Conrock / Fenton and Groves Sweetwater Projects

SPECIFIC PLANS 75-01 & 75-02

PART II
Appendices

As Adopted By:

San Diego County Board of Supervisors

April 13, 1976

SPECIFIC PLAN 75-01

SPECIFIC PLAN 75-02

Conrock/Fenton and Groves

Sweetwater Projects

PART II

Appendices

April 13, 1976

Department of Land Use and
Environmental Regulation
Department of Sanitation and
Flood Control
Department of Transportation
Environmental Analysis Division

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APPENDIX A

TREE INVENTORY AND

RIPARIAN HABITAT RETENTION PLAN

(Conrock/Fenton)

TREE INVENTORY AND RIPARIAN HABITAT RETENTION PLAN

An inventory of trees on the Conrock/Fenton property (Planning Areas II and III) was made to quantify the impact resulting from completion of the project on this segment of the vegetative cover. Counts were made in the field from points approximately 150 feet above the property with the aid of 10 x 50 binoculars, and checked where necessary at closer range. Assumptions made regarding the inventory were:

1. No dead trees were included in the total count.
2. Multi-trunked trees were counted as one.
3. Dense groupings of immature trees of the same species were counted as an equivalent number of mature trees of that species which would occupy the same amount of space.
4. Elderberry was counted due to its arboreal nature, but willow saplings along the river bed were not.

The distinction between those trees which are to remain and those to be removed was originally based on the plat map (Figure 1-3) for the Conrock/Fenton Sweetwater Project EIR.[1]

The excavation plan was subsequently altered to minimize the loss of riparian habitat from the site. Two major areas were to be retained in their natural state (see Figure 1). The condition of the riparian habitat in these areas is the best the project site has to offer. Trees in these areas are more numerous, less affected by

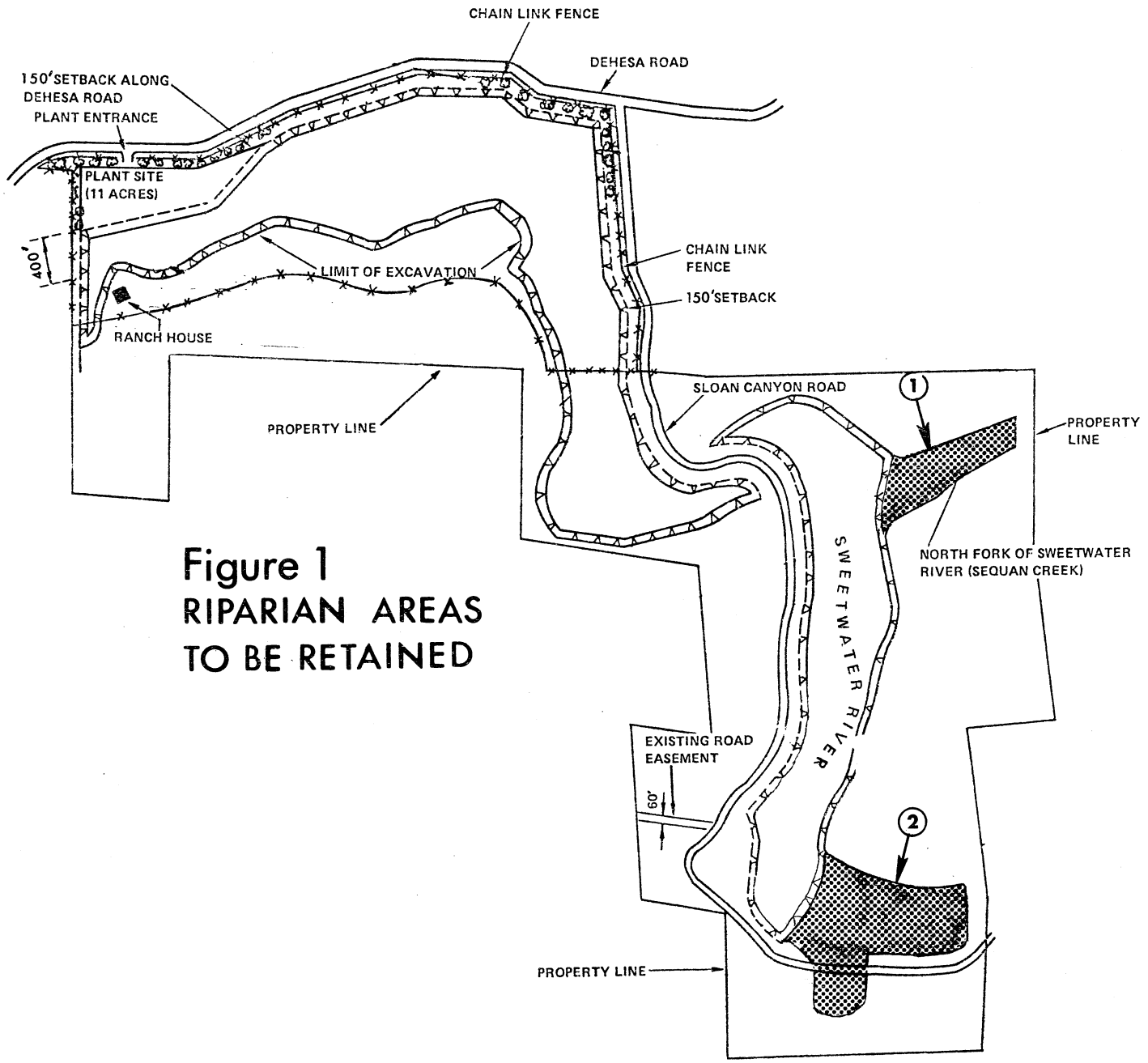

Figure 1
RIPARIAN AREAS TO BE RETAINED

the 1970 Laguna Fire, and not as infected with mistletoe as other sections of the property.

The following table is an inventory of the existing number and types of trees on-site. The table also quantifies the impact of the excavation on this population.

The retention of areas 1 and 2 (Figure 1) increased the riparian habitat (sycamores, cottonwoods, and willows) to be retained by a factor of 2.7. Overall these two areas contribute an additional 126 trees to the retention column raising the percentage of trees retained from 37% to 51% (+14%).

Acreage acquired by Conrock/Fenton to buffer the sand extraction operations (Planning Areas IA, IB and IC) contain additional tree resources not included in the table.[2,3] A 387 acre buffer parcel adjoining and upstream of area 2 on Figure 1 (Planning Area IC) contains valuable riparian areas and oak groves. These areas will remain undisturbed through the life of the Conrock/Fenton project.

REFERENCES

1. WESTEC Services, Inc., "Conrock/Fenton Sweetwater Project Environmental Impact Report"; March 28, 1974.

2. WESTEC Services, Inc., "Conrock/Fenton Sweetwater Project Site Rehabilitation and Specific Plan"; August 5, 1974.

3. WESTEC Services, Inc., "Addendum to the Conrock/Fenton Sweetwater Project Environmental Impact Report; April 19, 1974

TABLE 1

Tree Inventory and Related Project Impact

Name	Total	% of Total	No. to Remain	% Retained	No. to be Removed	% Removed
Coast Live Oak (Quercus agrifolia)	471	52	291	62	180	38
Western Sycamore (Platanus racemosa)	178	20	105	59	73	41
Fremont Cottonwood (Populus fremontii)	112	12	20	18	92	82
Red Willow (Salix laevigata)	80	9	25	31	55	69
California Pepper (Schinus molle)	37	4	6	16	31	84
Elderberry (Sambucus mexicana)	16	2	2	13	14	87
Eucalyptus (Eucalyptus sp.)	6	1	6	100	0	0
Silk Oak (Grevillea robusta)	2	1	1	50	1	50
	902	100	456	51	446	49

APPENDIX B

HYDROLOGY AND SOIL STUDIES

BEMENT - DAINWOOD - STURGEON

CIVIL ENGINEERS

6150 MISSION GORGE ROAD • SUITE 128 • SAN DIEGO, CALIF. 92120 • (714) 280-4842

August 25, 1975

Mr. Roger Woolley
c/o Conrock
P. O. Box 3098
San Diego, Calif. 92103

Attention: Mr. William Walker

Dear Mr. Woolley:

Because of the proximity of the Conrock/Fenton and S. J. Groves & Sons sand extraction and processing facilities in the Sweetwater River Valley near Dehesa Canyon and their numerous interrelated activities, a joint overall report analyzing soil, erosion, ground and surface water hydrology and site rehabilitation has been made a condition of approval of Special Use Permits P74-68 (Conrock/ Fenton) and P73-137 (Groves).

Many studies have been undertaken separately on the two properties to evaluate the hydrologic and soil conditions. This report incorporates the work of all consultants involved to provide such an overall plan.

Following is an alphabetical listing of agencies and individuals who contributed portions of the information contained herein:

Alvarado Soils Engineering
Catlin, William F., R.C.E.
Cavallin, James E., R.C.E.
Chang, Howard, Phd. S.D.S.U.
Environmental Engineering Laboratory
Ganus, William J., Phd. Reg. Geo. 3200
Hirsch & Koptionak
Lee, Louis J., R.C.E.
Threet, Richard L., Phd. Reg. Geol. 340
Westec Services, Inc.
Woodward-Gizienski & Associates

Please contact this office for any further information.

Very truly yours,

John F. Dainwood R.C.E. 15879

JFD/ve

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SCOPE

This report is a summarization of studies that have been made in connection with the S. J. Groves-Conrock/Fenton properties involving sand extraction, water quality control and site rehabilitation. These studies evaluate conditions prior to, during and after completion of the programs. The report examines the erosion potential within the project area and immediately downstream. It addressess the effects of the work on water and soil conditions on-site and outlines mitigating measures that will be used to counteract problems or adverse affects which may be encountered during the operation and in the subsequent land development. It additionally provides the technical data for the creation of a joint lake and excavation to bedrock.

PROJECT DESCRIPTION

Groves-Conrock/Fenton property is located in the Sweetwater River Valley, southerly of Dehesa Road and adjacent easterly to Singing Hills Golf Course. It is approximately 5 miles downstream from Loveland Dam and 22 miles upstream from Sweetwater Reservoir. The site includes the main channel of the Sweetwater River and its confluences with Harbison Canyon Creek and the North Fork of the Sweetwater River (also referred to as Sequan Creek).

The site consists of approximately 1,237 acres (Conrock/Fenton-1,062 acres)(Groves-175 acres).

The area of sand extraction will cover approximately 194 acres (Conrock/Fenton-144 acres)(Groves-50 acres).

A lake will be constructed in the extraction area westerly of Sloan Canyon Road of approximately 138 acres having a perimeter of approximately 29,100 feet when water surface is at elevation 465 MSL. Pit depths will range from 20 to 70 feet below the existing river bed. Proposed slopes are 2 horizontal to 1 vertical below the water line and will range between 3 to 1 and 10 to 1 above lake surface.

Initially, a trapezoidal wedge or plug of material spanning the pits will be left undisturbed at the common lot line of Conrock/Fenton-Groves. This section will have a surface width of 200' and extend 150' onto the Groves property and 50' onto the Conrock/Fenton property (measured at the top). The surface of this plug will be at elevation 475 or 10' above the maximum lake level of 465. A sluice will be constructed through this material to maintain equal levels of water in the two pit areas. Portions of this plug will be systematically removed on the Groves side only as Groves completes the 0' to 20', the 20' to 40', and the final 40' to 60' excavation (See Fig. 61). The remainder of the plug, having a top width of 50', will be retained until Conrock/Fenton has completed its mining process. It is necessary to maintain this embankment at the common boundary of the two properties since different mining and disposal methods are used which are briefly described as follows:

Groves is using a horizontally staged mining technique; the first operation will remove all sand to a point approximately 20' below river bed level; the second operation will mine from 20' to 40'; and the third operation from 40' to 60' or bedrock. The "wash" or residual fines from the extraction process will be hauled to off-site disposal areas, eliminating the need for a permanent on-site storage.

Conrock/Fenton is using a vertically staged mining technique; the extraction operation will begin at the east wall of the plug, excavation will be to bedrock and continued upstream in this manner. The residual fines removed from the marketable material will be permanently deposited in the bottom of the excavated area. Upon completion of the sand mining operation the plug will be shaved off to provide a surface elevation of 443' or 15' below lake level, creating a continuous body of water approximately 1 2/3 miles long extending from the easterly line of Singing Hills Golf Course to Sloan Canyon Road. The residual plug will be trapezoidal, spanning the lake and extending up from bedrock (elev. 407') approximately 36'. This residual plug will provide an underwater reservoir extending upstream for approximately 3,600 feet for deposition of the unmarketable products of the extraction process. This method has been approved by the Water Quality Control Board. The volume of this depository is near 1,250,000 cubic yards, more than adequate to accomodate the estimated 1,000,000 cu-

bic yards of unmarketable fines which must be wasted.

Erosion Control - Flood Protection

The Sweetwater River in the vicinity of Dehesa has considerable amounts of alluvial sands within the stream bed which are derived from a rather substantial sediment yield from the adjacent watershed. Erosion is a natural geological process by which soil is moved to a more stable environment. Soils are transported downslope by water (sheet erosion) and gravitational creep into river valleys where they form a deposit in the flood plain of a stream or river. In ephemeral streams, such as the Sweetwater River, which carry water during storms only, the sediment inflow, as well as the outflow, is very complex and closely related to the amount of water creating flow.

The transport capacity of a stream is a function of the stream velocity, slope, sediment size and sediment discharge (sediment yield). When the sediment yield within the watershed exceeds the transport capacity, aggredation takes place, which modifies the channel slope and the stream velocity. This complex phenomena can be analyzed by making certain simplifying assumptions. In our analysis, use was made of a computer program on file with the County of San Diego, Department of Sanitation and Flood Control. The analysis assumes a constant river discharge and a constant sediment inflow. With these parameters, it computes a water surface elevation at a given reach, then computes the equivalent tractive force (shear force on wetted area of stream bottom or side slope, whichever the case may be). With this inforamtion, the bedload

transport capacity is then calculated using the Du Boys' equation. This capacity, considered over a given incremental time span, gives an actual transport capacity per unit time; thus, providing an index to compare with the sediment input given initially in the program. It then distributes the net gain or loss of bedload downstream, and through an iterative process provides a time dependent channel geometry that affects the stream velocity and slope.

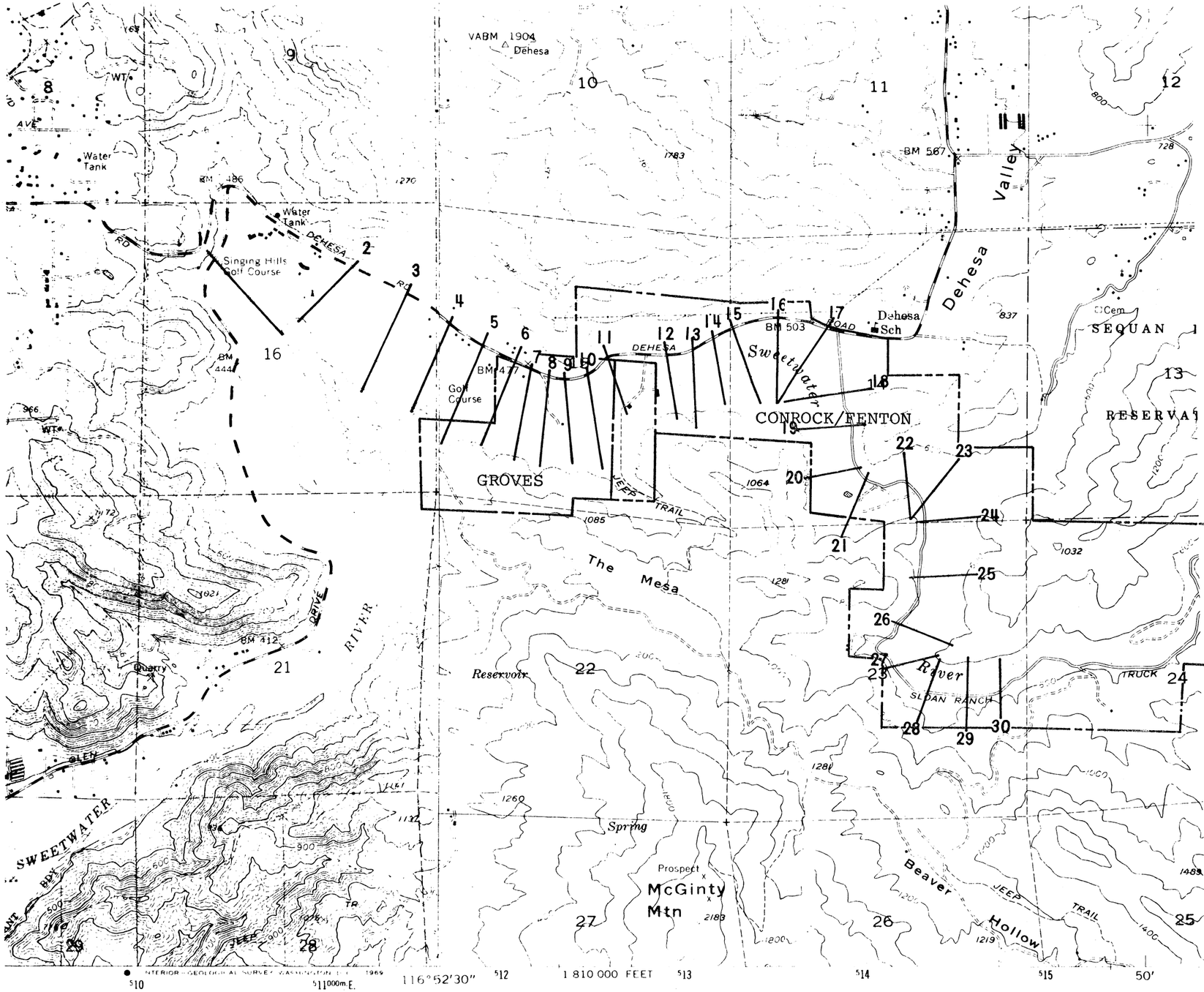
Figure 1 shows the location of the 30 cross-sections that were used in the analysis of the erosional and depositional charateristics of the stream within, and downstream of the site. S. J. Groves' pit, located immediately downstream of the Conrock/Fenton property, was assumed fully developed to a depth of 40 ft. Figure 2 shows a profile of the stream thalweg as it was proposed in the completed excavation, along with the eventual depostion and erosion due to a 4 hour flow of 28,000 cfs. It should be mentioned here that the County of San Diego's Flood Control Department considers a 4 hour peak flow equal in intensity to the actual 100 year flood design hydrograph, which is somewhat longer in duration. Data for the sediment inflow into the upstreammost section in the Sweetwater River along with sediment entering at the North Fork and Harbison Canyon Creek confluences was obtained from the County report on "Flood Plain Sedimentation and Erosion", Volume 2.

This evaluation is based on a project that proposed excavation to a depth of approximately 40' maximum on the Groves site

and approximately 45' maximum on the Conrock/Fenton site (below bed level). It also considered permanent retention of the plug at the common boundary of the two properties at a surface elevation of 470', 5' above maximum lake level creating two lakes. In Special Use Permit (P74-68) granted to Conrock/Fenton, it is mandated that a comprehensive rehabilitiation plan be submitted covering both properties showing a "joint" lake. This requires removal of the plug to a suitable depth below water level. Item 3c of this permit also states that excavation to bedrock, as is now proposed, be supported by technical data satisfactory to the Director of Planning.

Dr. Howard Chang, of S.D.S.U., has completed a study entitled "Engineering Study On The Effects Of Sand Mining In Upper Sweetwater River Basin" which analyzes the effects of the deeper excavation now proposed in these projects. This report, on file with the San Diego County Department of Sanitation and Flood Control, indicates that greater erosion with greater depth may be expected both upstream and downstream from the pit areas. His report does not indicate any other adverse effects will result from this increased pit depth.

Figure 2A through 2E, prepared by Hirsch & Koptionak, are compiled from Dr. Chang's report and graphically illustrate the downstream effect of 20', 40', and 60' excavations in the project area under 10 year and 100 year flood conditions.



N

Graphic Scale - Feet

2000 0 2000 4000

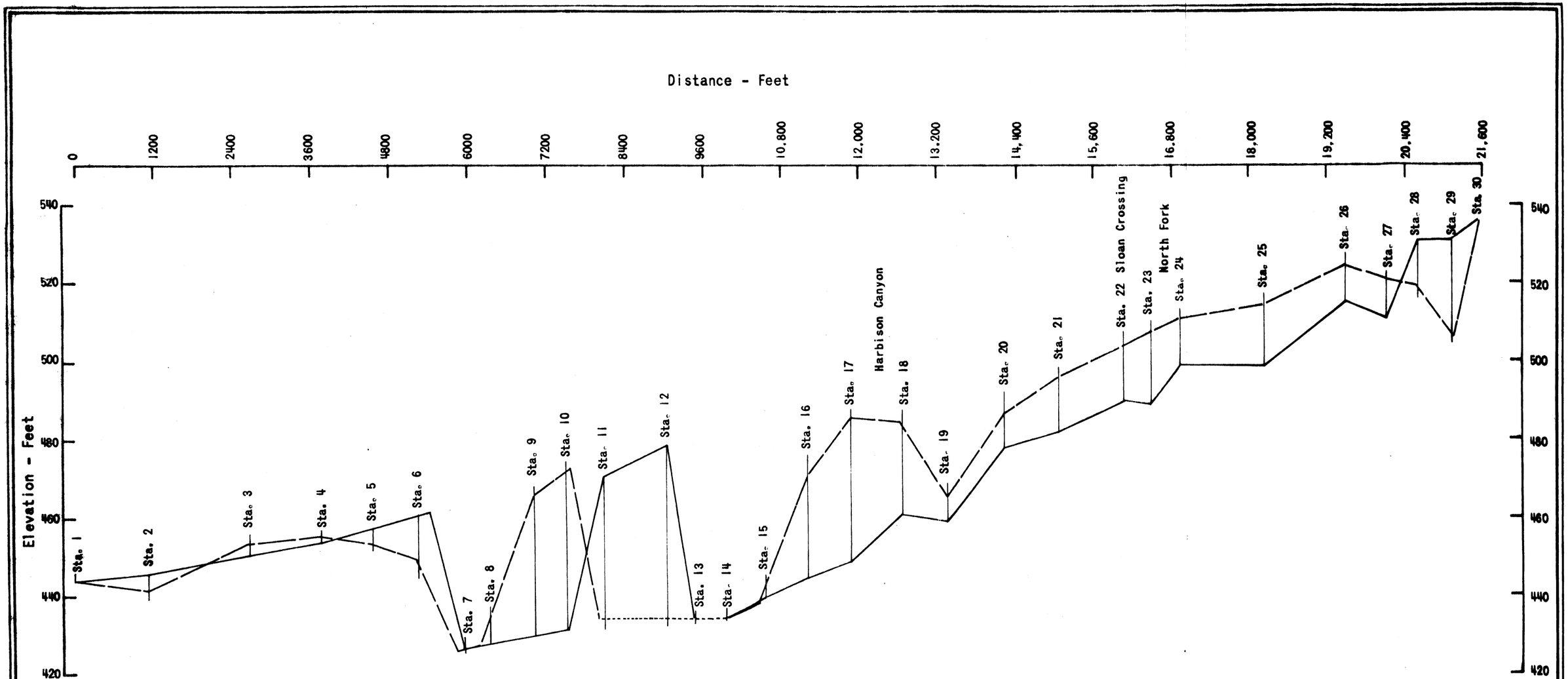
CONROCK DEHESA PROPERTY

SWEETWATER RIVER SECTIONS - EROSION STUDY

WOODWARD - GIZIENSKI & ASSOCIATES

CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: LDS	APPROX. SCALE: See Above	PROJ. NO: 74-119A
CK'D BY: JEC	DATE: 7/23/74	FIGURE NO: 1



LEGEND:

——— Indicates existing Thalweg Profile

– – – Indicates Thalweg Profile after 4 hours of Maximum Design Flood.

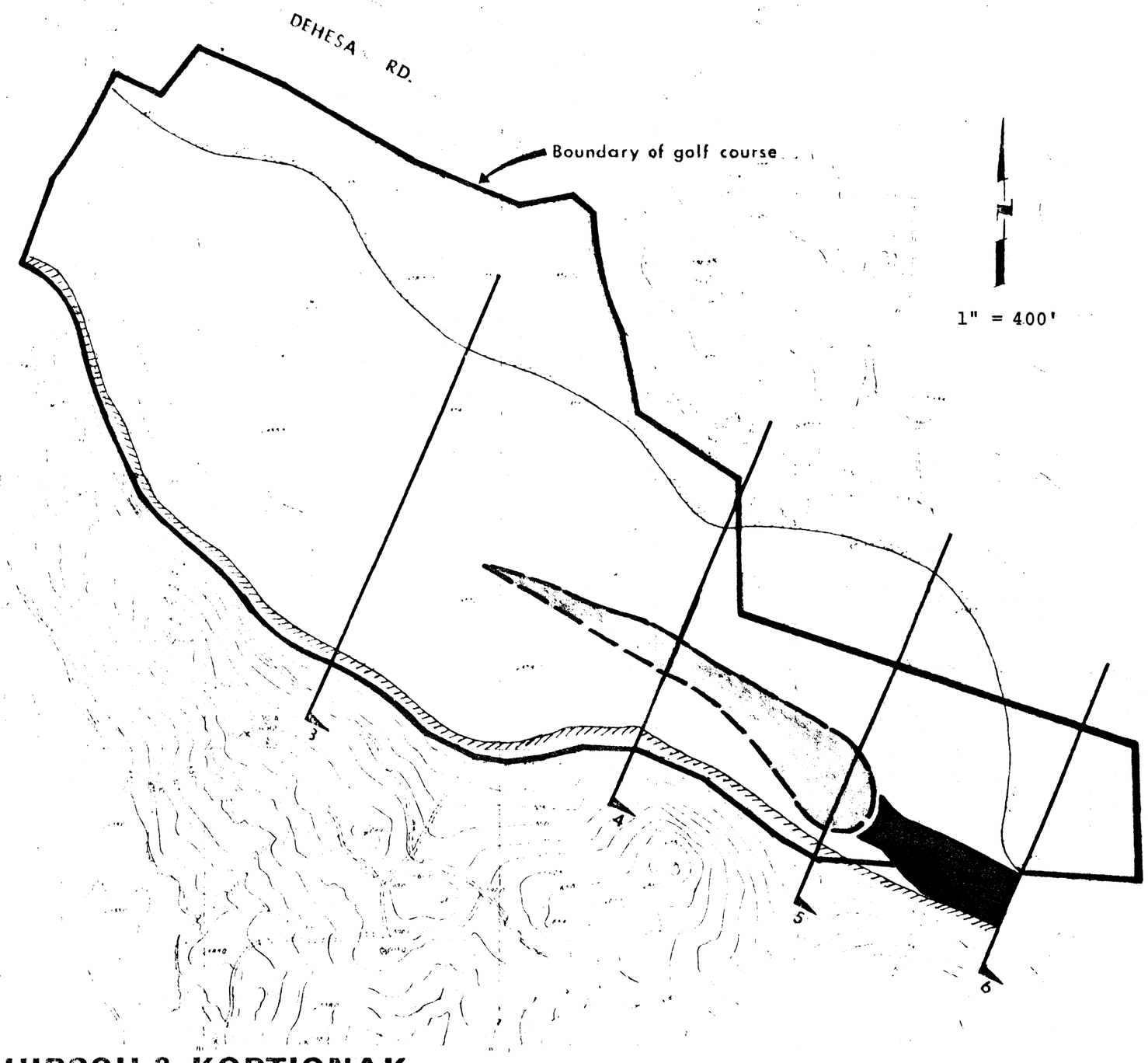
THALWEG PROFILE - SWEETWATER RIVER

CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: GS	APPROX. SCALE: as noted	PROJ. NO: 74-118A
CK'D BY:	DATE: 7/23/74	FIGURE NO: 2

DOWNSTREAM EFFECTS OF EXC. AT SAND PLANT
10 YR FLOOD



A. LIMITS OF EROSION

B. EROSION > 18" W/20', 40', 60' EXC.

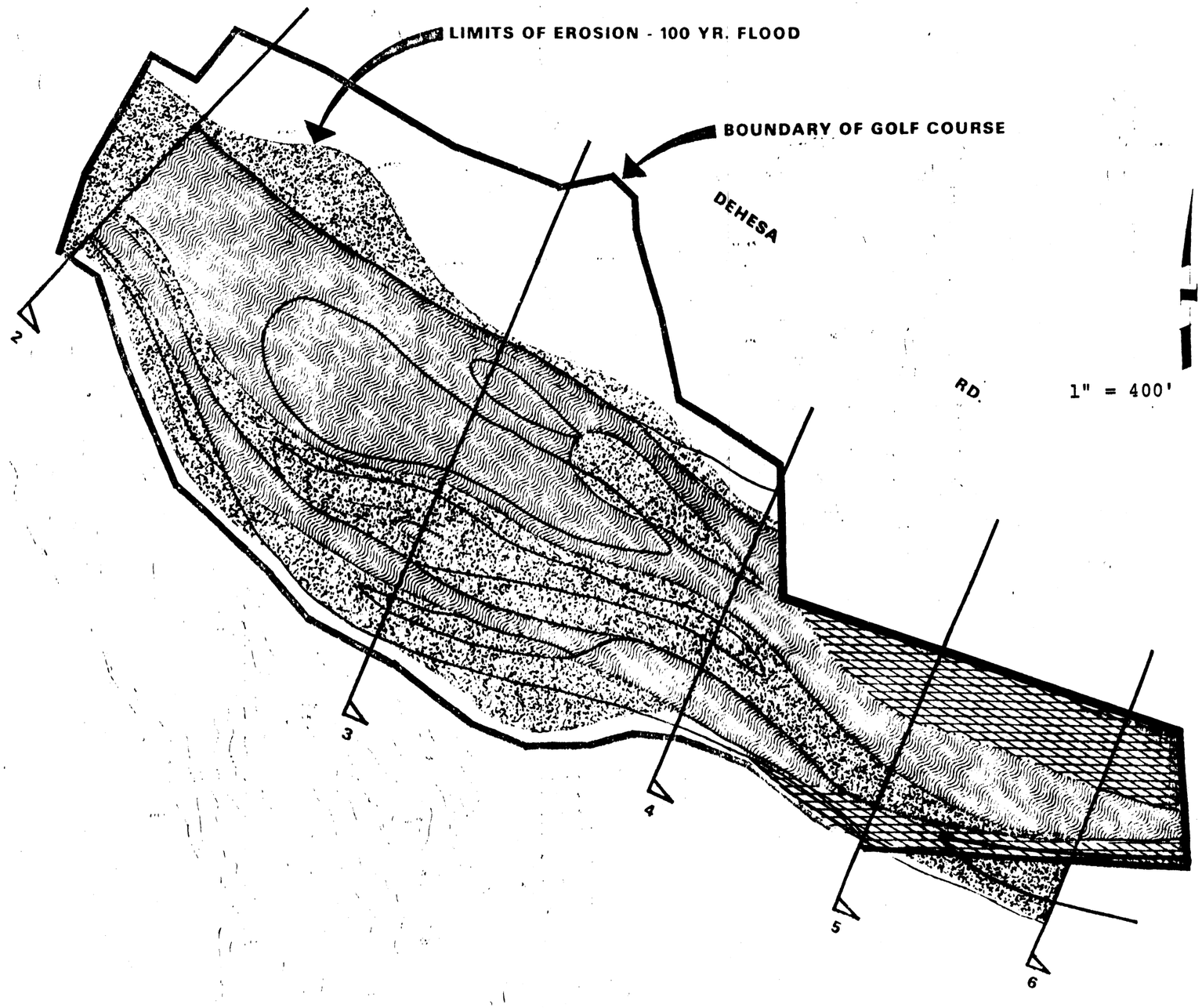
C. LIMITS OF DEPOSITION, W/20', 40', 60' EXC.

HIRSCH & KOPTIONAK

7-19-74

Figure No. 2A

DOWNSTREAM EFFECTS OF EXCAVATION AT SAND PLANT



A. EROSION >18" WITH 20' EXCAVATION
B. EROSION > 36" WITH 20' EXCAVATION
C LIMITS OF EROSION - 100 YR. FLOOD

HIRSCH & KOPTIONAK

8-8-74

B-13

Figure No. 2B

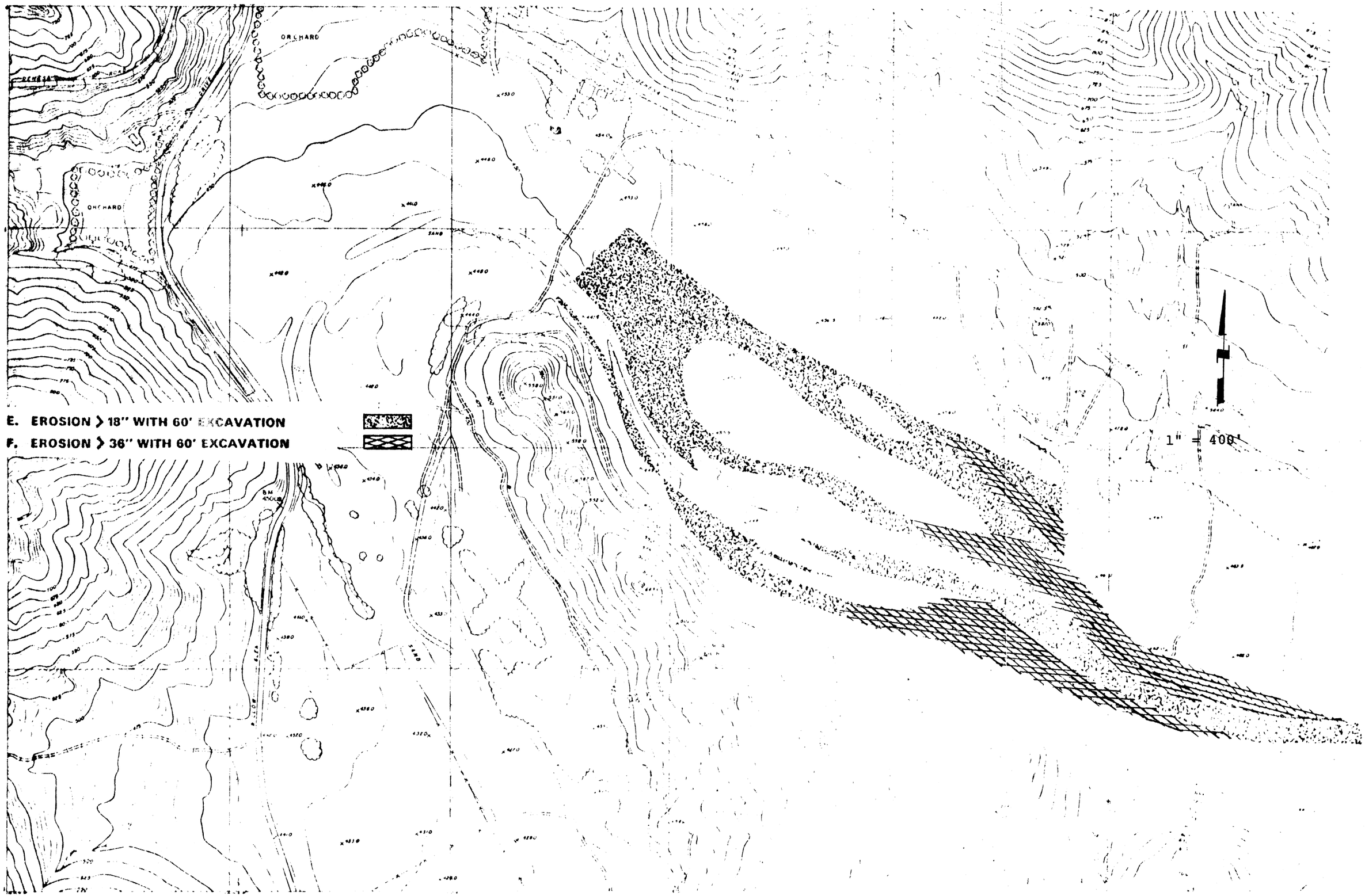
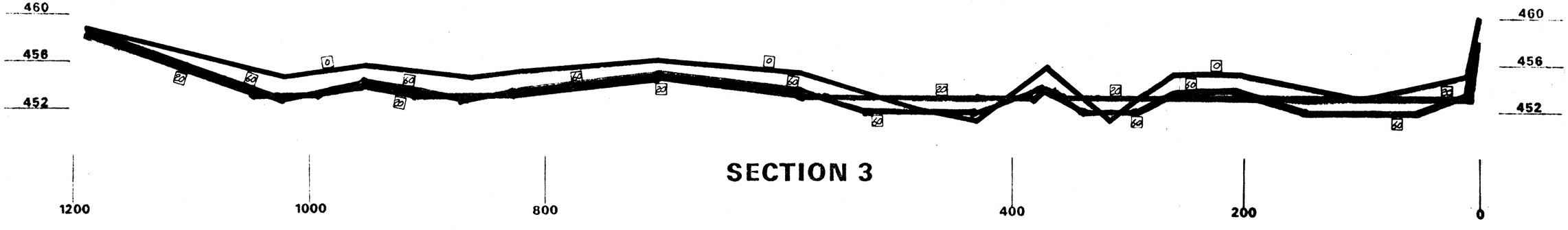
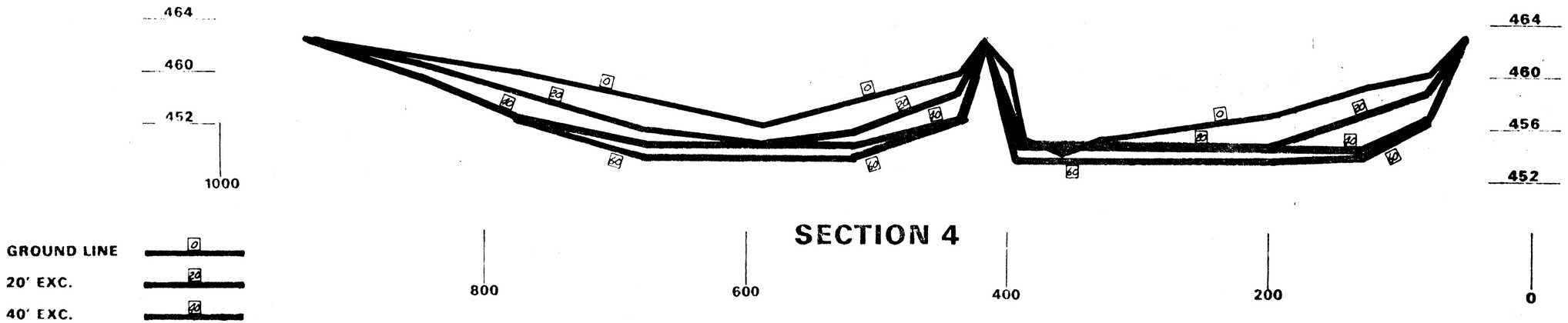

ORCHARD
ORCHARD
SAND
BM
450.8
E. EROSION > 18" WITH 60' EXCAVATION
F. EROSION > 36" WITH 60' EXCAVATION
1" = 400'

Figure No. 2C

DOWNSTREAM EFFECTS OF EXC. AT SAND PLANT
100 YR FLOOD



SECTION 3



SECTION 4

SCALES

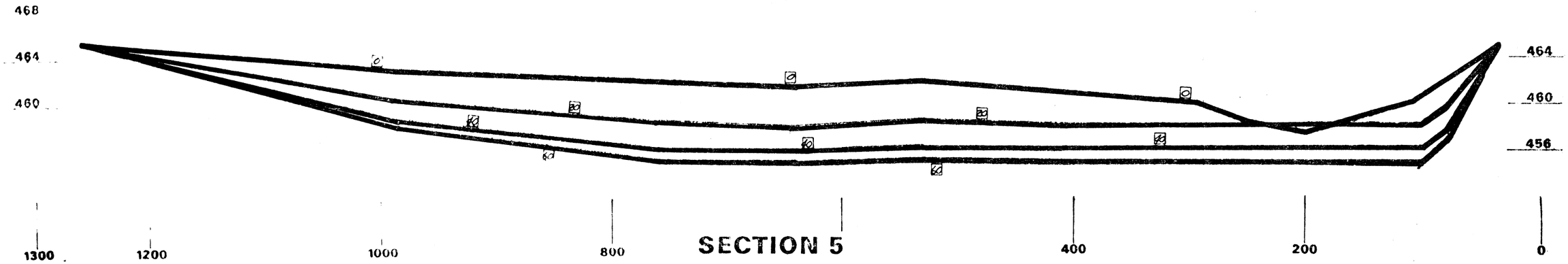
HOR. 1" = 80'
VERT. 1" = 8'

HIRSCH & KOPTIONAK

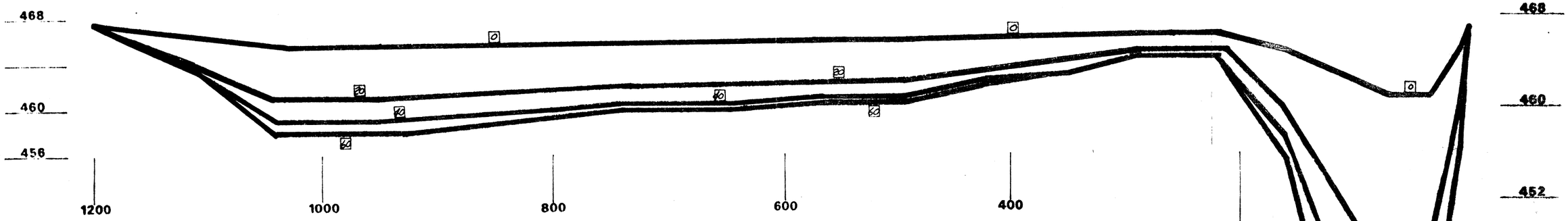
7-19-74

Figure No. 2D

DOWNSTREAM EFFECTS OF EXC. AT SAND PLANT
100 YR FLOOD



SECTION 5



SECTION 6

GROUND LINE
20' EXC.
40' EXC.
60' EXC.

SCALES
HOR. 1" = 80'
VERT. 1" = 8'

HIRSCH & KOPTIONAK

7-19-74

Figure No. 2E

Figures 2A, 2B, and 2C are extrapolations of the report which indicate theoretical erosion or depostion on the golf course property.

Figures 2D and 2E show several of Dr. Chang's sections taken across the thalweg. These illustrate the gradually decreasing erosive effect downstream of the deeper excavations. At Section 3, the most remote, the effects of 20', 40', and 60' excavations are nearly identical with the 20' erosive effect being theoretically greater than the 60' in some areas.

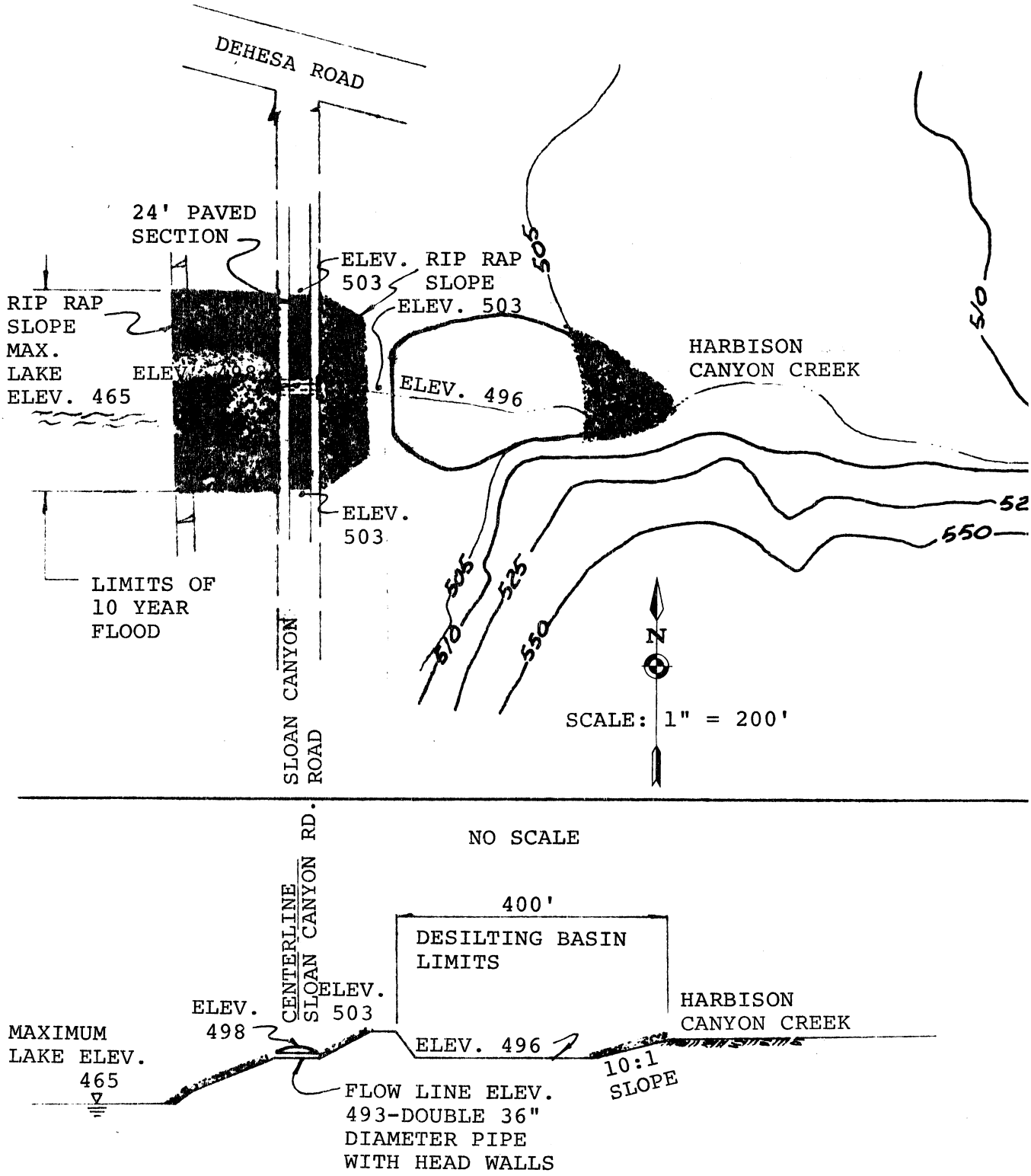
Upstream desilting basins and the long reach of the lake will purposely trap most of the sediment load of the stream resulting in a clean discharge onto the golf course property. This runoff will be inclined to pick up more sediment than it deposits. However, hydraulic sorting, which tends to coarsen the bed material as erosion occurs, will alleviate this problem in time and tend to provide channel stabilization. A stream with a balanced load will generally deposit as much material as it picks up but seldom in the same place, and areas that are vulnerable to scour, such as a deposit of sediment or the bank of a stream, will suffer erosion regardless of the balance or imbalance of the stream's load.

The benefits from the discharge of clean, silt free water at the westerly end of the lake and the elimination of problems that would occur from massive depositions of silt in an unprotected stream must be considered when analyzing the effects of possible downstream erosion.

Protective devices will be installed in vulnerable areas to minimize the effects of headward erosion as the work approaches these points. The operational phase of the project (Sand Mining Phase) will extend approximately 15 years, grading plans will be submitted for approval periodically to cover pertinent stages of the operation. These grading plans will follow guidelines established by the specific plan and in addition provide design criteria and precise construction details of these facilities. The specific locations are at the confluences of Harbison Canyon Creek and the North Fork with the Sweetwater River.

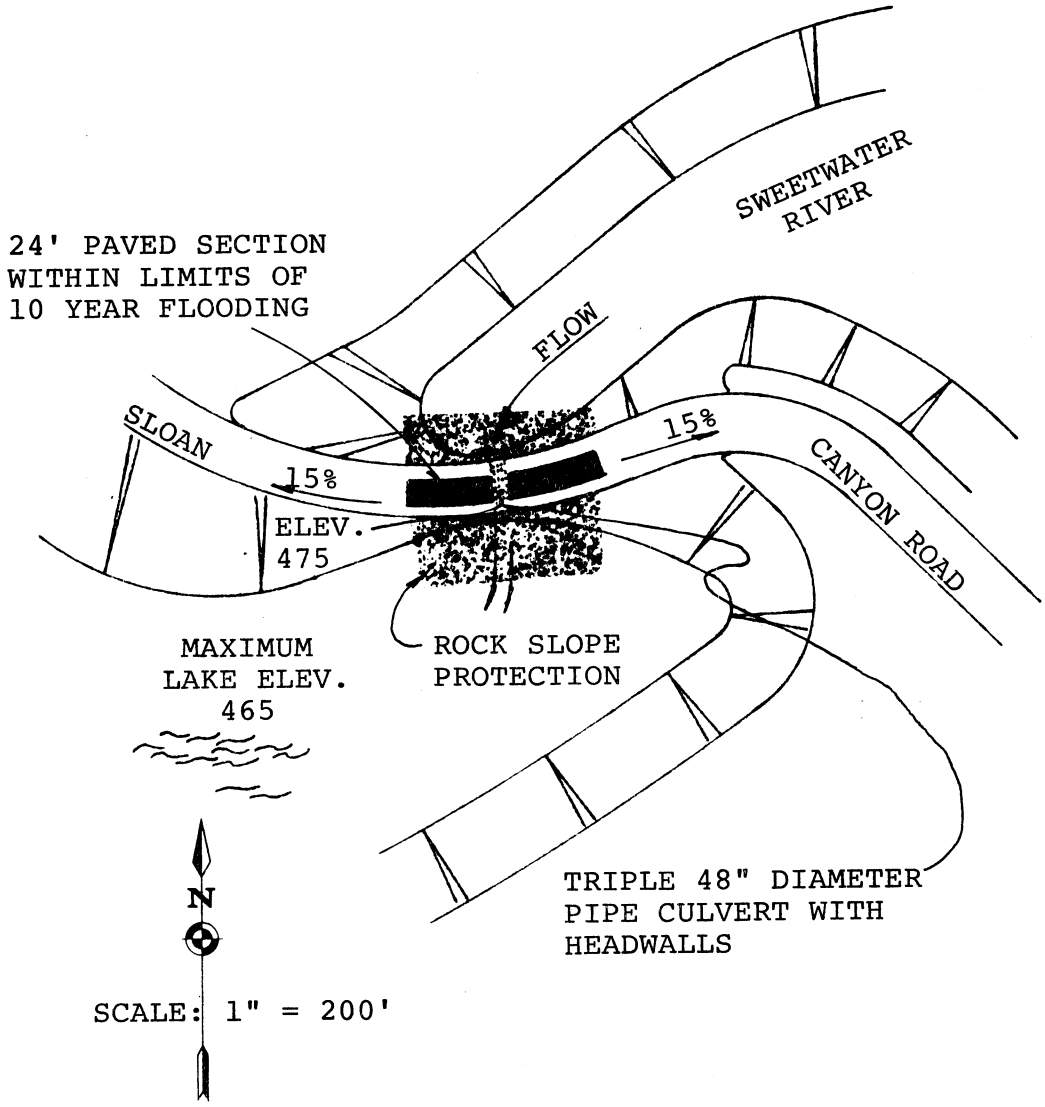
Figures 3 and 4 illustrate proposed ford and culvert construction at the Sloan Canyon Road crossing of Harbison Canyon Creek and Sweetwater River. These facilities will be designed to provide a dry crossing under minor run-off conditions and to confine the breakover of a 10 year flood within the limits of the paved section of roadway. Headwalls will be installed on the culvert systems and rock slope protection will be placed on slopes subject to erosion. The precise design details will be shown on the grading plans.

The sequence of construction of these drainage crossing facilities is shown on Exhibit A (Operation Plan).

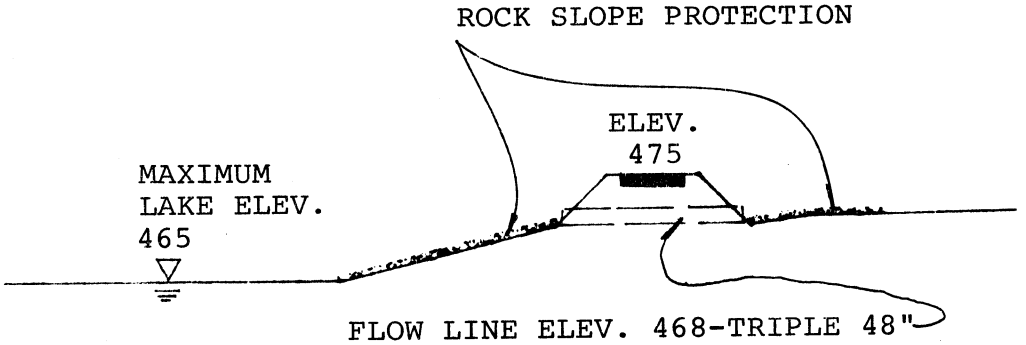


PROPOSED FORD AND CULVERT STRUCTURE
WITH DESILTING BASIN AT HARBISON
CANYON CREEK AND SLOAN CANYON ROAD
SEE EXHIBIT "A" FOR SCHEDULE OF CONSTRUCTION

FIGURE 3



NO SCALE



FLOW LINE ELEV. 468-TRIPLE 48"
DIAMETER PIPE CULVERT WITH HEADWALLS

PROPOSED FORD AND CULVERT STRUCTURE
AT SWEETWATER RIVER AND SLOAN CANYON ROAD
SEE EXHIBIT "A" FOR SCHEDULE OF CONSTRUCTION

FIGURE 4

Silting Basins

As the mining operation progresses upstream on the Conrock/Fenton property sequential construction of desilting basins at points of inflow will be undertaken to minimize sediment discharge into the lake. Specifically, these locations are upstream from the Sloan Canyon Road crossing with Harbison Canyon Creek and the Sweetwater River. The design criteria and construction details of these facilities, which are shown on Figures 3 and 4, will be shown in greater detail on the grading plans.

Slope Stability

The stability of the excavation of side slopes on the Conrock/Fenton property has been analyzed by Woodward-Gizienski & Associates under both static flooding and earthquake conditions. The materials were assumed to consist of clean, cohesionless sandy soil with an angle of repose (constant volume angle of internal friction) of 30^{o}.

Results of the analysis indicate that slopes will be stable at an inclination of 1.7 to 1 with the 100 year design flood. The decrease in slope inclinations is due primarily to the additional erosive forces from moving water.

The analysis also included the effects of a 0.1 g seismic shock acting normal to, and away from, the slope. The effects of flooding were not included due to the extremely low probability of a simultaneous flood and earthquake. This indicated that a

stable slope inclination was 2.5 to 1 when the 0.1 g force was applied.

Analysis of Groundwater Conditions

During the period of June 17 to 26, 1974, test borings were made on the Conrock/Fenton property, by Woodward-Gizienski & Associates, to install sixteen well points in the vicinity of the three existing wells that were pump tested. These well points have been designated as piezometers (1 through 16).

The names of the three wells are Immenschuh, Ferry and Dehesa Valley. Location of the wells are shown on Figure 5. Location of the test borings in relation to the wells and drawdown characteristics are shown on Figures 49 through 59.

Alvarado Soils Engineering, in March 1974, analyzed the effect of the Groves operation on the flow of groundwater through the project area. Their report was reviewed by Dr. Richard L. Threet, Registered Geologist No. 340 on July 11, 1974. Of primary concern was the effect of possible plugging of the aquifer at the Groves-Singing Hills boundary.

Conclusions were:

1. It was determined that peak momentary usage by the Singing Hills Golf Course was on the order of 2,000 gallons per minute or a maximum daily consumption on the order of 1 million gallons. Doubling this to 2 million gallons per day is a liberal estimate of downstream requirements.
2. The permeability and comparable values derived by relating mean grain size and permeability (Davis and de Wirst, 1966,

Hydrogeology) indicate that the alluvial cross section has an average permeability of about 200 meinzers (200 gpd/ft^2 under unit gradient). At least 10,000 square feet of the cross section of the sand deposits will not be disturbed in the extraction process and that a gradient of 3% would provide adequate head to maintain the required flow rate through this section. Additionally, the walls of the sand pit would transmit groundwater. The downstream end of the completely excavated sand pit would have an alluvial cross section below the water table of approximately 30,000 square feet and the sidewall area would raise the total seepage cross section to at least 100,000 square feet.

3. Even if the permeability of the alluvial walls of the pit is reduced an entire order of magnitude by plugging of pores by fines derived from sand washing a head of only 2 to 3 feet would be required to percolate about 1 million gallons per day through the pit area to downstream users.
   The water that would appear to be merely standing in the sand pit and trapped upstream, would actually be moving through the alluvial reach and on down to the golf course wells, precisely as water in existing sand pits in Mission Valley, lower Sweetwater Valley, and in other alluvial valleys in this region is freely interconnected with the water table and zone of saturation in the adjacent alluvial deposits on all sides.
4. The groundwater resources of the downstream riparian owners will be essentially unaffected by the project.

GEOLOGY AND ANALYSIS OF GEOLOGIC CROSS SECTIONS

In order to evaluate the general subsurface geological condition and estimate the cross sectional area of the aquifer, soils investigations were conducted by Woodward-Gizienski & Associates on the Conrock/Fenton site and by Alvarado Soils Engineering on the Groves site. Figure 5 is a composite map showing the locations of these exploration borings. Logs are shown on Figures 8 through 48 (beginning page B-58, following text).

Three geologic profiles across the valley floor were investigated; one in the vicinity of each of three wells located within the study area. These investigations and previous investigations revealed that there are generally four major geologic units present on site. These are, from youngest to oldest, Quaternary Alluvium, Quaternary Slope Wash, and two weathered Plutonic Crystalline rock masses. A general description of each geologic unit and its area of occurrence on site is given below.

Alluvium

Quaternary age alluvial deposits are generally confined to the major river valleys. Subsurface borings and tests on selected samples indicate that the alluvial material consists largely of fine to medium grained sand and silty sand with scattered thin interbeds of silt and gravel. Test borings indicate that, in general, immediately overlying the bedrock is a zone of larger boulder sized gravel. Analyses of the geologic cross-sections

reveals that approximately 50% of the alluvium in the Sweetwater River Valley within the Conrock/Fenton property is at present saturated. Depths of alluvium are variable with the maximum depth being encountered at 70 ft. in Boring No. 7 (Fig. 18 and 19). Alluvial deposits within the Dehesa Valley are considerably different than in the Sweetwater River Valley. Dehesa Valley alluvium is at present nonwater-bearing and varies from 4 to 15 ft. thick, with the general classification of brown silty fine sand and overlies Pleistocene slope wash deposits. The alluvial deposits in the Sweetwater River Valley comprise the major aquifer on site, with groundwater occurring within intergranular spaces.

Slopewash Deposits

In the context of this report, slopewash is an all inclusive term refering to all other Pleistocene deposits on site. These deposits are generally composed of brown to red brown silty sand with interbeds of clay and gravel. The deposits are generally located along the valley walls in the Sweetwater River Valley and appear to be discontinuous across the valley. In the Dehesa Valley, these older deposits underlie the alluvium to a maximum depth of 55 ft. in Boring No. 10 (Fig. 23 and 24). Groundwater within the slopewash deposit appears to be of marginal quality and generally clean sand was encountered indicating a probable source of groundwater.

Granitic Rock

Two distinct granitic rock units were observed on site consisting of a mafic quartzdiorite and a granodiorite. Geologic profile borings encountered highly weathered granitic units at variable depths in both the Dehesa and the Sweetwater River Valley. The granitic rock is in part saturated with intergranular water occurring in the residuum and freewater occupying fractures.

PIEZOMETER INSTALLATION, GROUNDWATER LEVEL MONITORING AND PUMP TESTING

Piezometers were installed at three well locations to monitor groundwater levels.

The three well sites are; (1) a 14 in. diameter well at the abandoned Ferry Brothers Sandpit; (2) a 12 in. diameter well presently supplying water at Dr. Immenschuh's Ranch at the western end of the property; and (3) a 9 in. diameter well approximately 700 ft. east of the Sloan Canyon road in the Harbison Canyon Creek bottom.

