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Los Angeles

PRELIMINARY SITE INVESTIGATION
PROPOSED INDUSTRIAL PARK DEVELOPMENT
SHELL CHEMICAL PLANT PROPERTY
LOS ANGELES, CALIFORNIA

for

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO.,INC.
September 22, 1972

Ken O'brien

Hazardous Materials Manage
JAN 7 1982
California Department of Health Services
LOS ANGELES

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I INTRODUCTION

A. Purpose

The purpose of this report is to present the findings of a preliminary study of the surface and subsurface conditions of the Shell Chemical Plant property located in the southern part of Los Angeles, California.

B. Location

The Shell Chemical Plant property (approximately 277 acres) is located a short distance to the southwest of the intersection of the San Diego and Harbor Freeways. Refer to Plate No's. 1 and 2. The property is separated into two parts. One portion (approximately 195 acres) is bordered on the north by 190th Street, on the east by Vermont Avenue, on the south by the extension of Del Amo Boulevard, and on the west by an industrial area whose frontage is on Normandie Avenue. The second portion (approximately 82 acres) is bordered on the north by Knox Street, on the east by Hamilton Street, on the south by Del Amo Boulevard, and on the west by Vermont Avenue.

C. Authorization

This preliminary site investigation was authorized by Cabot, Cabot & Forbes, C.C.&F. Western Development Co.,Inc., Los Angeles, California. The objective of this investigation is to determine the suitability of the Shell Chemical Plant property for development into an industrial park.

D. Scope

This report presents subsurface information including geology, seismology, soils, results of laboratory tests on typical subsurface materials, location of sumps and contaminated areas, description of existing structure foundations, and description of existing utilities (sewers, storm drains, water mains, gas mains, etc.). This report also presents information on surface conditions such as existing streets, railroads, buildings, drainage, utilities, etc.

The findings of the preliminary site investigation are presented to indicate the nature of the problems that will be encountered in developing the Shell Chemical Plant property into an industrial park. The report recommends which existing facilities and utilities should be retained. A series of industrial park layouts were developed and the most promising preliminary plan at this time is included. Refer to Plate No. 3.*

*In Folio

II ENGINEERING GEOLOGY

A. Geology and Physiography

The Shell Chemical Plant site is located physiographically in the Angeles Section of the Pacific Border Province. This particular area is known as the Torrance Plain and is of marine origin.

It is understood that the site prior to construction of the Chemical Plant in 1941 was used for agricultural purposes.

Geologically, the site is underlain by Pliocene and older rocks. Refer to Plate No. 4. These are overlain by the San Pedro formation and unnamed Upper Pleistocene deposits. Above these, occur the Palos Verdes Sand or equivalent of Upper Pleistocene age. The highly fossiliferous sand encountered in Auger Boring No's. 5, 8 and 15 drilled during the subsurface investigation, and the thin coquina beds encountered in Boring No's. 5 and 15 probably represent the basal portion of the Palos Verdes sand zone. The reddish brown deposits encountered in Auger Boring No's. 8, 12, 15, 17, 19, 21 and 22 represent terrace cover of probable flood plain origin or may be the upper few feet of the Palos Verdes sand modified by weathering. The dark brown to black organic near surface material probably represents remains from the original agricultural usage.

B. Faulting

The southernmost trace (exact location uncertain) of the Avalon-Compton fault is located approximately 3 miles northeast of the area of interest on the north flank of Dominguez Hill and trends in a northwest direction.

A short, inferred fault is mapped 3-1/2 miles southeast of the site, trending northwest towards the area of interest. There is no reported evidence of movement along either of these faults during Recent time (±18,000 years). The northwest-southeast trending Palos Verdes fault zone is located approximately 5 miles to the southwest of the site. This fault is considered active.

The thin marker beds (shell and Coquina) encountered in Boring No's. 5, 8 and 15 indicate that there has been no displacement at the site due to faulting. No faults are mapped or were observed in the immediate vicinity of the Shell Chemical Plant property.

C. Seismology

A study of epicenter events[1] for the general area (recorded since 1934) reveals that the largest earthquake event in the general area occurred in 1941 and had a magnitude ≥ 5 (Richter scale) but less than 6 (the damaging Long Beach earthquake of 1933 had a magnitude of 6.3). The epicenter for

[1]An epicenter map is not included in this report because the latest data available is being compiled for publication by the California Institute of Technology. The information has not been published and is proprietory until that time.

this earthquake appeared to be located in the Palos Verdes fault zone, approximately 5 miles south of the site. Numerous earthquake events of a magnitude of 4 or less have been recorded along this fault zone and in the near vicinity. The latest available information is for 1970 and is considered preliminary. This shows that approximately 17 events of magnitudes of 4 or less occurred along the Palos Verdes fault zone and in the general area of interest (a circle with a 5-mile radius centering on the site) during 1970. The average number of earthquake events over the past 37 years is approximately five per year. With the exception of 1941, all of these events had a magnitude of 4 or less. Most of the events were probably so low in magnitude that they were not noticed by the general public and could only be detected by instrumentation.

It is not possible to predict earthquakes at this point in time. However, the general area (5-mile-radius circle) is seismically active, primarily to the southwest. It is likely that a structure in this area will be subject to the effects of several shocks per year with a magnitude of 4 or less, the majority of which will probably not even be noticed. Some time during the lifetime of structures on this property, they will probably be subjected to the effects of a shock of the magnitude of 5 or 6. A microregionalization map of the Los Angeles Basin shows that a shock with a probable maximum intensity of VIII (Modified Mercalli scale) is possible within a 100-year period in the general area of the proposed site.

As there is no evidence of faulting in the immediate vicinity of the site, the probability of surface rupture due to earthquake activity is remote.

Ground shaking intensity depends on the distance from the earthquake source (epicenter, fault), i.e. the greater the distance, the less the intensity but the longer the duration; however, soil conditions can influence the intensity.

Soil conditions at this site are generally favorable in that the material encountered consists of a relatively homogeneous and dense lithologic sequence. A general classification of the materials encountered are: sandy clay, clayey sand, sand, and silty/clayey sand. The relative blow count, by a standard penetration test (i.e. driving a 1-1/2-inch I.D. split spoon sampler with a 140-pound hammer falling 30 inches) ranges from 8 to 39 blows per foot of penetration.

Two of the 38 borings drilled at the site were to depths of 50 feet and one was drilled to 60 feet. Two of the three deep borings encountered an extremely well cemented shell formation (Coquina) at 45 and 49 feet (Boring No's. 5 and 15). Refer to Plate No's. 35 and 45.

D. Subsidence

In several areas of the Los Angeles basin, ground subsidence has been occurring due to pressure relief from the withdrawal of fluids from deep oil, gas, and water zones.

Mr. L. R. Donkle, Staff Engineer, Shell Chemical Company, who has been assigned to the plant for 29 years, reports that no subsidence has been noted in the plant area during his tenure.

E. Partial Reference - Engineering Geology

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Barosh, J. P.; Use of Seismic Intensity Data to Predict the Effects of Earthquakes and Underground Nuclear Explosions in Various Geologic Settings, USGS Bulletin 1279, 1969.

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Hileman, J.; Southern California Network Epicenter Maps (unpublished), California Institute of Technology, 1972.

Poland, J. F., Garrett, A. A. and Simnott, A.; Geology, Hydrology, and Chemical Character of Ground Waters in the Torrance-Santa Monica Area, California, USGS Water Supply Paper 1461, 1959.

Wiegel, Robert L., et al.; Earthquake Engineering, 1970.

III SOIL INVESTIGATION

A. Field Investigation

The subsurface field investigation consisted of drilling auger borings and excavating backhoe trenches within the Shell Chemical Plant property at the locations shown on Plate No. 5.* Western Laboratories arranged for the bucket auger drilling and backhoe trench excavations. Twenty-two auger borings were drilled with an 18-inch bucket auger. Nineteen borings were drilled to a depth of 25 feet, two to a depth of 50 feet, and one to a depth of 60 feet. Contaminated Area No's. 1 and 2 discovered by Boring No. 2 were investigated for areal extent and depth by drilling sixteen 24-inch bucket auger borings and excavating 34 backhoe trenches. The oil and chemical Contaminated Area No. 3 discovered by visual reconnaissance was investigated for areal extent and depth by excavation of three backhoe trenches (No's. 23, 26 and 27). Two other backhoe trenches (No's. 24 and 25) were excavated to examine other potential contaminated areas. Refer to Plate No. 5* for the location of the auger borings, backhoe trenches and contaminated areas.

Engineering geologists (one each from Western Laboratories and Ken O'Brien & Associates) supervised the drilling of the auger borings and backhoe trenches, classified the subsurface materials, and prepared a field log for each boring and backhoe trench. The auger boring and backhoe trench logs are included, Plate No's. 31 through 74.

*In Folio

Soil samples were recovered from the auger borings utilizing a 2.43-inch I.D. split spoon sampler that contained either 1-inch rings and/or 5- or 6-inch sleeves. Standard penetration tests were made with a 1-1/2-inch I.D. split spoon sampler driven by a 140-pound hammer falling 30 inches. Disturbed samples were also recovered at various intervals for moisture content determination and grading analysis.

B. Laboratory Testing

Representative samples of subsurface materials recovered from the soil borings were subjected to the following laboratory tests that were performed by Western Laboratories.

In situ Moisture Content
In situ Density
Gradation/Hydrometer
Atterberg Limits
Unconfined Compression
Consolidation and Swell
Swell Tests
Direct Shear

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The in situ moisture content and density determinations are recorded on the boring logs. The results of the remainder of the tests are presented on Plate No's. 9 through 30.

C. Subsurface Conditions

The materials encountered in the soil borings consisted of a heterogeneous mixture of sandy clay, clayey sand, silty sand, sand, sandy silt and silty clay. This heterogeneous mixture extends to approximately ±40 feet in depth. In Boring No's. 5, 8 and 15, a thin sand section containing numerous shell fragments

was encountered at 42, 39 and 44 feet, respectively. A well cemented shell bed (Coquina) was encountered at 45 and 49 feet in Boring No's. 5 and 15, respectively. The typical subsurface soil conditions for the Shell Chemical Plant property, except for the contaminated areas, are presented on Plate No. 6.

As previously mentioned, three contaminated areas were found during the subsurface investigation. The areal extent of the contaminated areas is shown on Plate No. 7. A profile of the vertical extent of contamination in Area No's. 1 and 2 are shown on Plate No. 8. The contamination consists of oil-saturated native materials in Area No's. 1 and 2. In Area No. 3, the oil saturation extends to 5-foot depth and below this depth the native materials have been chemically contaminated to approximately 10 feet. The contamination in Area No. 2 also includes debris (broken concrete, wood, old tires, etc.) that was dumped into the sumps.

D. Properties of the Subsurface Materials

The properties of the subsurface materials encountered at the Shell Chemical Plant property based on laboratory tests are summarized in the following tabulation:

Property	Range	Average
In situ Moisture Content - % dry weight	5 to 37	16
In situ Dry Density - lbs/ft^3	79 to 134	112
Liquid Limit (sandy clay @ 3.5 to 4.5 foot depth)	32 to 43	37
Plasticity Index (sand clay @ 3.5 to 4.5 foot depth)	10 to 23	18
Unconfined Compressive Strength ($kips/ft^2$)	3.1 to 12.4	7.3
Standard Penetration - blow/ft	8 to 39	20
Expansion - percent	0.23 to 0.95	0.55
Direct Shear Test Results		
Cohesion - lbs/ft^2	800 to 1,450	1,195
Angle of friction (Ø) - degrees	24 to 32	27

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IV SITE EVALUATION AND ANALYSIS

A. Site Description

The Shell Chemical Plant property (approximately 277 acres) as previously described is separated into two parts by Vermont Avenue. The portion west of Vermont Avenue (approximately 195 acres) is bordered on the north by 190th Street, on the south by the dedicated right-of-way for Del Amo Boulevard, and on the west by a Los Angeles County industrial area whose frontage is on Normandie Avenue. The portion east of Vermont Avenue (approximately 82 acres) is bordered on the north by Knox Street, on the east by Hamilton Street, and on the south by the dedicated right-of-way for Del Amo Boulevard.

The property is very flat; the total relief is 25 feet sloping to the east (approximately 0.7 percent slope). The elevation of the site is 20 to 45 feet above mean sea level.

The Shell Chemical Plant occupies the property consisting of an Elastomer Technical Center; and Butadiene, Styrene and Polymer Units. The existing structures and facilities consist of office buildings, warehouses, shops, compressor stations, pump stations, tanks, stacks, towers, exchangers, vessels, columns, coolers, substations, etc. The existing plant is supported by an extensive system of underground utilities consisting of water distribution systems (domestic, utility and fire), sewer collection system (sanitary and process), storm drains, steam and gas distribution systems.

B. Foundation Conditions

The soil investigation revealed that the subsurface materials are competent except for three contaminated areas. The subsurface materials consist of a heterogeneous mixture of sandy clay, clayey sand, silty sand, sandy silt and silty clay to a depth of approximately 40 feet. Below that depth, the subsurface materials consist of sand and shell fragments including a well cemented shell bed (Coquina) to approximately 57 feet.

Because of the competent nature of the subsurface materials, spread footing foundations can be utilized to support structures that may be constructed at this proposed industrial park site. Based on strength data determined by laboratory tests, the following are allowable soil bearing values for the near subsurface materials:

Continuous Footings	-	4,000 pounds per square foot
Square Footings	-	5,000 pounds per square foot

The depth of embedment of footings must be equal to or greater than the width of the footing. The above bearing values are for maximum embedment of 5 feet and includes normal live load plus dead load and the weight of the footing.

Settlement analyses were made in order to obtain an order of magnitude of settlement under foundation loads. For a 5-foot square footing embedded 5 feet with a load of 5,000 pounds per square foot, the settlement will range from 2 to

5 inches. The maximum settlement assumes the subsurface soil conditions reflect the weakest material encountered. The 2-inch settlement assumes the subsurface conditions reflect the strongest material encountered. For smaller size footings, the settlement will be considerably less. The 5-inch settlement is a theoretical value that would never actually be attained because allowable load would never be imposed on the foundation soils 100 percent of the time.

Pilings or caissons would only be required to support extremely heavy structures. For the normal light to medium type industrial structures, spread footings can be utilized without problem.

Each foundation design for industrial structures must be individually analyzed. The foregoing bearing values and estimated amount of settlement are given for informational purposes only and should not be used carte blanche.

C. Contaminated Areas

Three contaminated areas were disclosed during the subsurface investigation. As previously mentioned, the areal extent of the contaminated areas is shown on Plate No. 7 and the profile of the vertical extent of Contaminated Area No's. 1 and 2 is given on Plate No. 8.

In Area No's. 1 and 2, the contamination consists of oil-saturated materials that are soft and unstable. In addition, Area No. 2 contains debris consisting of concrete rubble, organic material, steel, clay pipe, etc. The depth of contaminatio

in Area No. 1 is 5 feet and in Area No. 2, is 25 feet. In Area No. 3, the oil saturation extends to 5-foot depth and below this depth, the native materials have been chemically contaminated to approximately 10 feet.

Area No. 1 is approximately 670 feet long and 110 feet wide (1.7 acres); Area No. 2 is approximately 390 feet long and varies in width from 60 to 150 feet (0.6 acre); and Area No. 3 is approximately 250 feet long and averages 170 feet wide (1.0 acre). The contaminated areas are not suitable as building sites and in their present condition could be used only for parking areas or storage sites. It is feasible to remove and replace the materials in Area No. 1; the feasibility of removing and replacing materials in Area No. 2 is marginal; and it is not feasible to remove and replace the materials in Area No. 3.

The amount of contaminated material in Area No. 1 is approximately 15,000 cubic yards. The cost to remove this material is estimated at $2.50/cubic yard plus the charge to haul the material to a disposal site. Area No. 2 contains approximately 24,000 cubic yards of contaminated material. The cost to excavate this material will probably amount to $5.00/cubic yard plus the cost of hauling to a disposal site. Area No. 3 contains approximately 16,000 cubic yards of contaminated material. The cost of excavating this material will be approximately $4.00/cubic yard plus the cost of transporting the material to a disposal site.

Photograph No's. 1 and 2 (following page) shows the oil-contaminated material and the debris found in Contaminated Area No. 2.

PHOTOGRAPH NO. 1
Oil-Contaminated Material

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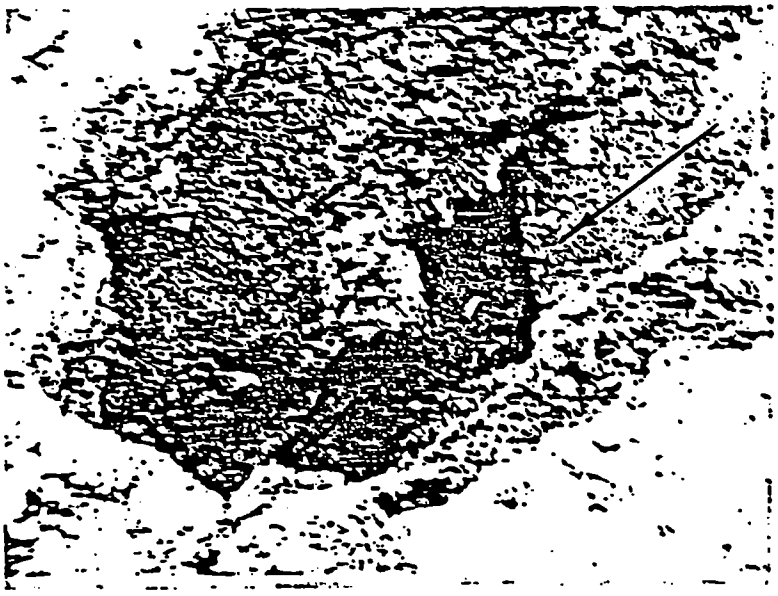


PHOTOGRAPH NO. 2
Concrete Slab (arrow) and
Miscellaneous Debris

D. Demolition

The Shell Chemical Plant property site contains a great number of structures that are aboveground and the site also includes many underground utilities. The aboveground structures and underground utilities were designed to support a petrochemical operation. Almost all of the buildings and utilities cannot be utilized to support a modern industrial park. Those few permanent buildings that could possibly be usable will require a great deal of renovation and it is most probable that the existing location of these facilities would compromise the planning of an efficient industrial park layout. The existing in-plant road and streets are substandard and do not comply with the requirements of the City of Los Angeles. The railroad tracks with n the in-plant area are for the most part improperly located to support a modern industrial park.

All aboveground surface structures should be removed. All near surface foundations (depths of 2 to 3 feet or less) should also be removed. Those foundations which are at a depth greater than 3 feet can remain in place and should be identified so that future industrial park pla-ning and industrial building construction can take into account whether or not they will have to be removed.

All existing underground utility lines that cross or are within the right-of-way of future dedicated streets will have to be removed. All other utility lines can remain in place bu

should be purged. These utility lines may have to be removed when industrial building construction and development of individual lots occurs.

A majority of the in-plant railroad track will have to be removed and reconstructed to support the industrial park layout. The railroad track and ties are salvagable. The ballast is not salvagable but can be utilized in the construction of structural sections for streets and parking areas.

The cost of removing railroad track is approximately $2.00/linear foot. The cost of reconstructing railroad track (utilizing used track and ties with new ballast) is approximately $10.00/linear foot.

E. Grading

The Shell Chemical Plant property is relatively flat. The total relief is 25 feet; the terrain sloping due east from elevation 45 feet at the west property line to elevation 20 feet at Hamilton Street (approximately 0.7 percent slope). Within the plant site, there are areas that have been raised 3 to 4 feet above the existing grade to provide pads for petrochemical structures.

There should be no problem in rough grading the plant site area to the plan of the future industrial park except for existing utilities and foundations that may be encountered. The surface and subsurface materials can be excavated with conventional

earthmoving equipment. It is not anticipated that a great deal of grading will be required to prepare the site for industrial subdivision development.

F. Streets

The existing road and street system of the Shell Chemical Plant cannot be retained and utilized in the proposed industrial park layout. Further, the in-plant road and streets are substandard and do not comply with the City of Los Angeles Bureau of Engineering requirements.

The Preliminary Industrial Park Layout (Plate No. 3) indicates a tentative layout of streets for the proposed industrial park. The Bureau of Engineering has indicated that the total right-of-way width of 64 feet will have to be provided and dedicated. These collector streets will have a paved width of 44 feet with curbs and gutters and a 10-foot parkway on each side within which will be constructed a 5-foot sidewalk.

The Preliminary Industrial Park Layout plan indicates the extension of Knox Street from the west property line to Vermont Avenue and widening of Knox Street from Vermont Avenue to Hamilton Street. The preliminary plan also indicates the extension of Francisco Street from the west property line easterly to Hamilton Street. Whereas Knox Street can be continuous from Normandie Avenue to Hamilton Street, there are problems in continuing Francisco Street. At the present time, Francisco Street is located within Los Angeles County and there is a

cul-de-sac at the east end. Unfortunately, an industrial building projects approximately 2 feet northerly of the south curb line of Francisco Street at the east end, and in order to connect Francisco Street, a slight curvature at this location would be required. This may or may not be possible.

The Bureau of Engineering has indicated the following requirements with regard to exterior streets.

An additional 25-foot right-of-way will be required for the proposed Del Amo Boulevard that adjoins the south boundary of the Shell Chemical Plant property and that construction of one-half of a major highway will be required. One-half of the major highway includes a 40-foot paved width, curb and gutter, and a 10-foot parkway that is fully paved with concrete. This requirement by the Bureau of Engineering will require that the property fence be moved northerly 25 feet and that the railroad tracks paralleling Del Amo Boulevard will have to be removed and relocated.

Vermont Avenue is a major highway and at the present time, the right-of-way width is 80 feet. The Bureau of Engineering has indicated that a 100-foot width of right-of-way will be required. This means that an additional dedication of 10 feet on each side of Vermont Avenue will be required from Del Amo Boulevard northerly to Knox Street and 10 feet only on the west side of Vermont Street from Knox Street to 190th Street.

