS)

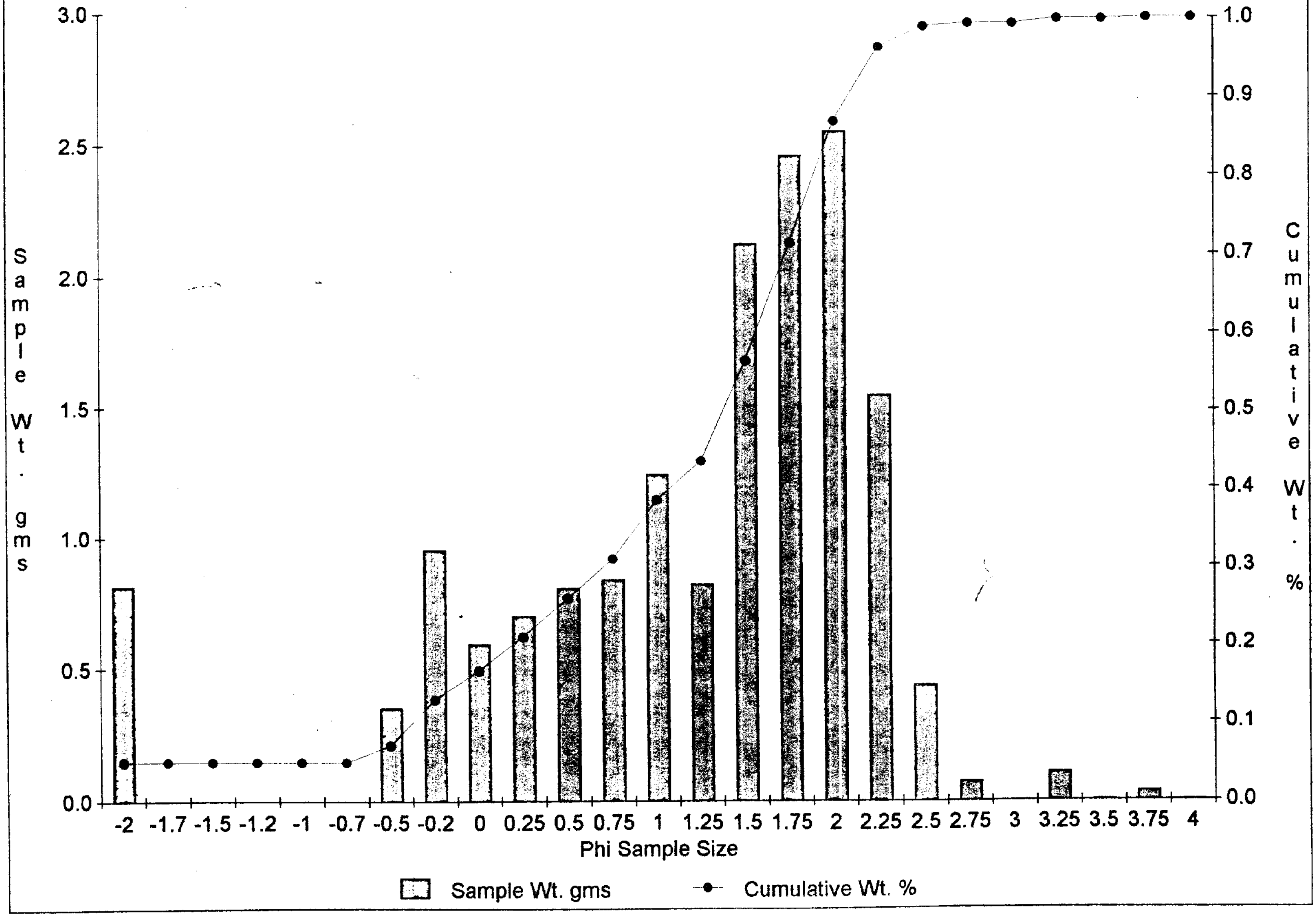
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.8133	0	0.8133	0.8133	0.0493298	0.049329775
-1.75	0	0	0	0.8133	0	0.049329775
-1.5	0	0	0	0.8133	0	0.049329775
-1.25	0	0	0	0.8133	0	0.049329775
-1	0	0	0	0.8133	0	0.049329775
-0.75	0	0	0	0.8133	0	0.049329775
-0.5	0.3536	0	0.3536	1.1669	0.0214472	0.070776976
-0.25	0.953	0	0.953	2.1199	0.0578031	0.128580093
0	0.593	0	0.593	2.7129	0.0359677	0.164547826
0.25	0.831	0.1307	0.7003	3.5439	0.0424759	0.207023716
0.5	1.2241	0.4165	0.8076	4.768	0.048984	0.256007764
0.75	1.5247	0.6837	0.841	6.2927	0.0510099	0.30701765
1	2.8571	1.6132	1.2439	9.1498	0.0754473	0.382464972
1.25	4.6487	3.8256	0.8231	13.7985	0.0499242	0.432389155
1.5	8.6436	6.5147	2.1289	22.4421	0.129126	0.561515133
1.75	10.7992	8.335	2.4642	33.2413	0.1494632	0.710978347
2	8.0907	5.5326	2.5581	41.332	0.1551586	0.866136956
2.25	5.1728	3.6194	1.5534	46.5048	0.0942197	0.960356645
2.5	1.4904	1.0511	0.4393	47.9952	0.0266452	0.98700188
2.75	0.7083	0.6366	0.0717	48.7035	0.0043489	0.991350761
3	0.472	0.472	0	49.1755	0	0.991350761
3.25	0.3496	0.2426	0.107	49.5251	0.00649	0.997840723
3.5	0.1319	0.1313	0.0006	49.657	3.639E-05	0.997877115
3.75	0.0517	0.018	0.0337	49.7087	0.002044	0.99992115
4	0.0101	0.0088	0.0013	49.7188	7.885E-05	1

Total Wt. 49.7188
CO3 Wt. 16.487

Sample % Carbonate 33.160495

Cum CO3 Wt. % IR3

0'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (IR-3)
DEPTH (2 FEET BLS)

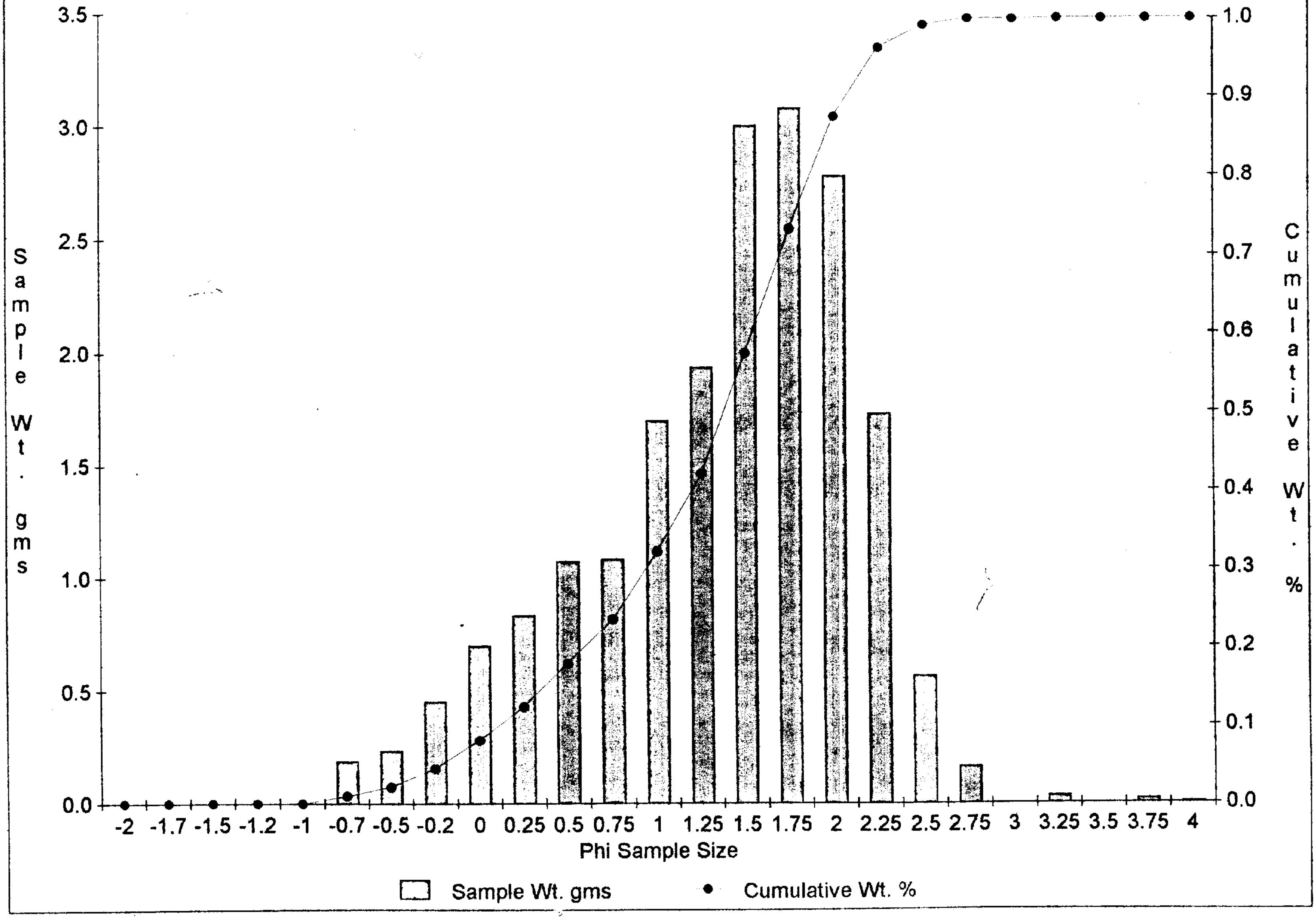
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.1881	0	0.1881	0.1881	0.0096015	0.009601495
-0.5	0.2341	0	0.2341	0.4222	0.0119495	0.021551042
-0.25	0.4551	0	0.4551	0.8773	0.0232304	0.044781452
0	0.6977	0	0.6977	1.575	0.0356138	0.08039529
0.25	1.0439	0.2116	0.8323	2.6189	0.0424844	0.122879734
0.5	1.4506	0.3789	1.0717	4.0695	0.0547045	0.177584262
0.75	1.9539	0.8693	1.0846	6.0234	0.055363	0.232947266
1	3.9331	2.2347	1.6984	9.9565	0.0866942	0.319641463
1.25	6.7961	4.86	1.9361	16.7526	0.0988275	0.418468967
1.5	11.6054	8.5989	3.0065	28.358	0.1534657	0.571934642
1.75	13.9828	10.8962	3.0866	42.3408	0.1575543	0.729488992
2	10.3712	7.5864	2.7848	52.712	0.1421491	0.871638073
2.25	6.3855	4.6523	1.7332	59.0975	0.0884705	0.960108623
2.5	2.0252	1.4586	0.5666	61.1227	0.0289219	0.989030509
2.75	0.7747	0.6114	0.1633	61.8974	0.0083356	0.997366097
3	0.3898	0.3898	0	62.2872	0	0.997366097
3.25	0.2133	0.1815	0.0318	62.5005	0.0016232	0.998989316
3.5	0.0781	0.0781	0	62.5786	0	0.998989316
3.75	0.0295	0.0126	0.0169	62.6081	0.0008627	0.999851971
4	0.0103	0.0074	0.0029	62.6184	0.000148	1

Total Wt.	62.6184
CO3 Wt.	19.5907

Sample % Carbonate	31.285852

Cum CO3 Wt. % IR3

2'