Ferry Brothers Well

The Ferry Brothers Well is located near the center of the Sweetwater River Valley, generally west of the intersection of the North Fork with the main Sweetwater River. A partially filled sand pit is located approximately 100 ft. north of the well. The Ferry Well consists of a 14 in. diameter casing that was sounded to a depth of 38 ft. below the existing ground surface. The loca-

tion and size of well casing perforations are unknown at present. A soil boring (Fig. 25 and 26), approximately 7 ft. south of the well indicates that clean to slightly silty sand extends from the ground surface to a depth of 44 ft., where a more silty sand was encountered to a depth of 54 ft. Large gravels and boulders impared the drilling until refusal of the 8-in. diameter, continuous flight auger was reached at a depth of 56 ft.

Five piezometers were installed at the site to evaluate the movement of subsurface waters. Typical piezometer construction is shown on Fig. 6.

Pump testing of this well was done starting July 8, 1974 and ending on July 11, 1974. A series of piezometer level measurements were made starting on June 23, 1974. Pump installation and electrical generators were provided for this operation.

Dehesa Valley-Harbison Canyon Creek Well

This well is located in the Dehesa Valley east of the confluence with the Sweetwater River. The well is 9 in. in diameter and approximately 54 ft. deep. Information about perforations of the casing was not obtained. A test boring, Figs. 31 and 32, adjacent to the well indicates that an interbeded sequence of brown silty sand and clay underlies the site to a depth of approximately 23 ft. Light brown sand and silty sand were encountered from 23 to 50 ft. At 50 to 56 ft., a brown silty fine sand, interpreted to be a remnant topsoil, was disclosed by the test boring. Highly

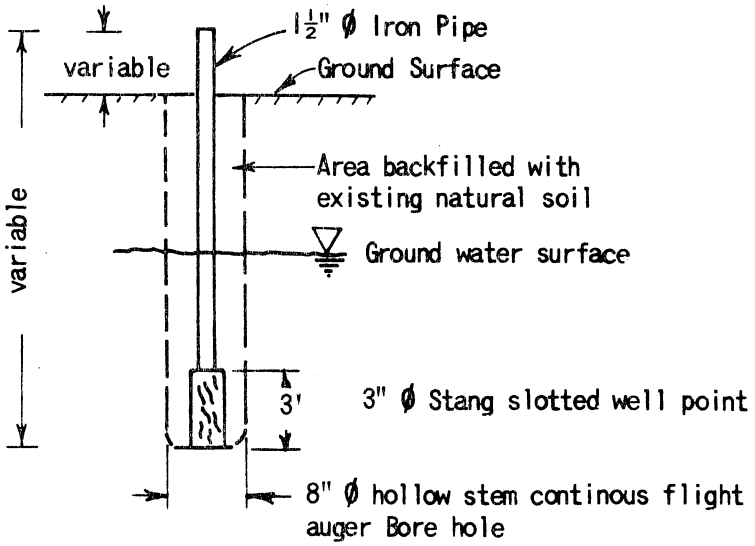
weathered granitic rock (most probably mafic quartzdiorite) was encountered at a depth of 56 ft.

Water level readings were initiated on piezometer number 1 on June 23, 1974, with readings of the remaining piezometers starting prior to June 26, 1974. Pump testing of the well was started on July 9, 1974, at a rate of approximately 3 gallons per minute, the total capacity of the well. Pumping was discontinued on July 11, 1974. Piezometers adjacent to the pumped well did not indicate a sufficient groundwater level change to permit interpretation of the data.

Immenschuh Well

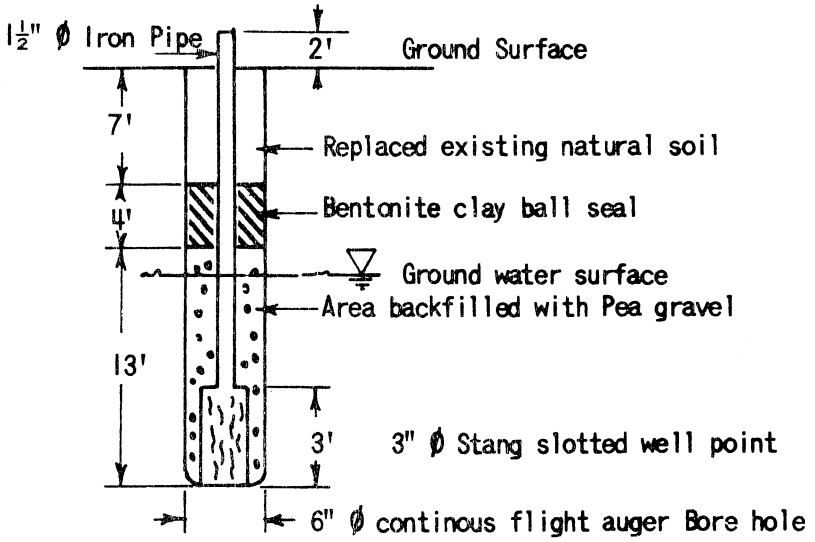
The Immenschuh Well is located on the south side of the Sweetwater Valley near the western property line. The test well consists of a 12 in. diameter casing equipped with a submersible pump. The well owner indicated that the well was approximately 57 ft. deep. No records were available as to the location and size of well casing perforations. A sample boring, Figs. 33 and 34, was drilled adjacent to the well for subsurface information. This boring indicates generally clean sand extends to a depth of approximately 64 ft. where highly weathered granitic rock was encountered. Five piezometers were installed to monitor the groundwater levels. Piezometer level readings were initiated on June 26, 1974. The well when pumped to a rate of approximately 60 gpm created no interpretable drawdown in the nearby piezometers.

TYPICAL PIEZOMETER CONSTRUCTION



Ferry Piezometers 1-5, Dehesa Piezometers 1-5, and Immenschuh Piezometers 2-5

Figure 6A



Immenschuh Piezometer 1

Figure 6B

TABLE I

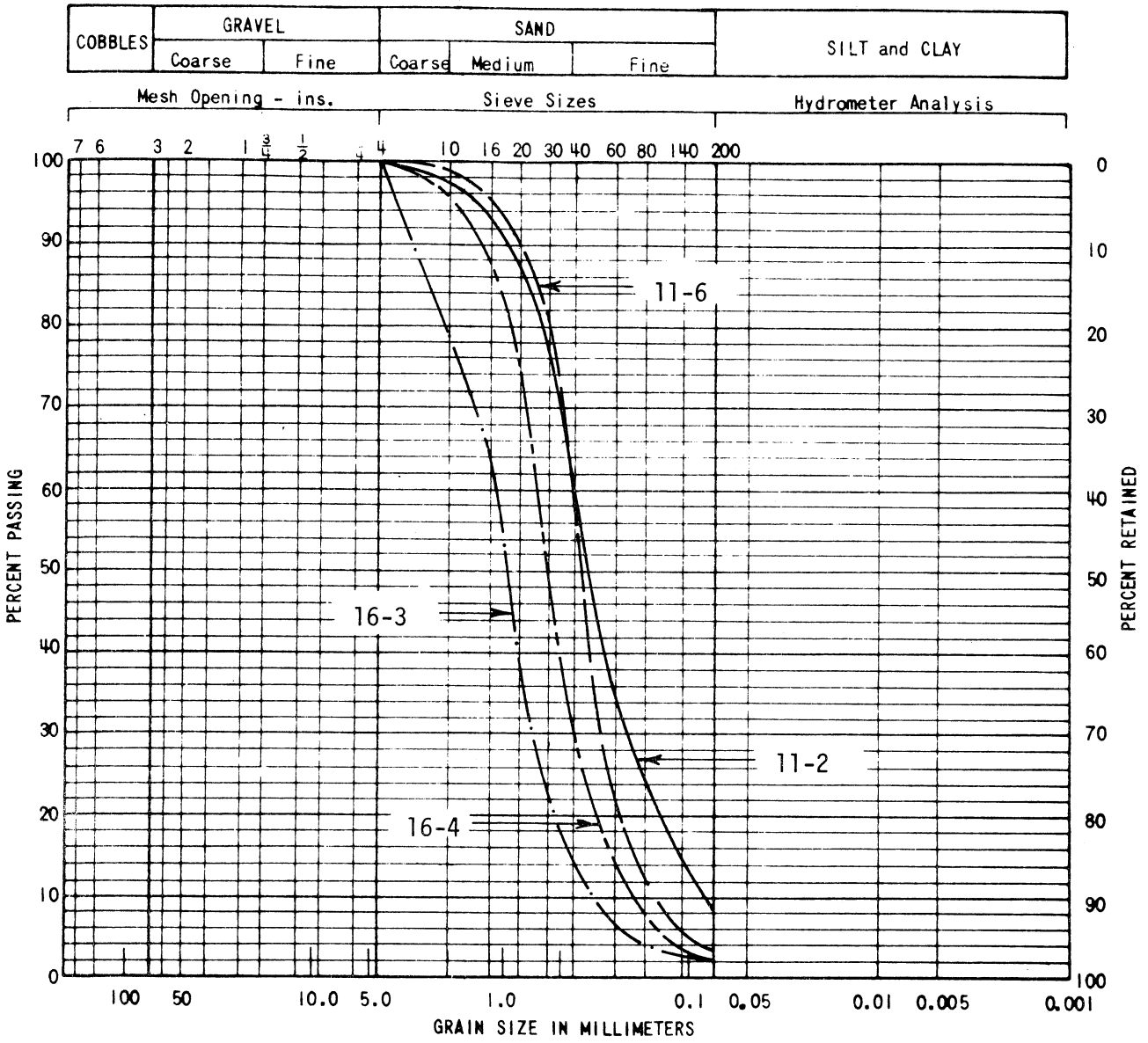
GROUND SURFACE AND REFERENCE ELEVATION

Well	Piezometer	Elevation		6/27/74
		Top of Csg	Ground	Groundwater Level
Ferry		513.57	509.55	
	1	511.58	509.00	489.0
	2	511.67	509.38	488.8
	3	510.70	508.94	488.9
	4	510.60	509.70	489.0
	5	515.49	514.26	489.4
Harbison Canyon		507.77	506.82	
	1	508.69	508.48	479.9
	2	507.15	506.26	481.2
	3	509.67	506.76	481.4
	4	508.91	507.37	481.1
	5	505.65	-	481.5
Immenschuh		481.07	480.82	
	1	480.72	479.43	465.0
	2	479.90	479.60	465.4
	3	478.80	478.21	465.4
	4	480.43	480.19	465.8
	5	477.74	477.40	465.7

Water Resources

The Sweetwater River alluvium is the major aquifer on site. This unit has two general sources of water for available recharge; one source, Loveland Reservoir, man controlled; and the second, natural precipitation and runoff. Natural recharge is derived from the drainage area below Loveland Reservoir, the North Fork of the Sweetwater River, and the area drained by Harbison Canyon Creek in Dehesa Valley. The groundwater in the alluvium is tending to flow downstream. It is probable that in the recent historic period prior to the construction of Loveland Reservoir that the groundwater surface was generally parallel to the existing ground surface. The construction of the reservoir in 1945 has reduced significantly the surface flow and groundwater recharge causing the groundwater surface in the upper region of the area to decline.

Pump testing at the Ferry Well, Fig. 52, indicates a transmissivity of the aquifer that varies from 75,000 to 105,000 gallons per day per foot, with an average value of 91,000 gallons per day per foot as being the best estimate for value of transmissivity. Solutions to transmissivity, permeability, and storage coefficient for the Ferry Well test are shown on Figs. 52 through 59. The storage coefficient of the Sweetwater River alluvium is, by test results, 0.24. Using permeability defined as transmissivity divided by aquifer thickness gives an average value of 2,300



SAMPLE	CLASSIFICATION AND SYMBOL	*LL	*PI
11-2	Silty sand (SM-SP)		
11-6	Sand (SP)		
16-3	Sand (SP)		
16-4	Sand (SP)		

*LL = Liquid Limit
*PI = Plasticity Index

GRAIN SIZE DISTRIBUTION CURVES
COMPARISON OF IMMENSCHUH WELL TO FERRY WELL
CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: ---	PROJ. NO: 74-119A
CK'D BY:	DATE: 7-2-74	FIGURE NO: 7

gallons per day per square foot for the permeability of the Sweetwater River Alluvium. A comparison of grain size curves, Fig. 7, from the Ferry Well and Immenschuh Well reveal a general similarity with the Immenschuh Well being slightly coarser grained and containing less fine material. Considering this, a permeability and transmissivity equal to or greater than the Ferry Well is most probably present at the Immenschuh Well. For design purposes a transmissivity of 90,000 gallons per day per foot and a permeability of 2,300 gallons per day per square foot are considered reasonable.

Water Quality

Samples of water were taken from each well during the pump test and at the Ferry Pond to evaluate the general water quality and the coliform bacteria present. These samples were taken at the closest discharge point for the well, and from the near surface of the pond. The mineral and bacteria samples were obtained from the same location at approximately the same time with the bacteria sample being taken slightly later than the water samples. Samples were delivered to the testing laboratory within 2 hours of sampling. The water samples were analyzed for dissolved minerals and bacteria by Environmental Engineering Laboratory. Laboratory analyses are shown on the attached analysis and summarized on Table II. On the basis of general water quality, the groundwater at the site can be segregated into two separate units. A Sweetwater River unit, and a Dehesa Valley unit. Dehesa Valley groundwater is significantly higher in content of dissolved solids and bacteria. These differ-

ences, in content, can be attributed to the different drainage areas, the higher content of fine grained soils, and to the larger population density in the upstream area. It is estimated that dissolved solids in the migrating groundwater may be concentrated due to the evaporative losses from the lake. In the initial phases of excavation, evaporative losses will be minor. The completed lake will be fed by both intermittent stream flow and groundwater migration. It is expected that the stream flow would be of better quality (lower TDS) than the migrating groundwater in the valley fill. No attempt has been made to extend the proposed water budget for the site to include an estimate of the downstream migrating groundwater quality on completion of the lake, which will enhance the quality of downstream groundwater. During the installation of the piezometers, a record of the existing groundwater temperature was made as indicated in the following table.

TABLE II

SUMMARY OF WATER QUALITY DATA

		Ferry Well mg/l	Ferry Pond mg/l	Immenschuh Well mg/l	Dehesa Well mg/l
Cations:					
Calcium	Ca	68	44	62	72
Magnesium	Mg	15	18	15	26
Sodium	Na	83	85	80	130
Potassium	K	2.2	2.0	1.9	2.2
Anions:					
Hydroxide	OH	0	0	0	0
Carbonate	CO_3	0	18	0	0
Bicarbonate	HCO_3	210	128	201	207
Sulfate	SO_4	44	48	54	68
Chloride	Cl	129	125	109	218
Nitrate	NO_3	2.3	0	0	26
Boron	B	0.02	0.02	0.02	0.02
Silica	SiO_2	20	13	21	56*
Iron	Fe	0.03	0.08	0.10	0.12
Manganese	Mn	0	0	0	0
Ortho Phosphate	PO4	0.04	0	0.04	0.08
Nitrate	N	0.52	0	0	5.8
Total Alkalinity	$CaCO_3$	172	135	165	170
Total Hardness	$CaCO_3$	230	185	215	287
Dissolved Solids		480	440	436	732
pH		7.20	8.79	7.03	7.04
Conductivity (microhms/cm @ 25°C)		830	740	760	1150
Coliform, MPH/100 ml.		5.1	2.2	<2.2	>16

TABLE III

GROUNDWATER TEMPERATURES

Location	Depth of Measurement Below Ground Surface	Temperature Prior To Pump Testing	Temperature After Pump Testing
Ferry Pond	Near Surface	25°C	--
Ferry Well	37.3'	17.5°C	17.5°C
Ferry Piezometer #1	28.6'	19.5°C	--
#2	28.7'	20°C	--
#3	28.3'	19°C	--
Immenschuh Wall	42'	--	18°C
Dehesa Piezometer #1	25.6'	20.5°C	--
#2	30'	21°C	--
#3	34.2'	21°C	--
#4	42.5'	21°C	--

Groundwater Data Collection System

A groundwater monitoring system, consisting of several piezometers, has been set up before the start of the proposed excavation to establish the historic position and fluctuations of the groundwater surface. Monitoring the several existing piezometers at key locations in the area periodically will provide information of the groundwater conditions. Dehesa Valley-Harbison Canyon Creek piezometers will generally indicate the addition and withdrawal of groundwater from this area. Piezometers at the Immenschuh Well and the Groves westerly property line will define the groundwater level at the eastern margin of the property. Monitoring of piezometers at the Ferry Well may reveal the addition of groundwater from crystalline rock and will determine the piezometric surface near the midpoint of the property. The measurement of the groundwater surface will be on a regular basis, with an interval between readings not exceeding 1 calendar month. The appropriate County offices will be provided copies of these measurements.

WATER BUDGET

The site will, on the average, receive from the Sweetwater River drainage approximately 770 acre ft. per year of water as runoff. This water, for purposes of analysis, is considered delivered to the site as total surface flow across the southern margin of the property. Additional surface flow waters enter the

water budget from the North Fork of the Sweetwater River, amounting to approximately 260 acre ft. per year, and the Dehesa Valley, at 240 acre ft. per year.

Pump tests and geologic profile data indicate that, at present, groundwater underflow of approximately 300 acre ft. per year is occurring in the alluvium past the westerly boundary of the project site.

In order to determine that enough water is available to fill and maintain the lake at a reasonable level a comprehensive study of hydrologic conditions relative to the site was made in August, 1975, by Dr. William J. Ganus, Registered Geologist #3200. The report in its entirety is as follows:

AN ANALYSIS OF HYDROLOGIC DATA RELATED TO THE OPERATION OF A GROUNDWATER LAKE ON THE SWEETWATER RIVER, SAN DIEGO COUNTY, CALIFORNIA

Introduction and Summary

A coordinated fifteen-year sand extraction plan has been proposed by CONROCK CO., H.G. Fenton Material Co., and S. J. Groves and Sons Co. for the Sweetwater Riverbottom near Sloan Canyon Road. Such an operation would create a large groundwater lake which could have aesthetic and economic benefits associated with it if it could be maintained.

This report addresses the water-related problems which are expected to be encountered during the sand extraction process, and following the project when a lake is to be maintained.

Topics analyzed herein are:

1. Amount of groundwater in storage compared to the volume requirement for the desired lake level of 460 feet elevation.
2. Annual water budget for maintenance of the lake.
3. Analysis of historical rainfall and runoff data.
4. Water level fluctuations and overflows for a hypothetical lake at the site, 1915-1973,
5. Significance of the 1946-1974 drought period.

Analyses of each of the above topics, in turn, are summarized below:

1. In a comparison of groundwater volume on-site and final lake volume, it was found that the average annual deficit of water for the 15 year excavation period would be 109 acre-feet; a total of 1,639 acre-feet. However, a wet period of years during the project may satisfy this need entirely, so that a full lake at 460 feet elevation may be achieved.
2. To evaluate the post-project maintenance of the lake elevation, a water budget considering all inflows and outflows was developed. This water budget indicates than an average annual excess of 681 acre-feet of water would occur. In a lake with a surface area of 138 acres, this excess would constitute a water depth of approximately 5 feet.
3. Sufficient historical rainfall and runoff data for Southern California exist to permit an analysis of frequency of occurrence for wet and dry years.
4. If a lake had existed at the site from 1915 to 1973, a maximum lake level decline of 10 feet (465 to 455) would have occurred during the three-year period from 1962 through 1964. However, for 44 years out of the 59-year period (1915-1973), a lake level above elevation 460 would have been naturally maintained.
5. The 27-year dry period, from 1946 to 1973, represents a drought duration which can be expected to occur only once in every 10 drought periods. It is reasonable to assume that this drought period is reaching an end and a wet period of 5 or more years will occur in the near future.

Comparison of Groundwater Volume On-Site and Final Lake Volume

An analysis of water availability for the lake, derived from the excavation operation, is shown below. Time and the probability of rainfall and runoff variations are not considered.

		Acre-Feet	
1.	Conrock-Fenton		
	a. Water yield from excavated sand	770	
	b. Groundwater from surrounding area	72	
	c. Displacement of water by return of non-marketable fines to lake	490	
	d. Subtotal		1,282
2.	Groves		
	a. Water yield from excavated sand	240	
	b. Groundwater from surrounding area	24	
	c. Subtotal		264
3.	Total [(1) (d) + (2) (c)]		1,546
4.	Water consumed by the 15-year operation		985
5.	Water remaining [(3) - (4)]		561
6.	Total volume of lake at 460 ft. elevation		2,200
7.	Water needed for lake [(6) - (5)]		1,639
8.	Per year deficit (15-year project) [(7) ÷ 15]		109

This water analysis was performed merely to show a comparison of the volume of water needed for the lake and the groundwater volume existing at the site. During the project, natural flow in the stream will be captured and thereby reduce the subsequent need for water. If the final years of the project are wet years, it is quite likely that the lake will be filled naturally.

Water Budget for Maintenance of the Lake

A determination of average annual quantities of water entering and leaving the lake vicinity was made and is shown on the following page as inflow and outflow. These values show that for the average year, inflow exceeds outflow by 681 acre-feet. For a lake of 138 acres, this represents a gain of approximately 5 feet of elevation for the average year. However, the rainfall records clearly show that dry years tend to follow dry years and that one wet year can easily balance several dry years in the calculation of the mean.

Analysis of Historical Hydrologic Data

Precipitation

Rainfall records of numerous stations in San Diego County were studied in an attempt to find the best quality record nearest the subject area. The 59-year record at Barrett Dam, approximately 11 miles southeast of the property was selected. The elevation of 1,600 feet and rainfall average of 17.3 inches per year at this site closely correlates with the elevation and precipitation representing the local watershed of the study area.

INFLOW	ACRE-FEET/YEAR
Surface Water	
Sweetwater River	770
North Fork (Sequan Creek)	260
Dehesa Valley (Harbison Canyon Creek)	240
Groundwater Underflow	
North Fork	20
Dehesa Valley	100
Precipitation	
On Lake	172
On Local Watershed of Lake	1,262
TOTAL	2,824

OUTFLOW	
Surface Water	
Sweetwater River	0
Groundwater Underflow	300
Evaporation	
From Lake	759
From Soil	1,062
Transpiration	22
TOTAL	2,143

CHANGE IN STORAGE	
(Difference between Inflow and Outflow)	+ 681

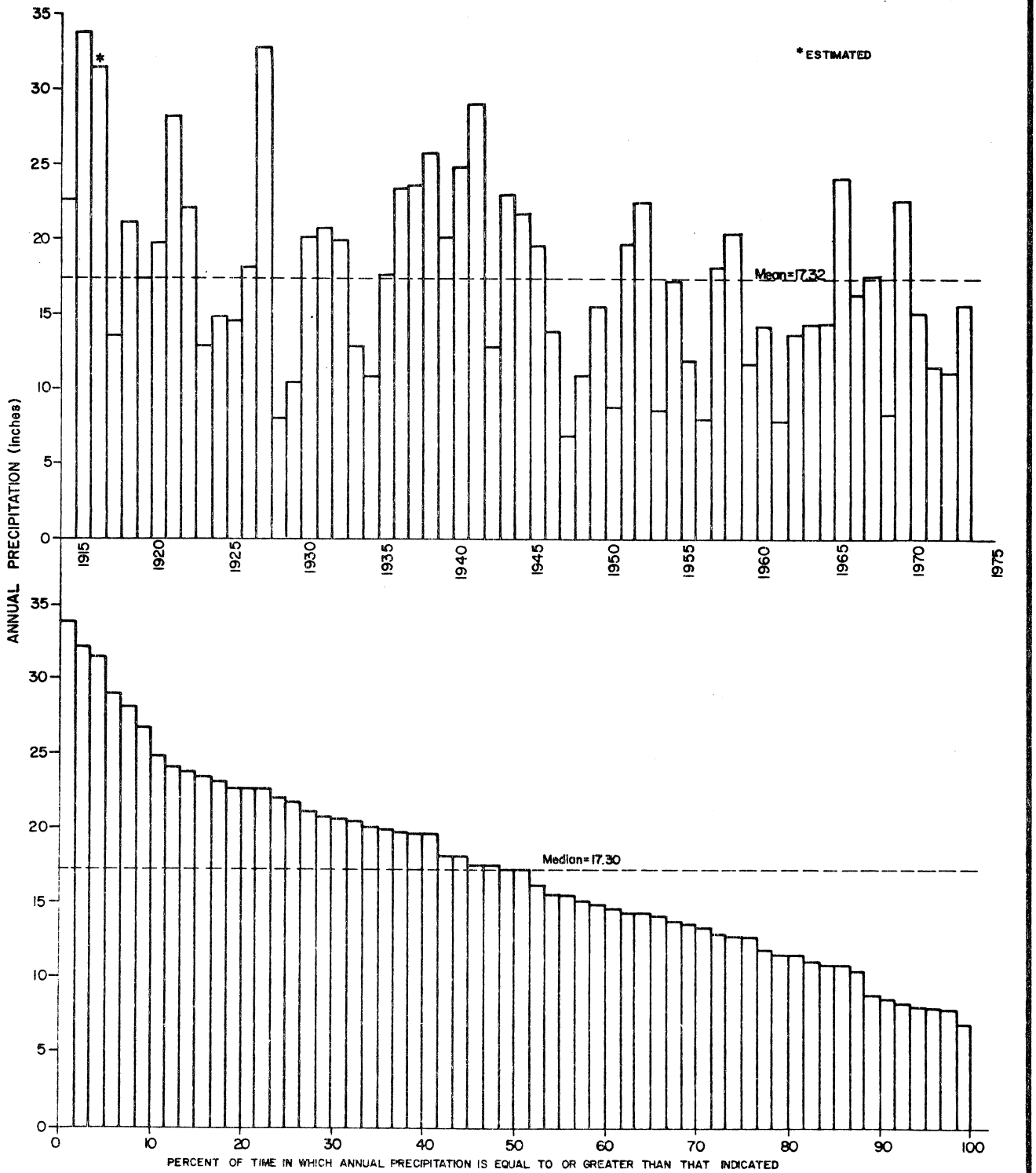
The rainfall record at Barrett Dam is presented in Figure 1. The mean is shown to be 17.32 inches per year. Annual rainfall amounts from the upper graph of this figure are ranked and shown on the lower graph. In this way a median or 50% of the time occurrence can be easily shown. The median was found to be 17.30 inches per year, nearly the same as the mean value.

If this 59-year record can be assumed to be representative of the typical long-term precipitation characteristics, the data can then be used to determine the frequency of occurrence of certain precipitation rates. The percent scale across the bottom graph of Figure 1 can be used to note the rainfall associated with a particular dry year value. For a 20-year event, the rainfall value at 95% is read, showing that 19 out of 20 years will be wetter than 8 inches per year. The 100-year dry event would be the lowest value shown, approximately 6 inches per year.

Although the median value is best to use as a reference to "wet" and "dry" years, the more common usage of these terms is in reference to the mean value. In this report, the reference to wet and dry years or events will be in relation to the mean value. Commonly, the mean and median value for precipitation are approximately the same, however, for runoff the mean is typically much greater than the median.

Runoff

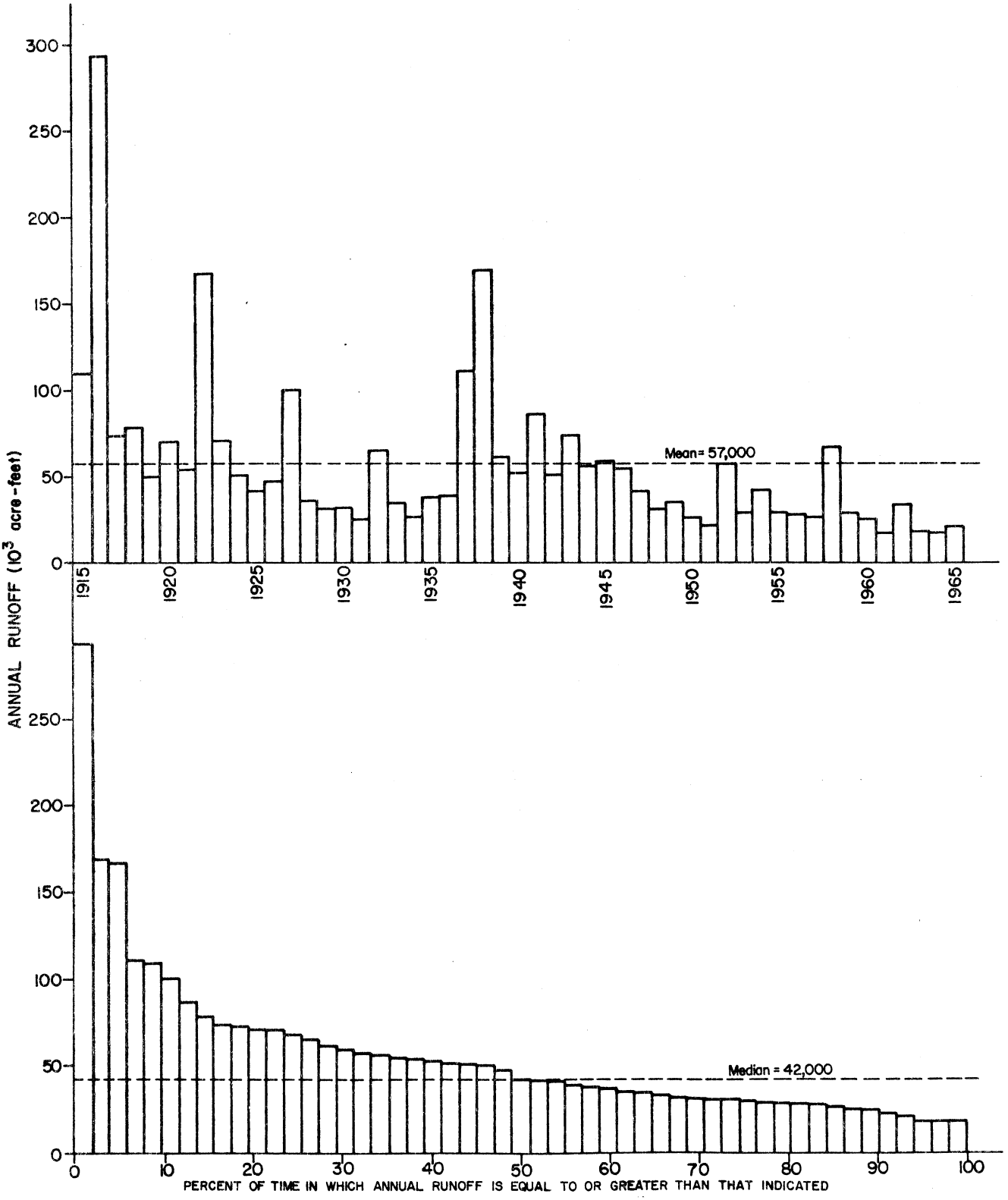
A review of all the runoff records of Southern California resulted in the selection for this study of the record on the



ANNUAL PRECIPITATION
BARRETT DAM, SAN DIEGO COUNTY
1914 THROUGH 1973

WESTEC Services, Inc.

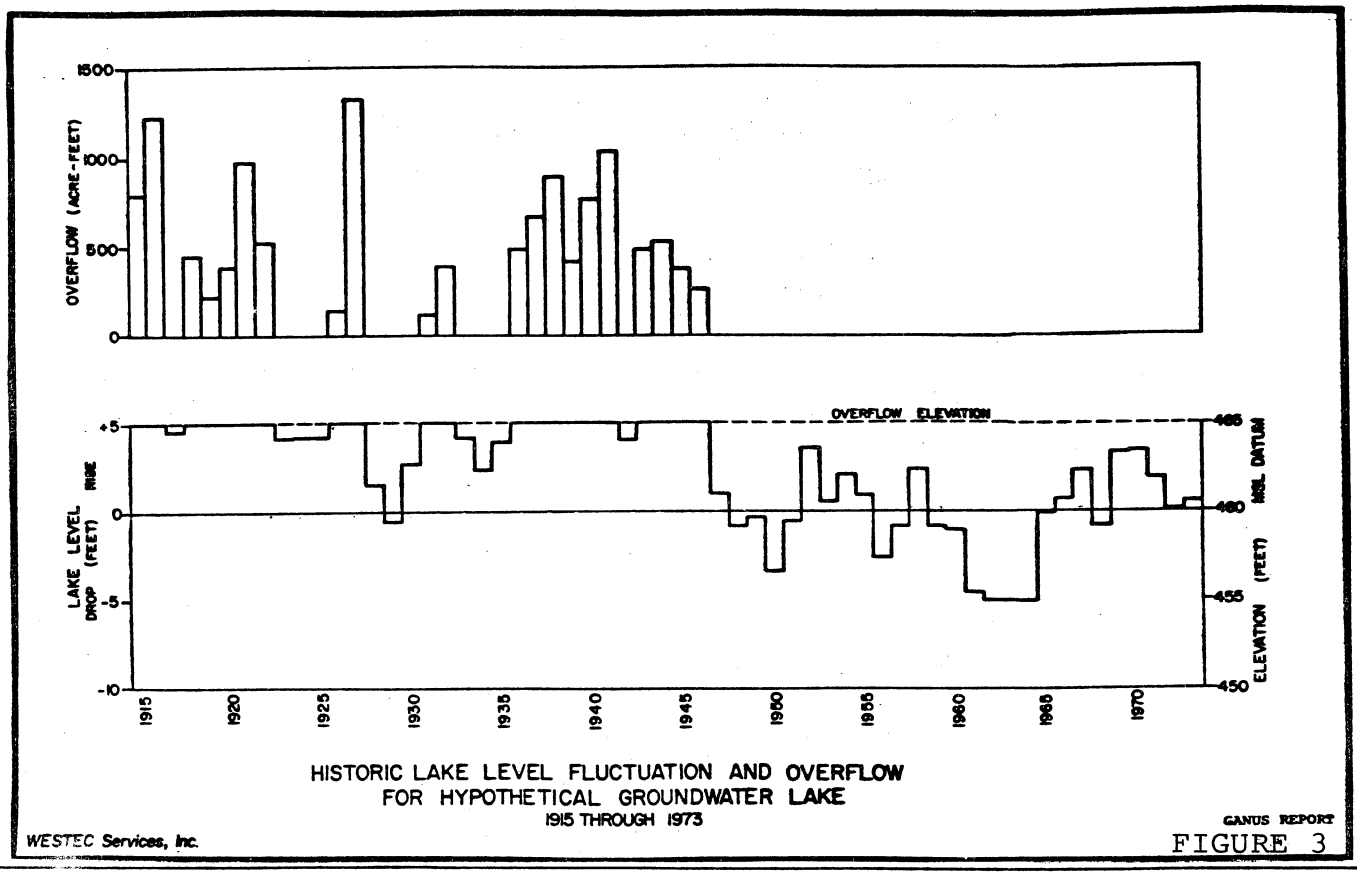
GANUS REPORT
Figure No. 1



ANNUAL RUNOFF
SANTA ANA RIVER NEAR MENTONE, SAN BERNARDINO COUNTY
1915 THROUGH 1965

WESTEC Services, Inc.

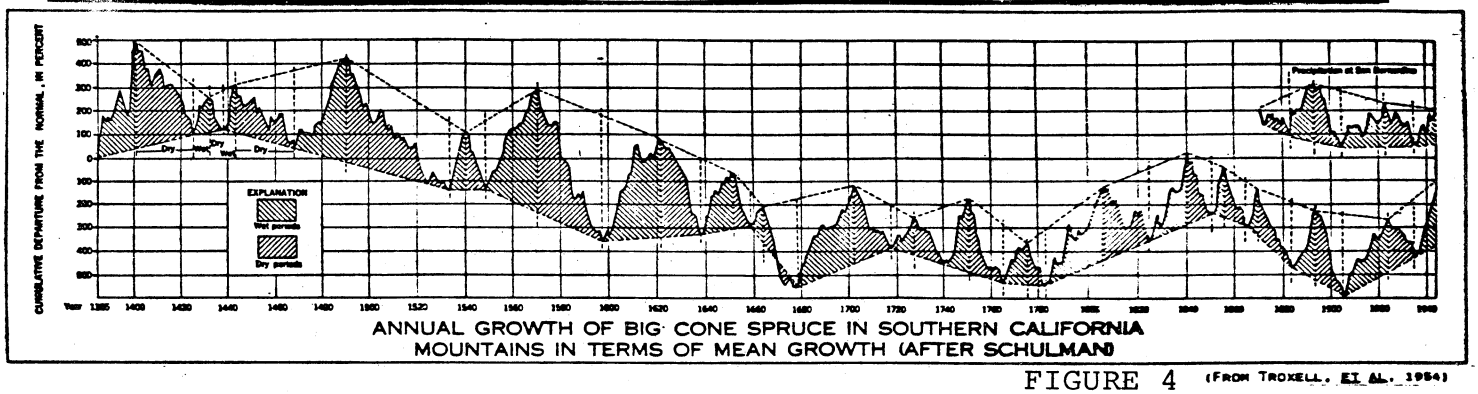
GANUS REPORT
Figure No.. 2



HISTORIC LAKE LEVEL FLUCTUATION AND OVERFLOW
FOR HYPOTHETICAL GROUNDWATER LAKE
1915 THROUGH 1973

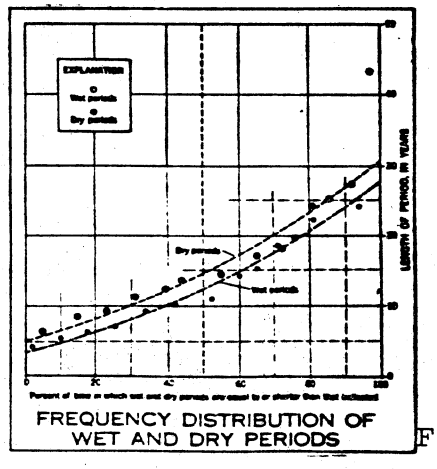
WESTEC Services, Inc.

GANUS REPORT
FIGURE 3



ANNUAL GROWTH OF BIG CONE SPRUCE IN SOUTHERN CALIFORNIA
MOUNTAINS IN TERMS OF MEAN GROWTH (AFTER SCHULMAN)

FIGURE 4 (FROM TROXELL, ET AL. 1954)



FREQUENCY DISTRIBUTION OF
WET AND DRY PERIODS

GANUS REPORT
FIG. 5 (FROM TROXELL, ET AL. 1954)

Santa Ana River near Mentone, in San Bernardino County. Although long-term runoff records were available at Sweetwater Dam, the hydrologic and geologic settings at this site were significantly different than those at the subject area. More than 15 miles of extensive floodplain upstream caused many years of record to show no flow in the stream at Sweetwater Dam. Such would not be the case for the study area; the Santa Ana River site more closely corresponds to the setting at the subject property.

The runoff record for 1915 to 1965 is shown in Figure 2. As evident on this figure, some wet years have been extremely wet whereas dry years have less degree of variability. The mean value for this 50-year record is 57,000 acre-feet per year. As with the precipitation data, the runoff values are assumed to be representative of the long-term runoff characteristics. The values are ranked and the percent of time shown on the bottom graph. A median value of 42,000 acre-feet per year was found.

Combined Precipitation and Runoff

The following table of values were derived from Figures 1 and 2:

Frequency of Occurrence of Dry Years	Percent of Mean Precipitation	Percent of Mean Runoff
1 in 2 yrs.	100	74
3 yrs.	81	56
4 yrs.	74	53
5 yrs.	67	49

Frequency of Occurrence of Dry Years	Percent of Mean Precipitation	Percent of Mean Runoff
1 in 10 yrs.	50	40
20 yrs.	46	33
50 yrs.	41	32
100 yrs.	40	30

The greater variability in runoff, compared to rainfall, is due primarily to the greater percentage of rainfall uptake by the watershed during dry years. This uptake approaches a limit during the rainy season and when it is satisfied or rainfall occurs too intensely for uptake, a greater percentage of the rainfall leaves the area as runoff. As a result, the percent of mean runoff associated with a particular frequency of occurrence will be less than the percent of mean rainfall.

Analysis of Hydrologic Data for Hypothetical Lake

In order to appreciate the variability of the hydrologic events which could affect the maintenance of the lake, an analysis of a hypothetical lake at the site for the period of rainfall record (1915-1973) was made. It was assumed that the initial and desired operating lake level was 460 feet. This elevation of the lake allows 5 feet of storage capability before overflow (465 feet) occurs. The results of the analysis are shown in Figure 3. The upper graph shows the quantity of overflow each time it would have occurred. The lower graph shows the fluctuation of the lake level below the overflow

elevation. It can be seen that the first half of the record is characterized by wet years and much overflow whereas, since 1947, the predominance of dry years would have caused the lake to drop as low as 455 feet.

Significance of the 1946-1974 Dry Period

While predictions about wet or dry years or periods of years cannot be reliably made, the long-term record of rainfall variability, as indicated from tree ring studies, can be helpful in hydrologic analyses.

Figure 4 shows the tree ring growth record of the Big Cone Spruce of Southern California for 1385 to 1942, a period of 558 years. The cyclical nature of wet and dry periods is clearly evident. Twenty wet periods and nineteen dry periods are identified on the graph. In Figure 5, the frequency distributions of these wet and dry periods are shown. The average dry period was found to be 15 years in length, the average wet period 12-13 years in length. The minimum length of wet or dry periods identified in this study was about 5 years. The longest dry period of record occurred from 1490 to 1533, a total of 43 years. This drought was anomolously long and does not statistically fit with the remaining data.

If the rainfall data from Figure 1 were plotted as cummulative departure (similar to the tree ring data) the 1946 to 1973 period would be shown as a 27-year drought. From Figure 5 it can be seen that this length of drought occurs only once in every 10 drought

periods. A logical conclusion from these data would be that this drought period is reaching an end and that in the near future we may expect to enter a wet period of more than 5 years duration. The wet winter of 1974-75 may have been the initial year of a wet period.

William J. Ganus
Registered Geologist No. 3200

Reference

Troxell, H. C., et al, 1954, Hydrology of the San Bernardino and Eastern San Gabriel Mountains, California: U.S. Geological Survey, Hydrologic Atlas HA-1.

GROUNDWATER DRAWDOWN AROUND PERIMETER OF LAKE

It is estimated that at the present time the groundwater level at the mouth of the North Fork is approximately 20 feet below the ground surface and the pit excavation across the mouth of the creek will be 31 feet deep. This pit excavation will result in a lowering of the groundwater level by 11 feet at the edge of the pit and the resultant drawdown curve will extend approximately 600 feet up the North Fork drainage above where no influence should be felt. A similar situation will occur at the upstream end of the proposed pit; however, the depth of excavation will be less and the resultant drawdown should not extend as far upstream.

At the mouth of Harbison Canyon Creek the water table will be lowered approximately 10' (lake level 465') which will result in a drawdown curve extending approximately 500' upstream.

Lowering of the water surface at the three significant locations, Harbison Canyon Creek, The North Fork, and the Sweetwater River, will have no influence on groundwater levels outside of the Conrock/Fenton property.

BY-PASS SWALE

The California-American Water Company intermittently discharges water from their Loveland Reservoir to replenish the supply of Sweetwater Reservoir. This discharge flows through the project site. The Water Quality Control Board waste discharge requirements prohibit discharges of sediments from the project site. Although

California-American Water Company historically discharges on the order of 100 cfs, a swale of considerably more capacity than this will be constructed on the Conrock/Fenton property as shown typically on Figure 62 and on Exhibit "A" (Operation Plan). At the westerly boundary of the Conrock/Fenton property the discharge will be directed into an existing channel and conveyed along the southerly boundary of the Groves pit to the westerly project boundary. Groves will alter the configuration of this by-pass facility on their property as necessary to accomodate their mining operation.

At all times when the discharge is being made concurrent with sand extraction, a means of transfer of this water through the project area consistent with the waste discharge requirements of the Water Quality Control Board will be provided.

LEGEND

MC = Moisture Content in percent of dry weight.

DD = Dry Density in pcf.

BC = Number of blows by 140 pound hammer falling 30 inches to drive sampler 12 inches.

 = Water Level at time of drilling or as noted.

(SM) = Group classification symbol in accordance with the Unified Soil Classification System.

 = California Drive Sample, Pitcher Sample (P), or Shelby Sample (S).

 = Disturbed Sample

Refusal = Unable to extend excavation, practically, with equipment being used in the exploration.

GS = Grain Size Distribution, see figures 7, and 35 thru 37.

LC = Laboratory Compaction Test.

CC = Confined Compression Test.

CT = Consolidation Test.

ST = Loaded Swell Test.

PI = Plasticity Index, see figure 35.

UCS = Unconfined Compressive Strength in psf,

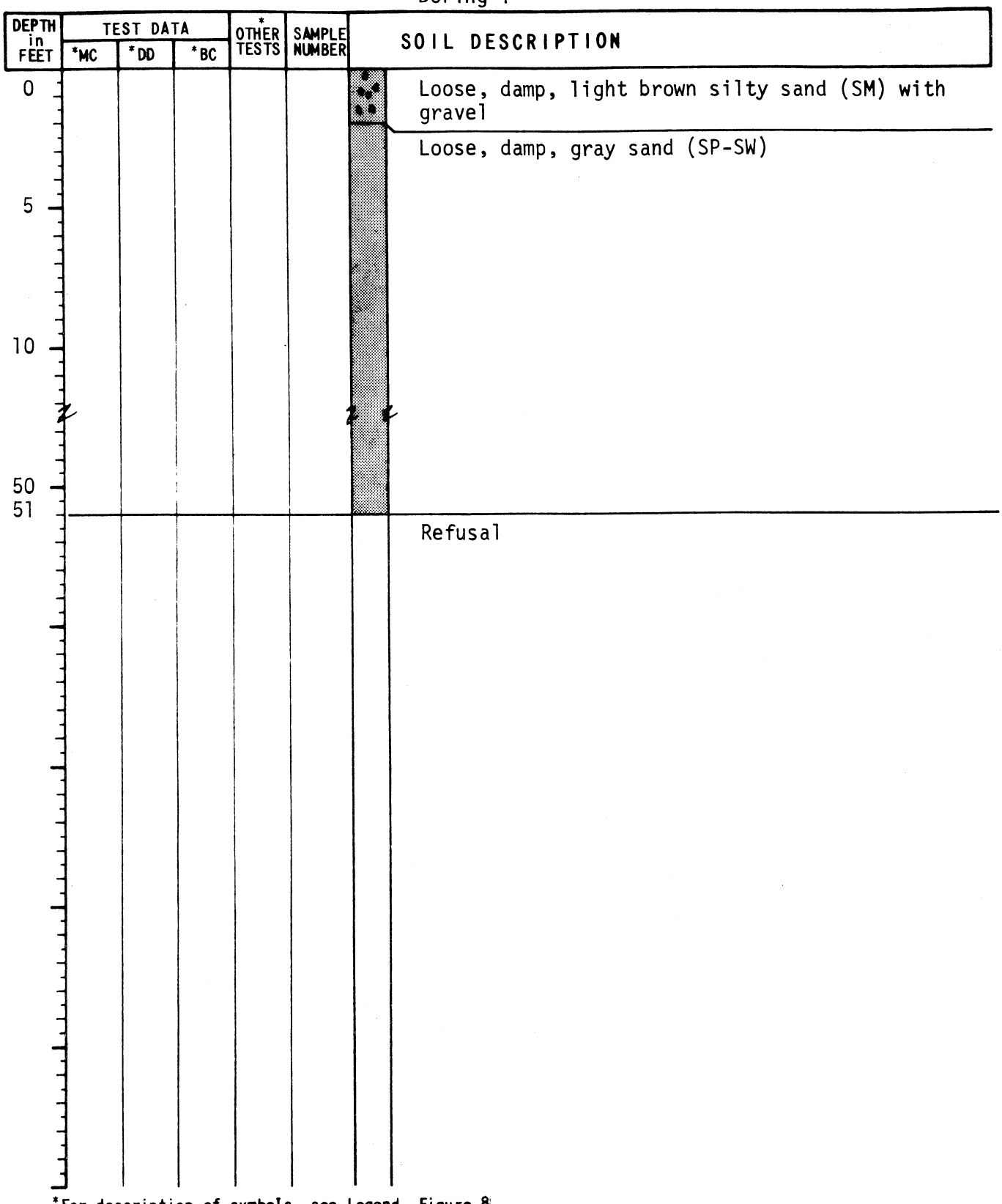
DS = Direct Shear Test.

TX = Triaxial Compression Test,

LEGEND CONROCK DEHESA PROPERTY				
DRAWN BY: ALS	CHECKED BY: REC	PROJECT NO: 74-119A	DATE: 7-24-74	FIGURE NO: 8

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 1



*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 1
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 9

WOODWARD - GIZIENSKI & ASSOCIATES
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Boring 2

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
0						Loose, damp, brown silty fine sand (SM)
5						Loose to medium dense, damp, brown sand (SP-SW)
15						
20						▽ Loose to medium dense, moist, dark gray silty sand (SM)
30						
35						Medium dense, saturated, brown silty fine sand (SM)
40						Hard, damp, orange silty clay (CH) with gravel
43						Bottom of Hole

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 2
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 10

WOODWARD - GIZIENSKI & ASSOCIATES
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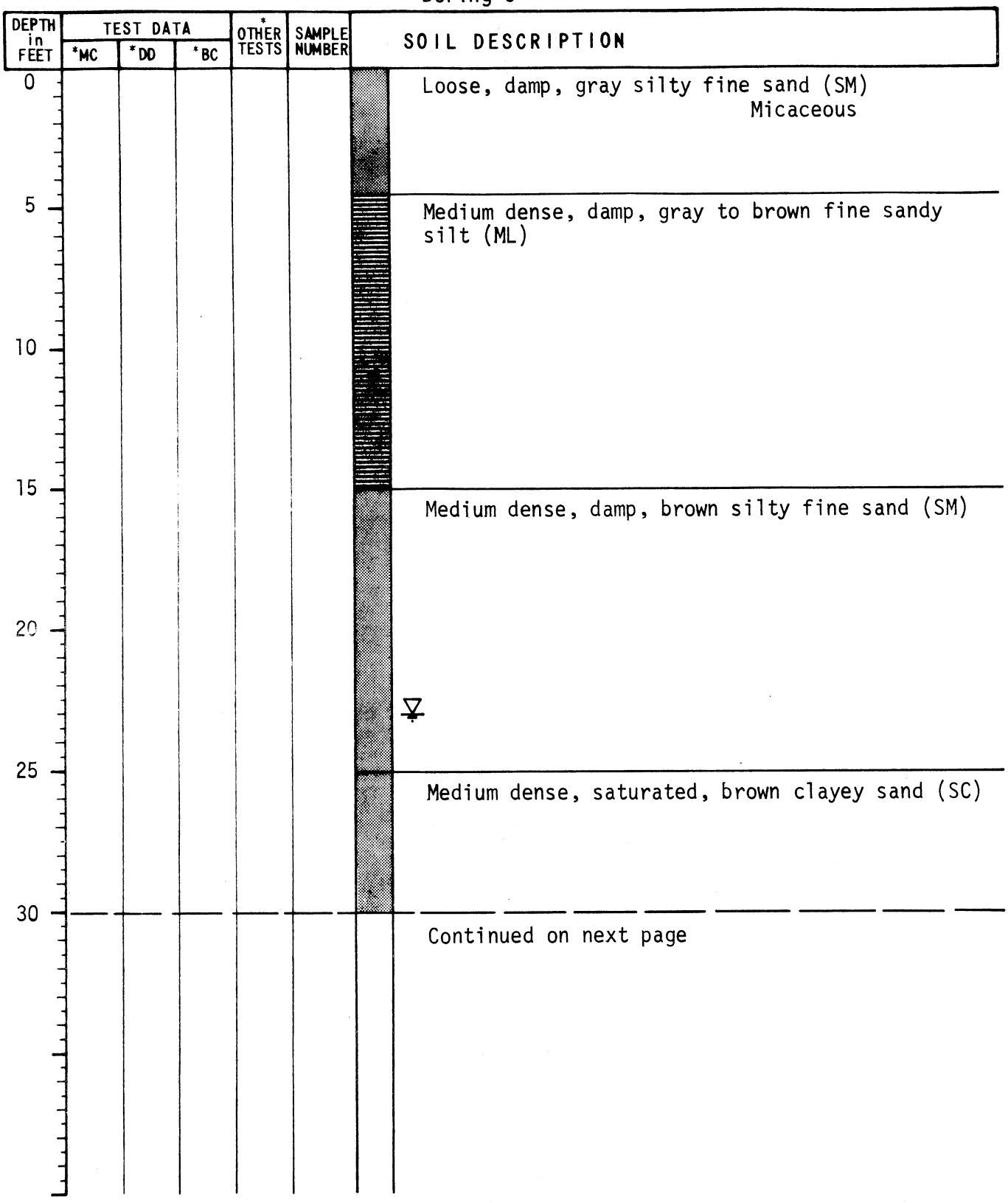
Boring 3



*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 3
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 11

WOODWARD - GIZIENSKI & ASSOCIATES
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Boring 3, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
30						Medium dense, saturated, brown clayey sand (SC)
35						
40						
						Very dense, saturated, gray silty sand (SM)
45						Decomposed Granitic Rock
48						Bottom of Hole

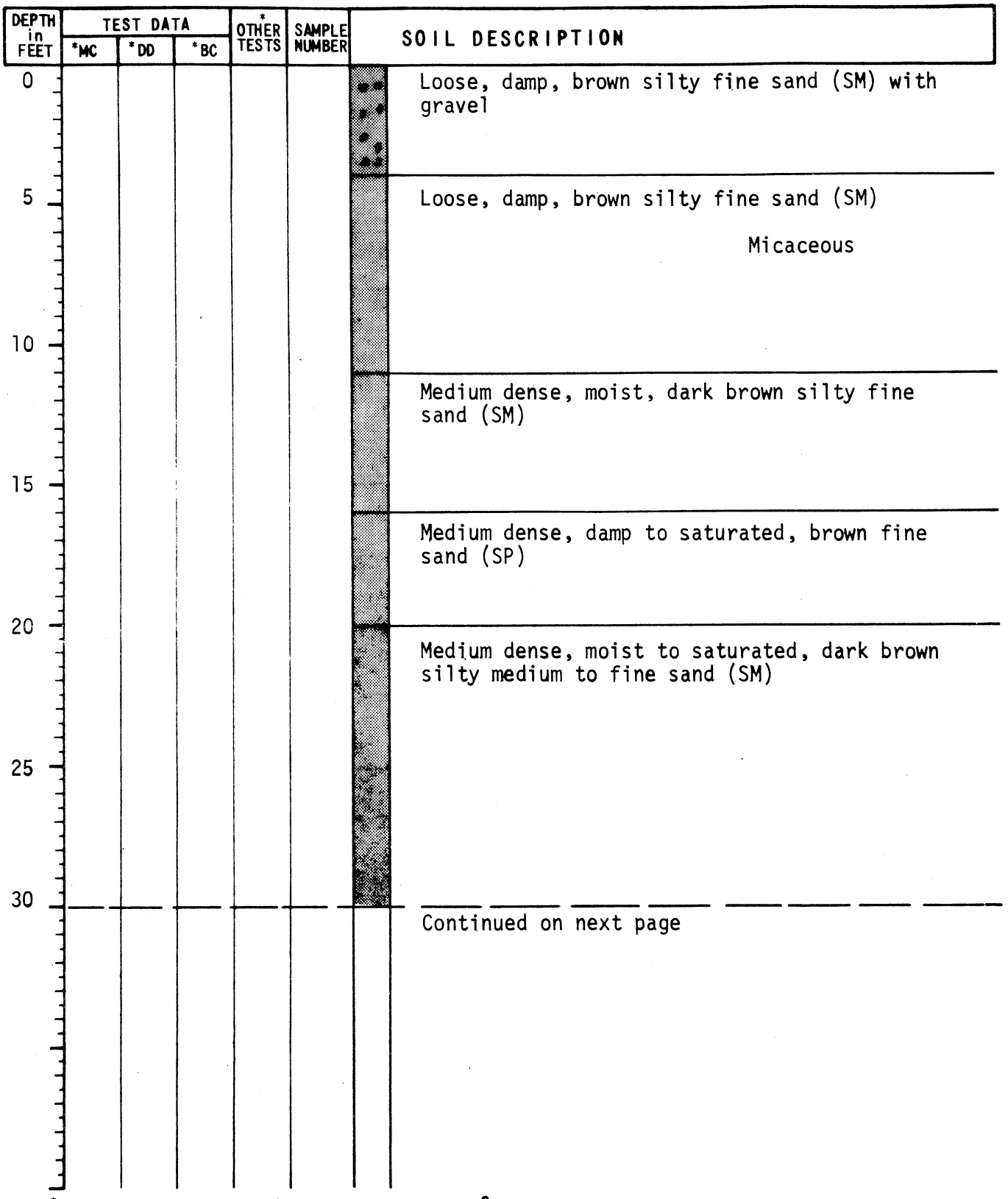
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 3
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 12

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 4



*For description of symbols, see Legend, Figure 8.