The fence line on the east side of Vermont Avenue between Del Amo Boulevard and Knox Street is on the line of the future right-of-way. There is a fence on the west side of Vermont Avenue from Del Amo Boulevard to Knox Street but it is located westerly of the future right-of-way line. At the present time, the portland cement concrete pavement width of Vermont Avenue on the east side of the centerline from Del Amo Boulevard to Knox Street is 15 feet with a 5-foot asphalt concrete shoulder. The pavement width on the west side is 25 feet with a 5-foot shoulder. North of Knox Street to 190th Street, the pavement width of Vermont Avenue on the west side of the centerline is 25 feet with a 13-foot-wide asphalt concrete shoulder. The fence line on the west side of Vermont Avenue from Knox Street to 190th Street is located along the future right-of-way line.

The Bureau of Engineering has indicated that 190th Street will be constructed to a major highway with a 100-foot right-of-way width. Between the north property line of the Shell Chemical Plant and the new south right-of-way line for 190th Street is a strip of land 50 feet wide which is owned by the City of Los Angeles and contains an open drainage ditch. The Bureau of Engineering has indicated that the City of Los Angeles contemplates the widening of 190th Street at an early date and included therein will be a storm drain constructed by the Los Angeles County Flood Control District. The existing drainage ditch will then be covered and the land sold to the

adjoining property owner. This strip which is 50 feet wide, as previously mentioned, is approximately 1,900 feet long and contains 2.2 acres.

G. Storm Drainage

The development of an industrial park on the Shell Chemical Plant property will require the design and construction of a new storm drainage system. The existing storm drainage system cannot be retained to serve the needs of the proposed industrial development and further will not conform to the requirements of the City of Los Angeles and Los Angeles County Flood Control District.

Fortunately, there are four possible storm drainage outlets for the Shell Chemical Plant property. They are:

(1) The storm drain in 190th Street which drains to the east.

(2) The storm drain in Knox Street that drains easterly of Hamilton Avenue to the Harbor Freeway outlet.

(3) A storm drain located in Kenwood Avenue (a north-south street) located one block south of Del Amo Boulevard, approximately in line with the west boundary of the property.

(4) A Los Angeles County Flood Control channel that is located approximately 900 feet south of Del Amo Boulevard. Access to the Los Angeles County Flood Control channel can be attained via Hamilton Street or Vermont Avenue.

The capacity of the 190th Street drain, the Knox Street drain, and the Kenwood Avenue drain are limited. The Los Angeles County Flood Control District channel has virtually unlimited capacity. The Bureau of Engineering, City of Los Angeles, recommends that in development of the storm drainage system for the proposed industrial development that the subdivision be divided into four drainage zones. These four zones would drain into the aforementioned existing storm drainage systems.

H. Water

Water for the proposed industrial development on the Shell Chemical Plant property will have to be obtained from the Los Angeles Department of Water and Power (DWP). DWP was contacted to ascertain the requirements they would impose for supplying water to the proposed industrial development.

At the present time, there is an existing DWP water main serving the Shell Chemical Plant. The main is located in the proposed right-of-way to be dedicated for Knox Street. A 24-inch main extends from Normandie Avenue to Vermont Avenue; easterly of Vermont Avenue, the main is reduced in size to 20 inches and extends to the Metropolitan Water District line. DWP indicates that this main has served its useful life (31 years) and would be of no value in serving the proposed industrial development. DWP indicates that a complete new system would have to be developed for the industrial subdivision. The water supply is available at 190th Street and Normandie Avenue.

Off-site improvements would probably have to be extended easterly in 190th Street to Vermont Avenue and southerly in Normandie Avenue to Del Amo Boulevard, in Knox Street from Normandie Avenue to the west property line and in Francisco Street from Normandie Avenue to the west property line. On-site improvements would be required along Vermont Avenue from 190th Street to Del Amo Boulevard, along Avenue A, along Avenue B, along Knox Street from the west boundary to Hamilton Street, along Francisco Street from the west property line to Hamilton Street, within the Del Amo Boulevard right-of-way from Normandie Avenue to Hamilton Street, and along the east side of Hamilton Street from Del Amo Boulevard to Knox Street. Refer to Plate No. 3.

Off-site improvements are those which are constructed within a street right-of-way that requires excavation of pavement and replacement thereof. On-site improvements are those which can be constructed prior to paving within the industrial subdivision, and within existing street rights-of-way outside of the pavement area. The water main that would be extended along Vermont Avenue, Del Amo Boulevard, and Hamilton Street would be considered as on-site improvements because they can be constructed within the street rights-of-way without disturbing the pavement.

Preliminary estimates indicate that 12-inch water mains will be required. The cost per foot of off-site improvements is approximately $31.50/linear foot. The cost for on-site improvements would be approximately $13.00/linear foot. Fire hydrants will be required within the industrial development and at the present time, the cost of installing 4 by 4 hydrants is $784.00 each. However, in the near future, the cost of furnishing and installing fire hydrants will be increased 15 percent.

Along the collector streets, fire hydrants can be installed on one side of the street only and spaced 300 to 400 feet apart. Fire hydrants along major highways will have to be placed on both sides of the street at 300- to 400-foot intervals.

DPW indicates that the total cost of the water system (on- and off-site) will have to be borne by the subdivider and this includes cost of the fire hydrants. The water system can be constructed incrementally; however, the terms of payment are cash in advance.

I. Sewers

The existing sanitary sewer system for the Shell Chemical Plant cannot be adapted to support the proposed industrial development. Therefore, local sewer mains will have to be constructed in the collector streets and extended to trunk lines. There is an existing trunk sewer line in Vermont Street that extends from just north of Knox Street, southerly to Del Amo Boulevard, and then easterly in the Del Amo Boulevard

right-of-way to Hamilton Street. There is also a trunk sewer in Normandie Avenue that flows southerly.

The Bureau of Engineering, City of Los Angeles, has indicated that they will designate to which trunk line the sewage collection system for the proposed industrial development will drain. There is adequate capacity in Vermont Avenue and Normandie Avenue to accommodate the sanitary sewage that will be generated in the proposed industrial development.

J. Electricity

The demolition of the Shell Chemical Plant will necessarily include removal of the electrical distribution system. Therefore, an entire new system will be required for the proposed industrial development. The electrical power for the industrial development will be supplied by the Los Angeles Department of Water and Power. There is apparently sufficient power capacity available nearby to support the proposed industrial development. The Preliminary Industrial Park Layout (Plate No. 3) indicates an area reserved for a DPW substation located northerly of the Del Amo Boulevard right-of-way adjoining Normandie Avenue. The electrical distribution system would emanate from this location and extend northerly and easterly.

JAN 7 1982
Services
LOS ANGELES

V SUMMARY AND RECOMMENDATIONS

The following summarizes the pertinent features for the industrial subdivision development of the Shell Chemical Plant property.

A. Site Description

The Shell Chemical Plant is located in the City of Los Angeles, Los Angeles County, California, southwest of the intersection of the San Diego and Harbor Freeways.

The accessibility to the site is good and there are nearby off-ramps from San Diego and Harbor Freeways. Major highways abut the property on the north (190th Street) and on the east (Hamilton Street). Vermont Avenue, a north-south major highway, divides the property into two parts.

The area of the property is approximately 277 acres.

The site is relatively flat, sloping to the east at 0.7 percent grade from elevation 45 feet at the west property line to 20 feet above mean sea level at Hamilton Street.

The subsurface materials are competent; no unusual foundation problems should be encountered except in the three areas that had been used as disposal for oil and chemical materials.

JAN 7 1982
of Health Services
LOS ANGELES

B. Existing Facilities

The existing facilities at the Shell Chemical Plant consist of office buildings, warehouses, vessels, tanks, columns, coalers, exchangers, pump stations, compressor stations, etc. These facilities will have to be removed prior to industrial development since they were designed to support a petrochemical operation and cannot be effectively integrated into a modern and industrial park.

Underground utilities at the Shell Chemical Plant consist of water distribution, sewage collection, storm drainage, and gas distribution. These utilities will virtually have no retention value for industrial development since they too cannot be effectively integrated into a modern industrial park.

C. Analysis of the Features of Industrial Subdivision Development

(1) Grading - No serious grading problems. Materials can be excavated with conventional earthmoving equipment.

(2) Storm Drainage - Four outlets are available for storm drainage and a carefully engineered design can be achieved with relative ease.

(3) Streets - City of Los Angeles, Bureau of Engineering specified that collector streets should be constructed for the interior access to the industrial park lots. These collector streets can be connected to major highways to the north

(190th Street), east (Hamilton Street), west (Normandie Avenue) and within the development (Vermont Avenue)

(4) Water - Los Angeles Department of Water and Power indicates that an adequate water supply is available for proposed industrial development at 190th Street and Normandie Avenue.

(5) Sewage - Sewage collection facilities can be developed to flow into existing trunk lines located in Del Amo Boulevard and Vermont Avenue.

(6) Electricity - Electric power available from Los Angeles Department of Water and Power within the project boundaries.

D. Recommendations

The development of the Shell Chemical Plant property into an industrial subdivision appears to have only two serious problems. The first problem is the demolition of the existing facilities. The demolition of the aboveground facilities should be accomplished without too much problem. Removal of the underground utilities and facilities (foundations) could be costly and it is recommended that only those underground utilities and facilities be removed that are necessary for the development of the proposed industrial subdivision.

The street requirements imposed by the City of Los Angeles Bureau of Engineering for the proposed industrial subdivision development are not unusual except for one element.

This element is with regard to the dedication of 25 feet of additional right-of-way along the south property line for Del Amo Boulevard and the construction of one-half of the major highway. To meet this requirement would necessitate relocation of the railroad tracks paralleling Del Amo Boulevard.

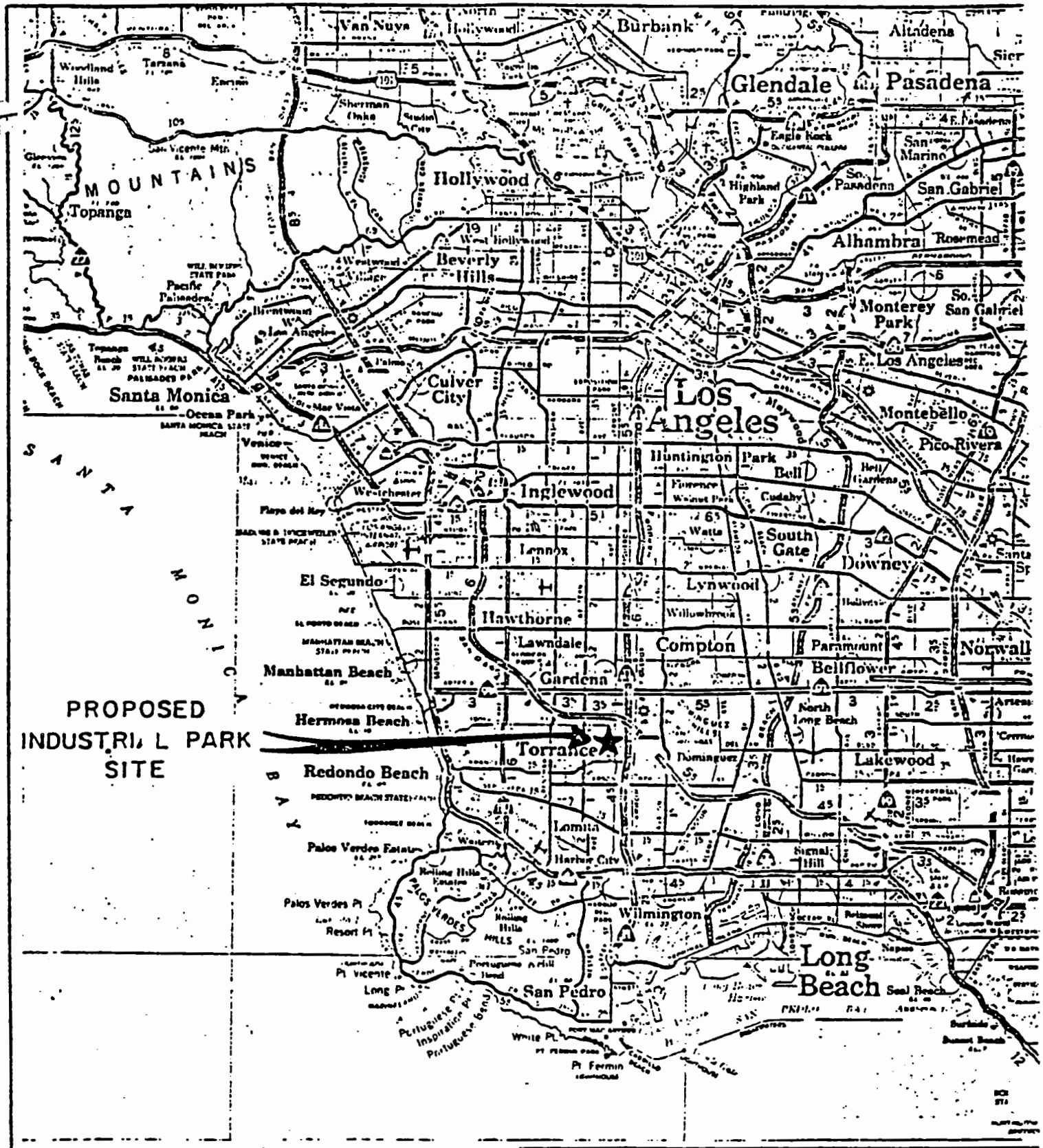
The property south of the Los Angeles Department of Water and POwer right-of-way and north of Del Amo Boulevard west of Vermont Avenue is of limited value in its present condition because of the two contaminated areas (total area, 2.3 acres). One of the contaminated areas could be removed; however, the cost of rehabilitating the other contaminated area would be prohibitive. It appears that the area to the south of the Department of Water and Power right-of-way probably has a use for parking or storage only.

The potential commercial or industrial development along Del Amo Boulevard from Normandie Avenue to Hamilton Street is limited to the north of Del Amo Boulevard since the area to the south is residential.

The connection of Del Amo Boulevard to the extension of 203rd Street will require a right angle turn to the north at Normandie Avenue and a left turn 186 feet north onto 203rd Street. Therefore, the creation of an efficient east-west major highway utilizing Del Amo Boulevard and 203rd Street will be difficult.

It is recommended that the matter of widening Del Amo Boulevard be pursued as follows. Del Amo Boulevard should be

designated as a collector street and not as a major highway. This would reduce the right-of-way requirement for Del Amo Boulevard from 100 to 64 feet and only 7 feet of additional right-of-way would be required. Dedicating only 7 feet of right-of-way along the south property line would allow the northerly track of the parallel tracks along Del Amo Boulevard to remain in place. The southerly track would have to be removed and the northerly track extended to cross Vermont Avenue, approximately 15 feet north of the existing crossing.



CABOT, CABOT & FORBES

C.C.& F. WESTERN DEVELOPMENT CO., INC

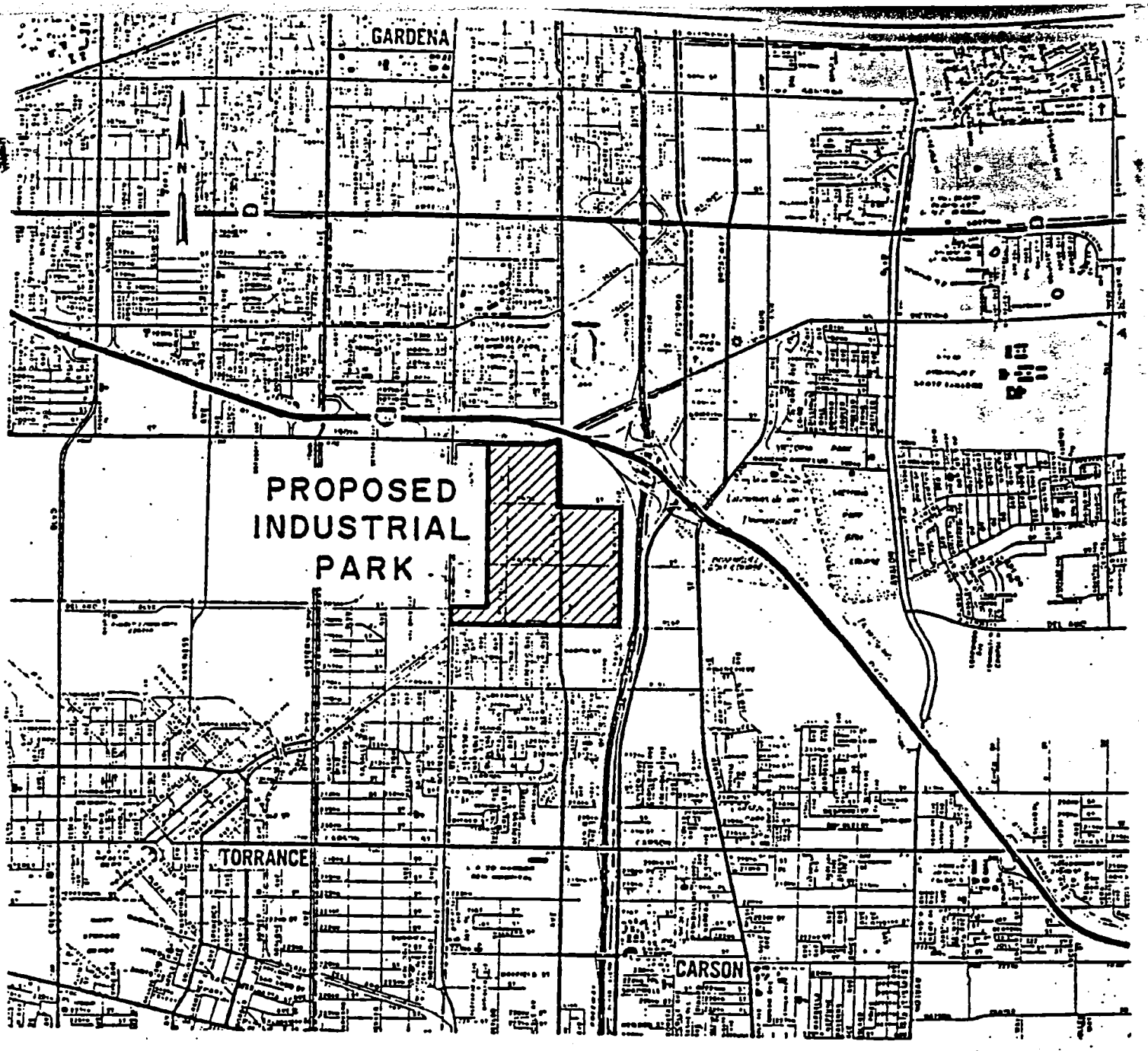
REGIONAL MAP

SHELL CHEMICAL PLANT PROPERTY

Los Angeles, California

DRWN BY: B.J.A.	DATE: 9-21-72	JOB NO.	PLATE NO.
CHKD. BY: H.L.T.	DATE: 9-21-72	7298	1

KEN O'BRIEN & ASSOCIATES



0 1/4 1/2 3/4 1 1/2 2

SCALE IN MILES

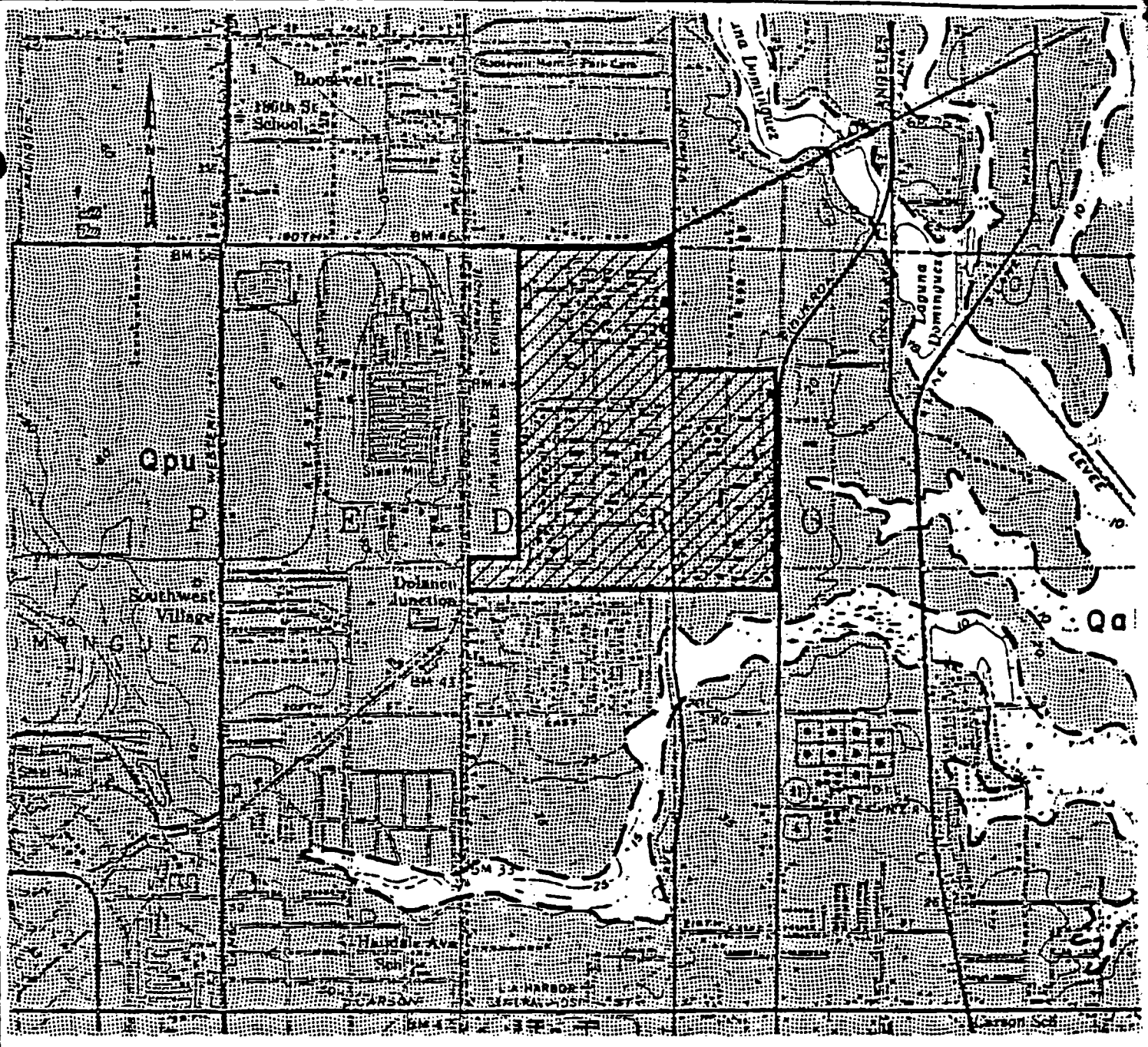
CABOT, CABOT & FORBES
C.C.& F. WESTERN DEVELOPMENT CO., INC

