FLORIDA DEPARTMENT OF STATE
Jim Smith
Secretary of State
Room 2002, DIVISION OF ELECTIONS
The Capitol, Tallahassee, Florida 32399-0250
(904) 488-8427

September 16, 1991

FILED FOR RECORD
R.B. SHORE
CLERK CIRCUIT COURT
MANATEE COUNTY, FLORIDA
SEP 18 3 33 PM '91

Honorable Richard B. "Chips" Shore
Clerk of the Circuit Court
Manatee County Courthouse
Post Office Box 1000
Bradenton, Florida 34206

Attention: Richard H. Ashley, Deputy Clerk

Dear Mr. Shore::

Pursuant to the provisions of Section 125.66, Florida Statutes, this will acknowledge your letter of September 12,1991 and certified copy of Manatee County Ordinance Number 91-62, which was filed in this office on September 16, 1991.

The duplicate copy showing the filing date is being returned for your records.

Sincerely,

Liz Cloud

Liz Cloud, Chief
Bureau of Administrative Code

LC/mb

Enclosure (1)

FILED

SEP 16 9 27 AM '91

SECRETARY OF STATE

FILED FOR RECORD
R.B. SHORE
CLERK CIRCUIT COURT
MANATEE CO. FLORIDA
SEP 18 3 34 PM '91

ORDINANCE 91-62

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF MANATEE COUNTY, FLORIDA, RENDERING A DEVELOPMENT ORDER PURSUANT TO CHAPTER 380, FLORIDA STATUTES, ON AN APPLICATION FOR DEVELOPMENT APPROVAL* (ADA*) FILED BY IMC FERTILIZER, INC., FOR FOUR CORNERS MINE DEVELOPMENT OF REGIONAL IMPACT (DRI) SUBSTANTIAL DEVIATION, ALSO KNOWN AS DRI #198; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, W. R. Grace and Company proposed a Development of Regional Impact (DRI) for a phosphate mine located in both Hillsborough and Manatee Counties; and

WHEREAS, the proposed DRI included two discontinuous tracts in Manatee County, one of which was known as the "Jameson Tract" and included 4,753 acres, the other of which was known as the "Northeast Manatee Tract" and included 5,052 acres; and

WHEREAS, on December 27, 1977 Manatee County adopted resolutions granting W. R. Grace and Company a DRI Development Order, Master Mining and Reclamation Plan, and Special Exception for the Four Corners Mine; and

WHEREAS, W. R. Grace and Company was issued an Operating Permit on January 22, 1981 to mine all parts of Four Corners Mine* excluding the Mine Extension Areas*; that Permit has been extended by operation of law, and the Developer has applied for a new Operating Permit; and

WHEREAS, on November 2, 1982, Manatee County approved a resolution transferring all rights in the Four Corners Mine from W. R. Grace to W. R. Grace, as manager to the Four Corners Mine Joint Venture; and

WHEREAS, on July 9, 1985, Four Corners Mine Joint Venture submitted an Operating Permit renewal application to Manatee County which included a new Reclamation Plan; and

WHEREAS, Four Corners Mine Joint Venture submitted a Notice of Proposed Change to a Development Order on November 27, 1987; and

WHEREAS, on March 29, 1988, Manatee County determined that the proposed change was a Substantial Deviation to the approved Development Order; and

WHEREAS, the management of the Four Corners Mine was transferred to IMC Fertilizer, Inc. on December 20, 1988; and

WHEREAS, on January 10, 1989, IMC Fertilizer, Inc. became the sole owner of the Four Corners Mine; and

WHEREAS, on March 28, 1989, IMC Fertilizer, Inc. filed an ADA* for a Substantial Deviation to an approved DRI with the Manatee County Board of County Commissioners, pursuant to the provisions of Section 380.06, Florida Statutes; and

WHEREAS, said Substantial Deviation proposed:

- the addition of a one hundred and seventy (170) acre parcel in Sections 10 and 15 of Township 33 South, Range 22 East, and the mining of that area;

- the construction of a heavy media facility to the Four Corners processing plant, southwest of the existing washer, to upgrade waste pebble into saleable product;

91-62 Four Corners Mine (IMC) Develop Order

- dismantling, mining, and rebuilding of the approximately seven hundred and forty (740) acre F-1 waste clay settling area;

- revision of the mining and reclamation plan for the Jameson and Northeast Manatee tracts, extending mining on the Jameson Tract to November 30, 2006 and mining on the Northeast Manatee Tract from 1998 through 2002 to 2002 through 2006 with reclamation being completed by 2018 and 2010, respectively;

- the mining of two hundred and eleven (211) acres within the approved DRI which were previously approved for disturbance but not mining;

- the mining of the right-of-way of Carlton Road, an unpaved County road in Sections 9 and 16, T33S, R22E; and revision of the project traffic impacts; and

WHEREAS, on March 28, 1991, 79 acres of the 170 Acre Addition were granted Vested Rights with regard to the currently approved Manatee County Comprehensive Plan, and the remaining 91 acres of the 170 Acre Addition were granted Vested Rights with regard to the rebuttable presumption against mining within the Lake Manatee Watershed, as described in the currently approved Manatee County Comprehensive Plan; and

WHEREAS, the described Project lies within the unincorporated area of Manatee County; and

WHEREAS, the Board of County Commissioners is the governing body of the local government having jurisdiction pursuant to Section 380.06, Florida Statutes; and

WHEREAS, the Planning Commission has reviewed the Application for Development Approval* for a Substantial Deviation and has filed a recommendation on said Application with the Board of County Commissioners; and

WHEREAS, The Board of County Commissioners has received and considered the report and recommendation of the Tampa Bay Regional Planning Council (TBRPC); and

WHEREAS, the Board of County Commissioners of Manatee County has, on March 14, 1991, April 25, 1991, June 27, 1991 and August 19, 1991 and September 5, 1991 held a duly noticed public hearing on said Application for Development Approval* for a Substantial Deviation, and has solicited, received and considered reports, comments, and recommendations from interested citizens, county and city agencies, and the applicant, as well as the review and report of the Manatee County Planning and Zoning Department.

NOW THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MANATEE COUNTY, FLORIDA, IN REGULAR MEETING ASSEMBLED THIS 5TH DAY OF SEPTEMBER, 1991, AS FOLLOWS:

SECTION 1: AMENDMENT OF DEVELOPMENT ORDER FOR DRI NO. 5, SE-852. The previous Development Order for Four Corners Mine in Manatee County, which was adopted on December 27, 1977, is hereby amended in its entirety, provided this amendment shall not be construed to terminate the rights of the Developer*, if any, granted under Section 163.3167(8) F.S. to the extent such rights have previously been granted and not specifically herein or otherwise modified or amended.

SECTION 2: FINDINGS OF FACT. The Board of County Commissioners of said County, after considering the testimony, evidence, documentation, application for amendment of the Official Zoning Atlas, the recommendation and findings of the Planning Commission of Manatee County, as well as all other matters presented to said Board at the public hearing hereinafter referenced, hereby makes the following Findings of Fact, provided this amendment shall not be construed to terminate the rights of the Developer*, if any, granted under Section 163.3167(8), F.S., to the extent such rights have previously been granted and not specifically herein or otherwise modified or amended:

A. The Board of County Commissioners has received and considered the report of the Manatee County Planning Commission concerning the DRI Substantial Deviation and the Application for Official Zoning Atlas Amendment as it relates to the real property described in Section 7 of this Resolution of an Application for Development Approval* pursuant to Section 380.06, Florida Statutes (FS).

B. That said Board of County Commissioners held a public hearing on March 14, 1991, April 25, 1991, June 27, 1991, August 19, 1991 and September 5, 1991 regarding the said DRI Substantial Deviation and the proposed Official Zoning Atlas Amendment described herein, in accordance with the requirements of Manatee County Ordinance No. 90-01 (The Manatee County Land Development Code), Ordinance 89-01 (The Manatee County Comprehensive Plan), and Ordinance 81-22 (The Manatee County Mining and Reclamation Ordinance) and has further considered the information received at said public hearing.

C. The proposed DRI Substantial Deviation regarding the property described in Section 7 herein is found to be consistent with the requirements of Manatee County Ordinance 89-01 (The Manatee County Comprehensive Plan) and with the Development Conditions specified in Section 6. The Four Corners Mine* is an approved DRI; therefore, this development has Special Exception status as explained in Section 3, Subsection D herein.

D. IMC Fertilizer, Inc. submitted to Manatee County, Florida, an Application for Development Approval (ADA)*, and five Sufficiency Responses, which are incorporated herein by reference. Hereinafter, the word "Application" shall mean the ADA* as defined in Section 5, Paragraph B herein.

E. The real property, which is the subject of this application, is legally described as set forth in Section 7 of the Development Order.

F. The proposed development is not in an Area of Critical State Concern, as designated pursuant to Section 380.05, Florida Statutes.

G. The authorized agent for IMC Fertilizer, Inc. is Mr. James V. Burleson, as Vice-President and General Manager, Florida Minerals Division, Post Office Box 867, Bartow, Florida 33830.

H. The owner of the property is IMC Fertilizer, Inc.

I. A comprehensive review of the impact generated by the Substantial Deviation has been conducted by the departments of Manatee County and TBRPC.

J. The DRI Preapplication Review, which was convened for the Substantial Deviation to the Four Corners Mine DRI, resulted in the elimination of the following questions from the ADA* for this Substantial Deviation review:

#13 - Air
#17 - Floodplain
#19 - Historical and Archaeological Resources
#20 - Economy
#21 - Wastewater
#24 - Solid Waste
#25 - Energy
#26 - Education
#27 - Recreation and Open Space
#28 - Health Care
#29 - Police
#30 - Fire, and
#32 - Housing.

K. The original DRI Development Order approval included 9805± acres to be impacted by mining. The Substantial Deviation Application includes a request to mine 211 acres which were previously approved for disturbance but not mining. The entire 211 acres are located within the boundaries of the Four Corners Mine, as originally approved, and results in part from improved planimetering techniques and in part from mining of lands approved to be impacted in the 1977 DRI. The applicant also intends to mine the right-of-way of Carlton Road. The proposed mining of the 211 acres and the right-of-way of Carlton Road were not known to Manatee County or to TBRPC at the pre-application stage. The total area to be impacted will be 9788± acres.

SECTION 3: CONCLUSIONS OF LAW:

A. Based upon the previous findings of fact and the following conditions of development approval, the Board of County Commissioners of Manatee County concluded that:

1. The 170± acre addition is not consistent with the Comprehensive Plan and the Land Development Code in that the requested expansion of the mine is incompatible with the existing agriculturally-zoned property located to the south, nor is it compatible with the Board's goals and objectives for preservation of the Lake Manatee Watershed, and also that the 170± acres was denied a rezone to EX/WP-M and phosphate mining is not permitted in the existing A/WP-M zoning district.

2. The Substantial Deviation components to the Four Corners Mine DRI, which are outlined in Section 4 herein, will not unreasonably interfere with the achievement of the objectives of the Adopted State Land Development Plan applicable to the area.

3. The Substantial Deviation components to the Four Corners Mine DRI, which are outlined in Section 4 herein, are consistent with the local land development regulations and are consistent with the State Comprehensive Plan, the Tampa Bay Regional Planning Council's Comprehensive Regional Policy Plan, and the Manatee County Comprehensive Plan, Ordinance 89-01, as amended.

4. The Substantial Deviation components to the Four Corners Mine, which are outlined in Section 4 herein, are consistent with the intent of the report and recommendations of the TBRPC issued on January 18, 1991.

B. That these proceedings have been duly conducted pursuant to applicable law and regulations, and, based upon the record in these proceedings, IMC Fertilizer, Inc. is authorized to conduct development as described herein, subject to the conditions, restrictions and limitations set forth below.

C. That the review by the County, the TBRPC, and other participating agencies and interested citizens reveals that the impacts of the Substantial Deviation components to the Four Corners Mine DRI, which are outlined in Section 4 herein, are adequately addressed pursuant to the requirements of Chapter 380, FS, within the terms and conditions of this Order and the Application. To the extent that the Application is inconsistent with the terms and conditions of this Order, the terms and conditions of this Order shall prevail.

D. That the original acres contained within the original DRI Development Order are determined to have Special Exception status pursuant to Section 4.B of the Manatee County Comprehensive Plan, Ordinance 89-01, as amended.

SECTION 4: DEVELOPMENT COMPONENTS

The Application for the Four Corners Mine DRI Substantial Deviation is hereby approved to allow the following development, subject to the conditions of the Manatee County Comprehensive Plan, and other conditions listed in this Development Order:

A. The construction of a heavy media facility at the Four Corners processing plant.

B. The dismantling, mining, and rebuilding of the approximately seven hundred and forty (740) acre F-1 waste clay settling area.

C. The revision of the mining and reclamation plan for the Jameson tract which provides that completion of mining be extended to November 30, 2006, and that reclamation be completed by 2018.

D. The revision of the mining and reclamation plan for the Northeast Manatee tract which provides that the mining period be extended from 1998-2002 to 2002-2006, and that reclamation be completed by 2010.

E. The mining of the 211 acres within the Jameson Tract, which acreage was previously approved for disturbance but not mining.

F. Revision of the projected traffic impacts.

SECTION 5: DEFINITIONS

Note: An asterisk (*) indicates that the word is defined.

A. "Acceptable Level of Service*" shall be Level of Service D, peak hour on urban roads, and Level of Service C, peak hour on rural roads, or as shown on Table 5.1 of the Manatee County Comprehensive Plan, whichever is more restrictive. Acceptable Level of Service for links and intersections in Polk County, Florida, shall mean Level of Service as set for the affected roadways in the Polk County Comprehensive Plan.

B. "Application for Development Approval*" and "ADA*" shall mean Four Corners Mine's* Development of Regional Impact Application for Development Approval and sufficiency responses, as amended by IMCF's Substantial Deviation Application for the Four Corners Mine (March 23, 1989), all five Additional Information Submittals submitted by the Developer* in response to the sufficiency reviews of state, regional, and local agencies, the revised mining schedule for the Jameson Tract, and the traffic information dated January 23, 1991.

C. "Best Management Practices*" shall mean practices that are technologically and economically practicable and most beneficial in preventing or reducing adverse impacts from mining activities. For more specific information and examples, see the same definition in the Manatee County Comprehensive Plan.

D. "Best Possible Technology*" shall mean the most advanced technology which provides the maximum protection possible for the public health, safety, and welfare and which minimizes to the greatest degree possible any adverse impacts from industrial uses and mining activities, on the watershed of the Lake Manatee Reservoir. Best Possible Technology may include, but is not limited to: innovative reclamation techniques, augmentation of public water supplies that could be adversely affected by mining activities; construction of

secondary containment structures or other measures to ensure against catastrophic failure of primary containment structures; elimination of mine site rock dryers; and zero point discharge; provided however, such requirements shall not be applied if the Developer* demonstrates that they are technologically infeasible. In ascertaining the Best Possible Technology, economic disadvantages shall only be considered relevant when analyzed in relation to other applicants conducting mining activities in the watershed of the Lake Manatee Reservoir.

E. "Conservation Areas*" shall mean the secondary zone around the eagle's nest, as determined by the U.S. Fish and Wildlife Service.

F. "Developer*" shall mean IMC Fertilizer, Inc., assigns, agents, and successors in interest as to the Four Corners Mine.

G. "Development Approval*" shall mean any approval for this development granted through the DRI ADA Substantial Deviation.

H. "Extended Four Corners Mine*" shall mean the entire Four Corners Mine located in Hillsborough, Polk and Manatee Counties, as illustrated on Map A of the Substantial Deviation Application for Development Approval dated March 23, 1989. The Developer* shall notify Manatee County of any amendments to any approved DRI in the Extended Four Corners Mine*.

I. "Four Corners Mine*" shall mean all portions of the Four Corners Mine which are located in Manatee County as described in Section 7 and excludes those portions of the mine located in Hillsborough and Polk Counties.

J. "Master Mining and Reclamation Plan* shall mean a description of proposed mining activities over the life of the mine, so as to allow overall review of applicant's mining activities.

K. "Mine Extension Areas*" shall mean the 740 acres of additional area to be mined in the F-1 settling area and the 211 acres not previously approved for mining.

L. "Preservation Areas*" shall mean the primary zone around the eagle's nest, as determined by the U.S. Fish and Wildlife Service, all 25-Year Floodplain* areas, and the MA-08 rookery.

M. "Reclamation Plan*" shall mean the consolidated Master Mining, Reclamation and Drainage Plan approved by the Board of County Commissioners on January 22, 1981 for the Northeast Manatee Tract and the revised Reclamation Plan as required by Condition J.(11.) herein.

N. "25-Year Floodplain*" shall mean the area that is so labeled in the maps in the original Four Corners Mine DRI/ADA, and the Substantial Deviation DRI #198 ADA*. The exact location of the 25-Year Floodplain shall be determined by a process of calculation of the elevation of the highest water level following a calculated 25 year storm event, and determination of the location of that water level in the field by elevation survey, using standard hydrological analysis and field surveying practices. The 25-Year Floodplain is distinguished from the "100-Year Flood Prone Areas" or "100-Year Flood Zone" as shown on FEMA maps.