LOG OF TEST BORING 4
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 13

WOODWARD - GIZIENSKI & ASSOCIATES
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Boring 4, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
30						Medium dense, moist to saturated, dark brown silty medium to fine sand (SM)
35						
40						Loose to medium dense, saturated, brown silty sand (SM)
45						
50						
52						Refusal

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 4
CONROCK DEHESA PROPERTY

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ALS	JEC	74-119A	7-2-74	14

WOODWARD - GIZIENSKI & ASSOCIATES
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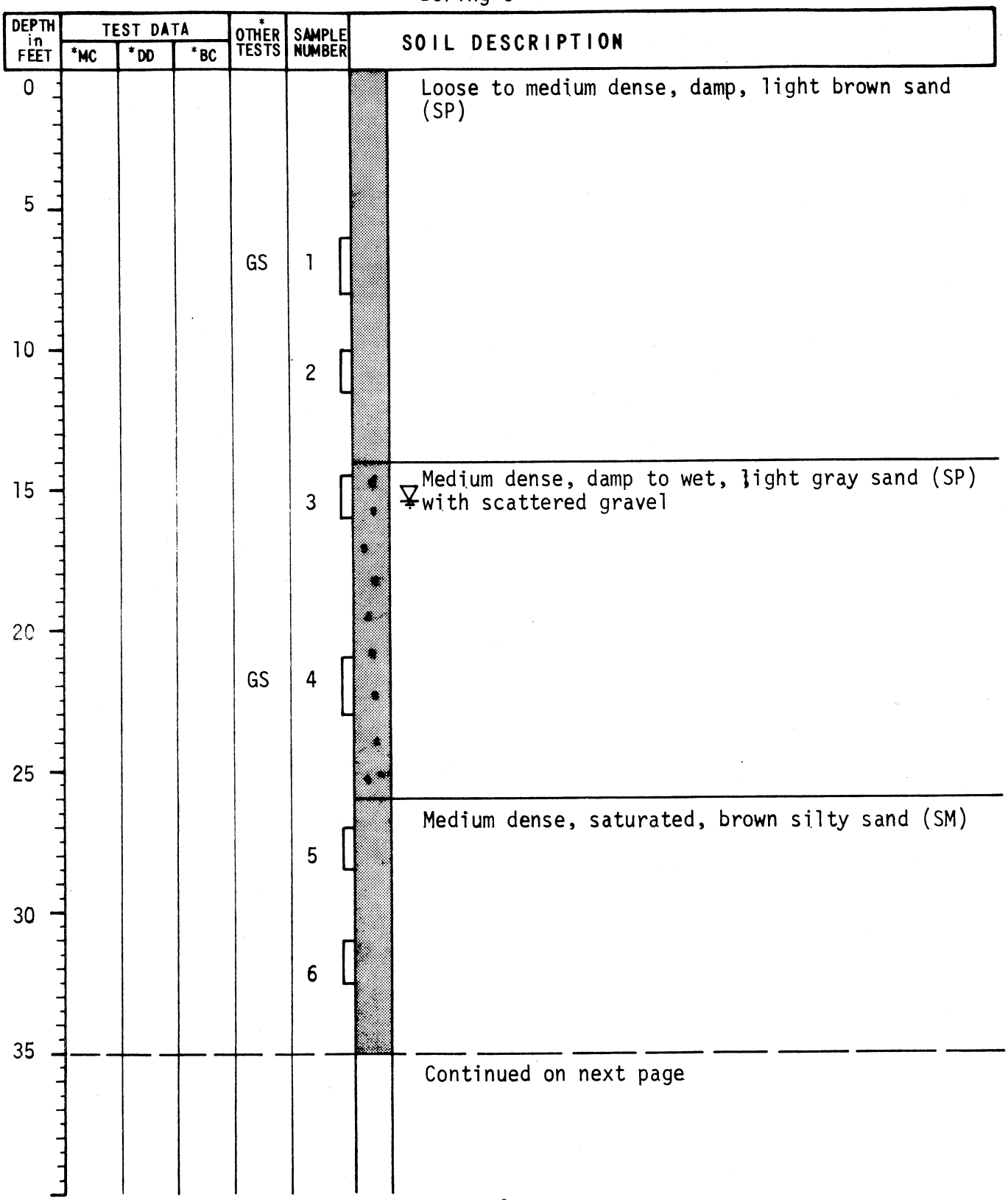
Boring 5



*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 5
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 15

WOODWARD - GIZIENSKI & ASSOCIATES
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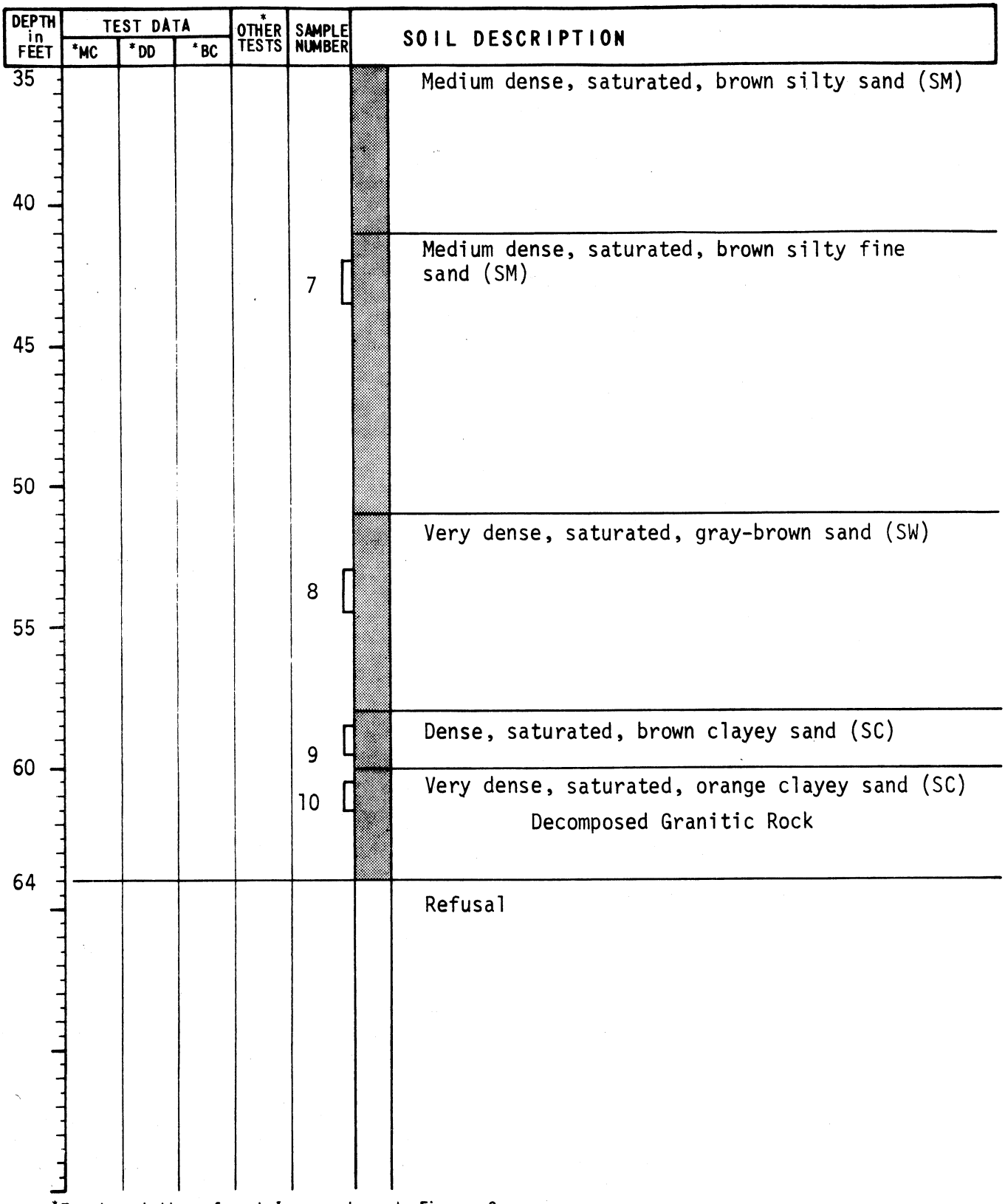
Boring 5, continued



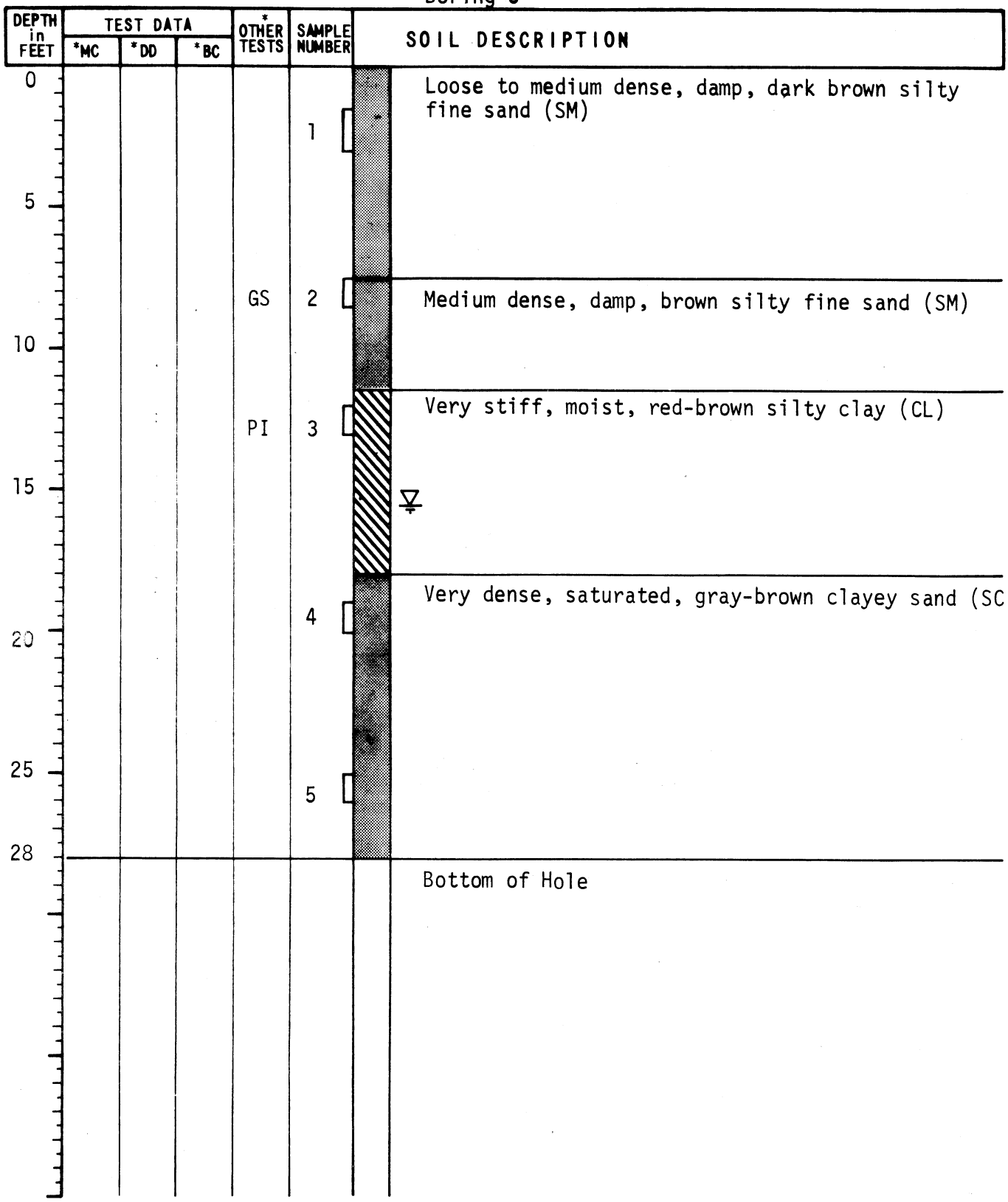
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 5
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 16

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 6



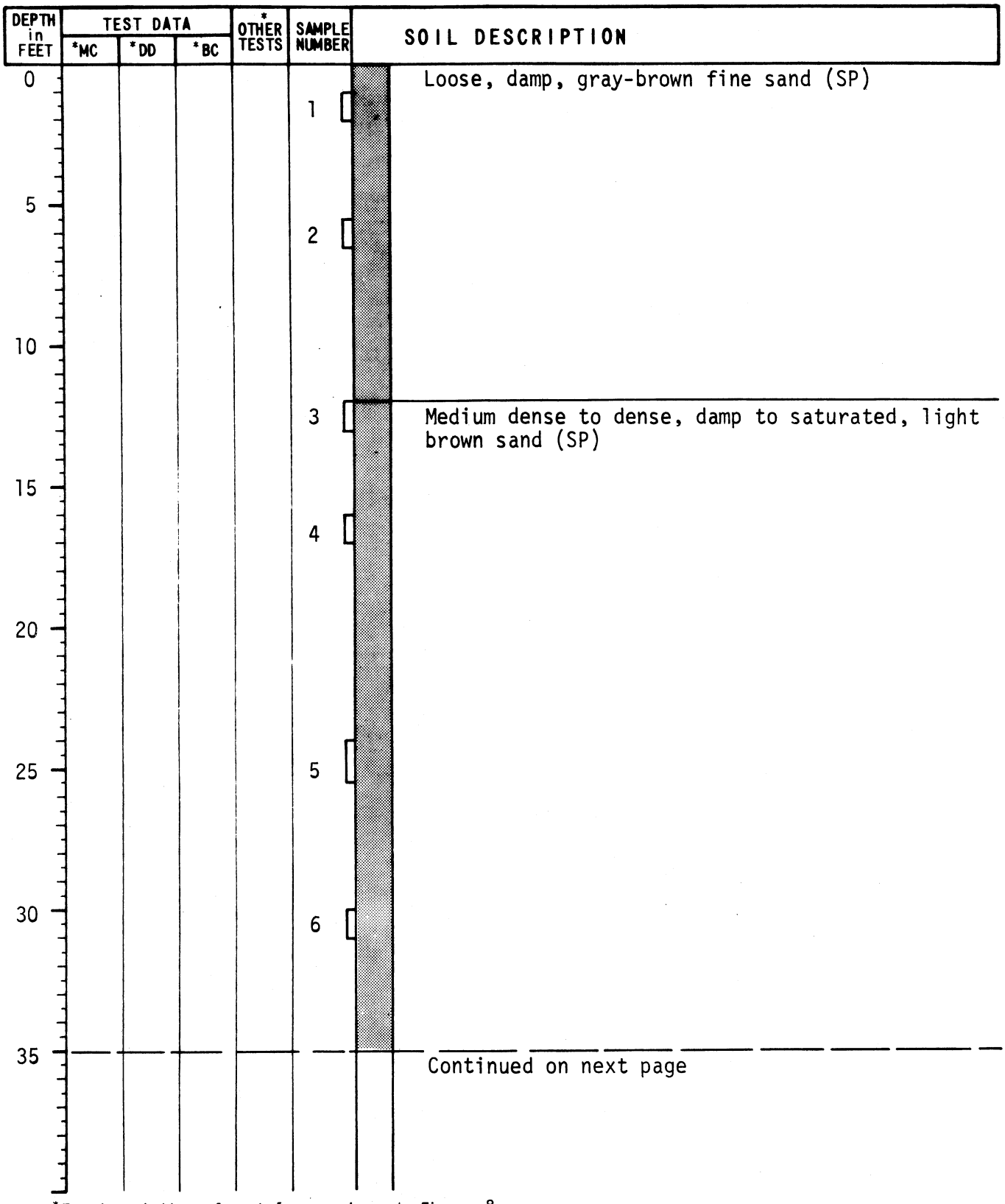
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 6
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 17

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 7



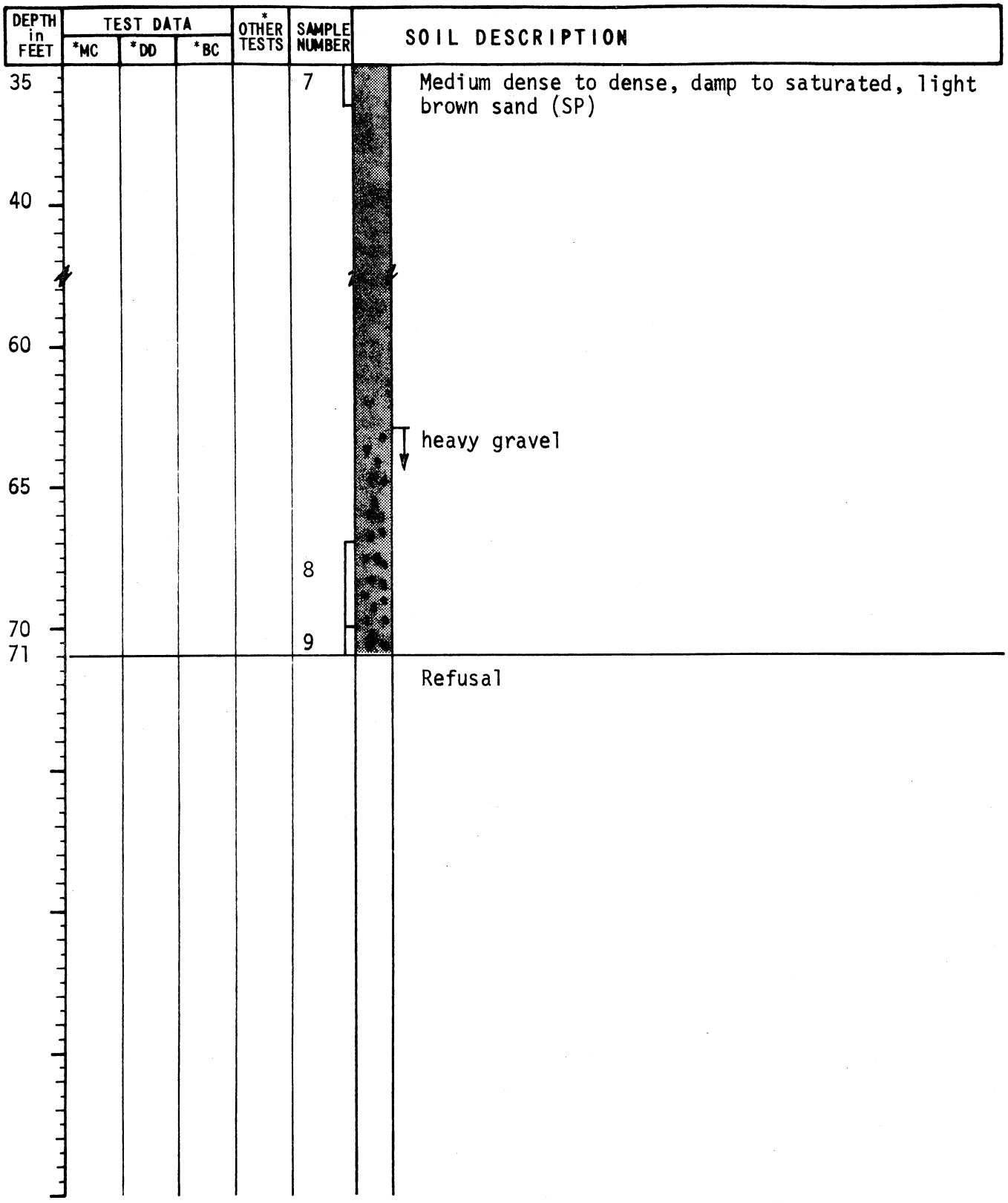
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 7
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 18

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 7, continued



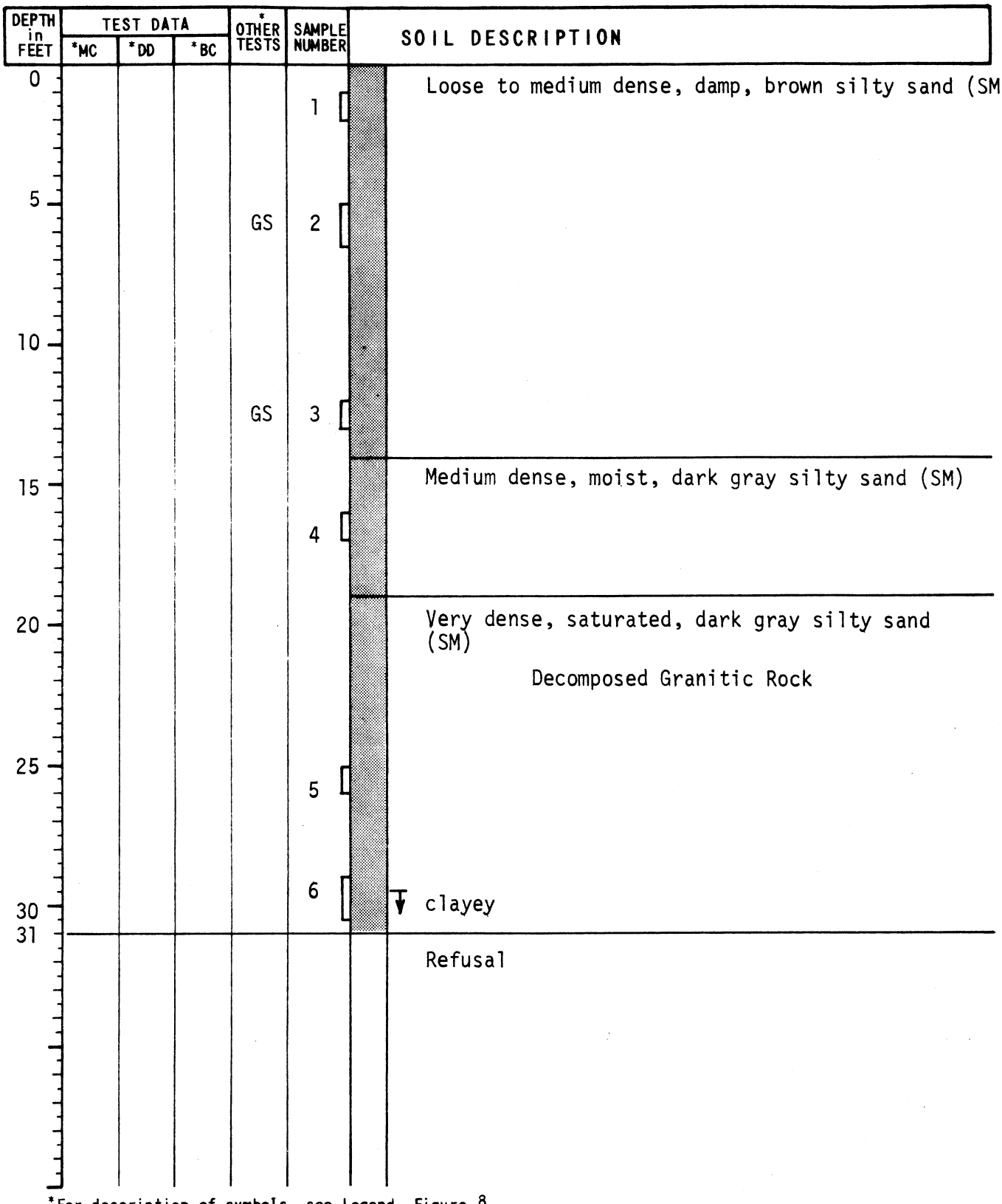
*For description of symbols, see Legend, Figure .8

LOG OF TEST BORING 7
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 19

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 8



*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 8
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY:	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 20

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 9

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
0				GS	1	Loose, damp, dark brown silty fine sand (SM)
5					2	
10				GS	3	Medium dense to dense, damp, light brown silty sand (SM)
						Very dense, moist, brown silty sand (SM)
15					4	
						Medium dense, moist, red-brown silty sand (SM) with clay lenses
20					5	
25				GS	6	▽
30						Continued on next page

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 9
CONROCK DEHESA PROPERTY

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ALS	[illegible]	74-119A	7-2-74	21

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 9, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
30					7	Medium dense, moist, red-brown silty sand (SM) with clay lenses
			26		8	
35						
40						
45						
50						
53					9	Very dense, saturated, brown silty sand (SM) Decomposed Granitic Rock
						Near Refusal

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 9
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 22

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 10

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
0					1	Loose to medium dense, damp, brown silty fine sand (SM)
					2	Medium dense, damp, brown clayey sand (SC)
5					3	Medium dense, damp, light brown silty sand (SM)
10					4	
15					5	
20					6	Medium dense, damp, brown silty fine sand (SM)
25					7	▽
30					8	
35						Continued on next page

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 10
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY:	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 23

WOODWARD · GIZIENSKI & ASSOCIATES
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Boring 10, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
35						Medium dense, damp, brown silty fine sand (SM)
40						
60					9	Very dense, saturated, olive-gray silty fine sand (SM) Decomposed Granitic Rock
63						Bottom of Hole

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 10
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 24

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 11

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
0						Loose, damp, light brown fine to medium sand (SP)
			5		1	
5						
			9	GS	2	
10						
			13		3	
15						
			11		4	
20						
			15		5	
25						
			12	GS	6	
30						Continued on next page

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 11
CONROCK DEHESA PROPERTY

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ALS	JEC	74-119A	7-2-74	25

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 11, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
30						Loose, damp, light brown fine to medium sand (SP)
35			20		7	
40						
45			14		8	
50						
55						
56						Refusal

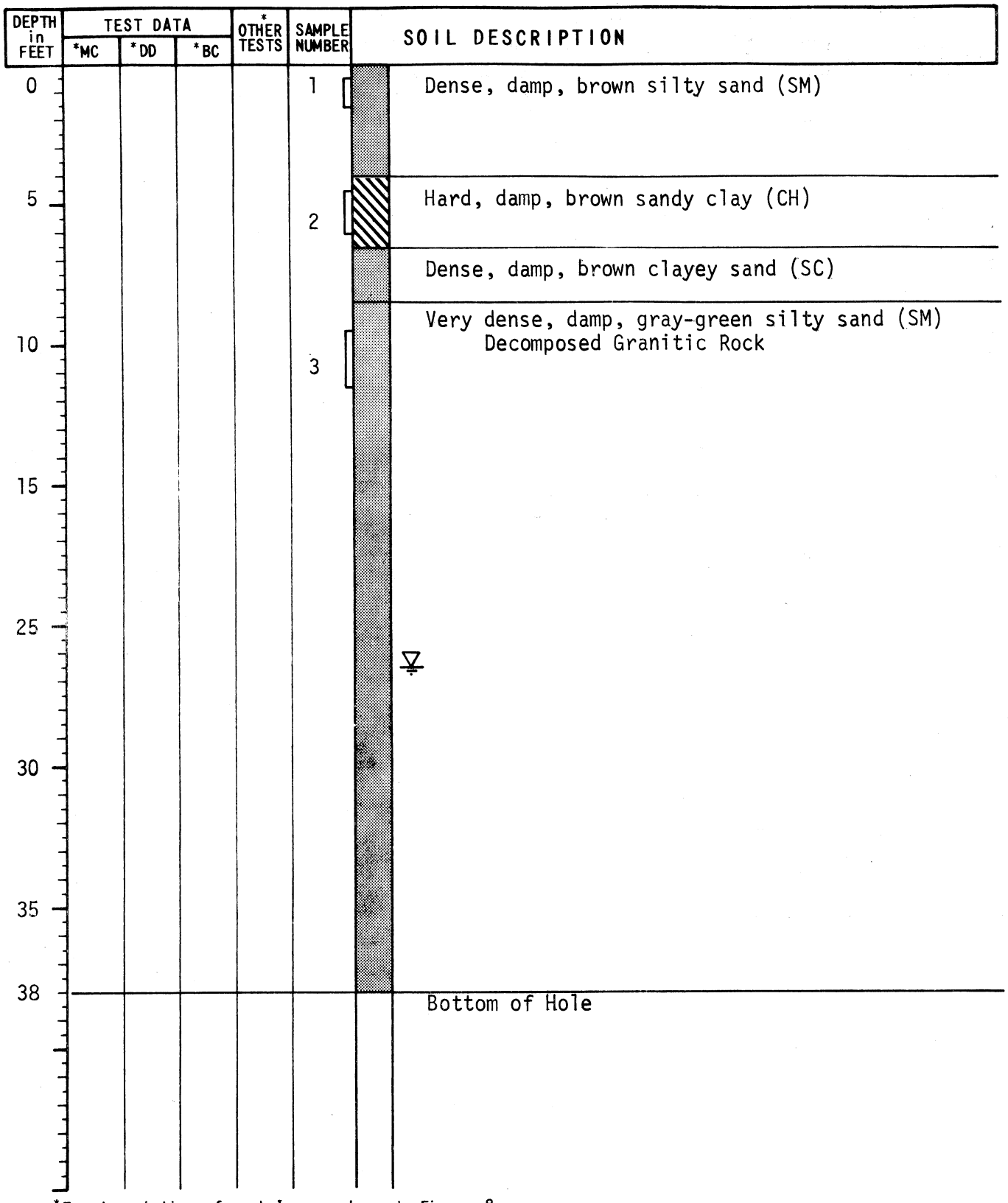
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 11
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 26

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 12



*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 12
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: REC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 27

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 13

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
0				GS	1	Dense, damp, brown silty sand (SM)
5				GS	2	Dense, damp, dark brown silty sand (SM-SP)
10					3	
15				GS	4	Very dense, damp, brown silty sand (SM)
20						
25					5	Dense, moist, brown silty sand (SM)
30						Continued on next page

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 13
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY:	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 28

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 13, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
30						Dense, moist, brown silty sand (SM)
35						
						Very dense, damp, brown silty sand (SM)
40						Decomposed Granitic Rock
45						Refusal

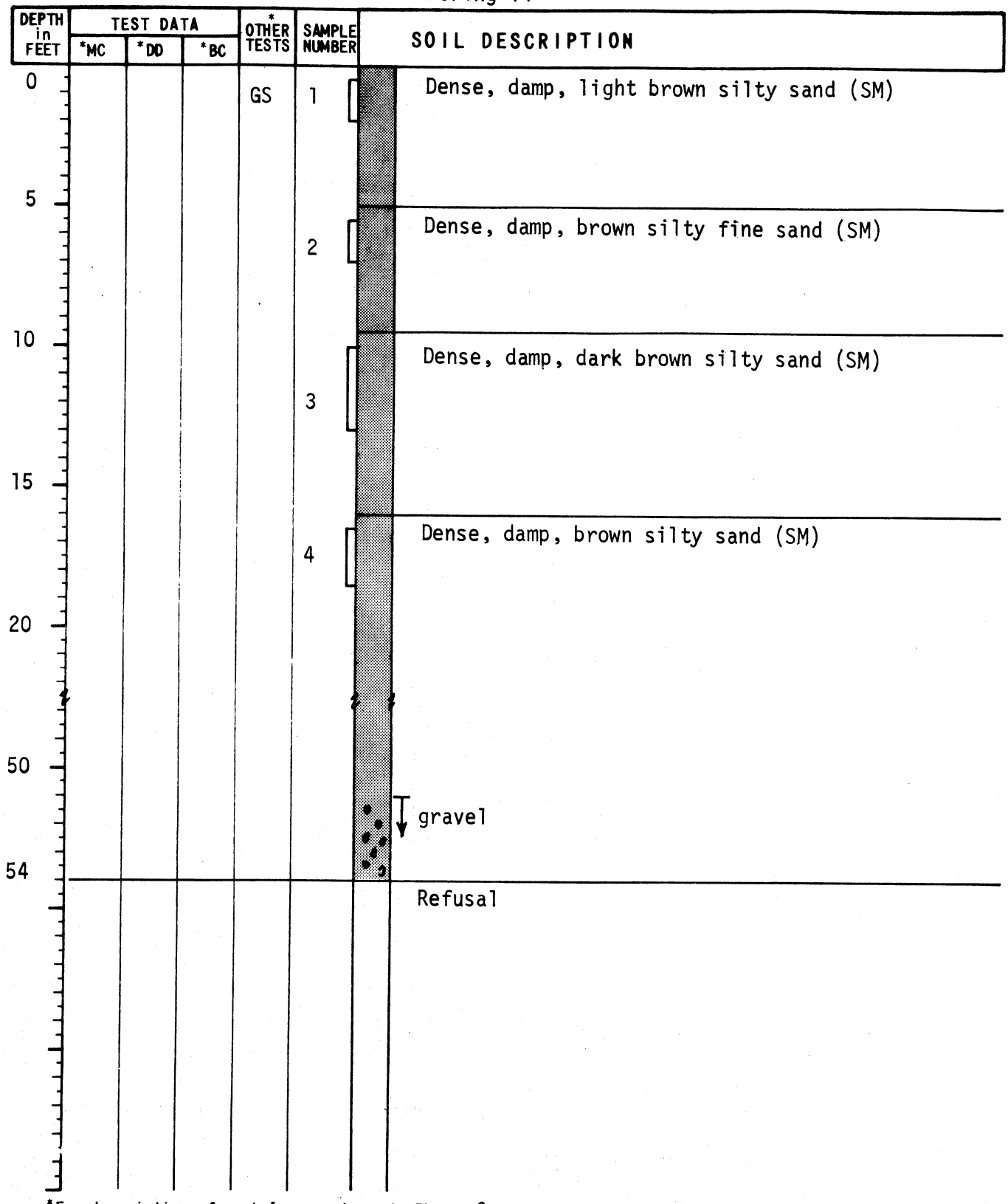
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 13
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 29

WOODWARD · GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 14



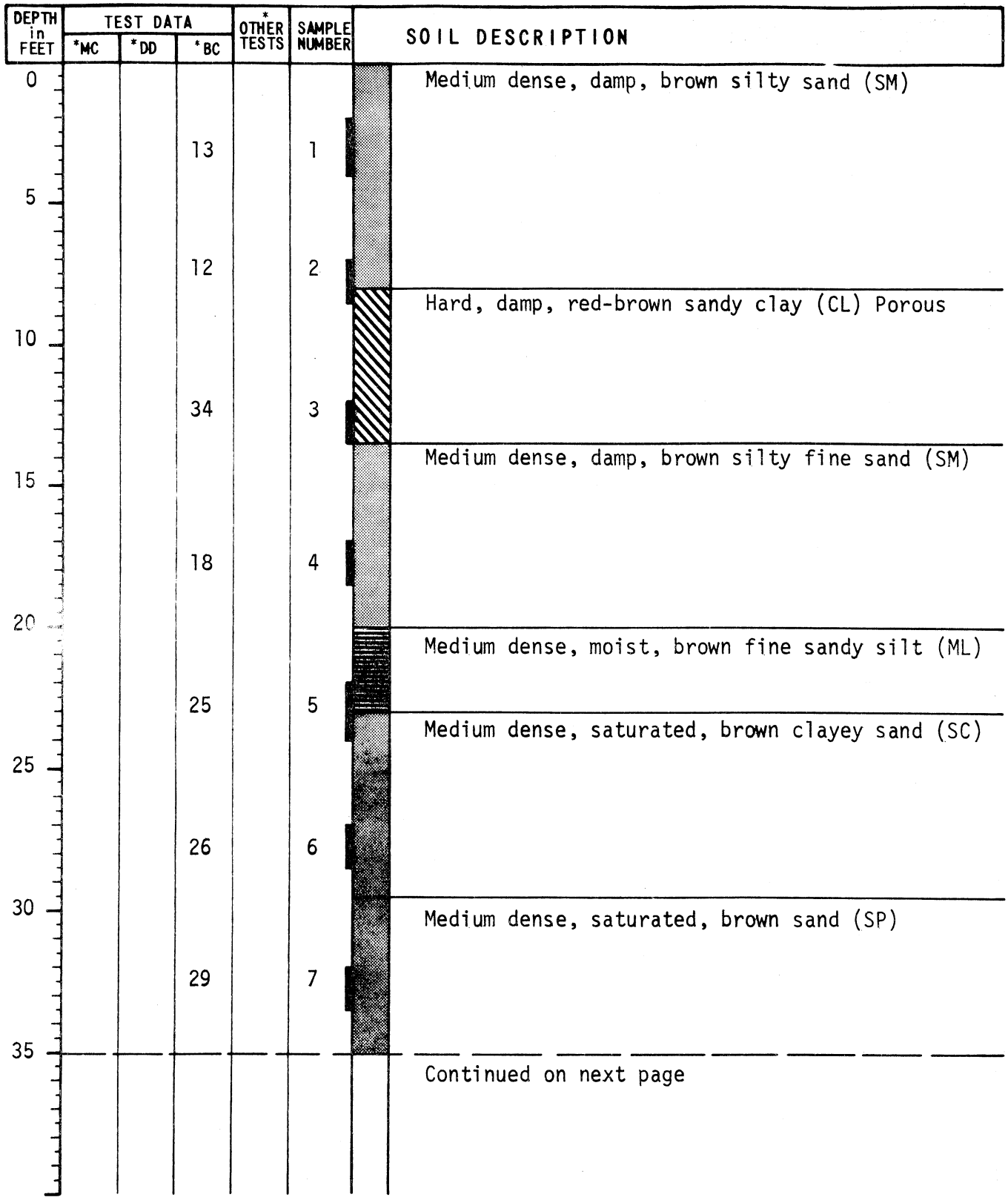
*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 14
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 30

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 15



*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 15
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 31

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 15, continued

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
35						Medium dense, saturated, brown sand (SP)
40			40		8	scattered gravel
45						
50						Medium dense, saturated, brown silty fine sand (SM)
55			28		9	
57						Very dense, saturated, dark brown silty sand (SM) Decomposed Granitic Rock
						Bottom of Hole

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 15
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 32

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 16

DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
0						Very loose, damp, brown silty fine sand (SM)
			3		1	
						Very loose to loose, damp, gray sand (SP)
5						
			10		2	
10						
			13	GS	3	
15						
			13	GS	4	
20						
			15		5	
25						
			18		6	
30						
			19		7	
35						Continued on next page

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 16
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 33

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

Boring 16, continued

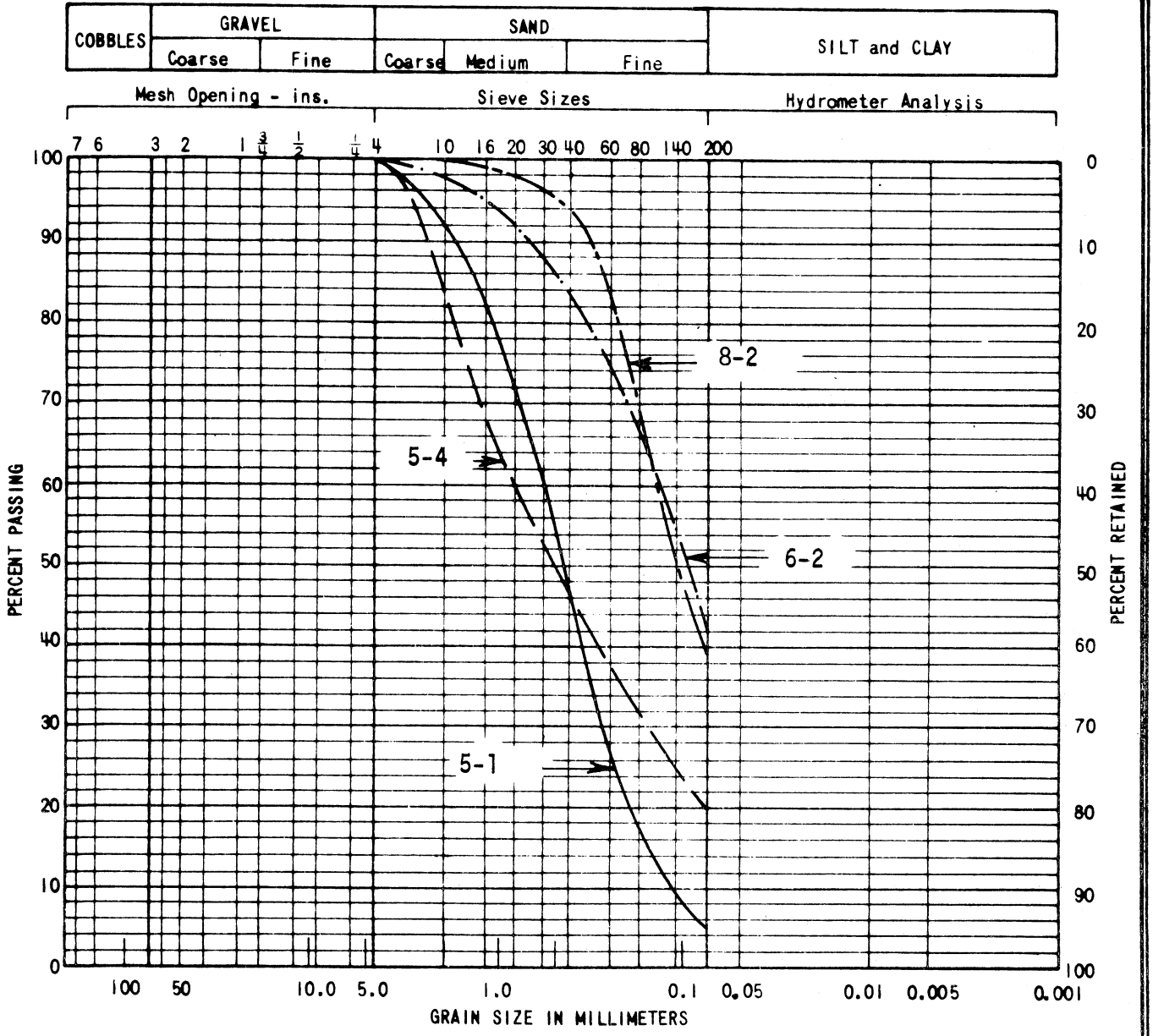
DEPTH in FEET	TEST DATA *MC	TEST DATA *DD	TEST DATA *BC	*OTHER TESTS	SAMPLE NUMBER	SOIL DESCRIPTION
35						Very loose to loose, damp, gray sand (SP)
40			22		8	
45						
50						gravel
			26		9	
55						
60						
			37		10	
65						Very dense, saturated, olive-gray clayey fine sand (SC)
66						Weathered Granitic Rock
						Refusal

*For description of symbols, see Legend, Figure 8

LOG OF TEST BORING 16
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-2-74	FIGURE NO: 34

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS



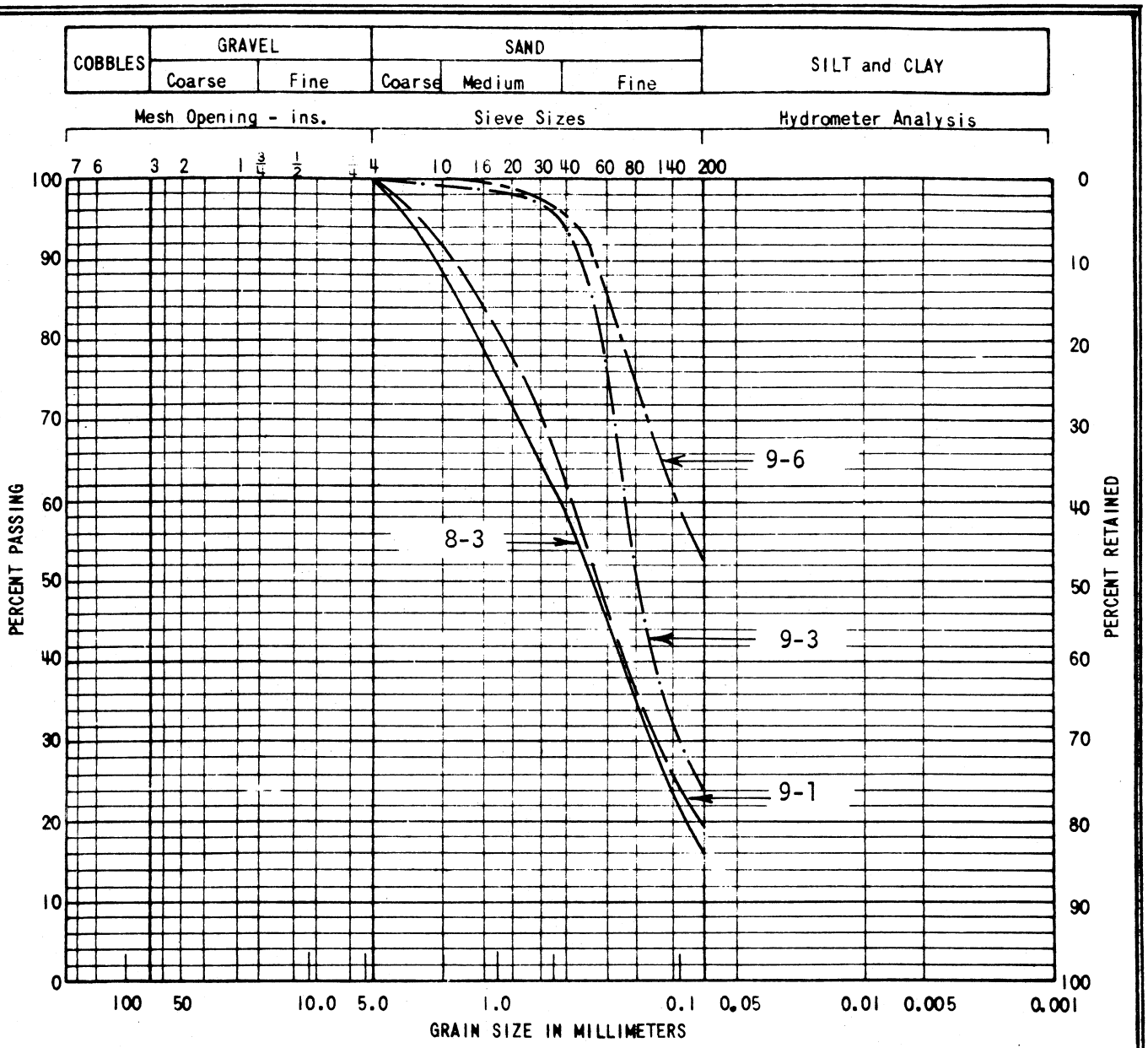
SAMPLE	CLASSIFICATION AND SYMBOL	*LL	*PI
5-1	Sand (SP)		
5-4	Silty sand (SM)		
6-2	Silty fine sand (SM)		
6-3	Silty clay (CL)	47	29
8-2	Silty fine sand (SM)		

*LL = Liquid Limit
*PI = Plasticity Index

GRAIN SIZE DISTRIBUTION CURVES
CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: - - -	PROJ. NO: 74-119A
CK'D BY:	DATE: 7-2-74	FIGURE NO: 35



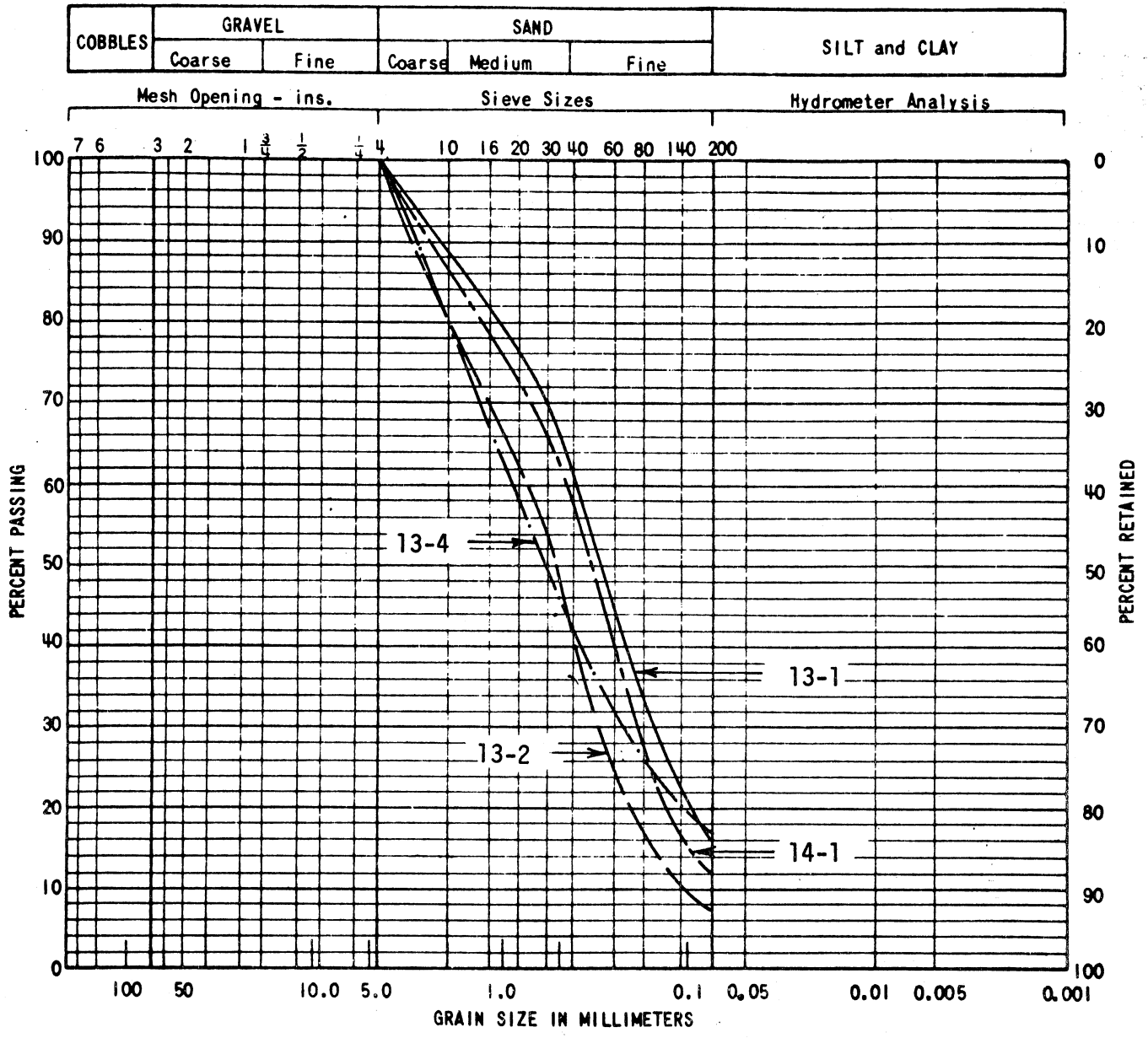
SAMPLE	CLASSIFICATION AND SYMBOL	*LL	*PI
8-3	Silty sand (SM)		
9-1	Silty sand (SM)		
9-3	Silty sand (SM)		
9-6	Sandy clay (CL)		

*LL = Liquid Limit
*PI = Plasticity Index

GRAIN SIZE DISTRIBUTION CURVES
CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: ---	PROJ. NO: 74-119A
CK'D BY: JEC	DATE: 7-2-74	FIGURE NO: 36



SAMPLE	CLASSIFICATION AND SYMBOL	*LL	*PI
13-1	Silty sand (SM)		
13-2	Silty sand (SM-SP)		
13-4	Silty sand (SM)		
14-1	Silty sand (SM)		

*LL = Liquid Limit
*PI = Plasticity Index

GRAIN SIZE DISTRIBUTION CURVES

CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: ----	PROJ. NO: 74-119A
CK'D BY: JEC	DATE: 7-2-74	FIGURE NO: 37

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 1

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASS I.F. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
2	1		Medium brown, loose, moist, presence of mica	Slightly silty fine to medium sand (SW-SM)					
4	2		Dry						
6	①		Medium dense		2.1				
8	3								
10	4		Black, white, tan, medium dense, saturated	Medium coarse sand (SP)	3.5				
12	②								
14			Gravel to 2 inches						
16									
18									
20									

(Continued on Drawing No. 3)

○ - Indicates undisturbed drive sample
□ - Indicates loose bag sample

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	2

Figure No. 38

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 1

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
22			Black, white, tan, medium dense, saturated	Slightly silty fine to medium sand (SW-SM)					
24	5 (4)				5.6				
			Black, white, tan, medium dense, saturated	Medium to very coarse sand (SW)					
26									
28									
30									
32									
34	6 (5)				5.6				
			Black, white, tan, medium dense, saturated	Fine to coarse sand (SW)					
36									
38									
40			Black, white, tan, medium dense, saturated	Silty, clayey fine to coarse sand (SM-SC)					
42	7 (6)		Black, white, tan, medium dense, saturated	Slightly silty fine to coarse sand (SW-SM)	8.1				
44			(Continued on Drawing No. 4)						

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	3

Figure No. 38b

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 1

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
46			Black, white, tan medium dense, saturated	Slightly silty fine to coarse sand (SW-SM)					
			Large gravels						
48			Black, white, tan medium dense saturated	Silty medium to coarse sand (SW-SM)					
50									
52									
54	⑦				7.2				
56									
58									
60			Dense						
62									
64	⑧ 8								
66			Large Gravel						
			Bedrock						
68									

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	4

Figure No. 38c

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 2

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
2			Light grayish tan, medium dense, moist, presence of mica	Silty fine to very fine sand (SM)					
4									
6									
8									
10			Gray, tan, medium dense, wet	Medium to coarse sand (SW)					
12			Saturated						
14			Gravels						
16									
18			Coarse Gravel						
20			Gray, tan, moist medium dense, saturated	Silty fine to coarse sand (SW)					
22									
24									

(Continued on Drawing No. 6)

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	5

Figure No. 39a

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL	SUMMARY SHEET BORING NO. 2 ELEVATION _____		DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
26			Gray, tan, medium dense, saturated	Silty fine to coarse sand (SW)					
28									
30									
32									
34									
36									
38									
40									
42									
44									
46									
48			(Continued on Drawing No. 7)						

JOB NAME _____

PROJECT NO.	ALVARADO SOILS ENGINEERING	DRAWING NO.
57E6		6

Figure 39b

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 2

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
50			Gray, tan, medium dense, saturated	Silty fine to coarse sand (SW)					
52									
54									
56									
58									
60			Gray, tan, medium dense, saturated	Silty fine to medium sand (SW)					
62									
64									
66									
68									
70				Rocks					
72			Gray, tan, dense, saturated	Very silty fine to coarse sand (SW)					
			Very dense	Bedrock					

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	7

Figure No. 39c

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 3

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
0	1		Light grayish tan, loose, dry	Slightly silty fine to coarse sand (SW)					
2									
4	①				2.3				
6									
8									
10	[1]		Damp, medium dense, small gravels						
12	②				3.5				
14	▼		Saturated						
16									
18	[2]		Gray, tan, medium dense, saturated	Medium to coarse sand (SW)					
20	③				5.0				
22	④		Reddish brown, medium dense, saturated	Clayey fine to coarse sand (SC)					
24	⑤				6.1				

(Continued on Drawing No. 9)

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	8

Figure No. 40a

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 3

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
26			Reddish brown, dense, Saturated	Very silty fine to medium sand (SW-SM)					
			Very dense						
28	⑥		Tan, white, black, very dense, saturated	Silty fine to medium sand (SW-SM)	8.4				
30									
32									
34									
36			Rocks						
38									

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	9

Figure No. 40b

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 4

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
0			Grayish brown, medium dense, damp	Gravelly fine to coarse sand (SW)					
10	▼		Saturated						
14			Grayish brown, medium dense, saturated	Gravelly medium to very coarse sand (SW)					
24			(Continued on Drawing No. 11)						

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	10

Figure No. 41a

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 4

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
26			Grayish brown, medium dense, saturated	Medium to very coarse sand (SW)					
28			Reddish brown, dense, Saturated	Very silty clayey fine to medium sand (SM-SC)					
30									
32									
34			Tan, dense saturated	Gravel (GP)					
36			Tan, white, black, dense, saturated	Gravelly clayey fine to coarse sand (SC)					
38									

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	11

Figure No. 41b

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 5

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
0			Light gray tan, loose damp	Fine to medium sand (SW)					
4			Medium dense, moist						
10	▼		Saturated						
14			Tan, white, black, medium dense saturated	Gravelly medium to very coarse sand (SW)					
22			Medium brown, medium dense; saturated	Slightly silty medium to coarse sand (SW)					
24			(Continued on Drawing No. 13)						

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	12

Figure No. 42a

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 5

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
26			Medium brown, medium dense, saturated	Slightly silty medium to coarse sand (SW)					
28			Pockets of silt						
30									
32									
34									
36									
38									
40									
42	(1) 1		Medium brown, dense, saturated	Silty fine to very fine sand (SM)	6.0				
44									
46									
48	2								

(Continued on Drawing No. 14)

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	13

Figure No. 42b

JOB NAME DEHESA SAND PLANT 2/11/74

SUMMARY SHEET

BORING NO. 5

ELEVATION _____

DEPTH/FEET	SAMPLE NUMBER	SOIL CLASSIF. SYMBOL			DRIVE ENERGY FT.KIPS/FT.	FIELD MOISTURE %DRY WT.	DRY DENSITY LBS./CU. FT.		
50	②		Tan, black, white medium dense, saturated	Fine to medium sand (SW)	5.4				
52									
	③		Tan, black, white medium dense well graded, saturated	Gravelly fine to very coarse sand (SW)	7.9				
54									
56									
	[3] ④		Reddish brown, slightly dense, saturated	Clayey very silty fine to medium sand (SM-SC)	1.8				
58									
60									
			Rocks						
62									
64			Gray, medium dense saturated	Decomposed granite (GW)					
66									
68									

PROJECT NO.		DRAWING NO.
57E6	ALVARADO SOILS ENGINEERING	14

Figure No. 42c

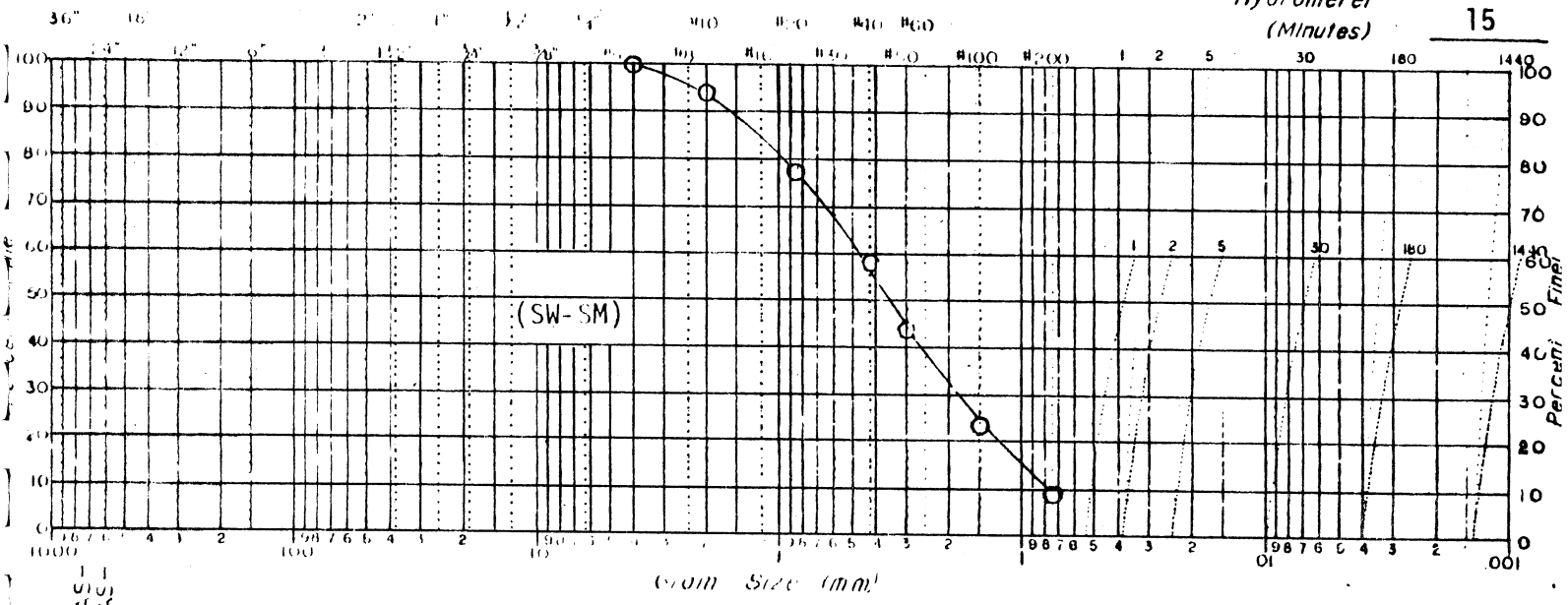
ALVARADO SOILS ENGINEERING

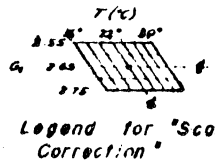
GRAIN SIZE DISTRIBUTION

Job Dehesa Sand Plant

Sample Boring 1-B3-Depth 8

Job No. 57E6 DWG.NO 15





Grain Size (mm)

WET WT. _____ OF -#4 BEFORE WASH

DRY WT. _____ OF -#4 BEFORE WASH

%MOIST _____

WT OF TOTAL -#4 (WET) _____

WT OF TOTAL -#4 (DRY) _____

U.S. Std. Sieve	MINUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass	PLUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass
TOTAL DRY WEIGHT	337.5 gm					
6"						
5"						
4"						
3"						
2"						
1½"	0	0	100			
1"	2.0	0.6	99.4			
¾"	19.3	5.7	94.3			
½"	78.0	23.1	76.9			
⅜"	160.3	42.5	57.5			
#4	190.9	56.6	43.4			
#10	259.8	77.0	23.0			
#20	308.4	91.4	8.6			
#40						
#50						
#100						
#200						
.05 mm						
.005						
.001						

HYDROMETER NO.

DATE	LAPSE	TIME	READ.	CORR.	ACTUAL
		1'			
		2'			
		30'			
		24 Hr.			