LOCATION MAP

SHELL CHEMICAL PLANT PROPERTY
Los Angeles, California

DRWN BY: V.R.W.	DATE: 9-14-72	JOB NO.	PLATE NO
CHKD. BY: H.L.T.	DATE: 9-20-72	7298	2

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



LEGEND

Qal	ALLUVIAL & COASTAL DEPOSITS (RECENT)
Qpu	TERRACE COVER OR PALOS VERDES SAND (UPPER PLEISTOCENE)
— — —	GEOLOGIC CONTACT
	PROPOSED INDUSTRIAL PARK

REFERENCES:

1. U.S.G.S. WATER SUPPLY PAPER 1461
2. TORRANCE QUADRANGLE MAP 7.5 Minute Series (Topographic)

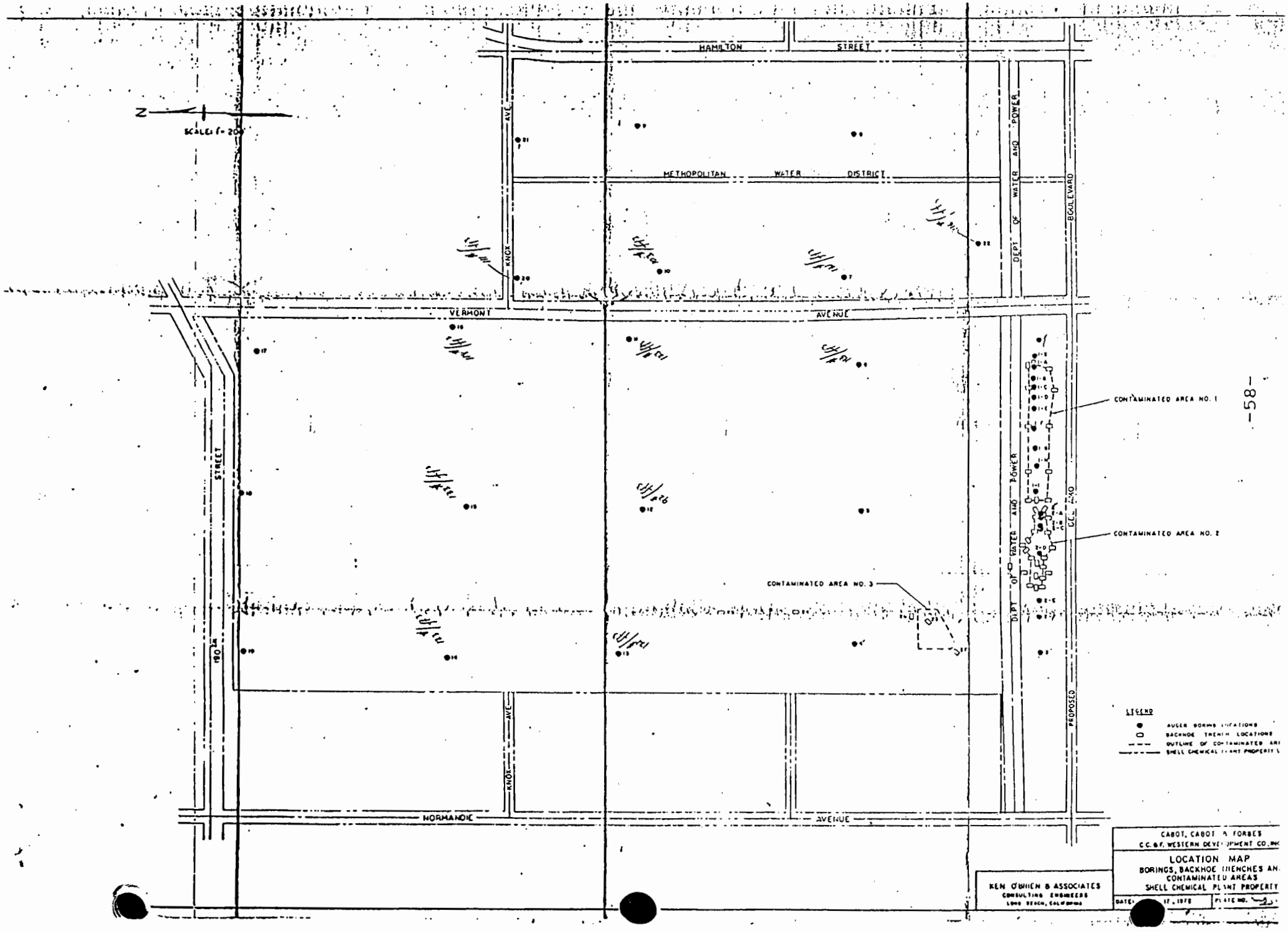
CABOT, CABOT & FORBES
C.C. & F. WESTERN DEVELOPMENT CO., INC

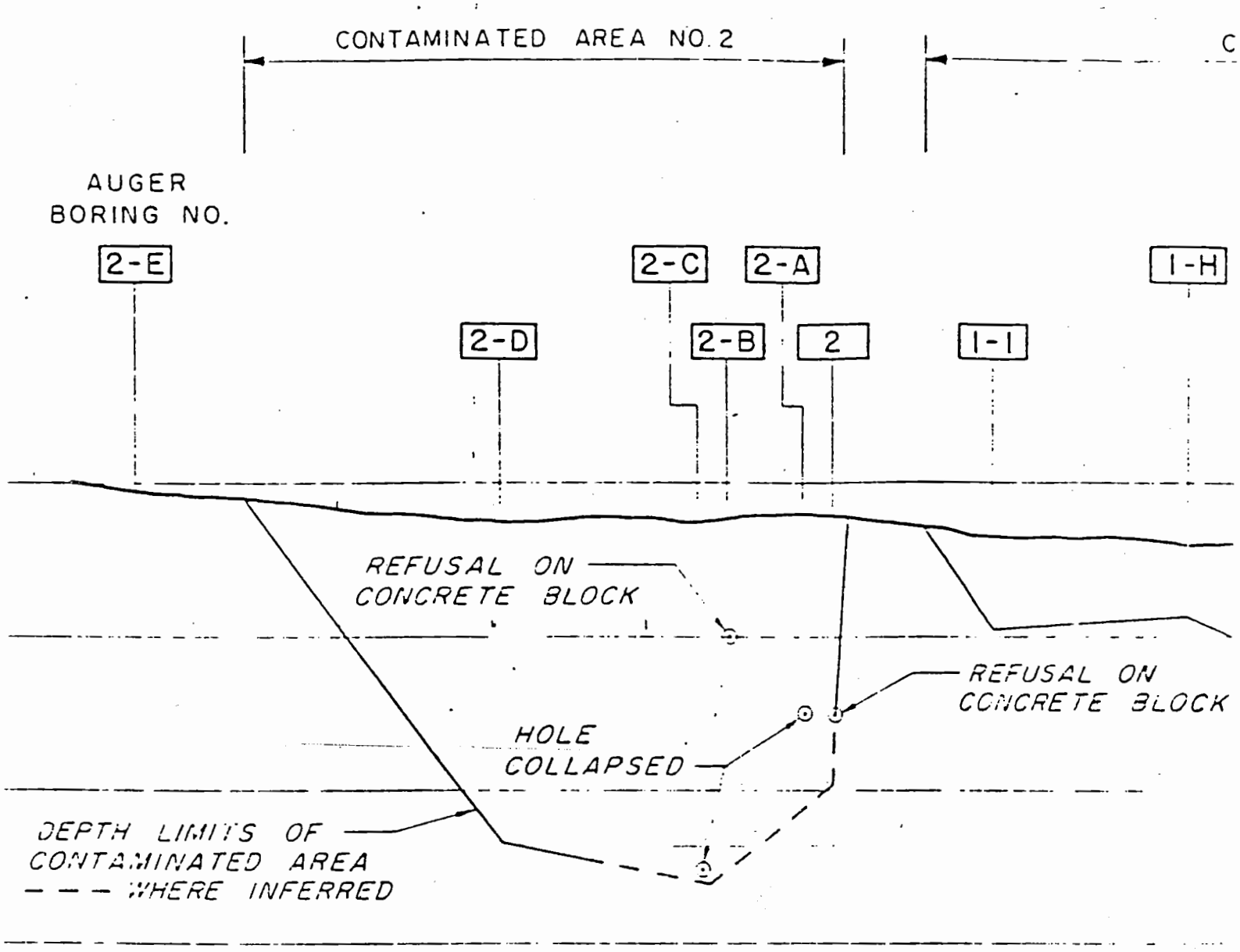
GEOLOGIC MAP

SHELL CHEMICAL PLANT PROPERTY
Los Angeles, California

DRWN BY: V.R.W.	DATE: 9-14-72	JOB NO.	PLATE N
CHKD. BY: H.L.T.	DATE: 9-20-72	7298	4

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS


N
SCALE: 1"=20'
HAMILTON STREET
METROPOLITAN WATER DISTRICT
KNOX AVE.
VERMONT AVENUE
DEPT OF WATER AND POWER
BOULEVARD
CONTAMINATED AREA NO. 1
CONTAMINATED AREA NO. 2
CONTAMINATED AREA NO. 3
STREET
190 TH
PROPOSED
NORMANDIE AVENUE
LEGEND
AUGER BORING LOCATIONS
BACKHOE TRENCH LOCATIONS
OUTLINE OF CONTAMINATED AREA
SHELL CHEMICAL PLANT PROPERTY
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
LOCATION MAP
BORINGS, BACKHOE TRENCHES AND
CONTAMINATED AREAS
SHELL CHEMICAL PLANT PROPERTY
DATE: 17, 1978
PLATE NO.
KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS
LONG BEACH, CALIFORNIA

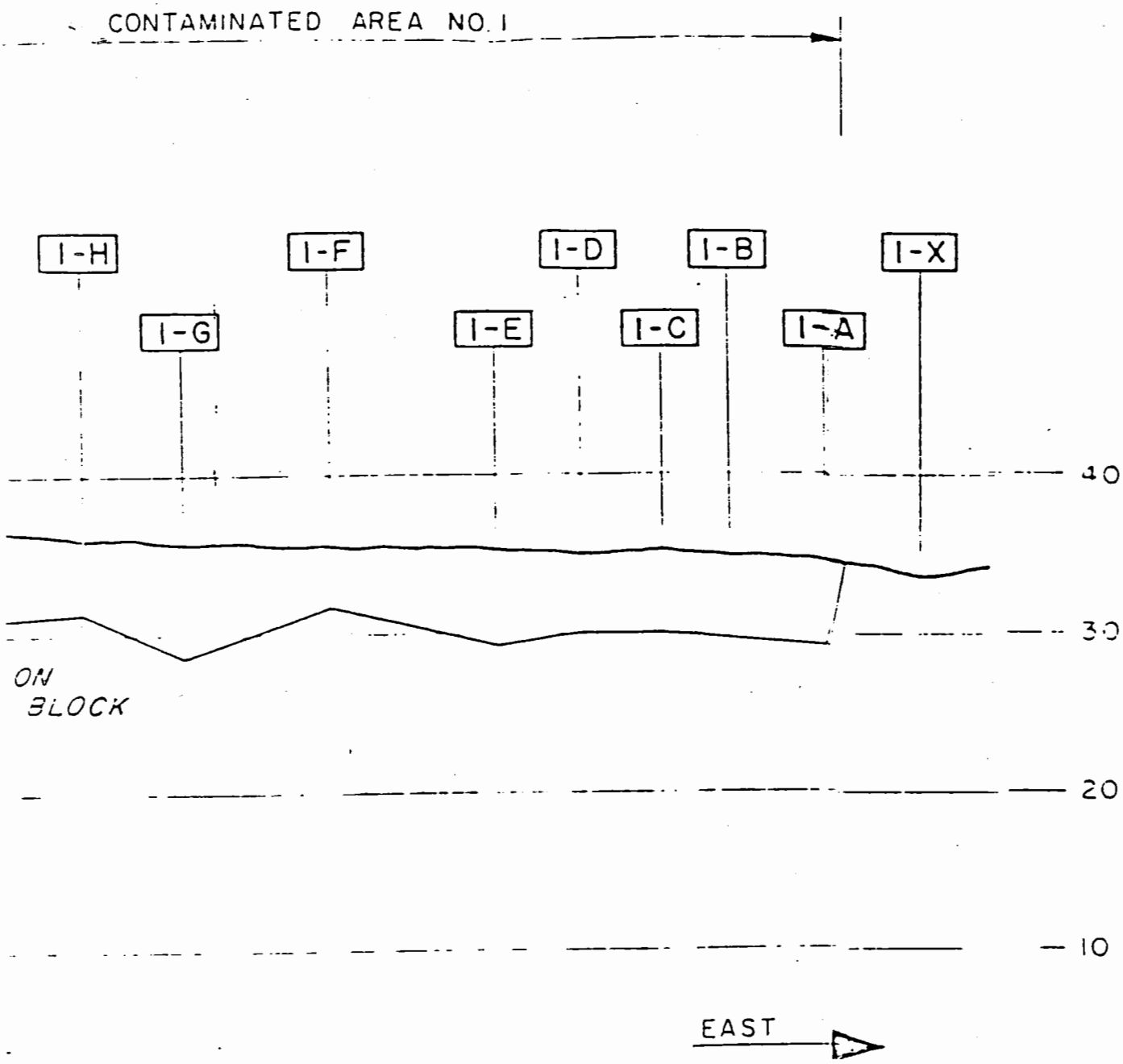


SCALE

VERTICAL - 1 Inch = 10 F
HORIZONTAL - 1 Inch = 100 F

NOTE :