SECTION 6: DEVELOPMENT CONDITIONS

Land

A.(1.) A sufficient quantity of organic deposits and natural topsoils in wetland habitats capable of supporting indigenous vegetation shall be stockpiled during mining activities and utilized in reclamation of all wetland habitats. The use of the donor soil (nuisance Species Free) shall follow the requirements of DER and/or COE, to insure reclamation and mitigation success. At a minimum, the following soil associations shall be stockpiled and utilized in reclamation:

1. Canova-Anclote-Okeelanta (Soil group #7)
2. Felda-Wabasso association (Soil group #24)
3. Floridana-Immokalee-Okeelanta association (Soil group #26)

Groundwater

B.(1.) The Groundwater Monitoring Program at the Four Corners Mine shall be performed as required by the Manatee County Operating Permit and Chapter 2-20, Code of Laws. At a minimum, the Groundwater Monitoring Program shall specify sampling locations, parameters, frequencies, duration, and analytical methods and procedures. The groundwater monitoring program shall be amended as determined necessary by Manatee County to require groundwater sampling at surficial monitor wells for the F-3 clay settling area. A summary of the results of the monitoring program shall be included as part of the DRI annual report.

B.(2.) Prior to mining in the Mining Extension Areas*, a field investigation of the mine shall be required to locate old wells not documented in the records. The Developer* shall properly plug and abandon all on-site wells (Table 23C-1, ADA*), in accordance with SWFWMD and Manatee County Health Department standards and rules, prior to mining each area.

Surface water

C.(1.) Best Management Practices* for reducing surface water quality impacts shall be implemented. Best Possible Technology* shall be required for those portions of the Mine Extension Areas* located within the Lake Manatee Watershed.

C.(2.) The existing Surface Water Monitoring Program at the Four Corners Mine shall be performed as required by the Manatee County Operating Permit and Chapter 2-20, Code of Laws. At a minimum, the Surface Water Monitoring Program shall specify sampling locations, parameters, frequencies, duration, and analytical methods and procedures. The surface water monitoring program shall be amended as determined necessary by Manatee County to require surface water sampling for the East Fork of the Manatee River. A summary of the results of the monitoring program shall be included as part of the DRI annual report.

C.(3.) The Developer* shall implement the water quality mitigation measures identified in the ADA*, Addendum Question 15-D.

Wetlands

D.(1.) Any portions of the Four Corners Mine* which meets the definition of Preservation* and Conservation Areas* shall be so designated in the DRI Annual Report.

D.(2.) The Developer* shall provide a thirty foot (30') wide transition zone around all wetlands in Preservation Areas* to provide an upland transition into the wetland

areas and to protect the natural systems from development impact. The recharge ditch and berm may be located in the transition area, and water shall be added as needed to maintain the hydroperiod. The Developer* shall obtain wetland delineations from the appropriate permitting agencies as part of the dredge and fill permitting requirements prior to any disturbance of jurisdictional areas, and shall simultaneously submit the applications to Manatee County.

a) Mitigation for wetland losses shall be shown on the DER and/or COE Dredge and Fill permit application prior to the wetlands being disturbed.

b) All wetland losses within the Four Corners Mine* shall require 1:1 in-kind wetland replacement, at minimum, except those portions without full Special Exception status which shall require a higher mitigation ratio in accordance with The Manatee County Comprehensive Plan (Ordinance 89-01) unless reduced by the Board of County Commissioners.

c) Wetlands which are permitted to be altered or eliminated shall be used as donor material for revegetation of mitigation areas as outlined in development condition A.(1.).

d) All mitigation areas and littoral shelves shall be monitored in accordance with DNR, DER, and Manatee County requirements. Additional planting may be required to achieve the desired natural cover rate. Mitigation areas monitoring results shall be included in the DRI annual report.

Floodplains

E.(1.) No mining or disturbance of the 25-Year Floodplain* shall be allowed except for those crossings permitted as part of the original DRI approval or those crossings as outlined in E.(2.) below. Any other mining or crossings shall be subject to further Chapter 380, F.S., review as a substantial deviation determination.

E.(2.) Any disturbance to the 25-Year Floodplain* necessitated by utility, dragline, or pipeline crossings or construction shall be conducted during periods of low flow and all applicable Best Management Practices* for erosion control shall be utilized throughout the entire period of disturbance. Immediately after such use is terminated, the Developer* shall remove all structures, restore the area in question to original grade elevations, and revegetate the area.

E.(3.) No adverse hydroperiod alteration shall be permitted in the 25-Year Floodplain* of the Mine Extension Areas* and the MA-08 rookery. Natural annual hydroperiods, normal pool elevations and seasonal water fluctuations shall be substantially maintained, however, this shall not require replication of storm surges. Hydroperiod monitoring of the above described areas shall be conducted semiannually, beginning immediately and continuing for three years following reclamation completion of the subbasin surrounding each of these areas. The monitoring sites shall be selected in cooperation with Manatee County. Should the above described be adversely impacted due to mining activities, the Developer* shall cease all mining and associated activity in the affected sub-basin until remedial measures have been taken to correct the hydroperiod imbalance. Such measures

could include limitations on surrounding activities, enlargement of buffer areas and additional protection measures or water augmentation. The results of the hydroperiod monitoring shall be provided in each annual report.

E.(4.) In order to promote the maintenance of the functional aspects of floodplains, water alterations caused by pit de-watering shall be limited to only one side of a floodplain at a time and mining of the opposite side of the floodplain shall be delayed wherever feasible until the mined portions have been reclaimed to design elevations and groundwater levels have recovered.

Vegetation and Wildlife

F.(1.) Because portions of the Jameson Tract may fall within the secondary and, possibly, primary zones established for protection of eagle nests, all mining and reclamation activities for the Four Corners Mine* Substantial Deviation shall conform with the U.S. Fish and Wildlife Service's Habitat Management Guidelines for the Bald Eagle in the Southeast Region (most recent edition) in regard to the eagle's nest (MN-08), which appears to be located approximately 1,450 feet southeast of the Four Corners Mine's* eastern boundary. (See the bird nesting locations map Figure 18B-1, Sufficiency Response 2, Page 40.)

a) The U.S. Fish and Wildlife Service (FWS) shall determine site specific conditions for protection from mining activities as are appropriate. Site specific criteria shall include mining and seasonal operation limitations, as appropriate.

F.(2.) The boundaries of the rookery (MA-08) shall be determined by the GFC, and the information shall be submitted to Manatee County as part of the DRI Annual Report.

Drainage

G.(1.) Prior to issuance of any new Operating Permit for the Four Corners Mine*, the following information must be submitted to Manatee County: estimated total volume and peak discharge rates of stormwater runoff to be generated by the final reclamation plan during the mean annual, 25 year, and 100 year storm events.

G.(2.) The drainage basins in the Four Corners Mine* shall be restored to their approximate pre-mining size and location as described in the ADA* response to question 22.(B.). The post-reclamation flood flow peaks shall be in accordance with the rates established in the response to question 22C of the ADA. The discharge rate shall be in accordance with Chapter 40D-4 F.A.C. requirements.

G.(3.) Upon completion of reclamation in each affected drainage basin, the Developer* shall conduct a detailed study to define final flood frequency elevations, delineate the aerial extent of each basin and determine the duration and quantity of surface water leaving the site during high rainfall events. This information shall be transmitted to all appropriate local, regional, state, and federal agencies involved in floodplain management and floodplain delineation so that downstream flood elevations and management mechanisms can be appropriately modified.

G.(4.) If the hydrologic studies indicate that the peak discharge characteristics of any affected drainage basin

have been increased over premining conditions, the Developer* shall increase the retention capacity of the reclaimed land such that peak discharge characteristics of the affected drainage basin is equal to or less than that which existed before mining. Increases in retention capacity shall be accomplished with minimum use of control structures.

G.(5.) All re-created wetlands and floodplain/floodprone areas shall be subject to all the rules, regulations and policies of local, state, regional and federal agencies governing wetland and floodplain/floodprone areas at the time mining and reclamation is complete.

G.(6.) The recreated wetlands shall be designed to promote seasonal fluctuations of water levels within the freshwater marsh and encourage seasonal inundation of the marsh property. Final grade of the side slopes of the marsh periphery shall meet the requirements established by Manatee County in Ordinance 81-22 or by the Department of Natural Resources, whichever is more stringent.

G.(7.) The Developer* shall be responsible for maintaining the water recirculation system and the drainage system, including channels, swales, culverts, erosion protection facilities, and discharge facilities. Any transfer of this responsibility from the Developer* to subsequent owners, or assigns, shall require the approval of the appropriate permitting agency.

Water Supply

H.(1.) The Developer* shall provide, operate, and maintain the internal water supply system for the heavy media plant until such time as it is no longer needed for operations; then the Developer* shall abandon and remove it according to the applicable regulations at that time.

H.(2.) The Developer* shall continue to provide 1.96 MGD augmentation to the Manatee County water supply. The Developer* shall also maintain a wellfield capable of providing no less than 14 MGD annual daily coverage and 18 MGD maximum daily demand, which will produce water which can be treated to meet or exceed drinking water standards by conventional lime softening techniques (1.96 MGD of this capacity will be provided to Manatee County pursuant to the augmentation referenced above) until the requirements set forth in Section 6.H.(3) of the Development Order are satisfied.

H.(3.) Upon completion of reclamation activities in the Lake Manatee Watershed, the Developer* shall perform studies, in accordance with SWFWMD and Manatee County requirements, to quantify the post-reclamation water budget so that mitigation in the form of long-term water supply augmentation can be performed by the Developer*, as necessary, to maintain the historic contribution to the Lake Manatee Watershed.

Transportation

I.(1.) The Developer* shall assume responsibility for the installation of a caution light at the mine's ingress-egress point on State Road 37, for use during operating hours.

I.(2.) An annual monitoring program to provide peak-hour and average daily traffic counts at the project entrance, including a description of the types of vehicles making each trip, shall be instituted to verify that the projected number of external trips for the project are not exceeded. Counts will continue on an annual basis

through project completion. This information shall be supplied in the required annual report. If the annual report indicates that the total trips exceed projected counts, Manatee County shall conduct a substantial deviation determination pursuant to Subsection 380.06(19), F.S., and may amend the Development Order to change or require additional roadway improvements. The results of the study may also serve as a basis for the Developer* or reviewing agencies to request Development Order amendments. If the variance is determined to be a substantial deviation, the revised transportation analysis required pursuant to Subsection 380.06(19), F.S., will be based upon results of the monitoring program and agreements reached at another transportation methodology meeting to be held prior to the preparation of the new analysis.

I.(3.) If by 2007, the Florida Department of Transportation determines that road improvements are required on the following sections of state maintained highway, the Developer* shall contribute its proportionate share of funds based on the percentage of project traffic on that roadway at that time. These improvements include:

a) Improve the intersection at SR 37/SR 640 by providing signalization, when warranted by the Manual for Uniform Traffic Control Devices (MUTCD).

I.(4.) Carlton Road and its right-of-way are not approved for mining.

I.(5.) All non-public roads, streets, bridges and other access ways located upon the site shall be constructed and maintained by the Developer* without any cost or obligation to Manatee County.

I.(6.) The existing east-west road on the Hillsborough-Manatee County line should be named Four Corners Mine Road and two street signs (one in each County) erected at its intersection with SR 37 at the Developer*'s expense.

I.(7.) Transportation of product from this mine by truck is permitted on State Road 37 north from the identified mine entrance on State Road 37. Transportation of product by truck shall not be permitted on other County or State roads within Manatee County without future Board of County Commissioners approval in a manner consistent with law.

I.(8.) The establishment of crossing points on County roads for purposes of access, movement of mining machinery, or mineral transport pipelines shall not be permitted without the prior written approval of the Phosphate Mining Coordinator. The Phosphate Mining Coordinator shall be sent copies of all crossing permit applications at the time of application for crossing any County right-of-way.

I.(9.) IMCF or the developer shall notify the Phosphate Mining Coordinator of any spill which may occur on public right-of-way as the result of a traffic accident.

I.(10.) The Developer* shall change eight hour work shifts to times that do not coincide with the A.M. (7:00 to 9:00) and P.M. (4:00 to 6:00) peak traffic periods.

Mining Operations

J.(1.) The Developer* shall obtain all the necessary construction and operation permits and approvals required by, and shall fully comply, to the extent not inconsistent with this Development Order and the VRD-90-14, with all the provisions of applicable laws, ordinances, rules, regulations or requirements of any federal, state, regional or county governmental authority in connection with the proposed mining activities at the Four Corners Mine*.

J.(2.) When filled, the F-1 (rebuilt) and F-3 disposal areas shall contain an amount of waste clay approximately equivalent to the amount of waste clay produced from Four Corners Mine*.

J.(3.) All earthen embankments (dams) shall be designed, constructed, inspected, and maintained in accordance with the standards of Chapter 17-672, FAC - Minimum Requirements for Earthen Dams, Phosphate Mining and Processing Operations, as indicated in the Substantial Deviation ADA*, as well as all other applicable local, state, and federal requirements.

J.(4.) The Developer* shall abide by all Florida Department of Natural Resources (DNR) reclamation regulations regarding site cleanup and shall dismantle and remove any building structures existing at the cessation of the mining operation that cannot be put to an allowable use under the zoning district classification of the property. The beneficiation plant and its accessory structures would be exempt from this condition if the Board of County Commissioners approves an extension of that facility prior to cessation of the mining operation and adequate performance security is posted to guarantee later removal of these structures.

J.(5.) The Developer* shall reclaim all mined or disturbed land to DNR or Manatee County standards, whichever is more stringent. Reclamation and revegetation shall proceed immediately after mining activities cease in each parcel and in no case shall exceed the schedule for reclamation outlined on page 38-17 of the ADA*. The Developer* shall be responsible for maintenance of all reclaimed areas until such time that those areas are certified as reclaimed by Manatee County in accordance with the procedures established in Ordinance 81-22.

J.(6.) The Developer shall utilize Best Management Practices* (including revegetation, reforestation, erosion control, etc.) for all mined/disturbed lands to accelerate and ensure the successful establishment of the natural vegetative associations that the reclamation areas are designed to support. Wherever possible, leach zone material shall be covered by graded spoil to lessen the potential of increased radiation levels on reclaimed lands.

J.(7.) Reclamation shall be considered complete when areas intended to develop native forested and unforested wetland vegetation associations are firmly established and it is assured that these areas will develop the

vegetation associations that they are designed to support, and when DNR and Manatee County have approved the reclamation of the Four Corners Mine* in accordance with Chapter 16C-16, Florida Administrative Code and Ordinance 81-22.

J.(8.) The Developer* shall allow no development or land use activity (such as grazing, farming, tree harvesting) within any newly established 25-Year Floodplains* that would in any way inhibit the growth and development of native vegetation associations appropriate for floodplains, during the mining period.

J.(9.) Minimum mine cut setbacks shall be maintained as follows:

a. 500 feet of a habitable structure existing at the time of initial application for Master Mining Plan approval;

b. 200 feet of an existing public right-of-way or public or private easement for drainage utility or road purpose;

c. 200 feet of IMCF's property line;

d. notwithstanding the foregoing, Section 2-20-33 of the Mining Code shall apply to the mine extension areas.

The F-3 exterior dam will meet the setback requirements of Section 2-20-33 of the Mining Code with the exception of Section 2-20-33(2)(b) in which case it will not be less than 200 feet from any public right-of-way.

All other operations and facilities shall meet the setback requirements of Section 2-20-33 of the Mining Code, provided that the F-1 exterior dam, or any reconstruction of the F-1 dam (F-1R), shall not be required to meet the requirements of Section 2-20-33, unless 50% of the linear footage of the existing F-1 exterior dam is dismantled or significantly disturbed or any portion of the existing F-1 exterior dam within 2500 feet of any existing church, school or habitable structure is dismantled or significantly disturbed.

However, nothing in this requirement shall prevent the reduction of setbacks pursuant to Section 2-20-33 (b)(4) of the Mining Code.

J.(10.) Radiation standards shall be maintained as follows:

a. For the Mine Extension Areas, the radiation standards shall be maintained in accordance with Section 2-20-33(d) of the Mining Code;

b. For all other areas of the mine, and in accordance with prior approvals, the weighted average soil concentration of radium for all reclaimed lands not included in the Mine Extension Areas*, which are not reclaimed over slime ponds or are not reclaimed as lakes or wetlands, for the top six feet shall not exceed 8.8 pCi/gram. In addition, these areas shall also comply with Section 2-20-33(d)(3) of the Mining Code.

c. Any building shall be designed and constructed and all reclamation shall be done to provide protection against gamma radiation and radon gas accumulation and emanation in accordance with the most stringent applicable state and federal requirements.

d. This section shall be subject to any restrictions set forth in Section 553.98, Florida Statutes.

J.(11.) IMCF will modify the Master Mining Plan by revising the applicable tables, maps, and discussions to reflect commensurate changes in mine sequencing, hydrology, topography, land use, waste clay settling areas and land types as appropriate based on the deletion of 170 acres, since the Master Mine Plan submitted November 30, 1990 by IMCF as part of this request included a 170 acre mine extension tract which was not approved for mining. IMCF will submit the revised Master Mining Plan for approval and acceptance by the Board of County Commissioners with the next annual report submitted. The annual report shall be due February 9, 1992. Such revised documents shall be consistent with this permit and the applicable federal, state and local laws. Furthermore, this revision shall show the F-3 waste clay settling area being located in the same location as was approved with the original Development Order for this mine.