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Figure No. 43

ALVARADO SOILS ENGINEERING

GRAIN SIZE DISTRIBUTION

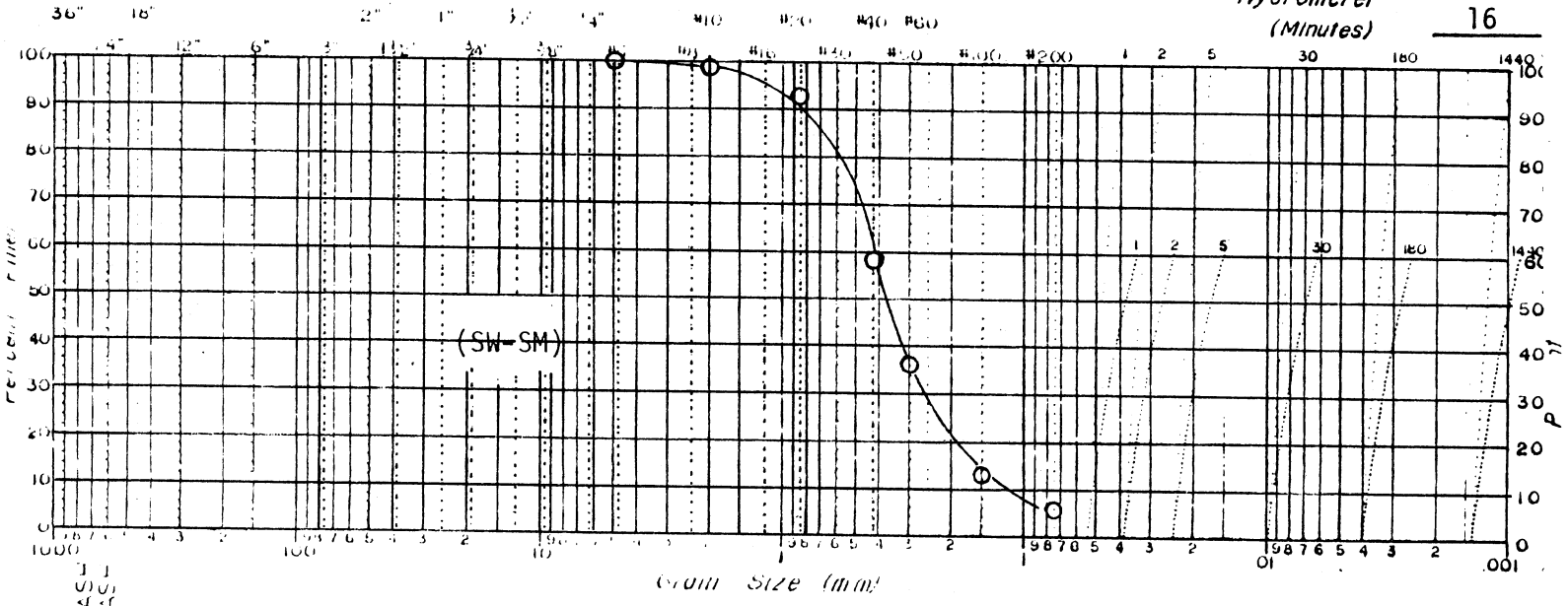
Job Dehesa Sand Plant

Sample Boring 1-B5-Depth 2'

Job No. 57E6 DWG.NO 16

U.S. Standard Sieves

Hydrometer (Minutes)



WET WT. _____ OF -#4 BEFORE WASH

DRY WT. _____ OF -#4 BEFORE WASH

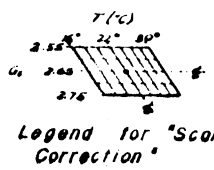
%MOISTURE _____

WT OF TOTAL -#4 (WET) _____

WT OF TOTAL -#4 (DRY) _____

Grain Size (mm)

U.S. Std Sieve	MINUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.	PLUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.
TOTAL DRY WEIGHT = 181.4 gm						
6"						
5"						
4"						
3"						
2"						
1½"						
1"						
¾"						
½"						
⅜"						
#4	0	0	100			
#10	1.1	0.6	99.4			
#20	13.2	7.2	92.8			
#40	77.1	41.9	58.1			
#50	117.3	63.7	36.3			
#100	161.1	87.5	12.5			
#200	172.0	93.4	6.4			
.05 mm						
.005						
.001						



HYDROMETER NO.	DATE	LAPSE	TIME	READ.	CORR.	ACTUAL
			1'			
			2'			
			30'			
			24 Hr.			

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Figure No. 44

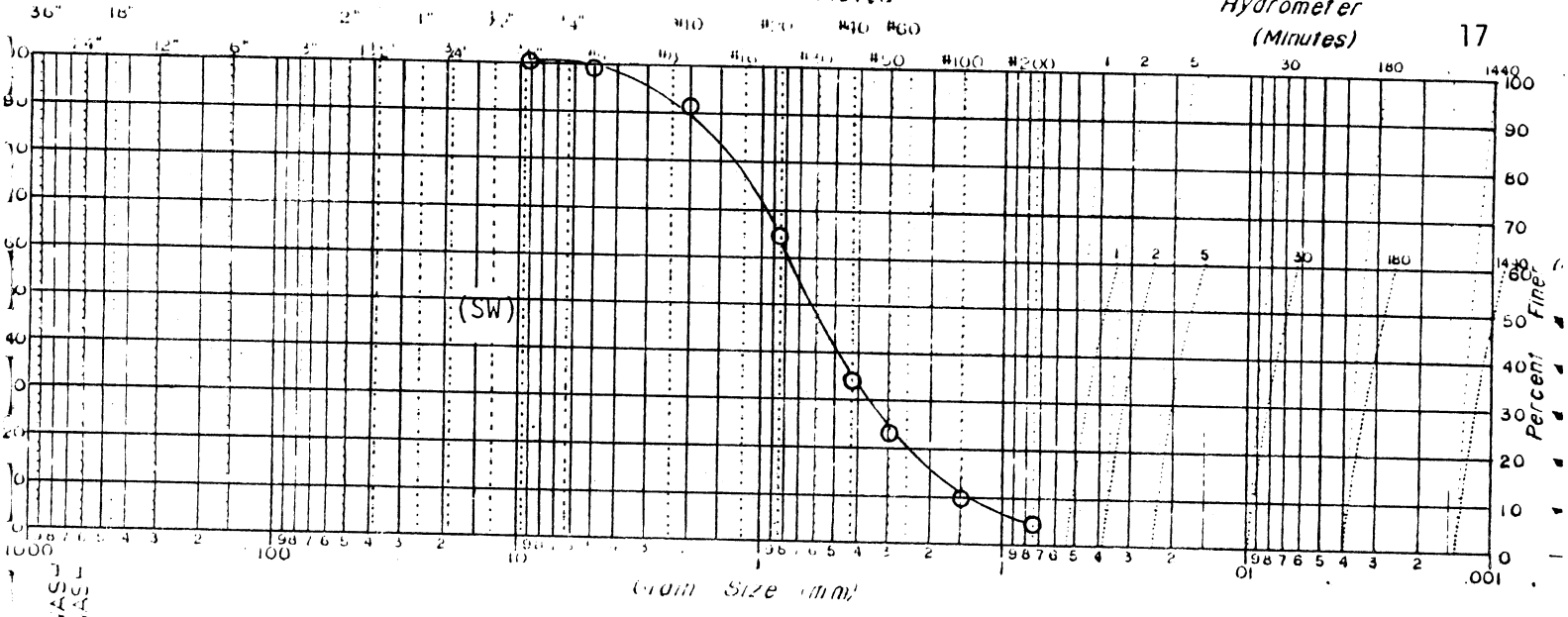
ALVARADO SOILS ENGINEERING

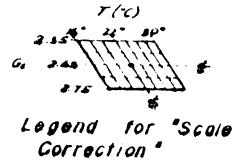
GRAIN SIZE DISTRIBUTION

Job Dehesa Sand Plant

Sample Boring 1-86-Depth 35

Job No. 57E6 DWG.NO.





WET WT. _____ OF -#4 BEFORE WASH

DRY WT. _____ OF -#4 BEFORE WASH

%MOIST. _____

WT OF TOTAL -#4 (WET) _____

WT OF TOTAL -#4 (DRY) _____

U.S. Std. Sieve	MINUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.	PLUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.
TOTAL DRY WEIGHT	256.9 gm					
6"						
5"						
4"						
3"						
2"						
1½"						
1"						
¾"						
½"						
⅜"	0	0	100			
#4	0.7	0.3	99.7			
#10	19.5	7.6	92.4			
#20	91.1	35.5	64.5			
#40	168.7	65.7	34.3			
#50	196.7	76.6	23.4			
#100	232.7	90.6	9.4			
#200	245.8	95.7	4.3			
.05 mm						
.005						
.001						

HYDROMETER NO.

DATE	LAPSE	TIME	READ.	CORR.	ACTUAL
		1'			
		2'			
		30'			
		24 Hr.			

Figure No. 45

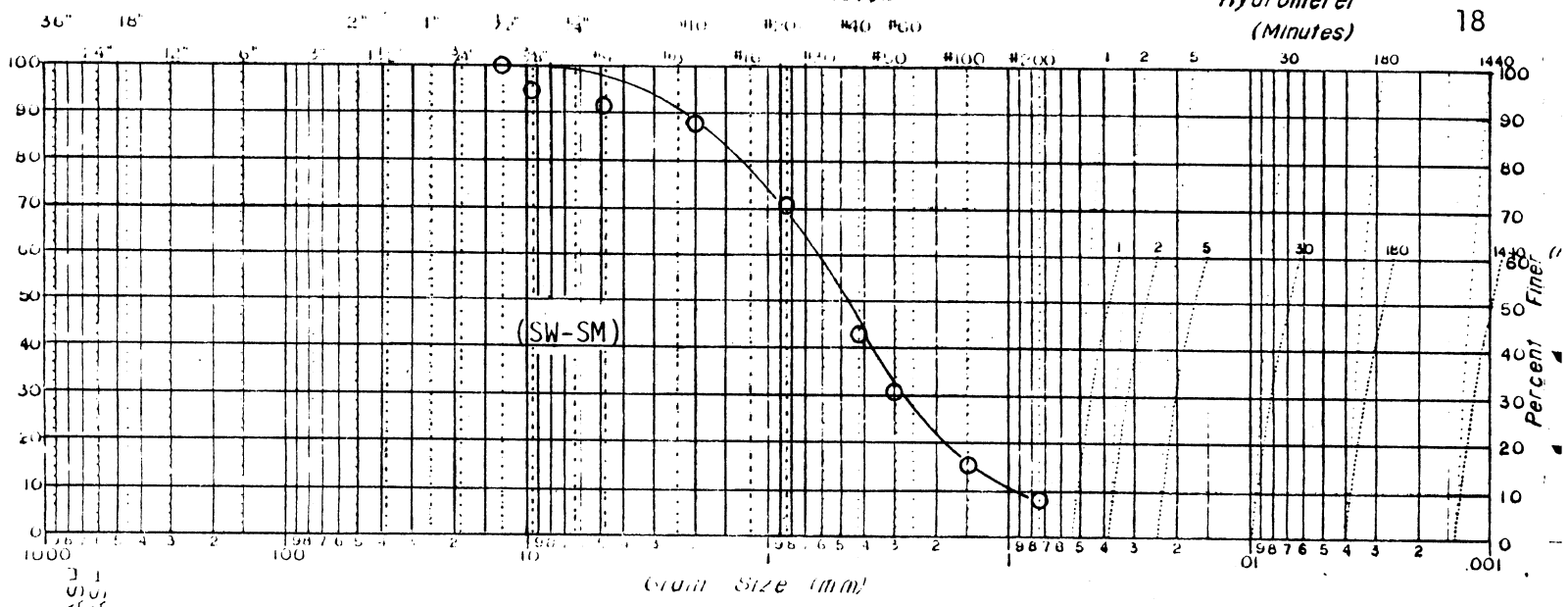
ALVARADO SOILS ENGINEERING

GRAIN SIZE DISTRIBUTION

Job Dehesa Sand Plant

Sample Boring 1-B8-Depth 64

Job No. 57E6 DWG.NO. 18



WET WT. _____ OF -#4 BEFORE WASH

DRY WT. _____ OF -#4 BEFORE WASH

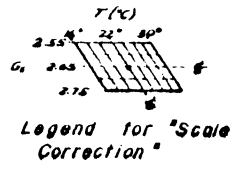
%MOISTURE _____

WT OF TOTAL -#4 (WET) _____

WT OF TOTAL -#4 (DRY) _____

Grain Size (mm)

U.S. Std. Sieve	MINUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.	PLUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.
TOTAL DRY WEIGHT	266.3 gm					
6"						
5"						
4"						
3"						
2"						
1½"						
1"						
¾"						
½"	0	0	100			
⅜"	14.7	5.5	94.5			
#4	21.2	8.0	92.0			
#10	35.9	13.5	86.5			
#20	79.7	29.9	70.1			
#40	152.5	57.3	42.7			
#50	184.6	69.3	30.7			
#100	226.6	85.1	14.9			
#200	244.6	91.9	8.1			
.05 mm						
.005						
.001						



HYDROMETER NO.					
DATE	LAPSE	TIME	READ.	CORR.	ACTUAL
		1'			
		2'			
		30'			
		24 Hr.			

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Figure No. 46

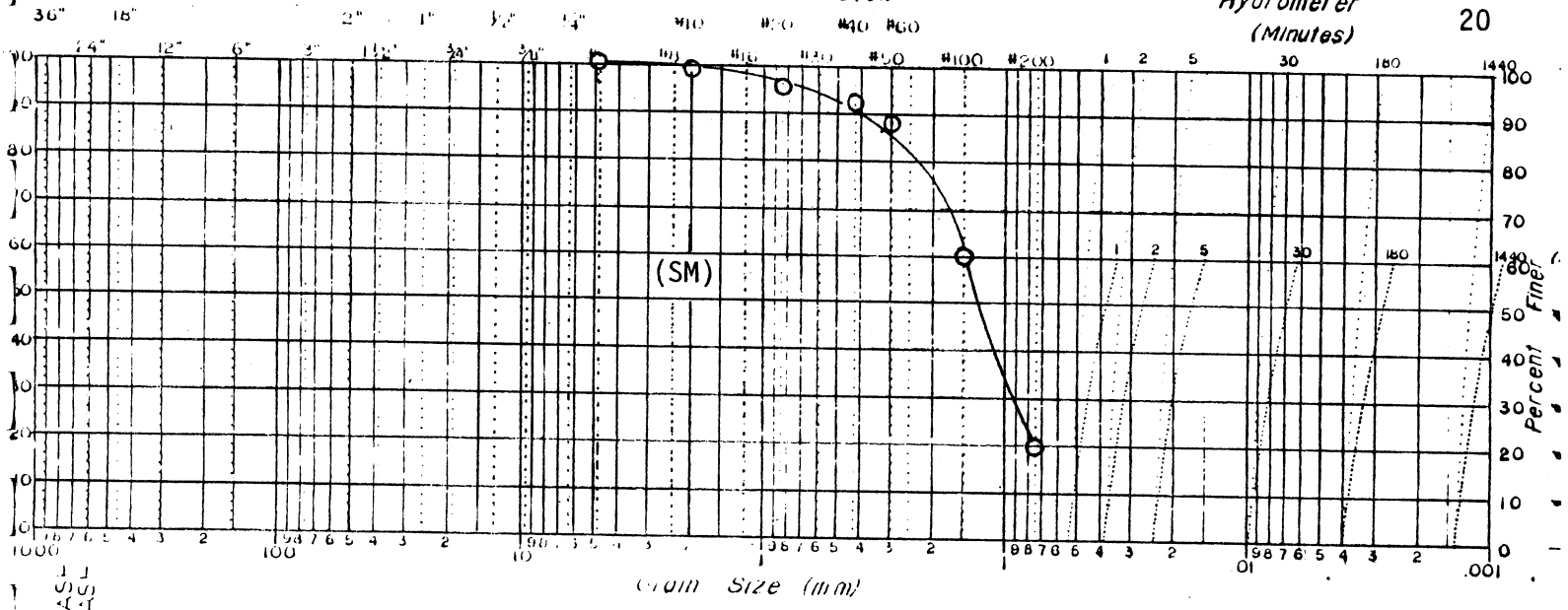
ALVARADO SOILS ENGINEERING

GRAIN SIZE DISTRIBUTION

Job Dehesa Sand Plant

Sample Boring 5-B1-Depth 43

Job No. 57E6 DWG.NO. 20



WET WT. _____ OF -#4 BEFORE WASH

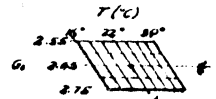
DRY WT. _____ OF -#4 BEFORE WASH

%MOISTURE _____

WT OF TOTAL -#4 (WET) _____

WT OF TOTAL -#4 (DRY) _____

U.S. Std. Sieve	MINUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.	PLUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.
TOTAL DRY WEIGHT 200.0 gm						
6"						
5"						
4"						
3"						
2"						
1½"						
1"						
¾"						
½"						
⅜"						
# 4	0	0	100			
# 10	1.2	0.6	99.4			
# 20	5.1	2.6	97.4			
# 40	13.2	7.6	92.4			
# 50	23.1	11.6	88.4			
# 100	78.8	39.4	60.6			
# 200	160.2	80.1	19.9			
.05 mm						
.005						
.001						



HYDROMETER NO. _____

DATE	LAPSE TIME	READ.	CORR.	ACTUAL
	1'			
	2'			
	30'			
	24 Hr.			

Figure No. 47

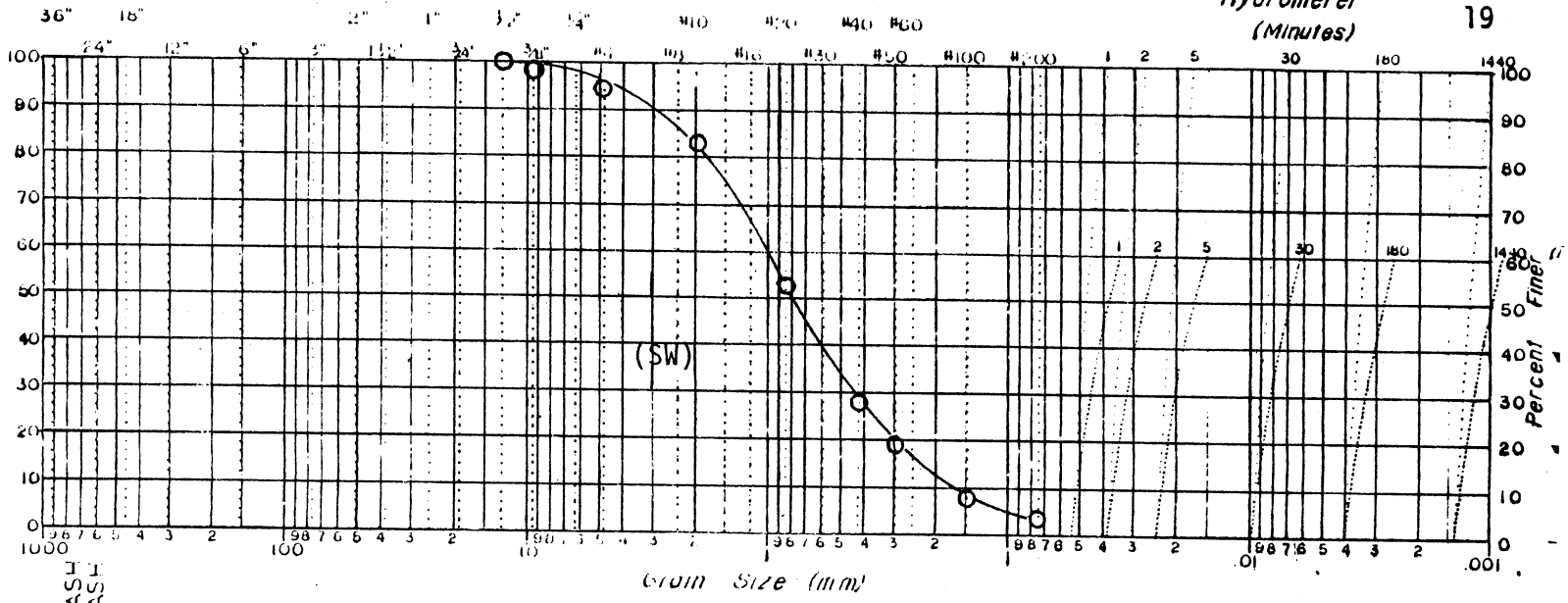
ALVARADO SOILS ENGINEERING

GRAIN SIZE DISTRIBUTION

Job Dehesa Sand Plant

Sample Boring 3-B2-Depth 18

Job No. 57E6 DWG.NO. 19



WET WT. _____ OF -#4 BEFORE WASH

DRY WT. _____ OF -#4 BEFORE WASH

%MOISTURE _____

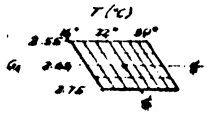
WT OF TOTAL -#4 (WET) _____

WT OF TOTAL -#4 (DRY) _____

Grain Size (mm)

U.S Std. Sieve	MINUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.	PLUS #4 SAMPLE Wt. Ret.	% Ret.	% Pass.
TOTAL DRY WEIGHT	206.4 gm					
6"						
5"						
4"						
3"						
2"						
1½"						
1"						
¾"						
½"	0	0	100			
⅜"	3.4	1.6	98.4			
#4	7.6	3.7	96.3			
#10	36.9	17.9	82.1			
#20	96.7	46.9	53.1			
#40	149.1	72.2	27.8			
#50	167.3	81.1	18.9			
#100	189.3	91.7	8.3			
#200	197.5	95.7	4.2			
.05 mm						
.005						
.001						

T(°C)



Legend for "Scale Correction"

HYDROMETER NO.

DATE	LAPSE	TIME	READ.	CORR.	ACTUAL
		1'			
		2'			
		30'			
		24 Hr.			

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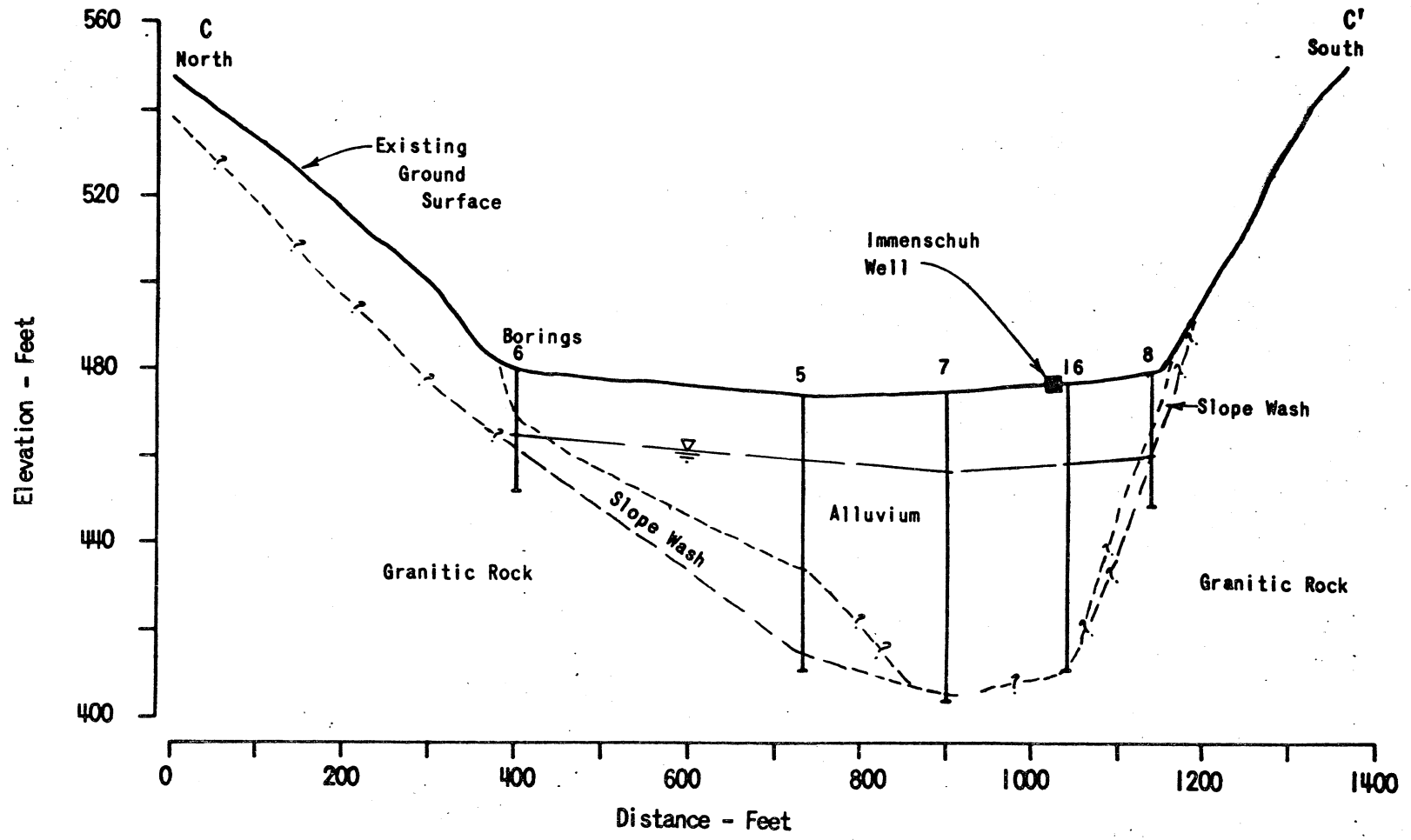
Figure No. 48

SECTION C - C'



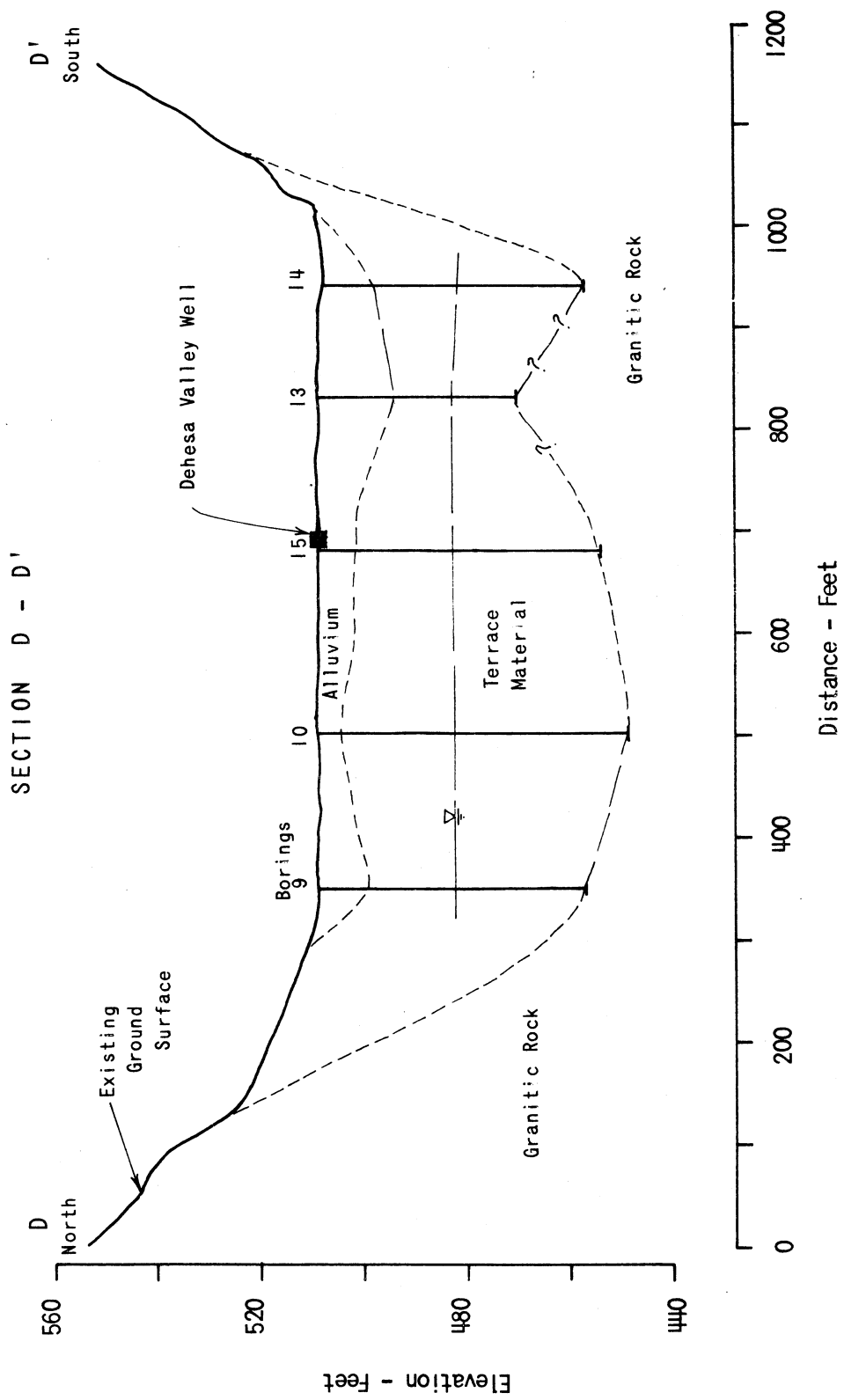
SECTION C-C'

CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS | APPROX. SCALE: - - - | PROJ. NO: 74-119A

CK'D BY: | DATE: 7-9-74 | FIGURE NO: 49

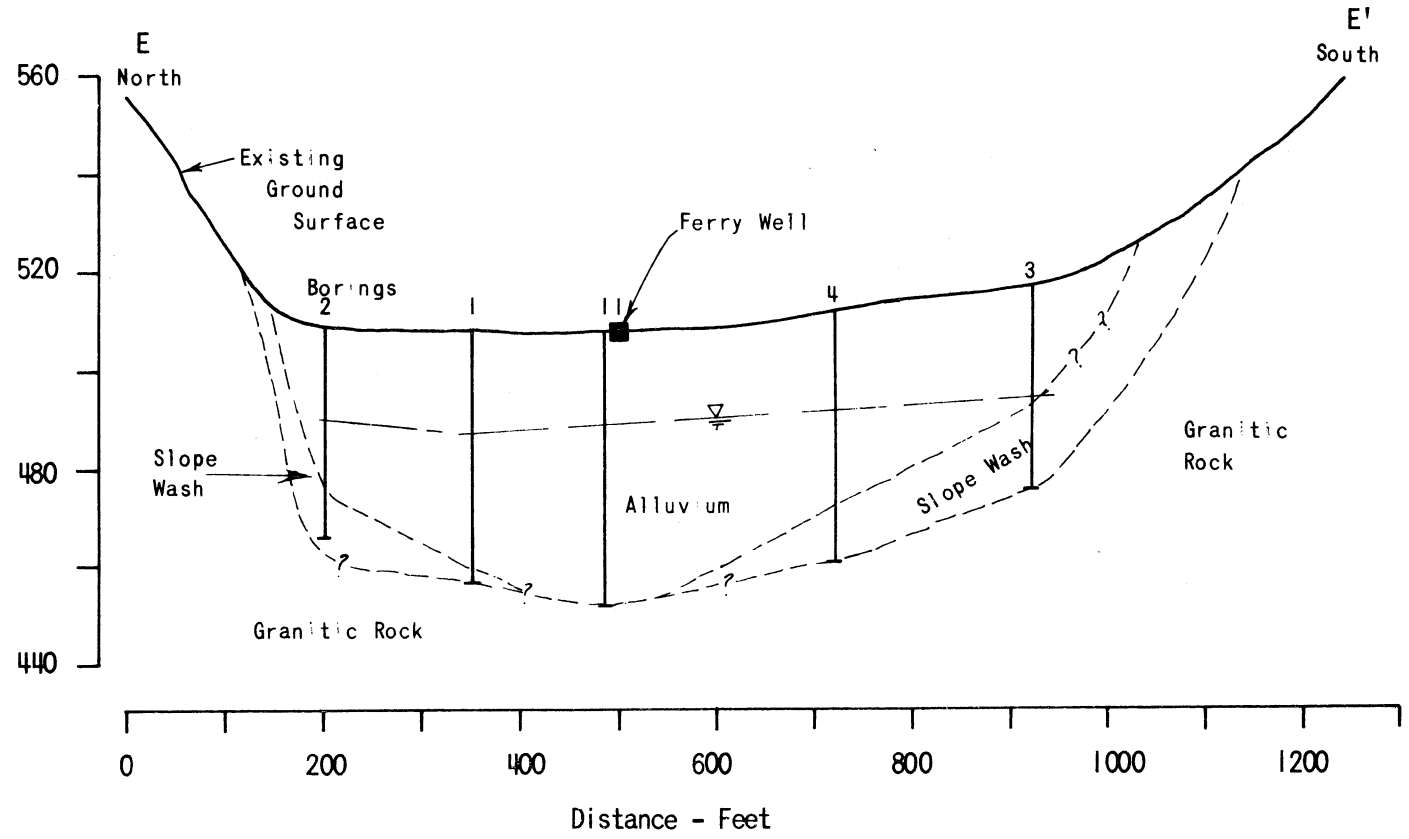


SECTION D-D'
CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: - - -	PROJ. NO: 74-119A
CK'D BY: REC	DATE: 7-9-74	FIGURE NO: 50

SECTION E - E'

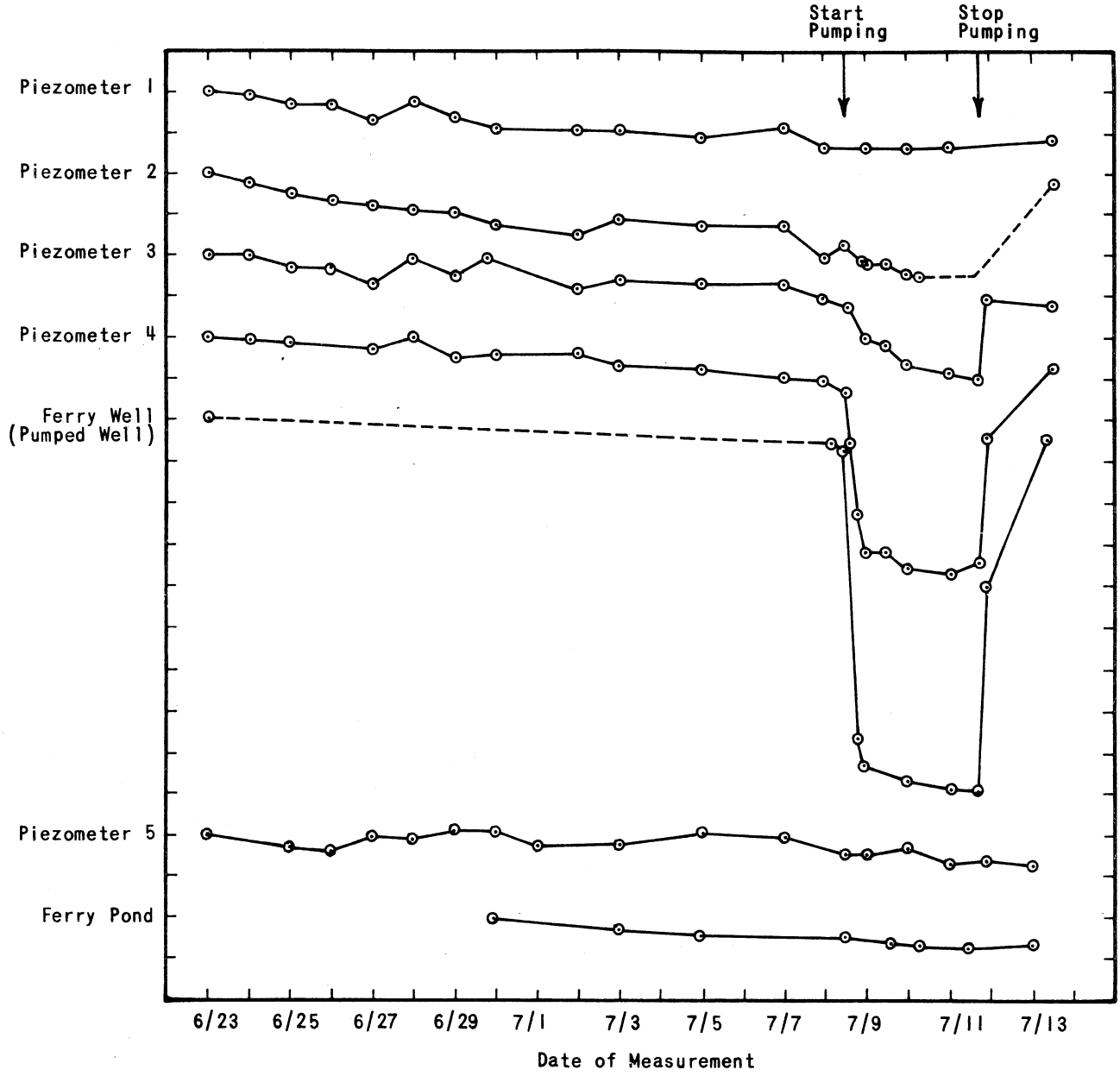


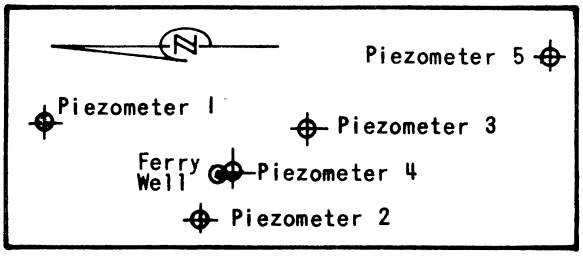
SECTION E-E'

CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: - - -	PROJ. NO: 74-119A
CK'D BY: [illegible]	DATE: 7-9-74	FIGURE NO: 51





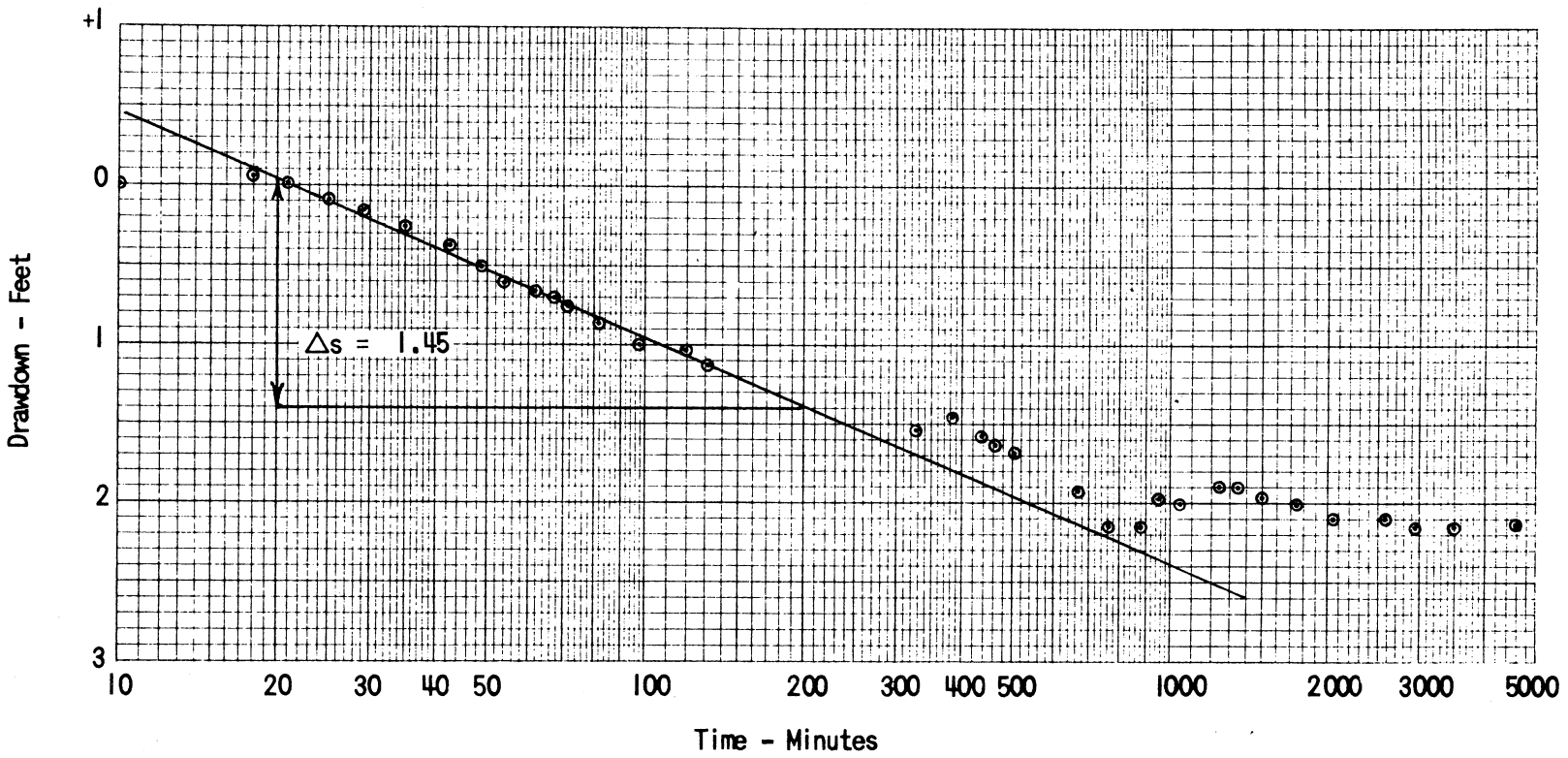
LOCATION MAP
Scale: 1" = 200'

NOTE: Water levels were plotted in reference to initial water level at start of hydrographs. Vertical Scale: 1 in = 2 ft.

HYDROGRAPHS OF FERRY WELL AND FERRY PIEZOMETERS
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY:	PROJECT NO: 74-119A	DATE: 7-16-74	FIGURE NO: 52

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS



$Q = 200 gal/min$

$\Delta s = 1.45 ft$

$T = \frac{264Q}{\Delta s}$

$T = 36{,}000 gpd/ft$

$P = \frac{T}{m}$

$P = 900 gpd/ft^2$

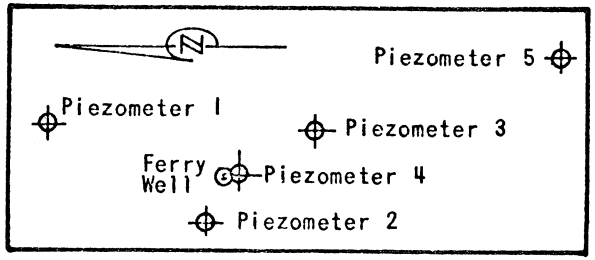
$t_o = 0.1 days$

$r^2 = 10^4 ft$

$S = \frac{0.3Tt_o}{r^2}$

$S = 0.304$

$t_{crit} = 165 min$

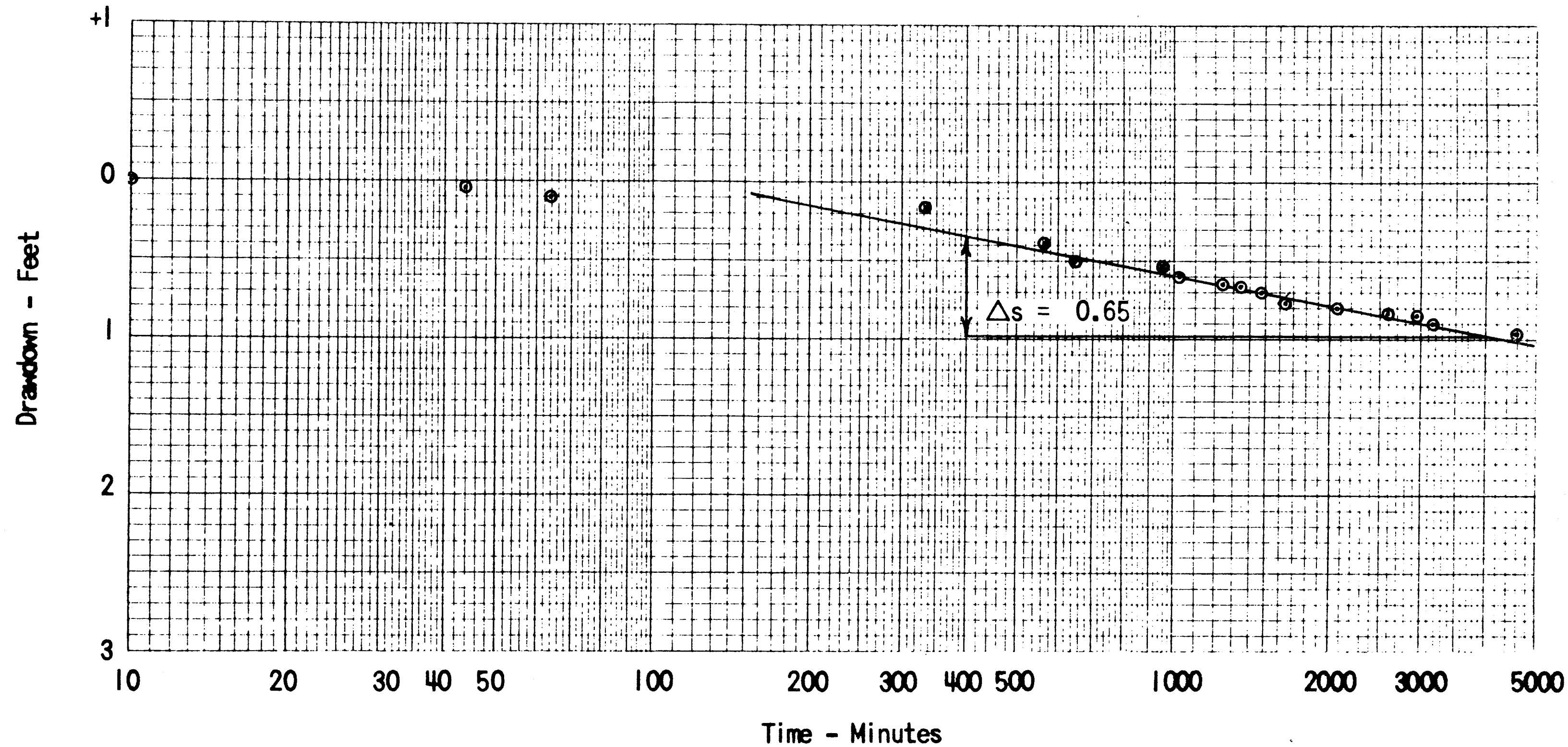


LOCATION MAP
Scale: 1" = 200'

DRAWDOWN - FERRY PIEZOMETER 4
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY:	PROJECT NO: 74-119A	DATE: 7-16-74	FIGURE NO: 53

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS



t_{crit} = 3.9min

Q = 200gal/min

Δs = 0.65ft

$$T = \frac{264Q}{\Delta s}$$

T = 81,000 gpd/ft

$$P = \frac{T}{m}$$

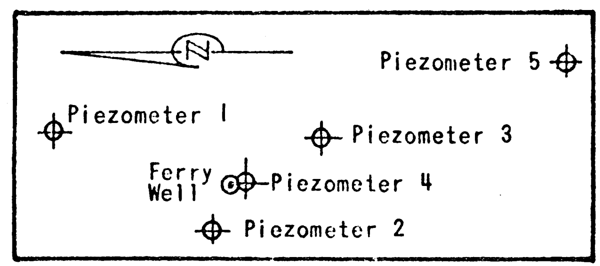
P = 2025 gpd/ft^2

t_o = 0.1 days

r^2 = 10^4ft

$$S = \frac{0.3Tt_o}{r^2}$$

S = 0.24

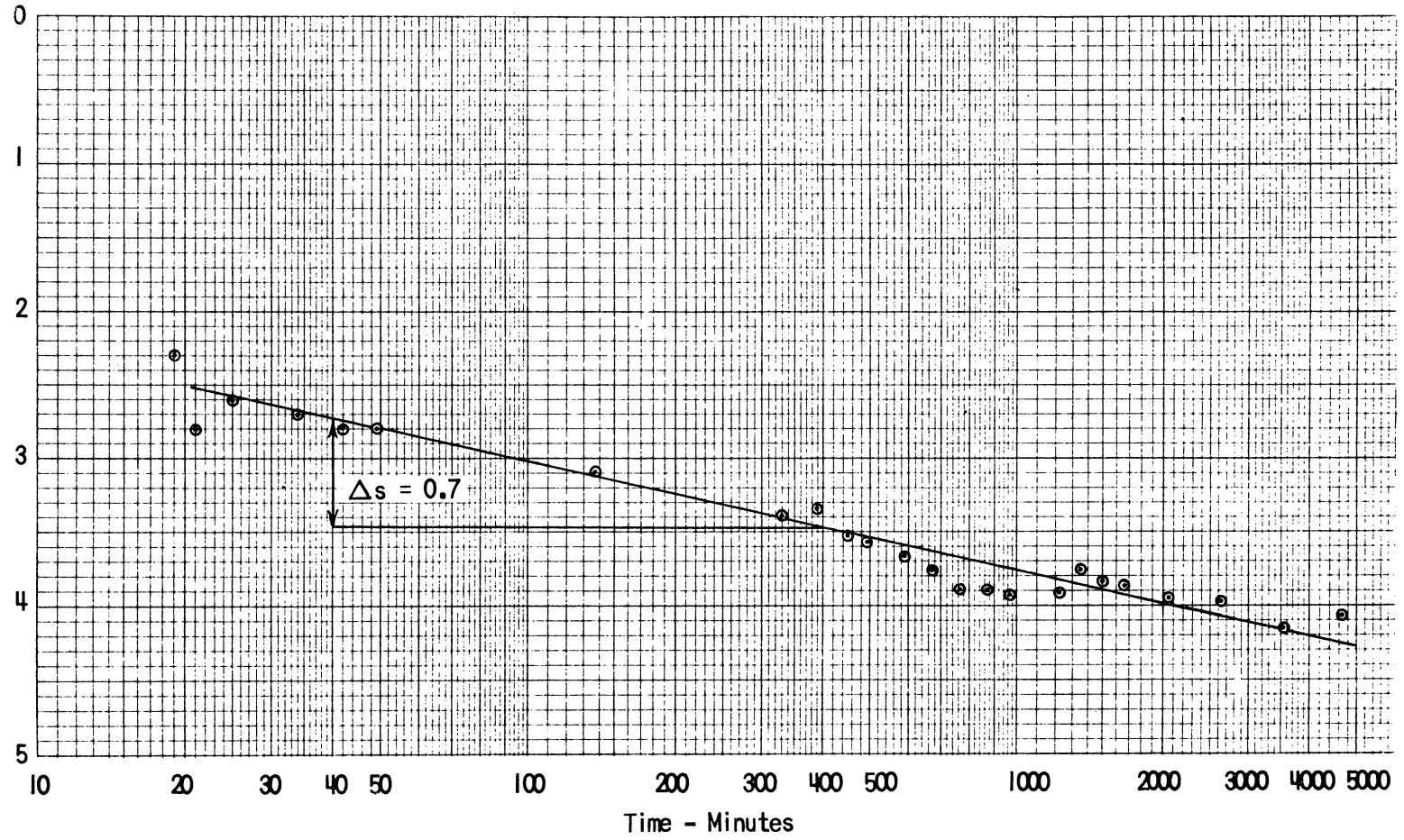


LOCATION MAP
Scale: 1" = 200'

DRAWDOWN - FERRY PIEZOMETER 3
CONROCK DEHESA PROPERTY

DRAWN BY: ALS | CHECKED BY: [signature] | PROJECT NO: 74-119A | DATE: 7-16-74 | FIGURE NO: 54

WOODWARD · GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

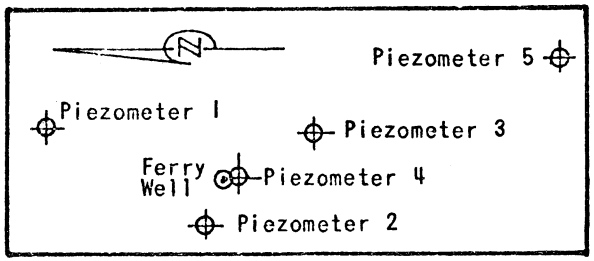


$Q = 200 \text{ gal/min}$

$\Delta s = 0.7 \text{ ft}$

$T = \frac{264Q}{\Delta s}$

$T = 75{,}000 \text{ gpd/ft}$

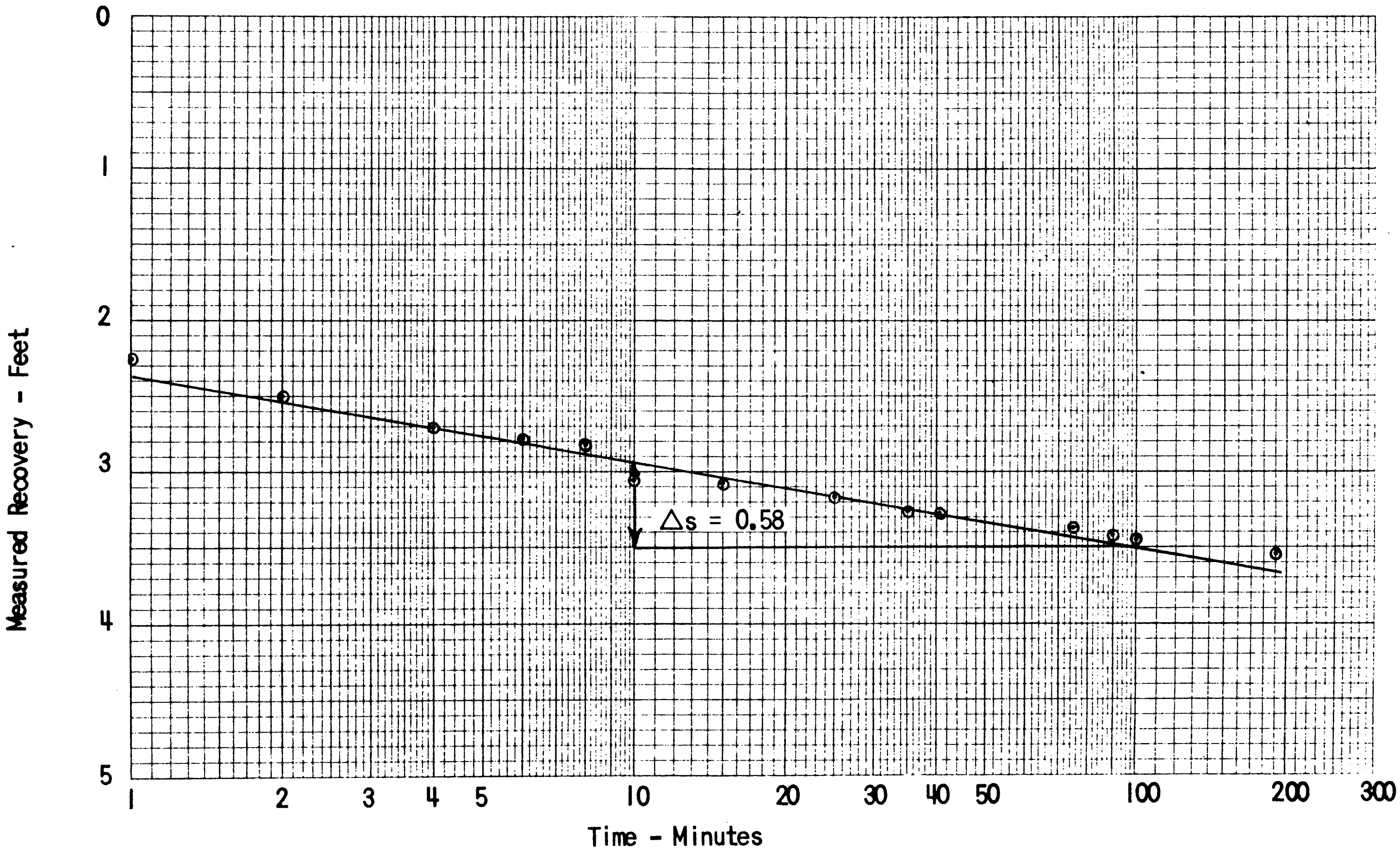


LOCATION MAP
Scale: 1" = 200'

DRAWDOWN - FERRY WELL
CONROCK DEHESA PROPERTY

DRAWN BY: ALS	CHECKED BY:	PROJECT NO: 74-119A	DATE: 7-16-74	FIGURE NO: 55

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

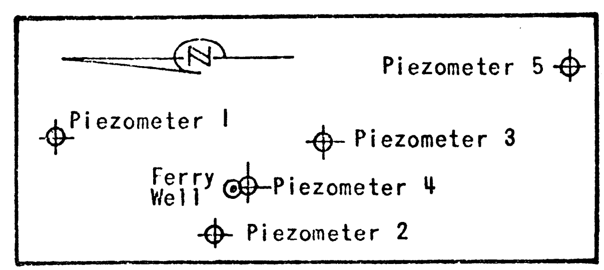


Q = 200 gal/min

Δs = 0.58 ft

$$T = \frac{264Q}{\Delta s}$$

T = 91,000 gpd/ft

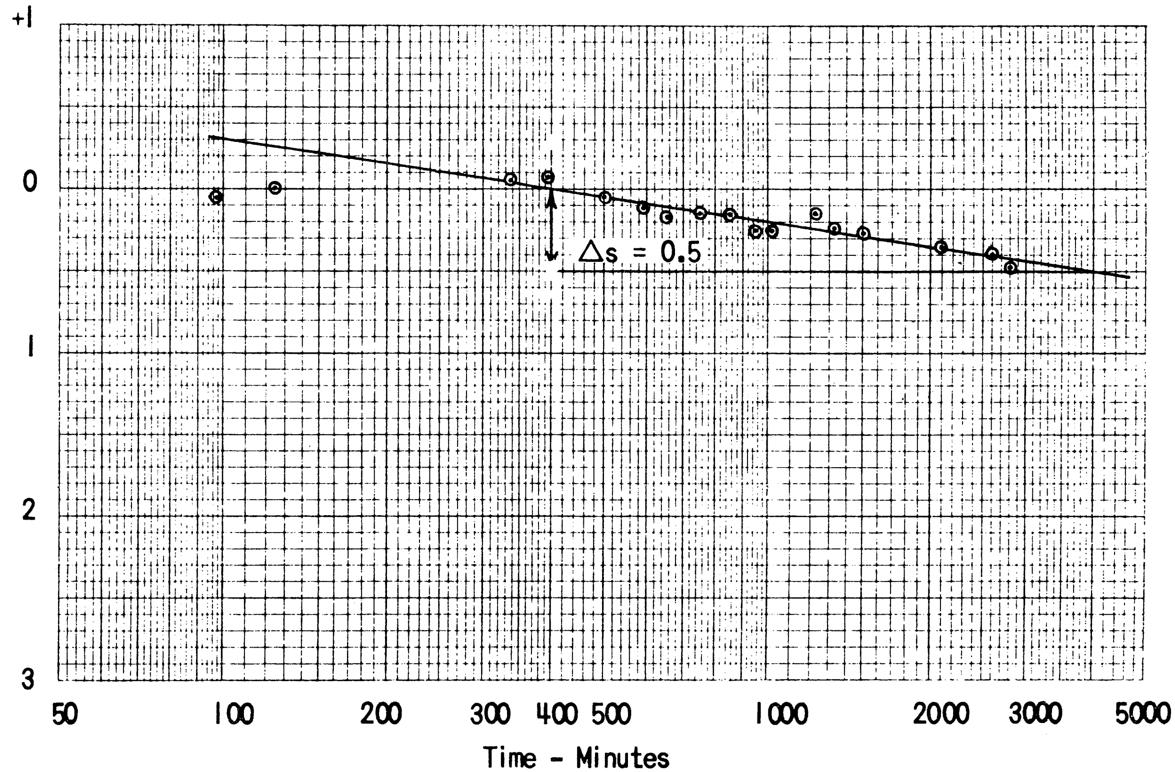


LOCATION MAP
Scale: 1" = 200'