REFER TO PLATE NO. 7 FOR AREAL EXTENT

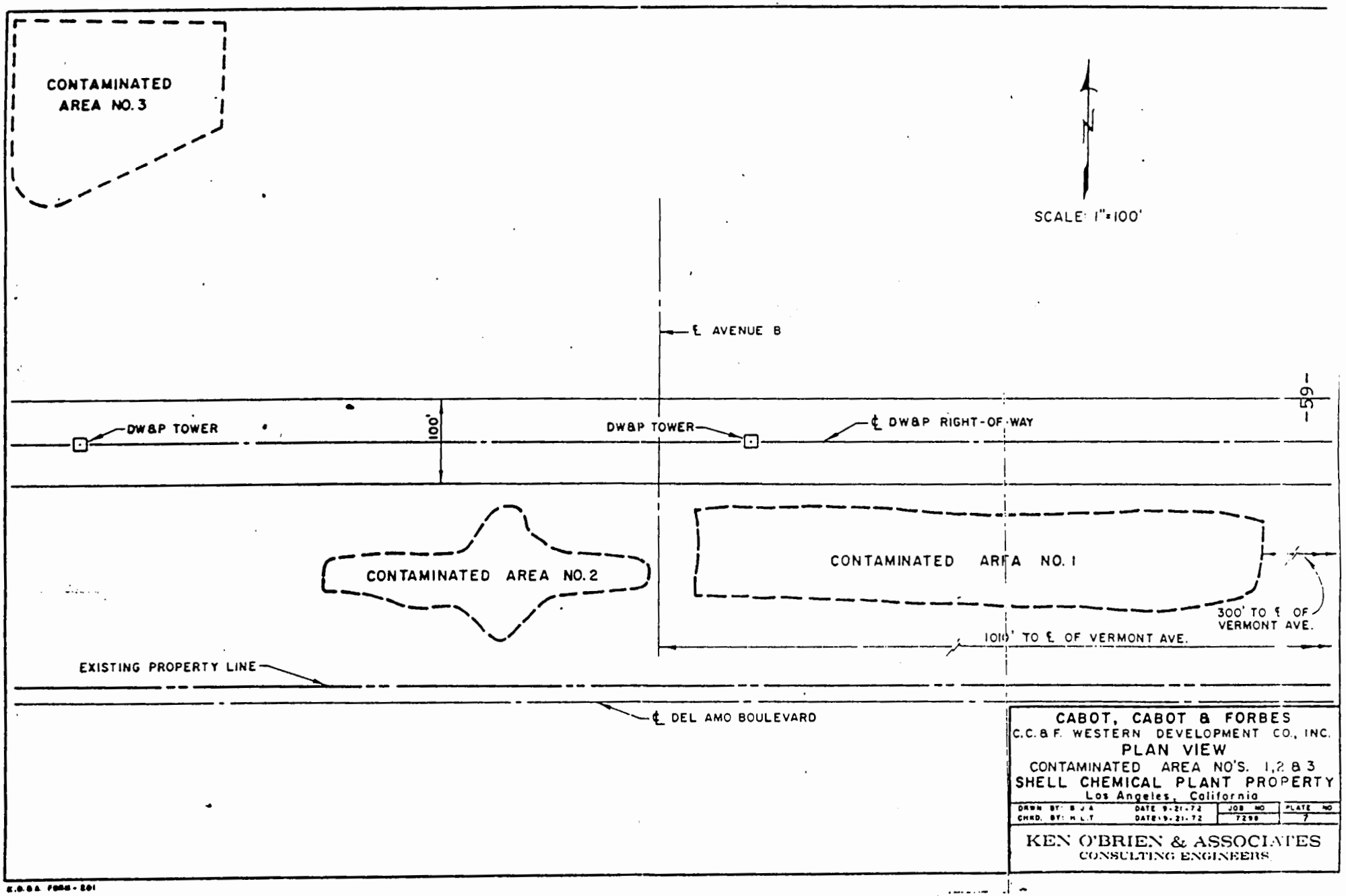


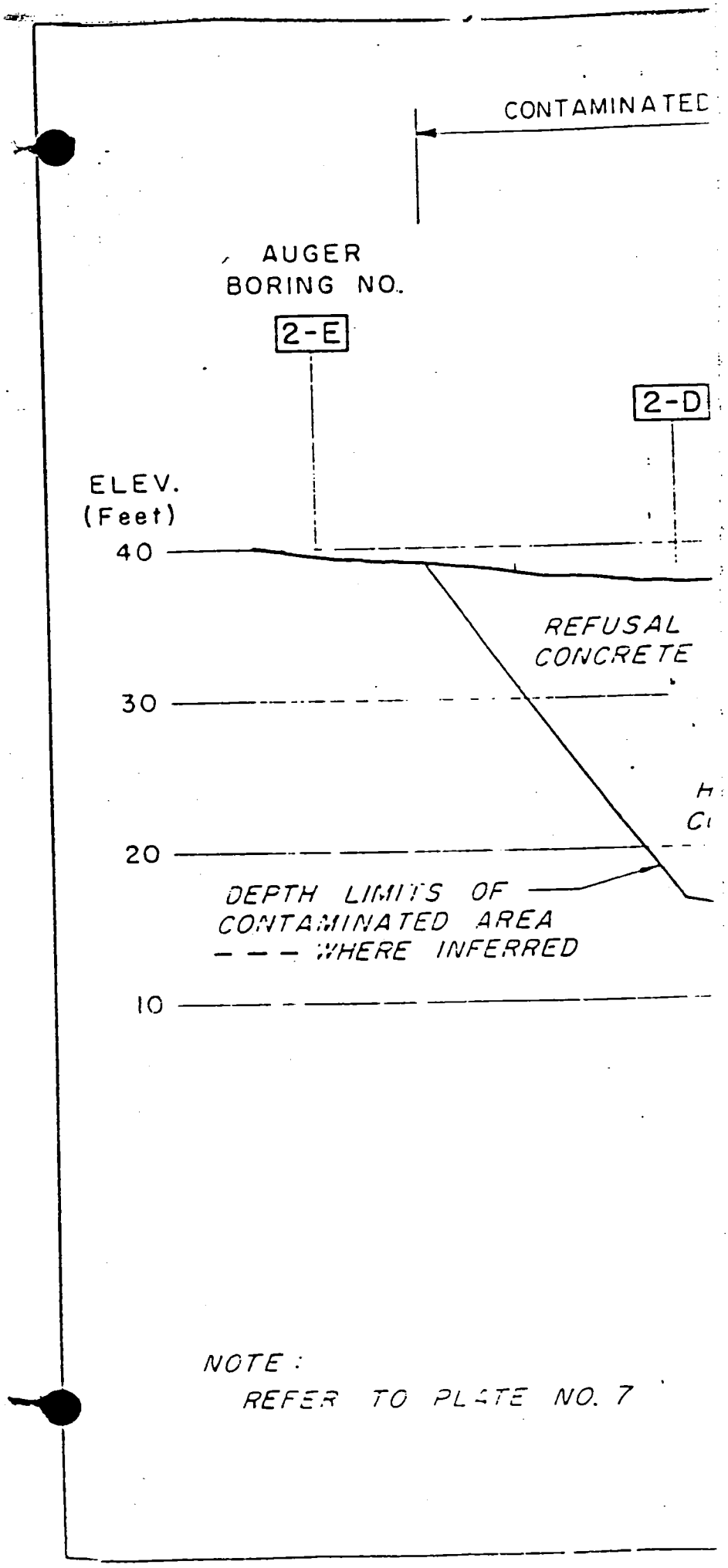
= 10 FEET
= 100 FEET

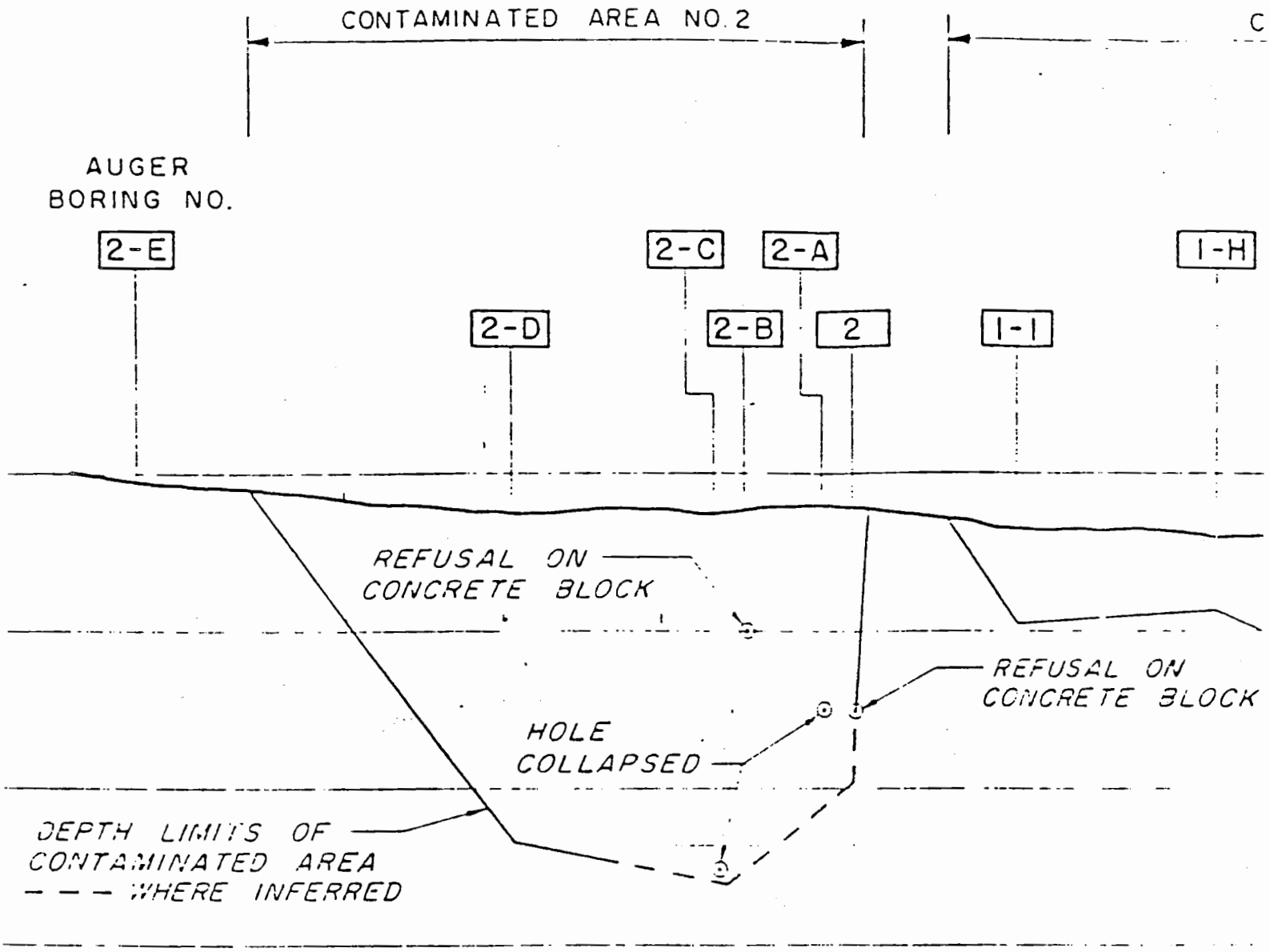
CABOT, CABOT & FORBES
C.C. & F. WESTERN DEVELOPMENT CO., INC.
PROFILE
CONTAMINATED AREA NO'S 1 & 2
SHELL CHEMICAL PLANT PROPERTY
Los Angeles, California

DRWN BY: V. R. W.	DATE [illegible]	JOB NO.	PLATE NO.
CHKD BY: H. L. [illegible]	DATE [illegible]	[illegible]	[illegible]

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS


CONTAMINATED AREA NO. 3
N
SCALE: 1"=100'
℄ AVENUE B
DW&P TOWER
100'
DW&P TOWER
℄ DW&P RIGHT-OF-WAY
CONTAMINATED AREA NO. 2
CONTAMINATED AREA NO. 1
300' TO ℄ OF VERMONT AVE.
1010' TO ℄ OF VERMONT AVE.
EXISTING PROPERTY LINE
℄ DEL AMO BOULEVARD
CABOT, CABOT & FORBES
C.C.& F. WESTERN DEVELOPMENT CO., INC.
PLAN VIEW
CONTAMINATED AREA NO'S. 1,2 & 3
SHELL CHEMICAL PLANT PROPERTY
Los Angeles, California
DRWN BY: B.J.A.
DATE 9-21-72
CHKD. BY: H.L.T.
DATE 9-21-72
JOB NO 7299
PLATE NO 7
KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS


CONTAMINATED
AUGER
BORING NO.
2-E
2-D
ELEV.
(Feet)
40
30
20
10
REFUSAL
CONCRETE
DEPTH LIMITS OF
CONTAMINATED AREA
WHERE INFERRED
NOTE :
REFER TO PLATE NO. 7

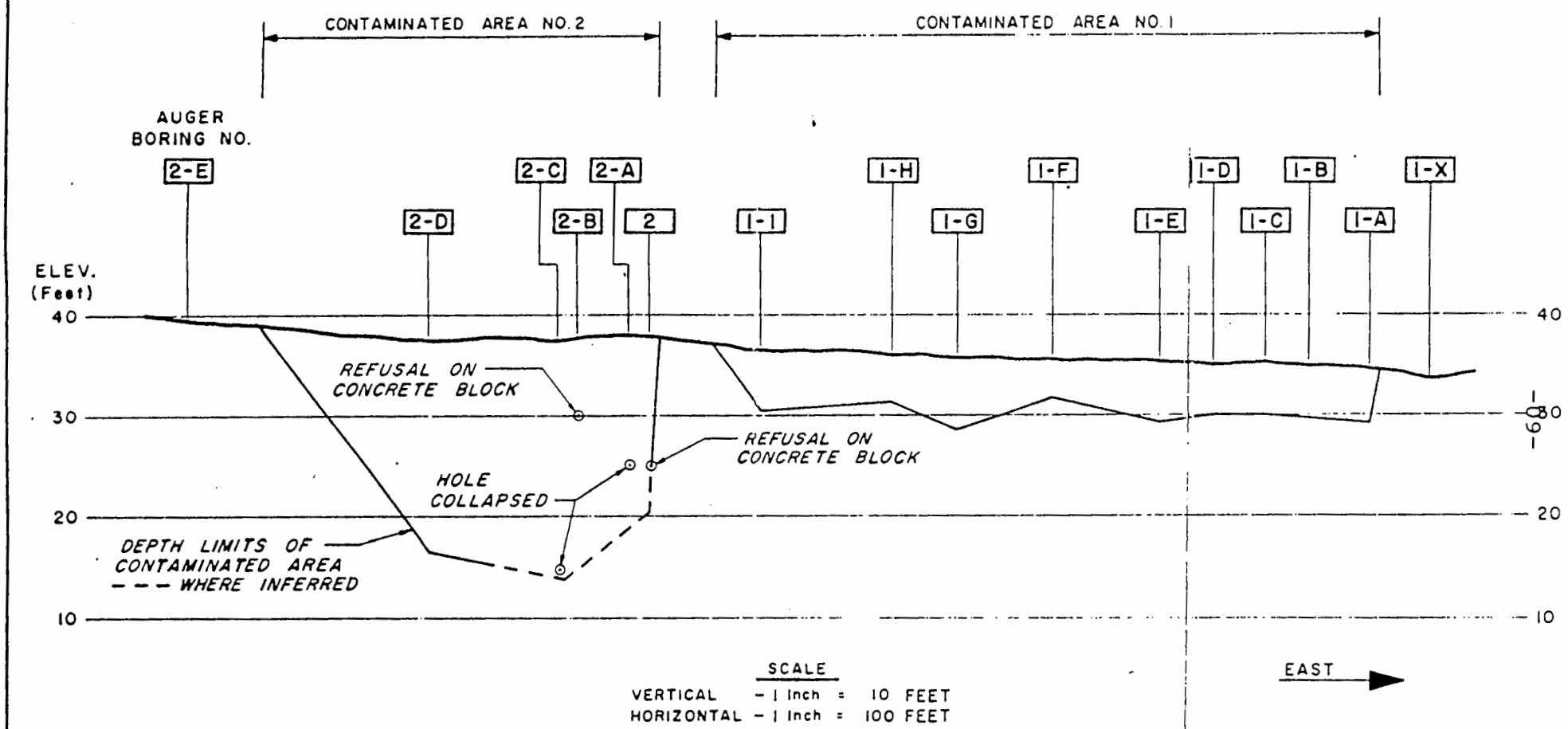


SCALE

VERTICAL - 1 inch = 10 F
HORIZONTAL - 1 inch = 100 F

NOTE:

REFER TO PLATE NO. 7 FOR AREAL EXTENT



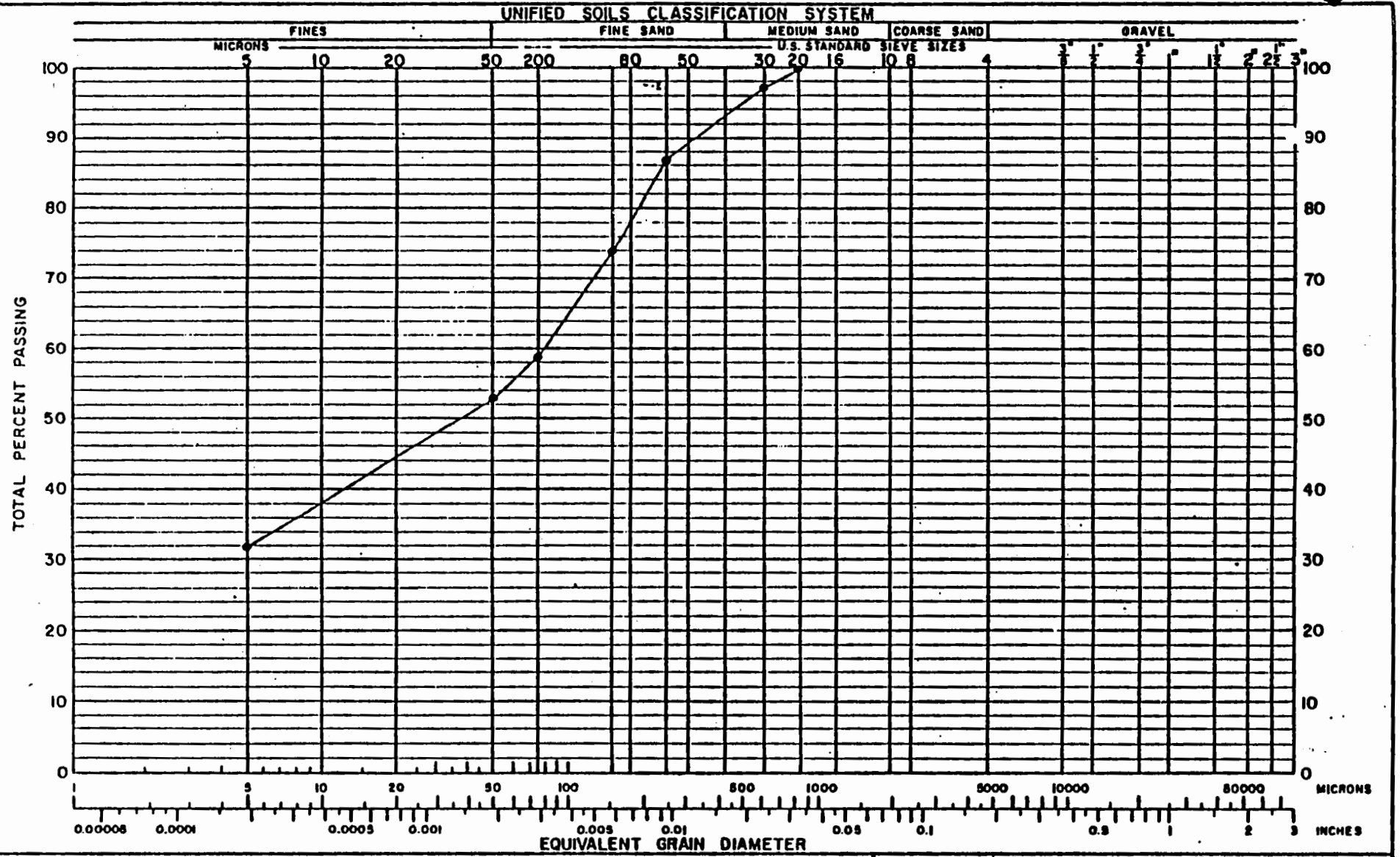
NOTE:
REFER TO PLATE NO. 7 FOR AREAL EXTENT

CABOT, CABOT & FORBES
C.C. & F. WESTERN DEVELOPMENT CO., IN
PROFILE
CONTAMINATED AREA NO'S. 1 & 2
SHELL CHEMICAL PLANT PROPERT
Los Angeles, California

DRWN BY: V.R.W.	DATE: 9-14-72	JOB NO	PLATE
CHKD BY: H.L.T.	DATE: 9-20-72	7298	8

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

E.B.&A. FORM-201



Sample Boring No. 1 Depth: 3.5'

% Sand	47	Liquid Limit	37
% Silt	21	Plastic Limit	17
% Clay	32	Plasticity Index	20

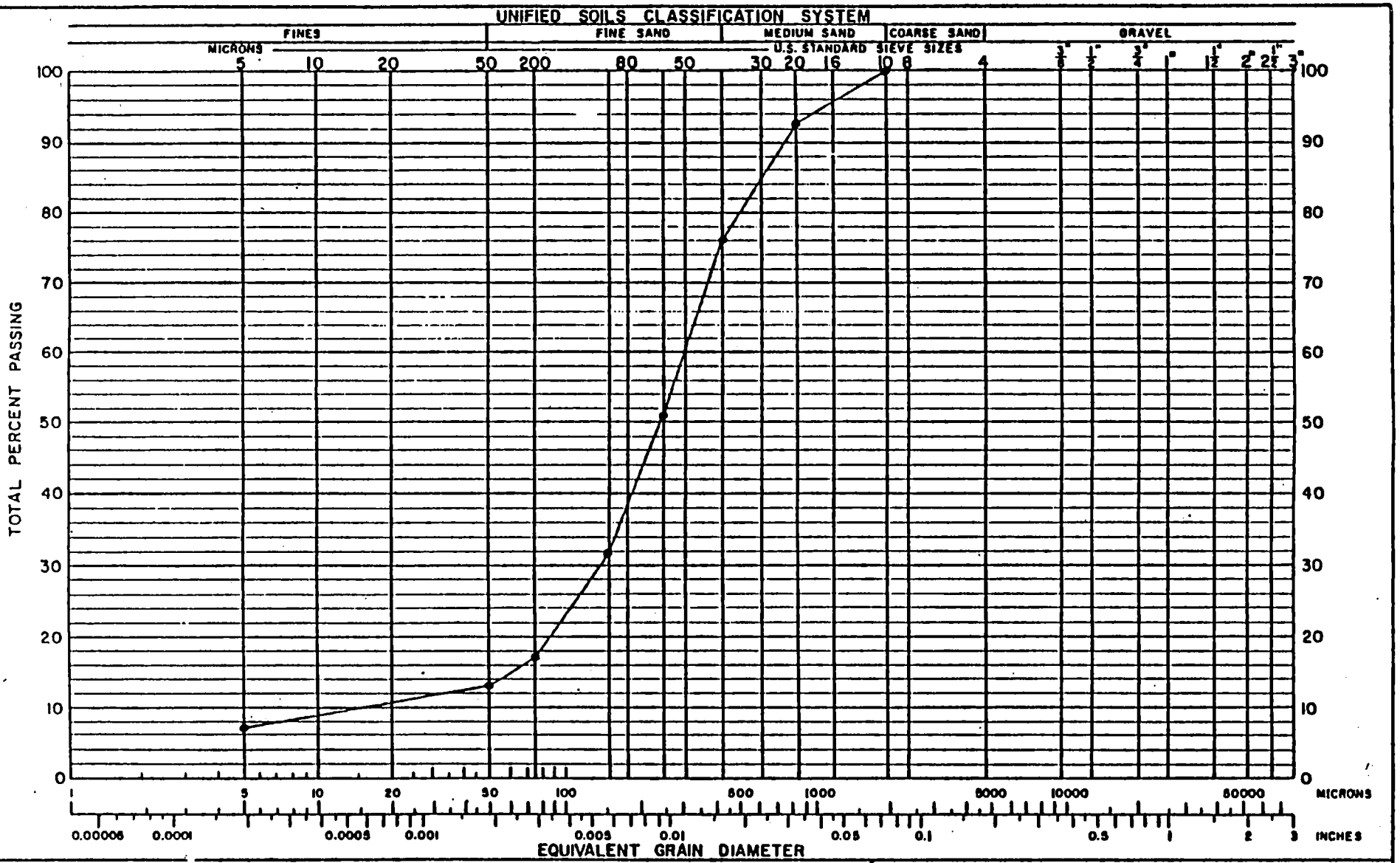
LEAN CLAY (CL-OL)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 9

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No. 4 Depth: 23.5'

% Sand	87
% Silt	6
% Clay	7

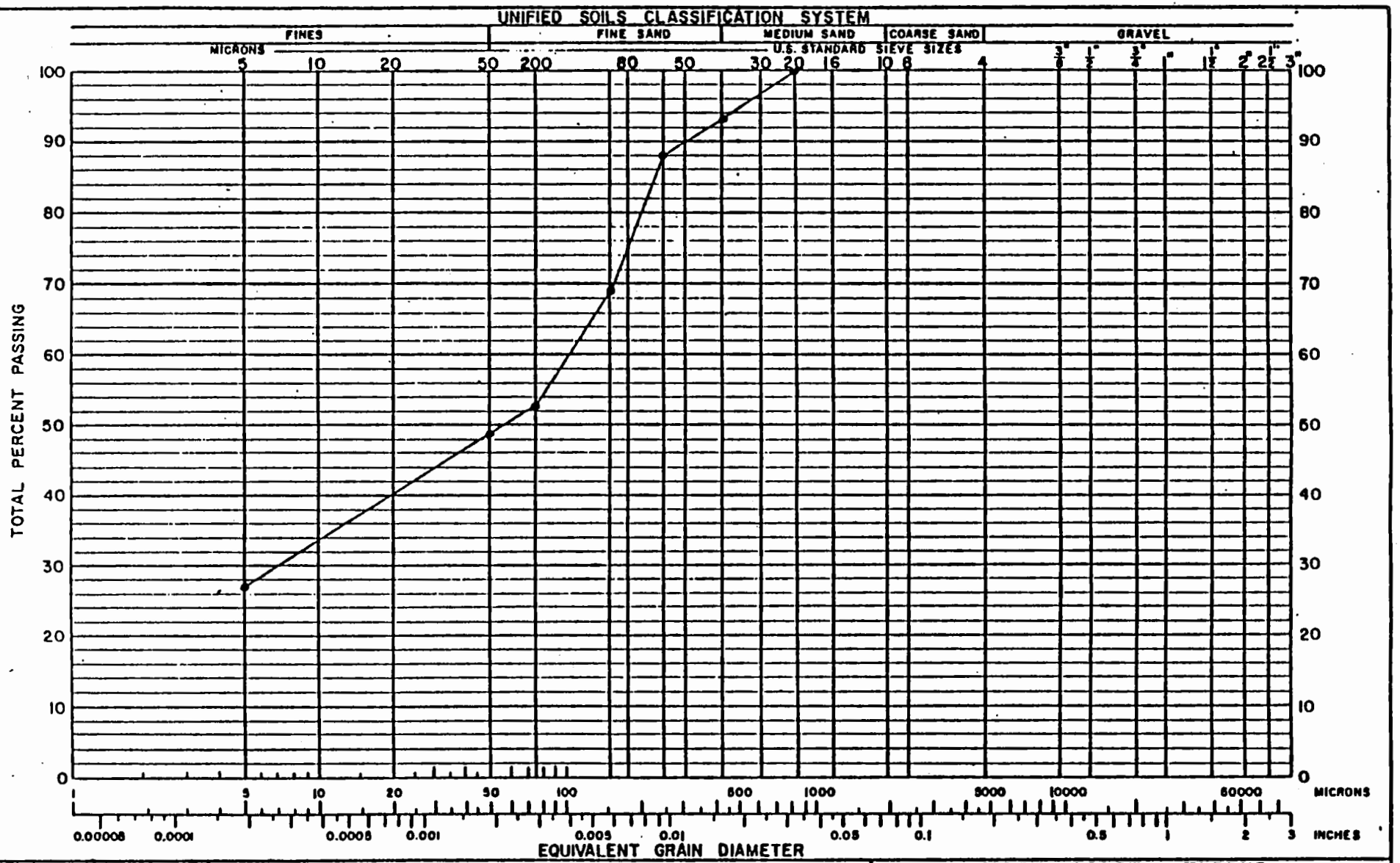
SAND (SW)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 10

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No...5 Depth: 3.5'

% Sand	51	Liquid Limit	35
% Silt	22	Plastic Limit	17
% Clay	27	Plasticity Index	18