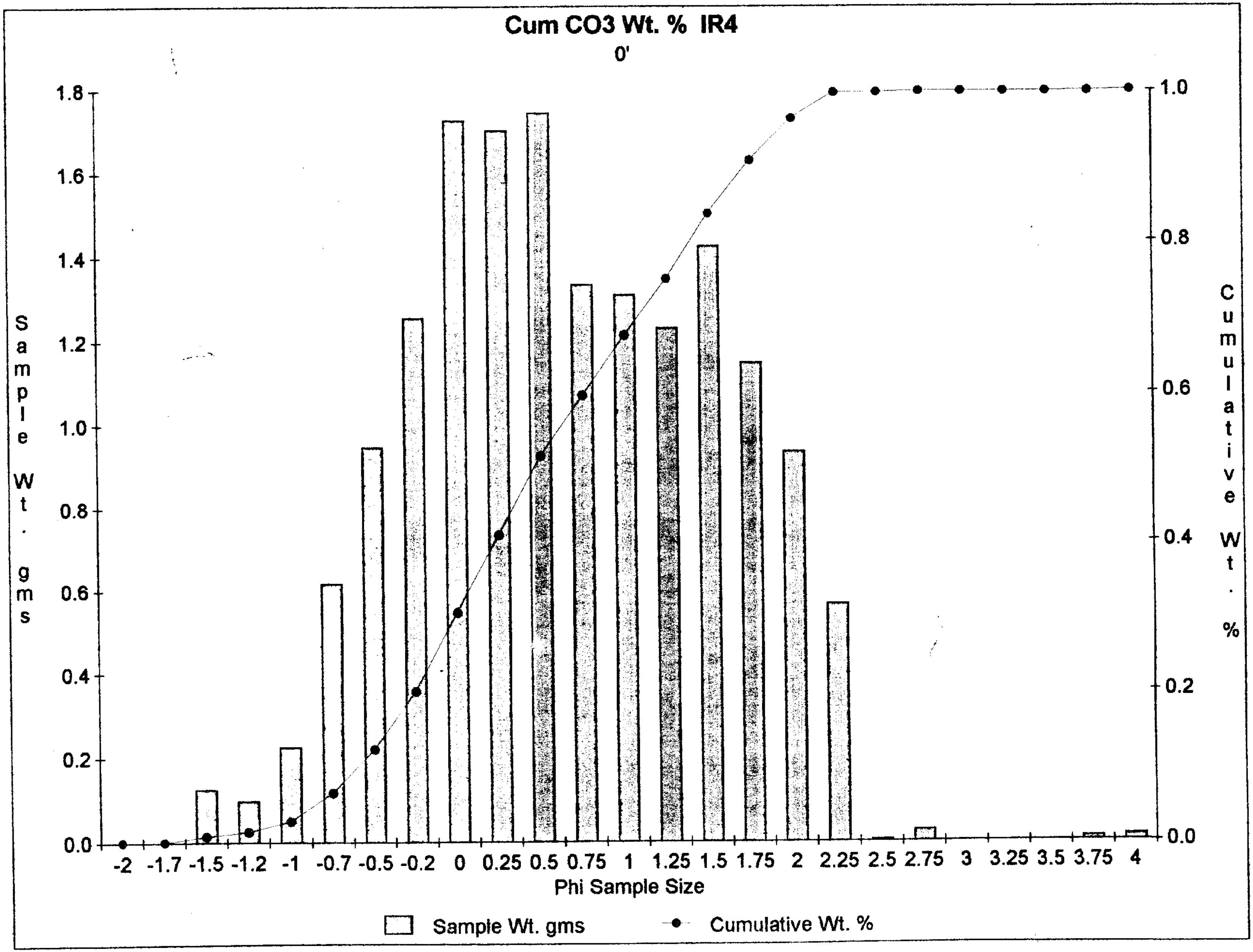
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (IR-4)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0.1254	0	0.1254	0.1254	0.0076222	0.007622174
-1.25	0.0979	0	0.0979	0.2233	0.0059506	0.013572818
-1	0.227	0	0.227	0.4503	0.0137977	0.027370532
-0.75	0.6168	0	0.6168	1.0671	0.0374909	0.064861415
-0.5	0.947	0	0.947	2.0141	0.0575614	0.122422806
-0.25	1.2547	0	1.2547	3.2688	0.0762643	0.19868709
0	1.7274	0	1.7274	4.9962	0.1049964	0.303683443
0.25	2.2585	0.5549	1.7036	7.2547	0.1035497	0.407233163
0.5	2.6908	0.9456	1.7452	9.9455	0.1060783	0.513311451
0.75	2.7883	1.4536	1.3347	12.7338	0.0811269	0.594438366
1	3.76	2.4501	1.3099	16.4938	0.0796195	0.674057865
1.25	4.2115	2.9805	1.231	20.7053	0.0748237	0.748881595
1.5	4.8239	3.3972	1.4267	25.5292	0.0867189	0.835600535
1.75	4.9352	3.7869	1.1483	30.4644	0.069797	0.90539752
2	3.3213	2.386	0.9353	33.7857	0.0568502	0.962247751
2.25	2.3415	1.7748	0.5667	36.1272	0.0344457	0.996693411
2.5	0.584	0.5791	0.0049	36.7112	0.0002978	0.996991247
2.75	0.356	0.3294	0.0266	37.0672	0.0016168	0.998608072
3	0.2187	0.2187	0	37.2859	0	0.998608072
3.25	0.089	0.089	0	37.3749	0	0.998608072
3.5	0.0357	0.0357	0	37.4106	0	0.998608072
3.75	0.0199	0.0107	0.0092	37.4305	0.0005592	0.999167274
4	0.0186	0.0049	0.0137	37.4491	0.0008327	1

Total Wt. 37.4491
CO3 Wt. 16.452

Sample % Carbonate 43.93163


Cum CO3 Wt. % IR4
0'
Sample Wt. gms
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Cumulative Wt. %
1.0
0.8
0.6
0.4
0.2
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

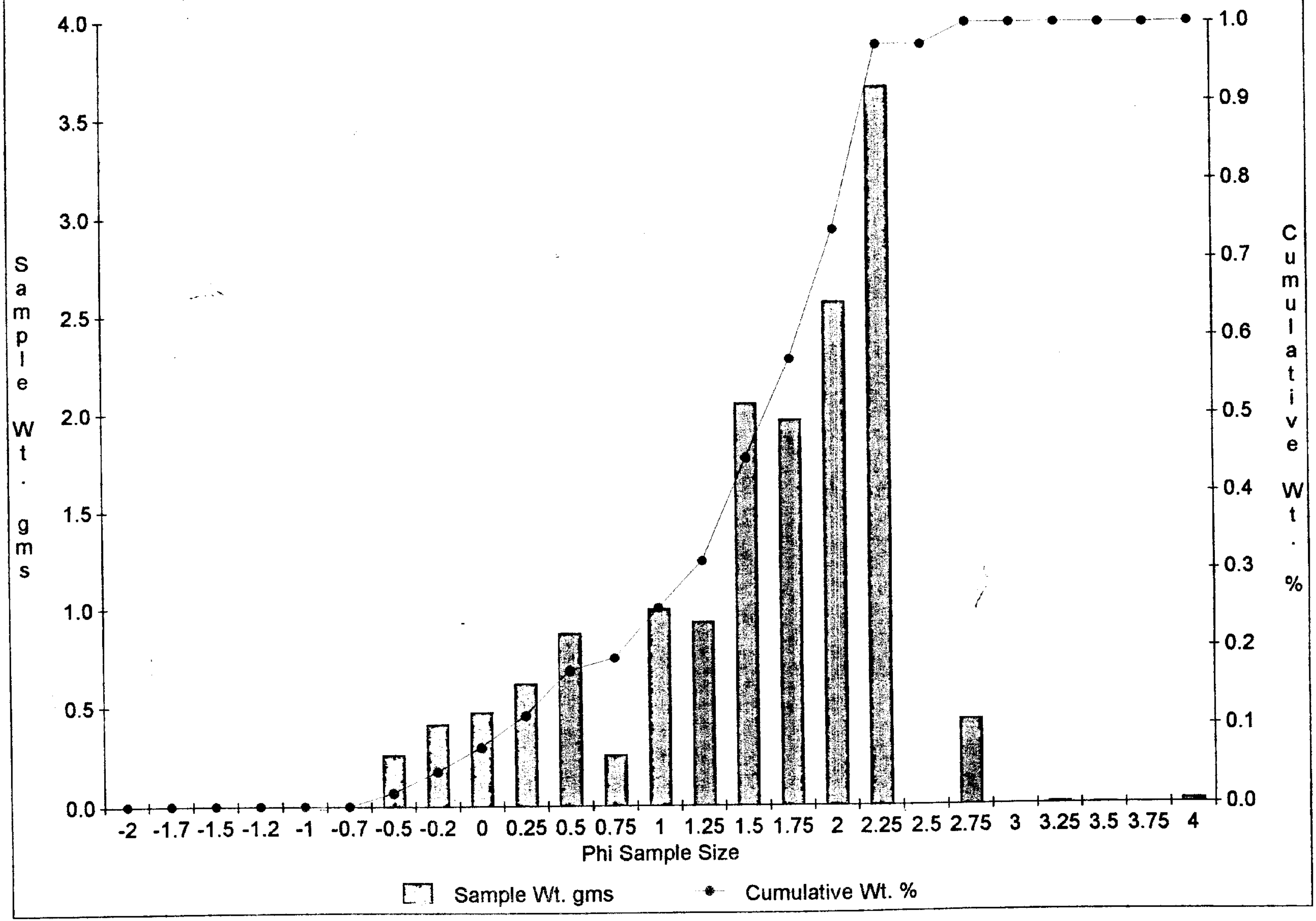
CORE (IR-4)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0.2608	0	0.2608	0.2608	0.0163042	0.016304168
-0.25	0.413	0	0.413	0.6738	0.0258191	0.042123268
0	0.5311	0.0576	0.4735	1.2049	0.0296013	0.071724585
0.25	0.7008	0.0841	0.6167	1.9057	0.0385536	0.11027819
0.5	1.0221	0.01513	1.00697	2.9278	0.0629517	0.173229907
0.75	0.6293	0.03746	0.59184	3.5571	0.0369995	0.210229365
1	1.9613	0.9669	0.9944	5.5184	0.0621659	0.272395256
1.25	3.0662	2.1368	0.9294	8.5846	0.0581024	0.330497608
1.5	5.9169	3.8684	2.0485	14.5015	0.128064	0.458561595
1.75	9.6358	7.6694	1.9664	24.1373	0.1229314	0.581493019
2	9.8506	7.2839	2.5667	33.9879	0.1604598	0.741952787
2.25	11.5226	7.856	3.6666	45.5105	0.2292211	0.971173881
2.5	3.8594	3.8594	0	49.3699	0	0.971173881
2.75	2.346	1.9134	0.4326	51.7159	0.0270444	0.998218295
3	0.8762	0.8762	0	52.5921	0	0.998218295
3.25	0.2401	0.2329	0.0072	52.8322	0.0004501	0.99866841
3.5	0.0995	0.098	0.0015	52.9317	9.377E-05	0.998762184
3.75	0.0258	0.0258	0	52.9575	0	0.998762184
4	0.0247	0.0049	0.0198	52.9822	0.0012378	1

Total Wt.	52.9822
CO3 Wt.	15.99591
Sample % Carbonate	30.191102

Cum CO3 Wt. % IR4

2'



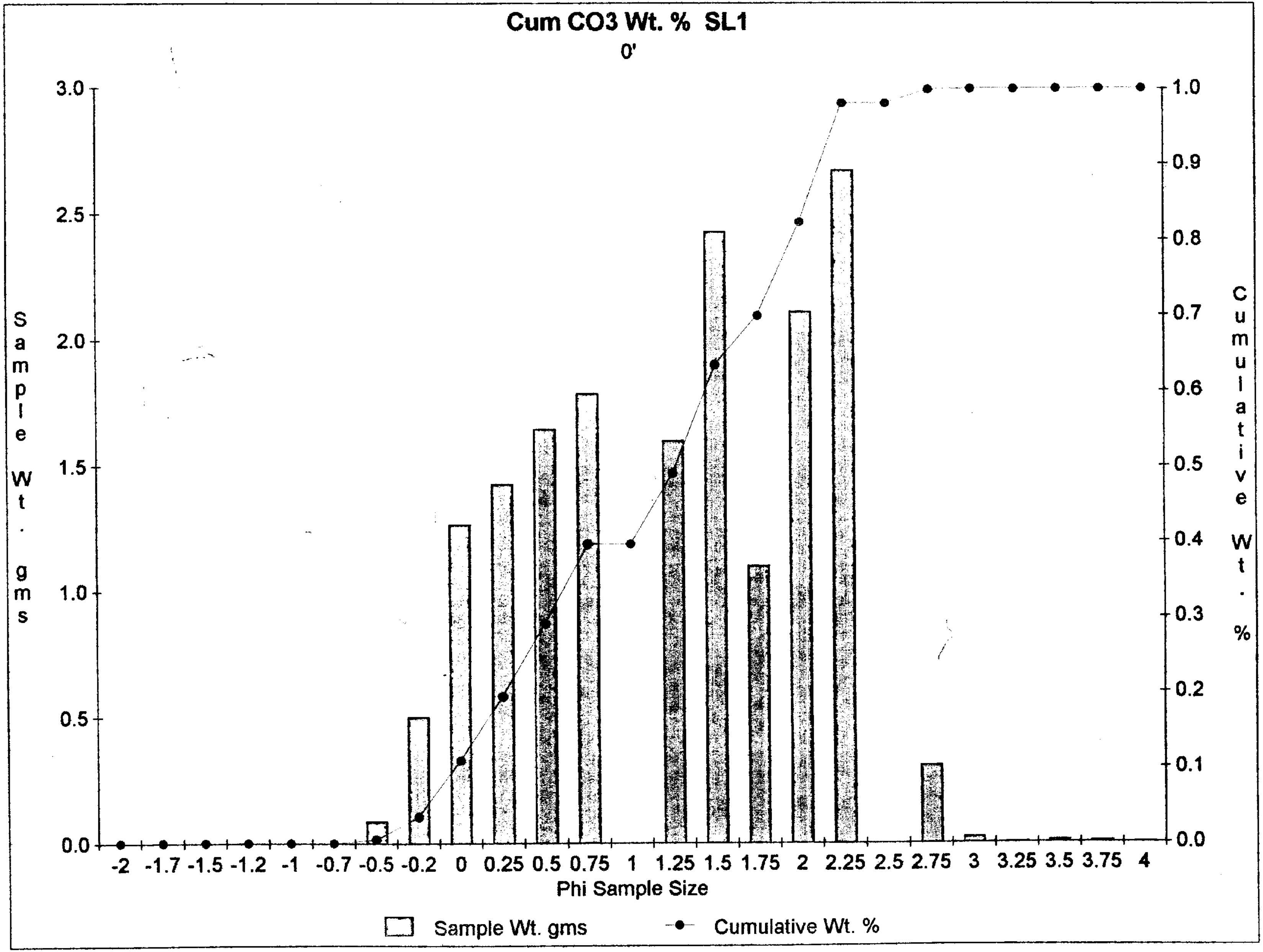
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (SL-1)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0.0876	0	0.0876	0.0876	0.0051643	0.005164272
-0.25	0.5014	0	0.5014	0.589	0.029559	0.034723246
0	1.2645	0	1.2645	1.8535	0.0745459	0.109269161
0.25	1.7949	0.3689	1.426	3.6484	0.0840668	0.193335967
0.5	2.6555	1.0107	1.6448	6.3039	0.0969657	0.290301662
0.75	3.9981	2.2125	1.7856	10.302	0.1052663	0.395567923
1	2.964	2.964	0	13.266	0	0.395567923
1.25	7.0144	5.4156	1.5988	20.2804	0.0942539	0.489821785
1.5	8.0362	5.6081	2.4281	28.3166	0.1431435	0.632965271
1.75	7.6627	6.5639	1.0988	35.9793	0.0647774	0.697742694
2	6.7895	4.6809	2.1086	42.7688	0.124308	0.822050735
2.25	7.0761	4.4056	2.6705	49.8449	0.1574337	0.979484398
2.5	1.5383	1.5383	0	51.3832	0	0.979484398
2.75	1.1974	0.8893	0.3081	52.5806	0.0181634	0.99764778
3	0.4514	0.4291	0.0223	53.032	0.0013146	0.998962429
3.25	0.1131	0.1118	0.0013	53.1451	7.664E-05	0.999039068
3.5	0.0661	0.0574	0.0087	53.2112	0.0005129	0.999551958
3.75	0.0243	0.0186	0.0057	53.2355	0.000336	0.99988799
4	0.0057	0.0038	0.0019	53.2412	0.000112	1