RECOVERY CURVE - FERRY WELL
CONROCK DEHESA PROPERTY

DRAWN BY: ALS | CHECKED BY: [signature] | PROJECT NO: 74-119A | DATE: 7-16-74 | FIGURE NO: 56

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS



Q = 200gal/min

Δs = 0.5ft

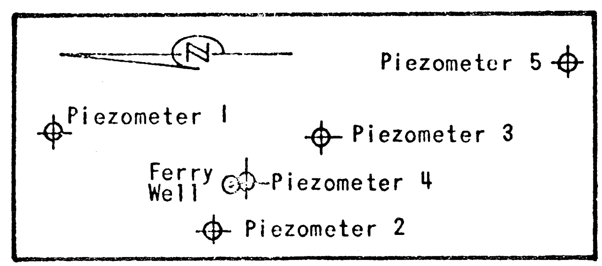
$$T = \frac{264Q}{\Delta s}$$

T = 105,000 gpd/ft

m = 40ft

$$P = \frac{T}{m}$$

P = 2640 gpd/ft^2

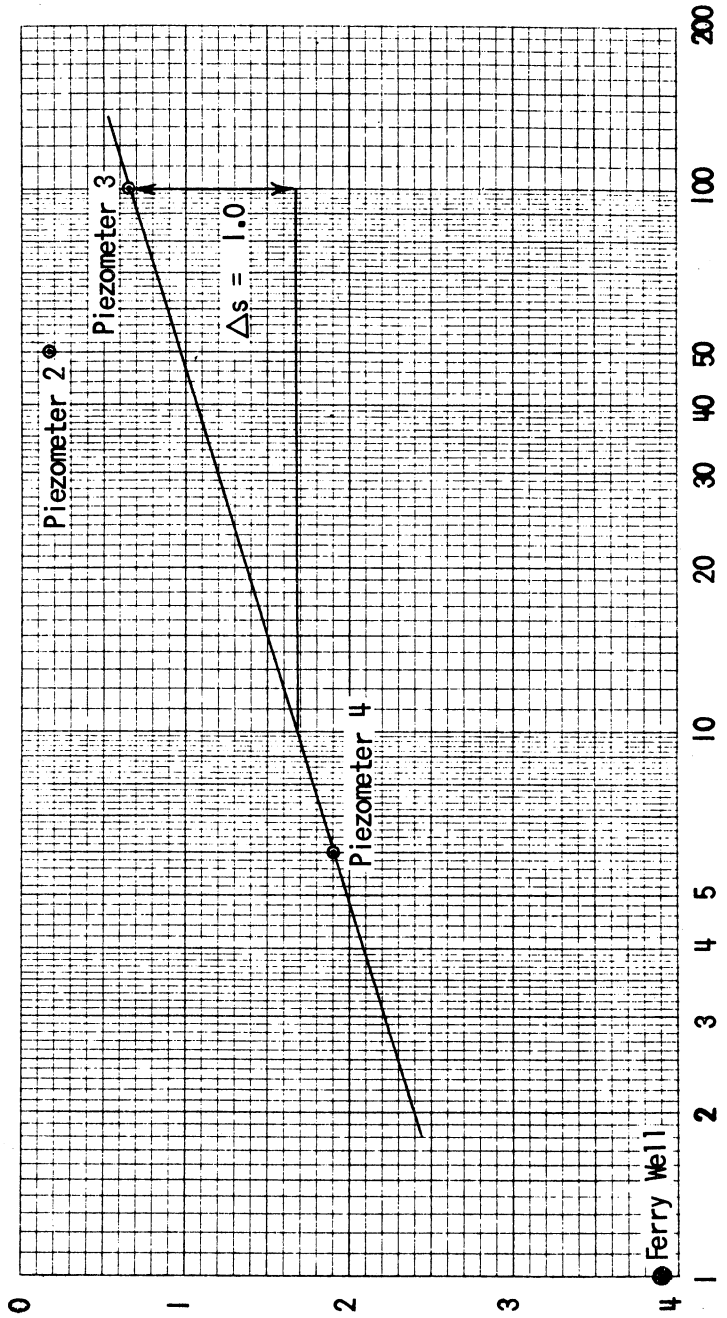


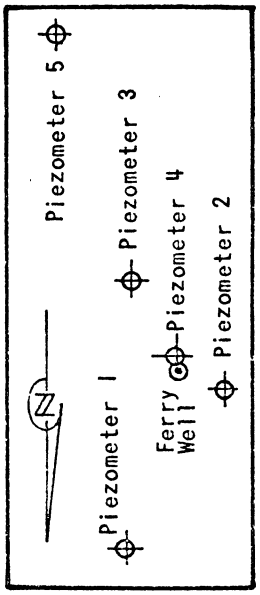
LOCATION MAP
Scale: 1" = 200'

DRAWDOWN - FERRY PIEZOMETER 2
CONROCK DEHESA PROPERTY

DRAWN BY: ALS | CHECKED BY: | PROJECT NO: 74-119A | DATE: 7-16-74 | FIGURE NO: 57

WOODWARD · GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS





LOCATION MAP
Scale: 1" = 200'

$Q = 200 gal/min$

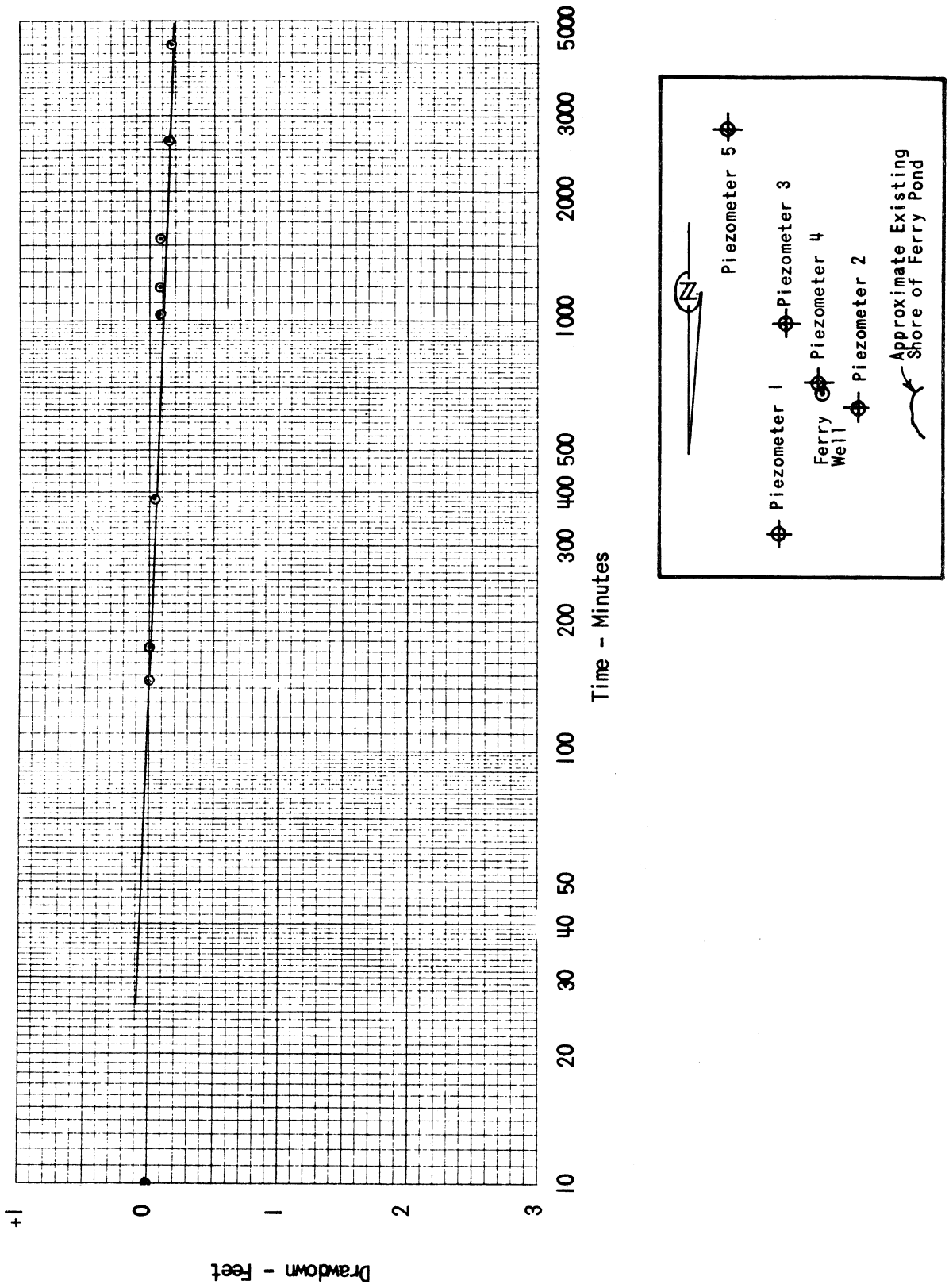
$\Delta s = 1.0$

$T = \frac{264Q}{\Delta s}$

$T = 105,000 gpd/ft$

DISTANCE VS DRAWDOWN - FERRY WELL CONROCK DEHESA PROPERTY				
DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-17-74	FIGURE NO: 58

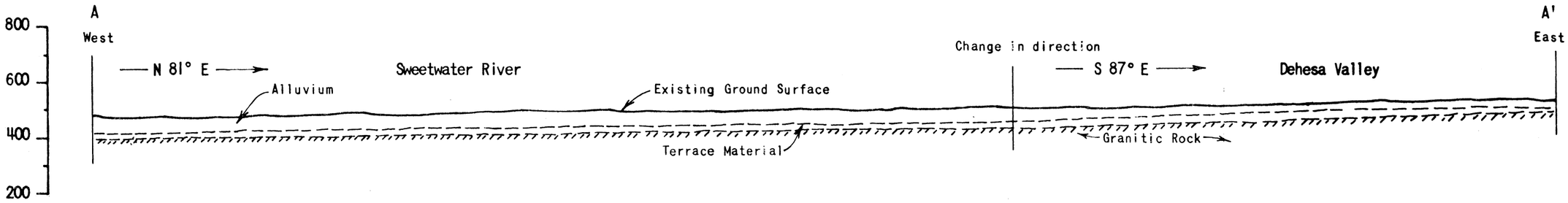
WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS



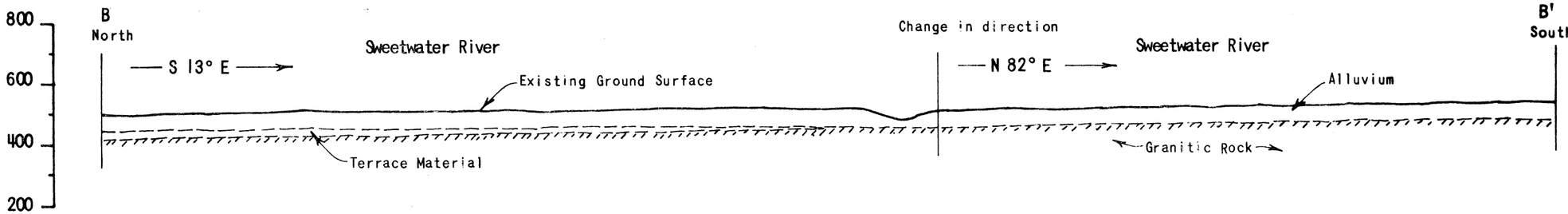
DRAWDOWN - FERRY POND CONROCK DEHESA PROPERTY				
DRAWN BY: ALS	CHECKED BY: JEC	PROJECT NO: 74-119A	DATE: 7-17-74	FIGURE NO: 59

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS

SECTION A - A'



SECTION B - B'



Graphic Scale in Feet

400 0 200 400 600 800 1000

SECTIONS A-A' AND B-B'
CONROCK DEHESA PROPERTY

WOODWARD - GIZIENSKI & ASSOCIATES
CONSULTING SOIL AND FOUNDATION ENGINEERS AND GEOLOGISTS
SAN DIEGO, CALIFORNIA

DR. BY: ALS	APPROX. SCALE: see above	PROJ. NO: 74-119A
CK'D BY: [illegible]	DATE: 7-12-74	FIGURE NO: 60

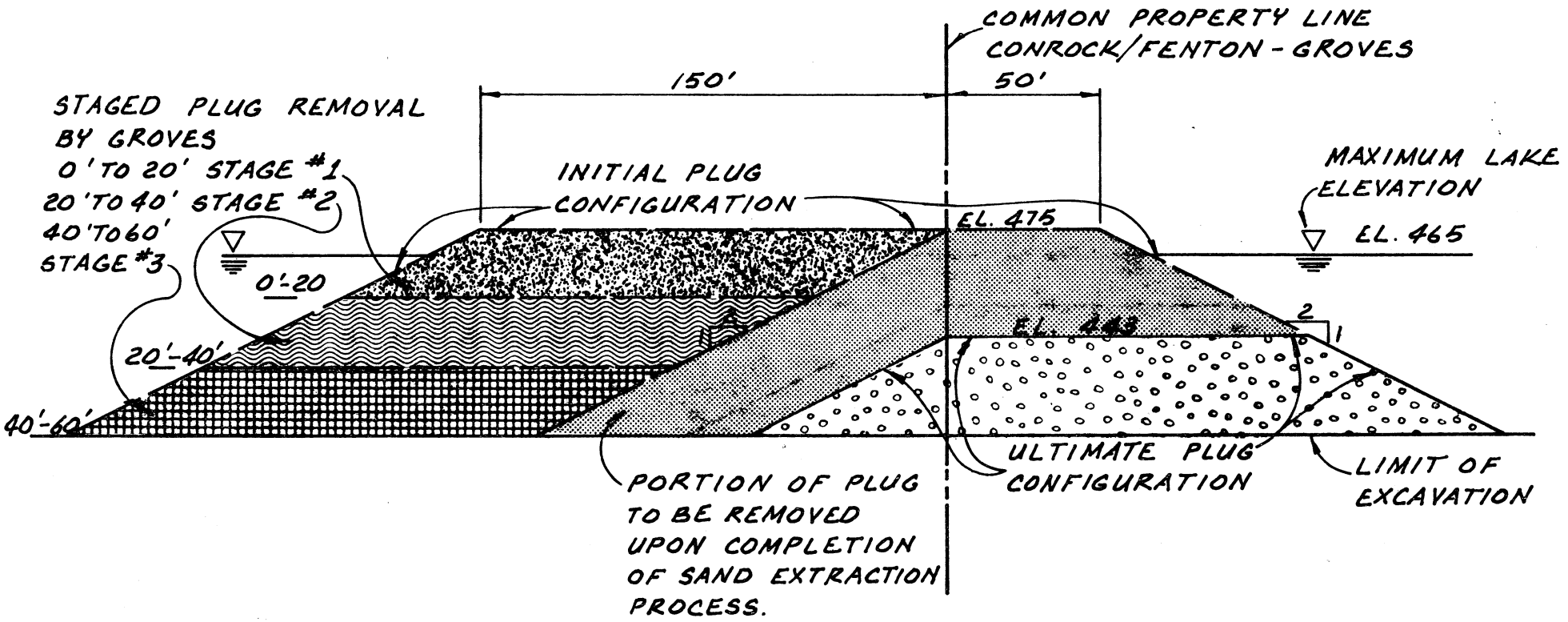
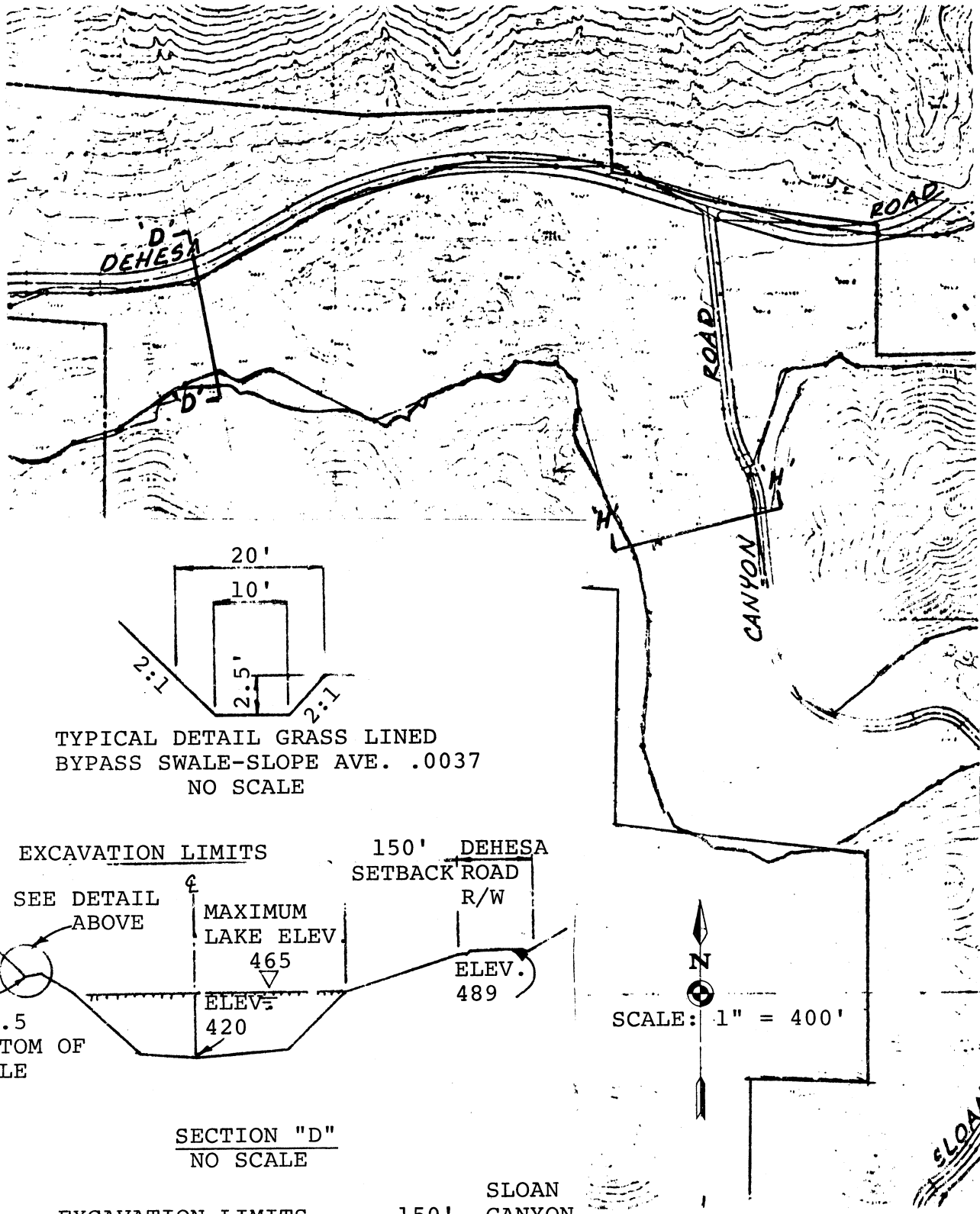


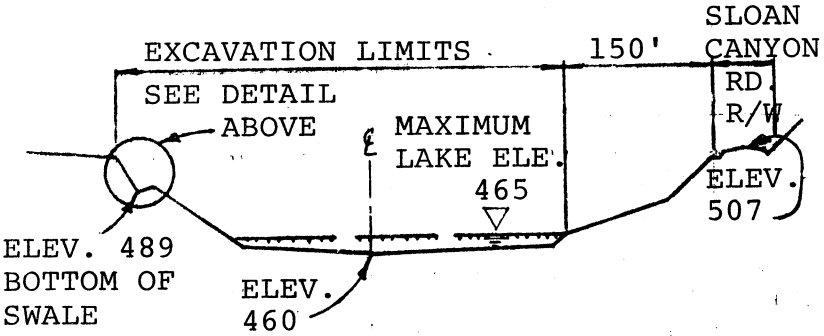
DIAGRAM OF SYSTEMATIC REMOVAL OF
PLUG BETWEEN CONROCK/FENTON-GROVES

Figure No 61



TYPICAL DETAIL GRASS LINED
BYPASS SWALE-SLOPE AVE. .0037
NO SCALE

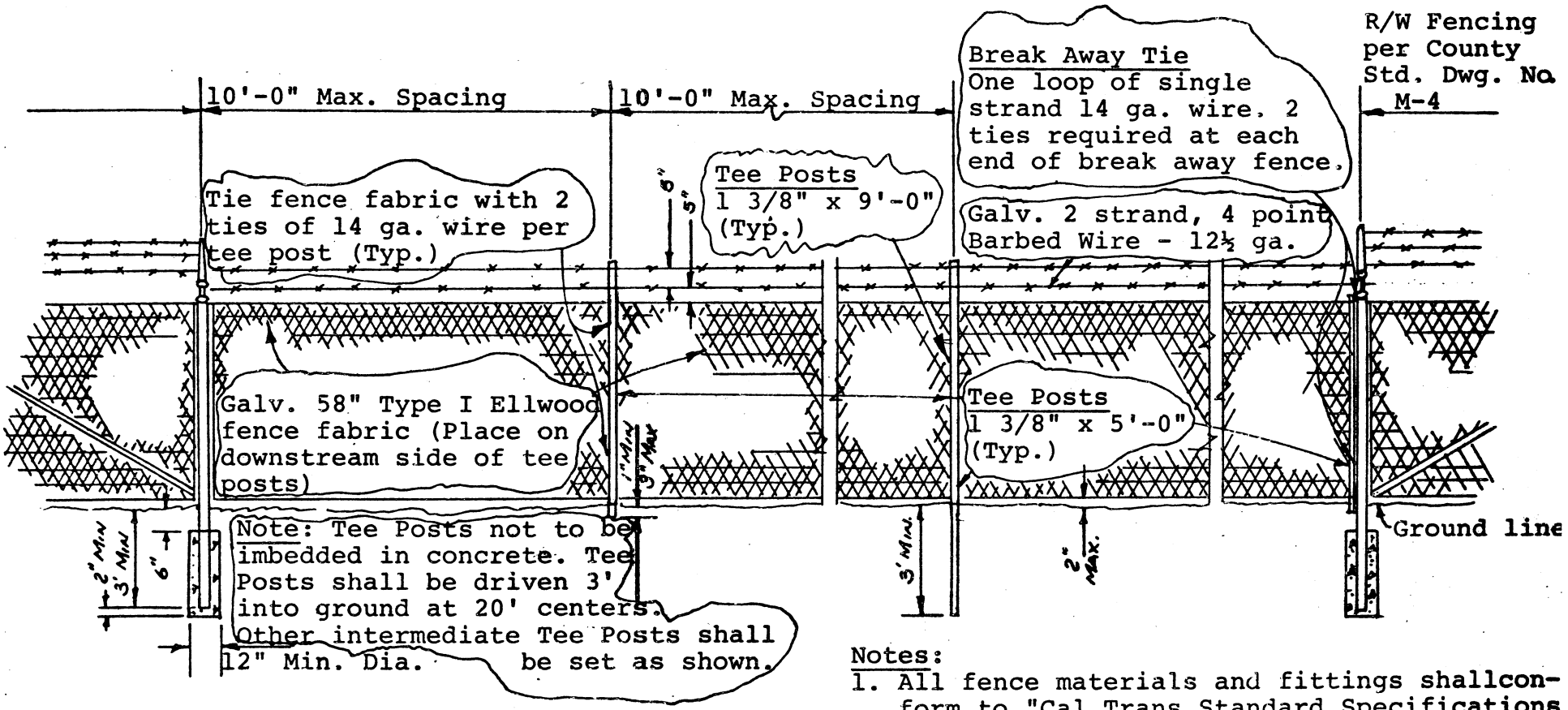
SECTION "D"
NO SCALE



SECTION "H"
NO SCALE

TYPICAL 100 CFS BY-PASS SWALE AND APPROXIMATE LOCATION RELATIVE TO PIT.

Figure No. 62



Notes:

1. All fence materials and fittings shallconform to "Cal Trans Standard Specifications Section 80, unless otherwise shown.
2. The fabric shall be placed on the downstream side of the posts, stretched taut, and fastened as shown.
3. Posts shall be 1 3/8" x 1 3/8" x 1 1/8" minimum, galvanized Tee fence posts.

BREAK AWAY FENCING

APPENDIX C

LAKE MANAGEMENT PLAN

TABLE OF CONTENTS

1.0

INTRODUCTION

1.1 BACKGROUND

Conrock Co., H. G. Fenton Material Co., and S. J. Groves and Sons Company propose to excavate approximately 13,500,000 cubic yards of high quality construction sand from the Sweetwater River bed at their Dehesa properties over a period of 15 years. Conrock Co. and H. G. Fenton Material Co. are joint venturing on this project and will excavate from a 529 acre parcel containing approximately 2.4 miles of the Sweetwater River. S. J. Groves and Sons will operate independently and extract from a 175 acre parcel directly downstream of the Conrock/Fenton property. Since most of the sand deposit lies beneath the natural groundwater table, part of the area from which the sand is removed will become a freshwater lake. Although two excavation operations are proposed, extraction will be coordinated to the extent that only one lake will ultimately result. As recovery of the resource proceeds, the water area will eventually reach 140-150 acres, with final depths ranging from a few feet to approximately 60 feet.

Conrock/Fenton and Groves are committed to implementation of all those rehabilitative and restorative measures, including but not limited to this lake management plan, that will create an aesthetically appealing, beneficial lake which will be an asset to the region.

1.2 OBJECTIVE

The objective of this lake management plan is to develop a feasible plan for enhancing and managing the freshwater lake that will result from the recovery of the sand resource from the Sweetwater River floodplain. This includes identifying and maximizing the many benefits of fresh water lakes and outlining solutions and/or alternatives to potential problems. The management plan is oriented toward developing a multipurpose lake as a viable companion activity to the recovery of the sand resource.

1.3 APPROACH

The ultimate use or purpose of the lake at the completion of the sand extraction project several years from now cannot be accurately or precisely specified at this time. Instead, final decisions will be made 10 years hence. Therefore, it is important that the management plan deal with those aspects of artificial lake development which are important no matter what kind of lake is involved or what its ultimate use may be. These include erosion control, bank stabilization, general configuration, and depth. Such things as type of fish to stock, how large to make swimming beaches, etc. can be decided at a later date when the long-range purpose is determined. Although the ultimate lake use emphasized in this report is recreationally oriented, the plan allows maintenance of the lake as a wildlife habitat through the life of the excavation operation. When excavation is completed, the alternatives of retaining the lake as a wildlife habitat or converting to recreational use will be open.

As the excavation of sand continues and the lake enlarges, there are several factors that must be considered and actions that should be taken to ensure that the lake will be a useful habitat and resource in the future. In the following management plan, no specific use for the lake is emphasized or recommended. Instead, an attempt is made to develop a lake which could be used for any of several activities, and one or more of them could be emphasized with a minimum expenditure of time and money by Conrock/Fenton and Groves.

It is expected that the management plan implemented in the recommended phases will result in a viable lake that will require the least modification in the final stages of development to be a beneficial multipurpose recreational resource. The data obtained from the recommended monitoring program will provide sufficient data for well-informed decisions concerning ultimate use of the lake, expecially with regard to its fish production and wildlife habitat potential.

It must be recognized that the operators will not permit their employees or the public to use the lake for recreational activities during the active life of the sand extraction project. This restriction is necessary for reasons of safety, security, and liability.

2.0

MANAGEMENT PLAN

2.1 GENERAL

The recommended lake management plan described below has been addressed as closely as possible to the specific considerations of developing a lake in Sweetwater River Valley. The recommendations are based partly on the literature concerning shallow, warm-water lake management and "real estate" lakes.

The concept and general form of the management plan has been approved in principle by the California Department of Fish and Game as indicated by the "AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION", No. V-74-76.

2.2 PHYSICAL CONFIGURATION OF THE LAKE

2.2.1 General Configuration of the Lake

The lake will be as large and unobstructed in shape as possible, within the limits of the planned excavation and setback constraints (Agardy and Boyd, 1971). The single, large lake which will result from the sand extraction projects is preferred over a chain of small lakes. The shape of the shoreline will be irregular, and the ratio of shoreline perimeter to total area will be kept as high as possible consistent with the sand extraction operations. A highly irregular shoreline tends to interfere with both horizontal and vertical mixing of the water and can lead to "stagnant" areas; however, an irregular shoreline also increases the amount of habitat available and results in an increased fish production from the lake. This plan achieves a balance of these factors.

The lake will be as deep as possible for much of its area and water depths will generally exceed 5 feet. There will be several relatively small areas of shallower water which will be suitable habitat for growth of selected rooted aquatic plants. In general, the areal extent of each shallow area and the total shallow area in the lake will be minimized. Otherwise, rooted aquatic plants might become extremely thick, mosquitoes will be able to survive, it will be a rather poor habitat for fish and/or benthic organisms, and the area will be unsuitable for swimming and fishing in the future.

2.2.2 Bottom of the Lake

Much of the sides and bottom of the lake in direct contact with the overlying water will be comprised of fine granular material such as sand and silt-sized soil. The area comprised of fine silt will be kept to a minimum. Certain areas of larger rocks and boulders in deeper portions of the lake are desirable from the aspect of providing habitat for various fishes and other aquatic organisms. During the sand extraction operation, the operator of the sand-removal equipment will minimize removal of large (> 1 foot) rocks and boulders for operational reasons. These boulders will provide this desirable habitat in areas where they are not covered by the fine sand from the washing operation.

Conrock/Fenton and Groves will remove sand from the lake area to the maximum depth that is possible to obtain all the high quality sand. This will result in a lake which will be about 60 feet deep at the deep end near the Singing Hills golf course, and

which will shallow up to zero at the shallow end. Fine sand and silt from the Conrock/Fenton sand washing operation will be returned to the deeper portion of the lake. Here, it will be less susceptible to disturbance from wind and wave action, floods and other water movement, especially if a depth of 15-20 feet of water can be maintained over this sediment. Material from the Groves sand washing operation will not be returned to the lake, but, rather, will be deposited in settling ponds from where it will be periodically removed and stockpiled out of the Sweetwater River floodplain. Excavation at the deeper end of the lake will not cut off the groundwater aquifer which lies about 60 feet below present ground level at the western end of the lake. Otherwise, the addition of the fine material to the bottom of the lake could slow flow through the main aquifer and effectively prevent groundwater from flowing through the lake to the river beyond the lake.

2.2.3 Banks of the Lake

The main consideration in the development of the banks of a lake is to reduce or eliminate erosion both from runoff from land and from wave action from the lake. An erosion analysis for the land portion has been completed (see Technical Appendix B), and Conrock/Fenton and Groves will protect the banks (or beaches) of the lake as necessary to prevent erosion.

Sloped banks of the lake (up to 150 feet inland from shoreline) will be comprised of coarse granular material along most of the shoreline. These banks will be planted as shown in the Phased Landscaping Plan. The choice of planted vegetation has been decided

by aesthetic considerations, intended land use, and cost/availability of material, with native vegetation being used predominantly. The slope angle at the immediate shoreline should be as steep as soil conditions, erosion potential, and construction techniques will allow (i.e., on the order of 2:1). The depth of this slope protection will extend to a minimum depth of 5 feet below water level. The purpose of the slope protection for the bank slope is to control the amount of erosion by wind and wave action on the shoreline (Bennett, 1962; Rickert and Spieker, 1971).

The very edge of the lake will have a vertical or near vertical drop of 10-12 inches around much of the perimeter. The preferred substratum of these dropoffs will be productive habitats, preferably a gravel-sand mixture or vegetation. A dense shoreline planting of rush-like water plants along portions of the shoreline will protect the vertical drop from wave erosion and also provide suitable habitat for aquatic organisms. This rapid dropoff feature is important from the standpoint of maintaining water quality, primarily because it helps control turbulence from small waves lapping against and eroding the shore. The dropoff is also effective in controlling the growth of many types of undesirable aquatic plants.

Considering the relatively large size and configuration of this lake and the costs involved, such measures as actively lining the lake bank with rocks, walls, etc. will not be used.

2.3 EROSION CONTROL

The erosion-sedimentation cycle is probably the most widespread problem of small lakes (Rickert and Spieker, 1971). The

greatest amount of sediments are generally deposited following heavy rains and subsequent water runoff. In addition to decreasing the aesthetic value of the lake, increased sediment loads may be detrimental to most forms of aquatic life. They accelerate the process of eutrophication and, by decreasing light penetration, decrease the amount of primary productivity from algae, higher plants, and phytoplankton (EPA, 1968). They also contribute to the filling in of the lake over time.

On the other hand, natural erosion of the surrounding watershed and subsequent sediment deposition in the lake would be beneficial. Natural erosion will bring coarse sand into the lake. This sand will settle on the surface of the finer sand and silt which will be deposited on a portion of the lake bottom after the sand-washing operation. As the amount of coarse sand increases, the bottom will become a more productive habitat for benthic organisms, and the biological productivity of the lake bottom will increase.

The bank and shoreline stabilization measures described in Section 2.2.3 will reduce erosion from these areas. Additionally, because of the size of the watershed or potential drainage area (about 40 square miles) relative to the ultimate size of the lake (about 0.2 square miles), sedimentation basins will be constructed at the upstream ends of the lake on Harbison Canyon Creek and at the crossing of Sloan Canyon Road over the Sweetwater River. Sediments carried by flowing water will be trapped in these basins which will decrease the velocity of flow below that necessary for transportation of sediment. The relatively sediment-free water will then flow into

the lake. The configuration of these basins is shown on the plot plan accompanying the Phased Rehabilitation Plan.

2.4 WATER QUALITY

The primary source of water for the lake will be groundwater of good quality (Table I). Previous analyses indicate that the quality is better than the groundwater water quality standards presently established by the San Diego Regional Water Quality Control Board (SDRWQCB, 1974), for the Sweetwater hydrologic sub-unit 9.20. Water quality analyses (Table I) of the Immenschuh Well and Ferry Pond (a small pond of about 1/2 acre located near the shallow end of the proposed lake) indicate both meet all the water quality standards established by the SDRWQCB for inland surface waters (SDRWQCB, 1974), and provide an adequate first approximation to the water quality conditions that may be expected in the lake.

Clean, clear water may be aesthetically pleasing and desirable, but it is not necessarily an asset if the proposed warm-water lake is to be biologically productive and yet remain free of aquatic weeds. There are several potential problems that could result from clear water. For instance, sunlight would be able to penetrate several feet into the water and would encourage the growth of rooted aquatic plants over a significant portion of the proposed lake (Florida Department of Natural Resources, 1973). These plants would:

1. Choke up the water surface (and in the future, after the sand extraction project is completed, prevent swimming or boating);

TABLE I

COMPARISON OF WATER QUALITY OBJECTIVES
AND GROUNDWATER QUALITY AT THE LAKE

Parameters[2]	Water Quality Objectives[1]		Groundwater Quality at the Lake[3]			
			Ferry Pond[4]		Immenschuh Well[5]	
	Groundwater	Inland Surface Waters	6/12/74	7/9/74	6/12/74	7/9/74
Total Dissolved Solids	1000	500	445	440	450	436
Chloride	400	250	118	125	103	109
% Sodium	60	60	42%	Not measured	40%	Not measured
Sulfate	500	250	42	48	57	54
Nitrate	10	Footnote 6	Not measured	None detected	Not measured	None detected
Iron	0.3	0.3	"	0.08	"	0.10
Manganese	0.05	0.05	"	None detected	"	None detected
Methylene Blue Active Substance	0.5	0.5	"	Not measured	"	Not measured
Boron	0.5	0.5	"	0.02	"	0.02
Odor	None	None	"	Not measured	"	Not measured
Turbidity (SJU)	5	20	2	"	2	"
Color (units)	15	20	3	"	3	"
Fluorine	1.0	1.0	Not measured	"	Not measured	"
Suspended Solids	No standard	No standard	1.0	"	None detected	"
pH Units	"	"	8.2	8.8	7.4	7.0
Hardness	"	"	200	185	225	215
Calcium	"	"	Not measured	44	Not measured	62
Magnesium	"	"	"	18	"	15

TABLE I (continued)

Parameters[2]	Water Quality Objectives[1]		Groundwater Quality at the Lake[3]			
			Ferry Pond[4]		Immenschuh Well[5]	
	Groundwater	Inland Surface Waters	6/12/74	7/9/74	6/12/74	7/9/74
Potassium	No standard	No standard	Not measured	2.0	Not measured	1.9
Sodium	"	"	"	85	"	80
Bicarbonate	"	"	"	128	"	201

1 Objectives are outlined in Tables 14 and 15 in "Abstract of Comprehensive Water Quality Control Plan for the San Diego Basin", California Water Quality Control Board, San Diego Region, April 1974. Water Quality Objectives for Sweetwater Hydrographic Sub-unit 9.20 are applied.

2 Concentrations not to be exceeded more than 10% of time (mg/l or as noted).

3 June 12, 1974 samples analyzed by Daylin Laboratories, Inc. in Los Angeles, California for Conrock Company, and July 9, 1974 samples analyzed by Environmental Engineering Laboratory in San Diego, California for Woodward-Gizienski & Associates.

4 Ferry Pond is located approximately where the shallow portion of the lake would end at its southeastern end.

5 Immenschuh Well is located approximately where the deep portion of the lake would end at its western end.

6 Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold phosphorus (P) concentrations of 0.1 mg/l for rapidly flowing streams, 0.05 mg/l for slowly flowing streams and 0.025 mg/l for lakes are recommended by EPA. These values are not to be exceeded more than 10% of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and approved by the Regional Board. Analagous threshold values have not been set for nitrogen compounds by the EPA; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P=10:1 should be used.

2. Bind up nutrients that would otherwise be available to the plankton and benthic organisms;
3. Decrease the amount of suitable habitat for larger game fish but increase the amount of escape cover and habitat for small fish;
4. Increase the likelihood of mosquito survival; and
5. Be expensive to remove or otherwise control.

Based on conditions in other small lakes and reservoirs in San Diego County, including the Sweetwater River drainage, and on the plan that the sand wash water containing mostly fine sand and some silt will flow by gravity through a pipe into the bottom of the lake, it is unlikely that the water in the proposed lake will be clear. It is more likely to be somewhat turbid and light levels necessary for plant growth are likely to be limited to 2 or 3 feet.

Conrock/Fenton proposes to return the fine sand and some silt obtained from the sand washing process and the wash water to the deeper, western end of the lake on their property. In the initial phases of the sand excavation operation when the size of the lake is small relative to the amount of wash water and fine material being piped in, the water is likely to be quite turbid due to the high concentration of suspended solids. Light penetration will probably be very low and biological activity below the upper few feet of water will probably be minimal. As the lake increases in size, the relative volume of wash water and find sand and silt will decrease, most of the material will settle out in the deeper areas over time, and

turbidity levels will decrease. After the sand washing process ceases, turbidity levels will drop further and stabilize, light will penetrate further into the water column, and biological productivity will increase.

To maintain compliance with the applicable water quality standards which will help to ensure a viable lake, every effort must be made to prevent water pollution. Nutrient enrichment from sewage, etc. may result in algal blooms, fouled lake water, fish kills, and other undesirable effects. The addition of other substances such as pesticides, herbicides, heavy metals, etc., may be toxic to lake organisms and would be a health hazard.

During the operational phase of the sand extraction project, there will be no residential development on the properties owned by Conrock/Fenton or Groves which comprises most of the land around the lake. At present, a few farms and houses in Harbison Canyon comprise the main residential development in the immediate upstream area of the lake. If development of the rest of the area around the lake is approved by agencies of jurisdiction after the sand extraction operation is completed, then the effects of residential development should be considered by those agencies.

Where there is residential development, storm runoff can be a potent source of pollution containing oils, fertilizers, pesticides, animal droppings, and many other wastes from community living. Thus, from the standpoint of water quality, it is recommended that the agencies of jurisdiction consider a storm drainage system designed to circumvent the lake and to empty into a municipal wastewater

treatment facility. In residential areas which are graded to drain toward the lake landscaping must be planned carefully so that it requires the application of only a minimal amount of fertilizers. Fertilizers should be applied sparingly, and only where and when needed. Otherwise, excess phosphates and nitrates, the main components of fertilizer, may be carried to the lake in runoff water from rain, lawn watering, etc.

Septic tank effluent must be controlled, especially in sandy soil such as found around the lake. Preferably, all sewage should be discharged into a municipal wastewater treatment plant; but if this is not feasible, then the agencies of jurisdiction should require that the distance between the lake and the septic tank tile fields be maximized. In this way, nutrient enrichment due to the effluent leaching through the sandy soil to the lake or tributaries emptying into the lake would be minimized if not eleiminated.

2.5 THERMAL STRATIFICATION

Most of the lakes and reservoirs which have been studied in San Diego County are classed as warm, monomictic lakes or reservoirs (Fast, 1968). In general, thermal stratification of these water bodies begins in March-April as the surface water warms up, and stratification continues throughout the summer. The warm upper layer (the epilimnion) is usually about 15 to 20 feet deep. The depth of this layer is only slightly influenced by total water volume or lake depth (unless the lake is less than 15 feet deep). The thermocline or metalimnion is defined as the zone of rapid temperature change, usually more than 1.0°C per 1 meter change in

depth; it may be 6 to 8 feet thick. The deeper, cold water or hypolimnion extends from the metalimnion to the lake bottom. By November-December, the surface water temperature cools, wind and wave action mix the epilimnion with the hypolimnion, and the temperature and other properties become homogeneous throughout the water column.

During the summer periods of thermal stratification, the hypolimnion is effectively sealed off from the surface, and it begins to stagnate. Dissolved oxygen levels drop and anaerobic conditions begin to dominate. Also, hydrogen sulfide, iron, manganese, and other ion concentrations increase. Fish and most other motile organisms move into shallow water where the habitat is more suitable. Some sessile or sedentary benthic organisms which cannot move from the hypolimnion may die.

In the lake which will result from the Conrock/Fenton sand extraction project, thermal stratification should not be of major significance in the functioning of most of the biological community. By the time the final phase of the Conrock/Fenton project is completed, the fine sand and silt from the sand washing operation will have filled the lake until the depth will be about 15 to 20 feet. Therefore, the hypolimnion probably will not form and there should be no areas of stagnant bottom water.

However, thermal stratification should occur in the deeper portions (up to 60 feet) of the final lake where S. J. Groves will excavate. Stratification will occur due to the normal cycle typical of monomictic lakes as described above. Groundwater, which may be

as much as 8-10° colder than surface water in the area (as measured in the Ferry Pond), should not add significantly to the stratification of the deeper portions of the final lake due to the extent of the shallower (15-20 feet) upper portion of the lake which has greater mixing potential. Water movement through the lake (1-2 feet per day) is slow enough to allow sufficient mixing of the cooler groundwater and surface flows entering the lake.

The stratification behavior of the lake, particularly the deeper end, will be monitored prior to making a final determination of the ultimate use of the lake, especially if fish production is to be important.

2.6 BIOLOGICAL COMPONENTS

If the ultimate goal of the lake management plan is to create a lake for fishing, some thought should be given to the flora and fauna which would be introduced into the reservoir. The final goal should be to establish an ecosystem which yields a harvestable quantity of fish.

The lake configuration and physical control of water, sediments, and nutrients entering the lake are designed to create a habitat suitable for desirable flora and fauna. In addition, the recommendations are designed to slow the process of eutrophication in the lake, which in advanced stages provides a poor quality habitat.

A simplified example of an aquatic ecosystem that is desirable includes:

1. Phytoplankton as primary producers;
2. Herbivorous fish and aquatic invertebrates (zooplankton and benthic organisms) as primary consumers; and
3. Carnivorous fish as secondary consumers and the product harvestable by man.

2.6.1 Flora

The plants associated with a lake may be separated into several groups as follows:

Algae

- Phytoplankton which is made up of free-floating single cells or, at most, colonies of a few cells.
- Filamentous algae which form strands of cells which may grow on the bottom, but often float on the water's surface.
- Macro-algae which grow from the bottom and are supported by the water.

Higher Plants

- Floating aquatic plants which are unattached and float on the surface; e.g., duckweed.
- Submerged aquatic plants which grow from the bottom, do not usually reach the surface, and are supported by the water; e.g., pondweed.
- Floating rooted aquatic plants which grow from the bottom and have leaves that float on surface; e.g., water lilies.

- Emergent aquatic plants which usually grow above the surface and are self-supporting; e.g., cattails, bulrush.
- Riparian plants and trees which are not truly aquatic, but are associated with water; e.g., willows.

In general, the objective of the lake management plan is to encourage the growth of phytoplankton, which is generally more readily utilized directly by benthic organisms and directly or indirectly by fish than are the other algae or higher plants. To a lesser extent, emergent aquatic plants should be encouraged, especially around the edge of the proposed lake where they can serve to stabilize the banks, bind up nutrients, and provide habitat, nesting sites, escape cover, etc. for fish, especially juvenile game fish.

On the other hand, the growth of other forms, especially filamentous algae and floating aquatic plants, should be discouraged as they become a nuisance when they become abundant.

Phytoplankton populations will begin to colonize the lake almost as soon as the first water begins to collect in the excavation. Species will be brought in by waterfowl, runoff from upstream reservoirs, and various other means. If nutrient additions to the lake are controlled by methods previously described, the more desirable species of algae should prevail.

Emergent vegetation, such as cattail, bur-reed, bulrush, and other reed-like plants will be strictly controlled and limited to a rather narrow band of a few yards in shallow shoreline areas. Initial population of the littoral areas by these plants can be facilitated by planting individuals at intervals in the areas where they are

desired. They will rapidly become more dense where planted and spread along the shoreline where the soil and water conditions are suitable. However, a large area of emergent vegetation may provide habitat for mosquitoes and may also attract birds, and the addition of their feces, etc. to the water could increase the nutrient level in the lake. Control of the vegetation will control these potential problems.

Riparian vegetation such as willows, pampas grass, western sycamore, cottonwoods, and other trees and shrubs will be planted in a manner consistent with the intended use of the shoreline areas. These plants along with grass, forbs, and other small plants will aid in erosion control along the shoreline. They will also bind up some of the nutrients either before or after they reach the lake. In either case, they will tend to reduce the process of eutropication.

Provided that: the banks and submerged shore slopes of the lake are steep; the water is relatively turbid due to high plankton populations; nutrient levels are not excessive; and undesirable plants are not introduced, there is relatively little chance that nuisance plants such as filamentous algae, and/or floating or submerged aquatic plants will become firmly established and abundant in the lake. If they do, then steps will be taken to reduce or eliminate their populations. Though the state-of-the-art is advancing rapidly, present methods to control aquatic weeds include raising or lowering the water level, mechanical removal, biological control, or some combination of these (Florida Department of Natural Resources, 1973; Bennett, 1962). The Aquatic Weed Identification

and Control Manual (Florida Department of Natural Resources, 1973) provides a relatively complete list of techniques that could be used in Florida; some may work at this lake. However, before an aquatic plant control program is undertaken, the advice and assistance as well as necessary permits from the local, state, and Federal agencies with jurisdiction will be obtained.

Floating rooted aquatic plants will probably become established by natural processes in shallow water, generally just offshore from the emergent vegetation and possibly in the shallow reaches of the lake. They provide habitat for small adult fish and for juvenile fish as well as aquatic insects. So long as the plants do not become too abundant, they probably will not need to be controlled. However, when dense populations cover large areas, several problems may arise:

1. Nutrients otherwise available for fish production become bound up in the plants;
2. Mosquitoes may breed and larvae survive among the plants where predators may have difficulty capturing the larvae;
3. Overpopulation by small fish which can escape from predators in the weeds; and
4. Loss of recreational area especially for swimming, boating, or fishing.

Before the floating rooted aquatic plants begin to become a nuisance, they will be controlled in an appropriate manner.

2.6.2 Fauna

The main components of the fauna that is likely to live in or near the lake are:

1. Aquatic invertebrates including insect larvae, aquatic insects, crayfish, clams, snails, oligochaetes, nematodes, and others;
2. Fish;
3. Birds, both waterfowl and water-associated birds such as red-winged blackbirds, sandpipers, etc.; and
4. Transient mammals including people.

Over a period of time aquatic invertebrates will develop resident populations. Benthic or bottom dwelling organisms are an important food source for larval and young fish. A gravelly bottom, or at least a bottom not covered with silt is the preferred substratum of most aquatic invertebrates, but fine sand with some silt as is likely to occur there will be suitable for many of the same kinds of organisms. However, production of these organisms in the region where the fine material from the washing process is deposited may be relatively lower. As natural erosion and sedimentation of coarser sand particles over this fine sand and silt occurs, the bottom will become a more productive habitat for aquatic insects as well as other invertebrates. Most of the aquatic invertebrates need relatively high levels of dissolved oxygen to survive and thus do not survive well below the hypolimnion of a thermally stratified lake.

This will be a problem in the western end of the lake where depth will exceed the hypolimnion. It should not be a problem in the shallower portion of the lake excavated by Controck/Fenton.

Of the aquatic invertebrates, insect larvae, especially midges, comprise the major portion of the diet of warmwater fishes in southern California lakes and reservoirs (Inland Fisheries Branch, 1970). Clams and crustaceans such as crayfish may be important to some fish. In general, oligochaetes and nematodes are not a significant part of the fishes' food web.

There should be no need to introduce any invertebrates into the lake system. However, it may be necessary to control some nuisance species that develop large populations, particularly mosquitoes, gnats, and flies. In addition to controlling their populations through vegetation management as described previously, it may be necessary and/or desirable to control them by other means where permissible. In particular, the mosquito fish, Gambusia affinis, will be stocked in the lake during the early phases of the development.

The establishment of a harvestable fish population by the time the lake is completed may be highly desirable and one of the major objectives of the lake management plan. If the proper lake management techniques have been practiced to the time of fish stocking, it would be relatively easy to establish a viable self-sustaining population of warmwater gamefish. In general, stocking would include forage species which feed on the plankton and aquatic invertebrates which in turn serve as forage for species which are

carnivorous and harvestable by man. Similar lakes in the San Diego area support populations which include bass, bluegill, white crappie, catfish, shad, minnows, and other fish.

Which species to stock in the lake would be discussed with the appropriate fish and wildlife agencies, especially California Department of Fish and Game. To a large extent, the final decision will depend on:

1. What the fishing public wants to fish for and catch;
2. What species are available from the hatcheries;
3. The costs involved in stocking weighed against the benefits; and
4. What species will survive and maintain a self-sustaining catchable population of fish.

No specific suggestion concerning fish species composition or stocking ratios are given here. These cannot be predicted without more detailed and accurate information concerning the physical-chemical-biological characteristics of the lake. These data will come from the suggested monitoring program (see below). In addition, the state-of-the-art of fish stocking and subsequent management of the fishery is rapidly advancing and changing; by the time the lake is ready for stocking, better techniques based on more experience and knowledge will probably be available.

Artificial destratification of the deep western portion of the lake may be an important aspect in the lake management plan.

Artificial circulation will eliminate any oxygen deficit present at the greater depths while improving water quality and providing additional living space for fish and other organisms. Destratification has in some cases retarded the excessive growth of blue-green algae and increased the transparency of the water mass (Malueg, et al, 1973). Several techniques of artificially circulating a lake by release of compressed air deep within a lake have been developed. These techniques have been shown to be efficient, rapid, and relatively inexpensive (Fast, 1966). The proper method for use at the subject lake will depend upon the condition of the water mass, the physical characteristics of the lake basin, and the state-of-the-art of artificial destratification at that time.

Birds and transient mammals must be expected to be residents of the lake from time to time. Their contribution to aesthetic appeal will be considerable. In general, their impact on the water quality should be minimal though the feces from large numbers of waterfowl could add a significant amount of nutrients to the lake.

3.0

SCHEDULE

The following schedule is presented as a guide to when certain aspects of the lake management plan will begin. It is related to Phases I - V as defined in the Specific Plan, and not to calendar dates or time periods. The various actions are listed under each phase in approximately the order in which they should be carried out; i.e., those listed first should begin soon after that phase begins while those listed last begin later in that phase.

Phase I

1. Begin excavation and return sand wash water with fine sand and silt to the bottom of the lake-to-be.
2. As Phase I excavation advances toward Sloan Canyon Road and after water level reaches approximately its highest average level, begin shoreline erosion control measures, especially planting of emergent vegetation at shoreline and planting of grass, trees, shrubs, etc. on upper banks.

Phase II

3. Continue shoreline erosion control measures, especially planting shoreline and bank vegetation as Phase II continues and as water level stabilizes.
4. Begin monitoring physical and chemical parameters of lake water on a semi-annual basis.

5. Toward the end of Phase II, begin monitoring plankton on a semi-annual basis, preferably at the same time as the physical and chemical parameters are monitored.

Phase III

6. Continue shoreline and upper bank stabilization and erosion control.
7. Continue monitoring physical and chemical parameters of lake water on a semi-annual basis.
8. Continue monitoring plankton on a semi-annual basis.
9. Monitor the movement, distribution, stability, and other physical characteristics of the fine sand and silt being deposited in the bottom of the lake.
10. When lake section of excavation is completed, finish landscaping, shoreline and bank erosion control, planting of emergent and riparian vegetation, and other physical alterations. This may carry through Phase IV.

Phase IV

11. Continue shoreline and upper bank stabilization and erosion control as well as landscaping and other physical alterations as applicable.
12. Continue monitoring physical and chemical parameters of lake water, but increase frequency of measurement of temperature-depth and dissolved oxygen-depth profiles to at least four times per year to determine the presence or absence, and behavior of thermal statification.

13. Continue monitoring plankton on a semi-annual basis.
14. Continue to monitor movement, distribution, stability and other physical characteristics of the fine sand and silt being deposited on the bottom of the lake.

Phase V

15. Allow about one or two years after the sand extraction and deposition of fine sand and silt from the washing process is completed, for the lake to "stabilize" before deciding stocking procedure. During this time, monitor physical and chemical parameters at least four times per year and preferably oftener. Also, the plankton and benthos should be monitored at least four times per year. The stability, physical characteristics, depth, thickness and especially distribution of the deposition of fine sand and silt on the bottom of the lake should be determined.
16. Stock fish as recommended by fish and wildlife authorities after the lake has "stabilized".
17. Monitor and manage fish populations as necessary.

4.0

MONITORING PROGRAM

The purposes of the monitoring program are several, specifically:

1. to determine if there is seasonal thermal stratification of the lake and, if so, to determine the behavior and structure of the stratification;
2. to determine if the thermal stratification results in low dissolved oxygen levels at the lake bottom and thus a poor habitat for fish or benthic organisms;
3. to determine the physical-chemical parameters of the lake and how they change seasonally and during the life of the lake;
4. to determine nutrient levels and whether or not they are so high as to accelerate eutrophication;
5. to determine and document the establishment and changes in abundance of the several groups of organisms that will enter the lake by natural processes, especially plankton, aquatic plants, and benthic organisms; and
6. to discover the presence of nuisance organisms such as filamentous algae, mosquitoes, etc.

By monitoring the lake on a regular, periodic basis, it will be possible to observe and/or predict the occurrence of certain changes in water chemistry, the appearance of undesirable organisms, or other events which are not desirable in a recreation-oriented lake. Steps would then be taken to mitigate these changes or occurrences, if it

is technically and/or economically feasible.

The monitoring program is designed to monitor changes in three main characteristics of the lake, namely:

1. physical and chemical parameters of the water;
2. fauna and flora of the water column and on the bottom; and
3. distribution, movement, stability, and other characteristics of the fine sand and silt from the sand washing operations.

The physical and chemical parameters which will be monitored throughout Phases II - V (see Section 3.0) include:

1. all the parameters listed in Table I of this Lake Management Plan, and especially those required by the San Diego Regional Water Quality Control Board and other regulatory agencies having jurisdiction.
2. temperature-depth profile;
3. dissolved oxygen-depth profile; and
4. water clarity as measured by a secchi disc or irradiance meter.

These parameters will be measured at several stations both in shallow water near shore and in deeper water toward the middle and lower end of the lake. As the lake increases in size, more stations will be sampled. Initially, sampling frequency will be twice a year, once in summer and once in winter. As the deposition of fine sand and silt into the lake nears completion, i.e., late Phase IV, sampling of temperature-depth and dissolved oxygen-depth profiles will be

done at least four times per year, preferably March-April, July, November-December, and February. During Phase V, for about two years after sand extraction and washing is completed, all physical and chemical parameters will be monitored during these same four periods each year.

The biological populations which will be sampled include plankton and benthic plants and animals. Plankton will be sampled at the same stations as the physical and chemical parameters and at the same time. Samples will be obtained from several depths and analyzed for species abundance and composition.

Benthic organisms will be sampled at several stations along several transects from shallow to deep water. In Phase V, for about two years after sand extraction and washing is completed, sampling will be done four times per year, preferably at the same time the physical-chemical measurements are made and plankton are sampled.

In late Phase IV and Phase V, a fish sampling program will be conducted annually to determine whether or not there has been accidental introduction of fish into the lake, and how abundant these fish are.

During Phases II - V, an annual or semi-annual qualitative survey of the aquatic vegetation, as well as the riparian community will be conducted, especially near shore, to determine the success of plantings.

5.0

SUMMARY OF RECOMMENDATIONS

The important features of the lake management plan are listed below.

1. The lake will be a single, large, unobstructed body of water with an irregular shoreline.
2. The lake will be as deep as possible throughout, and be a minimum of 3 feet deep wherever possible.
3. The bottom will be comprised primarily of sandy soil.
4. The fine sand and silt from the sand washing process will be deposited near the deeper end of the lake.
5. The bank at the shoreline will be as steep as possible and will extend at this slope from 3 to 5 feet below the water line. The very edge of the lake will have a near vertical drop of about 1 foot.
6. Portions of the lake shoreline will be stabilized by planting emergent vegetation.
7. Erosion from the banks will be controlled to reduce sedimentation in the lake.
8. Water pollution from the operational phase will be controlled and minimized.
9. Plankton growth will be encouraged and growth of other aquatic vegetation controlled or actively discouraged.
10. Emergent aquatic vegetation will be planted along portions of the shoreline, but will be controlled in area and

density of growth.

11. Riparian vegetation will be planted along the sloped banks as shown in the Phased Landscaping Plan.
12. Nuisance plants such as filamentous algae or floating aquatic plants will be controlled.
13. Fish will be stocked in collaboration with California Department of Fish and Game and other interested parties.
14. The physical-chemical parameters of the lake will be monitored at several sites during the growth of the lake.
15. The benthic, plankton, and fish populations of the lake will likewise be monitored.

6.0

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APPENDIX D

NOISE STUDY

CONROCK/FENTON/GROVES SWEETWATER PROJECT

NOISE STUDY

I. INTRODUCTION AND SUMMARY

The characterization and description of the noise levels and impacts associated with proposed sand excavation and processing operations by Conrock/Fenton/Groves in the Sweetwater River floodplain near Sloan Canyon is submitted herein. The phenomena involved are complex, changing and difficult to characterize with a handful of numbers and lines. Only long term changes have been treated, and thus construction-generated noise and other short term activities are not addressed. All levels given in the text were measured with a B&K 2203 or GR 1565 sound level meter using the A-weighting network and slow response mode. Noise levels used in the calculations were always averages of several measurements on different vehicles or pieces of similar equipment. In all cases, averages of the peak levels under load conditions were used.

The results, if they may be generally summarized, are that plant and processing equipment generated-noise will be confined to the property owned by the applicants (with CNEL 55 being the noise boundary) if the plants are utilized for an eight hour day. If a sixteen hour day is used, CNEL 55 contours produced by the Groves operation would extend outside its property line. Increased truck traffic associated with the project will produce higher noise levels to the extent of 2 to 3 dB at locations adjacent to Dehesa Road.

Excavation, brushing and grading equipment when operating at the extremities of the site could cause noise levels in excess of CNEL 55 at nearby residences and the Dehesa School unless steps are taken to mitigate this impact.

II. NOISE CRITERIA

The Noise Element of the San Diego County General Plan, Chapter 4 Action Program 4b4, reads as follows:

> "... Required that sponsors of new non-residential development demonstrate to the County that the proposed development would not create noise levels which would be rated "normally unacceptable" or "unacceptable" at the building sites of any existing or approved adjacent residential development based on the development standards contained in Policy 4b."

The noise standards developed as Policy 4b in the Noise Element are:

DEVELOPMENT STANDARDS: NOISE

	Residential Areas Where Preexisting Noise Levels Are CNEL 55 or Less	Residential Areas Where Preexisting Noise Levels Are CNEL 56-64	Residential Areas Where Preexisting Noise Levels Are CNEL 65 or Greater
Acceptable	CNEL < 55 dB(A)	CNEL < 60 dB(A)	CNEL < 65 dB(A)
Normally Unacceptable	CNEL = 55/75 dB(A)	CNEL = 60/75 dB(A)	CNEL = 65/75 dB(A)
Unacceptable	CNEL > 75 dB(A)	CNEL > 75 dB(A)	CNEL > 75 dB(A)

These are the criteria which will have to be met by the Conrock/Fenton/Groves projects in order to satisfy the Noise Element standards of the County General Plan.