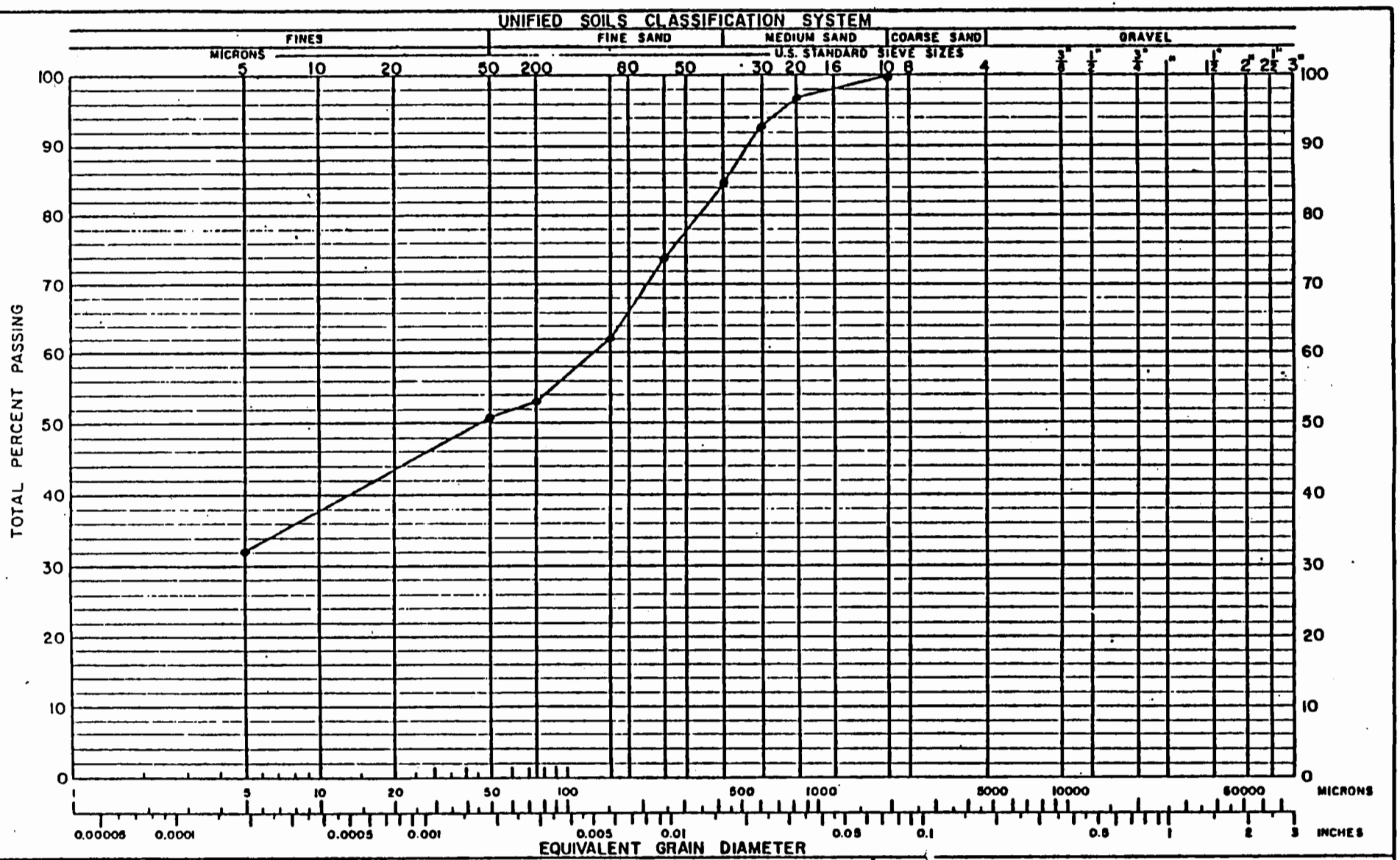
CLAYEY SAND (SC-SM)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 11

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No. 6 Depth: 3.5'

% Sand	12	Liquid Limit	36
% Silt	19	Plastic Limit	16
% Clay	32	Plasticity Index	20

LEAN CLAY (CL-OL)

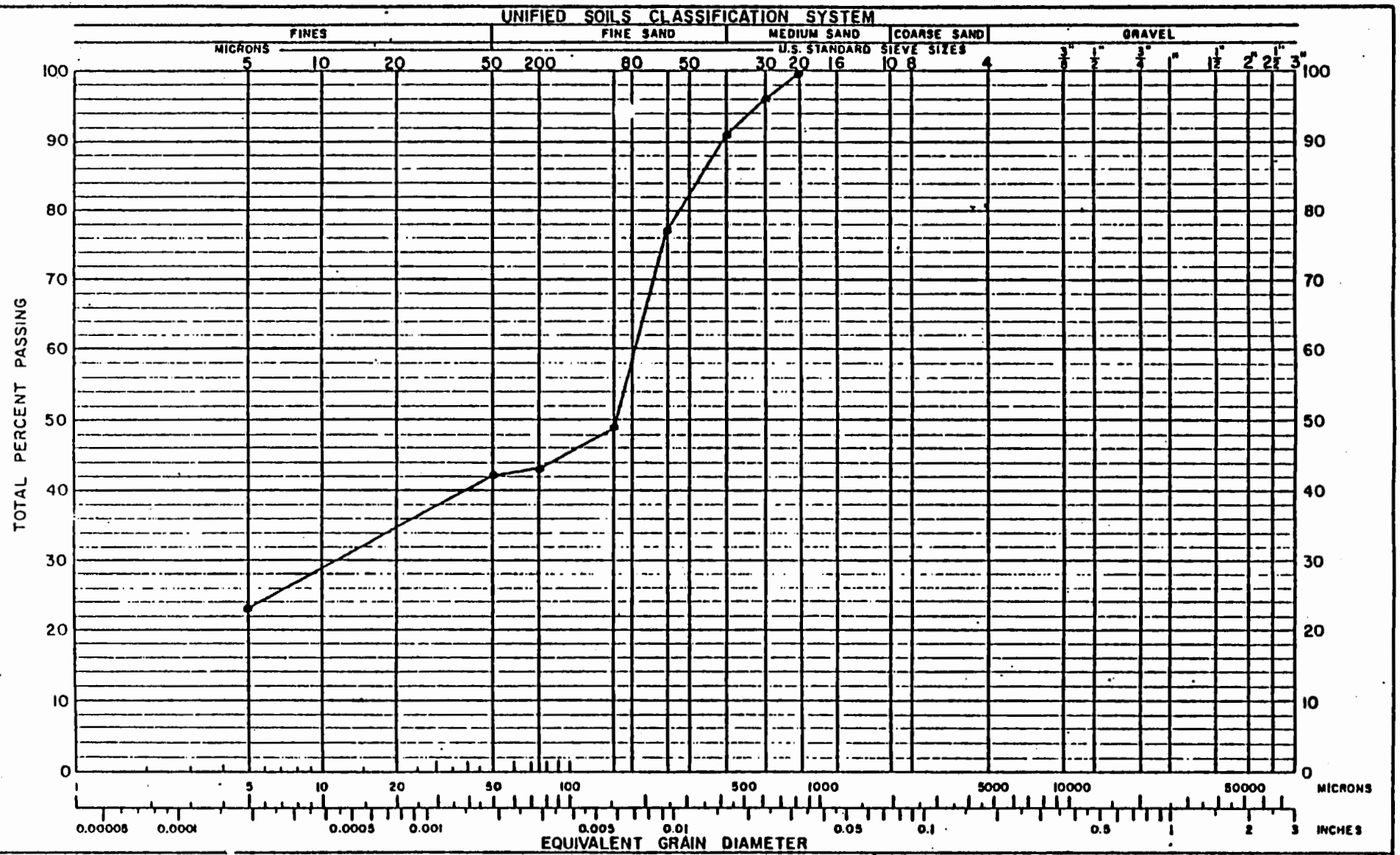
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 12

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

KO&A FORM-A



Sample Boring No. 6 Depth: 8.5'

% Sand 58
% Silt 19
% Clay 23
CLAYEY SAND (SC-SM)

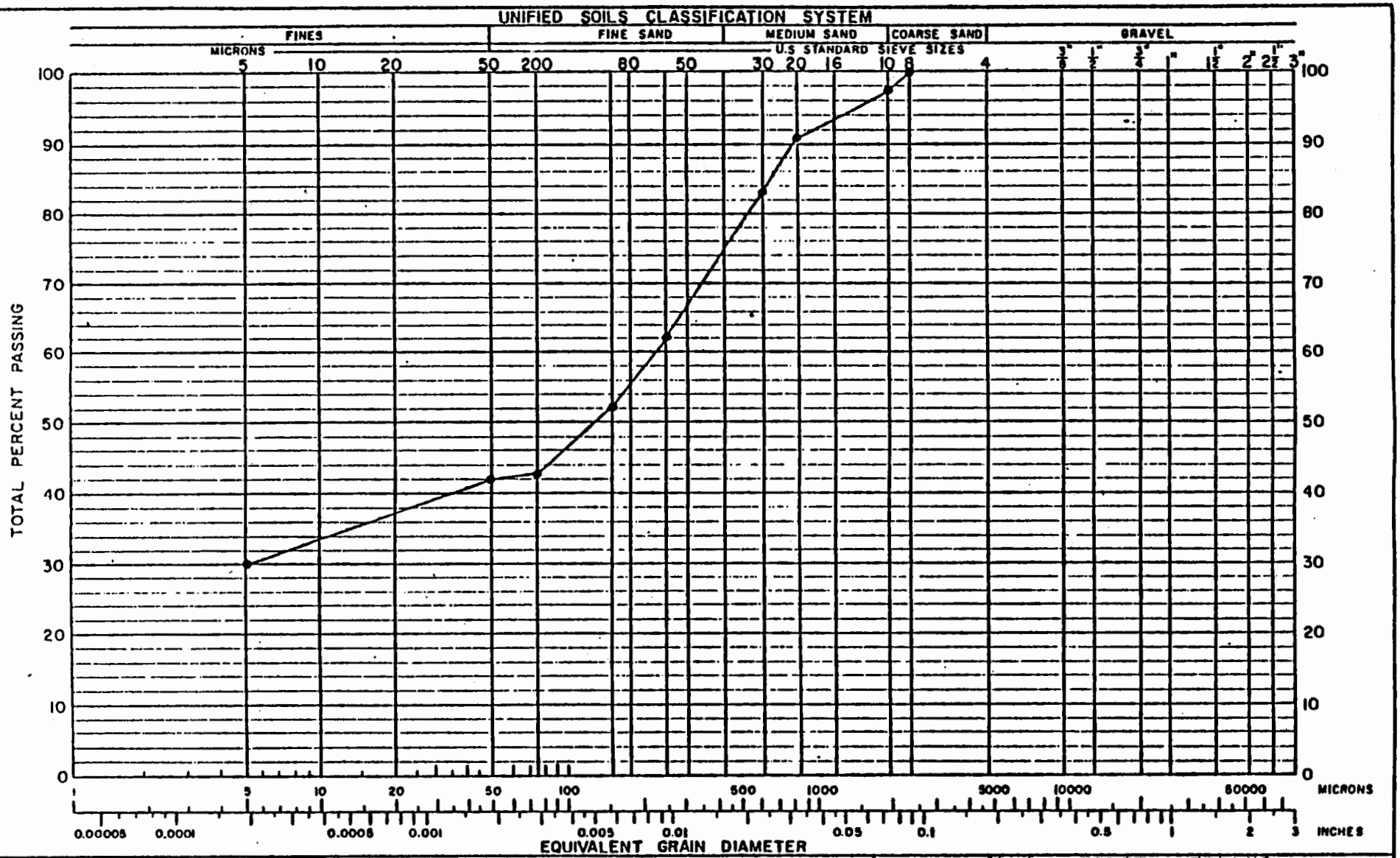
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 13

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

O&A FORM-8



Sample Boring No. 6 Depth: 18.5'

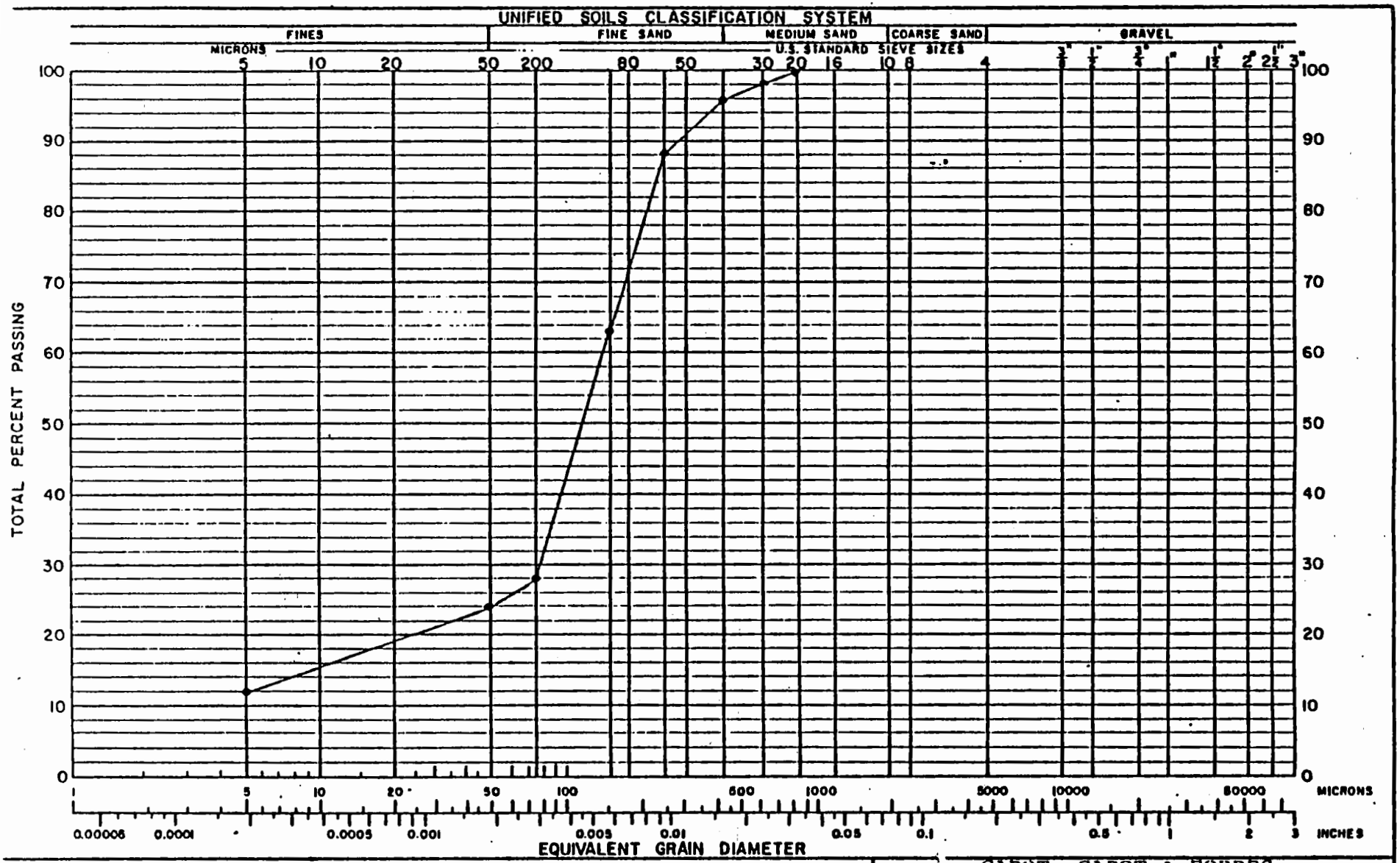
% Sand 58
% Silt 11
% Clay 31
SANDY CLAY (CL)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 14

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No. 6 Depth: 24.0'

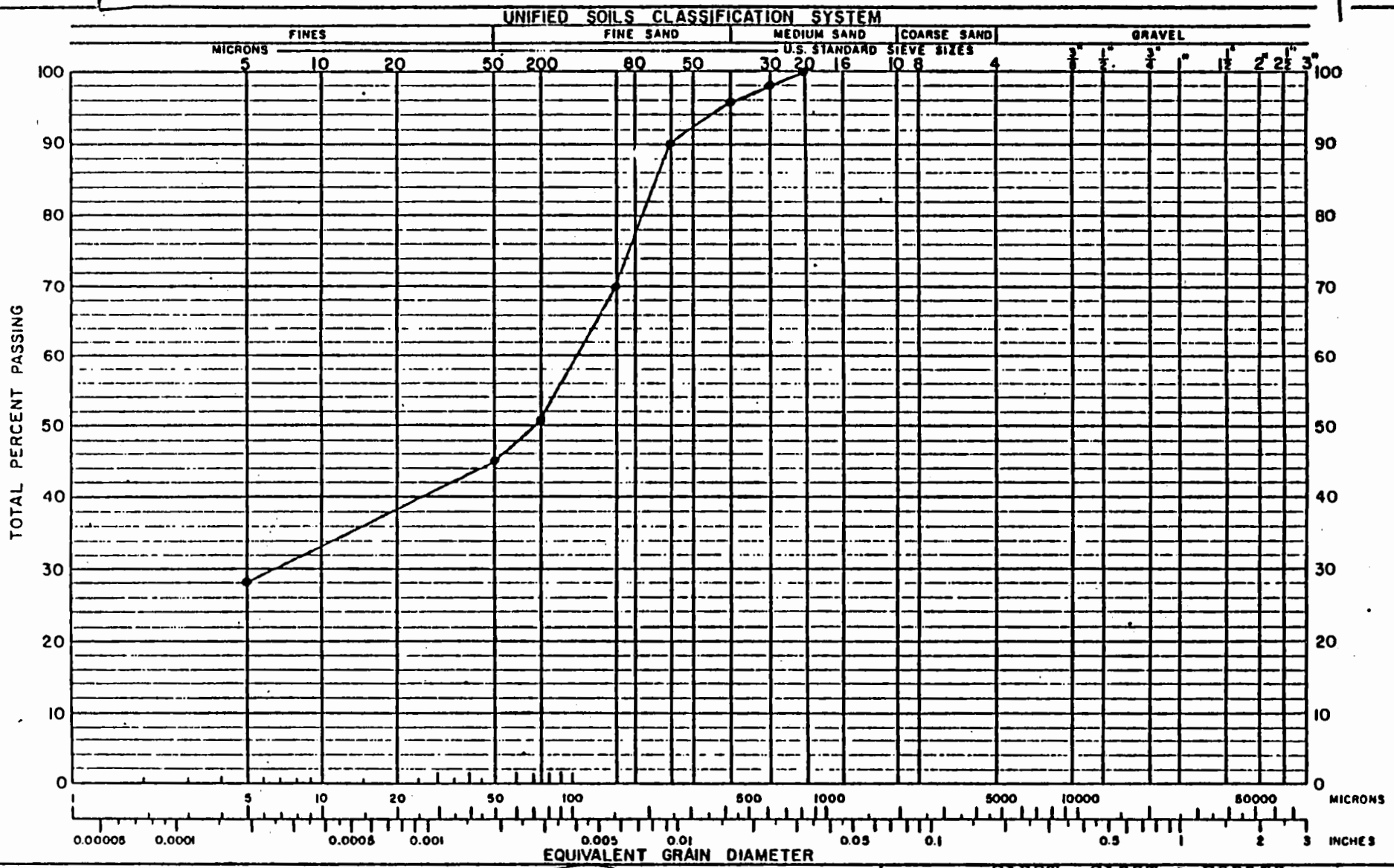
% Sand 76
% Silt 12
% Clay 12
CLAYEY SAND (SC-SM)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 15

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No. 7 Depth: 3.5'

% Sand 55
% Silt 17
% Clay 28
CLAYEY SAND (SC-SM)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

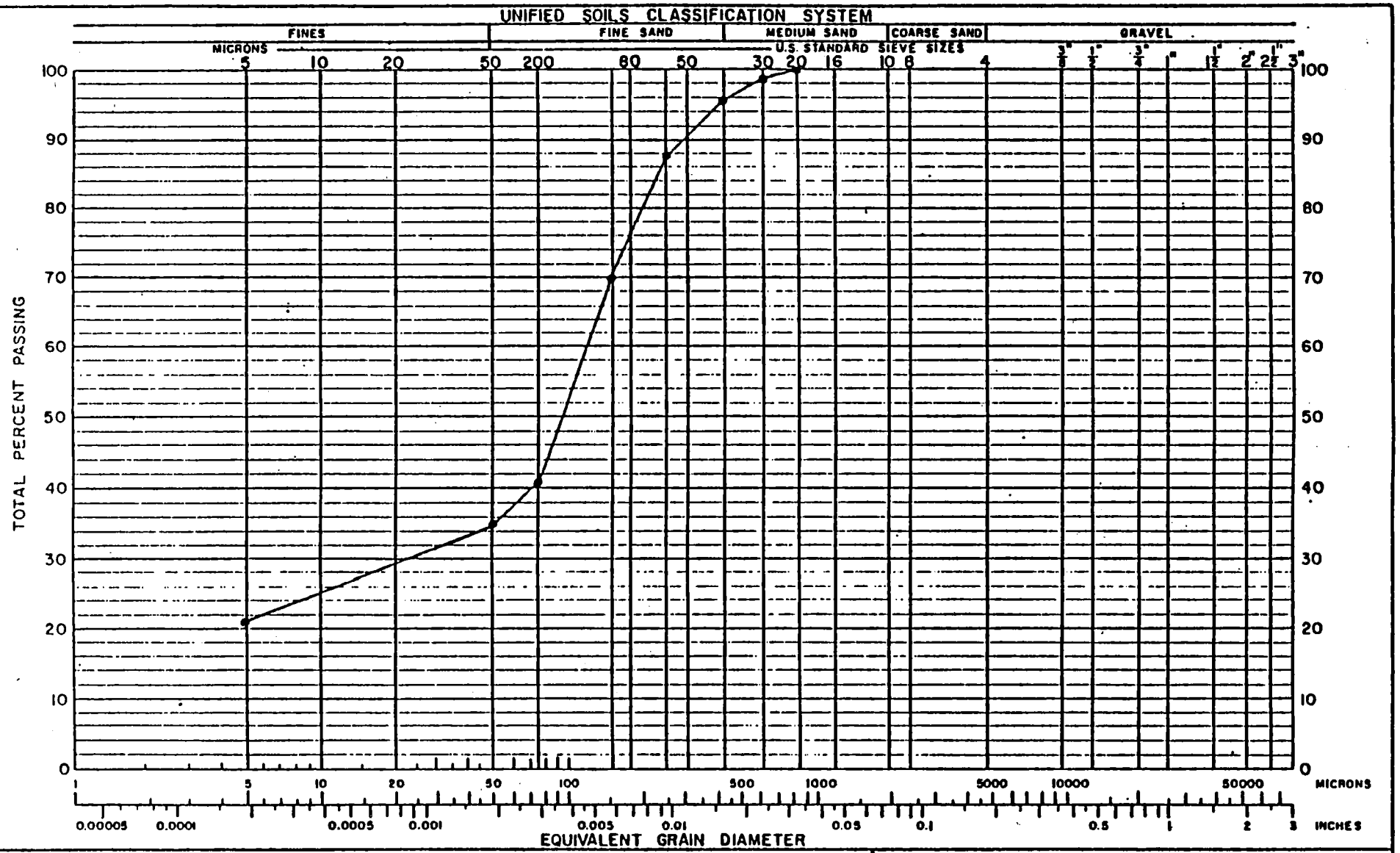
GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 16