J.(12.) Any reconstruction of the F-1 dam (F-1R) or any portion thereof shall be constructed in accordance with the appropriate design cross section shown in either Figure 14 or Figure 16 of the Dames and Moore January 2, 1990 report which is attached as Exhibit B.

General Conditions

K.(1.) Best Management Practices* shall be required for the operation, maintenance, and reclamation of the Four Corners Mine*. Best Management Practices* shall be used to accelerate the natural development of those areas that are intended to support native forested and unforested wetland vegetation associations. Utility and pipeline crossings of the tributaries shall, at a minimum, meet the following:

a) Pipelines shall be placed above the 25-Year Floodplain* elevation and isolated from tributaries by berms.

b) Pipelines shall be jacketed and spill containment areas outside the floodplain shall be provided.

c) Pipelines shall be routinely inspected by operating personnel and the system shall be shut down if a spill occurs until the source of the spill is corrected.

d) All utility crossings shall be elevated above the 25-Year Floodplain* level and shall consist of piers without any approach embankment. Verification that the proposed piers can sustain high water flow conditions shall be certified by a professional engineer, under seal, prior to any construction.

K.(2.) Due to the mine's location within the Lake Manatee watershed, Best Possible Technology* shall be applied to any portion of the Mine Extension Areas* located within the Lake Manatee Watershed Overlay District.

K.(3.) Storage of hazardous materials in excess of 220 lbs., or acutely hazardous materials in excess of 2.2 lbs. for any day of the month shall be prohibited within the Lake Manatee Watershed. Furthermore, all hazardous and acutely hazardous material storage shall be prohibited within any 25-year Floodplain* or 100-year Floodplain of any infowing watercourse located within the Lake Manatee Watershed or within 200 feet of the DER jurisdictional line associated with any inflowing watercourse, whichever is greater. Hazardous and acutely

hazardous materials shall be as defined and listed in 40 CFR 261 and as adopted within Chapter 17-30, Florida Administratie Code, and Section 403.7, Florida Statutes.

K.(4.) All of the Developer's* commitments, which are attached as Exhibit "A" and any other as set forth in the ADA*, shall be honored for the Mine Extension Areas*, except as they may be superseded by specific terms of the Development Order Amendment for the Four Corners Mine* Substantial Deviation.

K.(5.) The DRI annual report shall comply with the Florida Department of Community Affairs (DCA) report format and informational requirements, and shall include summaries of NPDES monitoring results and surface water and groundwater quality monitoring results (including notification of violations of water quality standards per Chapter 17-3, FAC); mining progress; impacts on surface water and groundwater flows; impacts on Lake Manatee (if any); compliance with listed species management plans; success or problems with listed species management plans; reclamation progress and compliance with approved mining and reclamation schedules. The Developer* shall submit annual DRI reports in accordance with Section 380.06(18), F.S., to Manatee County, and the TBRPC, the State Land Planning Agency and other agencies, as may be appropriate, no later than February 9, 1992, and July 31st of each year thereafter, commencing on July 31, 1992 until such time as terms and conditions of this Development Order are satisfied, as determined by Manatee County. Six copies of this report shall be submitted to the Director of Manatee County Planning and Zoning Department, or the Director's designee, who shall review the report for compliance with the terms and conditions of this Order and may submit an appropriate report to the County Commissioners should the Director decide that further orders and conditions are necessary. The Developer* shall be notified of any Board of County Commissioners hearing wherein such report is to be reviewed; provided, however, that receipt and review of any such report by the Board of County Commissioners shall not be considered as a substitute, waiver, or change of conditions as to any terms or conditions of this Order. The Planning Director or his/her designee shall notify the Developer in writing upon acceptance or denial of the report. The annual report shall, at a minimum, contain the following:

a) Any changes in the plan of development, or in the representation contained in the ADA*, or in the phasing for the reporting year and for the next year;

b) A summary comparison of development activity proposed and actually conducted for the year;

c) Undeveloped tracts of land, other than individual single family lots, that have been sold to a separate entity or developer in the Extended Four Corners Mine*;

d) Identification and intended use of lands purchased, leased or optioned by the Developer* adjacent to the Four Corners Mine* site since the Development Order was issued;

e) An assessment of the Developer's* and the local government's compliance with the conditions of approval contained in the DRI Development Order and the commitments that are

contained in the ADA* and which have been identified by the local government, the Regional Planning Council or the Department of Community Affairs as being significant.

f) Any known incremental DRI applications for development approval or requests for a substantial deviation determination that were filed in the reporting year and to be filed during the next year in the Extended Four Corners Mine*;

g) An indication of a change, if any, in local government jurisdiction for any portion of the development since the Development Order was issued;

h) A list of significant local, state, and federal permits which have been obtained or which are pending by agency, type of permit, permit number, and purpose of each;

i) A statement that all persons have been sent copies of the annual report in conformance with Subsections 380-06(14) and (16), F.S.; and

j) A copy of any recorded notice of the adoption of a Development Order or the subsequent modification of an adopted Development Order that was recorded by the Developer* pursuant to Subsection 380.06(14)(d), F.S.

k) Monitoring results pursuant to stipulations B.(1.), C.(2.), D.(2.)d, E.(3.), and I.(2.).

l) The boundaries of the MA-08 Rookery, pursuant to stipulation F.(2.) shall be provided in the annual report due on July 1, 1992.

m) Any notice of violation for noncompliance for the Extended Four Corners Mine*.

K.(6.) Mining under this Development Order shall terminate on December 31, 2006. This Development Order shall not expire until December 31, 2018, or until all reclamation has been completed and accepted by Manatee County, whichever occurs first.

K.(7.) This Ordinance shall constitute a Development Order issued in accordance with Chapter 380, F.S.

K.(8.) The Developer* shall, within sixty (60) days after notice by Manatee County of the amount of fees due and owing, pay all fees owed to Manatee County for the review of the Four Corners Mine DRI Substantial Deviation, except those fees in dispute and under review or appeal. Failure to make such payment shall require a cessation of mining activities until payment is made.

SECTION 7. LEGAL DESCRIPTION:

The following legal description of the development site covers the entire mine (Manatee and Hillsborough Counties), although this Substantial Deviation covers only the Manatee County area.

In Township 33 South, Range 22 East, Manatee Co. (Jameson tract)

Section 1: All lying N and W of Brewster-Parrish Road (SR 37).
Section 2: All.
Section 3: All.
Section 4: All.

Section 9: All.
Section 10: All.
Section 11: All lying N and W of Brewster-Parrish Road (SR 37)
Section 15: All lying N and W of Brewster-Parrish Road (SR 37), and that part of the W 1/2 of the SW 1/4 of the SW 1/4 lying S of said road.
Section 16: All less and except the NW 1/4 of the NW 1/4
Section 21: All lying S of the Brewster-Parrish Road less and except that portion lying S of the Parrish-Wauchula Road (SR 62).

In Township 33 South, Range 21 East, Manatee County (Northeast Manatee Tract);

Section 1: W 1/2 of the NE 1/4 and the N 1501' of the NW 1/4.
Section 2: W 1/2 and the N 1501' of the E 1/2.
Section 3: All.
Section 4: All.
Section 10: E 3/4.
Section 11: W 1/2.
Section 13: All, less and except the E 2570' thereof.
Section 14: All.
Section 15: W 1/2 of the NE 1/4 and the NW 1/4 of the SE 1/4.
Section 23: All lying N of Parrish-Wauchula Road (SR 62), less and except the SW 1/4 of the NW 1/4, and less the NW 1/4 of the NW 1/4 of the SW 1/4 and less the S 1/2 of the NW 1/4 of the SW 1/4.
Section 24: All lying N of the Parrish-Wauchula Road (SR 62), less and except the E 2570' thereof.
Section 26: That portion lying N on the Parrish-Wauchula Road.

In Township 32 South, Range 22 East, Hillsborough County (Ft. Lonesome Tract). This is the currently approved area in Hillsborough County.

Section 13: All.
Section 14: NE 1/4 of the NE 1/4, and the W 3/4.
Section 15: All.
Section 16: S 1/2, and the S 1/2 of the NW 1/4, and the NW 1/4 of the NE 1/4.
Section 21: All.
Section 22: All, less and except the SW 1/4 of the NE 1/4.
Section 23: All, less the NE 1/4 of the NE 1/4.
Section 24: All.
Section 25: All.
Section 26: All.
Section 27: All.
Section 28: E 1/2 of the SE 1/4 and the SW 1/4 of the SW 1/4.
Section 33: All, less the NE 1/4 of the NW 1/4.
Section 34: All.
Section 35: All.
Section 26: All.

SECTION 8. DEADLINE FOR COMMENCEMENT OF DEVELOPMENT.

Physical development of the project shall commence within two years from the date of this approval, unless the time period for commencement is extended by the Board of County Commissioners.

SECTION 9. RESTRICTIONS ON DOWN-ZONING.

The County may not down-zone the subject property described in Section 7 herein until 2002, unless the County can demonstrate that:

A. Substantial changes in the condition underlying the approval of the order have occurred; or

B. The order was based upon substantially inaccurate information provided by the Developer; or

C. The change is clearly established by the County to be essential for the public health, safety, or welfare.

Any down-zoning or reduction in intensity shall be effected only through the usual and customary procedures required by statute and/or ordinance for change in local land development regulations.

For the purposes of this order, the term "down-zone" shall refer only to changes in zoning, land use, or development regulations that decrease the development rights approved by this order, and nothing in this paragraph shall be construed to prohibit legally enacted changes in zoning regulations which do not decrease the development rights granted to the developer by this order. The inclusion of this section is not to be construed as evidencing any present or foreseeable intent on the part of the County to down-zone or alter the density of the development, but is included herein to comply with Paragraph 380.06(15)(c)3, F.S.

SECTION 10. BINDING ORDER UPON DEVELOPER.

That this order shall be binding upon the Developer, its successors, assigns, or successors in interest.

SECTION 11. COMPLIANCE WITH CODES, ORDINANCES.

All development undertaken pursuant to this order shall be in accordance with all applicable local codes and ordinances in effect at the time of permitting, and other laws, except to the extent such is inconsistent with the rights granted under this Development Order.

SECTION 12. SEVERABILITY

If any provision or portion of this Ordinance is declared by any court of competent jurisdiction to be void, unconstitutional, or unenforceable, then all remaining provisions and portions of this Ordinance shall remain in full force and effect.

SECTION 13. EFFECTIVE DATE This Resolution shall take effect upon being signed by the Chairman of the Board of County Commissioners.

PASSED AND DULY ADOPTED by the Board of County Commissioners of Manatee County, Florida this 5th day of September, 1991.

BOARD OF COUNTY COMMISSIONERS
OF MANATEE COUNTY, FLORIDA

BY: Patricia M. Glass
Chairman

ATTEST: R. B. SHORE
Clerk of the Circuit Court

SEAL

Deputy Clerk

EXHIBIT A

June 21, 1991

DRI #198

FOUR CORNERS MINE SUBSTANTIAL DEVIATION

DEVELOPER COMMITMENTS

The following are developer commitments set forth in the Application for Development Approval (ADA) and Sufficiency Responses which shall be honored by the developer, except as they may be superseded by specific terms of the Development Order. This summary of commitments is not intended to modify the specific statements in the ADA.

GENERAL PROJECT

1. IMCF commits to abide by rules and regulations of the Federal, State and Regional governmental bodies which have authority to regulate the mine activity, as is shown on page 9-1 of the ADA. (SR, 8)

2. The addition of the heavy media separation facility to the processing plant will not add any waste disposal, pollution or water supply concerns above what was addressed in the original DRI #52. (SR, 9)

ENVIRONMENTAL AND NATURAL RESOURCES

LAND

1. The natural vegetative cover currently established will be left undisturbed until impending mining operations require land clearing. Surface water runoff from cleared lands will be routed through ditches into the mine water recirculation system. (ADA, 14-4)

2. Portions of the site will be cleared for access roads, utility corridors and related mining activities. These areas will be graded and ditched to prevent high water velocities that could cause erosion (ADA, 14-4).

3. Post-mining surface soils shall be used only for agricultural purposes or wildlife habitat, except for areas along major roads which will be reclaimed with tailings and overburden-capped tailings. (ADA, 14-4)

Water Quality

1. The existing monitoring program will be continued as mining activities continue at Four Corners. (ADA, 15-30)

2. The potential for siltation of nearby streams which might be associated with stormwater runoff from recently cleared or disturbed land will be minimized by providing adequate ditching, berms, and entrapment features to capture the stormwater runoff from the active mining area. (ADA, 15-34)

3. IMCF will continue to maintain the surface water quality monitoring program, until reclamation of each area is completed, in order to verify that there is no change in the water quality. The current program, which is required by Manatee County in the Operating Permit, includes monthly sampling at five surface locations and five surficial aquifer locations. (SR 15-31)

4. A water recharge program shall be accompanied by a report indicating that water recharged to the groundwater meets appropriate standards. (SR2, 17)

Wetlands

1. IMCF will obtain wetland delineations from the appropriate permitting agencies as part of the dredge/fill permitting requirements prior to disturbance. (SR2, 9)

2. IMCF will have jurisdictional boundaries of all wetland areas determined, and mapped, prior to mining. (SR, 8)

Flood Plains

The 25 year flood plain will be determined and staked before beginning any mining operations adjacent to those areas. (SR, 8)

Vegetation and Wildlife

1. To protect the netted chain fern from current and future threats, IMCF will relocate all netted chain ferns to other suitable habitat present on the Four Corners Mine site that is not expected to be impacted. (SR, 18-8)

2. In addition, IMCF will relocate any other listed plant species found on-site, or will provide the opportunity for concerned environmental groups (i.e. Florida Native Plant Society) to remove specimens from the site for the purpose of preservation, in accordance with applicable rules or regulations prior to commencement of mining operations. (SR2, 14)

Delete #3.

~~3. In order to satisfy the concerns of the Florida Game and Fresh Water Fish Commission (FGFWFC), areas not in improved pasture (211) or citrus grove (221) will be specifically resurveyed for "listed plant species" which may occur on site. The resurvey will be conducted prior to commencement of mining operations on the 170-acre site. (SR2, 13)~~

~~4.~~ 3. As an alternative to habitat protection for such small populations of gopher tortoises, mitigation in the form of a capture and relocation plan in accordance with FGFWFC guidelines will be provided prior to the commencement of mining operations at this site. Individuals collected will be relocated to areas reclaimed as xeric habitat. (SR, 13)

4. IMCF will avoid disturbance of nesting habitat during the nesting period for the rookery (SR, 39) and will provide the same commitment for the Sandhill Crane. (SR2, 15)

PUBLIC FACILITIES

Drainage

1. IMCF will retain watershed boundaries in the approximate pre-mining locations and not cause any significant increase in the stormwater runoff peak flows. (SR, 8)

2. Control of drainage divides on waste clay areas will be accomplished by means of ditches, berms, grading of the dams, and multiple outlet swales on the wetlands. (ADA, 38-37)

3. The only water control structures that will be used are those included in the waste clay settling areas, the water recirculation system and the NPDES discharge points. (ADA, 38-37)

Water Supply

1. IMCF will plug all wells that are to be mined, according to SWFWMD and Manatee County Health Department standards and rules. (SR, 8)

2. IMCF does not plan any change in the amount of water consumption from these wells. (WUP No. 203573). (ADA, 23-2)

3. IMCF will operate the existing water supply system at the plant site until such time as it is no longer needed for the mine and plant operation. Then it will be abandoned and removed according to applicable regulations at that time. (ADA, 23-9)

4. IMCF does not plan any change from the approved water use as described in the 1977 DRI, and subsequent approved documents. (ADA, 38-8)

Fire

The design of the plant contains an emergency water supply system, powered by a diesel pump installed in the water return system. In addition, all field equipment is equipped with portable fire extinguishers.