Total Wt.	53.2412
CO3 Wt.	16.9627

Sample % Carbonate	31.860101


Cum CO3 Wt. % SL1
0'
Sample Wt. gms
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

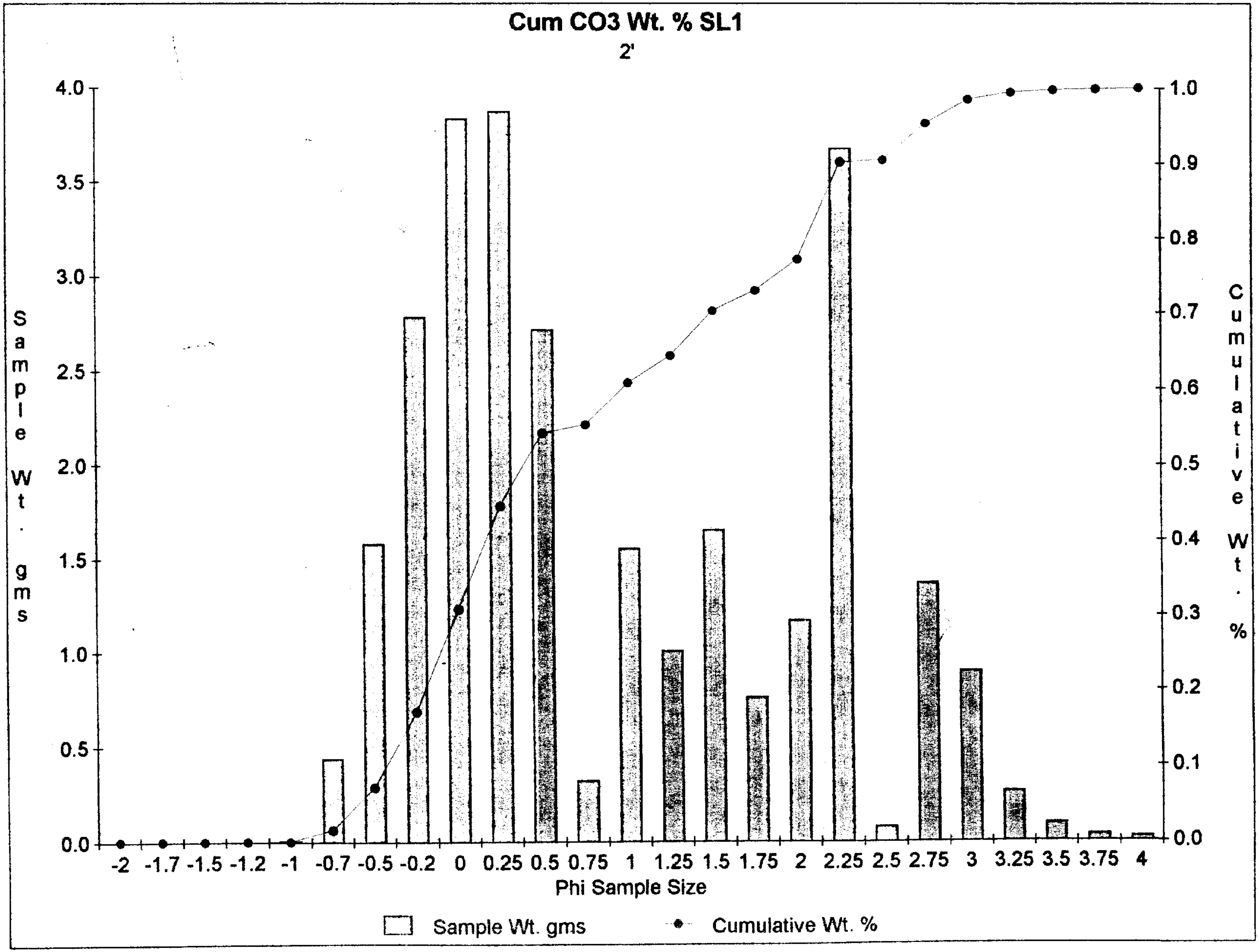
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (SL-1)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0.0061	0	0.0061	0.0061	0.0002168	0.000216848
-0.75	0.4401	0	0.4401	0.4462	0.0156451	0.0158619
-0.5	1.5793	0	1.5793	2.0255	0.0561423	0.072004209
-0.25	2.7783	0	2.7783	4.8038	0.0987654	0.170769597
0	3.8564	0.0207	3.8357	8.6602	0.1363547	0.307124346
0.25	4.6846	0.8107	3.8739	13.3448	0.1377127	0.444837062
0.5	4.7612	2.0482	2.713	18.106	0.096444	0.54128111
0.75	3.0394	2.7196	0.3198	21.1454	0.0113685	0.552649634
1	5.1811	3.6278	1.5533	26.3265	0.055218	0.607867673
1.25	4.7361	3.7301	1.006	31.0626	0.0357621	0.643629823
1.5	4.4241	2.7723	1.6518	35.4867	0.0587196	0.702349424
1.75	3.8514	3.0911	0.7603	39.3381	0.0270278	0.72937722
2	3.9587	2.7905	1.1682	43.2968	0.0415282	0.770905394
2.25	6.4858	2.8051	3.6807	49.7826	0.1308447	0.90175007
2.5	1.8191	1.7403	0.0788	51.6017	0.0028012	0.90455132
2.75	2.4492	1.0781	1.3711	54.0509	0.048741	0.953292357
3	1.4532	0.5526	0.9006	55.5041	0.0320153	0.985307658
3.25	0.4219	0.1599	0.262	55.926	0.0093138	0.994621458
3.5	0.1422	0.049	0.0932	56.0682	0.0033132	0.997934611
3.75	0.0517	0.0169	0.0348	56.1199	0.0012371	0.999171712
4	0.0259	0.0026	0.0233	56.1458	0.0008283	1

Total Wt.	56.1458
CO3 Wt.	28.1303

Sample % Carbonate	50.102234


Cum CO3 Wt. % SL1
2'
Sample Wt. gms
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Cumulative Wt. %
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

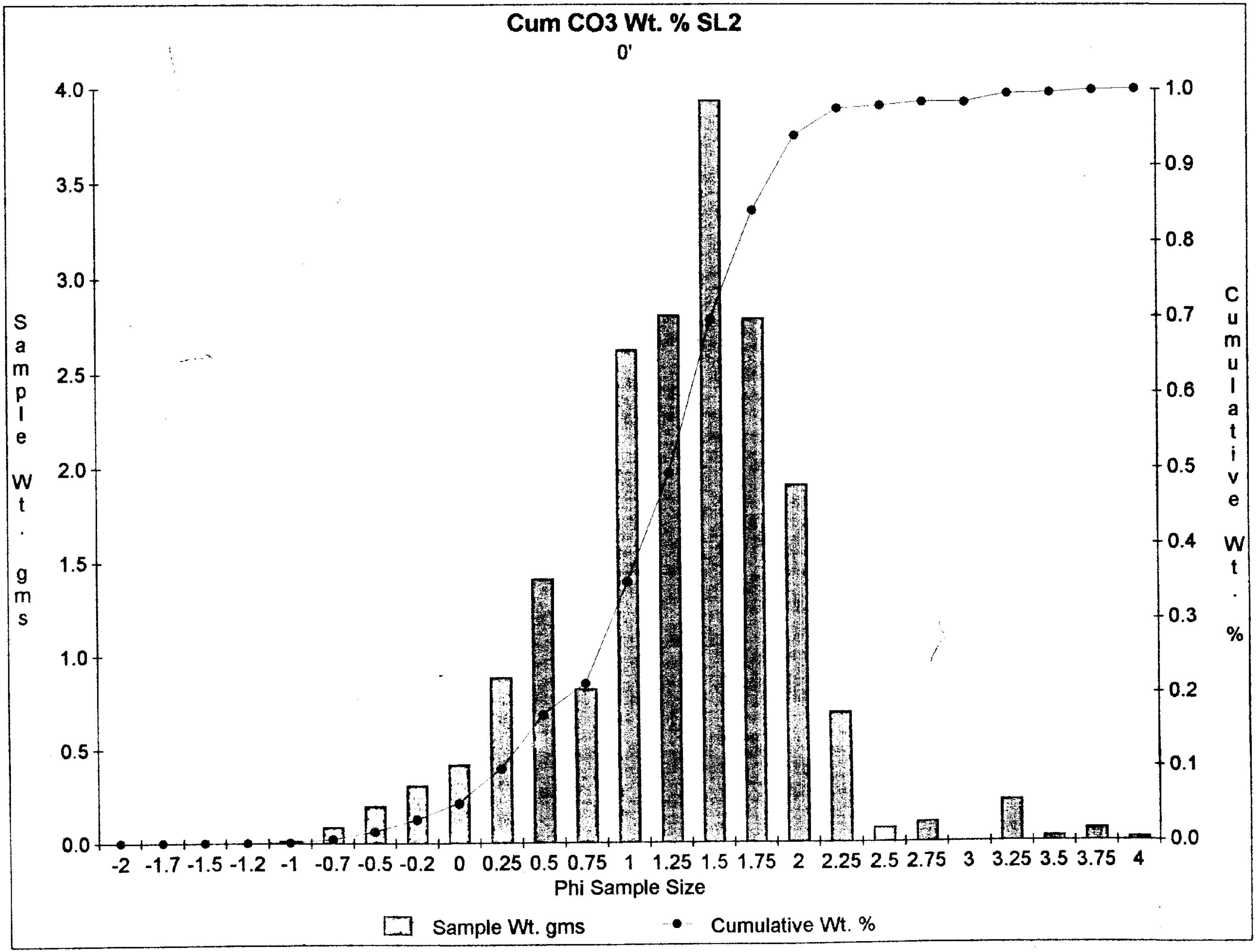
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (SL-2)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0.0131	0	0.0131	0.0131	0.0006757	0.000675745
-0.75	0.0847	0	0.0847	0.0978	0.0043691	0.005044878
-0.5	0.1969	0	0.1969	0.2947	0.0101568	0.015201692
-0.25	0.3032	0	0.3032	0.5979	0.0156402	0.030841845
0	0.4142	0	0.4142	1.0121	0.0213659	0.052207779
0.25	0.9639	0.0811	0.8828	1.976	0.045538	0.097745796
0.5	1.6162	0.206	1.4102	3.5922	0.0727432	0.170489013
0.75	1.5792	0.7588	0.8204	5.1714	0.0423192	0.212808212
1	5.4253	2.8028	2.6225	10.5967	0.135278	0.348086248
1.25	8.8685	6.065	2.8035	19.4652	0.1446147	0.492700918
1.5	12.2721	8.3332	3.9389	31.7373	0.2031827	0.695883627
1.75	11.3224	8.5366	2.7858	43.0597	0.1437016	0.839585268
2	5.6208	3.7123	1.9085	48.6805	0.0984473	0.938032601
2.25	2.2808	1.5843	0.6965	50.9613	0.035928	0.97396059
2.5	0.4871	0.4143	0.0728	51.4484	0.0037553	0.977715877
2.75	0.3581	0.254	0.1041	51.8065	0.0053699	0.983085732
3	0.2534	0.2534	0	52.0599	0	0.983085732
3.25	0.5091	0.2898	0.2193	52.569	0.0113123	0.994398019
3.5	0.2248	0.2003	0.0245	52.7938	0.0012638	0.995661818
3.75	0.0868	0.0207	0.0661	52.8806	0.0034097	0.999071495
4	0.0231	0.0051	0.018	52.9037	0.0009285	1

Total Wt.	52.9037
CO3 Wt.	19.386

Sample % Carbonate	36.64394



Cum CO3 Wt. % SL2

0'