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

JAN 7 1982 LOS ANGELES

K.O.&A. FORM-6



Sample Boring No. 10 Depth: 8.5'

% Sand 65
% Silt 14
% Clay 21
CLAYEY SAND (SC-SM)

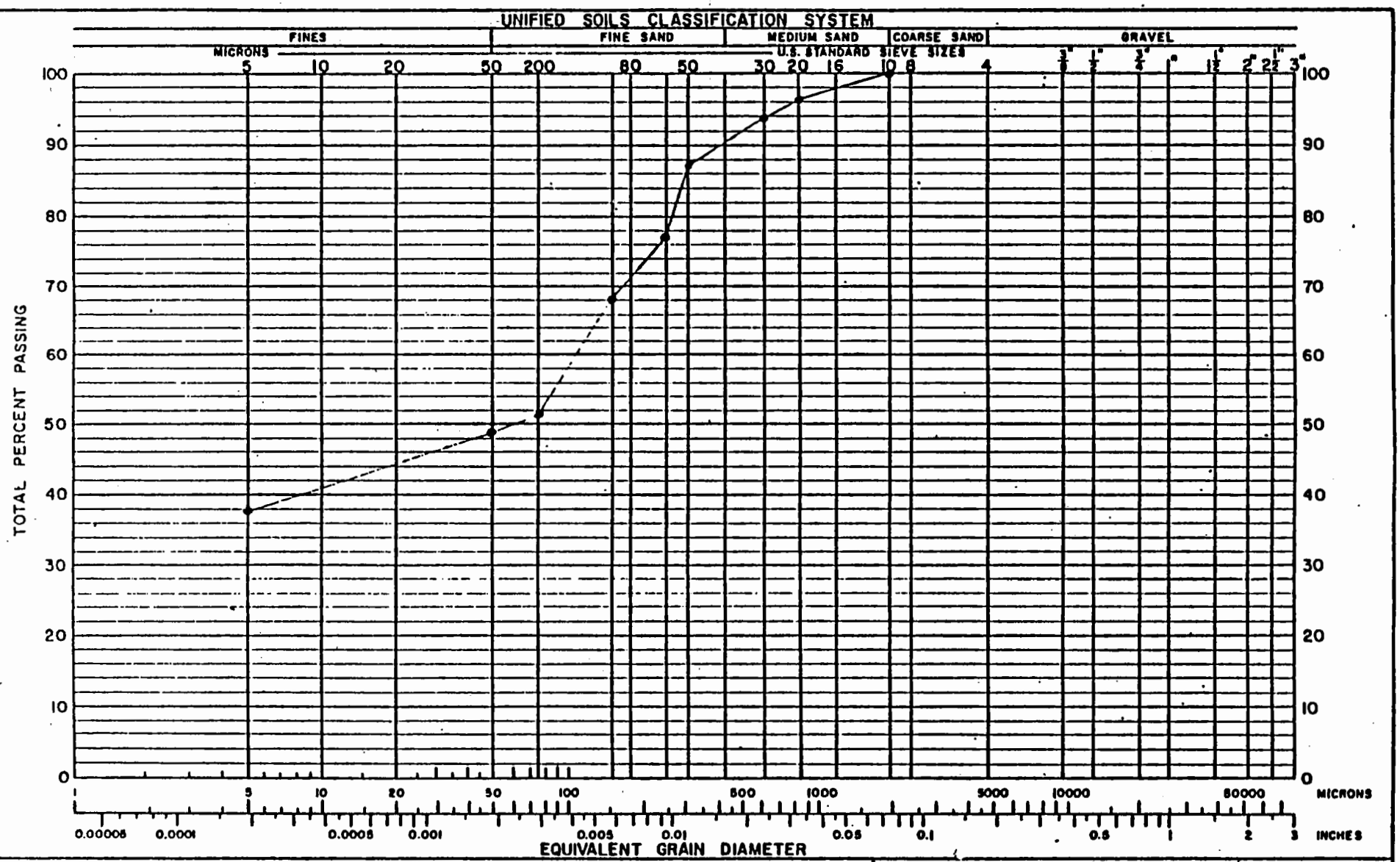
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 17

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

KO&A FORM-6



Sample Boring No. 14 Depth: 3.5'

% Sand 51
% Silt 11
% Clay 33
SANDY CLAY (CL)

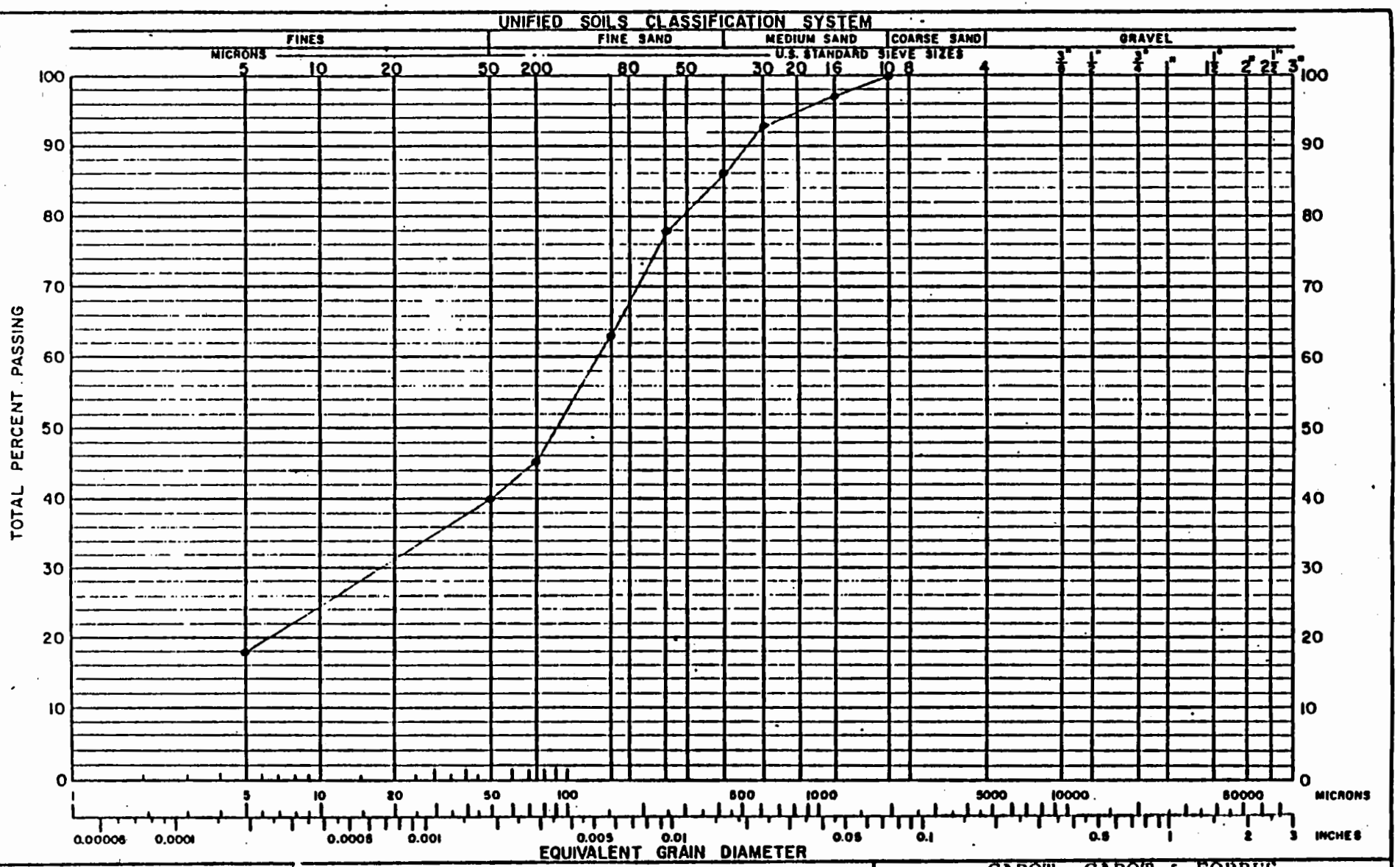
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 18

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

KO&A FORM-6



Sample Boring No. 15 . Depth: 8.5'

% Sand 60
% Silt 22
% Clay 18
CLAYEY SAND (SC-SM)

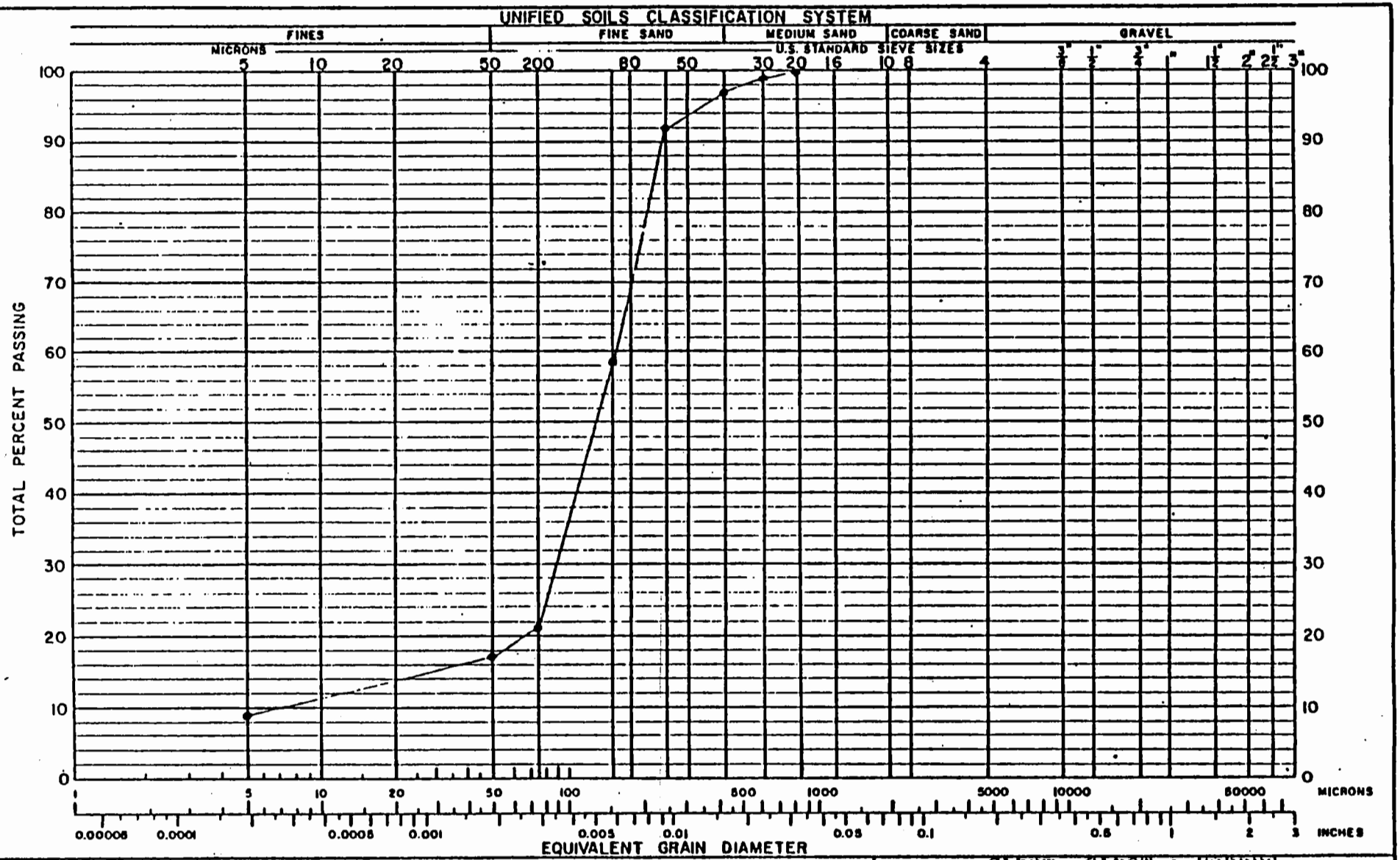
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 19

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

K.O.B.A. FORM-6



Sample Boring No. 18 Depth: 13.5'

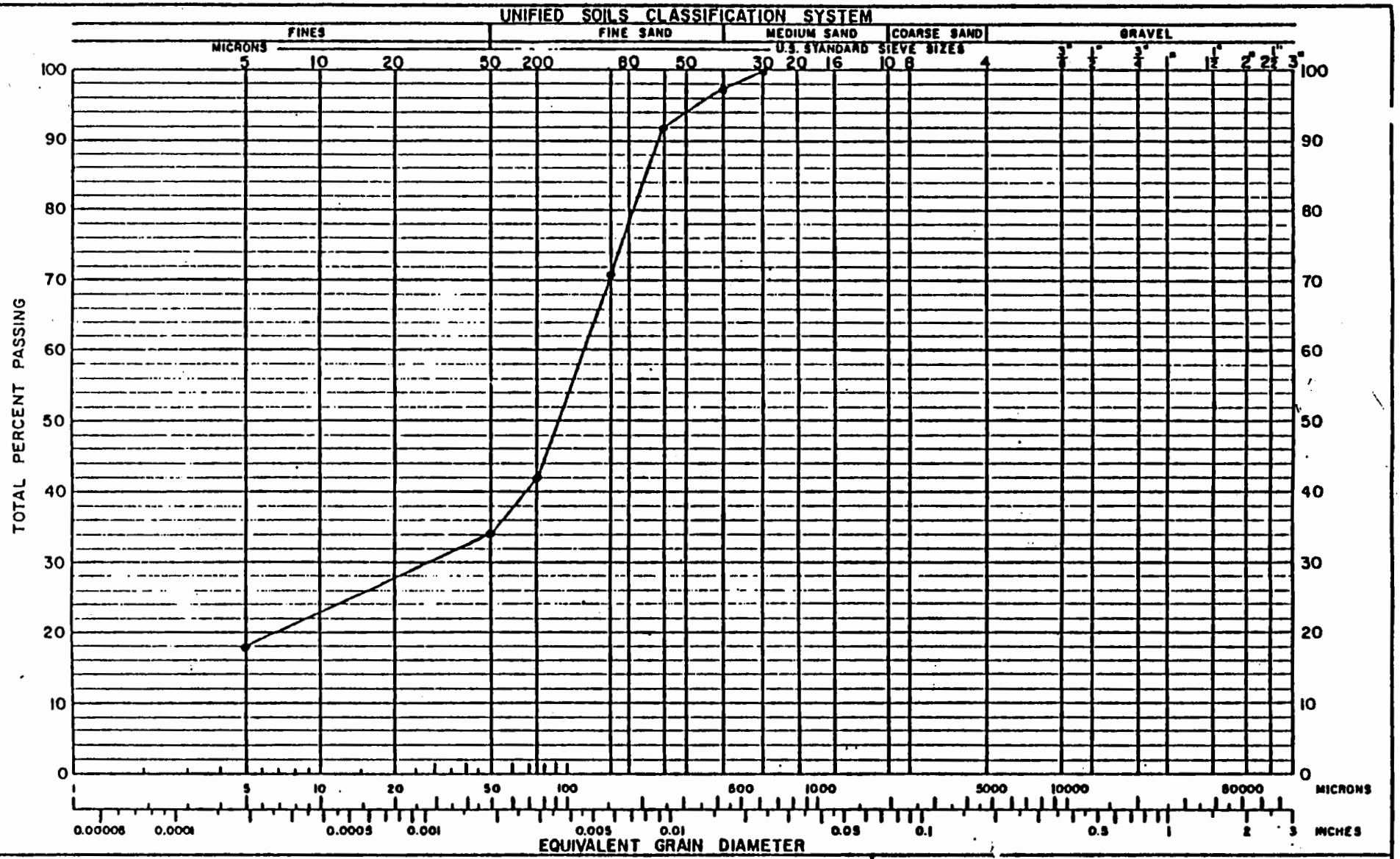
% Sand 63
% Silt 8
% Clay 9
SAND (SP)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 20

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No. 19 Depth: 8.5'

% Sand 66
% Silt 16
% Clay 18
CLAYEY SAND (SC-SM)

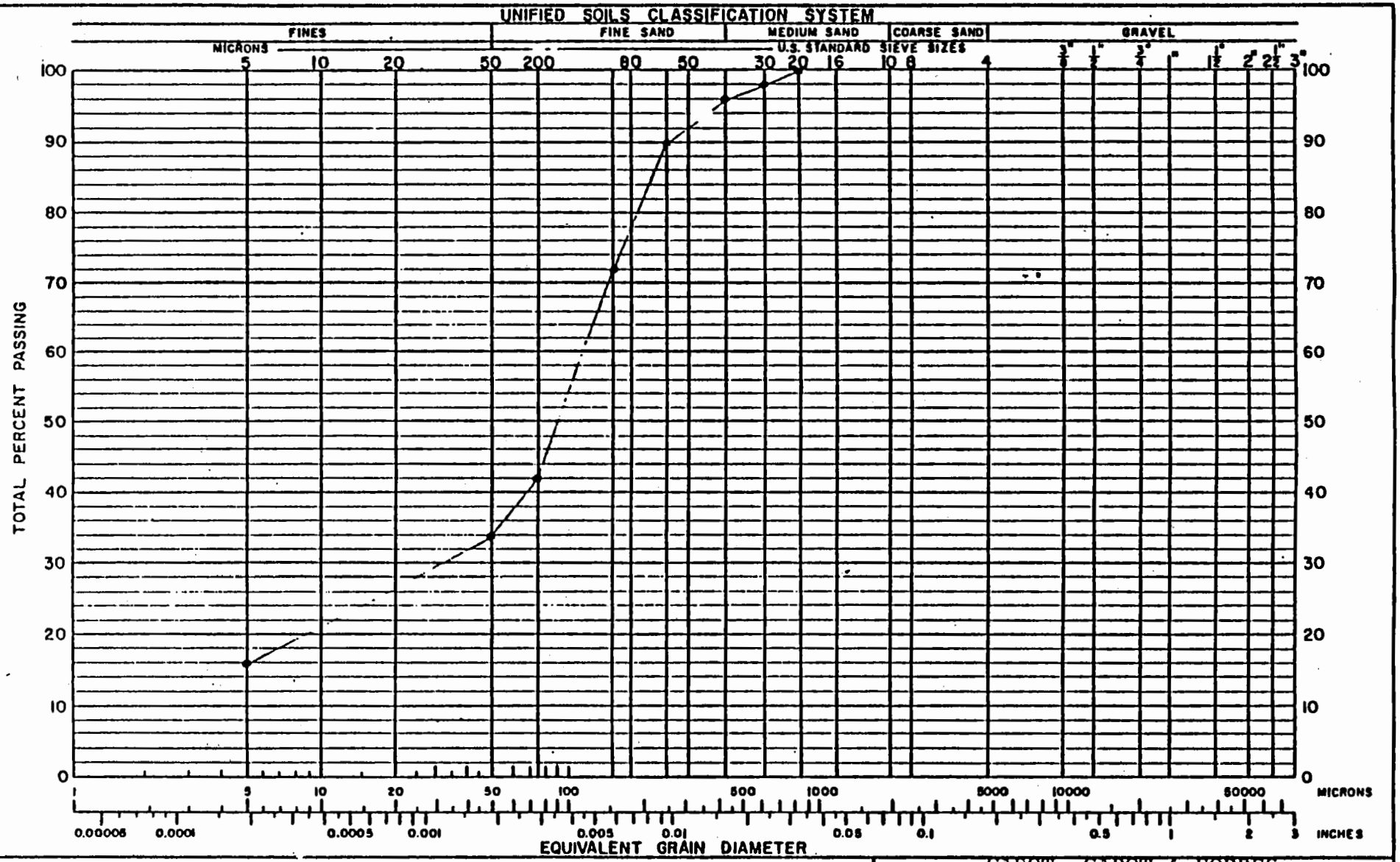
CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 21

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

K.O.B.A. FORM-3



Sample Boring No. 20 Depth: 6.0'