Transportation

1. IMCF shipments by truck will not exceed 750 loads of product per day. (SR, 8)

2. IMCF will not use State Road 37 / State Road 62 / Moccasin Wallow Road routing for transport of product to Piney Point. (SR, 8)

3. The relocation of Carlton Road will be done subject to Manatee County standards and permits. (ADA, 38-3)

Mining

1. IMCF will make every effort to recover all economic phosphate, to insure conservation and maximum effective extraction of this valuable mineral. (SR, 8)

2. The mining area includes allowances for the mining set backs that are contained in the Manatee County Operating Permit, along with exterior property lines, except for those areas in Section 16 (Township 33 South, Range 22 East) where there was no setback due to an agreement with the adjoining property owner to allow mining up to the property line. (ADA, 38-11)

3. The phosphate ore will be processed at the Four Corners plant on-site. The addition of the heavy media facility will change the plant. (ADA, 38-11)

Reclamation

1. IMCF will abide by all Florida Department of Natural Resources (DNR) reclamation regulations regarding site cleanup. (SR, 8)

2. IMCF will reclaim all mined or disturbed land to DNR and Manatee County standards. (SR, 8)

3. IMCF proposes to reclaim its mined and disturbed lands to a variety of forms including agricultural, wildlife habitat, and open space. (ADA, 37-19)

4. IMCF will continue to evaluate and investigate alternate methods of waste disposal and reclamation and consider using alternative procedures once they become technically acceptable and economically feasible. (ADA, 18-17)

5. The tailings reclamation will involve return to original grade, except where the wetlands are to be located. (ADA, 38-18)

6. IMCF plans to return most lands reclaimed using the tailings fill and overburden cap method to approximate pre-mining topography. (ADA, 38-23)

7. About one-fifth of the mined area will be reclaimed to pasture (and some crop uses), which will be established according to Soil Conservation Service standards and will include mulching of slopes prone to erosion. (ADA, 38-24)

8. About one-half of the mined land will be reclaimed to forest and about one-third of the mined land will be reclaimed to wetlands, with littoral zones provided along lake edges. (ADA, 38-24 & 38-25)

9. The reclamation plan vegetation is planned to connect wildlife corridors by using planted forests. (ADA, 38-32)

10. Reclaimed freshwater marshes will be graded to provide sufficient water supply to support wetland vegetation and will be spot mulched with soil borrowed from other marshes to be disturbed, if available. (ADA, 38-34)

11. Reclamation steps that will control erosion after mining include contouring of all lands to maximum slopes of 4:1 or 7:1 for agricultural land per the Manatee County Mining Ordinance, and stabilizing contoured lands by establishing a ground cover of vegetation. (SR, 14-4)

Waste Clay Settling Areas

1. All earthen embankments will be designed, constructed, operated and inspected according to the standards of Chapter 17-672, F.A.C. (SR< 8)

2. The clay settling areas will be kept in use only as long as they are needed, then taken out of service and reclaimed. (ADA, 38-18)

3. This Substantial Deviation (DRI #198) does not effect the F-2 settling area, which is located in Hillsborough County. (SR2, 7)

4. IMCF has made the commitment to provide clay storage capacity in each county for the clays equivalent to the volumes produced in the respective counties. (SR3, 5)

ADA - Application for Development Approval
SR - Sufficiency Response
SR2 - Second Sufficiency Response

Rev. 6-5-91
fc-sddev/14

DRI #198 Four Corners Mine
Substantial Deviation
Mining and Replacement of F-1 Settling Area
Manatee County

File No.: 15439-023-040

January, 1990

DAMES & MOORE

EXHIBIT B

DAMES & MOORE
ONE NORTH DALE MABRY, SUITE 700, TAMPA, FLORIDA
INCLUDING FLORIDA LAND DESIGN & ENGINEERING, A RECENT ACQUISITION

January 2, 1990

IMC Fertilizer, Inc.
P.O. Box 860
Bartow, Florida

Attn: Mr. T. A. Smith, PE
Senior Project Engineer

Subject: DRI #198 Four Corners Mine Substantial Deviation
Mining and Replacement of F-1 Settling Area

Gentlemen:

As authorized by IMC Fertilizer, Inc., Purchase Order N940733C, Dames & Moore has completed analyses for existing and proposed replacement dam sections for the above referenced project. This report presents the results of the analyses and provides documentation for IMCF responses to Question 19, TBRPC 9-20-89, relating to the elimination of internal dikes within settling areas.

INTRODUCTION

The Four Corners Mine was a Joint Venture of IMC Fertilizer, Inc. and W.R. Grace & Company, with Grace as the operating venture member. The operation has now come under IMCF operation control as Grace sold its interests in the Florida phosphate fields. The mine is located near the corners of four Florida counties; Hillsborough (SE), Polk (SW), Manatee (NE) and Hardee (NW). The site location is shown in Figure 1, Appendix A. The mine is presently utilizing a settling area in Manatee County, designated as F-1, for the disposal of waste clay which is generated from mining and phosphate matrix processing operations. The general site location for F-1 is shown in Figure 2. The F-2 settling area in Hillsborough County is under construction. A proposed F-3 settling area was shown in the original DRI as planned for construction in Manatee County, east of the F-1 settling area.

The dams of the F-1 settling areas were built on unmined ground and partitioned by internal dikes to separate the area into three sub-areas. The enclosed Figure 3 shows the general cross section for the F-1 exterior dams and Figure 4 shows the design cross section for the interior diversion dike.

IMCF has proposed to mine the phosphate matrix below the existing F-1 clay settling area. The settling area would then be re-built at about its existing location. Although the existing F-1 settling area is partitioned using internal dikes, IMCF wishes to eliminate the internal dikes in the reconstructed area.

Original Design

The original design of the F-1 settling area is shown in the report by Ardaman & Associates to W.R. Grace & Company dated May 31, 1979. This report was written to develop the F-1 dam cross sections required for construction and operation of the settling area under the requirements of The Florida Department of Environmental Regulation (FDER) Administrative Rules, Chapter 17-9, "Minimum Requirements for Earthen Dams, Phosphate Mining and Processing Operations." The original design showed the settling area to have a narrow east-west alignment with a diversion dike about 3/4 the length of the area from east toward west. The purpose of the dike was to allow the introduction of clay slurry in the northeast corner of the settling area and withdrawal of clear water through spillways in the southeast corner of the area. Without the diversion dike, there was a possibility that the clay could short-circuit the area and flow out the spillways. The original design did not show the F-1 settling area with a closed system of internal dikes.

The stability analyses by Ardaman & Associates for the original dam showed factors of safety between 1.50 and 2.33 depending on the cross section evaluated and the location of the potential slip surface. Analyses by Dames & Moore indicated that the south dam had a safety factor of 1.5 for operating conditions which included elevated pore water pressures in a sand stratum below the original ground surface. Ardaman estimated a probability of failure of the dam at "one chance in 100,000."

Questions by Manatee County for the original Operating Permit Application contained the following comments on dam break analyses by Manatee reviewers :

> "A dam break study might identify the need of having a containment structure built on the north fork of Lake Manatee, or, it might show that the pond area should be subdivided into many smaller compartments."

Apparently, the original design was modified on the basis of this comment to convert the proposed diversion dike to a system of internal containment dikes by adding a north-south dike at the western terminus of the east-west diversion dike. No design calculations are available for the internal dikes.

Proposed Design of the Re-built Settling Area

IMCF has proposed to mine the area presently occupied by the F-1 settling area, and to construct a new settling area with a similar alignment for the south and west dams. The new settling area may be larger in area, but present plans are to construct the new dams to about the same top elevation. The F-1 settling area and the proposed F-3 settling area are to be constructed without internal dikes.

The preliminary design concepts for the F-1 and F-3 dams indicate that the dams would be constructed inside the mine pit. Some of the dams might be buttressed against unmined ground depending on mining conditions. Neither the F-1 or F-3 settling areas are planned with internal diversion dikes.

The TBRPC sufficiency review presented the following comment relating to the replacement of F-1:

> 19. "Please provide documentation to support the assertion in the Sufficiency Response that intermediate dikes within settling areas F-1 and F-3 would not significantly lessen the impact should a dam fail. Please indicate the size of settling area which Florida Department of Natural Resources (DNR) rules recommend or deem acceptable."

The basic assumption relating to the use of interior dikes in a settling area is that these dikes might reduce the volume of clay material which would be released by a failure of an external dam. This assumes that the interior dike would not fail if an exterior dam failed. The response by W.R. Grace and the original designers of F-1 settling area to the Manatee County question on dam break analysis noted above was simply "Noted". However, it appears that the internal dikes were added to the F-1 settling area in response to the comment by Manatee County. It also appears that the internal dikes were added without specific analyses as to their effect on overall system safety and failure impact.

There are several reasons for not using such dikes except for the purpose of routing the clay slurry flow away from certain spillways. First, the interior dikes use up volume which could be used for storage of clay. Although this volume is small in an individual settling area, routine use of interior dikes would result in the need for either more settling areas or for a greater perimeter length or height of dams to provide the volume lost in each settling area. Second, the interior dikes use fill which can

be better used in the construction of the perimeter dams. The result is that exterior borrow pits, or larger plan areas are required to provide the additional fill material for construction.

IMCF's previous response to questions relating to the use of internal dikes was that such dikes would not lessen the impact of a dam failure. This answer was intuitive, and not supported by analyses. On request for clarification by TBRPC (Question 19 above), IMCF was asked to provide support for that comment.

SCOPE OF WORK

As the impact analyses by Grace's consultants for loss of clay slurry resulting from dam failure were accepted by Manatee County and other reviewing agencies during the original study, only analyses relating to the evaluation of dam safety with and without internal dikes is necessary. The general analyses proposed for the F-1 dams will extend specifically to the construction of F-3 dams because the site and soil conditions are similar. The following scope of work was accomplished for this project:

Task 1: Review existing data and analyses.

A review was conducted to establish the basic design parameters for analyses used by Grace's dam designers. Stability analyses for the F-1 dam were completed and presented by Dames & Moore in a letter dated June 29, 1989. These data were used with data from the original design.

Task 2: Conduct analyses for the safety of the original F-1 dams with the internal dike system.

The engineering design soil parameters developed in Task 1 were utilized in an analytical study to evaluate the safety of the existing dam and dike system. The effect of the internal dikes on overall settling area performance was included in the analyses.

Task 3: Develop preliminary dam cross sections as alternatives to the original dam-dike system.

Generalized design cross sections for F-1 and F-3 dams were developed such that the risk of failure for the revised dams would be less than the risk for the original dam-dike system.

Task 4: Present a report which would summarize the results of the analyses of the revised dams for the settling areas. Present specific answers to the above listed Question 19 by TBRPC.

METHODS OF ANALYSES

Deterministic Stability Analyses

The typical analyses done for the design of dams (and for most structures) are determinate. A fixed estimate of strength is divided by a fixed estimate of load or driving force. The result of this calculation is a Factor of Safety.

The FDER Rules Chapter 17-9 which govern the design and operation of settling area dams present a list of required Safety Factors for various failure mechanisms. These minimum Safety Factors are as follows:

Horizontal shear at the base of fill	1.75
Horizontal shear within fill due to seepage	1.5
Bearing capacity of foundation soils	1.5
Shear failure of any circular arc	1.5

Soil properties for design of earthen dams are developed from the results of field and laboratory test programs, except that cast overburden strength may be taken as only 75% of the measured laboratory or field strength at equivalent density. Cast overburden is material disturbed or placed by a mine dragline without any special attempts at compaction.

The completion of numerous earthen dam designs have shown that the critical slope stability mechanism is the circular-arc mechanism. Under limited circumstances, the horizontal shear (wedge) mechanism may be critical. For example, thin layers of very weak material in the foundation or the use of weak clay materials in a sloping core to control seepage may result in a more critical horizontal shear mechanism. These conditions are usually avoided in construction, and the clayey soils typically used in Florida dam construction for seepage control cores have strengths equal to or greater than the sandy soil used in the general embankment. Therefore, the circular-arc mechanism may be taken as the general analyses for design, with other mechanisms checked on the resulting design cross section.

The analytical method in general use for the evaluation of circular-arc slip surfaces is the Bishop Method of Slices (1955) as modified by Janbu et al. (1956). The mass of soil above a

possible circular-arc slip surface is cut into vertical slices, and the weight, water pressure and soil strength parameters are used to calculate a safety factor under limiting equilibrium conditions. Both the soil strength resisting slip and the weight of soil and other loads potentially driving the slip are estimated as specific values.

Therefore, in simple terms, the safety factor is simply the ratio of the soil strength to the driving forces.

Stochastic Stability Analyses

In the case of statistically distributed strength and load, the Safety Factor is the Average Strength, or some weighted or reduced strength based on average strength, divided by the Average Load. However, there is a chance that actual strength may be lower than the assumed (average or factored average) strength, and that this condition could occur at locations where the load is higher than the assumed load. Stochastic analyses allow the evaluation of the likely variations in load and strength to determine the "probability of failure", Pf.

The probability of failure is the measure of risk that the driving force in the system has been under estimated and/or that the strength has been over estimated such that a failure could result. These analyses indicate that the probability of failure for a given deterministic safety factor may vary depending on the variability of the strength and/or load parameters.

Although the backbone of stability analyses is the deterministic methodology described above, the fixed values of soil strength and driving load are estimates that have a certain level of variability. For example, soil strength, as measured by SPT penetration resistance (ASTM D-1586) or laboratory procedures in a particular soil stratum, may vary due to test method variations or to variations in soil density or mixture. The soil density as measured in the field also has two components of variability. First, the test itself has levels of accuracy that can result in variations in density for a single soil stratum. Second, minor variations in moisture, compaction energy and clay content can result in a given stratum having soil density which varies considerably from the average density.

The analytical method used for these analyses requires that the statistical variability of the soil strength and density be integrated with the deterministic slope stability analyses to provide a method of evaluating the risk associated with any given dam. Dames & Moore utilized a computer program called BISTAT which incorporates the stochastic parameters in the Bishop slope

stability analyses. Both the deterministic Safety Factor and an estimate of failure probability are obtained from the analyses. The data utilized in the analyses must include the stochastic parameters of Mean, Variance, Standard Deviation, Skewness and Kurtosis. A discussion of the Stochastic Parameters and Analyses is included in Appendix B.

PROJECT ANALYSES

Dames & Moore has determined that the best project approach would be to compare the statistical probability of failure (Pf) of the original F-1 dam system with the internal dikes to the Pf of the proposed IMCF system. The stochastic slope stability analyses method would be used with available data to evaluate both the internal dike and the exterior dam. The results of the analyses would allow a direct response to TBRPC Question 19 as to the impact of the interior dikes. Also, alternative embankments could be evaluated to provide cross sections with higher reliability (lower Pf) than existed for the original system.

The original design calculations by Ardaman & Associates show that the safety factors for Horizontal Shear Mechanisms varies from 1.75 to 4.6. The same cross sections shows that Circular-arc Mechanisms have safety factors ranging from 1.50 to 2.33. Based on these data and the extensive experience of Dames & Moore with the results of stability analyses for similar sections, only the Circular-arc Mechanism will be considered for this project. All mechanisms would be evaluated for actual design of cross sections as required under Chapter 17-9 of the FDER Administrative Rules.

SOIL PROPERTIES FOR ANALYSES

Both laboratory test data from the original Ardaman design analyses and field test results by both Ardaman and Dames & Moore were used to evaluate the soil properties to be used in the Stochastic Analyses for stability of dams. The enclosed Figure 5 shows a summary plot of Standard Penetration Test (SPT) penetration resistance (ASTM D-1558) versus depth from the borings in the settling area done by Ardaman for the original design. This plot shows that the soils are of medium to low strength in the upper 10 to 40 feet, with a general trend for increasing strength with depth. The trend was developed by Regression Analyses and shows a significant variation in measured values about the expected trend. The enclosed Figure 6 shows a similar plot for borings done by Dames & Moore after construction was complete and the settling area was in operation. Again, the dispersion of individual data about the Regression Fit Trend is significant. The upper part of the embankment has high penetration resistance with the resistance values dropping to medium to loose at about the original grade.

The soil below the dam increases in strength with depth as was shown in Figure 5.

Figure 7 shows a correlation between the angle of internal friction of cohesionless soils and SPT penetration resistance. This figure shows the Regression Analysis Best Fit with the Standard Error limits. The experience in actual testing of soils from the central Florida area indicate a lower bound friction angle of about 30 degrees and an upper bound strength of about 40 to 42 degrees. Figure 8 shows the relationship between cohesionless soil density and friction angle as developed from the original design data. The density data are typically available from construction testing and monitoring.

Figures 9 through 13 show histograms for each of the soil strata expected to occur within the dam cross section or its foundation. The Stochastic Parameters used in the Dames & Moore analyses are shown on the figure for each soil type. The friction angle was estimated for each soil type from SPT correlations or from density estimates. The friction angle for analyses varied from 33 degrees for rolled or compacted fill to 31 degrees for undisturbed clayey sand strata.

RESULTS OF THE ANALYSES

The Original Dam-Dike System

Ardaman & Associates estimated a probability of failure for the exterior dams of the F-1 settling area at "one chance in 100,000." This would normally be noted as a risk of $1x10^{-5}$. The analyses of the original cross section by Dames & Moore for the South Dam, as reported in a letter dated June 29, 1989, shows a safety factor of 1.5 for the downstream slope under operating conditions which include artesian porewater pressures in a deep sand stratum in the dam foundation. Analyses using stochastic procedures indicate that the Pf for this condition would be from $5x10^{-5}$ to $1x10^{-5}$, about the level estimated by Ardaman. The BISTAT analyses indicate that the factor of safety for the embankment after the settled clay seals the foundation soils may be 1.84 with a Pf of $7x10^{-8}$.

The stability of the internal dike was apparently never evaluated by Ardaman. This would be normal procedure as the internal dike would normally serve no function except as a flow diversion system. Under the uniform head across the embankment which would normally exist, the safety factor would be greater than 1.5. However, when the internal dikes function is to divide the settling area into discrete partitions, the stability considerations are different. If a failure occurs in an external dam, the fluid level in the

affected partition will drop rapidly. The water in the saturated pores of the partition dikes can not drain out as quickly as the water level falls in the downstream pool. Therefore, the stability analyses for the dikes must consider that the rapid draw-down occurs. The Dames & Moore analyses for rapid draw-down on the internal dikes of F-1 showed a safety factor of 0.87 and a Pf of 9.8×10^{-1}, virtual assurance that the internal dike would fail. Therefore, the overall Pf of the combined system is .98xPf of the design embankment, about 4.9×10^{-5} to 6.8×10^{-8} depending on operating conditions.

Proposed Alternative Dams

Dames & Moore has developed two alternative cross sections which might be used for dams built in or against the edge of mine pits. The enclosed Figure 14 shows Section 1, the proposed section where the dam is built against the edge of the mine pit. Figure 15 shows the results of the stochastic analyses for that section's critical circular-arc as a safety factor of 1.71 and a probability of failure (Pf) of 4×10^{-11}.