CARBONATE GRAIN SIZE DISTRIBUTION CHART

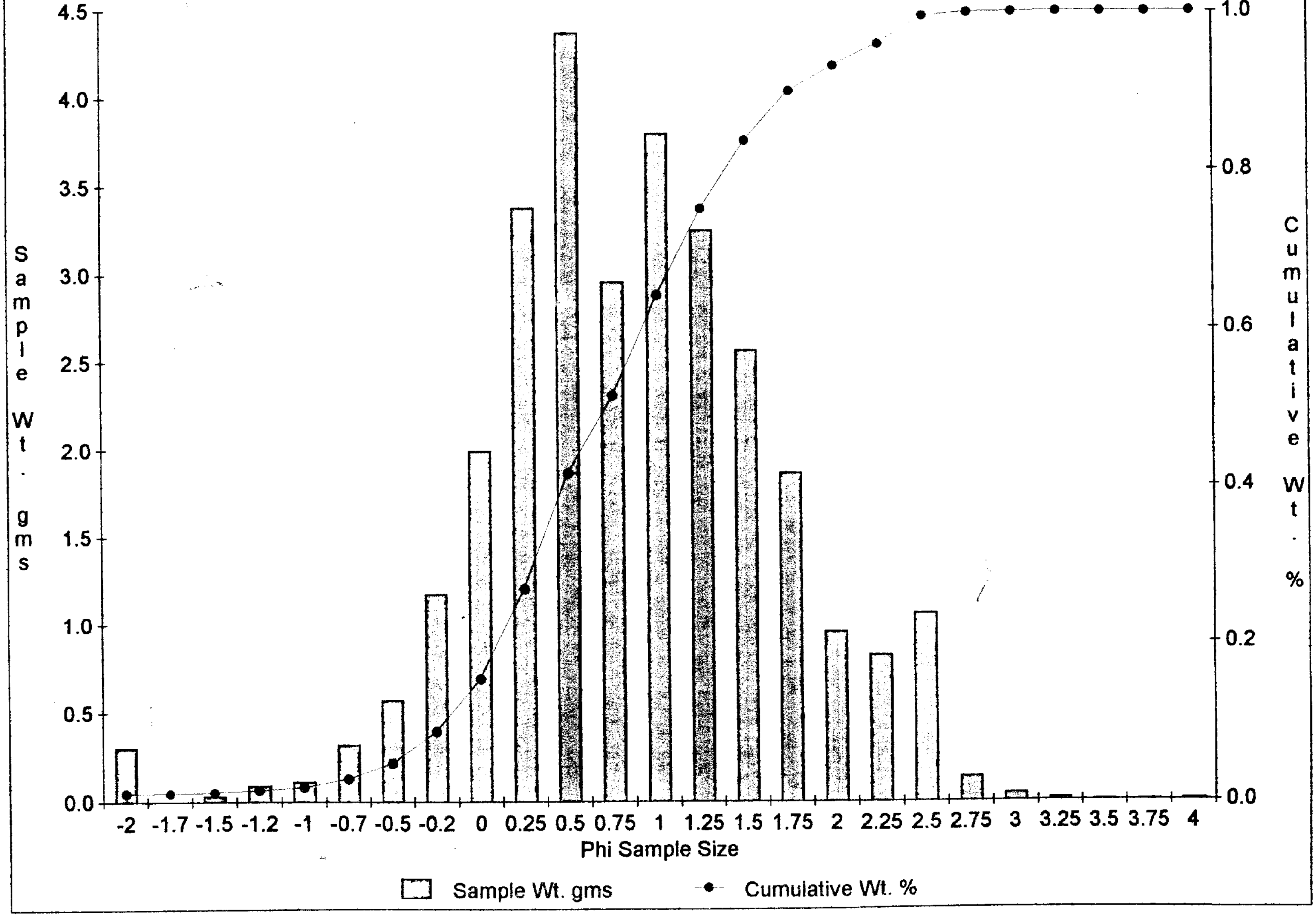
CORE (SL-2)
DEPTH (2FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.3011	0	0.3011	0.3011	0.0100938	0.010093798
-1.75	0	0	0	0.3011	0	0.010093798
-1.5	0.032	0	0.032	0.3331	0.0010727	0.011166536
-1.25	0.0881	0	0.0881	0.4212	0.0029534	0.014119919
-1	0.113	0	0.113	0.5342	0.0037881	0.017908026
-0.75	0.3191	0	0.3191	0.8533	0.0106972	0.028605239
-0.5	0.5746	0	0.5746	1.4279	0.0192624	0.047867597
-0.25	1.1727	0	1.1727	2.6006	0.0393125	0.087180106
0	2.063	0.071	1.992	4.6636	0.066778	0.153958069
0.25	3.6793	0.3021	3.3772	8.3429	0.1132141	0.267172195
0.5	5.0755	0.7034	4.3721	13.4184	0.1465662	0.413738426
0.75	4.2963	1.3411	2.9552	17.7147	0.0990674	0.512805814
1	6.2501	2.4523	3.7978	23.9648	0.1273139	0.640119744
1.25	6.2728	3.0235	3.2493	30.2376	0.1089265	0.749046269
1.5	5.9294	3.3622	2.5672	36.167	0.0860604	0.835106704
1.75	5.0336	3.1688	1.8648	41.2006	0.0625138	0.897620532
2	2.6634	1.7053	0.9581	43.864	0.0321185	0.929738989
2.25	1.9058	1.0805	0.8253	45.7698	0.0276666	0.957405582
2.5	1.4059	0.3413	1.0646	47.1757	0.0356887	0.993094247
2.75	0.321	0.182	0.139	47.4967	0.0046597	0.997753954
3	0.1528	0.1099	0.0429	47.6495	0.0014381	0.999192094
3.25	0.0569	0.0434	0.0135	47.7064	0.0004526	0.999644655
3.5	0.0296	0.027	0.0026	47.736	8.716E-05	0.999731815
3.75	0.0193	0.0186	0.0007	47.7553	2.347E-05	0.999755282
4	0.012	0.0047	0.0073	47.7673	0.0002447	1
			Total Wt.	47.7673		
			CO3 Wt.	29.8302		

Sample % Carbonate 62.448998

Cum CO3 Wt. % SL2

2'

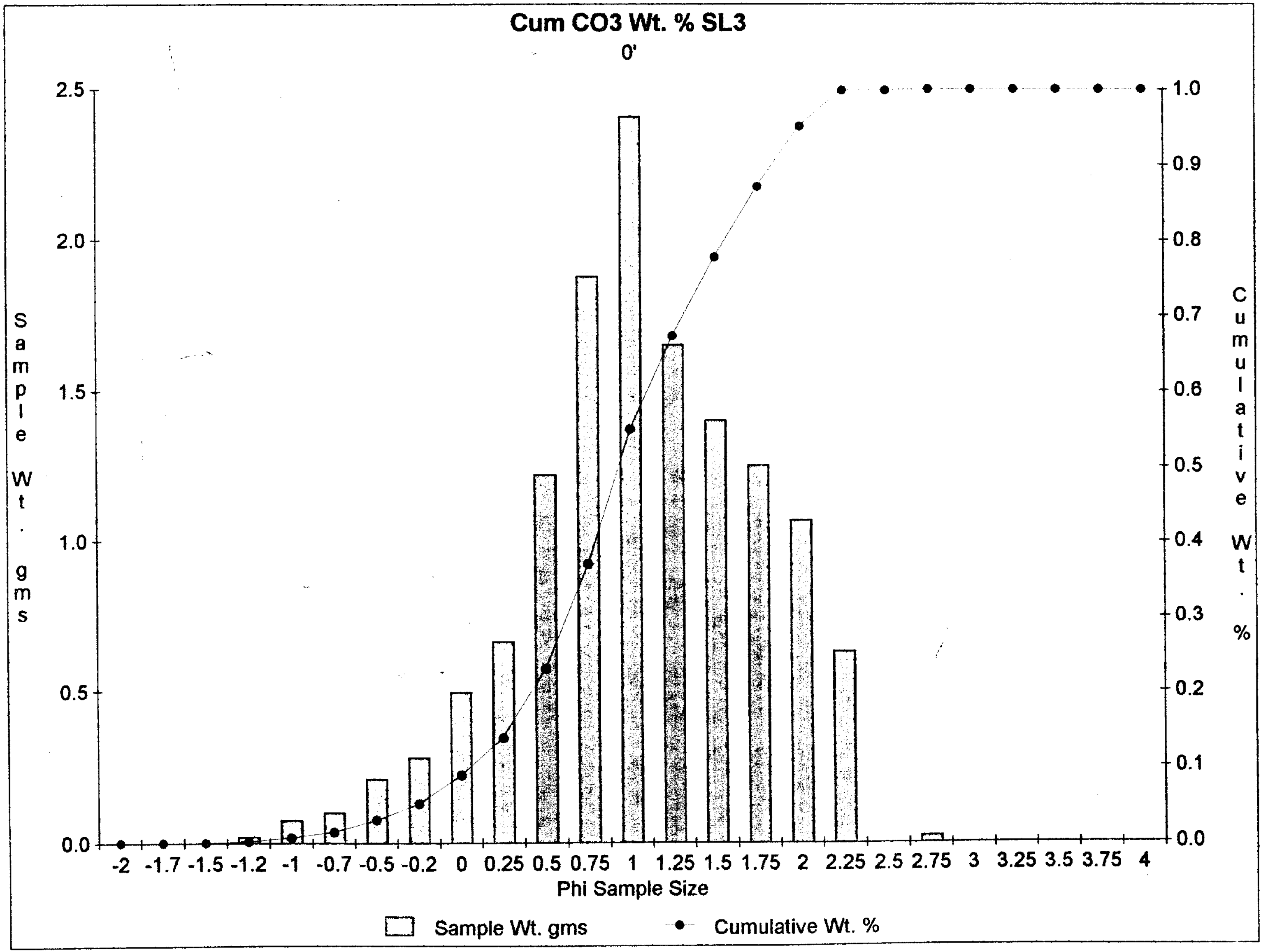


CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (SL-3)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0.0197	0	0.0197	0.0197	0.0014706	0.001470555
-1	0.0742	0	0.0742	0.0939	0.0055388	0.007009398
-0.75	0.1001	0	0.1001	0.194	0.0074722	0.014481611
-0.5	0.2105	0	0.2105	0.4045	0.0157133	0.030194905
-0.25	0.2819	0	0.2819	0.6864	0.0210431	0.051238028
0	0.4962	0	0.4962	1.1826	0.0370401	0.088278107
0.25	0.813	0.148	0.665	1.9956	0.0496406	0.137918679
0.5	1.4027	0.1802	1.2225	3.3983	0.0912565	0.22917522
0.75	2.6054	0.7247	1.8807	6.0037	0.1403895	0.369564731
1	4.3279	1.9175	2.4104	10.3316	0.1799303	0.54949501
1.25	5.6038	3.9506	1.6532	15.9354	0.1234072	0.672902219
1.5	7.2126	5.8094	1.4032	23.148	0.1047453	0.777647559
1.75	7.2601	6.0067	1.2534	30.4081	0.0935631	0.871210707
2	3.7542	2.6837	1.0705	34.1623	0.0799101	0.951120832
2.25	1.978	1.3457	0.6323	36.1403	0.0471996	0.998320432
2.5	0.1793	0.1793	0	36.3196	0	0.998320432
2.75	0.2006	0.1781	0.0225	36.5202	0.0016796	1
3	0.0126	0.0126	0	36.5328	0	1
3.25	0.048	0.048	0	36.5808	0	1
3.5	0.0196	0.0196	0	36.6004	0	1
3.75	0.0096	0.0096	0	36.61	0	1
4	0.0061	0.0061	0	36.6161	0	1

Total Wt.	36.6161
CO3 Wt.	13.3963
Sample % Carbonate	36.585819


Cum CO3 Wt. % SL3

0'

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (SL-3)
DEPTH (2 FEET BLS)

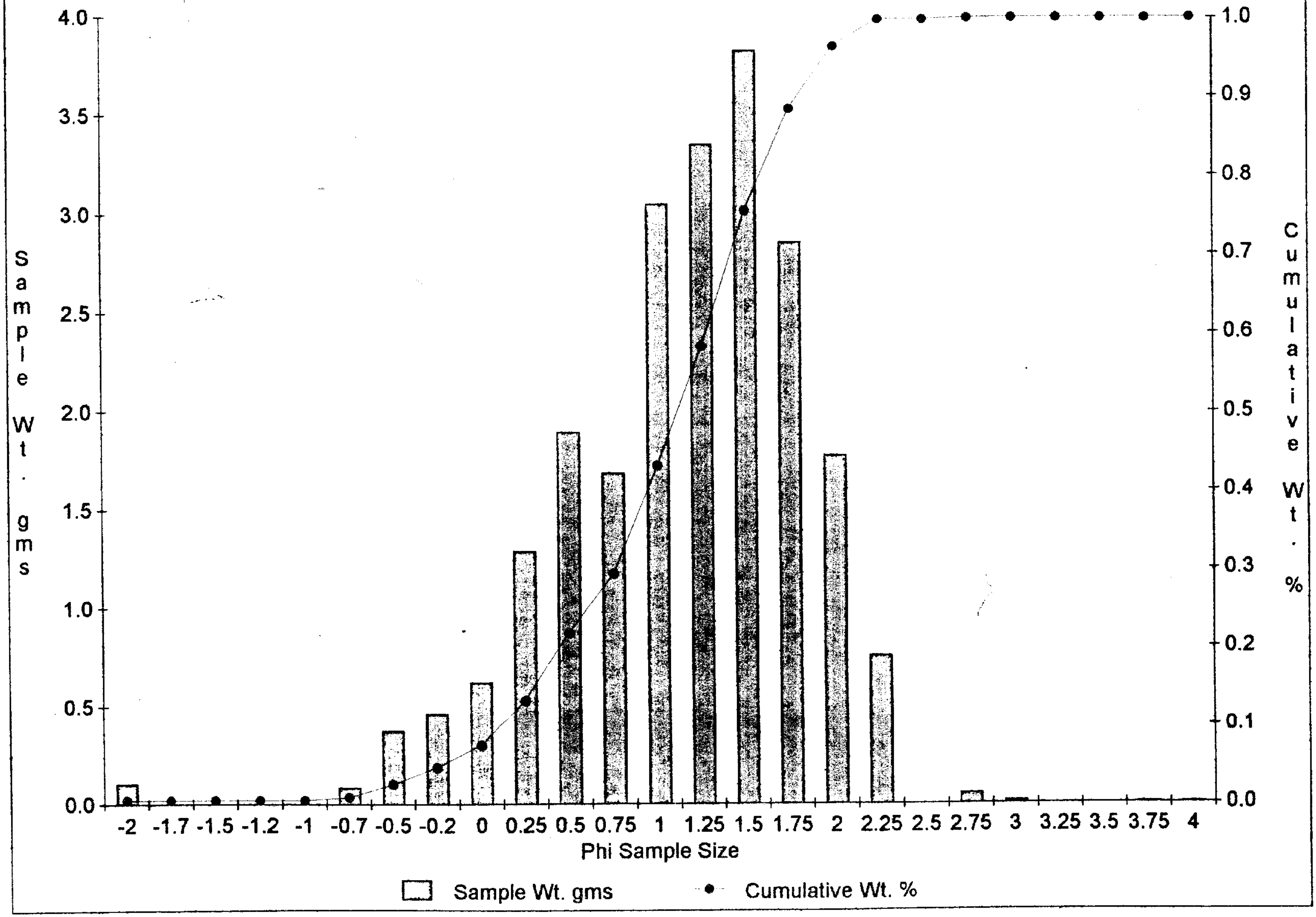
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.082	0	0.082	0.082	0.0037151	0.003715148
-0.5	0.3707	0	0.3707	0.4527	0.0167952	0.020510334
-0.25	0.4604	0	0.4604	0.9131	0.0208592	0.04136953
0	0.618	0	0.618	1.5311	0.0279995	0.069369059
0.25	1.2832	0	1.2832	2.8143	0.0581375	0.127506592
0.5	2.1604	0.2698	1.8906	4.9747	0.0856568	0.213163403
0.75	2.3706	0.6867	1.6839	7.3453	0.0762919	0.289455323
1	5.2925	2.2425	3.05	12.6378	0.1381854	0.4276407
1.25	7.7624	4.4098	3.3526	20.4002	0.1518952	0.579535878
1.5	9.628	5.7992	3.8288	30.0282	0.1734702	0.753006098
1.75	8.4019	5.5478	2.8541	38.4301	0.1293098	0.882315896
2	4.3539	2.5816	1.7723	42.784	0.080297	0.962612927
2.25	1.9485	1.195	0.7535	44.7325	0.0341386	0.996751511
2.5	0.2164	0.2164	0	44.9489	0	0.996751511
2.75	0.2006	0.1497	0.0509	45.1495	0.0023061	0.999057621
3	0.1374	0.125	0.0124	45.2869	0.0005618	0.999619424
3.25	0.0518	0.0518	0	45.3387	0	0.999619424
3.5	0.0325	0.0325	0	45.3712	0	0.999619424
3.75	0.0142	0.0101	0.0041	45.3854	0.0001858	0.999805181
4	0.0115	0.0072	0.0043	45.3969	0.0001948	1