The San Diego County Code includes sections which specify allowable noise levels. These sections (36.401 through 36.443) are given below:

San Diego County Code

The County's noise ordinance prescribes noise regulations for a wide variety of noise sources. Each source, by its nature, requires standards specific to it. The following standards are for fixed and non-stationary sources (Section 36.404). A violation occurs when the Sound Level Limit is exceeded by 5 decibels:

(a) Zone Ambient Noise Level Limits. "Noise level limit" or "sound level limit" referred to in this section shall mean that noise level limit as determined from the table below:

Zone	Time	Sound Level Limit (A-Weighted) Decibels
R-1, R-1-A E-1-A, R-1-B, R-1(15) LC, LC-A, T-Temporary R-2 and R-2-A	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
R-3, R-4, R-5, R-P, PRD and all other residential and estate zones	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
All Commercial zones	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 55
M, M-1, M-2	Anytime	70
M-3 and all other Industrial and Agricultural zones, including E-2-B	Anytime	75

If a measurement location is on a boundary between two zoning districts, the noise level limit for the zone from which the sound is emanating shall apply.

(b) Time Duration Correction Table. The time duration allowances set forth in the table below shall apply to those noise level limits set forth in subsection (a) above.

Allowances for Sound Levels lasting less than an hour:

Duration	Allowance Decibels
Up to 30 minutes per hour (50%)	+3
Up to 15 minutes per hour (25%)	+6
Up to 10 minutes per hour (16%)	+8
Up to 5 minutes per hour (8%)	+11
Up to 2 minutes per hour (3%)	+15

Since the property in question is zoned Agricultural, the Noise Element criterion is the stricter of the two standards. Thus, this analysis will utilize the Noise Element standards.

III. CURRENT NOISE LEVELS

Background or ambient noise levels at the site, recorded in the absence of any mechanical source, ranged from 35 to 45 dBA depending on location and the amount of wind generated noise present at the time. Man-made noise sources clearly dominated.

Existing Sand Processing Operations

Noise generated by current sand processing operations at the Groves plant is shown in Figure 1 in the form of CNEL contours. Each line represents a series of points having equal noise levels as measured in the CNEL system. The plant generated noise is relatively constant and contours were determined fairly accurately. The plant was assumed to be in operation for eight hours per day, during the period after 7 a.m. and before 7 p.m., so that no evening or nighttime CNEL correction was applied; the CNEL was taken to be solely due to the daytime plant operations. Figure 1 also shows the recorded steady dBA levels, from which the CNEL levels were calculated using the formulas given in the Technical Note section of this report (Section VIII).

CNEL levels due to the skiploaders operating at the Groves plant were determined in an analogous manner. Since these skiploaders are continually in motion, accurate readings of their noise emission levels were taken under controlled conditions then compared with field measurements. No directivity patterns were determined since the loaders were continually in motion and presented no consistent side to an observer. Average peak noise levels with the loaders

under load were used to determine L_{max}, and a spherical directivity pattern was assumed. CNEL contours calculated for the two most typical skiploader locations are shown in Figure 1. Generally, the skiploader noise dominates all other sources, primarily due to its constancy. Plant operations, which on an average day continue for eight hours, could begin as early as 6:30 a.m. and continue until 10:30 p.m. under certain circumstances. CNEL contours would be larger under these conditions than for the normal eight hour day. CNEL levels would be 6.1 dB higher than the eight hour levels at the same distance from a source. Thus distances to the CNEL 55 contour would be approximately two times greater. Both the eight hour and the sixteen hour contours for skiploaders are shown in Figure 2.

Existing Sand Extraction Operations

The extraction operations at the Groves site, as well as portions of the processing operation, are conducted by skiploader. Material is transported by truck from the skiploader to holding piles, from which the processing plant is fed by the two skiploaders as shown in Figure 1. Thus, there will be a skiploader at the bottom of the excavation pit, near the edge being worked, and trucks in transit from there to the holding piles. The pit skiploader is not in service constantly, but only while trucks are being loaded. Similarly, the trucks are not continuously in use. The pit is currently being worked at a depth of approximately 16 feet at the point of extraction. The depth of the pit affords considerable shielding for the trucks and loader operations therein. The overall extraction process is one of considerable complexity as far as noise is concerned.

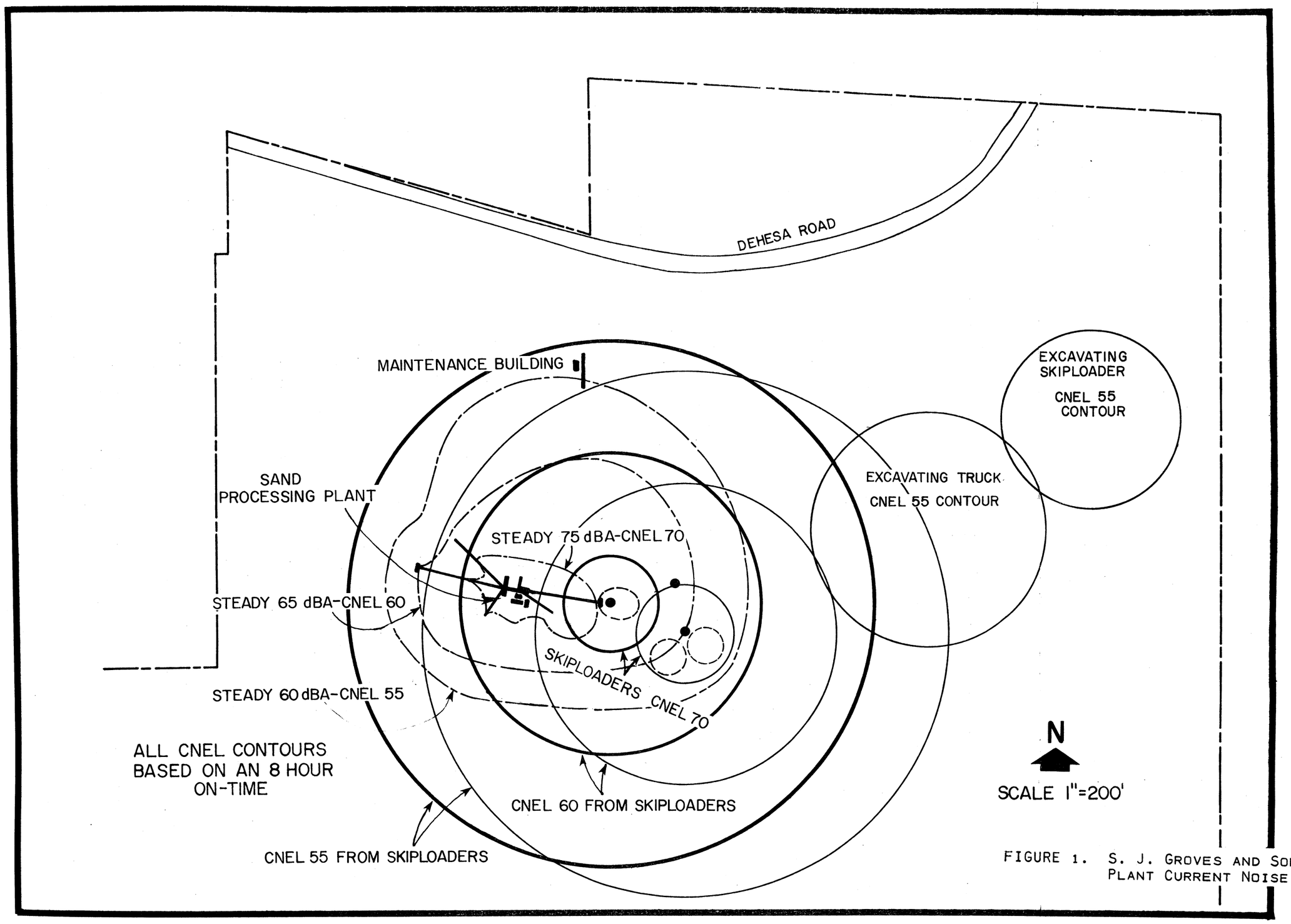

FIGURE 1. S. J. GROVES AND SONS DEHESA SAND PLANT CURRENT NOISE CONTOURS

Barrier attenuations change with the position of both the source and the observer, and thus the exact CNEL contours are virtually impossible to calculate. Rough estimates, however, can be made.

Calculations and measurements taken at the site yielded barrier attenuations, due to the pit walls, of 10 to 15 dBA at a distance of 85 feet from a skiploader and truck. This will not always be a constant; however, some estimate must be made. The trucks do not operate while the skiploader is operating and vice versa. The corresponding worst case description would be: one piece of equipment operating in one position for eight hours, shielded 10 dB by the pit wall. If this were the case, the pit skiploader CNEL 55 contours would be a circle having a radius of 180 feet, and those of the trucks would have a radius of 250 feet. Figure 1 shows a typical excavating skiploader and truck location. While these locations are not fixed, the skiploader and truck routes are localized for long periods of time. Since these pieces of equipment do not normally operate at full load for 8 hours per day, their actual CNEL 55 contours would be considerably smaller.

IV. PROJECTED NOISE LEVELS

Further excavation and processing operations in the Sweetwater riverbed are proposed. Processing by Conrock/Fenton would be accomplished through the installation of a plant approximately in the location shown in Figure 2 and similar in function to that now in use at the Groves plant. Contours shown about the Conrock plant

are circles having a radius equal to the maximum CNEL 55 (8 hour and 16 hour) distances now found at the existing Groves plant. Conrock will feed this plant by means of a conveyor, and thus no skiploader contours are drawn.

Conrock/Fenton excavation operations will be accomplished by means of a drag shovel mounted either on a barge or equipped with a shovel scoop. In either case, the same housing and engine would be utilized. Measurements made on a shovel loader equipped with a Murphey diesel engine similar to the unit to be used by Conrock/ Fenton were used to determine the shovel generated CNEL 55 contours shown in Figure 2. Both eight hour and twelve hour contours are shown. Although the drag shovel will be partially shielded by the bank on which it is working, its stack height of fourteen feet will minimize the effects of this shielding. Thus, no shielding or barrier attenuation effects have been included in the calculation of the drag shovel CNEL contours.

Brushing, land clearing and slope finishing operations which proceed and follow the excavation phase are performed by means of a D-8 caterpillar tractor or a skiploader. The D-8 tractor is the loudest piece of equipment which will be present at the site. Eight and twelve hour contours are shown in Figure 2, and the minimum eight hour approach distance is shown near sensitive locations. Minimum eight hour skiploader distances are also shown on Figure 2.

Conveyor belts are to be used in the Conrock/Fenton portion of the project to transport the raw excavated product to the processing area. Noise levels emitted by these conveyors are moderate. For

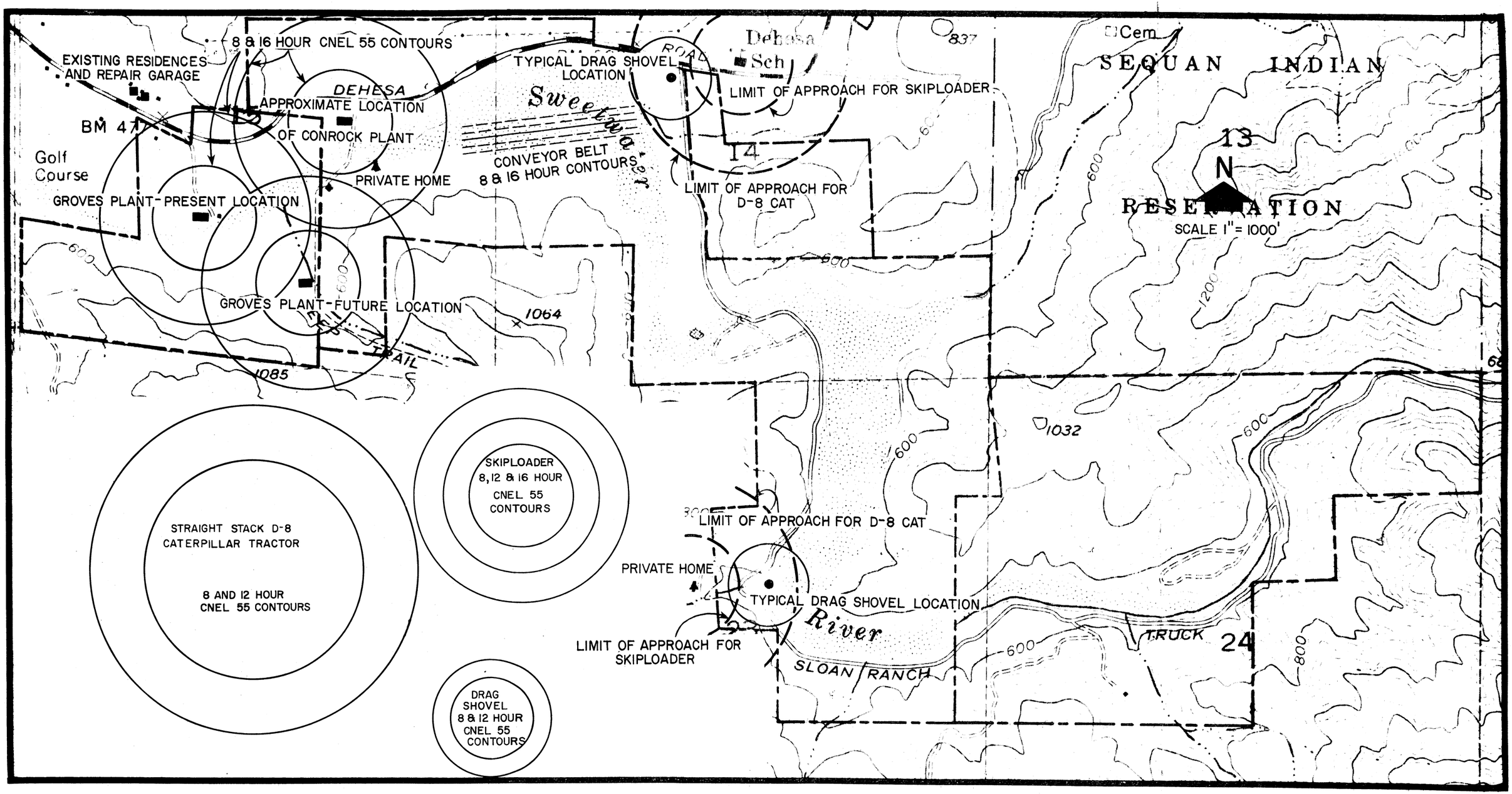

FIGURE 2. PROJECTED NOISE LEVELS UNDER UNSHIELDED CONDITIONS FROM PROPOSED EXPANDED OPERATIONS BY CONROCK/FENTON AND GROVES

eight hour operation the distance to the CNEL 55 contour is 80 feet, and for twelve hour operation it is 140 feet. A section of the conveyor and the appropriate contours are shown in Figure 2.

V. TRAFFIC GENERATED NOISE

Current noise levels generated by traffic along Dehesa Road have been measured and calculated. The average daily traffic level (ADT) along Dehesa Road reached a monthly maximum of 2,214 ADT in 1973. Of these, approximately 4% were trucks. Current truck volumes due to the Groves plant are approximately 55 vehicles per day, contributing 110 ADT along Dehesa Road. The average peak noise level produced by these trucks at 50 feet is 84 dBA. The average for automobiles under the same conditions is 70 dBA. Projected truck volumes, due to the combined operations, will generate as much as 340 ADT along Dehesa Road.

Traffic volumes are low; thus normal highway prediction models become inaccurate and peak averaging methods must be employed. CNEL levels depend not only upon the traffic volume, speed and source level, but also on the distribution of these sources throughout a twenty-four hour period. No data are available from the County of San Diego on this distribution so one must be assumed. Automobiles will be assumed to be distributed according to the distribution shown in Figure 3 which was published by EPA from research on California urban streets. Trucks which are not associated with the sand excavation and processing operations have been assumed to be evenly distributed over a normal eight hour working day. Truck traffic

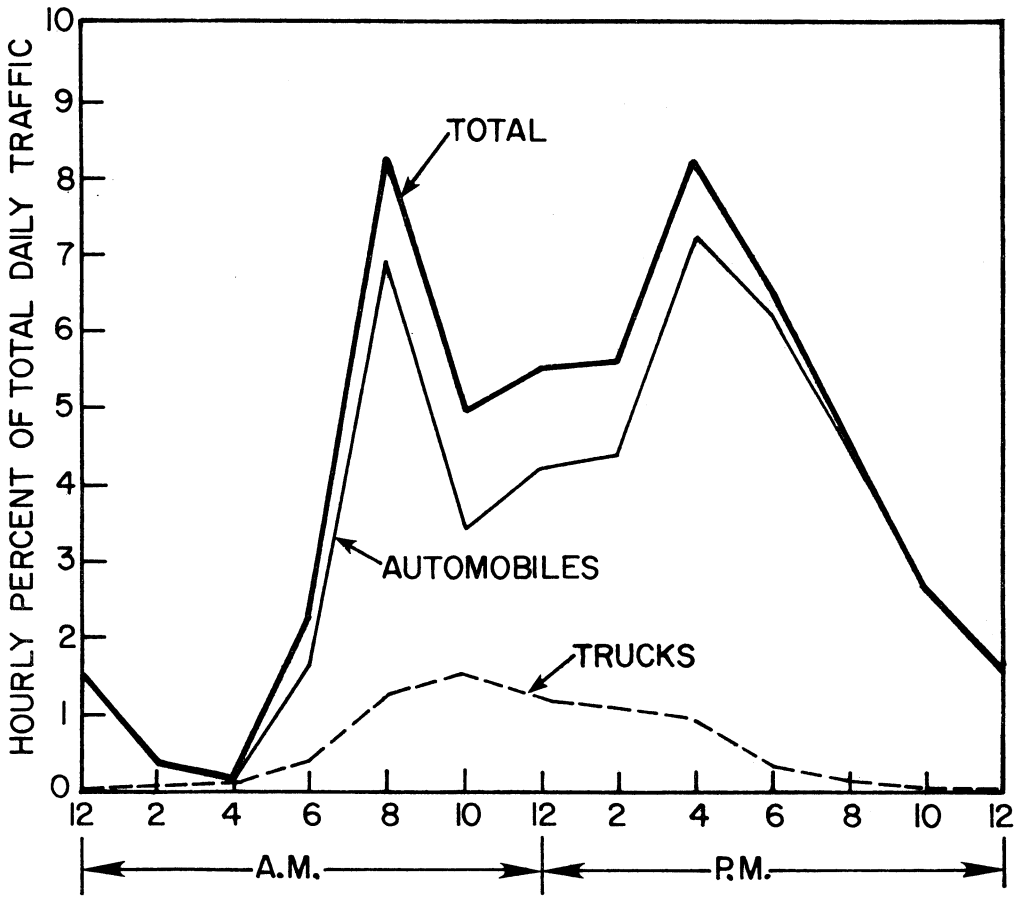

FIGURE 3. TYPICAL HOURLY DISTRIBUTION OF TOTAL DAILY URBAN VEHICLE TRAFFIC

which is now associated with the current Groves operation has been similarly distributed. Truck traffic which will be associated with the proposed expansion of the operations by Conrock/Fenton and Groves has been distributed evenly throughout both a normal eight hour and a twelve hour day, beginning at 6:30 a.m.

CNEL levels in unshielded open areas decrease 3 dB as the minimum distance between the road and the observer doubles. Table 1 expresses the results of the calculations for the various assumptions mentioned above. Distances to the CNEL 55 contour are also shown.

Truck generated contours will continue onto the plant site. These contours have not been shown due to the complexity of the figures and because the noise situation is reasonably well described by the CNEL contours along Dehesa Road.

VI. DISCUSSION OF IMPACT

The most widely felt noise impact due to the Conrock/Fenton and Groves projects will result from the additional truck traffic introduced onto Dehesa Road. CNEL levels along Dehesa Road could rise by 2 to 3 dB at maximum projected truck volume, depending upon the actual time distribution of these vehicles. The distance to the CNEL 55 contour in the case where there is no shielding effects would increase from its present value of 321 feet to either 506 or 618 feet from roadway centerline, depending again on the time distribution. In actual field conditions, the CNEL 55 distance is likely to be less than that calculated due to the shielding afforded by berms, hills, the winding roadway and changes in elevation. The precise level

TABLE 1

Overall Traffic-Generated CNEL Levels at 50 Feet

Source	1973	Current 1975	Projected 8 Hour	Projected 12 Hour
Automobiles	60.3	60.3	60.3	60.3
Non-Site Trucks	56.2	56.2	56.2	56.2
Current Groves Trucks		57.3		
Projected Combined 8 Hour			62.3	
Projected Combined 12 Hour				63.8
Overall Levels	61.8	63.1	65.1	65.9
Distance to CNEL 55 Contour (feet)	237.	321.	506.	618.

of attenuation available from these factors would have to be calculated individually for each receiver location of interest if precise contours were to be determined.

Noise at the Dehesa School, associated with either the Conrock/Fenton or Groves processing plants, is not expected to be significant. Noise levels at the school, however, could exceed CNEL 55 if brushing, clearing or leveling operations are carried out nearby. For eight hour operations, in the absence of other mitigating factors, a distance of 1,200 feet should be maintained between the school and a D-8 caterpillar tractor. Other heavy equipment operations should be confined to the existing site boundaries. A private home located south of the proposed location of the Conrock/Fenton processing plant will be subjected to levels above CNEL 55. This home is owned by Conrock/Fenton and is maintained for the plant supervisor. Thus, it is anticipated that the need for quiet at this residence will be primarily after plant operations have ceased for the day.

Two private homes in the southernmost portion of the proposed excavation area could be subjected to CNEL levels above 55 during brushing and clearing operations if a D-8 caterpillar tractor is used. Again, a 1,200 foot minimum approach distance is necessary in the absence of other mitigation. It is likely that annoyance at this particular location will occur even though the CNEL 55 standards are met. While noise levels could legally increase to 60 dBA for eight hours per day at that residence, current background levels are about 40 dBA.

The northwestern portion of the Groves property will eventually be excavated, according to their approved grading plan. Residences within 1,200 feet of D-8 caterpillars or 560 feet of skiploaders (unshielded by excavations) used for eight hours per day, will be subjected to levels above CNEL 55. At this juncture, the precise locations of planned residences in the area are not known; thus, the impacted structures cannot be pinpointed.

VII. MITIGATION

Several types of mitigation measures are available for the control of noise. The effectiveness, appropriateness and precise attenuation of each method must be determined for the specific application. The most common measures are:

1. Treatment of the noise producing device directly by means of a muffler, enclosure or other technique.
2. Substitution of a quieter device which will perform the particular task adequately.
3. Shortening the time period of use of the noise producing device.
4. Performing an operation when a sensitive location is not being used.
5. Construction of berms or barriers to block the sound produced.

The first of these methods is far and away the most effective. The D-8 caterpillar tractor and drag shovel measured did not have

mufflers on them. On the other hand, the skiploaders measured did have mufflers and removal of these devices would significantly alter the CNEL contours drawn.

Measures 2 and 4 could be effectively used near the Dehesa School to satisfactorily mitigate the noise impact. Item 3 is not recommended, for although it is legally allowable, noise annoyance would still occur, albeit for a shorter period.

Measure 5 would be most effective after muffling has been installed to protect areas such as the northwest edge of the Groves property during excavation in that area.

VIII. TECHNICAL NOTE

The CNEL system of describing environmental noise is defined as follows:

$$\text{CNEL} = 10 \log 1/24 \left[\sum \text{antilog} \frac{\text{HNLD}}{10} + 3 \sum \text{antilog} \frac{\text{HNLE}}{10} + 10 \sum \text{antilog} \frac{\text{HNLN}}{10} \right]$$

where:

HNLD = Hourly L_{eq} for the period 0700-1900 hours

HNLE = Hourly L_{eq} for the period 1900-2200 hours

HNLN = Hourly L_{eq} for the period 2200-0700 hours

$\sum$ means summation for each hourly period

L_{eq} is the energy average noise level present for a particular time period.

Traffic generated CNEL's were calculated using measured data. The data taken was the maximum noise level present when a vehicle passed. These were averaged arithmetically to determine L_{max}, and a triangular noise pattern was assumed. According to this model:

$$L_{eq} = L_b + 10 \log \left[1 + \frac{N\tau}{T} \left\{ \frac{10^{\Delta L/10} - 1}{2.3} - \Delta L/10 \right\} \right]$$

where:

ΔL = $L_{max} - L_b$

L_b = the background level (dBA)

L_{max} = the mean peak level due to a passing vehicle (dBA)

N = the number of vehicles passing per time period T

τ = twice the time it takes for a passing vehicle generated noise to drop to 10 dBA below its peak value

When the maximum sound levels measured are greater than 10 dBA above the background level, an approximate formula may be substituted without significant loss of accuracy:

$$L_{eg} = L_{max} + 10 \log \frac{N\tau}{2.3\ T}$$

This was the formula which was used to determine the traffic generated noise levels in this report.

For the more-or-less constant noise levels having inconstant duration, another formula was used:

$$L_{eq} = L_{max} + 10 \log x \text{ , for } (L_{max} - L_b > 10 \text{ dBA})$$

where x is the fractional on-time of the source. An example would be the processing plant which is either on or off. If it produces 60 dBA at a point for 1/3 of the time, its L_{eq} value would be 55.2 dBA for that period.

APPENDIX E

WASTE DISCHARGE REQUIREMENTS

(Conrock/Fenton)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

ORDER NO. 74-86

WASTE DISCHARGE REQUIREMENTS
FOR
CONROCK COMPANY SWEETWATER SAND PLANT
NEAR DEHESA

THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SAN DIEGO REGION, FINDS THAT:

1. MR. BRUCE SQUIRES OF CONROCK COMPANY SUBMITTED AN INCOMPLETE REPORT OF WASTE DISCHARGE DATED MAY 24, 1974 PROPOSING THE DISCHARGE OF WASTES FROM A NEW SAND AND GRAVEL MINING AND PROCESSING PLANT TO BE LOCATED NEAR THE UNINCORPORATED COMMUNITY OF DEHESA IN SAN DIEGO COUNTY. AFTER RECEIPT OF ADDITIONAL INFORMATION REQUESTED BY STAFF, THE COMPLETE REPORT OF WASTE DISCHARGE WAS ACCEPTED ON AUGUST 5, 1974.

2. THE DISCHARGER REPORTS THAT UP TO APPROXIMATELY 300 TONS PER HOUR OF MATERIAL EXTRACTED FROM THE BED OF THE SWEETWATER RIVER WOULD BE SIZED AND WASHED IN THE PROCESSING PLANT.

3. THE DISCHARGER REPORTS THAT SAND AND GRAVEL DEPOSITS IN THE BED OF THE SWEETWATER RIVER CONTAIN APPROXIMATELY 10 PERCENT NON-USABLE MATERIAL. AT A PROCESSING RATE OF 300 TONS PER HOUR, APPROXIMATELY 30 TONS PER HOUR OF NON-USABLE FINES OR SEDIMENT WOULD BE GENERATED.

4. THE DISCHARGER REPORTS THAT SAND AND GRAVEL WOULD BE EXCAVATED FROM A PORTION OF THE SWEETWATER RIVER BED RANGING IN WIDTH FROM 350 FEET TO APPROXIMATELY 1,000 FEET AND APPROXIMATELY 5,000 FEET LONG. DEPTH OF THE EXCAVATION WOULD RANGE TO IN EXCESS OF 40 FEET BELOW THE SURFACE OF THE GROUND. SINCE THE GROUNDWATER TABLE IS APPROXIMATELY 16 FEET BELOW THE SURFACE OF THE GROUND, MUCH OF THE EXCAVATION WOULD BE CARRIED OUT UNDERWATER AND THE MINING OPERATION WOULD CREATE A LARGE LAKE IN THE BED OF THE SWEETWATER RIVER.

5. THE DISCHARGER REPORTS THAT A RECIRCULATING WASH WATER SYSTEM WOULD BE UTILIZED. AT THE MAXIMUM ANTICIPATED PRODUCTION RATE OF 300 TONS PER HOUR, APPROXIMATELY 120,000 GALLONS PER HOUR OF WASH WATER WOULD BE REQUIRED. APPROXIMATELY 28,800 GALLONS PER DAY OF MAKEUP WATER WOULD BE SUPPLIED FROM ON-SITE WELLS.

6. THE DISCHARGER PROPOSES TO DISCHARGE USED WASH WATER, CONTAINING SEDIMENT, INTO THE EXCAVATED AREA IN THE BED OF THE SWEETWATER RIVER WHERE THE SEDIMENT WOULD BE REMOVED BY SETTLING. CLARIFIED WATER WOULD BE PUMPED FROM THE EXCAVATED AREA AND RECIRCULATED THROUGH THE WASH WATER SYSTEM.

7. THE DISCHARGER REPORTS THAT THE DISCHARGE OF SEDIMENT-LADEN USED WASH WATER TO THE EXCAVATED AREA WOULD BE DESIGNED TO RETURN WASTE SEDIMENT TO THE RIVER BED AND DEPOSIT IT BELOW THE GROUNDWATER TABLE. THE DISCHARGER MAINTAINS THAT THE SEDIMENT WOULD NOT BE WASHED DOWNSTREAM DURING PERIODS OF FLOODING OF THE EXCAVATED AREA.

8. THE PROPOSED FACILITY WOULD BE LOCATED APPROXIMATELY 10 MILES UPSTREAM FROM SWEETWATER RESERVOIR, BETWEEN SWEETWATER AND LOVELAND RESERVOIRS, BOTH USED AS MUNICIPAL SUPPLY WATER SOURCES BY THE CALIFORNIA AMERICAN WATER COMPANY. THE DISCHARGER REPORTS THAT THE CALIFORNIA AMERICAN WATER COMPANY PERIODICALLY TRANSFERS WATER FROM LOVELAND RESERVOIR TO SWEETWATER RESERVOIR VIA THE SWEETWATER RIVER AT A RATE OF UP TO 100 CUBIC FEET PER SECOND.

9. THE DISCHARGER REPORTS THAT A BYPASS CHANNEL WITH A CAPACITY OF 100 CUBIC FEET PER SECOND WOULD BE CONSTRUCTED TO DIVERT FLOWS FROM LOVELAND RESERVOIR AROUND THE EXCAVATION.

10. THE DISCHARGER REPORTS THAT SURFACE WATER IN THE SWEETWATER RIVER WOULD FLOW INTO THE EXCAVATED AREA AT APPROXIMATELY A FIVE YEAR FREQUENCY, DEPENDING ON RAINFALL FREQUENCY, INTENSITY, ETC.

11. THE STATE DEPARTMENT OF WATER RESOURCES, BY LETTER DATED AUGUST 23, 1974, EXPRESSED CONCERN ABOUT TURBIDITY AND SILTATION IN AREAS DOWNSTREAM FROM THE FACILITY AS A RESULT OF SEDIMENT BEING PICKED UP BY FLOOD WATERS.

12. PARTIAL RESULTS OF ANALYSES OF A SAMPLE OF WATER PONDED IN THE BED OF THE SWEETWATER RIVER AT THE LOCATION OF THE PROPOSED FACILITY AND A SAMPLE OF WATER FROM A NEARBY WELL, BOTH COLLECTED IN JUNE OF 1974, ARE AS FOLLOWS:

CONSTITUENTS	UNITS	CONCENTRATION	
		PONDED WATER	WELL WATER
TOTAL DISSOLVED SOLIDS	MG/L	445	450
CHLORIDE	MG/L	118	103
PERCENT SODIUM	-	42	40
SULFATE	MG/L	42	57

13. THE PROPOSED SAND AND GRAVEL MINING AND PROCESSING FACILITY WOULD BE LOCATED APPROXIMATELY ONE MILE SOUTHWEST OF THE UNINCORPORATED COMMUNITY OF DEHESA IN THE E½ OF SECTION 14, AND THE W½ OF SECTION 15, T16S, R1E, SBB&M, IN AND ADJACENT TO THE SWEETWATER RIVER IN THE JAMACHA HYDROLOGIC SUBAREA OF THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT OF THE SWEETWATER HYDROLOGIC UNIT.

NOTE: MG/L = MILLIGRAMS PER LITER

14. THE WATER QUALITY CONTROL PLAN (INTERIM), SAN DIEGO BASIN 9, ADOPTED BY THIS REGIONAL BOARD ON JUNE 14, 1971, AND MODIFIED ON DECEMBER 11, 1972 AND JANUARY 22, 1973, ESTABLISHED THE FOLLOWING OBJECTIVES FOR SURFACE AND GROUNDWATERS IN THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT:

CONSTITUENTS	SURFACE WATER		GROUNDWATER	
TOTAL DISSOLVED SOLIDS	500	MG/L	1,000	MG/L
CHLORIDE	250	"	400	"
PERCENT SODIUM	60		60	
SULFATE	250	MG/L	500	MG/L
NITRATE	*	"	10	"
IRON + MANGANESE	0.35	"	0.35	"
METHYLENE BLUE ACTIVE SUBSTANCES	0.5	"	0.5	"
BORON	0.5	"	0.5	"
DISSOLVED OXYGEN	5.0	"	-	
ODOR	NONE		NONE	
TURBIDITY	20	UNITS	5	UNITS
COLOR	20	"	15	"
FLUORIDE	1.0	MG/L	1.0	MG/L

* AT LEVELS BELOW THOSE WHICH STIMULATE ALGAE AND EMERGENT PLANT GROWTH.

15. THE WATER QUALITY CONTROL PLAN (INTERIM), SAN DIEGO BASIN 9, ALSO CONTAINS THE FOLLOWING PROHIBITIONS:

"1. DISCHARGE OF TREATED OR UNTREATED SEWAGE OR INDUSTRIAL WASTES TO A NATURAL WATERCOURSE UPSTREAM OF SURFACE STORAGE OR DIVERSION FACILITIES USED FOR MUNICIPAL SUPPLY IS PROHIBITED.

"2. DISCHARGE OF TREATED OR UNTREATED SEWAGE OR INDUSTRIAL WASTEWATER, EXCLUSIVE OF COOLING WATER OR OTHER WATERS WHICH ARE CHEMICALLY UNCHANGED, TO A WATERCOURSE FOR PURPOSES OF DISPOSAL IS PROHIBITED.

"3. DISCHARGING OF TREATED OR UNTREATED SEWAGE OR INDUSTRIAL WASTE IN SUCH MANNER OR VOLUME AS TO CAUSE SUSTAINED SURFACE FLOW OR PONDING ON LANDS NOT OWNED OR UNDER THE CONTROL OF THE DISCHARGER IS PROHIBITED.

"4. THE DUMPING OR DEPOSITION OF OIL, GARBAGE, TRASH OR OTHER SOLID MUNICIPAL, INDUSTRIAL OR AGRICULTURAL WASTE DIRECTLY INTO INLAND WATERS OR WATERCOURSES OR ADJACENT TO THE WATERCOURSES IN ANY MANNER WHICH MAY PERMIT ITS BEING WASHED INTO THE WATERCOURSE IS PROHIBITED."

* * * *

"6. DUMPING OR DEPOSITION OF OIL, GARBAGE, TRASH OR OTHER SOLID MUNICIPAL, INDUSTRIAL OR AGRICULTURAL WASTE INTO NATURAL OR EXCAVATED SITES BELOW HISTORIC WATER LEVELS OR DEPOSITION OF SOLUBLE INDUSTRIAL WASTES AT ANY SITE IS PROHIBITED, UNLESS SUCH SITE HAS BEEN SPECIFICALLY APPROVED BY THE REGIONAL BOARD FOR THAT PURPOSE.

"7. LAND GRADING AND SIMILAR OPERATIONS CAUSING SOIL DISTURBANCE WHICH DO NOT CONTAIN PROVISIONS TO MINIMIZE SOIL EROSION AND LIMIT SUSPENDED MATTER IN AREA RUNOFF ARE PROHIBITED."

16. SURFACE WATERS IN THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT ARE BENEFICIALLY USED FOR:

(A) MUNICIPAL AND INDIVIDUAL DOMESTIC SUPPLY
(B) AGRICULTURAL IRRIGATION
(C) INDUSTRIAL SUPPLY
(D) WATER CONTACT RECREATION
(E) AESTHETIC ENJOYMENT
(F) FRESH WATER HABITAT FOR FISH, WATERFOWL, AND WILDLIFE

17. GROUNDWATERS IN THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT ARE BENEFICIALLY USED FOR:

(A) MUNICIPAL AND INDIVIDUAL DOMESTIC SUPPLY
(B) AGRICULTURAL IRRIGATION
(C) INDUSTRIAL SUPPLY

18. THE BOARD HAS NOTIFIED THE DISCHARGER AND ALL KNOWN INTERESTED PARTIES OF ITS INTENT TO PRESCRIBE WASTE DISCHARGE REQUIREMENTS FOR THE PROPOSED DISCHARGE.

19. THE BOARD IN A PUBLIC MEETING HEARD AND CONSIDERED ALL COMMENTS PERTAINING TO THE DISCHARGE.

IT IS HEREBY ORDERED, THAT CONROCK COMPANY, IN THE OPERATION OF THEIR SWEETWATER SAND PLANT, SHALL COMPLY WITH THE FOLLOWING WASTE DISCHARGE REQUIREMENTS:

A. PROHIBITIONS

1. DISCHARGES OF WASTES TO LANDS WHICH HAVE NOT BEEN SPECIFICALLY DESCRIBED TO THE REGIONAL BOARD AND FOR WHICH VALID WASTE DISCHARGE REQUIREMENTS ARE NOT IN FORCE ARE PROHIBITED.

2. BYPASSING OR DIRECT DISCHARGE OF TREATED OR UNTREATED LIQUID OR SOLID WASTES TO THE SWEETWATER RIVER OR TRIBUTARIES THERETO, OUTSIDE OF THE EXCAVATED AREA, IS PROHIBITED.

3. THERE SHALL BE NO MINING OR CONSTRUCTION ACTIVITIES IN THE EXCAVATED AREA, OR ANY DISCHARGE OF USED WASH WATER TO THE EXCAVATED AREA WHEN THERE IS A SURFACE DISCHARGE OF WATER FROM THE EXCAVATED AREA.

4. MATERIALS DISCHARGED TO THE EXCAVATED AREA SHALL CONSIST OF ONLY RUNOFF OR WASH WATER FROM THE SAND AND GRAVEL WASHING OPERATION. DISCHARGES OF GREASE, OIL OR OTHER CHEMICALS WHICH WOULD NOT OCCUR NATURALLY IN THE RUNOFF OR WASH WATER ARE PROHIBITED.

5. THE DISCHARGE SHALL NOT:

   (A) CAUSE THE PRESENCE OF COLIFORM OR PATHOGENIC ORGANISMS IN WATERS PUMPED FROM THE BASIN;

   (B) CAUSE THE OCCURRENCE OF OBJECTIONABLE TASTES AND ODORS IN WATERS PUMPED FROM THE BASIN;

   (C) CAUSE WATERS PUMPED FROM THE BASIN TO FOAM;

   (D) CAUSE THE PRESENCE OF TOXIC MATERIALS IN WATERS PUMPED FROM THE BASIN;

   (E) CAUSE THE pH OF WATERS PUMPED FROM THE BASIN TO FALL BELOW 6.0 OR RISE ABOVE 9.0;

   (F) CAUSE THIS REGIONAL BOARD'S OBJECTIVES FOR THE GROUND OR SURFACE WATERS OF THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT AS ESTABLISHED IN THE WATER QUALITY CONTROL PLAN (INTERIM), SAN DIEGO BASIN 9, TO BE EXCEEDED;

   (G) CAUSE ODORS, SEPTICITY, MOSQUITOS OR OTHER VECTORS, WEED GROWTH OR OTHER NUISANCE CONDITIONS IN THE SWEETWATER RIVER OR ITS TRIBUTARIES;

   (H) CAUSE A SURFACE FLOW IN THE SWEETWATER RIVER OR ITS TRIBUTARIES AT ANY LOCATION OUTSIDE OF THE EXCAVATED AREA; OR

   (I) CAUSE A POLLUTION, CONTAMINATION OR NUISANCE.

B. DISCHARGE SPECIFICATIONS

1. CONCENTRATIONS OF MINERAL CONSTITUENTS IN THE DISCHARGE OF WASH WATER TO THE EXCAVATED AREA SHALL NOT EXCEED THE FOLLOWING:

CONSTITUENTS	CONCENTRATION
TOTAL DISSOLVED SOLIDS	500 MG/L
CHLORIDE	250 "
SULFATE	250 "
PERCENT SODIUM	60

2. ALL UNUSED SEDIMENT AND WASH WATER FROM THE PROCESSING OPERATION SHALL BE DISCHARGED TO THE EXCAVATED AREA AS DESCRIBED IN THE REPORT OF WASTE DISCHARGE AND IN THE FINDINGS OF THIS ORDER. THE WASTE SEDIMENT SHALL BE DEPOSITED IN A MANNER THAT WILL PREVENT ITS EROSION WHEN SUBJECTED TO THE EFFECTS OF UP TO A 100-YEAR-FREQUENCY FLOOD AS DEFINED BY THE SAN DIEGO COUNTY FLOOD CONTROL AGENCY.

3. THE EXCAVATION AND SEDIMENT DISPOSAL SHALL BE CONDUCTED IN A MANNER THAT WILL INSURE THAT THE NORMAL QUALITY AND QUANTITY OF GROUNDWATER UNDERFLOW OF THE SWEETWATER RIVER WILL BE MAINTAINED.

4. ALL RUNOFF FROM ALL DISTURBED SOIL AREAS SHALL BE SO MANAGED, CONTROLLED, AND/OR TREATED THAT THE DISCHARGE SHALL CONTAIN NO MORE SUSPENDED SOLIDS THAN WOULD BE CONTAINED IN RUNOFF FROM THE UNDISTURBED STATE. SAID RUNOFF SHALL BE MANAGED, CONTROLLED, AND/OR TREATED UNTIL SUCH TIME AS ALL DISTURBED SOIL AREAS HAVE BEEN RESTORED TO A STATE WHICH WILL PRODUCE RUNOFF WITH A SUSPENDED SOLIDS CONCENTRATION NOT GREATER THAN THAT FROM ORIGINAL UNDISTURBED SOIL AREAS.

5. SEDIMENT REMOVED FROM RUNOFF SHALL BE PLACED ONLY IN PROTECTED AREAS WHERE PRECAUTIONS HAVE BEEN TAKEN TO MINIMIZE EROSION. A PROGRAM SHALL BE INSTITUTED TO STABILIZE ALL STOCKPILED OR LANDFILLED MATERIALS TO MINIMIZE AND PREVENT HAZARDOUS CONDITIONS.

6. THE EXCAVATED AREA SHALL BE MAINTAINED TO BE FREE OF EXCESSIVE AQUATIC GROWTHS.

7. ALL DOMESTIC WASTES SHALL BE DISPOSED OF IN SUBSURFACE DISPOSAL SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE ORDINANCES AND REGULATIONS OF THE SAN DIEGO COUNTY DEPARTMENT OF PUBLIC HEALTH. THE SUBSURFACE DISPOSAL SYSTEMS SHALL BE LOCATED SO THAT THERE WILL BE NO SURFACING OF LEACHATE OR FLOW OF LEACHATE INTO THE EXCAVATED AREA OR ANY OTHER AREAS WHERE WATER IS PONDED.

C. PROVISIONS

1. THE DISCHARGER SHALL COMPLY WITH THE MONITORING AND REPORTING PROGRAM No. 74-86 AS SPECIFIED BY THE EXECUTIVE OFFICER.

2. ALL WASTEWATER TREATMENT AND DISPOSAL FACILITIES SHALL BE COMPLETELY CONSTRUCTED AND OPERABLE PRIOR TO THE INITIATION OF SAND AND GRAVEL WASHING OPERATIONS. [A REPORT FROM THE DESIGN ENGINEER CERTIFYING THE ADEQUACY OF EACH COMPONENT OF THE TREATMENT AND DISPOSAL FACILITIES SHALL BE SUBMITTED BY THE DISCHARGER PRIOR TO COMMENCEMENT OF THE DISCHARGE.] THE CERTIFICATION REPORT SHALL CONTAIN A REQUIREMENT-BY-REQUIREMENT ANALYSIS, BASED ON ACCEPTABLE ENGINEERING PRACTICES, OF HOW THE PROCESS AND PHYSICAL DESIGNS OF THE FACILITIES WILL INSURE

COMPLIANCE WITH THE WASTE DISCHARGE REQUIREMENTS. THE DESIGN ENGINEER SHALL AFFIX HIS SIGNATURE AND ENGINEERING LICENSE NUMBER TO THE CERTIFICATION REPORT AND SHOULD SUBMIT IT PRIOR TO CONSTRUCTION OF THE FACILITIES. THE DISCHARGE SHALL NOT BE INITIATED UNTIL:

(A) THE CERTIFICATION REPORT IS RECEIVED;

(B) THE REGIONAL BOARD HAS BEEN NOTIFIED OF THE COMPLETION OF FACILITIES BY THE DISCHARGER;

(C) AN INSPECTION OF THE FACILITIES HAS BEEN MADE BY STAFF OF THE REGIONAL BOARD; AND

(D) STAFF HAS NOTIFIED THE DISCHARGER BY LETTER THAT THE DISCHARGE CAN BE INITIATED.

3. THE DISCHARGER SHALL NOTIFY THIS REGIONAL BOARD BY LETTER OF THE COMMENCEMENT OF THE DISCHARGE.

4. THE DISCHARGER SHALL GRANT ADMISSION TO THE PREMISES OF THE WASTE TREATMENT AND DISPOSAL FACILITIES TO MEMBERS OF THIS REGIONAL BOARD AND ITS STAFF AT SUCH TIMES AS MAY BE NECESSARY IN THE CONDUCT OF THEIR DUTIES IN CONNECTION WITH THE WASTE DISCHARGE REQUIREMENTS ESTABLISHED HEREIN.

5. WASTE DISCHARGE REQUIREMENTS SHALL REMAIN APPLICABLE REGARDLESS OF CHANGES IN OWNERSHIP OR LESSEE. A CHANGE IN OWNERSHIP SHALL BE REPORTED PROMPTLY TO THIS REGIONAL BOARD BY LETTER.

6. THE ABOVE PRESCRIBED WASTE DISCHARGE REQUIREMENTS ARE ESTABLISHED ONLY FOR A WASTE DISPOSAL OPERATION AS DESCRIBED IN THE REPORT OF WASTE DISCHARGE AND IN THE FINDINGS OF THIS ORDER.

7. PRIOR TO INITIATING DISCHARGES OF WASTES FROM CONROCK COMPANY SWEETWATER SAND PLANT AT LOCATIONS OTHER THAN THOSE PROVIDED FOR BY THIS ORDER OR PRIOR TO INITIATING ANY MATERIAL CHANGE IN CHARACTERISTICS OR VOLUME OF DISCHARGE, THE DISCHARGER SHALL (A) SUBMIT A SUPPLEMENTARY REPORT OF WASTE DISCHARGE DESCRIBING THE PROPOSED CHANGES, AND (B) OBTAIN WASTE DISCHARGE REQUIREMENTS FOR THE PROPOSED CHANGES.

8. IF CONSTRUCTION OF THE FACILITIES DESCRIBED IN THE REPORT OF WASTE DISCHARGE HAS NOT BEGUN BY NOVEMBER 4, 1975, THIS ORDER WILL EXPIRE ON THAT DATE. SHOULD THE DISCHARGER WISH TO EXTEND THE EXPIRATION DATE OF THIS ORDER, A WRITTEN REQUEST MUST BE SUBMITTED TO THE EXECUTIVE OFFICER NO LATER THAN AUGUST 4, 1975. SHOULD THE DISCHARGER WISH TO INITIATE THE PROJECT FOLLOWING EXPIRATION OF THIS ORDER, A NEW REPORT OF WASTE DISCHARGE MUST BE FILED.

D. NOTIFICATION

THESE REQUIREMENTS HAVE NOT BEEN OFFICIALLY REVIEWED BY THE ENVIRONMENTAL PROTECTION AGENCY AS REQUIRED BY FEDERAL LAW (PUBLIC LAW 92-500) AND ARE NOT ISSUED PURSUANT TO SECTION 402 OF THE FEDERAL WATER POLLUTION CONTROL ACT AS AMENDED IN 1972.

I, LEONARD BURTMAN, EXECUTIVE OFFICER, DO HEREBY CERTIFY THE FOREGOING IS A FULL, TRUE, AND CORRECT COPY OF AN ORDER ADOPTED BY THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD ON NOVEMBER 4, 1974.

Leonard Burtman

LEONARD BURTMAN
EXECUTIVE OFFICER

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

MONITORING AND REPORTING PROGRAM NO. 74-86
FOR
CONROCK COMPANY SWEETWATER SAND PLANT
NEAR DEHESA

GENERAL PROVISIONS FOR SAMPLING AND ANALYSIS

UNLESS OTHERWISE NOTED, ALL SAMPLING, SAMPLE PRESERVATION, AND ANALYSES SHALL BE CONDUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER" OR APPROVED BY THE EXECUTIVE OFFICER.

ALL ANALYSES SHALL BE PERFORMED IN A LABORATORY CERTIFIED TO PERFORM SUCH ANALYSES BY THE CALIFORNIA DEPARTMENT OF HEALTH OR A LABORATORY APPROVED BY THE EXECUTIVE OFFICER.

GENERAL PROVISIONS FOR REPORTING

FOR EVERY ITEM WHERE THE REQUIREMENTS ARE NOT MET, THE DISCHARGER SHALL SUBMIT A STATEMENT OF THE ACTIONS UNDERTAKEN OR PROPOSED WHICH WILL BRING THE DISCHARGE INTO FULL COMPLIANCE WITH REQUIREMENTS AT THE EARLIEST TIME AND SUBMIT A TIME-TABLE FOR CORRECTION.

BY JANUARY 30 OF EACH YEAR, THE DISCHARGER SHALL SUBMIT AN ANNUAL SUMMARY REPORT TO THE REGIONAL BOARD. THE REPORT SHALL CONTAIN BOTH TABULAR AND GRAPHICAL SUMMARIES OF THE MONITORING DATA OBTAINED DURING THE PREVIOUS YEAR. IN ADDITION, THE DISCHARGER SHALL DISCUSS THE COMPLIANCE RECORD AND THE CORRECTIVE ACTIONS TAKEN OR PLANNED WHICH MAY BE NEEDED TO BRING THE DISCHARGE INTO FULL COMPLIANCE WITH THE WASTE DISCHARGE REQUIREMENTS.

MONITORING PROGRAM

THE DISCHARGER SHALL SUBMIT TECHNICAL REPORTS CONCERNING THE QUANTITY AND QUALITY OF THE DISCHARGE, USING THE ATTACHED FORMAT, IN ACCORDANCE WITH THE FOLLOWING SCHEDULE.

WASH WATER

EXAMINATIONS OF WASH WATER DISCHARGED TO THE EXCAVATED AREA SHALL BE CONDUCTED FOR THE FOLLOWING ITEMS AT THE FREQUENCY SHOWN, AND REPORTED AT QUARTERLY INTERVALS:

DETERMINATION	UNITS	FREQUENCY
TOTAL DISSOLVED SOLIDS	MG/L	QUARTERLY
CHLORIDE	"	"
SULFATE	"	"
PERCENT SODIUM	"	"
pH	UNITS	"
FLOW VOLUME	GPD	DAILY

A DAILY LOG OF THE ESTIMATED VOLUME OF SURFACE WATER DISCHARGING FROM THE EXCAVATED AREA SHALL BE REPORTED QUARTERLY. AN ENTRY OF "NO DISCHARGE" SHALL BE MADE FOR EACH DAY WHEN THERE IS NO WATER DISCHARGING FROM THE EXCAVATED AREA.

RIVER WATERS

SYNOPTIC SAMPLES OF SURFACE WATER DISCHARGING FROM THE EXCAVATED AREA AND FROM EACH MAJOR SOURCE OF SURFACE WATER INFLOW TO THE EXCAVATED AREA SHALL BE COLLECTED AND ANALYZED FOR THE FOLLOWING ITEMS AT THE FREQUENCY SHOWN AND REPORTED AT QUARTERLY INTERVALS:

DETERMINATION	UNITS	FREQUENCY
SUSPENDED SOLIDS	MG/L	DAILY 1/
SETTLEABLE SOLIDS	ML/L	"
TURBIDITY	JTU	"

GROUNDWATERS

A REPRESENTATIVE SAMPLE OF WATER FROM A WELL LOCATED DOWNGRADIENT OF THE EXCAVATED AREA AT A LOCATION APPROVED BY THE EXECUTIVE OFFICER SHALL BE COLLECTED AND ANALYZED FOR THE FOLLOWING ITEMS AT THE FREQUENCY SHOWN AND REPORTED AT SEMIANNUAL INTERVALS. (IN THE ABSENCE OF A SUITABLE NEARBY DOWNSTREAM WELL, A MONITORING WELL SHALL BE CONSTRUCTED AT A LOCATION APPROVED BY THE EXECUTIVE OFFICER PRIOR TO COMMENCING THE DISCHARGE.)

DETERMINATION	UNITS	FREQUENCY
TOTAL DISSOLVED SOLIDS	MG/L	SEMIANNUAL
CHLORIDE	"	"
SULFATE	"	"
PERCENT SODIUM	"	"
pH	UNITS	"

NOTE: MG/L = MILLIGRAMS PER LITER
GPD = GALLONS PER DAY
ML/L = MILLILITERS PER LITER
JTU = JACKSON TURBIDITY UNITS

1/ SAMPLING IS ONLY REQUIRED ON DAYS WHEN THERE IS INFLOW TO AND OUTFLOW FROM THE EXCAVATED AREA.

THE METHOD OF SAMPLE COLLECTION AND DEMONSTRATION THAT THE SAMPLE IS REPRESENTATIVE OF GROUNDWATER CONDITIONS SHALL BE INCLUDED WITH EACH REPORT.

THE MONITORING AND REPORTING PROGRAM CONTAINED HEREIN SHALL BE IN EFFECT UPON COMMENCEMENT OF THE DISCHARGE WITH THE EXPRESS EXCEPTION OF THE GROUNDWATER SAMPLING PROGRAM, WHICH SHALL BE INITIATED A MINIMUM OF SIX MONTHS PRIOR TO THE INITIATION OF OPERATION OF THE PLANT.

ORDERED BY Leonard Burtman

LEONARD BURTMAN
EXECUTIVE OFFICER
NOVEMBER 4, 1974

ALC:LVR

APPENDIX F

WASTE DISCHARGE REQUIREMENTS

(S. J. Groves & Sons)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

ORDER NO. 74-100

WASTE DISCHARGE REQUIREMENTS
FOR
S. J. GROVES & SONS CO. - DEHESA SAND PLANT
NEAR THE CITY OF EL CAJON

THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SAN DIEGO REGION, FINDS THAT:

1. MR. LAWRENCE HIRSCH OF HIRSCH AND KOPTIONAK, ACTING ON BEHALF OF S. J. GROVES & SONS CO., SUBMITTED A REPORT OF WASTE DISCHARGE DATED AUGUST 26, 1974, PROPOSING TO DISCHARGE WASTES FROM THE DEHESA SAND PLANT, AN EXISTING FACILITY, LOCATED NEAR THE CITY OF EL CAJON. AFTER RECEIPT OF SUPPLEMENTAL INFORMATION, THE REPORT OF WASTE DISCHARGE WAS ACCEPTED ON SEPTEMBER 10, 1974.

2. THE DEHESA SAND PLANT HAS BEEN IN SPORADIC OPERATION, UNDER VARIOUS OWNERSHIPS, SINCE PRIOR TO 1940. PRESENTLY, SAND IS MINED FROM THE UPPER 20 FEET OF THE SWEETWATER RIVER ALLUVIAL DEPOSITS. IT IS TRANSPORTED TO AN ON-SITE PROCESSING PLANT WHERE IT IS SCREENED, SIZED AND WASHED.

3. SEDIMENT-LADEN WATER FROM THE SAND WASHING OPERATION IS DISCHARGED TO A SETTLING POND WHERE THE BULK OF THE WASTE SEDIMENT IS REMOVED. THE CLARIFIED WATER IS DISCHARGED TO A FINAL STORAGE POND PRIOR TO BEING PUMPED INTO THE SAND WASHING SYSTEM FOR REUSE. MAKE-UP WATER IS SUPPLIED TO THE PLANT FROM AN ON-SITE WELL.

4. THE DEHESA SAND PLANT IS OPERATING UNDER A COUNTY OF SAN DIEGO CONDITIONAL USE PERMIT GRANTED OCTOBER 22, 1971. A CONDITION OF THIS PERMIT RESTRICTS THE MINING OPERATION TO 20 ACRES AND A MAXIMUM DEPTH OF 20 FEET. ON AUGUST 9, 1974, THE SAN DIEGO COUNTY PLANNING COMMISSION MODIFIED THE CONDITIONAL USE PERMIT TO ALLOW MINING OVER 40 ACRES, WITH A MAXIMUM DEPTH OF 60 FEET, PROVIDED THE DISCHARGER OBTAINED APPROPRIATE WASTE DISCHARGE REQUIREMENTS FROM THIS REGIONAL BOARD.

5. THE DISCHARGER PROPOSES TO EXPAND AND MODIFY THE EXISTING OPERATION IN CONFORMANCE WITH THE MODIFIED CONDITIONAL USE PERMIT. TWO NEW SETTLING PONDS WOULD BE CONSTRUCTED TO TREAT ADDITIONAL VOLUMES OF SEDIMENT-LADEN WASH WATER. UPON COMPLETION OF THE TWO PONDS, ALL WASH WATER WOULD BE RECIRCULATED AND REUSED AND THERE WOULD BE NO DISCHARGE TO NAVIGABLE WATERS. THE NEW PONDS WOULD BE DESIGNED TO WITHSTAND, WITHOUT DISCHARGE, A 100-YEAR-FREQUENCY FLOOD.

6. SEDIMENT DEPOSITED IN THE SETTLING PONDS WOULD BE PERIODICALLY REMOVED, STOCKPILED OUT OF THE FLOOD PLAIN OF THE SWEETWATER RIVER, AND SOLD AS FILL MATERIAL.

7. THE EXPANDED OPERATION WOULD INVOLVE EXCAVATION OF MATERIAL FROM BELOW THE GROUNDWATER TABLE. THIS WOULD FORM A LAKE ON THE PROPERTY. THE DISCHARGER REPORTS THAT GROUNDWATER WILL FLOW CONTINUOUSLY THROUGH THE LAKE, ENTERING FROM THE UPSTREAM FACE AND RETURNING UNDERGROUND AT THE DOWNSTREAM FACE.

8. THE SWEETWATER RIVER ONLY FLOWS DURING THE WINTER RAINY SEASON. DURING THIS PERIOD SURFACE-WATER WOULD FLOW THROUGH THE EXCAVATED AREA. IF MINING WERE CARRIED OUT DURING THIS TIME, THE TURBIDITY OF THE SWEETWATER RIVER COULD BE INCREASED.

9. A STUDY CONDUCTED BY THE SAN DIEGO COUNTY DEPARTMENT OF SANITATION AND FLOOD CONTROL ON THE EFFECTS OF SAND MINING IN THE SWEETWATER RIVER, DEMONSTRATED THAT THE EXCAVATION OPERATION COULD CAUSE A SUBSTANTIAL ALTERATION OF THE DOWNSTREAM TOPOGRAPHY DUE TO EROSION SHOULD MAJOR FLOODING OCCUR.

10. THE DEHESA SAND PLANT IS LOCATED UPSTREAM FROM AN AREA WHERE GROUNDWATER IS SUITABLE FOR DOMESTIC PURPOSES. THE EXISTING GROUNDWATER IS OF HIGH QUALITY. THE DISCHARGER REPORTS THAT A SAMPLE OF THE PLANT'S WELL WATER, COLLECTED ON AUGUST 1, 1974, HAD A TOTAL DISSOLVED SOLIDS CONCENTRATION OF 532 MG/L.

11. THE DEHESA SAND PLANT IS LOCATED AT 3605 DEHESA ROAD, IN THE SW¼ AND SE¼ OF SECTION 15, T16S, R1E, SBB&M, JUST EAST OF THE SINGING HILLS GOLF COURSE IN THE JAMACHA HYDROLOGIC SUBAREA OF THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT OF THE SWEETWATER HYDROLOGIC UNIT.