The alternative cross section, Section 2, shown in Figure 16 is proposed for the case where the entire dam is built within the mine pit. This section would typically be used where mining will continue beyond the limits of the dam. The critical circular-arc had a safety factor of 1.70 for this section with a Pf of 1.5×10^{-15} (Figure 17). Note that although the factor of safety of Section 2 is slightly less than that of Section 1, the Pf is lower because the construction incorporates more materials with lesser variations in strength.

DISCUSSION

The analyses show that the incorporation of the internal dikes has no significant effect on the Probability of Failure which would result in the loss of material from the settling area. The possibility of failure of the dike under anticipated conditions is so high that the only effect would be a slight reduction in volume of flow due to the flow restriction from the unfailed portions of the embankment and the viscosity of the clay slurry. This effect would be marginal at best.

On the other hand, the modifications in the external dams proposed for construction after mining result in embankments which contain a higher volume of controlled materials; that is, materials with lesser degrees of variability. The result is that the proposed alternative embankments can be expected to have a greater degree of reliability.

In order to allow proper perspective with respect to evaluation of failure probabilities for the proposed dams, it is advisable to discuss the levels of risk which have been experienced in other areas. A publication by the American Society of Civil Engineers (ASCE) with the U.S. Committee of the International Commission on Large Dams (USCOLD) published in 1975, "Lessons from Dam Incidents, USA" presents data on dams and dam failures as experienced in the U.S. from 1899 to 1973. This publication indicates that a total number of known dams was 4,918, of which 3605 were earthen dams. None of these dams were tailings dams or phosphate settling ponds. The failures evaluated for this paper included only major failures which resulted in complete abandonment of the dam. Not all of the incidents involved significant threat to the public, but they were treated as such in our analyses of the data. The data indicate that two failures could be attributed to slope mechanisms and eight incidents of significant seepage in the foundations or embankments of dams.

The Pf's based on these data are listed in the following table:

TYPE OF DAM	NUMBER	NUMBER FAILED	PROBABILITY OF FAILURE
EARTHEN	3,604		
by Stability		2	5.5×10^{-4}
by Seepage		8	2.2×10^{-3}

In an EIS study by the author for a dam in the phosphate industry performed in 1982, the known performance of the earthen dams was evaluated to estimate a basic Pf for these dams. However, since 1971 when the FDER Chapter 17-9 was re-written, there has not been a failure of a dam which was designed to meet the standards in the Rules. The normal means of estimating the Pf for manufactured items when no failure has occurred is typically a Poisson process with the following equation:

$$N = e^{(-n * SPP)}$$

where: n = The number of items which have been counted without a failure

SPP = The Pf for any item when n is approximately 1.0

This process could be used for Phosphate Industry Dams if a base can be determined to define the number "n". The base for n was chosen to be Mile-Years because inspections are done each year on each dam, and the typical dam length is one mile. Unfortunately, the only impartial agency that could provide reliable base data for the calculation of SPP is the FDER, and this agency does not keep track of these data. However, the EIS study determined that approximately 1366 mile-years of dam performance had been recorded by the Florida Phosphate Council from 1972 to 1982. The resulting SPP was estimated from 1.3×10^{-4} to 3×10^{-6} depending on the method of interpretation of calculation results. The table and figure used for this report are enclosed in Appendix C.

The difference in performance between dams throughout the U.S. and the Phosphate Industry since 1971 can be attributed to the improvement in technology for analyses, the typically limited drainage basin of the settling areas, and the fact that the settling areas store clay, not water. The majority of failures reported for U.S. dams are due to underestimates of flow volumes in large storms. Because the settling areas are typically above grade, the drainage basin is only slightly larger than the pool. Therefore, the entire design storm (12 inches in 24 hours, approximately the 100 year storm) can be retained within the pond because of the minimum freeboard of 5 feet required in Chapter 17-9. The second major problem with dams is seepage. Because the settling ponds contain a clay slurry, they are self sealing. Seepage problems generally occur during the initial filling of the areas, before the clay has formed a liner. The experienced designers of Phosphate Industry Dams typically design sections which do not rely on the sealing action of the clay. It is usually assumed that the dams contain only water.

The original design does not include a flood routing study to evaluate the performance of spillways during the design storm. However, the settling area does have 4 spillways that discharge to exterior circulation ditches. The FDER Rules Chapter 17-9 requires that a minimum of 2 spillways be installed in each settling area. It has been Dames & Moore's standard practice to evaluate both the 17-9 Design Storm (12 inches in 24 hours) and an estimated Maximum Probable Storm (MPS = 39 inches of rain in 24 hours) to evaluate spillway performance. The design of spillway capacity is based on the requirement in 17-9 that the Design Storm must be discharged in 24 hours. Further, the MPS in conjunction with waves calculated from hurricane winds should not cause a rise in water which would overtop the dam. These areas of design are required to assure hydraulic performance of the settling area which is as safe as the stability of the cross section.

SUMMARY AND CONCLUSIONS

Stability and reliability analyses have been completed for dams which form the F-1 settling area at IMCF's Four Corners Mine in Manatee County, Florida. Comparison analyses have been completed to evaluate the stability and reliability of alternative cross section dams which might be constructed in mined areas. The results of the stability analyses can be summarized as:

DAM	SAFETY FACTOR	FAILURE PROBABILITY
U.S. Earth Dams		5.5×10^{-4}
Florida Phosphate Dams		1.3×10^{-4}
to		3.0×10^{-6}
FDER Chapter 17-9 Requirements		
From	1.5	
to	1.75	
Original F-1 Dams	1.5	1.0×10^{-5}
to	1.84	6.8×10^{-8}
Internal Dike w/Draw-down	0.87	9.8×10^{-1}
Combined Original Dams		9.8×10^{-6}
to		6.7×10^{-8}
Proposed Alternative Dams w/o Internal Dikes		
Section 1	1.71	3.6×10^{-11}
Section 2	1.70	1.5×10^{-15}

The analyses presented in this report show that the use of interior dikes does not contribute to overall safety of a settling area. The basis of this conclusion is that the factor of safety for the internal dikes under rapid draw-down conditions which would be imposed by the failure of an exterior dike is less than 1.0. The conclusion is further demonstrated by the fact that stochastic analyses for stability show no difference between the Probability of Failure, that is the loss of clay by a slope failure mechanism, with or without the internal dike.

The alternative cross sections proposed for reconstruction are shown to have lower Probabilities of Failure than the existing dams. Therefore, it can be concluded that the mining of the area can result in reducing an existing low risk even further.

The other part of TBRPC's Question 19 was "Please indicate the size of settling area which Department of Natural Resources (DNR) Rules recommend or deem acceptable."

As far as we know, DNR has no rules which govern the size of Phosphatic Clay Settling Areas. Dames & Moore has designed such settling areas as small as 150 acres and larger than 1,500 acres. The important component for the design of a settling area is its stability and safety.

We appreciate the opportunity to be of service to you on this project. If you have any questions relating to the data or analyses presented in this report, please contact the undersigned at your convenience.

Respectfully submitted,

DAMES & MOORE

Ross T. McGillivray, PE
Associate

z181, imcf-89-90\imc-f1\ WPS Doc.#2

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1. Ang, A. and Tang, W. H. (1975), Probability Concepts in Engineering Planning and Design. John Wiley & Sons, N.Y.

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3. Bishop, A. W. (1955), "The Use of the Slip Circle in the Stability Analysis of Slopes", Geotechnique V, No. 1, pp. 7-17.

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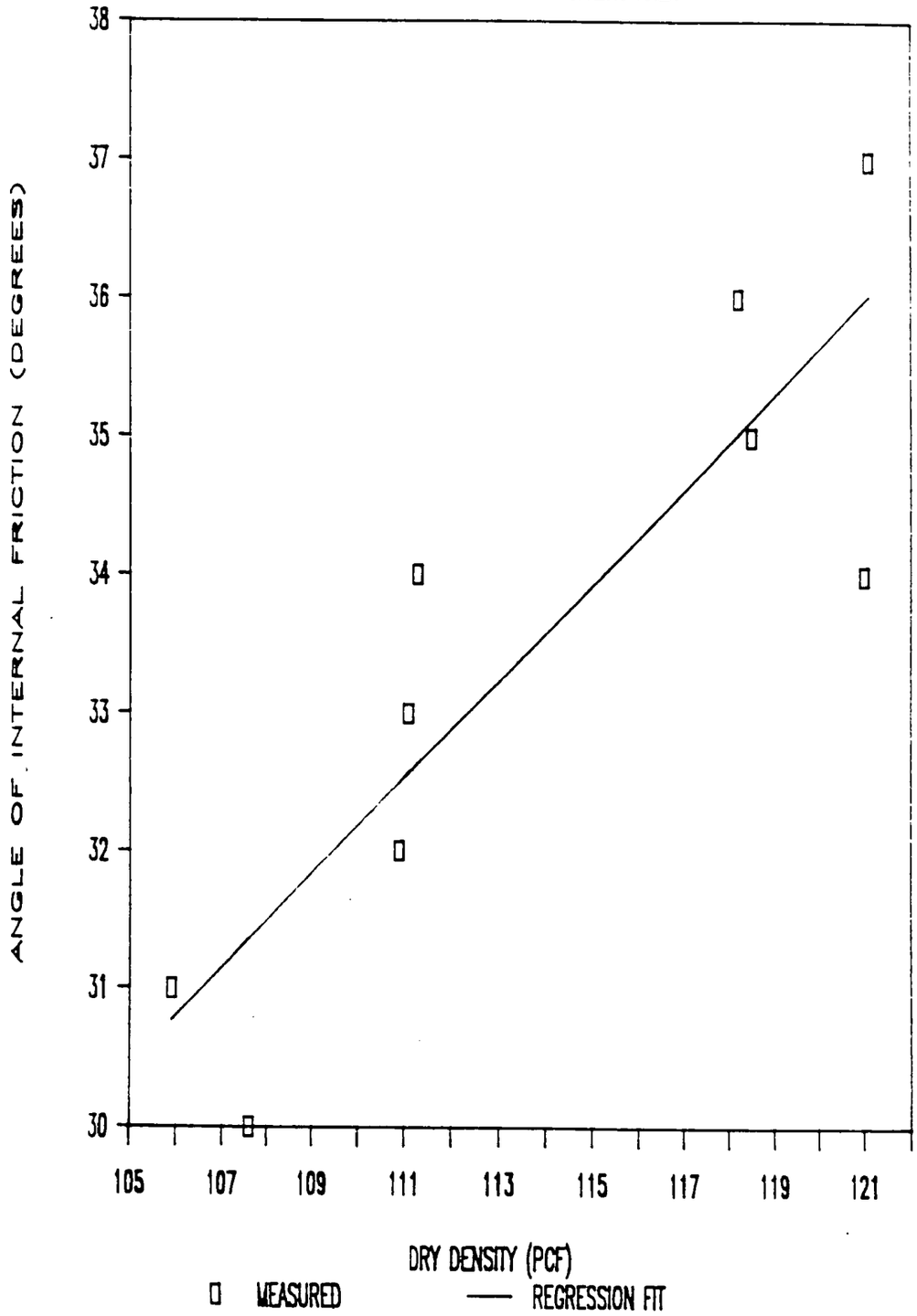
5. Janbu, N., Bjerrum, L., and Kjaernsli, B. (1956), Veiledning ved losning av fundamenteringsoppgaver, Norwegian Geotechnical Institute, Publication No. 16, Oslo.