Total Wt.	45.3969
CO3 Wt.	22.0718

Sample % Carbonate 48.619619

Cum CO3 Wt. % SL3

2'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

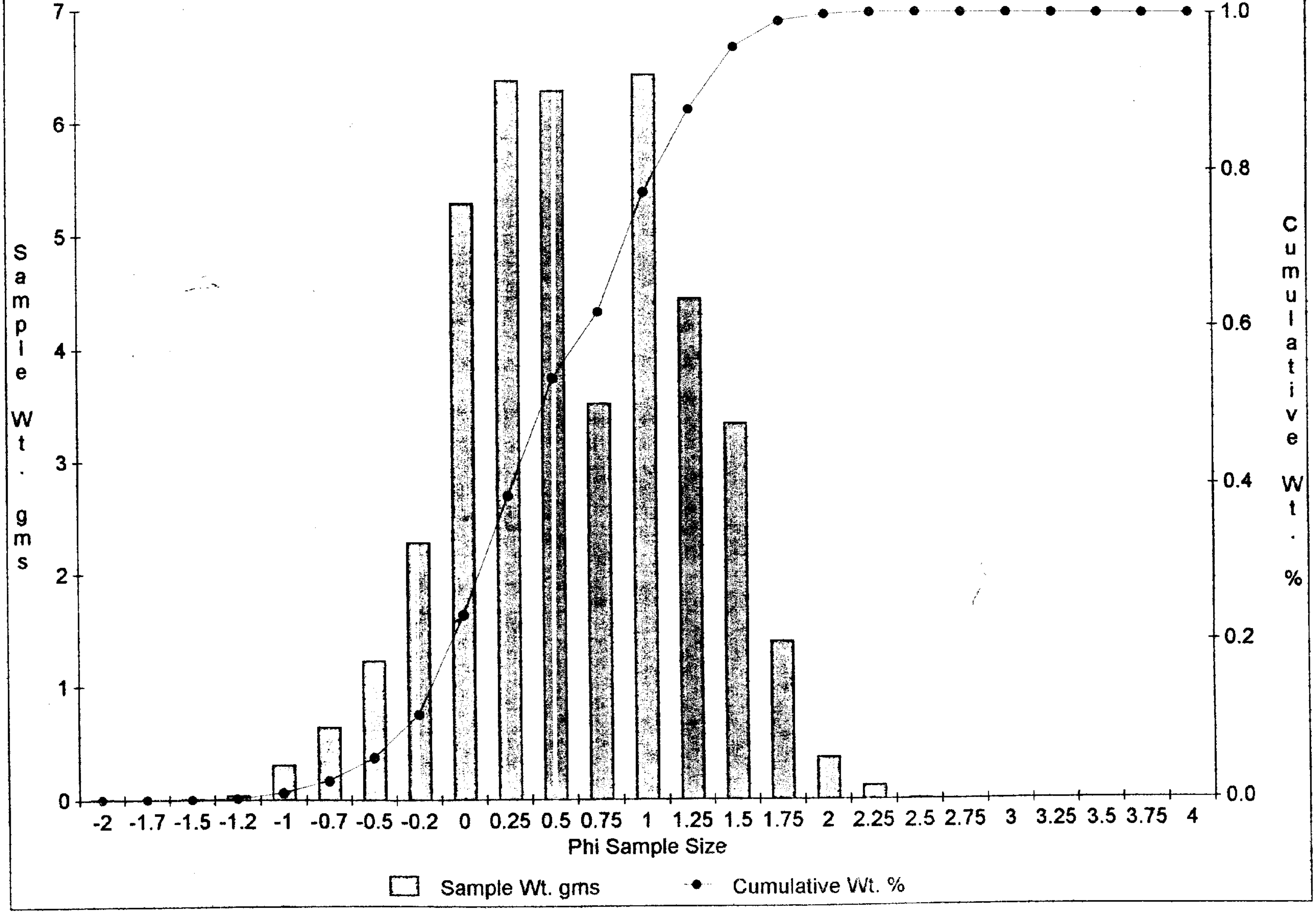
CORE (SL-4)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0.0062	0	0.0062	0.0062	0.0001473	0.000147283
-1.75	0	0	0	0.0062	0	0.000147283
-1.5	0.006	0	0.006	0.0122	0.0001425	0.000289815
-1.25	0.0407	0	0.0407	0.0529	0.0009668	0.001256657
-1	0.3107	0	0.3107	0.3636	0.0073808	0.008637441
-0.75	0.6464	0	0.6464	1.01	0.0153555	0.023992892
-0.5	1.2303	0	1.2303	2.2403	0.0292262	0.053219086
-0.25	2.2789	0	2.2789	4.5192	0.054136	0.107355128
0	5.2867	0	5.2867	9.8059	0.1255874	0.232942479
0.25	6.76	0.3804	6.3796	16.5659	0.1515496	0.38449204
0.5	7.706	1.4151	6.2909	24.2719	0.1494425	0.533934502
0.75	5.8293	2.316	3.5133	30.1012	0.0834596	0.617394134
1	10.8771	4.4384	6.4387	40.9783	0.1529535	0.770347636
1.25	10.3497	5.9071	4.4426	51.328	0.1055355	0.875883105
1.5	9.0822	5.7429	3.3393	60.4102	0.0793262	0.955209308
1.75	4.9697	3.5795	1.3902	65.3799	0.0330247	0.988233981
2	1.5286	1.1601	0.3685	66.9085	0.0087538	0.996987823
2.25	0.5682	0.4488	0.1194	67.4767	0.0028364	0.99982421
2.5	0.1408	0.1334	0.0074	67.6175	0.0001758	1
2.75	0.0727	0.0727	0	67.6902	0	1
3	0.0441	0.0441	0	67.7343	0	1
3.25	0.0298	0.0298	0	67.7641	0	1
3.5	0.021	0.021	0	67.7851	0	1
3.75	0.0104	0.0104	0	67.7955	0	1
4	0.0061	0.0061	0	67.8016	0	1

Total Wt.	67.8016
CO3 Wt.	42.0958
Sample % Carbonate	62.086735

Cum CO3 Wt. % SL4

0'



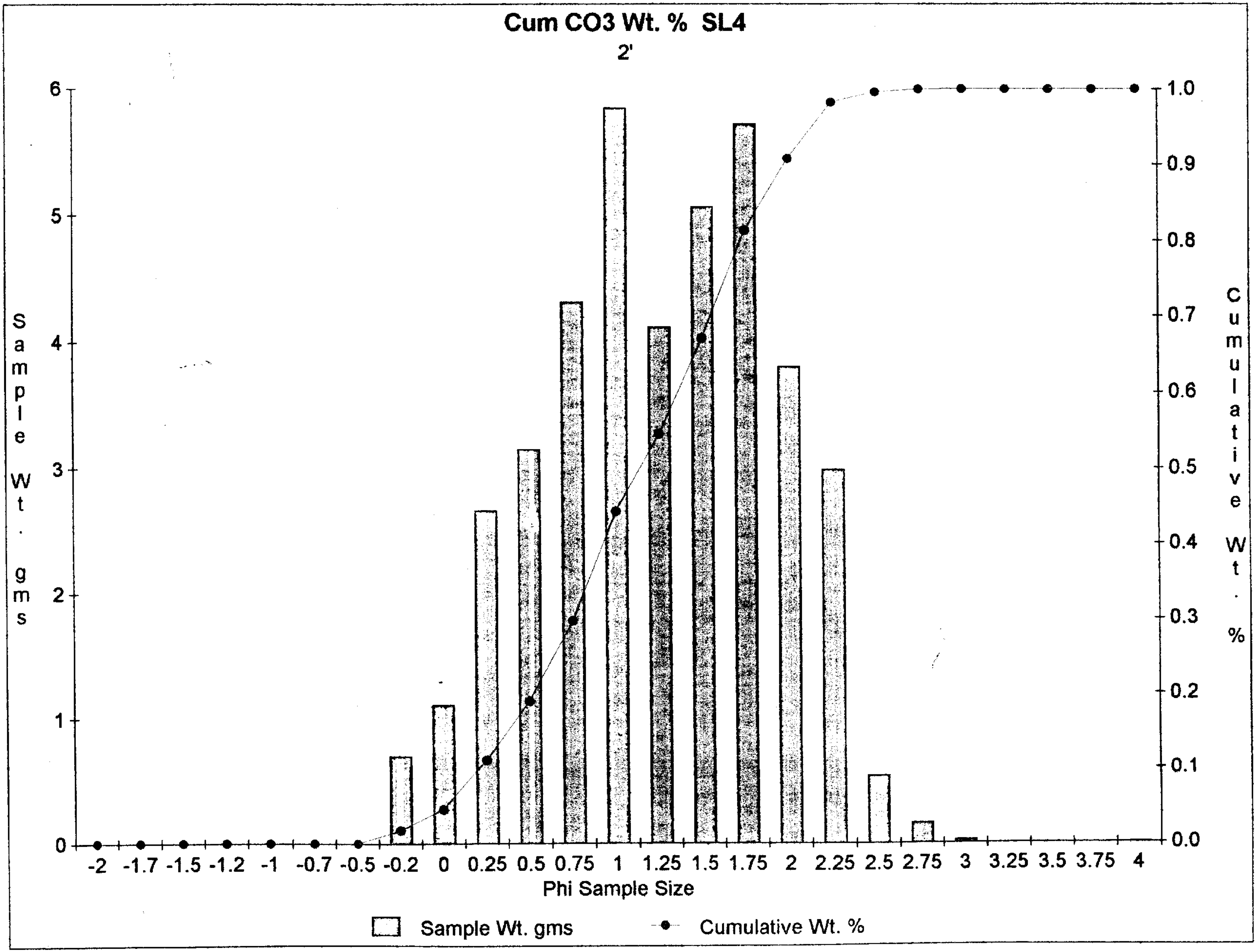
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (SL-4)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.7014	0	0.7014	0.7014	0.0174616	0.017461574
0	1.1102	0	1.1102	1.8116	0.0276388	0.045100353
0.25	2.8269	0.1684	2.6585	4.6385	0.0661842	0.111284548
0.5	3.4584	0.3128	3.1456	8.0969	0.0783107	0.189595252
0.75	5.4335	1.1269	4.3066	13.5304	0.1072142	0.296809416
1	9.2854	3.4391	5.8463	22.8158	0.1455455	0.442354898
1.25	11.3723	7.2611	4.1112	34.1881	0.1023496	0.544704518
1.5	15.4662	10.4048	5.0614	49.6543	0.1260051	0.670709666
1.75	17.4389	11.7207	5.7182	67.0932	0.1423564	0.813066057
2	11.5902	7.7916	3.7986	78.6834	0.0945673	0.907633402
2.25	6.5628	3.5751	2.9877	85.2462	0.0743797	0.982013135
2.5	1.4142	0.8776	0.5366	86.6604	0.0133588	0.995371961
2.75	0.7665	0.6047	0.1618	87.4269	0.0040281	0.999400023
3	0.4104	0.3886	0.0218	87.8373	0.0005427	0.999942741
3.25	0.1066	0.1066	0	87.9439	0	0.999942741
3.5	0.0531	0.0531	0	87.997	0	0.999942741
3.75	0.0186	0.0186	0	88.0156	0	0.999942741
4	0.0098	0.0075	0.0023	88.0254	5.726E-05	1