12. THE DEHESA SAND PLANT IS LOCATED APPROXIMATELY 9½ MILES UPSTREAM OF THE SWEETWATER RESERVOIR, A DOMESTIC WATER SUPPLY RESERVOIR.

13. THE WATER QUALITY CONTROL PLAN (INTERIM), SAN DIEGO BASIN 9, ADOPTED BY THIS REGIONAL BOARD ON JUNE 14, 1971, AND MODIFIED ON DECEMBER 11, 1972 AND JANUARY 22, 1973, ESTABLISHED THE FOLLOWING OBJECTIVES FOR SURFACE AND GROUNDWATERS IN THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT:

CONSTITUENT	SURFACE WATER	GROUNDWATER
TOTAL DISSOLVED SOLIDS	500 MG/L	1,000 MG/L
CHLORIDE	250 "	400 "
PERCENT SODIUM	60	60
SULFATE	250 MG/L	500 MG/L
NITRATE	*	10 "
IRON + MANGANESE	0.35 "	0.35 "
METHYLENE BLUE ACTIVE SUBSTANCES	0.5 "	0.5 "
BORON	0.5 "	0.5 "
DISSOLVED OXYGEN	5.0 "	--
ODOR	NONE	NONE
TURBIDITY	20 UNITS	5 UNITS
COLOR	20 "	15 "
FLUORIDE	1.0 MG/L	1.0 MG/L

* AT LEVELS BELOW THOSE WHICH STIMULATE ALGAE AND EMERGENT PLANT GROWTH.

14. THE WATER QUALITY CONTROL PLAN (INTERIM), SAN DIEGO BASIN 9, ALSO CONTAINS THE FOLLOWING PROHIBITIONS:

"1. DISCHARGE OF TREATED OR UNTREATED SEWAGE OR INDUSTRIAL WASTES TO A NATURAL WATERCOURSE UPSTREAM OF SURFACE STORAGE OR DIVERSION FACILITIES USED FOR MUNICIPAL SUPPLY IS PROHIBITED.

"2. DISCHARGE OF TREATED OR UNTREATED SEWAGE OR INDUSTRIAL WASTEWATER, EXCLUSIVE OF COOLING WATER OR OTHER WATERS WHICH ARE CHEMICALLY UNCHANGED, TO A WATERCOURSE FOR PURPOSES OF DISPOSAL IS PROHIBITED.

"3. DISCHARGING OF TREATED OR UNTREATED SEWAGE OR INDUSTRIAL WASTE IN SUCH MANNER OR VOLUME AS TO CAUSE SUSTAINED SURFACE FLOW OR PONDING ON LANDS NOT OWNED OR UNDER THE CONTROL OF THE DISCHARGER IS PROHIBITED.

"4. THE DUMPING OR DEPOSITION OF OIL, GARBAGE, TRASH OR OTHER SOLID MUNICIPAL, INDUSTRIAL OR AGRICULTURAL WASTE DIRECTLY INTO INLAND WATERS OR WATERCOURSES OR ADJACENT TO THE WATERCOURSES IN ANY MANNER WHICH MAY PERMIT ITS BEING WASHED INTO THE WATERCOURSE IS PROHIBITED."

* * * *

NOTE: MG/L = MILLIGRAMS PER LITER

"6. DUMPING OR DEPOSITION OF OIL, GARBAGE, TRASH OR OTHER SOLID MUNICIPAL, INDUSTRIAL OR AGRICULTURAL WASTE INTO NATURAL OR EXCAVATED SITES BELOW HISTORIC WATER LEVELS OR DEPOSITION OF SOLUBLE INDUSTRIAL WASTES AT ANY SITE IS PROHIBITED, UNLESS SUCH SITE HAS BEEN SPECIFICALLY APPROVED BY THE REGIONAL BOARD FOR THAT PURPOSE.

"7. LAND GRADING AND SIMILAR OPERATIONS CAUSING SOIL DISTURBANCE WHICH DO NOT CONTAIN PROVISIONS TO MINIMIZE SOIL EROSION AND LIMIT SUSPENDED MATTER IN AREA RUNOFF ARE PROHIBITED."

15. SURFACE WATERS IN THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT ARE BENEFICIALLY USED FOR:

(A) MUNICIPAL AND INDIVIDUAL DOMESTIC SUPPLY
(B) AGRICULTURAL IRRIGATION
(C) INDUSTRIAL SUPPLY
(D) WATER CONTACT RECREATION
(E) AESTHETIC ENJOYMENT
(F) FRESH WATER HABITAT FOR FISH, WATERFOWL AND WILDLIFE

16. GROUNDWATERS IN THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT ARE BENEFICIALLY USED FOR:

(A) MUNICIPAL AND INDIVIDUAL DOMESTIC SUPPLY
(B) AGRICULTURAL IRRIGATION
(C) INDUSTRIAL SUPPLY

17. THE BOARD HAS NOTIFIED THE DISCHARGER AND ALL KNOWN INTERESTED PARTIES OF ITS INTENT TO PRESCRIBE WASTE DISCHARGE REQUIREMENTS FOR THE PROPOSED DISCHARGE.

18. THE BOARD IN A PUBLIC MEETING HEARD AND CONSIDERED ALL COMMENTS PERTAINING TO THE DISCHARGE.

IT IS HEREBY ORDERED, THAT S. J. GROVES & SONS CO. - DEHESA SAND PLANT, NEAR EL CAJON, SHALL COMPLY WITH THE FOLLOWING WASTE DISCHARGE REQUIREMENTS:

A. PROHIBITIONS

1. DISCHARGES OF WASTES TO LANDS WHICH HAVE NOT BEEN SPECIFICALLY DESCRIBED TO THE REGIONAL BOARD AND FOR WHICH VALID WASTE DISCHARGE REQUIREMENTS ARE NOT IN FORCE ARE PROHIBITED.

2. BYPASSING OR DIRECT DISCHARGE OF ANY TREATED OR UNTREATED LIQUID OR SOLID WASTES TO THE SWEETWATER RIVER, OR TRIBUTARIES THERETO IS PROHIBITED.

3. THERE SHALL BE NO MINING OR CONSTRUCTION ACTIVITIES IN THE EXCAVATED AREA WHEN THERE IS A SURFACE DISCHARGE FROM THE EXCAVATED AREA.

4. THE DISCHARGE SHALL NOT:

   (A) CAUSE THE PRESENCE OF COLIFORM OR PATHOGENIC ORGANISMS IN WATERS PUMPED FROM THE BASIN;

   (B) CAUSE THE OCCURRENCE OF OBJECTIONABLE TASTES AND ODORS IN WATERS PUMPED FROM THE BASIN;

   (C) CAUSE WATERS PUMPED FROM THE BASIN TO FOAM;

   (D) CAUSE THE PRESENCE OF TOXIC MATERIALS IN WATERS PUMPED FROM THE BASIN;

   (E) CAUSE THE pH OF WATERS PUMPED FROM THE BASIN TO FALL BELOW 6.0 OR RISE ABOVE 9.0;

   (F) CAUSE THIS REGIONAL BOARD'S OBJECTIVES FOR THE GROUND OR SURFACE WATERS OF THE MIDDLE SWEETWATER HYDROLOGIC SUBUNIT AS ESTABLISHED IN THE WATER QUALITY CONTROL PLAN (INTERIM), SAN DIEGO BASIN 9, TO BE EXCEEDED;

   (G) CAUSE ODORS, SEPTICITY, MOSQUITOS OR OTHER VECTORS, WEED GROWTH OR OTHER NUISANCE CONDITIONS IN THE SWEETWATER RIVER OR ITS TRIBUTARIES;

   (H) CAUSE A SURFACE FLOW IN THE SWEETWATER RIVER OR ITS TRIBUTARIES; OR

   (I) CAUSE A POLLUTION, CONTAMINATION OR NUISANCE.

B. DISCHARGE SPECIFICATIONS

1. THE EXCAVATION SHALL BE CONDUCTED IN A MANNER THAT WILL INSURE THAT THE NORMAL QUALITY AND QUANTITY OF GROUNDWATER UNDERFLOW OF THE SWEETWATER RIVER WILL BE MAINTAINED.

2. ALL RUNOFF FROM ALL DISTURBED SOIL AREAS SHALL BE SO MANAGED, CONTROLLED, AND/OR TREATED THAT THE DISCHARGE SHALL CONTAIN NO MORE SUSPENDED SOLIDS THAN WOULD BE CONTAINED IN RUNOFF FROM THE UNDISTURBED STATE. SAID RUNOFF SHALL BE MANAGED, CONTROLLED, AND/OR TREATED UNTIL SUCH TIME AS ALL DISTURBED SOIL AREAS HAVE BEEN RESTORED TO A STATE WHICH WILL PRODUCE RUNOFF WITH A SUSPENDED SOLIDS CONCENTRATION NOT GREATER THAN THAT FROM ORIGINAL UNDISTURBED SOIL AREAS.

3. SEDIMENT REMOVED FROM RUNOFF SHALL BE PLACED ONLY IN PROTECTED AREAS WHERE PRECAUTIONS HAVE BEEN TAKEN TO MINIMIZE EROSION. A PROGRAM SHALL BE INSTITUTED TO STABILIZE ALL STOCKPILED OR LANDFILLED MATERIALS TO MINIMIZE EROSION AND PREVENT HAZARDOUS CONDITIONS.

4. THE EXCAVATED AREA SHALL BE MAINTAINED TO BE FREE OF EXCESSIVE AQUATIC GROWTHS.

5. ALL DOMESTIC WASTES SHALL BE DISPOSED OF IN SUBSURFACE DISPOSAL SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE ORDINANCES AND REGULATIONS OF THE SAN DIEGO COUNTY DEPARTMENT OF PUBLIC HEALTH. THE SUBSURFACE DISPOSAL SYSTEMS SHALL BE LOCATED SO THAT THERE WILL BE NO SURFACING OF LEACHATE OR FLOW OF LEACHATE INTO THE EXCAVATED AREA OR ANY OTHER AREAS WHERE WATER IS PONDED.

6. SEDIMENT REMOVED FROM THE WASH WATER SETTLING PONDS AND STOCKPILED ON THE PLANT SITE SHALL BE PROTECTED AGAINST A 100-YEAR-FREQUENCY FLOOD AS DEFINED BY THE SAN DIEGO COUNTY FLOOD CONTROL AGENCY.

7. THE BOTTOMS AND SIDES OF ALL PONDS THAT WILL CONTAIN WASH WATER SHALL BE RENDERED IMPERVIOUS[1] AND SHALL BE MAINTAINED IN AN IMPERVIOUS STATE. THE REQUIRED PERMEABILITY MAY BE DEVELOPED DURING THE INITIAL SIX MONTHS OF OPERATION OF EACH POND.

8. ALL WASTE TREATMENT AND DISPOSAL FACILITIES SHALL BE PROTECTED TO WITHSTAND WITHOUT DISCHARGE A 100-YEAR-FREQUENCY FLOOD AS DEFINED BY THE SAN DIEGO COUNTY DEPARTMENT OF SANITATION AND FLOOD CONTROL.

9. ALL WASTE TREATMENT AND DISPOSAL FACILITIES SHALL BE PROTECTED TO WITHSTAND, WITHOUT DISCHARGE, RUNOFF RESULTING FROM A 100-YEAR-FREQUENCY, SIX-HOUR STORM.

C. PROVISIONS

1. THE DISCHARGER SHALL COMPLY WITH THE MONITORING AND REPORTING PROGRAM No. 74-100 AS SPECIFIED BY THE EXECUTIVE OFFICER.

2. ALL WASTEWATER TREATMENT AND DISPOSAL FACILITIES SHALL BE COMPLETELY CONSTRUCTED AND OPERABLE PRIOR TO THE COMMENCEMENT OF EXPANDED SAND PROCESSING OPERATIONS. A REPORT FROM THE DESIGN ENGINEER CERTIFYING THE ADEQUACY OF EACH COMPONENT OF THE TREATMENT AND DISPOSAL FACILITIES SHALL BE SUBMITTED BY THE DISCHARGER PRIOR TO COMMENCEMENT OF EXPANDED SAND PROCESSING OPERATIONS. THE CERTIFICATION REPORT SHALL CONTAIN RESULTS OF TESTS AND A REQUIREMENT-BY-REQUIREMENT ANALYSIS DEMONSTRATING HOW THE PROCESS AND PHYSICAL DESIGNS OF THE FACILITIES WILL INSURE COMPLIANCE WITH THE WASTE DISCHARGE REQUIREMENTS. THE DESIGN ENGINEER SHALL AFFIX HIS SIGNATURE AND ENGINEERING LICENSE NUMBER TO THE CERTIFICATION REPORT. COMMENCEMENT OF THE EXPANDED SAND PROCESSING OPERATIONS SHALL NOT BE INITIATED UNTIL:

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[1] "IMPERVIOUS" SHALL BE DEFINED AS HAVING A COEFFICIENT OF PERMEABILITY OF 10^{-5} CENTIMETERS PER SECOND OR LESS.

(A) THE CERTIFICATION REPORT IS RECEIVED;

(B) THE REGIONAL BOARD HAS BEEN NOTIFIED OF THE COMPLETION OF FACILITIES BY THE DISCHARGER;

(C) AN INSPECTION OF THE FACILITIES HAS BEEN MADE BY STAFF OF THE REGIONAL BOARD; AND

(D) STAFF HAS NOTIFIED THE DISCHARGER BY LETTER THAT THE DISCHARGE CAN BE INITIATED.

3. THE DISCHARGER SHALL NOTIFY THIS REGIONAL BOARD BY LETTER OF THE COMMENCEMENT OF THE EXPANDED SAND PROCESSING OPERATION.

4. THE DISCHARGER SHALL GRANT ADMISSION TO THE PREMISES OF THE WASTE TREATMENT AND DISPOSAL FACILITIES TO MEMBERS OF THIS REGIONAL BOARD AND ITS STAFF AT SUCH TIMES AS MAY BE NECESSARY IN THE CONDUCT OF THEIR DUTIES IN CONNECTION WITH THE WASTE DISCHARGE REQUIREMENTS ESTABLISHED HEREIN.

5. WASTE DISCHARGE REQUIREMENTS SHALL REMAIN APPLICABLE REGARDLESS OF CHANGES IN OWNERSHIP OR LESSEE. A CHANGE IN OWNERSHIP SHALL BE REPORTED PROMPTLY TO THIS REGIONAL BOARD BY LETTER.

6. THE ABOVE PRESCRIBED WASTE DISCHARGE REQUIREMENTS ARE ESTABLISHED ONLY FOR A WASTE DISPOSAL OPERATION AS DESCRIBED IN THE REPORT OF WASTE DISCHARGE.

7. PRIOR TO MODIFYING THE WASTE TREATMENT AND DISPOSAL SYSTEM AT THE DEHESA SAND PLANT, OR PRIOR TO INITIATING ANY MATERIAL CHANGE IN THE CHARACTERISTICS OR VOLUME OF THE DISCHARGE, THE DISCHARGER SHALL (A) SUBMIT A SUPPLEMENTARY REPORT OF WASTE DISCHARGE DESCRIBING THE PROPOSED CHANGES, AND (B) OBTAIN WASTE DISCHARGE REQUIREMENTS FOR THE PROPOSED CHANGES.

8. IF CONSTRUCTION OF THE FACILITIES DESCRIBED IN THE REPORT OF WASTE DISCHARGE HAS NOT BEGUN BY DECEMBER 1, 1975, THIS ORDER WILL EXPIRE ON THAT DATE. SHOULD THE DISCHARGER WISH TO EXTEND THE EXPIRATION DATE OF THIS ORDER, A WRITTEN REQUEST MUST BE SUBMITTED TO THE EXECUTIVE OFFICER NO LATER THAN OCTOBER 1, 1975. SHOULD THE DISCHARGER WISH TO INITIATE THE PROJECT FOLLOWING EXPIRATION OF THIS ORDER, A NEW REPORT OF WASTE DISCHARGE MUST BE FILED.

D. NOTIFICATION

THESE REQUIREMENTS HAVE NOT BEEN OFFICIALLY REVIEWED BY THE ENVIRONMENTAL PROTECTION AGENCY AS REQUIRED BY FEDERAL LAW (PUBLIC LAW 92-500) AND ARE NOT ISSUED PURSUANT TO SECTION 402 OF THE FEDERAL WATER POLLUTION CONTROL ACT AS AMENDED IN 1972.

I, LEONARD BURTMAN, EXECUTIVE OFFICER, DO HEREBY CERTIFY THE FOREGOING IS A FULL, TRUE, AND CORRECT COPY OF AN ORDER ADOPTED BY THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SAN DIEGO REGION, ON DECEMBER 9, 1974.

Leonard Burtman

LEONARD BURTMAN
EXECUTIVE OFFICER

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

MONITORING AND REPORTING PROGRAM NO. 74-100
FOR
S. J. GROVES & SONS CO. - DEHESA SAND PLANT
NEAR THE CITY OF EL CAJON

GENERAL PROVISIONS FOR SAMPLING AND ANALYSIS

UNLESS OTHERWISE NOTED, ALL SAMPLING, SAMPLE PRESERVATION, AND ANALYSES SHALL BE CONDUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER" OR APPROVED BY THE EXECUTIVE OFFICER.

ALL ANALYSES SHALL BE PERFORMED IN A LABORATORY CERTIFIED TO PERFORM SUCH ANALYSES BY THE CALIFORNIA DEPARTMENT OF HEALTH OR A LABORATORY APPROVED BY THE EXECUTIVE OFFICER.

GENERAL PROVISIONS FOR REPORTING

FOR EVERY ITEM WHERE THE REQUIREMENTS ARE NOT MET, THE DISCHARGER SHALL SUBMIT A STATEMENT OF THE ACTIONS UNDERTAKEN OR PROPOSED WHICH WILL BRING THE DISCHARGE INTO FULL COMPLIANCE WITH REQUIREMENTS AT THE EARLIEST TIME AND SUBMIT A TIME-TABLE FOR CORRECTION.

BY JANUARY 30 OF EACH YEAR, THE DISCHARGER SHALL SUBMIT AN ANNUAL SUMMARY REPORT TO THE REGIONAL BOARD. THE REPORT SHALL CONTAIN BOTH TABULAR AND GRAPHICAL SUMMARIES OF THE MONITORING DATA OBTAINED DURING THE PREVIOUS YEAR. IN ADDITION, THE DISCHARGER SHALL DISCUSS THE COMPLIANCE RECORD AND THE CORRECTIVE ACTIONS TAKEN OR PLANNED WHICH MAY BE NEEDED TO BRING THE DISCHARGE INTO FULL COMPLIANCE WITH THE WASTE DISCHARGE REQUIREMENTS.

MONITORING PROGRAM

THE DISCHARGER SHALL SUBMIT TECHNICAL REPORTS CONCERNING THE QUANTITY AND QUALITY OF THE DISCHARGE, USING THE ATTACHED FORMAT, IN ACCORDANCE WITH THE FOLLOWING SCHEDULE.

RIVER WATERS

SYNOPTIC SAMPLES OF SURFACE WATER DISCHARGING FROM THE EXCAVATED AREA AND FROM EACH MAJOR SOURCE OF SURFACE WATER INFLOW TO THE EXCAVATED AREA SHALL BE COLLECTED AND ANALYZED FOR THE FOLLOWING ITEMS AT THE FREQUENCY SHOWN AND REPORTED AT QUARTERLY INTERVALS:

MONITORING AND REPORTING PROGRAM
ORDER No. 74-100

DETERMINATION	UNITS	FREQUENCY [A]
SUSPENDED SOLIDS	MG/L	DAILY
SETTLEABLE SOLIDS	ML/L	"
TURBIDITY	JTU	"

POND PERMEABILITY

ENGINEERING TESTS TO DETERMINE THE PERMEABILITY OF THE BOTTOM AND SIDES OF EACH POND CONTAINING RECIRCULATED WASH WATER SHALL BE CONDUCTED WITHIN SIX MONTHS OF THE INITIATION OF OPERATIONS AT THE EXPANDED SAND PLANT AND ANNUALLY THEREAFTER. A REPORT SHOWING THE RESULTS OF THE TESTS SHALL BE SUBMITTED TO THE REGIONAL BOARD WITHIN THIRTY (30) DAYS OF THE TEST DATE. PERFORMANCE OF THE TESTS SHALL BE UNDER THE DIRECT SUPERVISION OF A REGISTERED ENGINEER AND THE REPORTS SHALL CONTAIN HIS NAME AND LICENSE NUMBER.

THE MONITORING AND REPORTING PROGRAM CONTAINED HEREIN SHALL BE IN EFFECT UPON COMMENCEMENT OF THE DISCHARGE WITH THE EXPRESS EXCEPTION OF THE GROUNDWATER SAMPLING PROGRAM, WHICH SHALL BE INITIATED A MINIMUM OF SIX MONTHS PRIOR TO THE INITIATION OF EXPANDED SAND MINING OPERATIONS.

ORDERED BY Leonard Burtman

LEONARD BURTMAN
EXECUTIVE OFFICER
DECEMBER 9, 1974

NOTE: MG/L = MILLIGRAMS PER LITER
ML/L = MILLILITERS PER LITER
JTU = JACKSON TURBIDITY UNITS

[A] SAMPLING IS ONLY REQUIRED ON DAYS WHEN THERE IS INFLOW TO AND OUTFLOW FROM THE EXCAVATED AREA.

GL:LVR

APPENDIX G

DEPARTMENT OF FISH AND GAME APPROVALS

Notification No. V-74-76

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and CONROCK CO. and H.G. FENTON MATERIAL CO. of SAN DIEGO, State of CALIFORNIA, hereinafter called the operator, is as follows:

WHEREAS, pursuant to Section 1602 of California Fish and Game Code, the operator, on the ____ day of July, 1974, notified the Department that he intends to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of, the following water: SWEETWATER RIVER in the County of SAN DIEGO, State of California, S 14, 15, 23 T 16 S R 1 E.

WHEREAS, the Department hereby certifies that an inspection of subject area was made on the 25th day of July, 1974, by the following Department personnel: Warden R. R. Jordan and it was determined that an existing fish or game resource may be substantially adversely affected by such operations.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife during the operator's work. The operator hereby agrees to accept the following recommendations as part of his work: ~~Numbers from the list of recommendations on the back of this page and the following special recommendations:~~

1. All work in or near the stream or lake shall be confined to the period all year.
2. No debris, rubbish, cement, concrete or washings thereof, oil or petroleum products or other organic materials shall be allowed to enter into the waters of the State, ~~to~~
3. The vegetative rehabilitation plan and the riparian habitat retention plan approximately as presented on 7-26-74 should be implemented to offset wildlife resource impacts of the project.

If the operator's work changes from that stated in the notification specified above, this agreement is no longer valid and a new notification shall be submitted to the Department of Fish and Game. Failure to comply with the provisions of this agreement and with other pertinent Code Sections, including but not limited to Fish and Game Code Sections 5650, 5652 and 5948, may result in prosecution.

Nothing in this agreement authorizes the operator to trespass on any land or property, nor does it relieve the operator of responsibility for compliance with applicable federal, state, or local laws or ordinances.

This agreement becomes effective on 7-26-74 and terminates upon completion of project.

Operator CONROCK Co. & H.G. FENTON MATERIAL CO. by: Wm. K. Walker

Title Asst. Prop. Mgr.

Organization CONROCK Co.

Date 7/26/74

Bruce E. Elaine
Department Representative

Title Environmental Services Supervisor

Department of Fish and Game, State of California

Date 7-26-74

RECOMMENDATIONS

.. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high water mark of the stream or lake shall be restored to as near their original condition as possible.

. Restoration shall include the revegetation of stripped or exposed areas.

. Rock, riprap, or other erosion protection shall be placed in areas where vegetation cannot reasonably be expected to become reestablished.

. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired and upstream or downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade. Bottoms of permanent culverts shall be placed below stream channel grade.

. Plans for design of concrete sills and other features that could potentially impede fish migrations must be approved by Department engineers.

. When any dam (any artificial obstruction) is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain fishlife below the dam.

. An adequate fish passage facility must be incorporated into any barrier that obstructs fish passage.

. Any dam (any artificial obstruction) constructed shall only be built from material such as clean washed gravel which will cause little or no siltation.

. Equipment shall not be operated in the stream channels of flowing live streams except as may be necessary to construct crossings or barriers and fills at channel changes.

. When work in a flowing stream is unavoidable, the entire streamflow shall be diverted around the work area by a barrier, temporary culvert, and/or a new channel capable of permitting upstream and downstream fish movement. Construction of the barrier and/or the new channel shall normally begin in the downstream area and continue in an upstream direction, and the flow shall be diverted only when construction of the diversion is completed. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock riprap, or other protective material. The enclosure and the supportive material shall be removed when the work is completed and the removal shall normally proceed from downstream in an upstream direction.

. Temporary fills shall be constructed of nonerodible materials and shall be removed immediately upon work completion.

. Equipment shall not be operated in the lake or its margin except during excavation and as may be necessary to construct barriers or fills. If work in the lake is unavoidable, a curtain enclosure to prevent siltation of the lake beyond the immediate working area shall be installed. The enclosure and any supportive material shall be removed when the work is completed.

13. Silt settling basins shall be located away from the stream or lake to prevent discolored, silt-bearing water from reaching the stream or lake.

14. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

15. Wash water containing mud or silt from aggregate washing or other operations shall not be allowed to enter a lake or flowing streams.

16. A silt catchment basin shall be constructed across the stream immediately below the project site. This catchment basin shall be constructed of gravel which is free from mud or silt. Upon completion of the project and after all flowing water in the area is clear of turbidity, the gravel along with the trapped sediment shall be removed from the stream.

17. If operations require moving of equipment across a flowing stream, such operations shall be conducted without substantially increasing stream turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-fill crossing.

18. If a stream channel has been altered during the operations, its low flow channel shall be returned as nearly as possible to its natural state without creating a possible future bank erosion problem, or a flat wide channel or sluice-like area. If a lake margin has been altered, it shall be returned as nearly as possible to its natural state without creating a future bank erosion problem. The gradient of the streambed or lake margin shall be as nearly as possible the same gradient as existed prior to disturbance.

19. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

20. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any logging, construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

21. The operator will notify the Department of Fish and Game of the date of completion of operations at least five days prior to such completion.

Notification No. V-74-80

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and S. J. Groves & Sons Co., dba Dehesa Sand Plant of San Diego, State of California, hereinafter called the operator, is as follows:

WHEREAS, pursuant to Section 1602 of California Fish and Game Code, the operator, on the 8th day of August, 1974, notified the Department that he intends to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of, the following water: Sweetwater River in the County of San Diego, State of California, S 13 T 16 S R 1 East.

WHEREAS, the Department hereby certifies that an inspection of subject area was made on the 8th day of August, 1974, by the following Department personnel: R. Jordan and it was determined that an existing fish or game resource may be substantially adversely affected by such operations.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife during the operator's work. The operator hereby agrees to accept the following recommendations as part of his work: Numbers _____ from the list of recommendations on the back of this page and the following special recommendations:

1. All work in or near the stream or lake shall be confined to the period all year.
2. No debris, rubbish, cement or concrete washings thereof, oil or petroleum products or other organic materials shall be allowed to enter into the waters of the State.
3. The vegetative rehabilitation plan and the riparian habitat retention plan approximately as presented, should be implemented to offset wild life resource impacts of the project.

If the operator's work changes from that stated in the notification specified above, this agreement is no longer valid and a new notification shall be submitted to the Department of Fish and Game. Failure to comply with the provisions of this agreement and with other pertinent Code Sections, including but not limited to Fish and Game Code Sections 5650, 5652 and 5948, may result in prosecution.

Nothing in this agreement authorizes the operator to trespass on any land or property, nor does it relieve the operator of responsibility for compliance with applicable federal, state, or local laws or ordinances.

This agreement becomes effective on August 8, 1974 and terminates Completion of project.

Operator _____ Department Representative _____

Title Project Manager Title Warden

Organization Dehesa Sand Plant Department of Fish and Game, State of California

Date August 8, 1974 Date August 8, 1974

RECOMMENDATIONS

1. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high water mark of the stream or lake shall be restored to as near their original condition as possible.

2. Restoration shall include the revegetation of stripped or exposed areas.

3. Rock, riprap, or other erosion protection shall be placed in areas where vegetation cannot reasonably be expected to become reestablished.

4. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired and upstream or downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade. Bottoms of permanent culverts shall be placed below stream channel grade.

5. Plans for design of concrete sills and other features that could potentially impede fish migrations must be approved by Department engineers.

6. When any dam (any artificial obstruction) is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain fishlife below the dam.

7. An adequate fish passage facility must be incorporated into any barrier that obstructs fish passage.

8. Any dam (any artificial obstruction) constructed shall only be built from material such as clean washed gravel which will cause little or no siltation.

9. Equipment shall not be operated in the stream channels of flowing live streams except as may be necessary to construct crossings or barriers and fills at channel changes.

10. When work in a flowing stream is unavoidable, the entire streamflow shall be diverted around the work area by a barrier, temporary culvert, and/or a new channel capable of permitting upstream and downstream fish movement. Construction of the barrier and/or the new channel shall normally begin in the downstream area and continue in an upstream direction, and the flow shall be diverted only when construction of the diversion is completed. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock riprap, or other protective material. The enclosure and the supportive material shall be removed when the work is completed and the removal shall normally proceed from downstream in an upstream direction.

11. Temporary fills shall be constructed of nonerodible materials and shall be removed immediately upon work completion.

12. Equipment shall not be operated in the lake or its margin except during excavation and as may be necessary to construct barriers or fills. If work in the lake is unavoidable, a curtain enclosure to prevent siltation of the lake beyond the immediate working area shall be installed. The enclosure and any supportive material shall be removed when the work is completed.

13. Silt settling basins shall be located away from the stream or lake to prevent discolored, silt-bearing water from reaching the stream or lake.

14. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

15. Wash water containing mud or silt from aggregate washing or other operations shall not be allowed to enter a lake or flowing streams.

16. A silt catchment basin shall be constructed across the stream immediately below the project site. This catchment basin shall be constructed of gravel which is free from mud or silt. Upon completion of the project and after all flowing water in the area is clear of turbidity, the gravel along with the trapped sediment shall be removed from the stream.

17. If operations require moving of equipment across a flowing stream, such operations shall be conducted without substantially increasing stream turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-fill crossing.

18. If a stream channel has been altered during the operations, its low flow channel shall be returned as nearly as possible to its natural state without creating a possible future bank erosion problem, or a flat wide channel or sluice-like area. If a lake margin has been altered, it shall be returned as nearly as possible to its natural state without creating a future bank erosion problem. The gradient of the streambed or lake margin shall be as nearly as possible the same gradient as existed prior to disturbance.

19. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

20. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any logging, construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

21. The operator will notify the Department of Fish and Game of the date of completion of operations at least five days prior to such completion.

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APPENDIX H

LEGAL DESCRIPTION OF PROPERTY

(Conrock/Fenton)

OMP:

PARCEL 1:

The South Half of the Northeast Quarter AND the Northeast Quarter of the Southeast Quarter of Section 15, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

PARCEL 2:

That portion of the Northwest Quarter of the Southwest Quarter of Section 15, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to the Official Plat thereof lying Northerly of a line described as follows:

Commencing at the Southwest corner of the Northwest Quarter of the Southwest Quarter of said Section 15 as shown on Record of Survey Map No. 6282 filed in the Office of the County Recorder of San Diego County October 4, 1963; thence along the Westerly line of said Section 15, North 00°25'00" West, 802.09 feet to the TRUE POINT OF BEGINNING; thence South 75°10'16" East, 1391.47 feet to a point on the Easterly line of said Northwest Quarter of the Southwest Quarter distant thereon North 01°00'50" West, 525.00 feet from the Southeast corner of said Northwest Quarter of the Southwest Quarter as shown on said Record of Survey Map No. 6282.

EXCEPTING from said Northwest Quarter of the Southwest Quarter that portion lying Northeasterly of the center line of County Road Survey No. 277 (known as Dehesa Road) according to plat thereof on file in the Office of the County Engineer of San Diego County.

PARCEL 3:

The Southeast Quarter of the Southeast Quarter, AND the West Half of the Southeast Quarter, AND the East Half of the Southwest Quarter AND the Northwest Quarter of the Southwest Quarter, all being in Section 14, Township 16 South, Range 1 East, San Bernardino, in the County of San Diego, State of California, according to the Official Plat thereof.

PARCEL 4:

All of the South Half of the Northwest Quarter of Section 14, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to the Official Plat thereof.

EXCEPTING from said South Half of the Northwest Quarter that portion thereof described as follows:

Beginning at the intersection of the North-South center line of said Section 14, with the center line of County Road Survey No. 277 (known as Dehesa Road) according to the plat thereof on file in the Office of the County Engineer of San Diego County, being also the Southeast corner of land described in deed to the Trustees of the Sequan School District, dated October 27, 1888 and recorded in Book 142, Page 116 of Deeds; thence

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along said North-South center line North 02°00'34" East, to the Northeast corner of the South Half of the Northwest Quarter of Section 14; thence along the Northerly line of said South Half of the Northwest Quarter, South 88°27'53" West to a point distant thereon North 88°27'53" East, 1275.77 feet from the Northwest corner of said South Half of the Northwest Quarter; thence South 00°45'45" West, 367.29 feet to the center line of said County Road Survey No. 277; thence Southeasterly and Easterly along said center line to the Point Of Beginning.

ALSO EXCEPTING therefrom that portion, if any lying within the boundary of said land of the Trustees of the Sequan School District, more particularly described as follows:

Beginning at a point of intersection of the North line of the County Road and the East line of said Northwest Quarter, said point being distant 698.00 feet North of the Southeast corner thereof; thence North along said East line 209.00 feet; thence West 209.00 feet; thence South 209.00 feet; thence East 209.00 feet to the Point Of Beginning.

PARCEL 5:

The North Half of the Southeast Quarter, AND all of the Northeast Quarter AND the East Half of the Southeast Quarter of the Northwest Quarter AND the Northwest Quarter of the Southwest Quarter, all being in Section 23, Townsnip 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to the Official Plat thereof.

PARCEL 6:

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All of Lots 1, 2, 3, 4, 5, 6, 7, 11 and 12 in Section 24, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to the Official Plat thereof.

PARCEL 7:

THAT PORTION OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 15, TOWNSHIP 16 SOUTH, RANGE 1 EAST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF, WHICH LIES EASTERLY OF A LINE DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER OF SECTION 15; THENCE ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 15, NORTH 87°35'07" WEST 465.38 FEET TO THE SOUTHWEST CORNER OF SAID EAST 465.00 FEET OF THE SOUTHWEST QUARTER; THENCE ALONG THE WEST LINE OF SAID EAST 465.00 FEET, NORTH 0°06'39" EAST 2528.61 FEET TO THE NORTHWEST CORNER OF SAID EAST 465.00 FEET; THENCE ALONG THE NORTH LINE OF SAID SOUTHWEST QUARTER AND SAID SOUTHEAST QUARTER OF SECTION 15, SOUTH 85°43'19" EAST 1139.97 FEET TO THE TRUE POINT OF BEGINNING OF THE HEREIN DESCRIBED LINE; THENCE SOUTH 01°00'12" WEST 2490.26 FEET TO THE SOUTH LINE OF THE WEST HALF OF SAID SECTION 15.

RIDING AND HIKING TRAIL EASEMENT:

An easement and right of way over a portion of Lot 12 for a riding and hiking trail as granted to the State of California by deed recorded June 29, 1948 as File No. 64496, in Book 2854, page 125 of Official Records. The exact location of said easement is not disclosed by said deed.

Affects Parcels 8 and 13.

A license and right of way for use as a riding and hiking trail under, upon, over and across the North Half of the Southeast Quarter of Section 23, and the North Half of Lot 12 (Northwest Quarter of the Southwest Quarter), Section 24, all in Township 16 South, Range 1 East, San Bernardino Base and Meridian. Said license and right-of-way being a strip of land 20 feet in width, the center line of which is described as follows, to-wit:

Beginning at a point on the South line of the North half of the Southeast Quarter of Section 23, approximately 400 feet West of the Southeast corner thereof, where the State Forestry trail enters the said North half of the Southeast Quarter of the said Section 23 on the South; thence in a Northeasterly direction 500 feet, more or less, to a point in the East line of the said Section 23;

ALSO: Beginning at a point in the South line of the North half of Lot 12, of Section 24, said Township and Range, where the State Forestry Trail crosses the said South line; thence in a Northeasterly and Northerly direction to a point where the said trail intersects the County Road on the South side of Sweetwater River, the said intersection being approximately 600 feet East of the West Quarter Section corner of the said Section 24, as granted to the State of California by deed recorded July 12, 1949 as File No. 61939, in Book 3254, page 412 of Official Records.

APPENDIX I

LEGAL DESCRIPTION OF PROPERTY

(S. J. Groves & Sons)

PARCEL 1:

The Southwest Quarter of the Southwest Quarter, and the East Half of the Southwest Quarter of Section 15, Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, according to the Official Plat thereof.

EXCEPTING from said East Half of the Southwest Quarter the East 465.00 feet thereof.

ALSO EXCEPTING from said East Half that portion described as follows:

Beginning at the Northwest corner of said East Half; thence Southerly along the West line thereof to a point distant thereon 250.00 feet Southerly from the Point of Intersection of said West line with the centerline of County Road Survey No. 277, according to Map filed in the office of the County Surveyor of the said County; thence Easterly at right angles 25.00 feet; thence Northerly parallel with said West line to a point in said centerline; thence Southeasterly along said centerline to a point in a line which is parallel with and 655.00 feet Westerly measured at right angles from the East line of said East half; thence Northerly along said parallel line to the North line of said East Half; thence Westerly along said North line to the Point of Beginning.

PARCEL 2:

An easement for road purposes over that portion of said East Half of the Southwest Quarter, described as follows:

Beginning at a point of intersection of the West line of said East Half with said centerline of County Road Survey No. 277; thence Southerly along said West line 225.00 feet; thence Easterly at right angles 25.00 feet; thence Northerly parallel with said West line to a point in said centerline; thence Westerly along said centerline to the Point of Beginning.

PARCEL 3:

The North 330.00 feet of Lots 3 and 4 of Section 22, Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

PROPERTY DESCRIPTION OF SAND PLANT EXTENSION

PARCEL 4:

That portion of Section 15, in Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, more particularly described as follows:

The West Half of the West Half of the Southeast Quarter and the Easterly 465.00 feet of the East Half of the Southwest Quarter.

APPENDIX J

LEGAL DESCRIPTION OF EROSION CONTROL PLAN PARCEL

(also see Exhibit K)

LEGAL DESCRIPTION OF EROSION

CONTROL PLAN PARCEL (also see Exhibit K)

The northwest quarter of the southwest quarter of Section 15, Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, according to official plat thereof.

Excepting that portion lying southerly of the location and prolongation of a line described as follows:

Beginning at a point on the west line of said northwest quarter of the southwest quarter as shown on record of survey map no. 6282, filed in the Office of County Recorder of San Diego County, October 4, 1963, which is distant north 0°25' west 802.09 feet from the southwest corner of said northwest quarter of the southwest quarter; thence easterly in a straight line to a point on the east line of said northwest quarter of the southwest quarter, which is distant thereon north 1°00'50" west 525.00 feet from the southeast corner of said northwest quarter of the southwest quarter of Section 15 as shown on record of survey map no. 6282.

Also excepting that portion lying northerly of Dehesa Road.

APPENDIX K

SP75-01 and SP75-02

RESOLUTION OF ADOPTION

TUESDAY, APRIL 13, 1976

No. 62

On motion of Supervisor Brown , seconded by Supervisor Walsh , the following resolution is adopted:

WHEREAS, pursuant to Section 65450 et seq of the Government Code, this Board did designate an area of approximately 1,257 gross acres, which is generally described as that area lying one and three-quarters miles easterly of the intersection of Dehesa Road and Willow Glen Drive on the south side of Dehesa Road in the Sweetwater River Flood Plain, for which the preparation of Specific Plans would be convenient to the implementation of the San Diego County General Plan; and

WHEREAS, the S.J. Groves and Sons site was previously considered by the Board of Supervisors as P73-137, which Board, on December 31, 1974, took the following action:

1) Granted, for a period of one year, a special use permit for the expansion of an existing sand processing plant and borrow pit, based on certain conditions.

2) Required the permittee to prepare in cooperation with the County and the Conrock/Fenton Companies a comprehensive rehabilitation plan; and

WHEREAS, the comprehensive rehabilitation plan has been prepared as a portion of Specific Plan 75-01; and

WHEREAS, the Planning Commission on October 10, 1975, modified the S.J. Groves permit (P73-137) to bring it into conformance with the proposed Specific Plan (SP75-01); and

WHEREAS, the Conrock/Fenton site was previously considered by the Board of Planning and Zoning Appeals as P74-68, which Board on January 27, 1975, took the following action:

1) Granted, for a period of 15 years, a special use permit for a borrow pit and sand processing plant, based on certain conditions.

2) Required the permittee to prepare, in cooperation with the County and S.J. Groves and Sons, a comprehensive rehabilitation plan.

3) Required said rehabilitation plan show a joint lake and include justification for deep excavation.

4) Required said rehabilitation plan be accomplished through the adoption of a Specific Plan as described in Government Code, Section 65450 et seq; and

WHEREAS, pursuant to said requirements, the comprehensive rehabilitation plan has been prepared as a portion of Specific Plan 75-02; and

WHEREAS, said Specific Plans consist of the following documents:

1) Specific Plan 75-01 - Groves Sweetwater Project: Part 1, Text and Exhibits, December 1975;

2) Specific Plan 75-02 - Conrock/Fenton Sweetwater Project: Part 1, Text and Exhibits, December 1975;

3) Specific Plans 75-01 and 75-02 - Conrock/Fenton/Groves Sweetwater Projects: Part 11, Appendices, December 1975; and

WHEREAS, the permittees propose to excavate and process sand from the Sweetwater River in a manner as is consistent with the County General Plan; and

WHEREAS, the technical data and studies and the detailed regulations, conditions and programs set forth in said Specific Plans comply with Title 7, Article 8, Government Code Section 65450 et seq; and

WHEREAS, said Specific Plans provide for the comprehensive rehabilitation and long term maintenance of these properties as a private recreational facility; and

WHEREAS, said Specific Plans show a joint lake and include justification for deep excavating; and

WHEREAS, pursuant to Government Code Section 65500, said Specific Plans were considered by the Planning Commission on October 10, 1975, but due to an error in the public advertising process, the public hearing of said Plans was readvertised; and

WHEREAS, pursuant to Government Code Section 65500, said Specific Plans were again considered by the Planning Commission at a new public hearing on November 7, 1975; and

WHEREAS, following said public hearing on November 7, 1975, the Planning Commission voted 3-2 in favor of said Specific Plans; said vote being insufficient, however, to recommend said Plans to the Board of Supervisors, under Government Code Section 65501, because not made by the "affirmative votes of not less than the majority of its total voting members"; and

WHEREAS, on November 19, 1975, this Board, pursuant to Government Code Section 65507, and deeming it to be for the public interest, initiated, on its own, consideration of said Specific Plans and requested the Planning Commission to report thereon; and

WHEREAS, the Planning Commission, having previously conducted a full public hearing on said Specific Plans, did on November 21, 1975, approve and file its report on said Plans with this Board; and

WHEREAS, this Board pursuant to Government Code Section 65507 conducted on December 17, 1975, January 15, 1976, February 18, 1976, March 9, 1976, and April 13, 1976, duly advertised public hearings on said Specific Plans and has reviewed the report of the Planning Commission thereon; NOW THEREFORE

IT IS FOUND, DETERMINED AND CERTIFIED that the Environmental Impact Report dated September 25, 1975, Board of Supervisors Document No. 514509, has been completed in compliance with the California Environmental Quality Act and the State Guidelines.

IT IS FURTHER FOUND AND DETERMINED that despite the adverse environmental impacts identified by the certified EIR which will not be fully mitigated, said Specific Plans will provide the following overriding social and economic benefits to the region:

1. Due to existing and proposed residential development along the Sweetwater River, there are few alternative borrow sites available which would substantially reduce the impacts associated with borrow operations and truck traffic. The Sweetwater River is one of the best sources of large quantities of construction quality sand, a vital natural resource, to serve the existing and anticipated demands of the metropolitan San Diego area. The project will not increase the haul distances to this market and will result in:

    a. Less inflation of building material costs when compared to obtaining sand from potential sites further away.

    b. No increase in the use of fossil fuel energy in transporting the sand to its place of use.

    c. No increase in total exhaust emissions.

2. The deep excavation of these sites will allow the creation of a valuable lake for recreational and wildlife habitat purposes.

3. These projects will have the effect of lessening damage from small floods by reducing the area of inundation and retaining flood waters.

4. These projects will not increase damage from large floods on downstream properties by providing a diked area where erosion/deposition can occur.

5. This proposal to mine sand to a maximum pit depth makes it possible to:

   a. Maximize the economic gain from each mineral deposit while saving presently untouched deposits for future use.

   b. Develop and approve positive and permanent site rehabilitation plans. The 20-foot maximum pit depth which has been applied to most borrow pits leaves valuable resources in place. Increased economic value, as these renewable resources become more scarce, will require that sites be reworked at some future date with the result of additional environmental disturbance.

   c. Minimize the cost of construction aggregates by eliminating the need for expensive processing plant "set-up" costs each time a borrow operation must be relocated.

6. All those benefits specifically set out in the document dated December 5, 1975, and titled "Overriding Socio-Economic Benefits of the Proposed Conrock/Fenton/Groves Sweetwater Project", a copy of which is on file with the Clerk of the Board of Supervisors, Board of Supervisors Document No. 520368.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED that the above statements of overriding social and economic benefits are hereby attached to the final Environmental Impact Report and are fully incorporated therein.

BE IT FURTHER RESOLVED AND ORDERED, that this Board adopts Specific Plans SP75-01 and SP75-02, conditioned upon each of the following:

1. Said Specific Plans shall not be effective for any purpose whatsoever unless and until:

   a. The civil action pending in San Diego County Superior Court entitled Dehesa Vista Partnership vs. San Diego County Board of Planning and Zoning Appeals, et al (No. 375944) is dismissed with prejudice as to all parties; and

b. The claim filed by Dehesa Vista Partnership against the County of San Diego, dated and filed with the Clerk of the Board of Supervisors on December 31, 1975 (Clerk of the Board of Supervisors Document No. 515701) shall be fully and finally withdrawn and any lawsuit now or hereafter filed pursuant thereto shall be dismissed with prejudice to all parties.

c. Each and every document required to carry out paragraphs 1(a) and 1(b) above shall be approved as to form and content by the County Counsel.

2. Said Specific Plans shall not be effective for any purpose whatsoever unless and until the applicants for said plans shall apply for and receive modifications to Special Use Permits P73-137 (S.J. Groves and Sons Company) and P74-68 (Conrock Company and H.G. Fenton Material Company), to bring said permits into conformance with said Specific Plans with regard to each of the following:

a. Number of truck trips.

b. Hours of operation.

c. Deadline for agreement between applicants and metropolitan water supplier.

d. Imposition of and deadline for lien agreement between applicants and County.

BE IT FURTHER RESOLVED AND ORDERED that said Specific Plans are subject to modification or amendment by this Board and prior to the expiration of five (5) years from the date of adoption hereof, said Specific Plans shall be reviewed and recommendations made to this Board with regard to the necessity or propriety of initiating proposed modifications or amendments thereto.

PASSED AND ADOPTED by the Board of Supervisors of the County of San Diego, State of California, this 13th day of April, 1976, in the County Administration Center, San Diego, California, by the following vote:

AYES: Supervisors Walsh, Brown, Conde, Bates, and Taylor
NOES: Supervisors None
ABSENT: Supervisors None

- - -

STATE OF CALIFORNIA)
County of San Diego) ss.

I, PORTER D. CREMANS, Clerk of the Board of Supervisors of the County of San Diego, State of California, hereby certify that I have compared the foregoing copy with the original resolution passed and adopted by said Board, at a regular meeting thereof, at the time and by the vote therein stated, which original resolution is now on file in my office; that the same contains a full, true and correct transcript therefrom and of the whole thereof.

Witness my hand and the seal of said Board of Supervisors, this 13th day of April, 1976.

PORTER D. CREMANS
Clerk of the Board of Supervisors

By Lenelle Rapp Lenelle Rapp
Deputy

APR 13 1976 #62

APPENDIX L

SPECIAL USE PERMIT P74-68W

(Conrock/Fenton)

SPECIAL USE PERMIT

(No. P74-68W)

PERMITTEE: Conrock Co. and H. G. Fenton Material Co.

IS GRANTED, for a period of fifteen years, a special use permit for a borrow pit and sand processing plant, on a total of 532 acres, pursuant to Section 480(3) of The Zoning Ordinance.

The following conditions are imposed on the granting of this special use permit:

A. Prior to any use of the premises pursuant to this special use permit, and/or at all times said premises are used pursuant to this permit the applicant shall:

1. Dedicate to the County, without cost, sufficient additional right-of-way to provide a total of 102 feet of right-of-way width for Dehesa Road along the entire frontage of subject property, and a total of 60 feet of right-of-way width for Sloan Canyon Road through subject property.

2. Sign a secured agreement to improve Dehesa Road to modified County standards to consist of the following:

a. Forty feet of traveled way width from the entrance of subject processing plant westerly to the entrance of the S. J. Groves plant.

b. Improve access from Dehesa Road into the property, to the satisfaction of the County Engineer to include acceleration and deceleration lanes, a left turn pocket for traffic entering the property from the east and an acceleration lane for traffic leaving the property and proceeding west. (E.I.R.)

c. In the event that S. J. Groves does not exercise their permit prior to use of the Conrock/Fenton permit, the applicant shall be responsible for making improvements to widen Dehesa Road as required by the S. J. Groves permit. Namely, the applicant shall provide a total of 40 feet of traveled way width on Dehesa Road from the Conrock/Fenton property to a point 1,600 feet west of the S. J. Groves westerly property line.

d. Make provisions along the entire frontage of Dehesa Road to accommodate bicycles, and pedestrians, to the satisfaction of the County Engineer. (E.I.R.)

3. Submit a revised plot plan with cross-sections to be approved by the Director of LUER which conforms to Specific Plan SP75-02.

4. Obtain approval of the proposed operation from the San Diego Regional Water Quality Control Board. (E.I.R.)

5. Submit evidence to the Director of LUER that the California Department of Fish and Game has been notified of the intention to modify a riverbed, as required by Section 1601 of the Fish and Game Code.

6. Obtain a grading permit from the County Engineer for the grading that will take place within the boundaries of the property pursuant to Ordinance 2925 (New Series). Department of LUER shall participate with the County Engineer in a joint annual review of the grading permit.

7. Provide the premises with a supply of water approved by the Air Pollution Control Officer of the County of San Diego as adequate to effectuate the dust and air pollution control requirements hereof.

8. Provide facilities on the property approved by the Health Officer of the County of San Diego as follows:

   a. A potable water supply.

   b. Proper sanitary facilities, including toilet, handwashing, and sewage disposal facilities, for employees working on the premises. These facilities shall be installed in conformance with laws applicable thereto.

9. Install and maintain piezometers to monitor the downstream aquifer as shown on Figure 5 of Appendix B of Specific Plans 75-01 and 75-02.

10. Post signs prohibiting trespassing on the property.

11. Obtain adoption by the Board of Supervisors of SP75-02.

12. Obtain from the Director of LUER certification that all specified conditions of Condition "A" have been met.

B. The applicant shall provide a by-pass to allow for the unimpeded transfer of water from Loveland Reservoir to downstream users as described in SP75-02. This by-pass shall be coordinated with adjacent properties and conform to the specifications of the Department of Sanitation and Flood Control. During water transfer, inspection and monitoring of the by-pass flow by the Regional Water Quality Control Board and the Department of Sanitation and Flood Control shall be permitted.

C. At the end of Operational Phase III (excavation to bedrock) as described in SP75-02, the applicant shall participate with Groves and the County in the preparation of an updated Long-Term Plan for the use of the property as also specified in SP75-02.

D. At the end of Operational Phase IV (excavation to bedrock) as described in SP75-02, the applicant shall:

1. Dismantle and remove processing plant and other facilities.

2. Rehabilitate the ex-plant site as shown on Exhibit B of SP75-02.

3. Continue lake monitoring and stock with fish after the lake has "stabilized."

4. Excavate plug at common property line to complete formation of lake.

5. Complete rehabilitation of graded areas.

6. Maintain desilting basins and erosion protection devices.

E. Equipment used shall be that described in attachments to the application or its equal in preventing air pollution as determined by the Air Pollution Control Officer.

F. All highway vehicle parking areas and the access road to the truck scales shall be paved and at all times be maintained and swept clean so as to prevent dust production to the satisfaction of the Air Pollution Control Officer. All other traffic and parking areas, and service roads that are not paved shall be treated with a surfactant such as Coherax. (E.I.R.)

G. Wet sweeping of all adjacent roads shall be done to remove the accumulation of spilled material from the pavement. (E.I.R.)

H. Immediately prior to removal from the premises, all materials not already saturated with water shall be surface watered in a manner approved by said Air Pollution Control Officer.

I. Plant equipment, except for mobile equipment, will be electrically powered. A "wet plant" type operation will be used.

J. All dust or other air pollution emissions at the screens, at material transfer points, or at any equipment, during any phase of the operation shall be controlled by water sprays, or by such other or additional methods as may be required by said Air Pollution Control Officer to control any excessive dust or air pollutant production which, in the opinion of said Air Pollution Control Officer, may develop or has developed. All material handled shall contain sufficient moisture to prevent dust generation in excess of that allowed by Rule 50. (E.I.R.)

K. No plumbing or other installation shall be made that could cause pollution of the potable water supply due to an open or potential cross connection or due to back syphonage.

L. The premises to be graded, and all operations on said premises shall be conducted so that there is no ponding or accumulation of surface waters that could constitute a health and/or safety hazard to persons or property, and so there is no ponding or accumulation of surface waters which, in the opinion of said Health Officer, would or could provide a place for the development or harborage of insects or pests that could cause annoyance or constitute a nuisance to persons or property in the vicinity of such premises.

M. All truck operations, including the arrival and departure of trucks and other vehicular equipment, shall be limited to the period between 7:00 a.m. and 5:00 p.m. each day, Monday through Saturday. The warming up of trucks parked on-site overnight shall not begin before 6:30 a.m. The operation of the sand plant shall be limited in accordance with the following schedule:

	Equipment Description	Operation		
		Excavation	Processing	Distribution
Days of Operation		Mon-Sat	Mon-Sat	Mon-Sat
Hours of Operation		7:00am-7:00pm	6:30am-10:30pm	7:00am-5:00pm
Maintenance		Anytime	Anytime	Anytime
	Shovel	X		
	Dragline	X		
	Dredge	X		
	Dozer	X		
	Skiploader	X		X
	Grader	X		X
	Water Truck	X		X
	Lube Equipment	X	X	
	Air Compressor		X	
	Maint. Equip.	X	X	X
	Belt Conveyors	X	X	X
	Feeders	X		
	Hoppers	X		
	Bunkers			X
	Processing Plant		X	
	Water Pumps		X	
	Sprinklers			X
	Spray Racks			X
	Truck Scales			X
	Dump Trucks			X
	Scale House			X
	Business Office	X	X	X

N. There shall be no blasting, and no storage or use of explosives on the premises.

O. Top of the excavation shall be set back from the property lines to the satisfaction of the Department of Sanitation and Flood Control.

P. No slope shall be established having a grade steeper than one foot rise in every two feet.

Q. Sloan Canyon Road shall be protected from flood hazard to the satisfaction of the Department of Sanitation and Flood Control.

R. The applicant shall provide erosion protection measures easterly and westerly of subject site to the satisfaction of the Department of Sanitation and Flood Control.

S. At no time shall the sound level at the perimeter of the property exceed 55 dba during the hours between 7 p.m. and 7 a.m.

T. For the control of noise from plant operations, the applicant shall: (E.I.R.)

1. Utilize the quietest available diesel equipment with efficient exhaust mufflers.

2. Utilize "acoustical cloth" to screen noise.

3. Provide noise attenuating berms or barriers on the site as necessary, or provide other mitigating measures as the Director of LUER so designates so as to maintain noise levels below CNELL 55 at the site of any existing or approved residences or school. Such berms or barriers, if necessary, shall be reviewed by the Director of LUER as a "Minor Deviation" to the plot plan prior to installation.

U. No nonoperating equipment, vehicles, junk or other refuse shall be stored or allowed to exist on the premises.

V. All air contaminants emissions from any equipment used in this operation must comply with the limits prescribed in the San Diego County Air Pollution Control District Rules and Regulations, including the possible requirements for Permits to Construct and/or Operate, if deemed necessary by the Air Pollution Control Officer.

W. The processing plant or any other proposed structure or equipment shall not cause the natural watercourse to be obstructed, diverted or otherwise altered to adversely affect the adjacent ownerships. Any such proposed change to the existing drainageway shall be subject to the approval of the Department of Sanitation and Flood Control.

X. Groundwater monitoring shall be set up on a regular basis and the interval between readings shall not exceed one month. Results of such groundwater monitoring shall be submitted semi-annually for review by the Department of Sanitation and Flood Control.

Y. If monitoring of piezometers indicates a loss of groundwater is occurring, it shall be corrected by scarifying the downstream face of the pit. In the event that scarifying the pit slope does not satisfactorily improve the downstream groundwater supply, the holder of this permit shall drill water wells upstream of the sand pit and transfer water past the quarry to the downstream acquifer at no cost to the downstream property owners. Alternatively, water of equivalent quality will be provided by pumping from the lake.

Z. At the end of Phase I (excavation to bedrock) the holder of this permit shall submit semi-annually the results of a lake monitoring program to the Director of LUER and to the Regional Water Quality Control Board for review. Said monitoring program shall be as described in the Lake Management Plan provided as Appendix C of Specific Plans 75-01 and 75-02.

AA. In those areas where returned fines are placed at the bottom of the lake, a minimum water depth of 15 feet shall be maintained.

BB. To prevent excessive erosion, an energy dissipating arrangement of large rocks shall be placed upstream of the proposed lake and on the downstream face of the lake. (E.I.R.)

CC. The mosquito hazard shall be offset by the introduction of mosquito fish (Gambusia affinis) to the lake as it is excavated. (E.I.R.)

DD. Potential damage to valuable biological and archaeological sites which may occur on the 570 acres of "buffer zone" property shall be investigated. This investigation shall consist of reconnaissance surveys to be completed in accordance with the following timetable: (E.I.R.)

1. Parcels 1 and 2 due prior to the first annual review of the grading permit.

2. Parcel 3 due prior to the third annual review of the grading permit.

These surveys shall be conducted by qualified biologists and archaeologists and complete reports on the surveys should be submitted to the San Diego County Office of Environmental Management Environmental Analysis Division for review and comment.

Note: Parcel numbers refer to those indicated on page 3 of the Addendum to the Draft Environmental Impact Report dated April 19, 1974.

EE. The mitigating measures proposed in the archaeology report submitted by the applicant (Appendix D of the Draft Environmental Impact Report, pages D-9 and 10), shall be completely implemented. (E.I.R.)

FF. Open space easements on Parcels 1, 2 and 3 shall be granted to the County of San Diego. These open space easements shall be granted for a term to coincide with this special use permit. (E.I.R.)

Note: Parcel numbers refer to those indicated on page 3 of the Addendum to the Draft Environmental Impact Report dated April 19, 1974.

GG. Sand trucks traveling to and from subject property shall be restricted to the following route: Dehesa Road from the borrow pit site to Willow Glen Drive and then Willow Glen Drive to Jamacha Road. (E.I.R.)

HH. Haul routes for trucks transporting excavated material to the plant site shall be confined within the limits of subject property and shall not use Dehesa Road or Sloan Canyon Road for that purpose.