6. McGillivray, R.T. (1982), "Estech Duette Mine - Dam Failure Probability", Armac Engineers, Inc. report.

ORIG. DESIGN REPORT STRENGTH CORRELATION

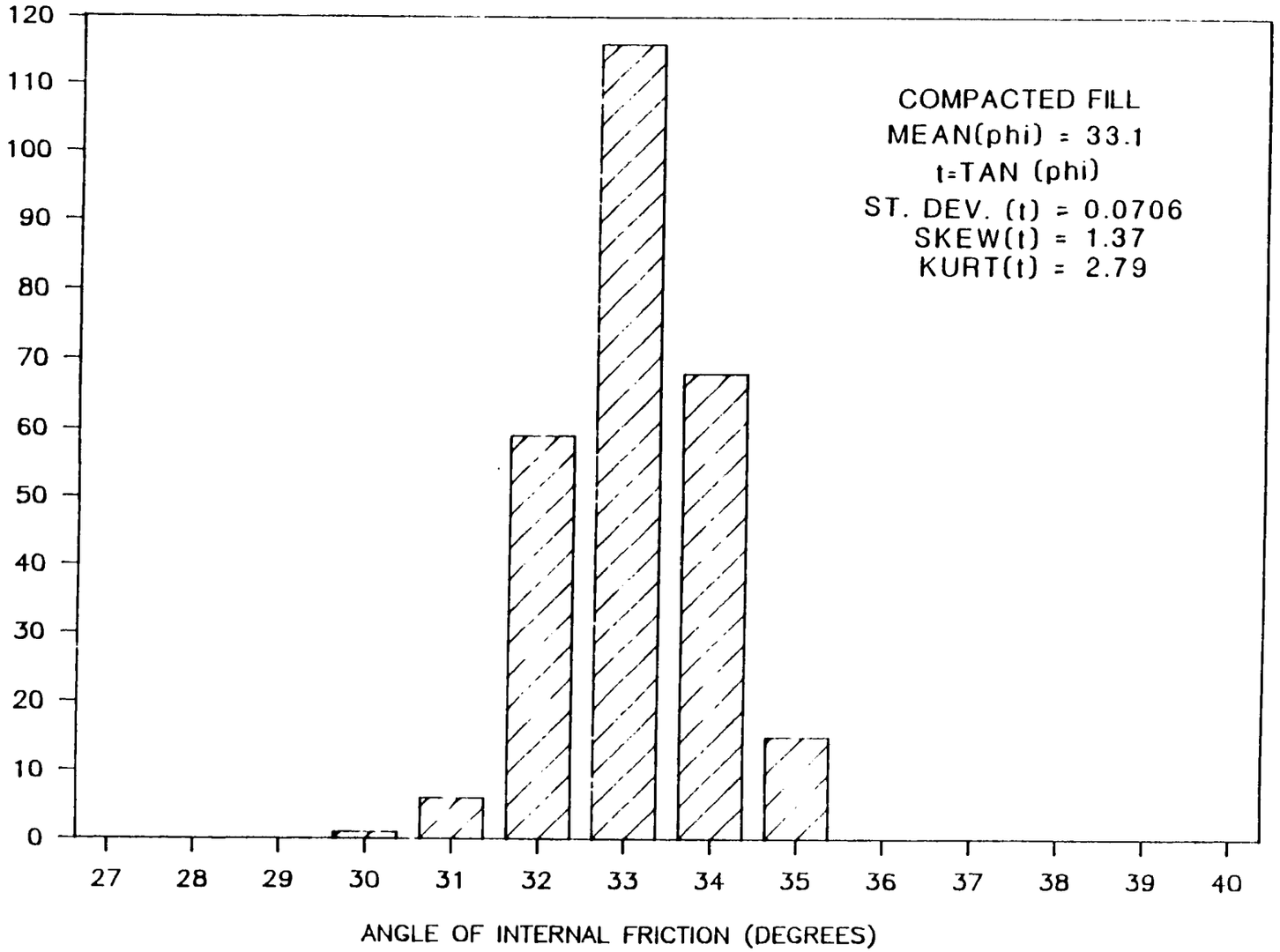
FOUR CORNERS MINE - F-1 SETTLING AREA



2128

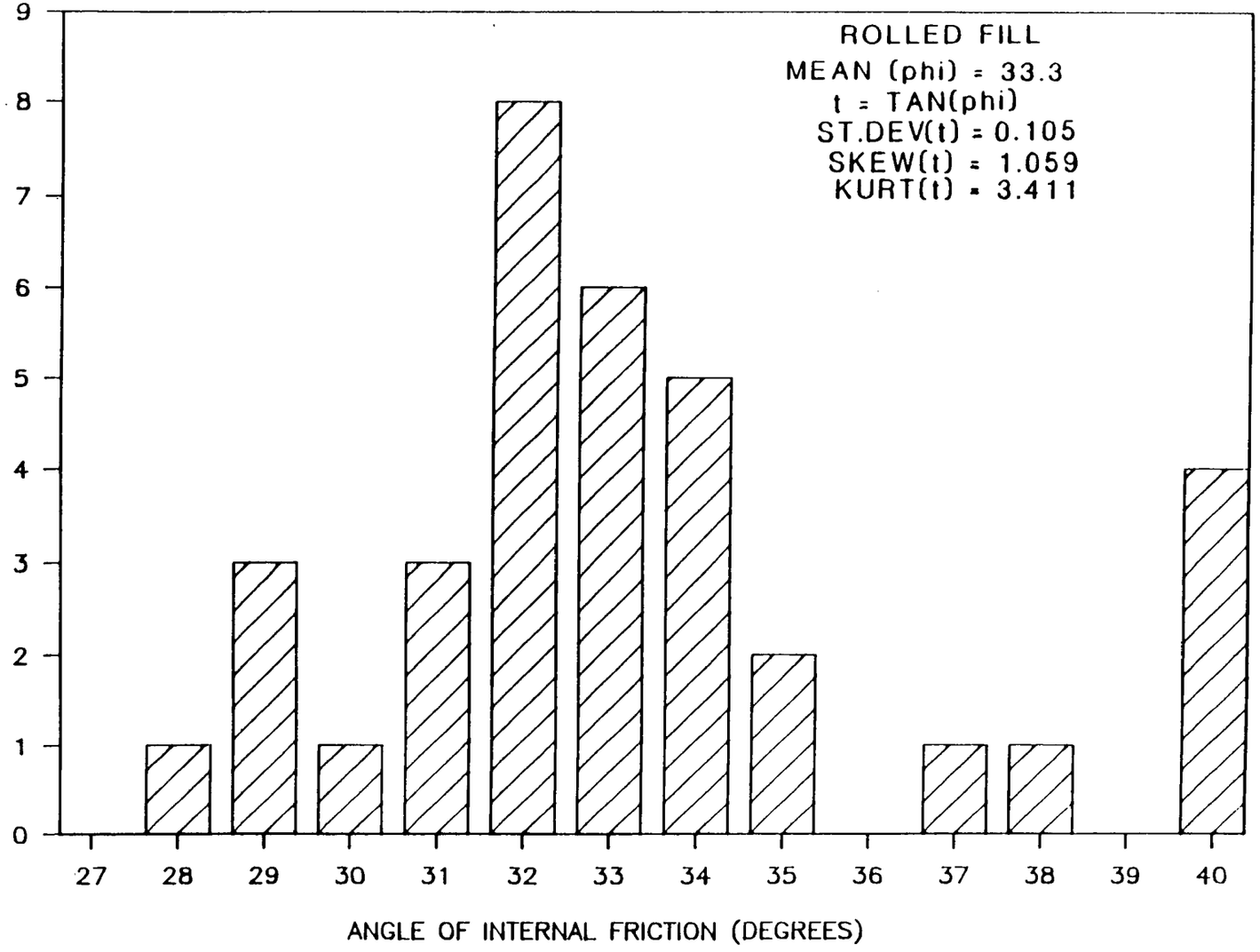
Dames & Moore
Figure 8

STOCHASTIC STABILITY STUDY OF F-1 DAMS



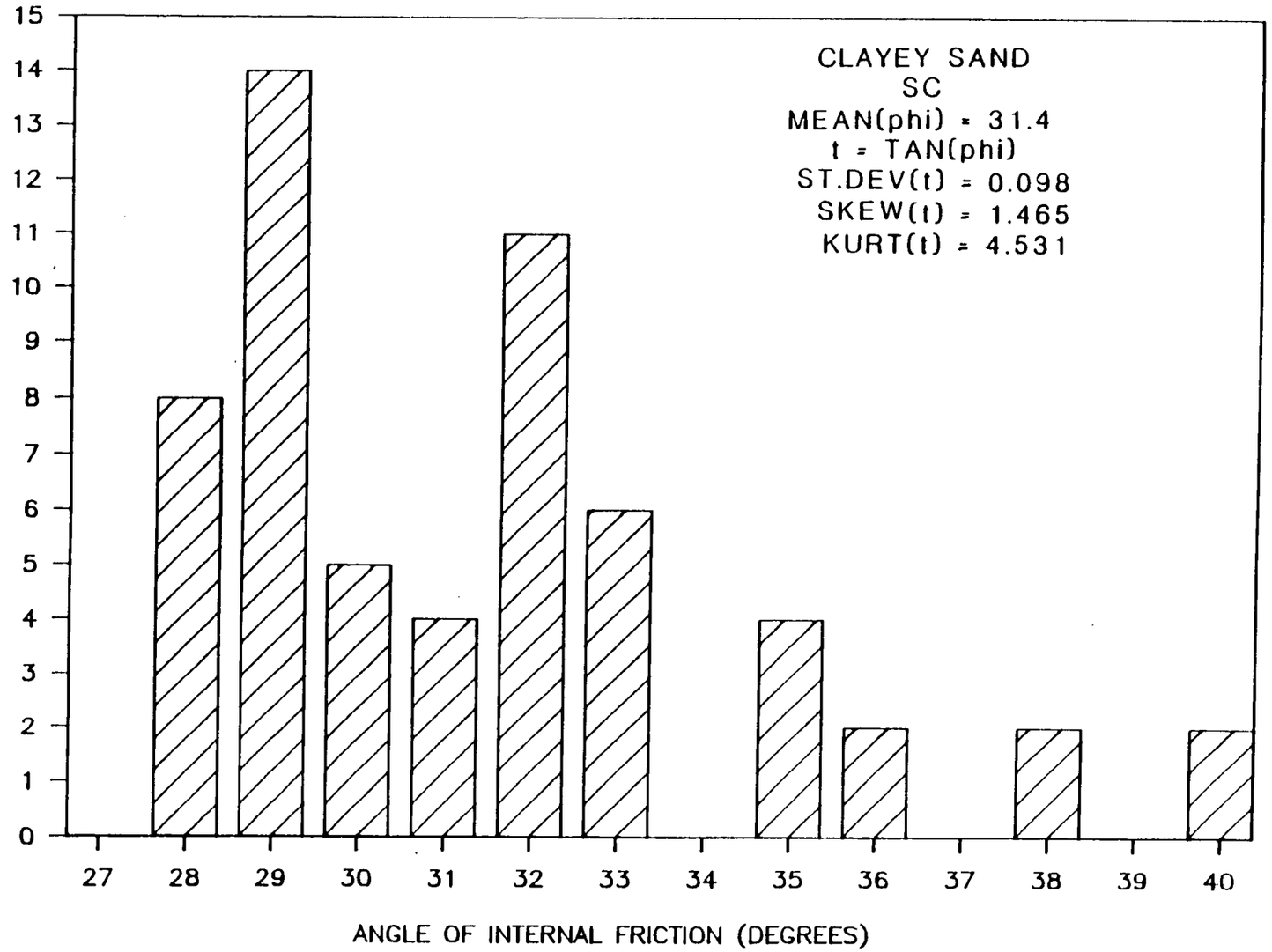
Dames & Moore
Figure 9

STOCHASTIC STABILITY STUDY OF F-1 DAMS



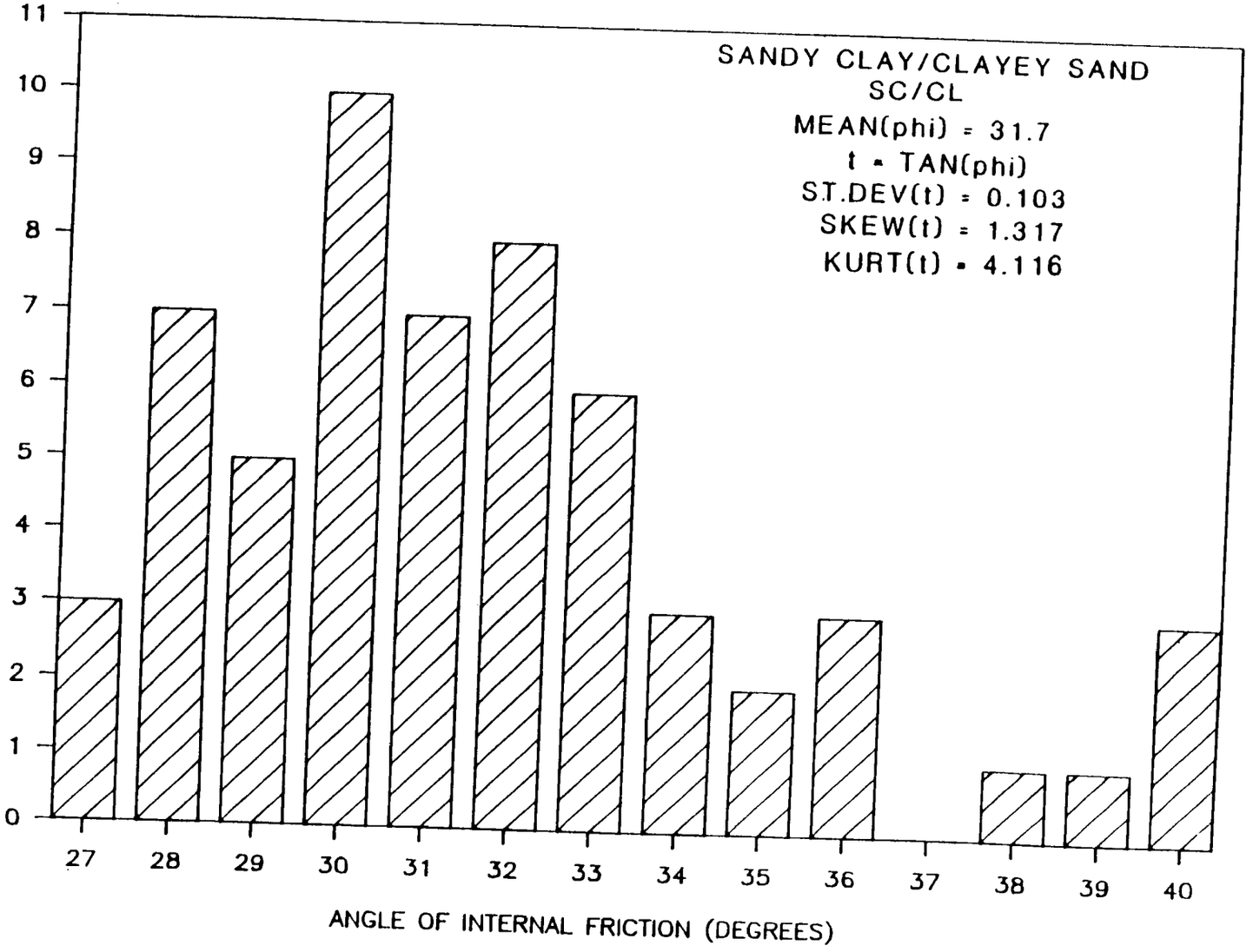
Dames & Moore
Figure 10

STOCHASTIC STABILITY STUDY OF F-1 DAMS



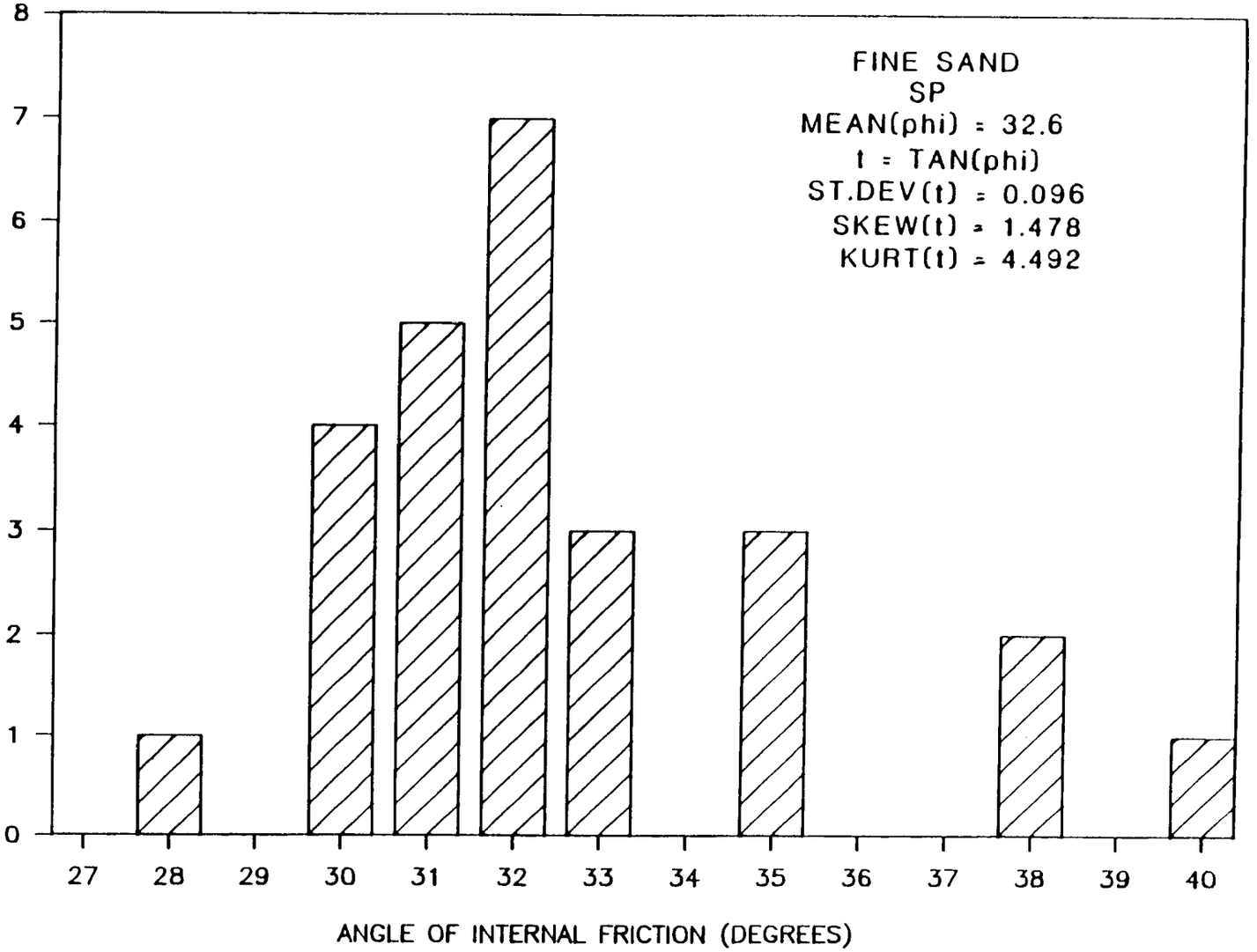
Dames & Moore
Figure 11

STOCHASTIC STABILITY STUDY OF F-1 DAMS

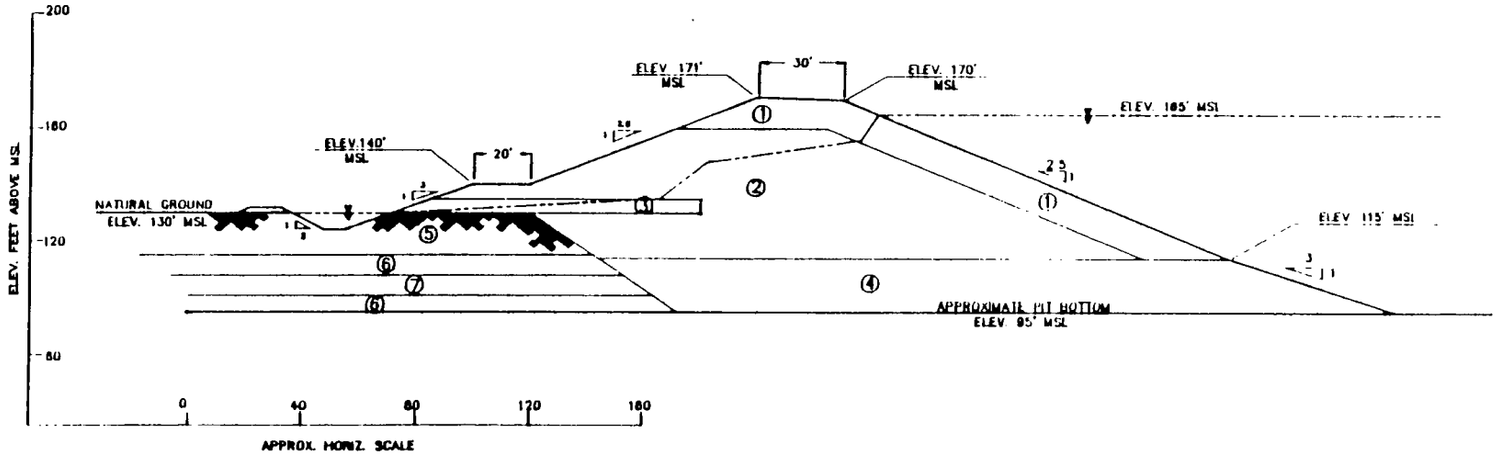


Dames & Moore
Figure 12

STOCHASTIC STABILITY STUDY OF F-1 DAMS



Dames & Moore
Figure 13



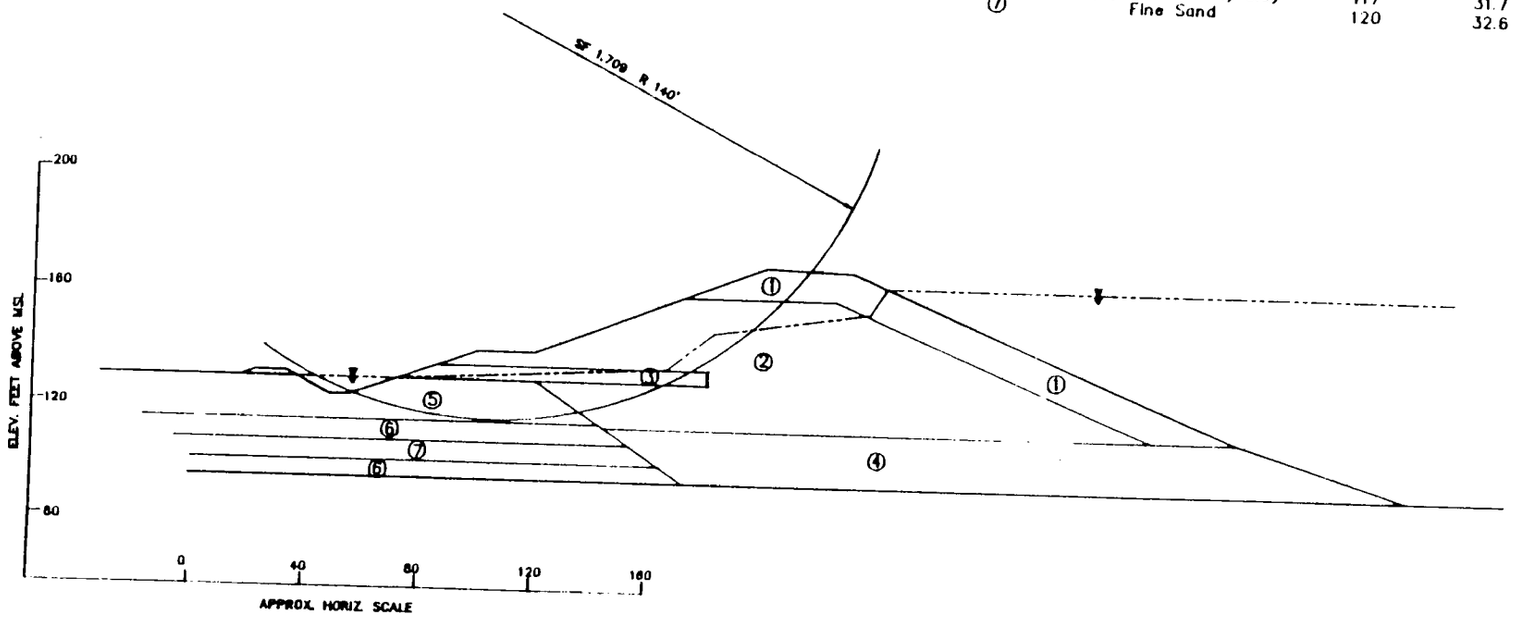
PROPOSED DAM
SECTION 1
Design Cross Section