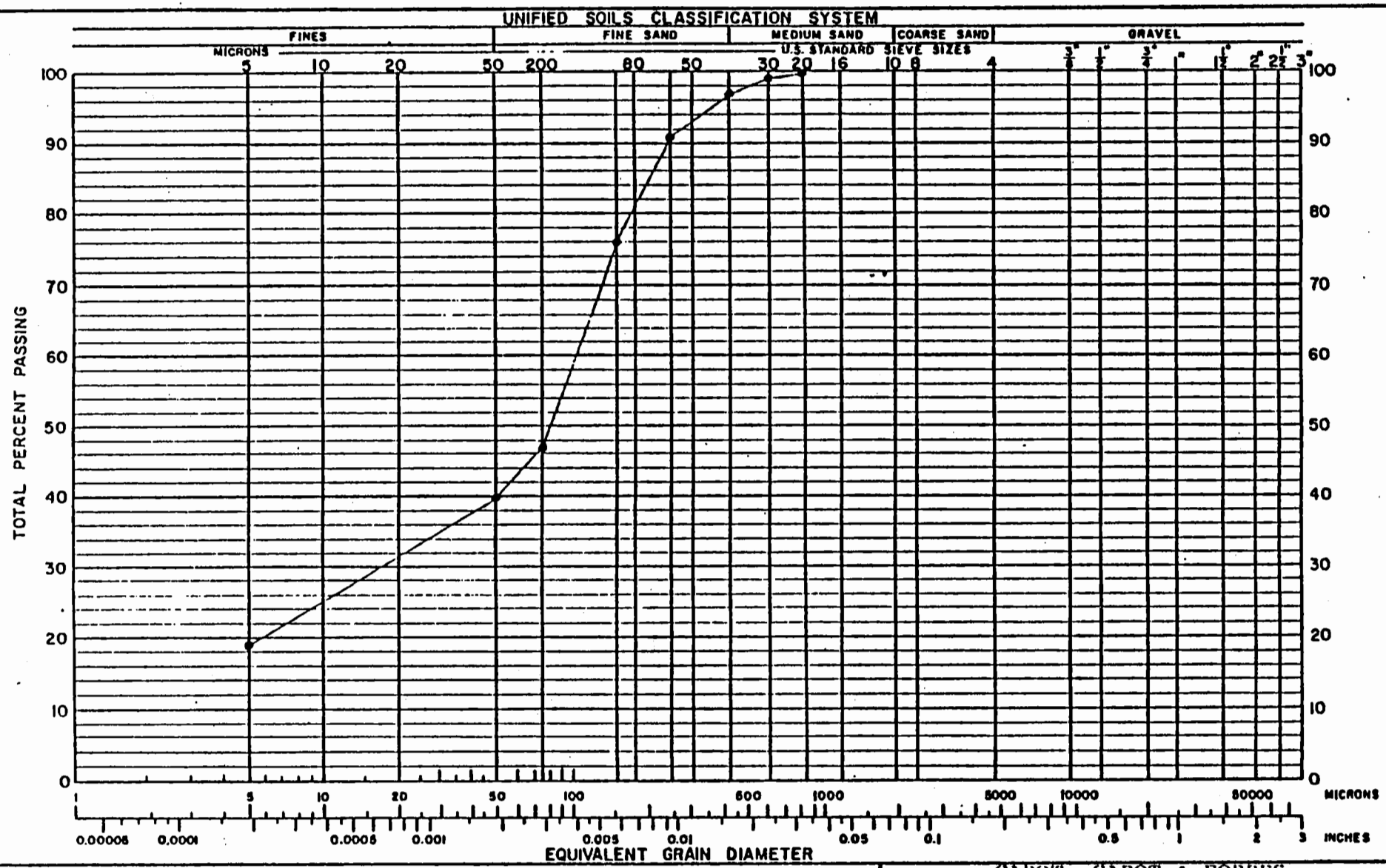
% Sand 66
% Silt 18
% Clay 16
CLAYEY SAND (SC-SM)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 22

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS



Sample Boring No. 22 Depth: 4.0'

% Sand 60
% Silt 21
% Clay 19
CLAYEY SAND (SC-SM)

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

GRADING ANALYSIS

PROJECT NO. 7298 DATE 9-11-72 PLATE NO. 23

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K.O.&A. FORM-8

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

ATTERBERG LIMITS

Boring No.	Depth of Sample	Soil Class	Liquid Limit	Plastic Limit	Plasticity Index
1	3.5	LEAN CLAY	37	17	20
3	3.5	SANDY CLAY	43	20	23
5	3.5	CLAYEY SAND	35	17	18
6	3.5	LEAN CLAY	36	16	20
6	13.5	SILTY SAND	20.7	N/A	N/A
16	4.5	SANDY CLAY	32	22	10

EXPANSION TEST AND DIRECT SHEAR TEST

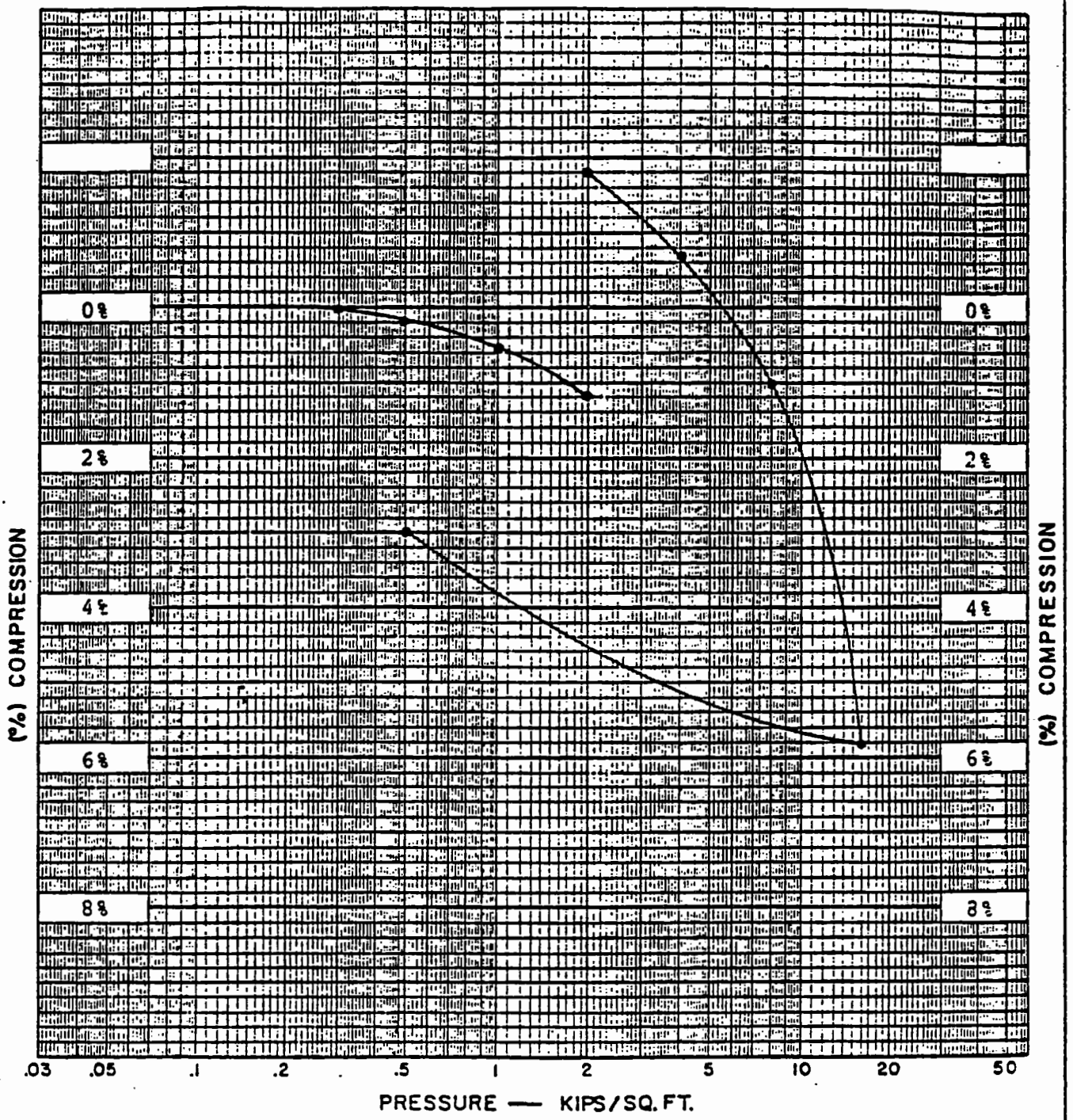
Boring No.	Depth of Sample	Soil Class	Percent Expansion	Cohesion (lbs/ft^2)	Angle of Internal Friction
6	3.5	LEAN CLAY	0.95	1,200	24
7	3.5	CLAYEY SAND	0.44	1,100	26
10	8.5	CLAYEY SAND	0.75	900	30
11	8.5	SILTY SAND	0.23	800	32
15	8.5	CLAYEY SAND	0.75	1,400	26
16	4.5	SANDY CLAY	0.76	1,450	28
20	6.0	CLAYEY SAND	0.23	1,400	24
22	4.0	CLAYEY SAND	0.29	1,300	29

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

UNCONFINED COMPRESSION TEST RESULTS

Boring No.	Depth to Sample	Soil Classification	Strength--Ksf
6	3.5'	LEAN CLAY	4.0
7	3.5'	CLAYEY SAND	8.8
10	8.5'	CLAYEY SAND	5.1
11	8.5'	SILTY SAND	8.8
15	8.5'	CLAYEY SAND	12.4
16	4.5'	SANDY CLAY	10.2
20	6.0'	CLAYEY SAND	3.1
22	4.0'	CLAYEY SAND	6.2

NOTE: Refer to Plate No's. 5 and 6 for boring locations and typical subsurface soil conditions.



TEST DATA

BORING NUMBER 6
SAMPLE NUMBER
DEPTH (FEET) 3.5
CLASSIFICATION (CL-OL) LEAN CLAY
HEIGHT (INCHES)
DIAMETER (INCHES)
INITIAL MOISTURE CONTENT (%) 16
INITIAL DRY DENSITY (LB./CU. FT.) 113
SPECIFIC GRAVITY
FINAL MOISTURE CONTENT (%)
LIQUID LIMIT 36
PLASTIC INDEX 20

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

CONSOLIDATION TEST

DR. BY:	DATE:	PROJECT	PLATE NO.
CHK. BY: W.D.	DATE: 9/17/72	7298	26

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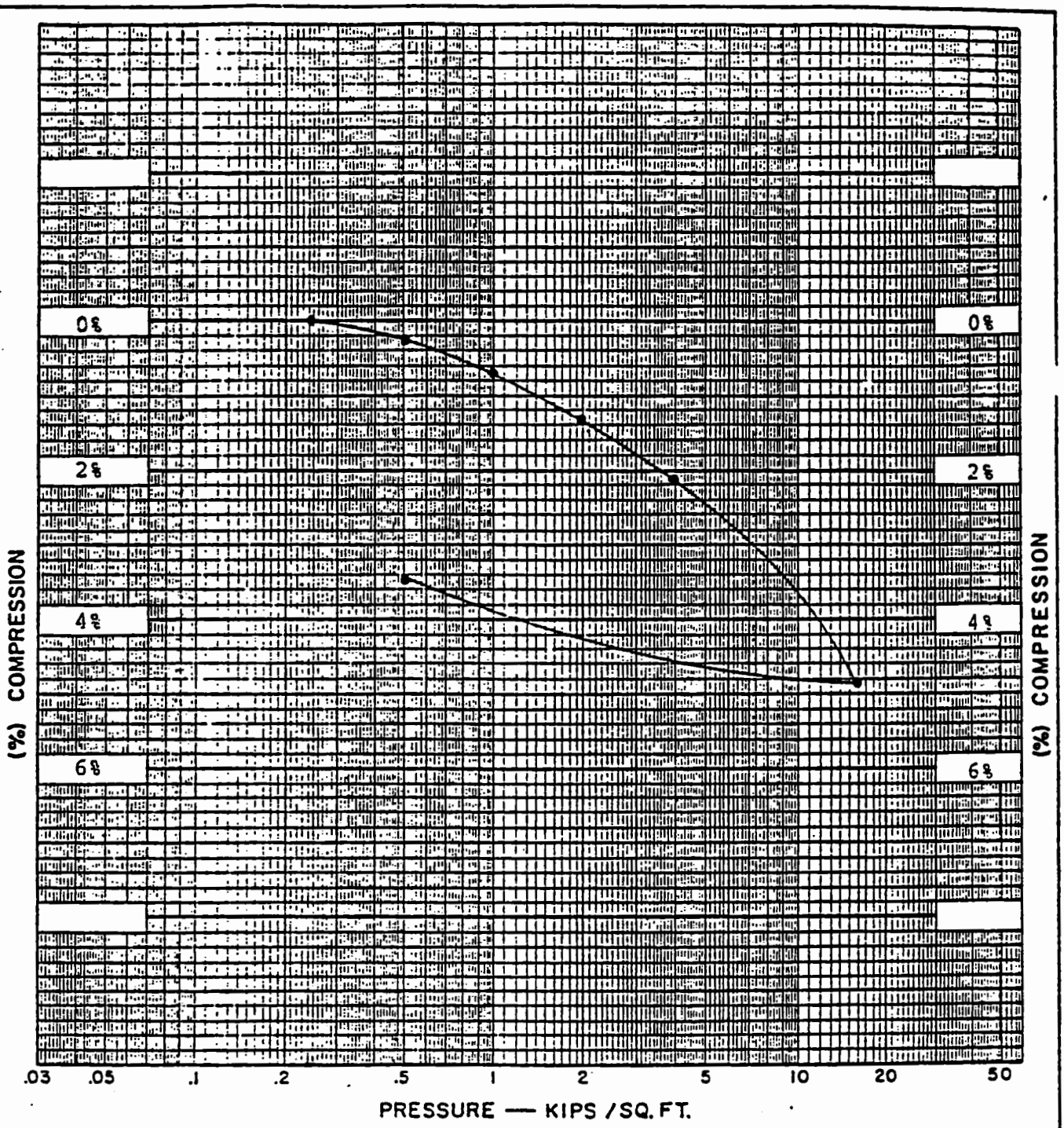

TEST DATA

BORING NUMBER 6
SAMPLE NUMBER
DEPTH (FEET) 13.5
CLASSIFICATION (SM) SILTY SAND
HEIGHT (INCHES)
DIAMETER (INCHES)
INITIAL MOISTURE CONTENT (%) 13
INITIAL DRY DENSITY (LB./CU. FT. 110
SPECIFIC GRAVITY
FINAL MOISTURE CONTENT (%)
LIQUID LIMIT
PLASTIC INDEX

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

CONSOLIDATION TEST

DR. BY:	DATE:	PROJECT	PLATE NO.
CHK. BY: W.D.	DATE: 9/17/72	7298	27

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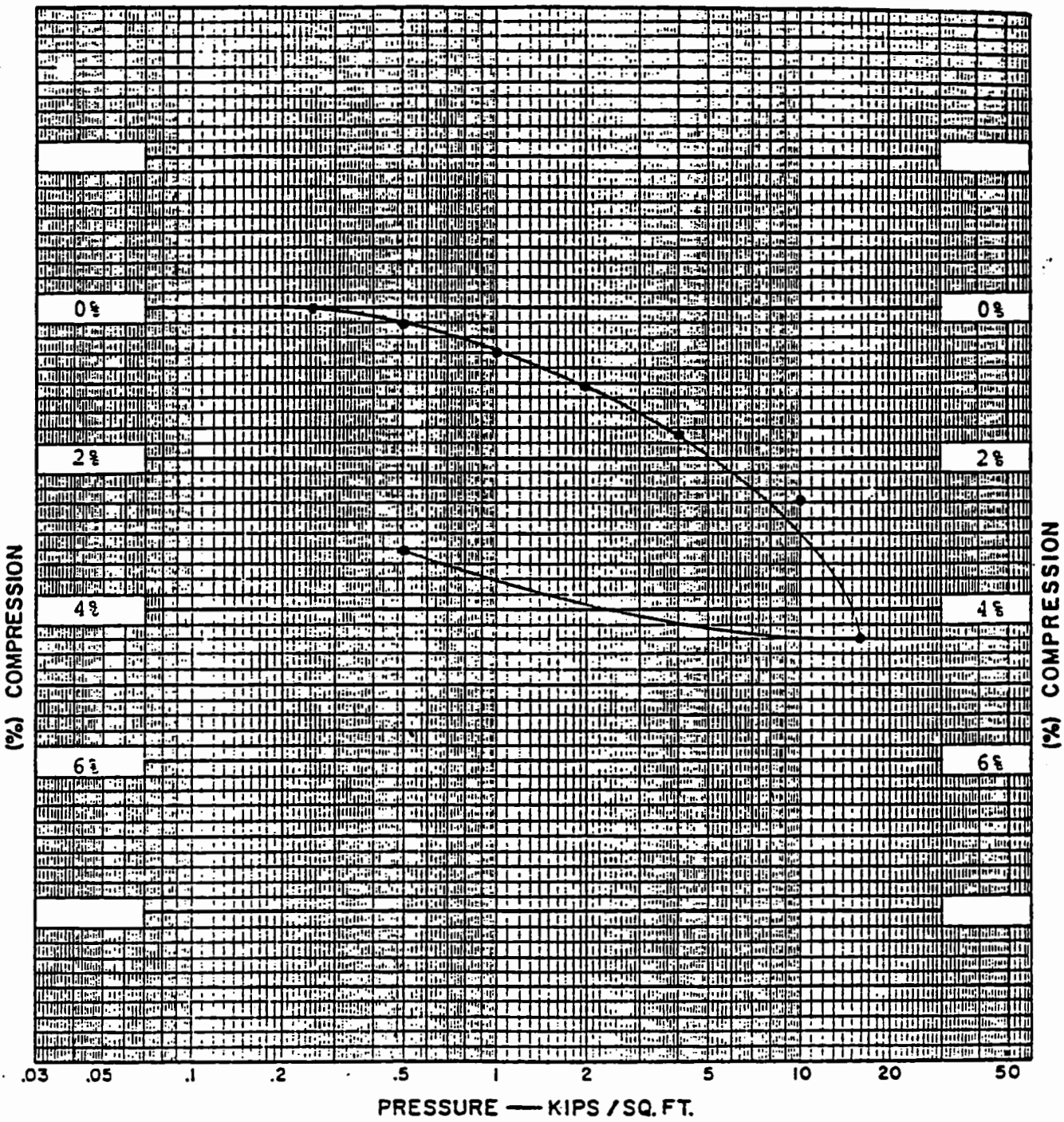

TEST DATA

BORING NUMBER 15
SAMPLE NUMBER
DEPTH (FEET) 8.5
CLASSIFICATION SC-SM/CLAYEY SAND
HEIGHT (INCHES)
DIAMETER (INCHES)
INITIAL MOISTURE CONTENT (%) 12
INITIAL DRY DENSITY (LB./CU. FT. 117
SPECIFIC GRAVITY
FINAL MOISTURE CONTENT (%)
LIQUID LIMIT
PLASTIC INDEX

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

CONSOLIDATION TEST

DR. BY:	DATE:	PROJECT	PLATE NO.
CHK. BY: W.D.	DATE: 9/17/72	7298	28

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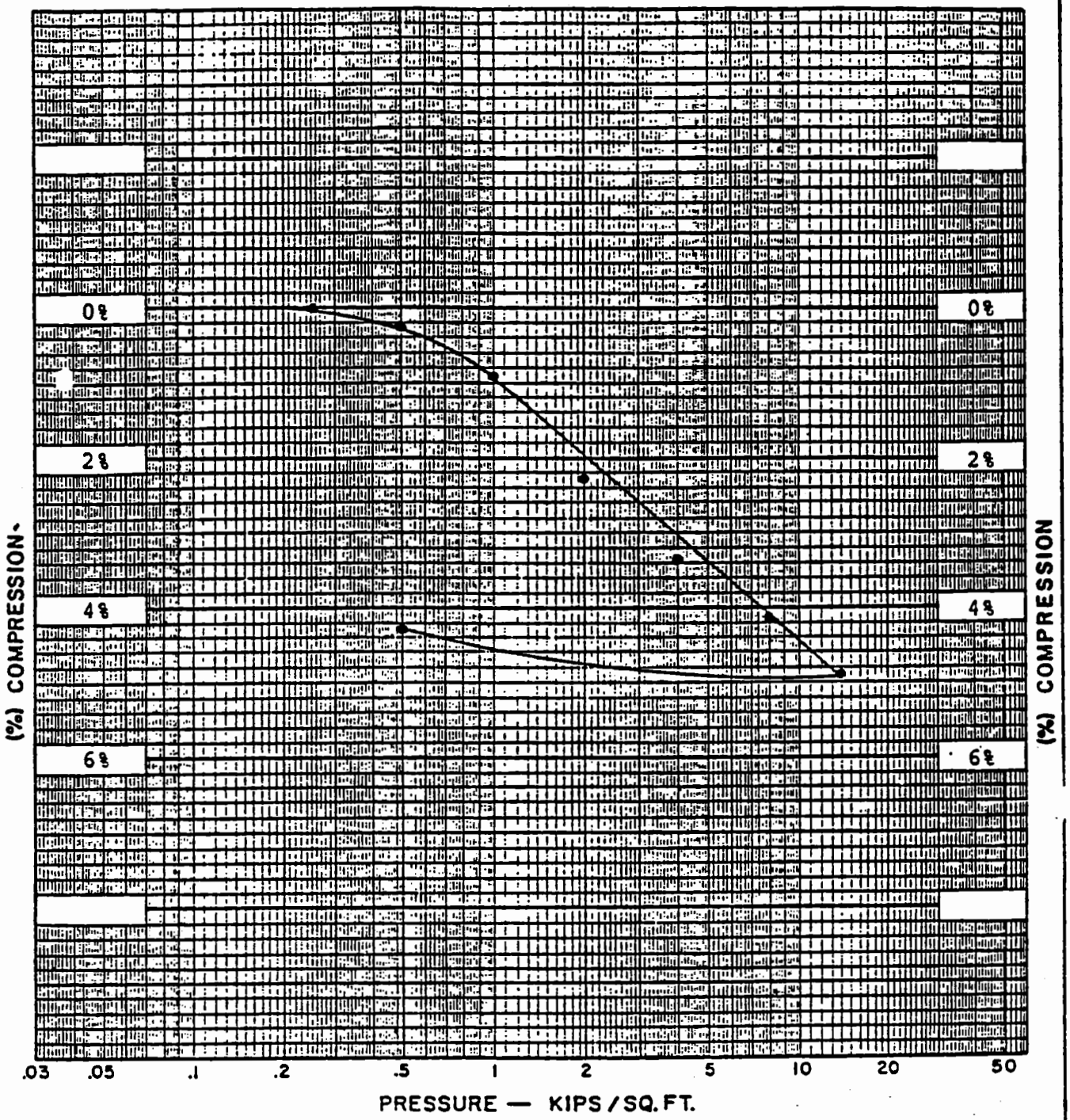