Total Wt.	88.0254
CO3 Wt.	40.1682

Sample % Carbonate	45.632511


Cum CO3 Wt. % SL4

2'

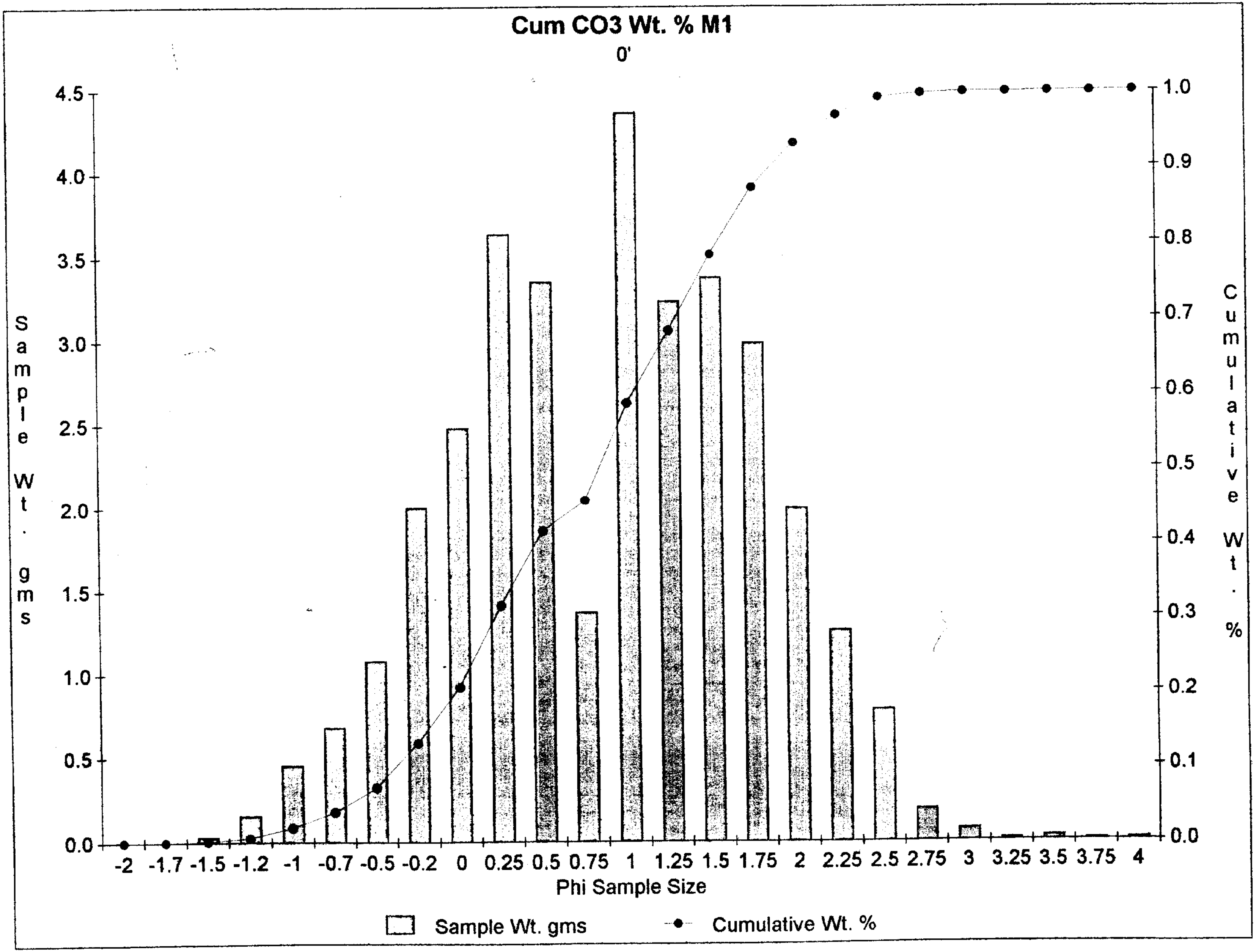
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (M-1)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0.0307	0	0.0307	0.0307	0.0009145	0.00091451
-1.25	0.1549	0	0.1549	0.1856	0.0046143	0.005528762
-1	0.4554	0	0.4554	0.641	0.0135657	0.019094486
-0.75	0.6886	0	0.6886	1.3296	0.0205124	0.03960691
-0.5	1.0818	0	1.0818	2.4114	0.0322253	0.071832207
-0.25	1.9997	0	1.9997	4.4111	0.0595682	0.131400451
0	2.5655	0.0867	2.4788	6.9766	0.07384	0.205240409
0.25	3.8464	0.2077	3.6387	10.823	0.1083917	0.313632153
0.5	3.8303	0.4802	3.3501	14.6533	0.0997948	0.413426909
0.75	2.3044	0.9344	1.37	16.9577	0.0408104	0.454237278
1	6.3895	2.0267	4.3628	23.3472	0.1299617	0.58419894
1.25	6.3984	3.1613	3.2371	29.7456	0.0964286	0.680627586
1.5	8.1464	4.7688	3.3776	37.892	0.1006139	0.781241529
1.75	8.2051	5.2197	2.9854	46.0971	0.0889309	0.870172387
2	5.1906	3.1959	1.9947	51.2877	0.0594193	0.929591688
2.25	3.0982	1.8388	1.2594	54.3859	0.0375158	0.967107439
2.5	1.2815	0.4928	0.7887	55.6674	0.0234943	0.9906017
2.75	0.5061	0.3183	0.1878	56.1735	0.0055943	0.996195997
3	0.2658	0.1956	0.0702	56.4393	0.0020912	0.998287156
3.25	0.0771	0.0658	0.0113	56.5164	0.0003366	0.998623767
3.5	0.0716	0.0448	0.0268	56.588	0.0007983	0.999422101
3.75	0.0286	0.0215	0.0071	56.6166	0.0002115	0.9996336
4	0.021	0.0087	0.0123	56.6376	0.0003664	1

Total Wt.	56.6376
CO3 Wt.	33.5699

Sample % Carbonate	59.271403


Cum CO3 Wt. % M1

0'

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (M-1)
DEPTH (2 FEET BLS)

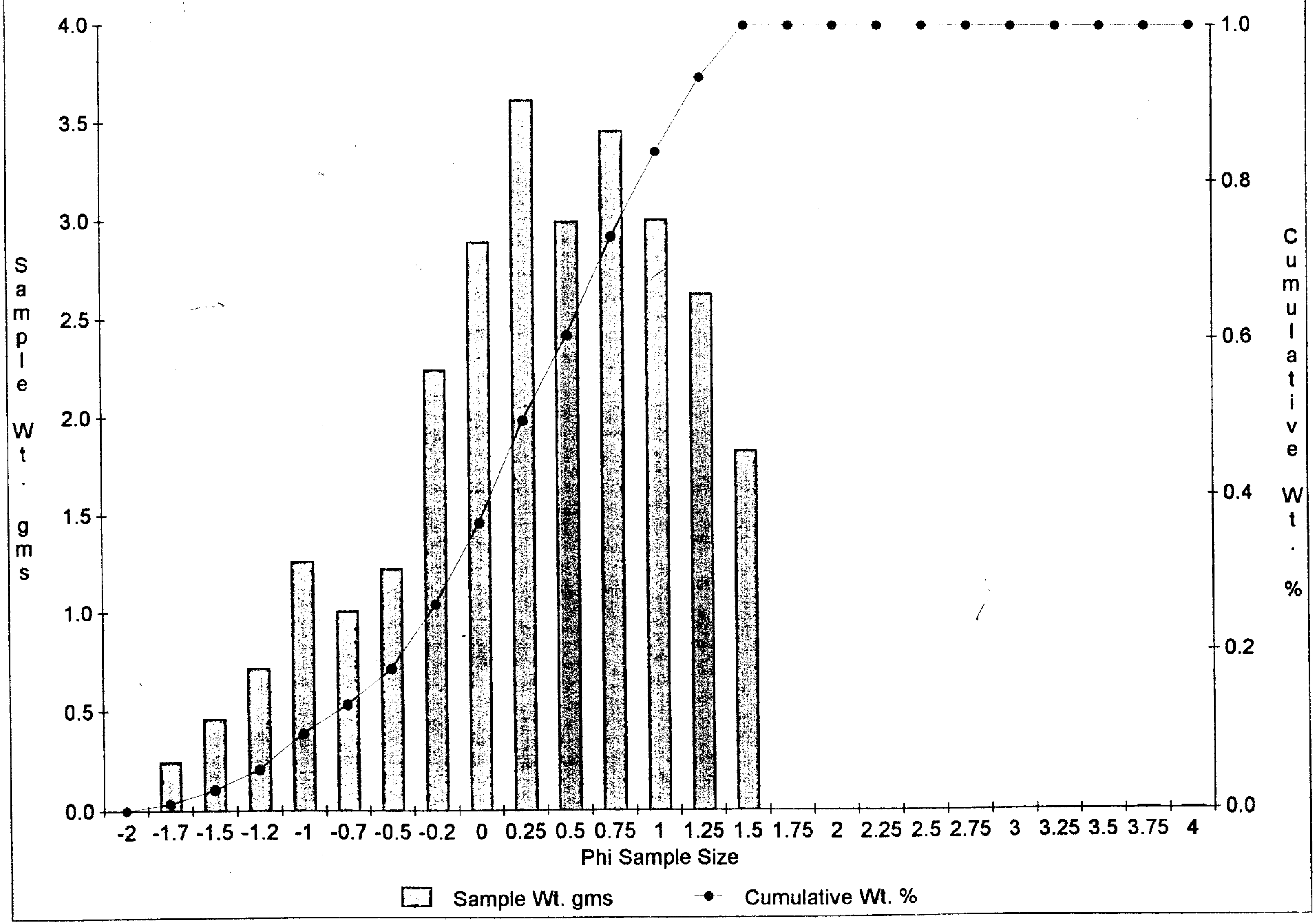
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0.2451	0	0.2451	0.2451	0.009088	0.00908801
-1.5	0.4608	0	0.4608	0.7059	0.0170859	0.026173914
-1.25	0.7179	0	0.7179	1.4238	0.0266189	0.052792774
-1	1.2661	0	1.2661	2.6899	0.0469454	0.099738224
-0.75	1.0092	0	1.0092	3.6991	0.0374199	0.137158134
-0.5	1.2218	0	1.2218	4.9209	0.0453029	0.182460993
-0.25	2.2391	0	2.2391	7.16	0.0830231	0.265484101
0	2.8857	0	2.8857	10.0457	0.1069982	0.37248235
0.25	3.86	0.2453	3.6147	13.9057	0.1340287	0.506511035
0.5	3.4949	0.5074	2.9875	17.4006	0.1107729	0.617283905
0.75	4.3036	0.8465	3.4571	21.7042	0.1281851	0.745468972
1	4.6112	1.6103	3.0009	26.3154	0.1112697	0.856738698
1.25	4.8269	2.2014	2.6255	31.1423	0.0973504	0.954089048
1.5	4.0253	2.797	1.2283	35.1676	0.0455439	0.99963292
1.75	1.8508	1.8508	0	37.0184	0	0.99963292
2	0.9742	0.9742	0	37.9926	0	0.99963292
2.25	0.3159	0.3159	0	38.3085	0	0.99963292
2.5	0.1712	0.1712	0	38.4797	0	0.99963292
2.75	0.096	0.096	0	38.5757	0	0.99963292
3	0.0424	0.0424	0	38.6181	0	0.99963292
3.25	0.0219	0.0219	0	38.64	0	0.99963292
3.5	0.0208	0.0208	0	38.6608	0	0.99963292
3.75	0.0153	0.0107	0.0046	38.6761	0.0001706	0.999803482
4	0.0094	0.0041	0.0053	38.6855	0.0001965	1

Total Wt. 38.6855
CO3 Wt. 26.9696

Sample % Carbonate 69.715009

Cum CO3 Wt. % M1

2'