2134

PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

Dames & Moore
Figure 14

NO.	SOIL DESCRIPTION	UNIT WEIGHT (pcf)	FRICTION ANGLE (deg)
①	Compacted Fill	125	33.1
②	Hauled Fill	127	33.3
③	Sand Tailings	115	36.0
④	Shaped Spoils	115	28.0
⑤	Clayey Sand	116	31.4
⑥	Clayey Sand/Sandy Clay	117	31.7
⑦	Fine Sand	120	32.6

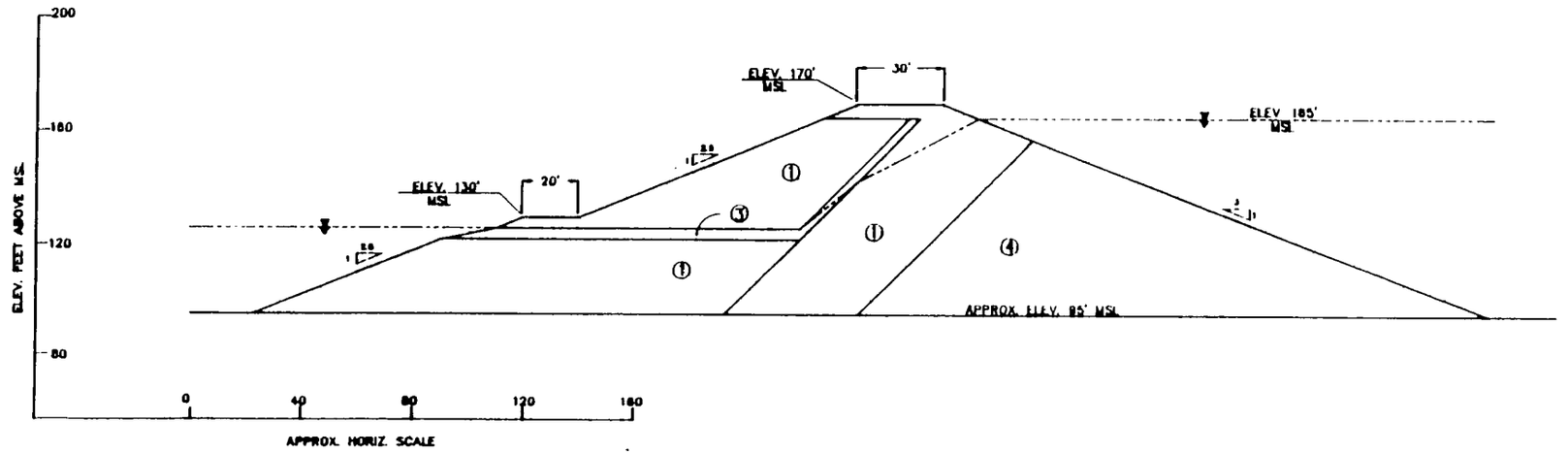


PROPOSED DAM
SECTION 1
Stability Analysis

2135

PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

Dames & Moore
Figure 15



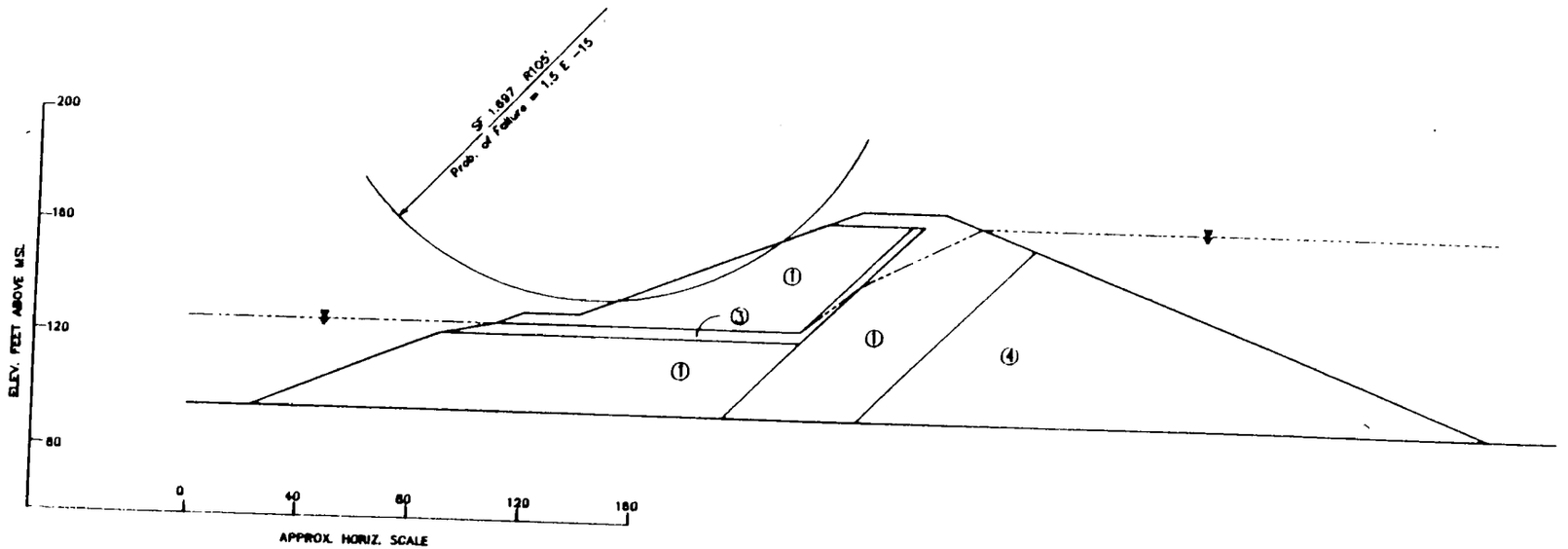
PROPOSED DAM
SECTION 2
Design Cross Section

2136

PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

Dames & Moore
Figure 16

NO.	SOIL DESCRIPTION	UNIT WEIGHT (pcf)	FRICTION ANGLE (deg)
①	Compacted Fill	125	33.1
③	Sand Tailings	115	36.0
④	Shaped Spoils	115	28.0



PROPOSED DAM
SECTION 2
Stability analysis

2132

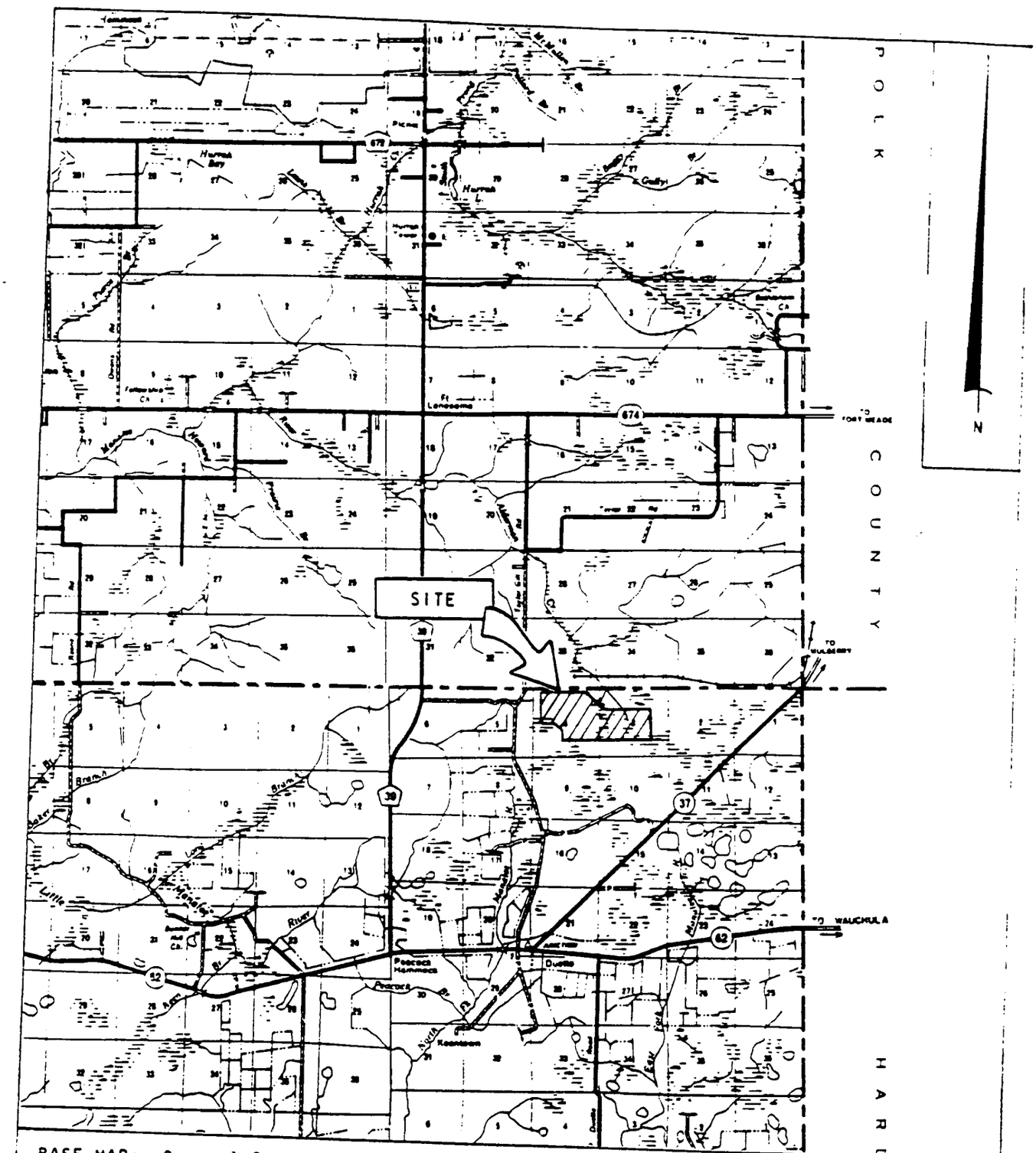
PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

Dames & Moore
Figure 17

[redacted] [redacted] [redacted]

APPENDIX A

FIGURES

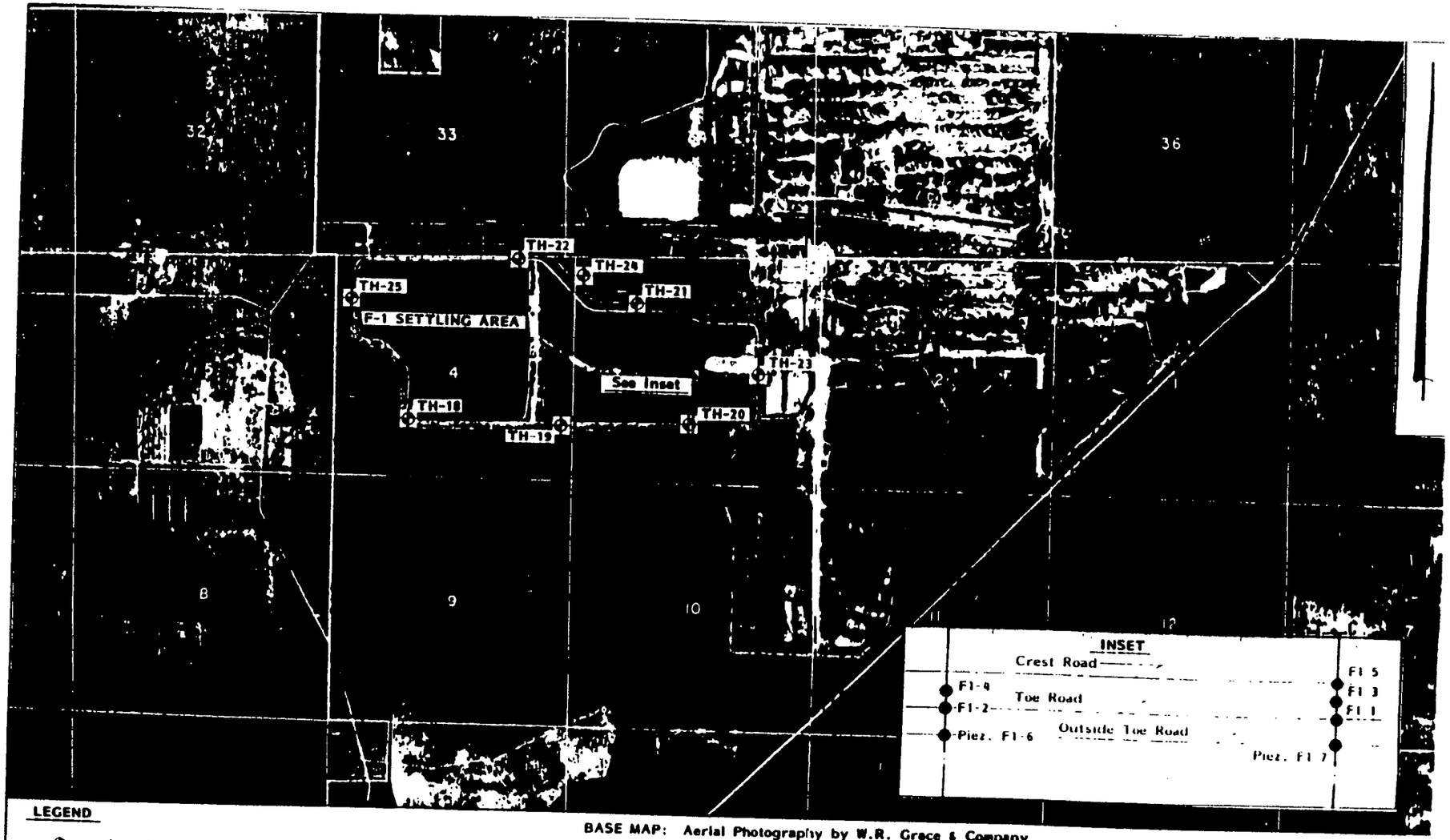


BASE MAP: General County Maps for Manatee & Hillsborough Counties, dated 1974 and 1976, respectively.

0 5 Miles

SCALE

Figure 1
VICINITY MAP
Four Corners F-1C
IMC Fertilizer
Dames & Moore



LEGEND

- Location of Standard Penetration Boring before Construction
- Location of Standard Penetration Boring after Construction

BASE MAP: Aerial Photography by W.R. Grace & Company, Four Corners Tract, January 27, 1988.