II. The combined volume of truck traffic hauling materials generated by the applicant and the S. J. Groves and Sons Company (Special Use Permit P73-137W2 and Specific Plan SP75-01) will be limited to a rate of 150 dump truck round trips per day, Monday through Saturday, except in cases of emergencies to protect life and property or in response to requirements of governmental or quasi-governmental agencies beyond the control of the applicants. Trucks which shall be counted toward the 150 daily total shall include two axle dump trucks with a carrying capacity of eight tons or more and all dump trucks with three axles or more.

JJ. All landscaping and fencing as shown on the approved landscape plan for SP75-02 shall be adequately maintained at all times.

KK. All signs advertising the wholesaling or retailing of material produced on the site shall be prohibited except for a site identification sign as allowed by The Zoning Ordinance.

LL. During Operational Phase I, as outlined in SP75-02, the applicant shall enter into an agreement with a Metropolitan Water Supplier for supplemental water to maintain a viable lake level in compliance with SP75-02. Said agreement shall be subject to the review and approval of the Board of Supervisors.

MM. During Operational Phase I, as outlined in SP75-02, the applicant shall enter into an agreement with the County of San Diego under which all of applicant's property described in Part II, Appendices, of SP75-02 shall become encumbered with an immediately effective lien, the purpose of which will be to insure the maintenance of the lake water level required by SP75-02. Said agreement shall be subject to review and approval by the Board of Supervisors and filed with the County Recorder.

NN. During Operational Phase I, the applicant and S. J. Groves (P73-137W2) shall construct a protective dike as described in SP75-02. Said dike shall be in accordance with the conditions of a Watercourse Permit as defined by County Ordinance No. 3172.obtained during Operational Phase I.

OO. Prior to the expiration of five (5) years this permit (P74-68W) and P73-137W2 shall be reviewed by the Planning Commission regarding the necessity or propriety of initiating modifications or amendments thereto.

PP. This special use permit expires on June 16, 1977,(or such longer period as may be approved by the Board of Supervisors of the County of San Diego prior to said expiration date) unless construction or use in reliance on this special use permit has commenced prior to said expiration date.

Pursuant to Section 710 of The Zoning Ordinance, the following findings in support of the granting of this special use permit modification are made:

(1) The granting of such special use permit modification will not be materially detrimental to the public health, safety or welfare or injurious to the property or improvements in such vicinity and zone in which the property is located.

The facts supporting finding (1) are as follows:

(a) Dehesa Road provides adequate access for a borrow pit operation. Road improvements required as a condition of approval will insure that vehicles will be able to enter and leave the plant site without presenting a hazard to other traffic.

(b) The site is located in a sparsely developed area. Limiting the number of truck trips, the hours of operation to that requested and the route of truck traffic should avoid most noise conflicts with residential areas which are concentrated to the north and east of the subject property.

(2) The granting of such special use permit modifications will not adversely affect any master or precise plan adopted pursuant to law.

The facts supporting finding (2) are as follows:

(a) A portion of the property is designated as a "Flood Plain" on the County General Plan. The Open Space Element of the General Plan specifies that the extraction of sand and gravel is an appropriate function in a Flood Plain.

(b) The modified special use permit will implement the Specific Plan (SP75-02) adopted for this site.

It has also been found, that for the following reasons this special use permit modification will provide overriding social and economic benefits to the region in spite of adverse environmental impacts identified by the certified EIR which will not be fully mitigated:

1. Due to existing and proposed residential development along the Sweetwater River, there are few alternative borrow pit sites available which would substantially reduce the impacts associated with borrow operations and truck traffic. The Sweetwater River is one of the best sources of large quantities of construction quality sand, a vital natural resource, to serve the existing and anticipated demands of the metropolitan San Diego area. The project will not increase the haul distances to this market and will result in:

a. Less inflation of building material costs when compared to obtaining sand from potential sites further away.

b. No increase in the use of fossil fuel energy in transporting the sand to its place of use.

c. No increase in total exhaust emissions.

2. The deep excavation of this site will allow the creation of a valuable lake for recreational and wildlife habitat purposes.

3. This project will have the effect of lessening damage from small floods by reducing the area of inundation and retaining flood waters.

4. This project will not increase damage from large floods on downstream properties by providing a diked area where erosion/deposition can occur.

5. This proposal to mine sand to a maximum pit depth makes it possible to:

a. Maximize the economic gain from each mineral deposit while saving presently untouched deposits for future use.

b. Develop and approve a positive and permanent site rehabilitation plans (SP75-02). The 20 foot maximum pit depth which has been applied to most borrow pits leaves valuable resources in place. Increased economic value, as these nonrenewable resources become more scarce, will require that sites be reworked at some future date with the result of additional environmental disturbance.

c. Minimize the cost of construction aggregates by eliminating the need for expensive processing plant "set-up" costs each time a borrow operation must be relocated.

6. All those benefits specifically set out in the document dated December 5, 1975, and titled "Overriding Socio-Economic Benefits of the Proposed Conrock/Fenton/Groves Sweetwater Project," a copy of which is attached hereto as Exhibit 1 and fully incorporated herein by this reference.

* * * * * * * *

The real property for which this special use permit is granted is located in the County of San Diego, State of California, and is more particularly described as follows:

PARCEL 1:

The South-Half of the Northwest Quarter of Section 14; and the South-Half of the Northeast Quarter of Section 15, all in Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey.

EXCEPTING from the South-Half of the Northwest Quarter of said Section 14, that portion described as follows:

Beginning at the intersection of the North line of the County Road and the East line of said Northwest Quarter, said point of intersection being distant 698.00 feet North of the Southeast corner of said Northwest Quarter; thence North along said East line 209.00 feet; thence West 209.00 feet; thence South 209.00 feet; thence East 209.00 feet to the Point of Beginning.

ALSO EXCEPTING from said Section 14, that portion described as follows:

Beginning at a point on the East line of said South Half of the Northwest Quarter; distant thereon 907.00 feet Northerly from a Southeast corner thereof, being the Northeast corner of a parcel of land described in deed to the Trustees of the Sequan School District, dated October 27, 1888, and recorded in Book 142, page 116 of Deeds, records of San Diego County; thence North along said East line, 452.00 feet, more or less, to the Northeast corner of said South Half of the Northwest Quarter; thence Westerly along the North line of said South-Half 875.00 feet; thence South, parallel with said East line of the South Half of the Northwest Quarter of the Northerly line of County Road Survey 277; thence Easterly along said Northerly line to an intersection with the Westerly line of its Southerly prolongation of said land described in deed to the Trustees of the Sequan School District; thence Northerly along said prolongation and said Westerly line to the Northwest corner of said land; thence East along the North line of said land to the Point of Beginning.

AND ALSO EXCEPTING from said Section 14, that portion described as follows:

Commencing at the Southwest corner of said Northwest Quarter of Section 14; thence along the Westerly line of said Section 14, North 01°05'47" East, 1211.28 feet to the North line of said South Half of the Northwest Quarter Section 14; thence along said North line North 88°27'53" East, 1275.77 feet to the TRUE POINT OF BEGINNING; thence from said TRUE POINT OF BEGINNING and continuing North 88°27'53" East, 460.00 feet to the Northwest corner of the land described in a Deed to Dehesa School District of San Diego County, recorded March 5, 1951 in Book 3999, page 199 of Official Records of said County of San Diego, thence along the Westerly line of said School property and the Southerly prolongation thereof South 00°45'45" West, 511.69 feet to the center line of the County Road (known as Dehesa Road), according to County Road Survey No. 277, filed in the office of the County Surveyor of said County; thence along said center line as follows: North 79°37'27" West; 356.36 feet to the beginning of a tangent 143.30 foot radius curve concave

Northeasterly; Westerly and Northwesterly along the arc of said curve through a central angle of 31°56'00" a distance of 79.87 feet; tangent to said curve North 47°41'27" West, 35.80 feet to the beginning of a tangent 191.11 foot radius curve concave Southwesterly; Northwesterly along the arc of said curve through a central angle of 04°02'05" a distance of 13.46 feet to a point that bears South 00°45'45" West from the TRUE POINT OF BEGINNING; thence leaving said center line North 00°45'45" East, 367.39 feet to the TRUE POINT OF BEGINNING.

AND ALSO EXCEPTING from all that portion described in Parcel 1 above, that portion lying Southerly of Dehesa Road.

PARCEL 2:

The Southeast Quarter of the Northwest Quarter; the Northeast Quarter of the Southwest Quarter; and the Northwest Quarter of the Southeast Quarter of Section 14, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey.

EXCEPTING from said Southeast Quarter of the Northwest Quarter that portion lying Northerly of Dehesa Road and Westerly of Sloan Ranch Truck Trail.

EXCEPTING from said Northeast Quarter of the Southwest Quarter that portion lying Westerly of Sloan Ranch Truck Trail.

PARCEL 3:

The Northeast Quarter of the Southwest Quarter of Section 14, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

EXCEPT therefrom all that portion lying Easterly of the Sloan Ranch Truck Trail.

PARCEL 4:

The South Half of the Northwest Quarter and the Northwest Quarter of the Southwest Quarter of Section 14; the Southeast Quarter of the Northeast Quarter and the Northeast Quarter of the Southeast Quarter of Section 15, all in Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

EXCEPTING from the South Half of the Northwest Quarter of said Section 14, a Tract of land described as follows:

Beginning at a point of intersection of the North line of the County Road and the East line of said Northwest Quarter, said point being distant 698.00 feet North of the Southeast corner thereof; thence North along said East line 209.00 feet; thence West 209.00 feet; thence South 209.00 feet; thence East 209.00 feet to the Point of Beginning.

-532860
3843 ALSO EXCEPTING that portion described as follows:

Beginning at a point on the East line of said South Half of the Northwest Quarter; distant thereon 907.00 feet Northerly from a Southeast corner thereof, being the Northeast corner of a parcel of land described in deed to the Trustees of the Sequan School District, dated October 27, 1888, and recorded in Book 142, page 116 of Deeds, records of San Diego County; thence North along said East line, 452.00 feet, more or less, to the Northeast corner of said South Half of the Northwest Quarter; thence West along the North line of said South Half of the Northwest Quarter 875.00 feet; thence South parallel with said East line of the South Half of the Northwest Quarter to the Northerly line of County Road Survey 277; thence Easterly along said Northerly line to an intersection with the Westerly line or its Southerly prolongation of said land described in deed to the Trustees of the Sequan School District; thence Northerly along said prolongation and/or said Westerly line to the Northwest corner of said land; thence East along the North line of said land to the Point of Beginning.

ALSO EXCEPTING all that portion of the above described Parcel 2 lying Northerly of Dehesa Road and lying Easterly of the Sloan Ranch Truck Trail.

PARCEL 5:

The Southeast Quarter of the Southwest Quarter, and the South Half of the Southeast Quarter of Section 14; the Northwest Quarter of the Northeast Quarter of Section 23, all in Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

PARCEL 6:

The East Half of the Southeast Quarter of Northwest Quarter; the Southwest Quarter of the Northeast Quarter; the West Half of the Southeast Quarter of Northeast Quarter; the Northwest Quarter of the Southeast Quarter; the West Half of the Northeast Quarter of the Southeast Quarter, all in Section 23, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey.

PARCEL 7:

The Northeast Quarter of the Northeast Quarter of Section 23, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

PARCEL 8:

The Northeast Quarter of the Southeast Quarter of the Northeast Quarter of Section 23; the West 20 rods of Lot 5 and the South Half of the West 20 rods of Lot 12 in Section 24, all being in Township 16 South, Range 1 East San Bernardino
32860 Meridian, in the County of San Diego, State of California, according to
843 United States Government Survey.

PARCEL 9:

The South Half of the West Half of the East Half of the Southeast Quarter of the Northeast Quarter of Section 23, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey approved April 10,1886.

PARCEL 10:

The East Half of the Southeast Quarter of the Southeast Quarter of the Northeast Quarter and the East Half of the Northeast Quarter of the Southeast Quarter of Section 23, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey.

PARCEL 11:

The North Half of the West 20.00 rods of Lot 12 in Section 24, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey.

PARCEL 12:

Lot 4 in Section 24, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey.

PARCEL 13:

Lots 1, 2, 3, 6, 7 and 11 Section 24, Township 16 South, Range 1 East, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey, AND all that portion of Lots 5 and 12 in said Section 24, lying Easterly of a line running North and South through said Lots 5 and 12, a distance of 20.00 rods East of and parallel with the West line of said Lots 5 and 12.

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An easement and right of way over a portion of Lot 12 for a riding and hiking trail as granted to the State of California by deed recorded June 29, 1948 as File No. 64496, in Book 2854, page 125 of Official Records. The exact location of said easement is not disclosed by said deed.

Affects Parcels 8 and 13.

A license and right of way for use as a riding and hiking trail under, upon, over and across the North Half of the Southeast Quarter of Section 23, and the North Half of Lot 12 (Northwest Quarter of the Southwest Quarter), Section 24, all in Township 16 South, Range 1 East, San Bernardino Base and Meridian. Said license and right-of-way being a strip of land 20 feet in width, the center line of which is described as follows, to-wit:

Beginning at a point on the South line of the North half of the Southeast Quarter of Section 23, approximately 400 feet West of the Southeast corner thereof, where the State Forestry trail enters the said North half of the Southeast Quarter of the said Section 23 on the South; thence in a Northeasterly direction 500 feet, more or less, to a point in the East line of the said Section 23;

ALSO: Beginning at a point in the South line of the North half of Lot 12, of Section 24, said Township and Range, where the State Forestry Trail crosses the said South line; thence in a Northeasterly and Northerly direction to a point where the said trail intersects the County Road on the South side of Sweetwater River, the said intersection being approximately 600 feet East of the West Quarter Section corner of the said Section 24, as granted to the State of California by deed recorded July 12, 1949 as File No. 61939, in Book 3254, page 412 of Official Records.

P74-68W

THE LAND REFERRED TO HEREIN IS SITUATED IN THE STATE OF CALIFORNIA, COUNTY OF SAN DIEGO, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

THAT PORTION OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 15, TOWNSHIP 16 SOUTH, RANGE 1 EAST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF, WHICH LIES EASTERLY OF A LINE DESCRIBED AS FOLLOWS::

BEGINNING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER OF SECTION 15; THENCE ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 15, NORTH 87°35'07" WEST 465.38 FEET TO THE SOUTHWEST CORNER OF SAID EAST 465.00 FEET OF THE SOUTHWEST QUARTER; THENCE ALONG THE WEST LINE OF SAID EAST 465.00 FEET, NORTH 0°06'39" EAST 2528.61 FEET TO THE NORTHWEST CORNER OF SAID EAST 465.00 FEET; THENCE ALONG THE NORTH LINE OF SAID SOUTHWEST QUARTER AND SAID SOUTHEAST QUARTER OF SECTION 15, SOUTH 89°43'19" EAST 1139.97 FEET TO THE TRUE POINT OF BEGINNING OF THE HEREIN DESCRIBED LINE; THENCE SOUTH 01°00'12" WEST 2490.26 FEET TO THE SOUTH LINE OF THE WEST HALF OF SAID SECTION 15.

PARCEL 2:

AN EASEMENT AND RIGHT OF WAY FOR ROAD AND PUBLIC UTILITY PURPOSES OVER, UNDER, ALONG AND ACROSS THE NORTHERLY 56.00 FEET OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 15, TOWNSHIP 16 SOUTH, RANGE 1 EAST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF.

EXCEPT THEREFROM THAT PORTION LYING WITHIN PARCEL 1 ABOVE.

THE EASEMENT HEREIN DESCRIBED IS HEREBY DECLARED TO BE APPURTENANT TO AND FOR THE USE AND BENEFIT OF THE PRESENT AND FUTURE OWNERS OF ALL OR ANY PORTION OF PARCEL 1 ABOVE.

LEGAL DESCRIPTION OF EROSION

CONTROL PLAN PARCEL (JOINTLY OWNED WITH S. J. GROVES)

The northwest quarter of the southwest quarter of Section 15, Township 16 south, Range 1 east, San Bernardino base and meridian, in the County of San Diego, State of California, according to official plat thereof.

Excepting that portion lying southerly of the location and prolongation of a line described as follows:

Beginning at a point on the west line of said northwest quarter of the southwest quarter as shown on record of survey map no. 6282, filed in the Office of County Recorder of San Diego County, October 4, 1963, which is distant north 0°25' west 802.09 feet from the southwest corner of said northwest quarter of the southwest quarter; thence easterly in a straight line to a point on the east line of said northwest quarter of the southwest quarter, which is distant thereon north 1°00'50" west 525.00 feet from the southeast corner of said northwest quarter of the southwest quarter of Section 15 as shown on record of survey map no. 6282.

Also excepting that portion lying northerly of Dehesa Road.

L-16

P74-68W

SPECIAL USE PERMIT P74-68W

ISSUED THIS 16th day of June, 1976 (9).

BY ORDER of the Board of Supervisors.

Porter D. Cremans

PORTER D. CREMANS, Clerk of the
Board of Supervisors

cc: 2 LUER (0173; Bldg. Insp. 0173B)
2 DOT (Current Planning; Grading; 0336)
Assessor (A4)
Sanitation (Health Dept.) (A21)
DSFC (0380)
Air Pollution (0176)
Wm. R. Walker, Conrock/Fenton, POB 3098, SD 92103

6/25/76 1r

APPENDIX M

SPECIAL USE PERMIT P73-137W2

(S. J. Groves and Sons)

SPECIAL USE PERMIT

(No. P73-137W2)

PERMITTEE: S. J. Groves & Sons Company

IS GRANTED, for a period of 14 years, a special use permit for the expansion of an existing sand processing plant and borrow pit, on a total of about 175 acres, pursuant to Section 480(3) of The Zoning Ordinance, on the following conditions:

A. Prior to any further use of the premises pursuant to this special use permit, the applicant shall:

1. Dedicate to the County, without cost, sufficient additional right-of-way to provide a total of 102 feet of right-of-way for Dehesa Road along the entire frontage of subject property.

2. Sign a secured agreement or deposit in an amount agreed by County Engineer but not to exceed $25,000 to improve Dehesa Road to modified County Standards to consist of the following:

   a. Construct a left turn pocket at the intersection of Willow Glen Drive and Dehesa Road.

   b. Improve access from Dehesa Road into the property, to the satisfaction of the County Engineer, to include acceleration and deceleration lanes.

   c. Widening of Dehesa Road with an additional 12 to 16 feet of pavement, for a distance of 1,600 feet, in a westerly direction from the entrance of the property.

   d. There shall be provisions made, including the relocation of existing fences, if necessary, for adequate width shoulders along Dehesa Road in front of the applicant's property to accommodate bicyclists, and pedestrians, to the satisfaction of the County Engineer.

3. Submit a revised plot plan with cross-sections to be approved by the Director of LUER which conforms to Specific Plan SP75-01.

4. Obtain approval of the proposed operation from the San Diego Regional Water Quality Control Board.

5. Submit evidence to the Director of LUER that the applicant has notified the California Department of Fish and Game of his intentions to modify a reverbed as required by Section 1601 of the Fish and Game Code.

6. The open space easement granted to the County over, upon, across and under all properties under control of the applicant shall be maintained in force until the expiration of this special use permit modification. No building or structure shall be constructed, erected, placed or maintained on subject easement except as may be permitted by a special use permit issued pursuant to The Zoning Ordinance of the County.

7. Obtain a grading permit from the County Engineer for the grading that will take place within the boundaries of the property pursuant to Ordinance 2925 (New Series). The Department of LUER shall participate with the County Engineer in a joint annual review of the grading permit.

8. Provide the premises with a supply of water approved by the Air Pollution Control Officer of the County of San Diego as adequate to effectuate the dust and air pollution control requirements hereof.

9. Provide facilities on the property approved by the Health Officer of the County of San Diego as follows:

   a. A potable water supply.

   b. Proper sanitary facilities, including toilet, handwashing and sewage disposal facilities, for employees working on the premises. These facilities shall be installed in conformance with laws applicable thereto.

10. Install and maintain piezometers to monitor the downstream acquifer as shown on Figure 5 of Appendix B of Specific Plans 75-01 and 75-02.

11. Post signs prohibiting trespassing on the property.

12. Post signs at truck scales and plant exit directing drivers to limit truck traffic to the route prescribed in Condition "EE" below.

13. Post roadways affected by delivery truck traffic from this site satisfactory to the County Traffic Engineer.

14. Obtain from the Director of LUER certification that all specified conditions of Condition "A" have been met.

B. Prior to excavation below a depth of 20 feet below the natural stream grade:

1. Specific Plan SP75-01 shall have been adopted by the Board of Supervisors.

2. The applicant shall provide a by-pass to allow for the unimpeded transfer of water from Loveland Reservoir to downstream users as described in SP75-01. This by-pass shall be coordinated with adjacent properties and conform to the specifications of the Department of Sanitation and Flood Control. During water transfer, inspection and monitoring of the by-pass flow by the Region Water Quality Control Board and the Department of Sanitation and Flood Control shall be permitted.

C. At the end of Operational Phase III (excavation of 40 foot depth) as described in SP75-01, the applicant shall participate with Conrock-Fenton and the County in the preparation of an updated Long-Term Plan for the use of the property as also specified in SP75-01.

D. At the end of Operational Phase IV (excavation to bedrock) as described in SP75-01, the applicant shall:

1. Dismantle and remove processing plant and other facilities.

2. Rehabilitate the ex-plant site and water reclamation area as shown on Exhibit B of SP75-01.

3. Continue lake monitoring and stock with fish after the lake has "stabilized."

E. Equipment used shall be that described in attachments to the application or its equal in preventing air pollution as determined by said Air Pollution Control Officer.

F. All equipment and vehicular parking areas and roads shall be periodically oiled or paved and at all times be maintained and swept clean so as to prevent dust production to the satisfaction of said Air Pollution Control Officer. All other traffic areas that are not paved shall be treated with a surfactant such as Coherax.

Wet sweeping of all adjacent roads shall be done to remove the accumulation of spilled material from the pavement.

H. Immediately prior to removal from the premises, all materials not already saturated with water shall be surface watered in a manner approved by said Air Pollution Control Officer.

I. Plant equipment except for pneumatic tired vehicles, will be electrically powered. A "wet plant" type operation will be used.

J. All dust or other air pollution emissions at the screens, at material transfer points, or at any equipment, during any phase of the operation shall be controlled by water sprays, or by such other or additional methods excessive dust or air pollutant production which, in the opinion of said Air Pollution Control Officer, may develop or has developed. All material handled shall contain sufficient moisture to prevent dust generation in excess of that allowed by Rule 50.

K. No plumbing or other installation shall be made that could cause pollution of the potable water supply due to an open or potential cross connection or due to back syphonage.

L. The applicant shall exercise mosquito control satisfactory to the San Diego County Health Department.

M. All truck operations, including the arrival and departure of trucks and other vehicular equipment, shall be limited to the period between 7:00 AM and 5:00 PM each day, Monday through Saturday. The warming up of trucks parked on-site overnite shall not begin before 6:30 A.M. The operation of the sand plant shall be limited in accordance with the following schedule:

Equipment Description	Excavation	Processing	Distributio
Days of Operation	Mon-Sat	Mon-Sat	Mon-Sat
Hours of Operation	7:00A - 7:00P	6:30A - 10:30P	7:00A - 5:[illegible]
Maintenance	Anytime	Anytime	Anytime
Shovel	X		
Dragline	X		
Dredge	X		
Dozer	X		
Skiploader	X		X
Grader	X		X
Water Truck	X		X
Lube Equipment	X	X	
Air Compressor		X	
Maint. Equipment	X	X	X
Belt Conveyors	X	X	X
Feeders	X		
Hoppers	X		
Bunkers			X
Processing Plant		X	
Water Pumps		X	
Sprinklers			X
Spray Racks			X
Truck Scales			X
Dump Trucks			X
Scale House			X
Business Office	X	X	X

N. There shall be no blasting, and no storage or use of explosives on the premises.

O. Tops of excavations shall be no closer than 150 feet from the westerly property lines and no excavation within 150 feet of Dehesa Road.

P. No slope shall be established having a grade steeper than one foot rise in every two feet.

Q. No non-operating equipment, vehicles, junk or other refuse shall be stored or allowed to exist on the premises.

R. All air contaminants emissions from any equipment used in this operation must comply with the limits prescribed in the San Diego County Air Pollution Control District Rules and Regulations, including the possible requirements for Permits to Construct and/or Operate, if deemed necessary by the Air Pollution Control Officer.

S. The processing plant or any other proposed structure or equipment shall not cause the natural watercourse to be obstructed, diverted or otherwise altered to adversely affect the adjacent ownerships. Any such proposed change to the existing drainageway shall be subject to the approval of the Department of Sanitation and Flood Control.

T. Groundwater monitoring shall be set up on a regular basis and the interval between readings shall not exceed one month. Results of such groundwater monitoring shall be submitted semi-annually for review by the Department of Sanitation and Flood Control.

U. If monitoring of piezometers indicates a loss of groundwater is occurring, it shall be corrected by scarifying the downstream face of the pit. In the event that scarifying the pit slope does not satisfactorily improve the downstream groundwater supply, the holder of this permit shall drill water wells upstream of the sand pit and transfer water past the quarry to the downstream acquifer at no cost to the downstream property owners. Alternatively, water of equivalent quality will be provided by pumping from the lake.

V. At the end of Phase I (excavation to 20 foot depth) the holder of this permit shall submit semi-annually the results of a lake monitoring program to the Director of LUER and to the Regional Water Quality Control Board for review. Said monitoring program shall be as described in the Lake Management Plan provided as Appendix C of Specific Plans 75-01 and 75-02.

W. At no time shall the sound level at the perimeter of the property exceed 55 dba during the hours between 7 p.m. and 7 a.m.

X. For the control of noise from equipment operating on the site, the applicant shall:

1. Equip significant noise generating equipment operating on the site with the most efficient mufflers available.

2. Provide noise attenuating berms or barriers on the site as necessary, or provide other mitigating measures as the Director of LUER so designates so as to maintain noise levels below CNEL 55 at the site of any existing or approved residences or school. Such berms or barriers, if necessary, shall be review by the Director of LUER as a "Minor Deviation" to the plot plan prior to installation.

Y. If delivery truck operations by the applicant do not conform to the Noise Element of the General Plan, the Director of LUER shall direct that any or all of the following actions be taken by the applicant:

1. Relocation of the plant entrance driveway to the easterly property line (by "Minor Deviation");

2. Implement equivalent mitigating measures such as those described under "Mitigation" in Appendix D, page 16 of Specific Plans 75-01 and 75-02.

Z. A minimum lake level of 458 feet above mean sea level shall be maintained.

AA. During Operational Phase I, as outlined in SP75-01, the applicant shall enter into an agreement with a Metropolitan Water Supplier for supplemental water to maintain a viable lake level in compliance with SP75-01. Said agreement shall be subject to the review and approval of the Board of Supervisors.

BB. During Operational Phase I, as outline in SP75-01, the applicant shall enter into an agreement with the County of San Diego under which all of the applicant's property described in Part II, Appendices, of SP75-01 shall become encumbered with an immediately effective lien, the purpose of which will be to insure the maintenance of the lake water level required by SP75-01. Said agreement shall be subject to review and approval by the Board of Supervisors and filed with the County Recorder.

CC. "Wash" or residual fines from the extraction process shall be hauled to off-site disposal areas and not returned to the lake.

DD. Any fencing within and across the floodway shall be of a type having six inch minimum opening or breakaway sections satisfactory to the Department of Sanitation and Flood Control.

EE. The mosquito hazard shall be offset by the introduction of mosquito fish (Gambusia affinis) to the lake as it is excavated.

FF. Sand trucks traveling to and from subject property shall be restricted to the following route: Dehesa Road from the borrow pit site to Willow Glen Drive and Willow Glen Drive to Jamacha Road.

GG. Haul routes for trucks transporting excavated material to the plant site shall be confined within the limits of the operations area of subject property and shall not use Dehesa Road for that purpose.

HH. The combined volume of truck traffic hauling materials generated by the applicant and Conrock/Fenton, (Special Use Permit P74-68W and Specific Plan SP75-02), will be limited to a rate of 150 dump-truck round trips per day, Monday through Saturday, except in cases of emergencies to protect life and property or in response to requirements of governmental or quasigovernmental agencies beyond the control of the applicants. Trucks which shall be counted toward the 150 daily total shall include 2 axle dump trucks with a carrying capacity of 8 tons or more and all dump trucks with 3 axles or more.

II. All landscaping and fencing as shown on the approved landscape plan for P73-137 shall be adequately maintained at all times.

JJ. All signs advertising the wholesaling or retailing of material produced on the site shall be prohibited.

KK. During Operation Phase I, the applicant and Conrock/Fenton (P74-68W) shall construct a protective dike as described in SP75-01. Said dike shall be in accordance with the conditions of a Watercourse Permit as defined by County Ordinance No. 3172 obtained during Operational Phase I.

LL. Prior to the expiration of five (5) years this permit (P73-137W2) and P74-68W shall be reviewed by the Planning Commission regarding the necessity or propriety of initiating modifications or amendments thereto.

MM. This special use permit expires on June 16, 1977, (or such longer period as may be approved by the Board of Supervisors of the County of San Diego prior to said expiration date) unless construction or use in reliance on this special use permit has commenced prior to said expiration date.

Pursuant to Section 710 of The Zoning Ordinance, the following findings in support of the granting of this special use permit modification are made:

(1) The granting of such special use permit modification will not be materially detrimental to the public health, safety or welfare or injurious to the property or improvements in such vicinity and zone in which the property is located.

The facts supporting Finding (1) are as follows:

(a) Dehesa Road provides adequate access for a borrow pit operation. Road improvements required as a condition of approval will insure that vehicles will be able to enter and leave the plant site without presenting a hazard to other traffic.

(b) The site is located in a sparsely developed area. Limiting the number of truck trips, the hours of operation to that requested and the route of truck traffic should avoid most noise conflicts with residential areas which are concentrated to the north and east of the subject property.

(2) The granting of such special use permit modifications will not adversely affect any master or precise plan adopted pursuant to law.

The facts supporting Finding (2) are as follows:

(a) A portion of the property is designated as a "Flood Plain" on the County General Plan. The Open Space Element of the General Plan specifies that the extraction of sand and gravel is an appropriate function in a Flood Plain.

(b) The modified special use permit will implement the Specific Plan (SP75-01) prepared for this site.

It has been found that for the following reasons this special use permit modification will provide overriding social and economic benefits to the region in spite of adverse environmental impacts identified by the certified EIR which will not be fully mitigated:

1. Due to existing and proposed residential development along the Sweetwater River, there are few alternative borrow pit sites available which would substantially reduce the impacts associated with borrow operations and truck traffic. The Sweetwater River is one of the best sources of large quantities of construction quality sand, a vital natural resource, to serve the existing and anticipated demands of the metropolitan San Diego area. The project will not increase the haul distances to this market and will result in:

    a. Less inflation of building material costs when compared to obtaining sand from potential sites further away.

    b. No increase in the use of fossil fuel energy in transporting the sand to its place of use.

    c. No increase in total exhaust emissions.

2. The deep excavation of this site will allow the creation of a valuable lake for recreational and wildlife habitat purposes.

3. This project will have the effect of lessening damage from small floods by reducing the area of inundation and retaining flood waters.

4. This project will not increase damage from large floods on downstream properties by providing a diked area where erosion/deposition can occur.

5. This proposal to mine sand to a maximum pit depth makes it possible to:

    a. Maximize the economic gain from each mineral deposit while saving presently untouched deposits for future use.

    b. Develop and approve a positive and permanent site rehabilitation plan (SP75-01). The 20-foot maximum pit depth which has been applied to most borrow pits leaves valuable resources in place. Increased economic value, as these non-renewable resources become more scarce, will require that sites be reworked at some future date with the result of additional environmental disturbance.

    c. Minimize the cost of construction aggregates by eliminating the need for expensive processing plant "set up" costs each time a borrow operation must be relocated.

6. All those benefits specifically set out in the document dated December 5, 1975, and titled "Overriding Socio-Economic Benefits of the Proposed Conrock/Fenton/Groves Sweetwater Project," a copy of which is attached hereto as Exhibit 1 and fully incorporated herein by this reference.

The real property for which this special use permit is granted is located in the County of San Diego, State of California, and is more particularly described as follows:

PARCEL 1:

The Southwest Quarter of the Southwest Quarter, and the East Half of the Southwest Quarter of Section 15, Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, according to the Official Plat thereof.

EXCEPTING from said East Half of the Southwest Quarter the East 465.00 feet thereof.

ALSO EXCEPTING from said East Half that portion described as follows:

Beginning at the Northwest corner of said East Half; thence Southerly along the West line thereof to a point distant thereon 250.00 feet Southerly from the Point of Intersection of said West line with the centerline of County Road Survey No. 277, according to Map filed in the office of the County Surveyor of the said County; thence Easterly at right angles 25.00 feet; thence Northerly parallel with said West line to a point in said centerline; thence Southeasterly along said centerline to a point in a line which is parallel with and 655.00 feet Westerly measured at right angles from the East line of said East half; thence Northerly along said parallel line to the North line of said East Half; thence Westerly along said North line to the Point of Beginning.

PARCEL 2:

An easement for road purposes over that portion of said East Half of the Southwest Quarter, described as follows:

Beginning at a point of intersection of the West line of said East Half with said centerline of County Road Survey No. 277; thence Southerly along said West line 225.00 feet; thence Easterly at right angles 25.00 feet; thence Northerly parallel with said West line to a point in said centerline; thence Westerly along said centerline to the Point of Beginning.

PARCEL 3:

The North 330.00 feet of Lots 3 and 4 of Section 22, Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, according to Official Plat thereof.

PROPERTY DESCRIPTION OF SAND PLANT EXTENSION

PARCEL 4:

That portion of Section 15, in Township 16 South, Range 1 East, San Bernardino Base and Meridian, in the County of San Diego, State of California, more particularly described as follows:

The West Half of the West Half of the Southeast Quarter and the Easterly 465.00 feet of the East Half of the Southwest Quarter.

LEGAL DESCRIPTION OF EROSION

CONTROL PLAN PARCEL (JOINTLY OWNED WITH CONROCK/FENTON)

The northwest quarter of the southwest quarter of Section 15, Township 16 south, Range 1 east, San Bernardino base and meridian, in the County of San Diego, State of California, according to official plat thereof.

Excepting that portion lying southerly of the location and prolongation of a line described as follows:

Beginning at a point on the west line of said northwest quarter of the southwest quarter as shown on record of survey map no. 6282, filed in the Office of County Recorder of San Diego County, October 4, 1963, which is distant north 0°25' west 802.09 feet from the southwest corner of said northwest quarter of the southwest quarter; thence easterly in a straight line to a point on the east line of said northwest quarter of the southwest quarter, which is distant thereon north 1°00'50" west 525.00 feet from the southeast corner of said northwest quarter of the southwest quarter of Section 15 as shown on record of survey map no. 6282.

Also excepting that portion lying northerly of Dehesa Road.

M-10

SPECIAL USE PERMIT P73-137W2

ISSUED THIS 16th day of June, 1976 (10).

BY ORDER of the Board of Supervisors.

Porter D. Cremans

PORTER D. CREMANS, Clerk of the
Board of Supervisors

cc: 2 LUER (0173; Bldg. Insp. 0173B)
2 DOT (Current Planning; Grading; 0336)
Assessor (A4)
Sanitation (Health Dept.) (A21)
DSFC (0380)
Air Pollution (0176)
S. J. Groves & Sons Company, POB 2667, El Cajon 92010

6/25/76 lr

APPENDIX N

EXHIBIT "1" TO RESOLUTION

SP75-01 and SP75-02

EXHIBIT "1" TO

SPECIAL USE PERMITS

P73-137W2 AND P74-68W

OVERRIDING SOCIO-ECONOMIC BENEFITS OF THE PROPOSED CONROCK/FENTON/GROVES SWEETWATER PROJECT

December 5, 1975

1. SOCIO-ECONOMIC PERSPECTIVE

This report provides substantiation to the Board of Supervisors regarding the overriding social and economic benefits to the region of the proposed CONROCK/Fenton/Groves Sweetwater project. An evaluation of the social and economic benefits associated with the proposed sand mining operation must be keyed to geography and time phasing of the project. That is, (1) the local, near-term environmental resource commitment, and the project benefits during the sand extraction phase; and (2) the regional, long-term environmental and social effects which persist after completion of sand mining operations and the continuing effect of the proposed recreational lake on the human environment. In the context of these factors the economic benefits of the project will be evaluated first with regard to the near-term (next 15 years). Thereafter the attendent social consequences will be discussed.

2. NEAR-TERM ECONOMIC BENEFITS

A very substantial overriding economic benefit of the Sweetwater Project is to be found in the fact that the project will open up a major new supply source for construction quality sand which can meet the requirements of the Metropolitan San Diego area at relatively low costs.

River sand extraction operations authorized under existing special use permits are being rapidly depleted--they will be sufficient for little more than five more years.

Sand is a significant cost input for the ready-mixed concrete industry. In turn, the price of concrete affects construction costs in housing, highways and streets, public works, commercial and industrial structures of all types. Adverse cost factors due to supply shortages will tend to reduce jobs and incomes in the construction trades generally. When added to other upward cost pressures, the "ripple" effect upon employment and incomes in the total San Diego economy can be considerable.

The seriousness of an incipient supply shortage is evidenced in a projection of construction quality sand requirements over the next fifteen years. Table 1 presents annual sand production in San Diego from 1960 through 1974. For the five-year period 1970-74, average annual sand production was approximately 2,600,000 cubic yards. Using average per capita sand production factors, it is possible to project annual sand requirements. These amount to 2.8, 3.3 and 3.7 million cubic yards for 1980, 1985 and 1990, respectively.

Based on these projections, total San Diego County sand requirements for the 15-year period 1975 to 1990 are

TABLE 1. SUPPLY OF CONSTRUCTION QUALITY SAND--SAN DIEGO COUNTY

Year	Total Sand Production (cu. yds.)	Population	Per Capita Sand Production (cu. yds.)
1960	1,558,000	1,049,000	1.49
1961	1,430,000	1,083,000	1.32
1962	952,000	1,121,000	.85
1963	1,405,000	1,147,000	1.22
1964	1,344,000	1,172,000	1.15
1965	1,714,000	1,213,000	1.41
1966	1,464,000	1,251,000	1.17
1967	1,826,000	1,255,000	1.45
1968	2,508,000	1,316,000	1.91
1969	2,011,000	1,348,000	1.49
1970	2,431,000	1,358,000	1.79
1971	2,320,000	1,389,000	1.67
1972	2,456,000	1,443,000	1.70
1973	4,160,000	1,483,000	2.81
1974	1,698,000	1,509,000	1.13
proj. 1975	2,307,000	1,538,000*	1.50 est.#
proj. 1980	2,848,000	1,780,000**	1.60 est.
proj. 1985	3,300,000	2,000,000**	1.65 est.
proj. 1990	3,694,000	2,239,000**	1.65 est.

Source: San Diego County Division of Natural Resources; Calif. Dept. of Finance; U.S. Bureau of Census.

* Special State Census, April 1975.
**Comprehensive Planning Organization.
1.50--15 year average; 1.65--10 year average.

estimated in Table 2 to be 45.7 million cubic yards. With appropriate adjustments, the 15-year river sand requirements for the Metropolitan San Diego area is estimated to be approximately 31,000,000 cubic yards. Table 3 indicates the river sand reserves economically accessible to the Metropolitan San Diego market area and currently authorized for extraction under special use permits. These reserves amount to approximately 11,000,000 cubic yards, or little more than one-third of the total 15-year requirement. Assuming an annual production of 1,750,000 cubic yards, authorized sand reserves would be depleted in little more than five years. It is noteworthy that three-fourths of the total San Diego County river sand reserves authorized for extraction under special use permits is located in the San Luis Rey river basin. As will be demonstrated, these Pala area sand reserves are not economically available to the Metropolitan San Diego area.

The river sand resources which will be in short supply are the coarse grain deposits suitable for concrete production. As indicated in Table 4, the physical volume of construction quality sand, including concrete grade sand, underlying various river basins is very large. Still, the fact remains that, for a variety of reasons, the river sand volumes which can be brought into production is sharply limited. The San Diego County's River Sand Resource Study

TABLE 2. ESTIMATED CONSTRUCTION QUALITY SAND REQUIREMENTS-SAN DIEGO COUNTY 1975-1990
(cubic yards)

Period	Average Annual Requirement*	Five-Year Requirements
1975 - 1980	2,577,000	12,885,000
1980 - 1985	3,074,000	15,370,000
1985 - 1990	3,497,000	17,485,000
A. Estimated Total Sand Requirement		45,740,000
B. Metropolitan San Diego Sand Requirement @ 85% of (A)		38,879,000
C. Portion Attributable to River Sand Production @ 80% of (B)		31,103,000
D. Metropolitan San Diego River Sand Reserves Authorized for Extraction as of 10/1/72**		10,975,000
E. Remaining Reserve Life at Annual Production of 1,750,000 cu. yds.		6.3 years

* Based on Table 1 projections.

**River Sand Resource Study, Environmental Development Agency, San Diego County, June 1974, Table 1, p. 19.

TABLE 3. RIVER SAND RESERVES ACCESSIBLE UNDER SPECIAL USE PERMITS--SAN DIEGO COUNTY

Metropolitan San Diego Market Area	Sand Volumes Accessible Under Existing Permits as of 10/1/72 (cubic yards)
Sweetwater River (Dehesa)	1,700,000
Upper San Diego River (Lakeside)	5,850,000
Lower San Diego River (Mission Valley)	825,000
San Dieguito River (San Pasqual Valley)	1,500,000
Otay River (Depleted)	-0-
Tia Juana River	1,100,000
Sub-total	10,975,000
North County Market Area	
San Luis Rey River (Pala area)	30,500,000
Total	41,475,000

Source: River Sand Resource Study, Environmental Development Agency, San Diego County, June 1974, Table 1, p. 19.

TABLE 4. CONSTRUCTION QUALITY RIVER SAND RESOURCES-
SAN DIEGO COUNTY
(millions of cubic yards)

Metropolitan San Diego Market Area	Total Construction Sand	Concrete Grade Sand	Concrete Sand Reserves Available*
Sweetwater River (Dehesa)	112.0	89.0	47.8
Upper San Diego River (Lakeside)	145.3	116.7	18.5
Lower San Diego River (Mission Valley)	64.8	26.5	5.1
San Dieguito River (San Pasqual Valley)	286.0	207.1	9.2
Tia Juana River	18.7	8.7	5.2
Sub-total	626.8	448.0	85.8
North County Market Area			
San Luis Rey River (Pala area)	391.1	233.5	150.4
Sub-total	1,017.9	681.5	236.2
Sand Deposits Below Permit Depth in Existing Extraction Sites	68.4	65.3	65.3
Total	1,086.3	746.8	301.5

Source: River Sand Resource Study, Environmental Development Agency, San Diego County, June 1974, Tables IV, VI.

*"Available" assumes that ". . . all private landholders will be willing to lease or sell their property for extraction, . . . and that sand extractors will be permitted to excavate as deep as the sand exists." (River Sand Resource Study, p. 22)

in 1974 concluded that no more than 85.8 million cubic yards of concrete grade sand is available to the Metropolitan San Diego area.[1] And of this total, more than half, 47.8 million cubic yards, is found in the upper Sweetwater River-Dehesa area.

Although it has been suggested that the sizeable sand reserves of the San Luis Rey River-Pala area should be produced before opening new sand reserves, it must be concluded that sand from this supply source would result in a substantial increase in the cost of sand delivered to concrete batch plants.

Table 5 establishes the current value of concrete sand at the production plant. Costs can be taken to be between $3.00 and $3.50 per ton. Table 6 presents the cost of transporting sand from the three river sand extraction areas presently available, namely, Lakeside-East of Highway 67, Upper Sweetwater River-Dehesa and the North County Pala area. Transportation costs from the Pala area to the Mission Valley concrete batch plants amount to $3.02 per ton for a delivered cost of $6.00 to $6.50 per ton. By comparison, the delivered cost of Dehesa sand production would be $4.33 to $4.83 per ton. It may be concluded that the North County Pala area sand reserves are not economical for the Metropolitan San Diego area.

TABLE 5. MARKET VALUE OF CONCRETE SAND-
F.O.B. PRODUCTION PLANT*
(dollars per ton)

Year	No. of Suppliers	Range of Prices	Accepted Bid Price
1970	6	$2.45 - 3.10	$2.75
1971	4	2.75 - 3.35	2.75
1972	3	2.80 - 3.65	2.80
1973	5	2.80 - 3.65	2.80
1974	3	3.00 - 3.45	3.00
1975	2	3.50	3.50

* Based on competitive bids to supply sand to the City of San Diego. All bids to specification. Price to be F.O.B. producer's plant to be picked up by City trucks. Location of bidder's plant to be given consideration as well as price because of travel time costs.

Source: City of San Diego.

TABLE 6. SAND AND GRAVEL TRANSPORTATION COSTS
(dollars per ton)

Concrete Batch Plant Locations	Available River Sand Extraction Areas		
	San Luis Rey R. Pala (37A)	Upper S.Diego R. Lakeside-E. of Hwy 67 (37S)	Upper Sweetwater R. Dehesa (37RR)
A. Mission Valley (37440)	$3.02	$1.14	$1.33
B. Miramar-Carroll Canyon (37412)	2.61	1.49	1.70
C. National City (37914)	n.a.	1.45	1.30
D. Otay (37925)	n.a.	1.67	1.59

Source: Calif. Pub. Util. Comm. Minimum Rate Tariff 17-A Revised as of September 1974.

Any discussion of economic and social factors today must necessarily consider the impacts of energy. The economic-social implications of energy consumption are manifold and, in general, becoming better understood as we enter an era of critical energy shortages and escalating energy costs. Suffice it to say that energy conservation is a primary goal at Federal, State and local governmental levels and that formal policies have been instituted to implement these objectives.

The following summarizes the existing major available sources of construction quality sand in the San Diego region as previously identified.[1] The average haul distance from each of these sources to the center of the Metropolitan San Diego market area is also shown:

Sand Source Location	Haul Distance to Rt. 163 and Interstate 8 (Miles)
Lakeside	13
Sweetwater-Dehesa	15
San Dieguito River*	22
San Luis Rey River	40

If Lakeside were considered to be available for a long-term source, the similarity in haul distance (13 vs. 15

*Considered for evaluative purposes only; resource not considered currently available by City of San Diego.

miles) results in comparable energy consumption factors. The energy implications of these sources in regard to serving the Metropolitan San Diego market area are:

Energy Consumption and Costs
Based on 213 Round Trips/Day

Source	Energy Consumption/Yr. (Gals. Diesel Fuel)	Fuel Costs/Yr. @ 44.5¢/Gal.
Sweetwater (Dehesa) River	466,500	$207,000
San Dieguito River	684,200	$304,500

Other economic benefits include lessening flood damage by reducing the area of inundation and retaining flood waters, and minimizing expensive processing plant "set-up" costs each time a borrow operation must be relocated.

To summarize, an overriding economic benefit to the San Diego region of the CONROCK/Fenton and Groves Sweetwater project is its provision of an additional supply of construction sand to offset the depletion of existing sand reserves. The avoidance of raw material shortages will curb price increases in the costs of construction, will curb energy consumption and will therefore provide attendant social benefit.

3. SOCIAL BENEFITS

3.1 Near-Term

Initially, therefore, as stated in the economics discussion, the primary objective of the project is to provide a supply of construction quality sand to offset the decline in supplies from existing sources and to improve the deliverability of the product to the existing Metropolitan San Diego market area.

Construction quality sand supplies of significant volumes must be provided to meet the normal requirements of the construction industry which in turn are keyed to regional demands.[2] The general trend of sand production in San Diego County, although fluctuating considerably year-to-year, is steadily rising.[1] No alternatives which are economically more viable and socially more acceptable currently exist given present transportational, environmental and technological constraints.

Therefore, in order that this demand may be met, a comprehensive plan for the provision of these sand resources to the Metropolitan San Diego market area has been detailed in the Specific Plans for this project.[3,4] These plans address mitigation of the land use conflict, conservation of existing regional sand sources (i.e., maximizing extraction of individual sources), restoration and reuse of

the extraction site, and environmental concerns, while attempting in a positive manner to maximize regional social benefits through maintaining equitable market conditions.

Theoretical alternatives to the project do exist, including the elimination of the entire project or a reduction in the scope of the excavation. The 'no project' alternative would maintain the CONROCK/Fenton property in its existing state, and allow excavation to proceed at the Groves site only through 1975. This, of course, would severely limit the supply of construction grade sand necessary to the construction industry, with accompanying social and economic inconveniences. Lacking a primary low-cost ingredient in the production of concrete, and therefore an extremely important component of modern construction technology, severe damage to the development and redevelopment processes within the San Diego area could occur.

The establishment of a single coordinated sand mining operation combining three major producers allows a more significant and concentrated application of physical, social, and economic resources in the rehabilitation of the site. Reducing the scope of excavation at the Sweetwater River site would merely postpone the inevitable mining of alternative sources.

The economics analysis translated the available major alternative sand sources into energy consumption factors. Translated further it can be shown that longer haul distances are particularly adverse with regard to air pollution emissions. Each additional vehicle mile traveled by sand trucks produces additional air pollution emissions. For the two major alternative sources evaluated for energy impact these are:

Source	Total Vehicle Miles/Year (Millions)	Total Emissions[8] (Tons/Yr.)
Sweetwater (Dehesa)	2.33	158
San Dieguito	3.42	232

Thus, on a regional basis, obtaining this sand from a San Dieguito River source rather than the Sweetwater River would result in an additional 74 tons of air pollutants per year.

The social impact from this factor alone is that of additional burden on the region's air resources and incrementally adding to health-endangering air pollution concentration levels. Regionally, the objective is to reduce and minimize air pollution emission sources and in particular for motor vehicles to reduce sand resource alternatives which can satisfy other major environmental constraints. The project minimizes haul distance to the Metropolitan San Diego Market area with attendant regional air pollution emissions.

In summary, therefore, it can be stated that the primary near-term social benefits resulting from implementing the proposed mining operation would be:

1. Reducing the rate of inflation of local building material costs when compared to obtaining sand from more distant sources and manufacturing processes;
2. Maximizing economic gain from the resource through deep excavation while conserving other deposits for future use;[2]
3. Concentrating the development of the sand resource at one large and non-urbanized area, and therefore minimizing the disruption to the region's population as a whole; and
4. More efficient use of energy resources on a regional basis to provide the required sand resource.

3.2 Long-Term Social Benefits

Following the mining phase of the project, the excavation site will not merely be abandoned. Historically, excavated sites have been left in a non-rehabilitated condition, frequently resulting in scarred topography and detracting heavily from the physical and social qualities of the area. However, recognizing that significant alteration

of the site will occur, concise rehabilitation plans have been developed in order that the area may regain its natural qualities. The creation of the 138 acre lake will establish a habitat, relatively unique in the San Diego area. The benefits of such a lake, although produced at the expense of a similarly unique riparian resource, are recognized by the Recreation Element of the County General Plan.[5] Considering the wildlife value of the present riparian community in terms of its effect on the common social and cultural behavior of those individuals enjoying the resource, this enjoyment will, in many cases, be enhanced by the rehabilitated property.

A freshwater lake, established through a careful excavation and monitoring program during the mining operation, represents an attraction for many facets of the region's population. These attractions include the enhancement of the area's indigenous plant and animal communities as described in the Conservation Element of the County General Plan;[2] the aesthetic enhancement of the immediate site environment for the Dehesa Community benefit; and, providing and allowing for significant potential for wildlife preservation and regeneration in the area.

This recreational facility will be located within relatively close proximity to major urban population centers, accessible by local circulation systems, and will be

characterized by those recreational activities which have high local and regional demands.[6] Land use demand forecasts have established a basis for anticipating the need and desire for commercial recreational type facilities due to increased leisure time, increasing expendable income, travel habits, and growing population.[7] Anticipated needs in recreation have been the subject of extensive study and analysis by all levels of government. Nearly every city and county general plan addresses the recreational needs of its population, including San Diego County. In January of 1972, a regional recreational demand study conducted for San Diego County by Development Research Associates was completed.[7] This study was a joint analysis with Cornell, Bridgers, and Troller (Development Research Associates, et al., "San Diego County Regional Parks Implementation Study," Final Report, January, 1972). This study utilizes the State of California Parks and Recreation Implementation Study (PARIS) data extensively, as well as local data sources to clearly define San Diego County recreational demands.

Local jurisdictions, according to the study, will be called upon to supply many different types of recreational opportunities based on a wide variety of resources. Nationally, swimming, outdoor sports, walking, and driving for pleasure will be in high demand through 1990 due to their relative inexpensiveness and ease with which people

can participate. A young, well educated and urbanized population can be expected to place heavy recreational demands on resources. Locally, preference surveys for the San Diego area indicate a unique array of recreational demands, but generally conform to national trends.[7] Swimming is the favorite activity in San Diego County, with boating a rapidly increasing recreational pursuit. Also increasing in demand will be fishing, picnicing, nature walks and bicycling.

Currently the PARIS report establishes 12 major categories of recreational activities enjoyed by the majority of those individuals active in leisure time pursuits. These include:

Activity	Available at Sweetwater Site
1. Walking for pleasure	X
2. Driving for pleasure	
3. Sightseeing	X
4. Picnicing	X
5. Nature walks	X
6. Bicycling	X
7. Swimming	X
8. Water skiing	
9. Fishing	X

Activity	Available at Sweetwater Site
10. Camping	X
11. Outdoor games and sports	X
12. Boating	X

It is noted that the proposed lake will supply a substantial number of high quality opportunities for the enjoyment of the majority of these pursuits.

Although the PARIS report did not identify equestrian activities as one of the 12 recreational activities, it is a popular activity in the Dehesa area and the Specific Plans for the projects provide both interim and long-term equestrian trails.

Although San Diego County has done an admirable job of keeping pace with the increase in recreational demand during the last decade, there is currently a shortage of recreational facilities in all areas.[7] By utilizing use standards, demand was converted to spatial requirements. Table 7 illustrates San Diego County recreational demand on the basis of the previously cited study. Note that between 1975 and 1990 an additional 13,000 acres of recreational space will be required.

According to the Recreation Element of the County General Plan, the general goals of any recreational facility

TABLE 7

TOTAL ACREAGE DEMANDS FOR
BASIC RECREATION ACTIVITIES
1970-1990

Basic Recreation Activity	1970	1975	1980	1990
Picnicking	222.89	259.87	299.03	370.71
Nature walks	211.49	246.58	289.11	358.41
Playing games	489.58	570.79	656.75	814.17
Bicycling	141.85	165.38	197.89	245.32
Horseback riding	182.78	213.11	245.20	303.97
Swimming	36.63	42.71	49.15	60.93
Boating	1,424.81	1,661.18	1,937.44	2,401.84
Fishing	349.09	407.00	468.33	580.59
Camping	596.12	695.01	826.55	1,024.67
Hiking	40.24	46.92	56.47	70.00
Subtotal – Basic Recreation Activities Area	3,695.48	4,308.55	5,025.92	6,230.61
Area required for support facilities (@ 1 x basic area)	3,695.48	4,308.55	5,025.92	6,230.61
Subtotal – Developed Area	7,390.96	8,617.11	10,051.84	12,461.22
Area required for park character, buffer and feeling of openness (@ 2.5 x developed area)	18,477.40	21,542.77	25,129.60	31,153.05
Total Area	25,868.36	30,159.88	35,181.44	43,614.27

Sources: Cornell, Bridgers & Troller
Development Research Associates

are to enhance the physical, mental and spiritual well-being of County residents by providing opportunity for both passive and active recreation.[5]

In that the demand for such facilities has already been established, and the proposed lake meets the requirements of such a recreational resource, it follows that the lake will be a valuable addition to the County-wide recreational plan. However, as is the case with any park environment, the best measure of the quality and desirability of a recreational resource is the ultimate social enrichment of the people served.

It should also be noted that not only will the lake offer recreational opportunities, this new lake habitat will serve as a living classroom and laboratory for the study of natural biological processes. The Kendall-Frost marsh preserve in Mission Bay and the South Bay Marine Biological area in San Diego Bay are excellent existing examples of study areas used by local educational institutions. This lake will add further educational opportunities.

The lake environment will encourage the protection and restoration of floral and faunal habitats, and preserve them for a wide range of research activities.

Thus, the primary long-term social benefit is the creation of a high quality recreational lake which will

satisfy a portion of the steadily increasing demand for such facilities on a County-wide basis. Not withstanding the fact that the precise use approach or development plan for the property is not determined, the lake resource is valuable and needed. The ultimate long-term economic consequences of the project will be a function of the precise development approach and operational mode of the facility. Without knowing these specific parameters it can be stated that property value enhancement will accrue with the lake's conversion to a recreational facility.

REFERENCES

1. Environmental Development Agency, County of San Diego, River Sand Resource Study; June, 1974.

2. County of San Diego, Conservation Element-San Diego County General Plan (Preliminary), 1975.

3. County of San Diego, "Specific Plan 75-01, Groves Sweetwater Project"; October, 1975.

4. County of San Diego, "Specific Plan 75-02, CONROCK/ Fenton Sweetwater Project"; October, 1975.

5. County of San Diego, Recreation Element-San Diego County General Plan; December 20, 1973.

6. San Diego Unified Port District, Recreational Demand; (Master Plan Revision Program); September, 1972.

7. Development Research Associates, San Diego County Regional Parks Implementation Study, (Final Report); January, 1972.

8. U. S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors (AP-42); March, 1975.

APPENDIX O

EROSION CONTROL PLAN

EROSION CONTROL PLAN

Details of a plan to substantially reduce the potential for increased downstream erosion which could result from the mining of sand from the Sweetwater Riverbed are shown on Exhibit K. An explanation of the features shown on this exhibit and engineering design details are provided below:

1. The low profile dike (Exhibit K) will cause approximately 90 percent of the floodwaters of a 100-year storm to flow over Parcel "A", which is nearly 1,400 feet in length measured parallel to the stream flow. This property for the most part is sparsely covered with vegetation and a few large shrubs. Approximately 10 percent of its area along the northerly line is covered by a grove of eucalyptus trees.
2. The material on the site consists of Sweetwater Valley alluvial sands and silts. Vegetation and material on the site are similar to those found in the upstream riverbed.
3. Conveying the floodwater over Parcel "A" prior to discharge onto Singing Hills golf course will provide substantial mitigation of the erosion that would theoretically occur otherwise during a 100-year flood. Furthermore, this will create an

erosion/deposition situation similar to that which existed prior to any sand extraction upstream.

The potentially erosive situation which now exists as a result of the 20-foot excavation on the Groves site immediately upsteam will be considerably alleviated.

4. The dike will be constructed from the alluvium taken from Parcel "A". An opening in the southerly portion called the "Controlled Section" will permit approximately 3,000 cubic feet per second (10 percent of the 100-year storm) to flow into the existing channel of the golf course property. This is near the maximum capacity of this channel. The width of the opening will be controlled by rock slope protection, or equivalent. Similar protection will be installed at angle points in the dike where it may be subjected to scouring velocities.

5. Five hundred feet short of its westerly end the dike will begin to taper from full height to zero height at the westerly boundary of the golf course. This will allow the waters to disperse over the floodplain.

At Section A-A (downstream end of Parcel "A") hydraulic calculations verify that the surface elevations and velocities of the floodwaters will

be similar to those that would occur during the 100-year flood if the dike did not exist.

6. The surfaces of the dike will be planted for protection. Adequate compaction, vegetation and rip-rap, or equivalent, in vulnerable areas will protect the dike from erosive velocities.

   Storms of greater magnitude than the 100-year flood will, however, top the dike and cause localized failure. The only effect of possible dike failure would be the additional deposition of dike material on the golf course.

7. Preliminary hydraulic calculations using a Department of Sanitation and Flood Control procedure indicate that the controlled section and flow area over Parcel "A" are entirely adequate to contain the 100-year floodwaters.

8. More precise hydraulic and erosion sedimentation computations will be made to accurately define the floodplain and erosion protection.