CARBONATE GRAIN SIZE DISTRIBUTION CHART

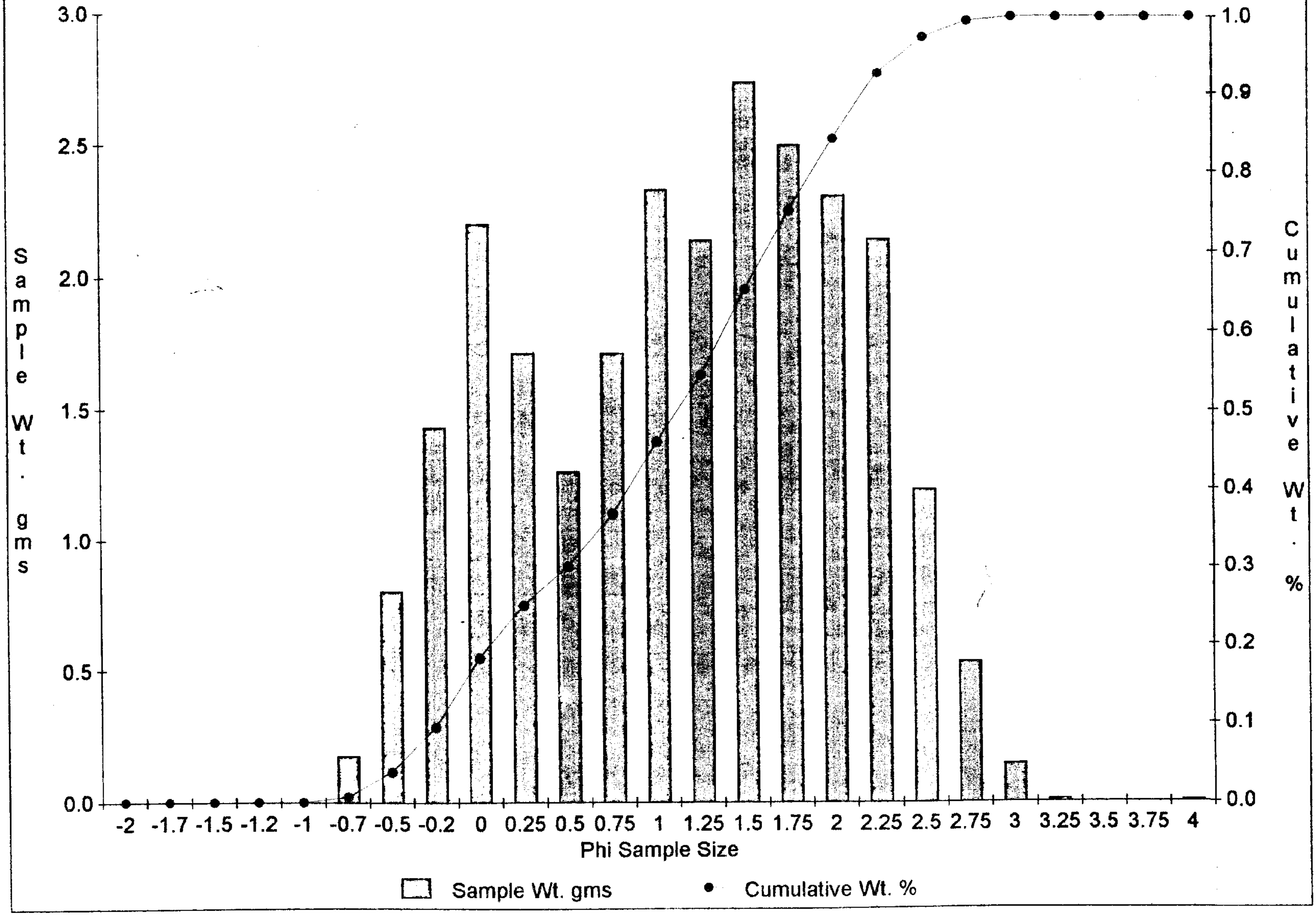
CORE (M-2)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0.1771	0	0.1771	0.1771	0.0070647	0.007064671
-0.5	0.8049	0	0.8049	0.982	0.0321082	0.039172823
-0.25	1.4302	0	1.4302	2.4122	0.0570519	0.096224729
0	2.2001	0	2.2001	4.6123	0.0877639	0.183988607
0.25	1.9159	0.205	1.7109	6.5282	0.0682493	0.252237877
0.5	1.5535	0.2914	1.2621	8.0817	0.0503463	0.30258413
0.75	2.1642	0.4519	1.7123	10.2459	0.0683051	0.370889247
1	3.2701	0.9393	2.3308	13.516	0.0929776	0.46386686
1.25	3.7431	1.6027	2.1404	17.2591	0.0853824	0.549249254
1.5	5.5243	2.7848	2.7395	22.7834	0.109281	0.658530261
1.75	7.2718	4.7727	2.4991	30.0552	0.0996912	0.758221506
2	6.6907	4.6644	2.0263	36.7459	0.0808308	0.839052353
2.25	6.6461	4.5027	2.1434	43.392	0.0855021	0.924554419
2.5	3.3501	2.1538	1.1963	46.7421	0.0477214	0.972275853
2.75	1.6057	1.0701	0.5356	48.3478	0.0213655	0.993641397
3	0.8317	0.686	0.1457	49.1795	0.0058121	0.999453495
3.25	0.2734	0.2644	0.009	49.4529	0.000359	0.999812513
3.5	0.1093	0.1093	0	49.5622	0	0.999812513
3.75	0.0147	0.0147	0	49.5769	0	0.999812513
4	0.0086	0.0039	0.0047	49.5855	0.0001875	1

Total Wt.	49.5855
CO3 Wt.	25.0684
Sample % Carbonate	50.555908

Cum CO3 Wt. % M2

0'



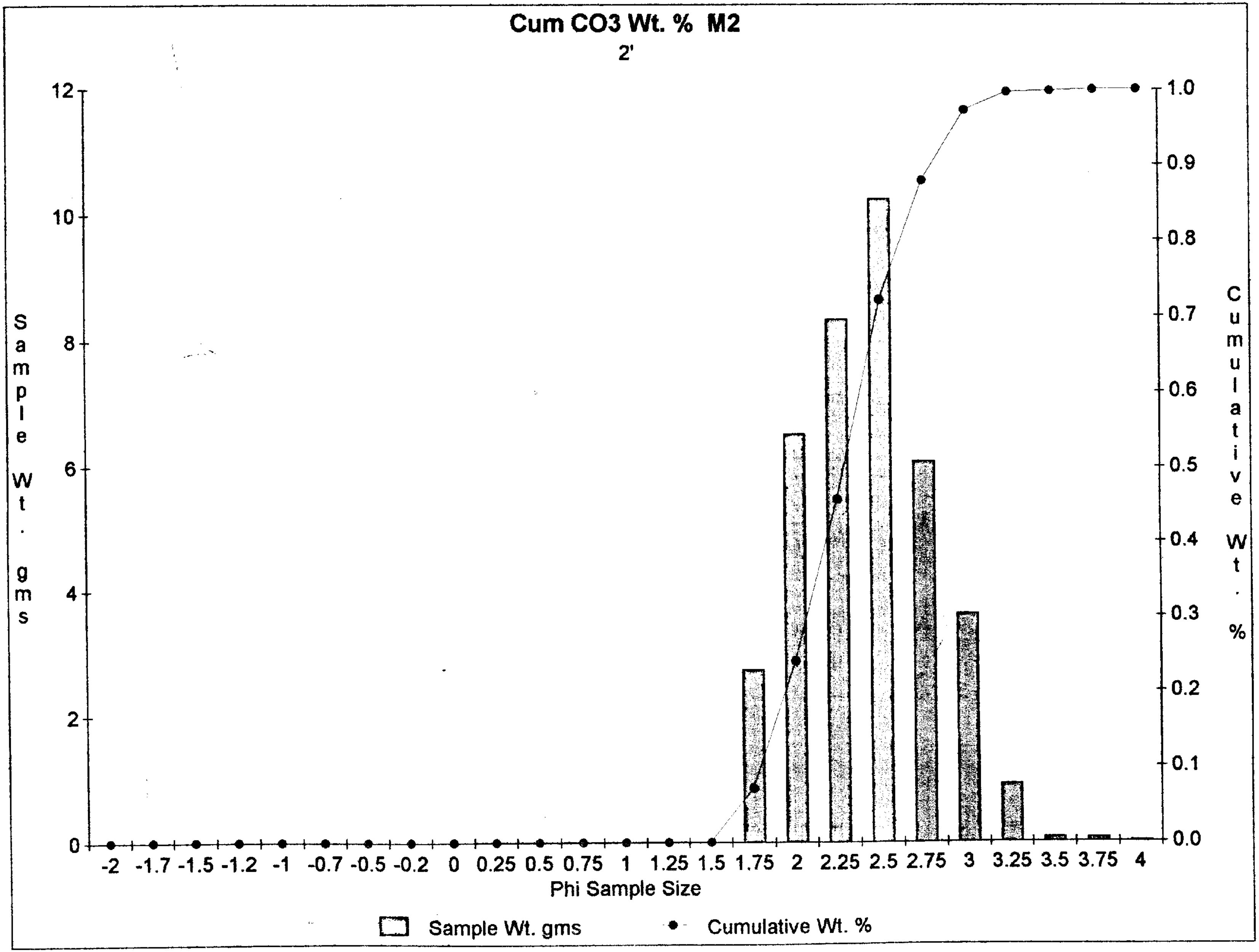
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (M-2)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0	0	0	0	0	0
0	0	0	0	0	0	0
0.25	0.7617	0.753	0.0087	0.7617	0.0002253	0.000225264
0.5	0.9045	0.9045	0	1.6662	0	0.000225264
0.75	2.3254	2.3254	0	3.9916	0	0.000225264
1	3.1854	3.1854	0	7.177	0	0.000225264
1.25	3.7805	3.7805	0	10.9575	0	0.000225264
1.5	6.1335	6.1335	0	17.091	0	0.000225264
1.75	10.7703	8.0421	2.7282	27.8613	0.0706396	0.070864857
2	11.4761	4.9595	6.5166	39.3374	0.1687303	0.239595147
2.25	11.2249	2.8861	8.3388	50.5623	0.2159114	0.455506533
2.5	10.9961	0.7527	10.2434	61.5584	0.265226	0.720732547
2.75	6.402	0.3169	6.0851	67.9604	0.1575577	0.878290274
3	3.7261	0.0889	3.6372	71.6865	0.0941758	0.972466042
3.25	0.9615	0.0434	0.9181	72.648	0.0237718	0.996237837
3.5	0.1037	0.0336	0.0701	72.7517	0.0018151	0.998052893
3.75	0.0901	0.0267	0.0634	72.8418	0.0016416	0.99969447
4	0.0204	0.0086	0.0118	72.8622	0.0003055	1

Total Wt.	72.8622
CO3 Wt.	38.6214

Sample % Carbonate 53.006085


Cum CO3 Wt. % M2
2'
Sample Wt. gms
12
10
8
6
4
2
0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (M-2)
DEPTH (2.5 FEET BLS)

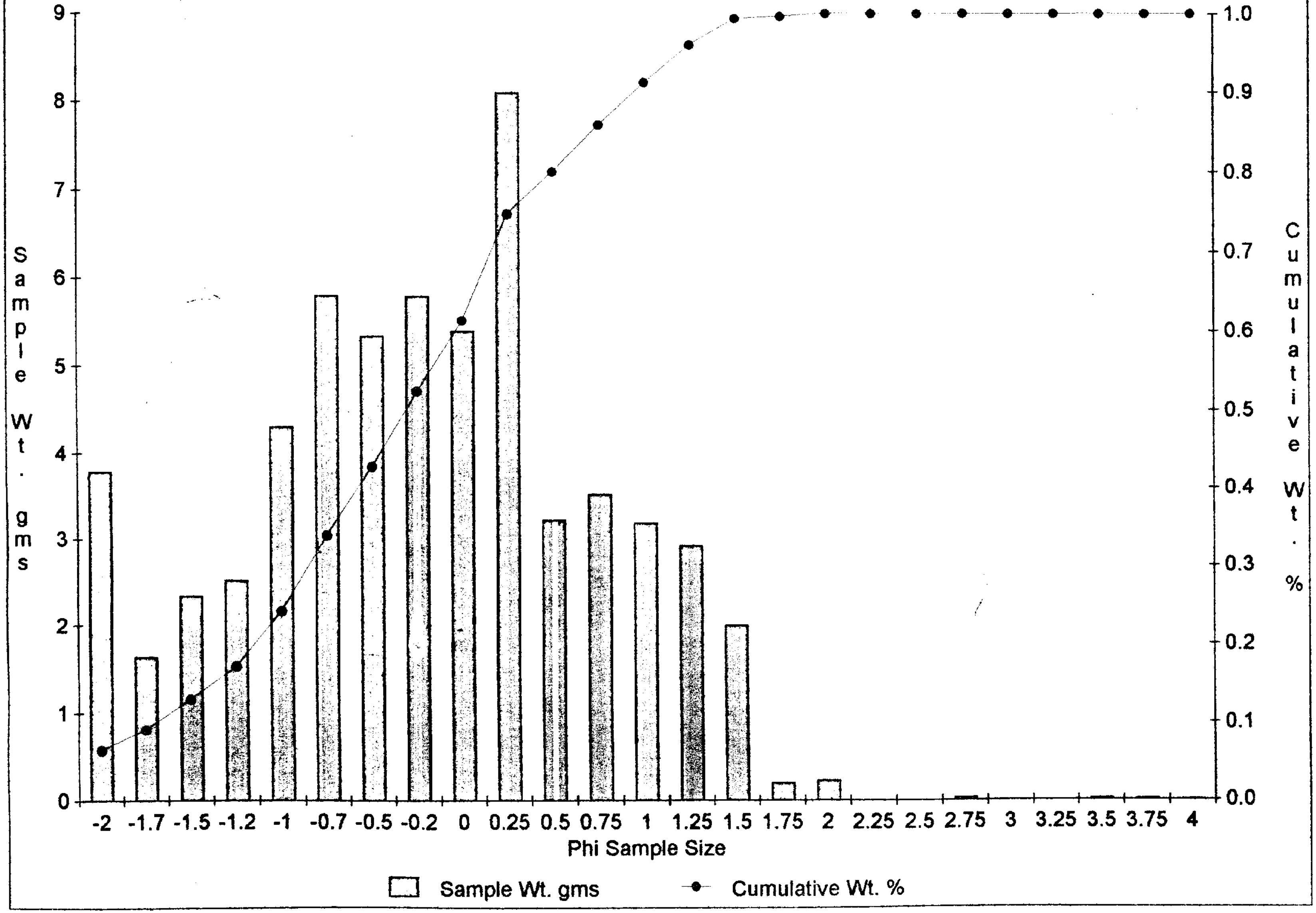
Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	3.7843	0	3.7843	3.7843	0.0627553	0.062755275
-1.75	1.6401	0	1.6401	5.4244	0.0271979	0.089953153
-1.5	2.3458	0	2.3458	7.7702	0.0389005	0.128853696
-1.25	2.5332	0	2.5332	10.3034	0.0420082	0.170861905
-1	4.3067	0	4.3067	14.6101	0.0714183	0.242280171
-0.75	5.7964	0	5.7964	20.4065	0.0961221	0.338402222
-0.5	5.3355	0	5.3355	25.742	0.0884789	0.426881141
-0.25	5.7983	0.0102	5.7881	31.5403	0.0959844	0.522865553
0	5.4875	0.1001	5.3874	37.0278	0.0893396	0.612205132
0.25	8.3492	0.2664	8.0828	45.377	0.1340376	0.746242693
0.5	3.5568	0.3437	3.2131	48.9338	0.053283	0.799525724
0.75	3.9623	0.4498	3.5125	52.8961	0.058248	0.857773724
1	4.1002	0.9237	3.1765	56.9963	0.0526761	0.910449816
1.25	4.3552	1.4342	2.921	61.3515	0.0484391	0.958888935
1.5	4.1324	2.1275	2.0049	65.4839	0.0332474	0.992136313
1.75	2.6588	2.4663	0.1925	68.1427	0.0031922	0.995328552
2	1.9998	1.7771	0.2227	70.1425	0.003693	0.999021599
2.25	0.7833	0.7833	0	70.9258	0	0.999021599
2.5	0.556	0.556	0	71.4818	0	0.999021599
2.75	0.3887	0.36	0.0287	71.8705	0.0004759	0.999497533
3	0.1935	0.1935	0	72.064	0	0.999497533
3.25	0.073	0.073	0	72.137	0	0.999497533
3.5	0.0495	0.0319	0.0176	72.1865	0.0002919	0.999789395
3.75	0.0111	0.0037	0.0074	72.1976	0.0001227	0.99991211
4	0.0063	0.001	0.0053	72.2039	8.789E-05	1