0 6000 Feet

SCALE

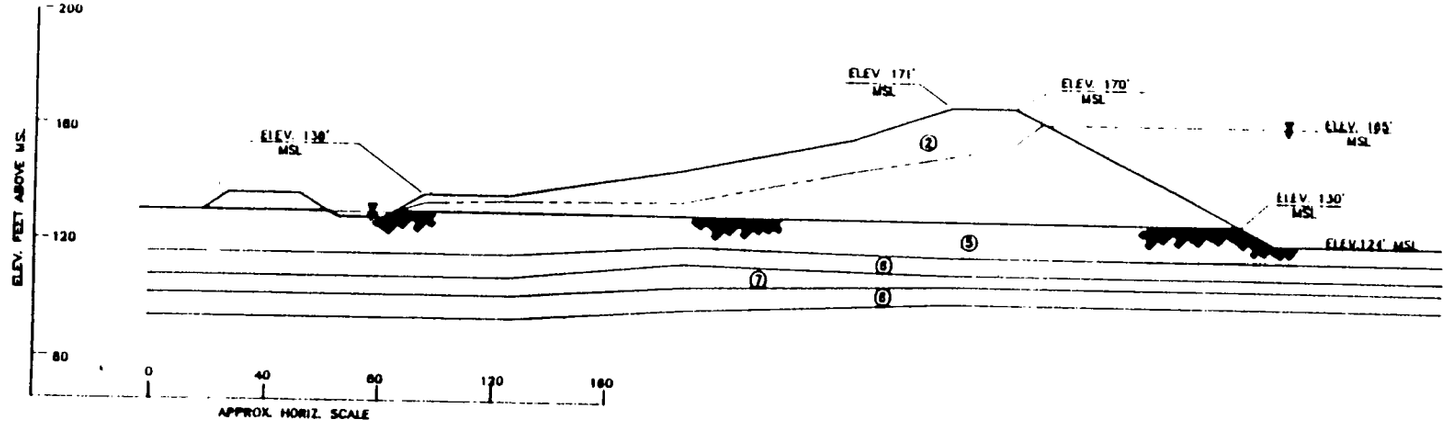
PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

SITE PLAN AND
APPROXIMATE BORING LOCATIONS

Dames & Moore
Figure 2

2140

NO	SOIL DESCRIPTIONS	UNIT WIEGHT (pfc)	FRICTION ANGLE (Deg)
②	Hauled Fill	127	33.3
⑤	Clayey Sand	116	31.4
⑥	Clayey Sand/Sandy Clay	117	31.7
⑦	Fine Sand	120	32.6



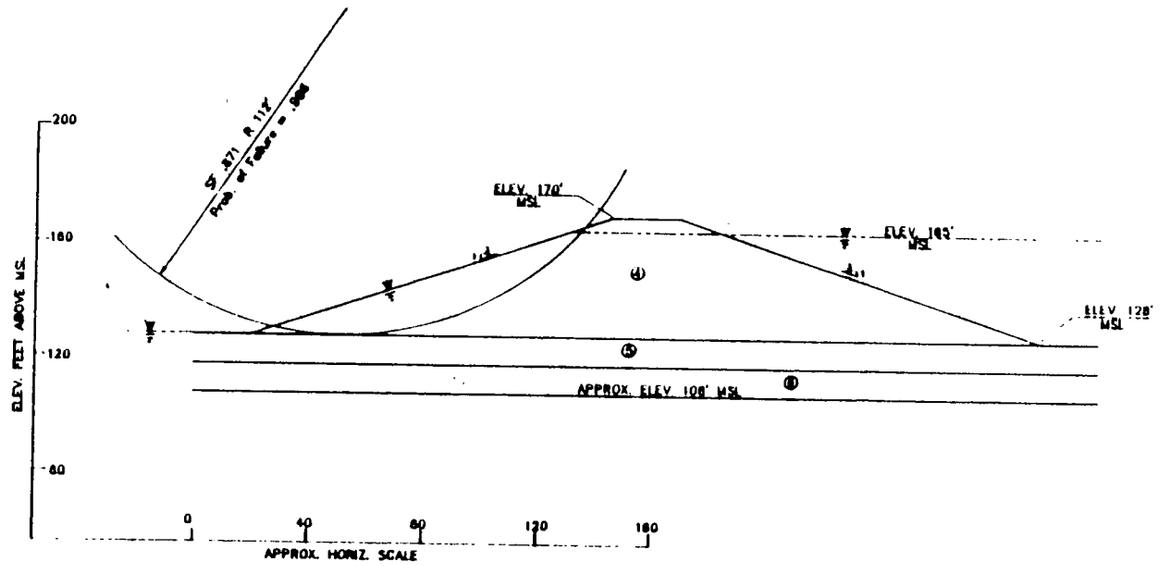
F-1 SETTLING AREA
F-1C DAM
Existing Cross Section

2141

PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

Dames & Moore
Figure 1

NO.	SOIL DESCRIPTION	UNIT WEIGHT (pcf)	FRICTION ANGLE (deg)
④	Shaped Spoils	115	28.0
⑤	Clayey Sand	118	31.4
⑥	Clayey Sand/Sandy Clay	117	31.7



F-1 SETTLING AREA
INTERIOR DIVERSION DIKE
Existing Cross Section

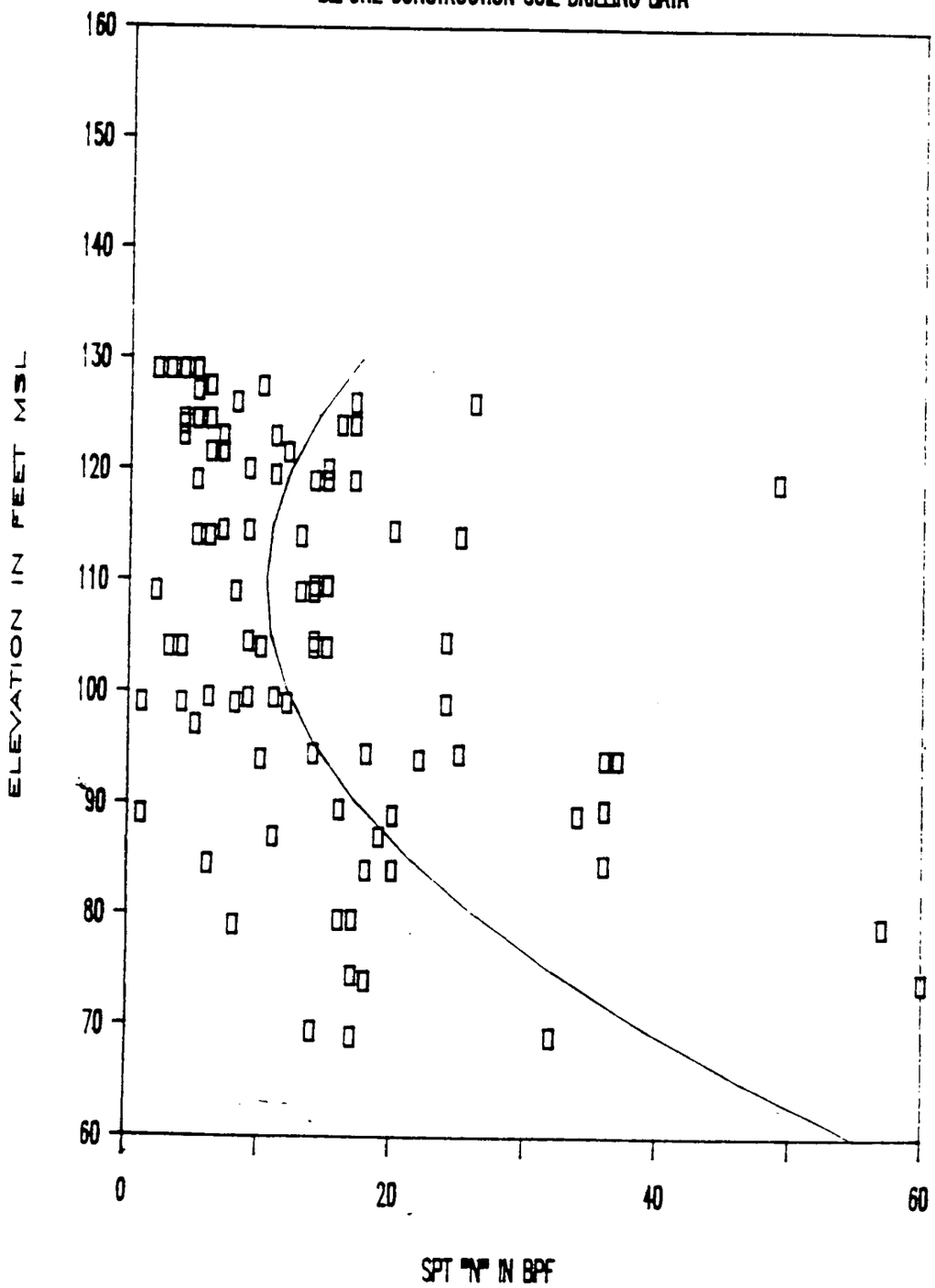
2142

PROJECT: IMC FERTILIZER FOUR CORNERS MINE
LOCATION: MANATEE COUNTY, FLORIDA

Dames & Moore
Figure 4

TREND ANALYSIS, F-1 SETTLING AREA

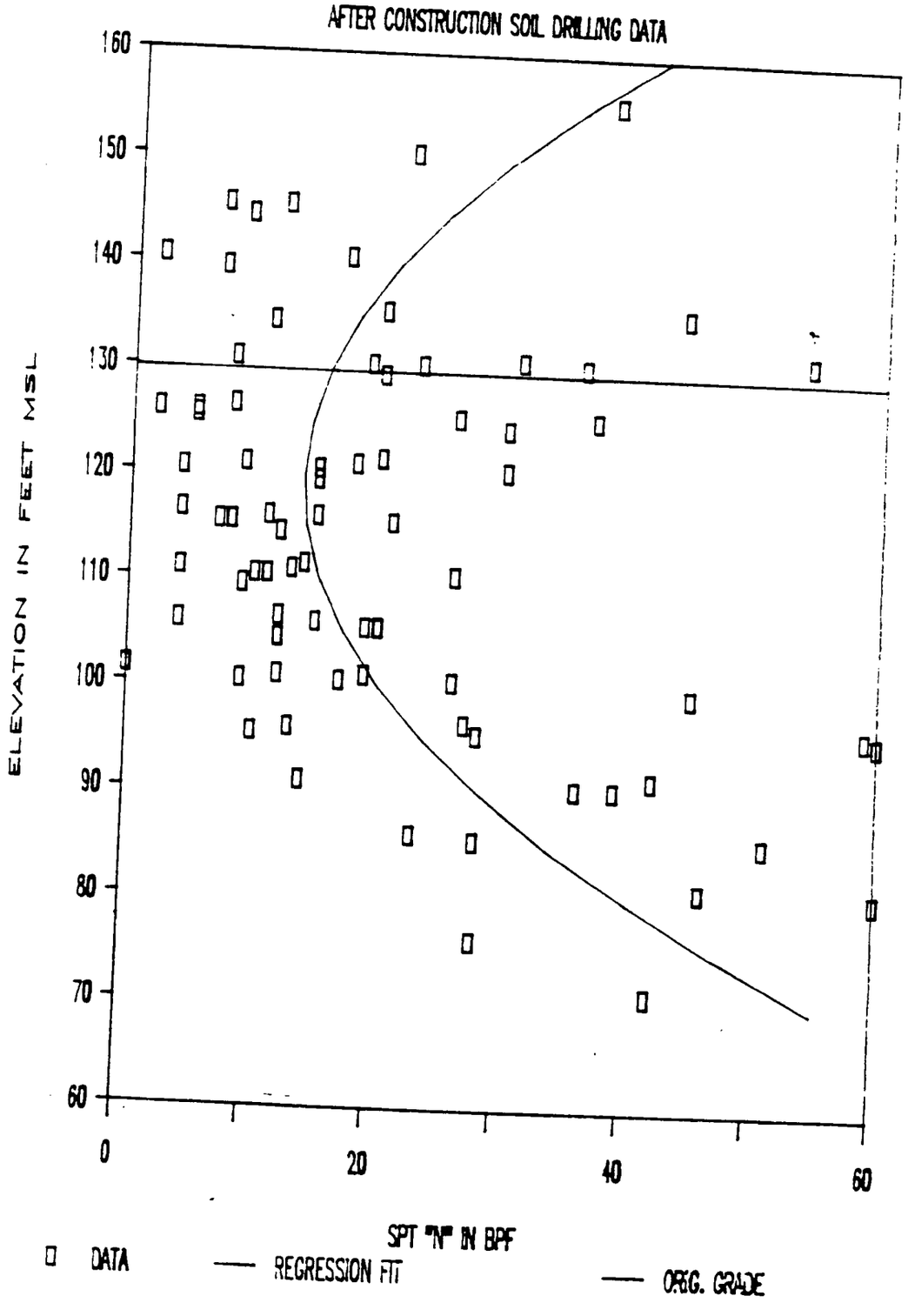
BEFORE CONSTRUCTION SOIL DRILLING DATA



2143

Dames & Moore
Figure 5

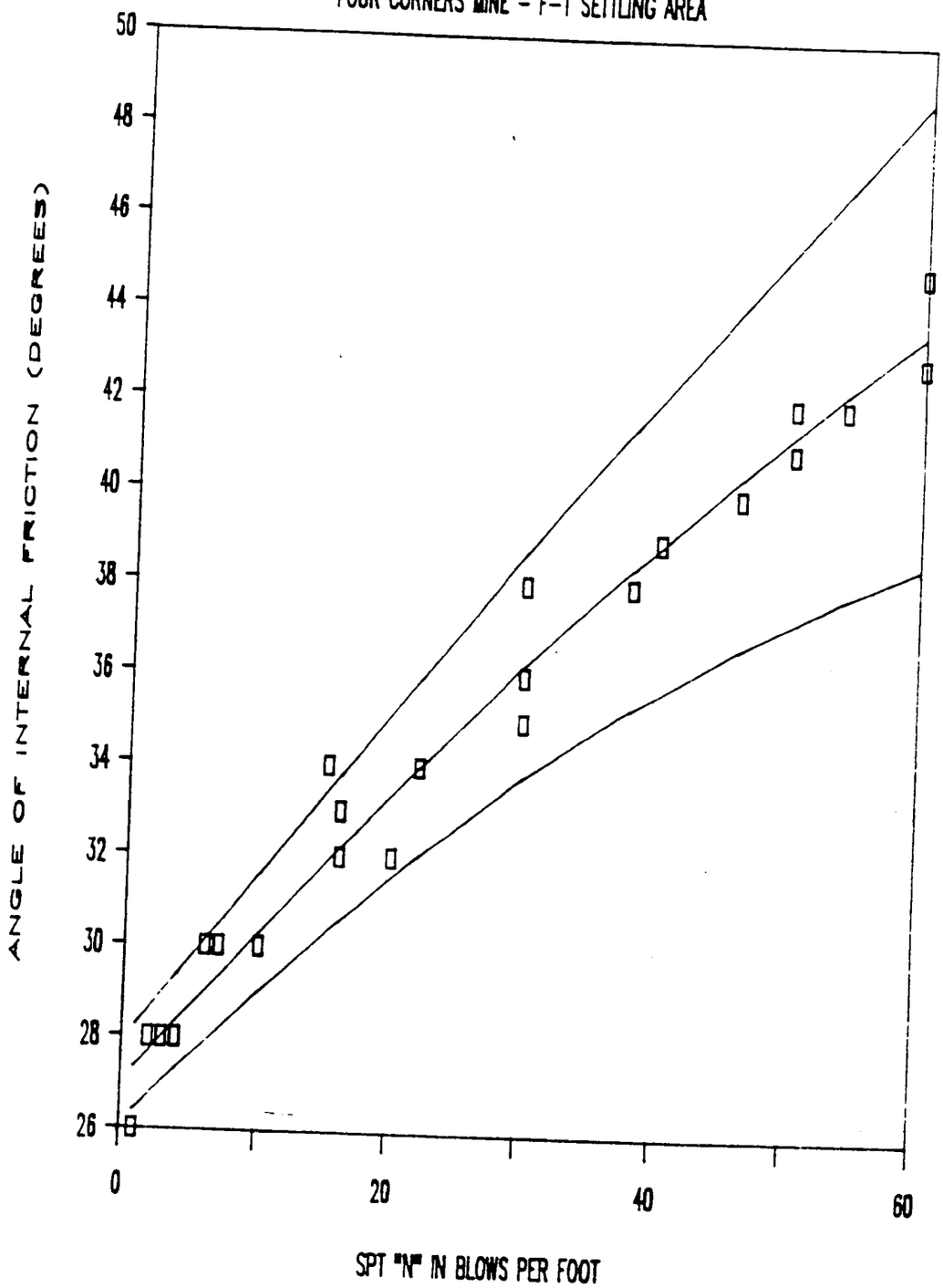
TREND ANALYSIS, F-1 SETTLING AREA



Dames & Moore
Figure 6

PROPOSED STRENGTH CORRELATION

FOUR CORNERS MINE - F-1 SETTLING AREA



Dames & Moore
Figure 7

[redacted] [redacted] [redacted]

COPIES TO:

Barb - Tyler - BCC.
Joanne - A+Z

9/18/91
RLL

STATE OF FLORIDA

COUNTY OF MANATEE

I, R. B. Shore, Clerk of Circuit Court, in and for the County of Manatee, State of Florida, do hereby certify that the foregoing is a true copy of an ORDINANCE adopted by the Board of County Commissioners of said County in session on the 5th day of September, 1991.

SUBJECT: **ORDINANCE 91-62:**
AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF MANATEE COUNTY, FLORIDA, RENDERING A DEVELOPMENT ORDER PURSUANT TO CHAPTER 380, FLORIDA STATUTES, ON AN APPLICATION FOR DEVELOPMENT APPROVAL* (ADA*) FILED BY IMC FERTILIZER, INC., FOR FOUR CORNERS MINE DEVELOPMENT OF REGIONAL IMPACT (DRI) SUBSTANTIAL DEVIATION, ALSO KNOWN AS DRI #198; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WITNESS My Hand and Official Seal this the 12th of September, 1991, in Bradenton, Florida.

R. B. Shore, Clerk of Circuit Court
Manatee County, Florida

By: Chief Deputy Clerk