Total Wt. 72.2039
CO3 Wt. 60.3025

Sample % Carbonate 83.516957

Cum CO3 Wt. % M2

2.5'



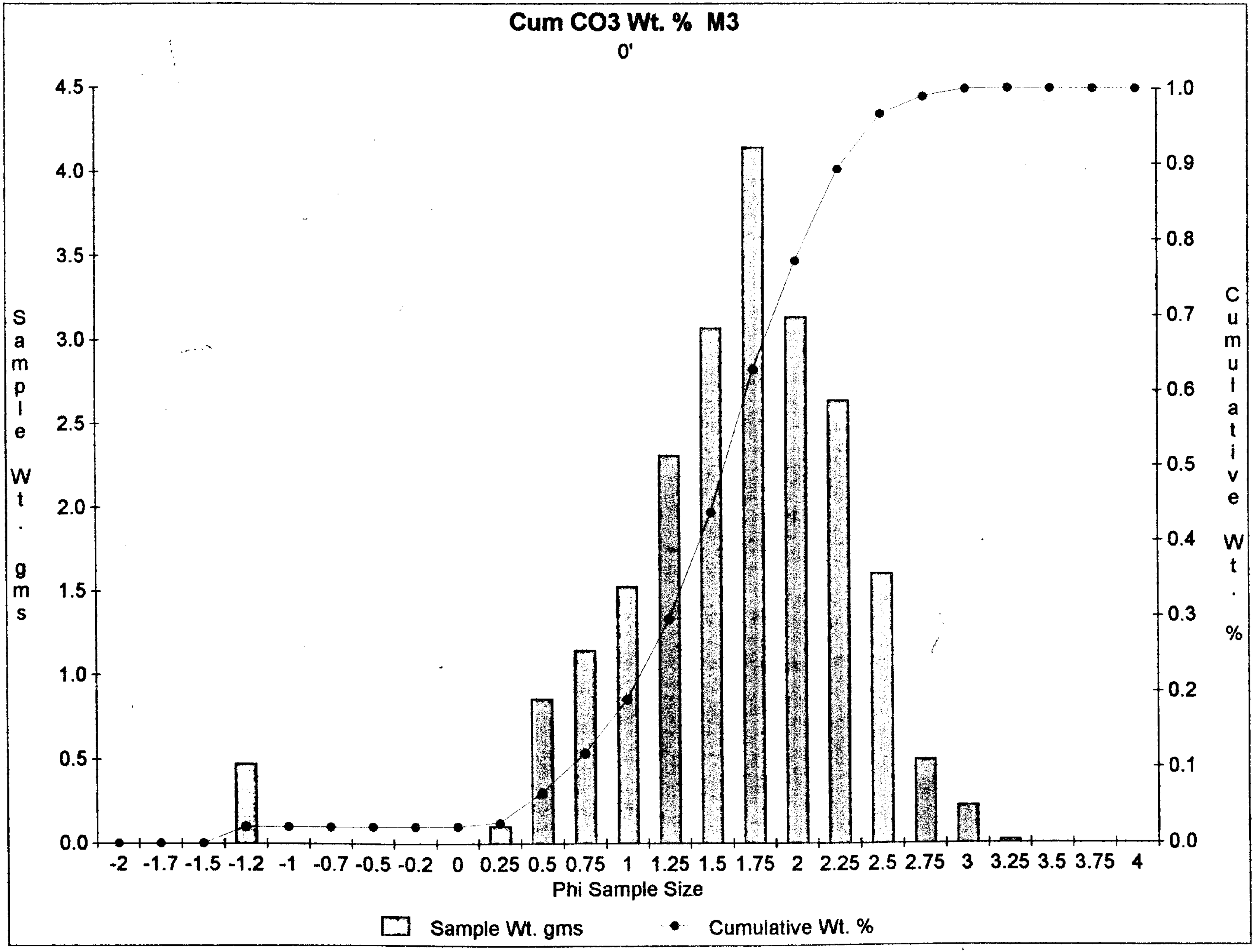
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (M-3)
DEPTH (0 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0.4738	0	0.4738	0.4738	0.021821	0.021821029
-1	0	0	0	0.4738	0	0.021821029
-0.75	0	0	0	0.4738	0	0.021821029
-0.5	0	0	0	0.4738	0	0.021821029
-0.25	0	0	0	0.4738	0	0.021821029
0	0	0	0	0.4738	0	0.021821029
0.25	0.101	0	0.101	0.5748	0.0046516	0.02647262
0.5	0.941	0.0901	0.8509	1.5158	0.0391885	0.065661125
0.75	1.3428	0.2031	1.1397	2.8586	0.0524893	0.118150417
1	2.1891	0.6689	1.5202	5.0477	0.0700134	0.188163773
1.25	4.0811	1.7776	2.3035	9.1288	0.1060885	0.294252291
1.5	6.4865	3.4196	3.0669	15.6153	0.1412472	0.43549947
1.75	9.1024	4.9584	4.144	24.7177	0.1908534	0.626352876
2	7.0715	3.939	3.1325	31.7892	0.1442684	0.770621287
2.25	5.9221	3.289	2.6331	37.7113	0.1212684	0.891889651
2.5	2.9856	1.3845	1.6011	40.6969	0.0737392	0.965628886
2.75	1.3979	0.8964	0.5015	42.0948	0.0230968	0.988725648
3	0.8038	0.5784	0.2254	42.8986	0.0103809	0.999106526
3.25	0.2711	0.2517	0.0194	43.1697	0.0008935	1
3.5	0.0848	0.0848	0	43.2545	0	1
3.75	0.0108	0.0108	0	43.2653	0	1
4	0.0059	0.0059	0	43.2712	0	1

Total Wt.	43.2712
CO3 Wt.	21.713

Sample % Carbonate	50.178872


Cum CO3 Wt. % M3
0'
Sample Wt. gms
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cumulative Wt. %
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %

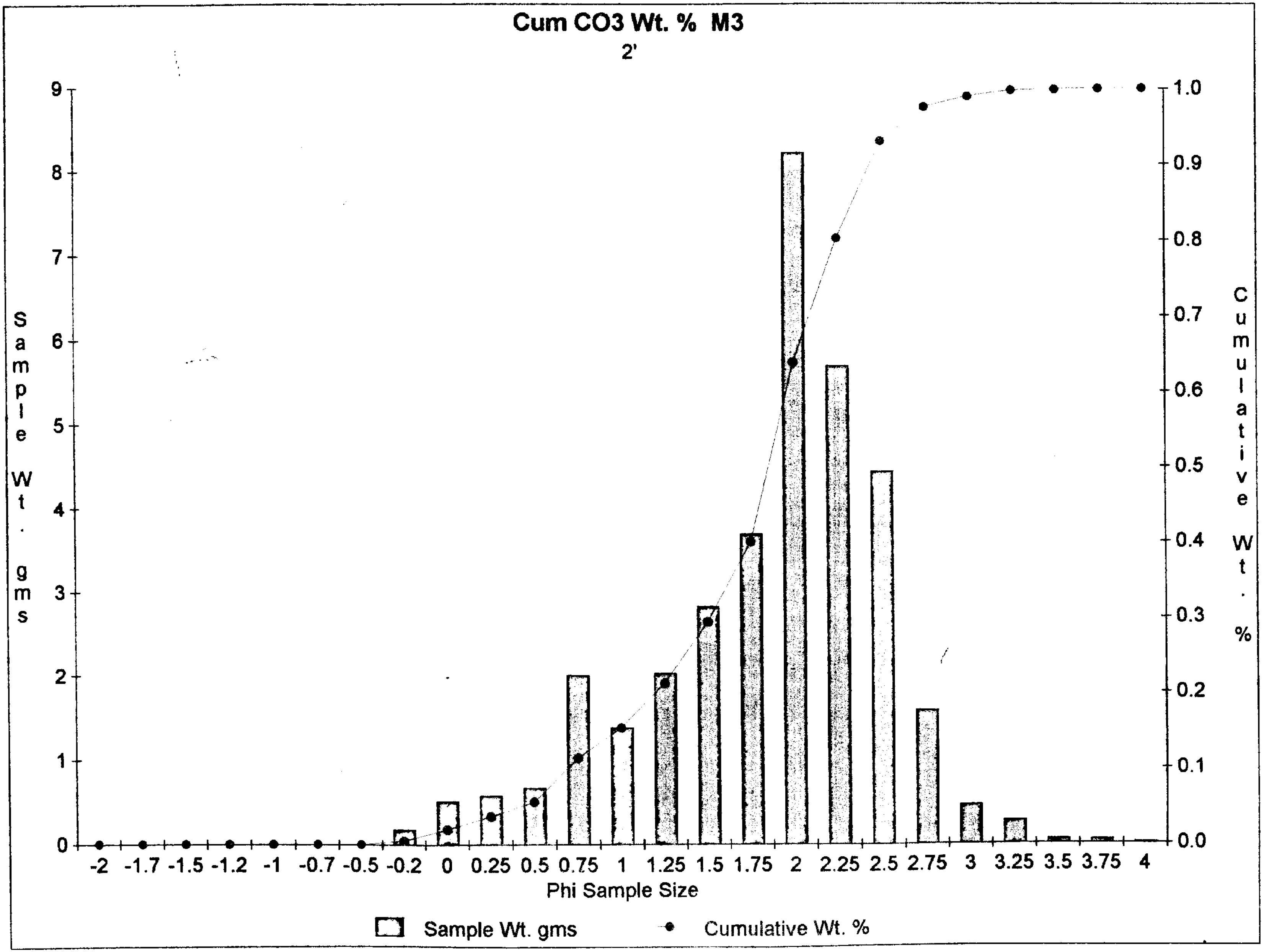
CARBONATE GRAIN SIZE DISTRIBUTION CHART

CORE (M-3)
DEPTH (2 FEET BLS)

Phi	Total Wt.	Digest Wt.	CO3 Wt.	Cum. Wt.	CO3 Wt. %	Tot.Cum.Wt.% CO3
-2	0	0	0	0	0	0
-1.75	0	0	0	0	0	0
-1.5	0	0	0	0	0	0
-1.25	0	0	0	0	0	0
-1	0	0	0	0	0	0
-0.75	0	0	0	0	0	0
-0.5	0	0	0	0	0	0
-0.25	0.1746	0	0.1746	0.1746	0.0050446	0.005044581
0	0.5118	0	0.5118	0.6864	0.014787	0.019831616
0.25	0.5764	0	0.5764	1.2628	0.0166535	0.036485089
0.5	0.901	0.2369	0.6641	2.1638	0.0191873	0.055672409
0.75	2.4654	0.4676	1.9978	4.6292	0.0577209	0.113393275
1	2.8316	1.458	1.3736	7.4608	0.0396863	0.153079621
1.25	5.4437	3.4224	2.0213	12.9045	0.0583998	0.211479455
1.5	8.3666	5.5447	2.8219	21.2711	0.0815309	0.293010395
1.75	10.6197	6.9347	3.685	31.8908	0.1064678	0.399478207
2	12.5236	4.2956	8.228	44.4144	0.2377251	0.637203349
2.25	8.389	2.6974	5.6916	52.8034	0.1644429	0.801646278
2.5	5.3287	0.8982	4.4305	58.1321	0.128007	0.929653236
2.75	2.068	0.4775	1.5905	60.2001	0.0459531	0.975606303
3	0.7261	0.2616	0.4645	60.9262	0.0134204	0.989026737
3.25	0.3536	0.0796	0.274	61.2798	0.0079165	0.996943204
3.5	0.0927	0.0391	0.0536	61.3725	0.0015486	0.998491826
3.75	0.0503	0.0082	0.0421	61.4228	0.0012164	0.999708189
4	0.0142	0.0041	0.0101	61.437	0.0002918	1

Total Wt. 61.437
CO3 Wt. 34.6114

Sample % Carbonate 56.33641


Cum CO3 Wt. % M3
2'
Sample Wt. gms
Cumulative Wt. %
9
8
7
6
5
4
3
2
1
0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2
-1.7
-1.5
-1.2
-1
-0.7
-0.5
-0.2
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
2.25
2.5
2.75
3
3.25
3.5
3.75
4
Phi Sample Size
Sample Wt. gms
Cumulative Wt. %