TEST DATA

BORING NUMBER 16
SAMPLE NUMBER
DEPTH (FEET) 4.5
CLASSIFICATION (CL) SANDY CLAY
HEIGHT (INCHES)
DIAMETER (INCHES)
INITIAL MOISTURE CONTENT (%) 16
INITIAL DRY DENSITY (LB./CU. FT.) 118
SPECIFIC GRAVITY
FINAL MOISTURE CONTENT (%)
LIQUID LIMIT 32
PLASTIC INDEX 10

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

CONSOLIDATION TEST

DR. BY: W.D.	DATE: 9/17/72	PROJECT	PLATE NO.
CHK. BY:	DATE	7298	29

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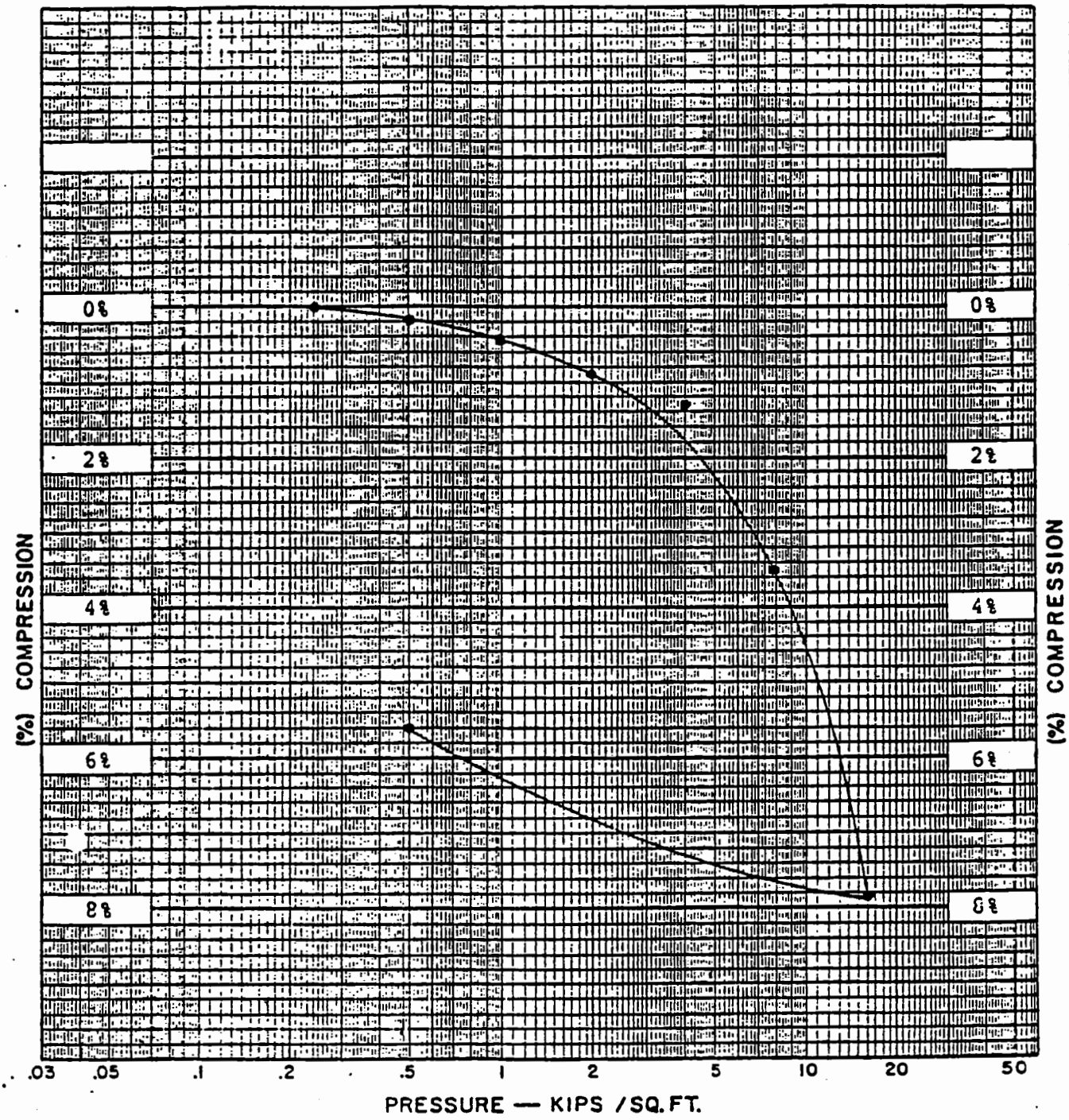

TEST DATA

BORING NUMBER 20
SAMPLE NUMBER
DEPTH (FEET) 6.0
CLASSIFICATION (SC-SM) CLAYEY SAND
HEIGHT (INCHES)
DIAMETER (INCHES)
INITIAL MOISTURE CONTENT (%) 16
INITIAL DRY DENSITY (LB./CU. FT. 111
SPECIFIC GRAVITY
FINAL MOISTURE CONTENT (%)
LIQUID LIMIT
PLASTIC INDEX

CABOT, CABOT & FORBES
C.C.&F. WESTERN DEVELOPMENT CO., INC.
SHELL CHEMICAL PLANT PROPERTY

CONSOLIDATION TEST

DR. BY:	DATE:	PROJECT	PLATE NO.
CHK. BY: W.D.	DATE 9/17/72	7298	30

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BORING LEGEND

SPT	Standard Penetration Test
Penetration Resistance - 3	Number of blows required to drive 1.50-inch I.D. split spoon sampler 6 inches with a 140-pound hammer falling 30 inches.
SS	2.43-inch I.D. split spoon sampler with 1-inch rings and/or 5- or 6-inch sleeves, utilizing a 4,000-pound Kelly as a reaction.
B	Bag Sample
(18)	Moisture Content - % dry weight
(SC-SM)	Unified Soil Classification

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LOG OF BORING 1

SHEET 1 OF 2

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 33.5'	DATE OF BORING STARTED 8-14-72 COMPLETED 8-14-72
TYPE & DESIGNATION OF DRILL 18" Bucket Auger	SAMPLES Disturbed/ Undisturbed	HAMMER 140 lbs falling 30"	DEPTH TO WATER None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	LEAN CLAY: fine sand, silty, dark brown (CL-OL)						moist
2							
3							
4		SS			●(16)	117	
5							
6	CLAYEY/SILTY SAND: fine sand, light brown (SC-SM)						moist
7		B			●(15)		
8							
9	SILTY SAND: fine sand, clayey, slightly micaceous, several pea sized brown clay pebbles, light brown (SM-SC)	SS			●(12)	134	
10							
11							
12							
13	SAND: fine sand, silty, micaceous, light brown (SW)						
14		SS			●(12)	105	moist
15	SANDY CLAY: fine sand, slightly micaceous, light brown (CL)	B			●(18)		moist to wet
16							
17							
18							
19		SS			●(27)		wet
20							

K.O. & A. FORM - 16

BORING NO. 1
PLATE NO. 31

PROJECT 7298	LOG OF BORING 1	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SANDY CLAY: fine sand, micaceous, light brown (CL)						
22							
23							
24		SS			●(35)	79	wet (?)
25							
26	TOTAL DEPTH 25.0'						
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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CONSULTING ENGINEERS

LOG OF BORING 2

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	37.9'	STARTED	8-14-72
		COMPLETED	8-14-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
	LOCATION: Refer to Plate No.						
1	CLAYEY SAND/SANDY CLAY: heavily oil-saturated, brown to black, very viscous, sticky, odorous (SC-CL-OL)						-moist
2							
3							
4		SS			●(14)	123	
5							Note: bucket sunk without pressure
6							
7							
8							hole caved due to viscous tar matrix
9							
10							
11							
12	Refusal on old concrete slab ± 4'x5'x6"						
13							
14	TOTAL DEPTH 13.0'						
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 16

BORING NO. 2
PLATE NO. 32

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 3

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	40.2'	STARTED	8-14-72
		COMPLETED	8-14-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	CLAYEY SAND: fine sand, dark brown (SC)						dry moist
2–3	SANDY CLAY: fine sand, slightly micaceous, dark brown (CL)	B					
4–5		SS			(19)	111	moist to wet
6–8	SANDY CLAY/SANDY SILT: fine sand, micaceous, slightly lighter in weight, light tan to brown (CL-ML)						moist
9–13	SILTY SAND: fine to medium sand, micaceous, light tan to brown (SM)	SPT		13 15	(13)		
14		SS			(21)	115	moist to wet
15–20	SILTY SAND: fine sand, micaceous, clayey, light tan to brown (SM-SC)	SPT		6 9 10	(12)		moist

K.O. & A. FORM - 16

BORING NO. 3
PLATE NO. 33

PROJECT 7298	LOG OF BORING 3	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
	SILTY SAND: (continued)						
21	(SM-SC)						
22							
23							
24		SS					-moist
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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LOG OF BORING 4

SHEET 1 OF _

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 33.5'	DATE OF BORING STARTED 8-14-72 COMPLETED 8-14-72
TYPE & DESIGNATION OF DRILL 18" Bucket Auger	SAMPLES Disturbed/ Undisturbed	HAMMER 140 lbs falling 30"	DEPTH TO WATER None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
1	LEAN CLAY: fine sand, organic, silty, dark brown & black (CL-OL)						moist
2	SANDY CLAY/CLAYEY SAND: fine sand, silty, light brown (CL-SC)						
3							
4		SS			● (16)	92	moist
5	SILTY SAND: fine sand, clayey, slightly micaceous, light brown (SM-SC)						
6							
7							
8							
9		SPT		3			moist
10				6	● (16)		
				8			
11							
12		B			● (15)		
13							
14		SS			● (12)	116	moist
15							
16							
17							
18							
19		SPT		5			moist
20				10	● (9)		
				9			

K.C. & A. FORM - 16

BORING NO. 4
PLATE NO. 34

PROJECT 7298	LOG OF BORING 4	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ ● NAT. ■ LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
20							
21	SAND: fine to medium sand, slightly silty, micaceous, several friable sand pebbles (dry), trace of greenish clay residue, light brown (SW)						-moist
22							
23							
24		SS					
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

E C 3 A FORM - 16A

BORING NO. 4

PLATE NO. 34

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LOG OF BORING 5

SHEET 1 OF 3

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	36.7'	STARTED	8-15-72
		COMPLETED	8-15-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	CLAYEY SAND: fine sand, few small pebbles, silty, organic, dark brown & black (SC-SM)						-moist
2							
3							
4	color change to light brown	SS			● (18)	113	-moist to wet
5							
6							-moist
7	SILTY SAND: fine sand, slight clay content, light brown, several limonite stained zones (SM)						
8							
9		SPT		11	● (11)		
10				12			
				16			
11							
12							-moist to wet
13	SILTY SAND: fine sand, several pea sized friable sand pebbles, micaceous, slight clay content, light brown (SM)						
14		SS			● (17)	121	
15							
16							
17							
18							-wet
19	SANDY/SILTY CLAY: fine sand, several friable sand pebbles, micaceous, light brown (CL-ML)	SPT		5			
				8	● (30)		
20				14			

E.O. & A. FORM - 18

BORING NO. 5

PROJECT 7298	LOG OF BORING 5	SHEET 2 OF 3

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SANDY/SILTY CLAY: (continued) (CL-ML)						moist
22							
23							
24							
25							
26							
27							moist to wet
28	SILTY SAND: fine sand, micaceous, odorous, light green (SM)	B			(19)		
29							dry
30	SAND: silty, fine to medium, micaceous, odorous, greenish tan becoming tan (SW)	SS			(5)	109	
31							
32							
33	SANDY CLAY: fine sand, micaceous, fine organics, limonite staining, light greenish tan (CL)						
34							
35	SILTY SAND: fine sand, micaceous, odorous, fine organic matter, greenish brown (SM)	SPT		6 8 11	(17)		moist
36	SANDY SILT: clayey, fine sand, micaceous, limonite stains, odorous, light greenish brown (ML-CL)						
37							
38							
39							
40	SILTY CLAY: fine sand, micaceous, odorous, limonite light greenish brown (CL-ML)	SS			(27)	95	wet
41							
42							dry
43	SHELL FRAGMENTS: dense, calcareous sandy shell bed, sand with friable shell fragments light tan & brown	B			(6)		
44							
45		SPT		10			refusal

PROJECT 7298	LOG OF BORING 5	SHEET 3 OF 3

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT PCF.	
45							
46	CALCAREOUS SHELL BED: extremely dense, sand, clay, silt matrix, iron-stained, tan (Coquina)						moist
47							
48	SANDY/SILTY CLAY: fine sand, limonite, shell fragments, mottled tan to brown (CL-ML)						
49							
50	SAND: fine, silty, micaceous, brown						moist
	TOTAL DEPTH 50.0'						

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 6

SHEET 1 OF 2

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 36.1'	DATE OF BORING STARTED 8-15-72 COMPLETED 8-15-72
TYPE & DESIGNATION OF DRILL 18" Bucket Auger	SAMPLES Disturbed/ Undisturbed	HAMMER 140 lbs falling 30"	DEPTH TO WATER None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
	GRASS SOD						
1	LEAN CLAY: fine to medium sand, organics, silty, dark brown (CL-OL)						-moist
2							
3							
4		SS			● (17)	113	-moist to wet
5							
6	CLAYEY SAND: fine to medium sand, silty, color change to brown (SC-SM)						
7							
8							
9		SPT		4			-moist to wet
10				6	● (17)		
				8			
11							
12	SILTY SAND: fine sand, micaceous, slight clay content, light brown (SM)						
13							
14		SS			● (13)	110	-moist
15							
16							
17	SANDY CLAY: silty, micaceous, light brown (CL)						
18							
19		SPT		4			
				5			
20				10			

K.O. & A. FORM - 15

BORING NO. 6

PROJECT 7298	LOG OF BORING 6	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SANDY CLAY: (continued) numerous sand pebbles, friable, from pea size to 1/2", light brown (CL)						-moist
22							
23							
24	CLAYEY SAND: fine to medium, silty, micaceous, brown (SC-SM)	B			(9)		-moist
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 7

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	32.3'	STARTED 8-18-72 COMPLETED 8-18-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ● LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SAND/GRAVEL FILL: loose						
1							-moist
2	CLAYEY SAND: silty, fine to medium sand, dark brown (SC-SM)						
3	color change to brown						
4		SS			• (10)	131	-moist
5	SILTY SAND: fine sand, micaceous, brown, variable clay content (SM-SC)						
6							
7							
8							
9		SPT		6			-moist
10				13	• (13)		
11				17			
12	color change to tan						
13							
14		SS			• (7)		-moist to dry
15	SILTY/CLAYEY SAND: fine sand, limonite, micaceous, tan (SM-SC)						
16							
17							
18							
19	SANDY/CLAYEY SILT: very fine sand, micaceous, limonite-staining, tan (ML-CL)	SPT		5			-moist to wet
				8	• (24)		
20				8			

K.O. & A. FORM-16

BORING NO. 7
PLATE NO. 37

PROJECT 7298	LOG OF BORING 7	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SANDY/CLAYEY SILT: very fine sand, micaceous, limonite-staining (ML-CL)						-moist to wet
22							
23							
24	numerous dark brown silty clay clods, moist to dry	B					
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 8

SHEET 1 OF 3

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 30.3'	DATE OF BORING STARTED 8-21-72 COMPLETED 8-21-72
TYPE & DESIGNATION OF DRILL 18" Bucket Auger	SAMPLES Disturbed/ Undisturbed	HAMMER 140 lbs falling 30"	DEPTH TO WATER None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	SAND GRAVEL: fill material, reddish brown						-moist
2	SANDY CLAY: silty, dark brown organic matter (black) (CL-OL)	SPT		10			-moist
3				10			
				14			
4							
5	CLAYEY SAND: silty, fine to medium sand, reddish brown (SC-SM)						
6							
7							
8	SILTY SAND: clayey, fine to medium sand, reddish brown changing to brown, slightly micaceous (SC-SM)	SS			● (10)	127	-moist
9							
10							
11							
12							
13							
14		SPT		6			-moist
				9	● (12)		
15				12			
16							
17							
18							
19	SAND: silty, light brown, slightly gaseous odor (SW)	SS			● (12)	109	-moist
20	SILTY/CLAYEY SAND: fine, micaceous, brown (SM-SC)						

K.O. & A. FORM-16

BORING NO. 8
PLATE NO. 38

PROJECT 7298	LOG OF BORING 8	SHEET 2 OF 3

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — NAT. ● — LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY/CLAYEY SAND: (continued) (SM-SC)						
22							-moist
23	SILTY SAND: fine to medium sand, micaceous, slight gas odor, limonite, variable clay & silt content, brown (SM)						
24							
25							
26							
27	SAND: silty, micaceous, fine to medium sand, very odorous (variable in zones) (SW)						
28							
				6			
29		SPT		14	• (6)		-moist to dry
				18			
30							
31							
32							-moist
33	SILTY/CLAYEY SAND: fine to medium sand, micaceous, limonite, brown (SM-SC)						
34		SS			• (16)	113	
35							
36							
37							
38							
39							-moist
40	SILTY SAND/SHELL BED: fine sand, micaceous, limonite stains, shell fragments (SM)						-moist to wet
		B			• (19)		
41	SILTY SAND: fine, micaceous, heavy limonite staining, brown (SM)						
42							
43							
44							
45							

PROJECT 7298	LOG OF BORING 8	SHEET 3 OF 3

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
45							
46	SILTY SAND/SANDY SILT: fine to medium sand, micaceous, slightly odorous, heavy limonite staining, vari-colored gray-green-brown (SM-ML)						-moist to wet
47		SS			(19)	100	
48							
49							
50							
51							
52							
53							
54							
55	SAND: silty, fine to medium, micaceous, limonite, heavy odor, greenish gray (SW)						-moist to wet
56	shell fragments						
57							-dry to moist
58	CLAY: silty, odorous, micaceous, limonite staining, fine sand, brown (CL)						
59							
60							
	TOTAL DEPTH 60.0'						

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LOG OF BORING 9

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	26.1'	STARTED 8-18-72 COMPLETED 8-18-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SURFACE GRAVEL: loose						
1	SANDY CLAY: fine sand, dark brown						-moist
2	SANDY CLAY: color change to brown (CL)						
3							
4		SS			● (16)	108	-moist
5							
6							
	CLAYEY SAND: silty, micaceous, fine grained, brown (SC-SM)						
7							
8							
9	SILTY SAND: fine sand, micaceous, minor clay content, brown (SM)	SPT		6 12 13	● (11)		-moist
10							
11							
12	- - - -						
13	slight gaseous odor						
14		SS			● (11)		-moist
15							
	SAND: silty, fine to medium, micaceous, light tan (SW)						
16	CLAYEY SAND: fine to medium micaceous, limonite, brown (SC)						
17							
18	SANDY SILT: clayey, fine to medium sand, micaceous, (gas) odorous, greenish brown (ML-CL)						
19		SPT		7 7 10			-moist
20	color change to green						

K. O. & A. FORM - 16

BORING NO. 9
PLATE NO. 39

PROJECT 7298	LOG OF BORING 9	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ ● NAT. ■ LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
20							
21	SANDY SILT: fine to medium sand, micaceous, limonite stains, heavy gas odor, greenish brown (ML-CL)						-moist
22							
23							
24	SILTY SAND: fine to medium sand, clayey, micaceous, limonite, gas odor, greenish brown (SM-SC)						
25							-moist.
26	SAND: fine to medium, tan (SW)						
27	TOTAL DEPTH 25.0'						
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 10

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	31.1'	STARTED 8-18-72 COMPLETED 8-18-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
	SURFACE GRAVEL: loose						-moist
1	SANDY CLAY: fine, limonite stained, organics, dark						
2	brown (CL-OL)						
	SANDY CLAY: fine sand,			5			
3	limonite staining, color	SPT		10	• (18)		
	change to brown (CL)			15			
4	CLAYEY SAND: silty, fine to						-moist to wet
	medium sand, limonite						
5	staining, brown (SC-SM)						
6							
7							
8							
9		SS			• (19)	103	
10							
11							
12							
13		B			• (17)		
14							
	change of color to light						
15	brown						
16							
17							
18							
	SANDY/CLAYEY SILT: fine			5			-wet
19	sand, odorous (gas), mica-	SPT		8	• (24)		
	ceous, tan (ML-CL)			11			
20							

K.C. & A. FORM - 16

BORING NO. 10
PLATE NO. 40

PROJECT 7298	LOG OF BORING 10	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SANDY/CLAYEY SILT: fine sand, micaceous, odorous, tan (ML-CL)						
22							
23							
24	CLAYEY SAND: silty, micaceous, limonite stained, fine sand, tan, odorous (SC-SM)	SS			(27)	97	-wet
25							
26	TOTAL DEPTH 25.0'						
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

K.C.& A. FORM - 16A

BORING NO. 10

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 11

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	35.0'	STARTED COMPLETED

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
	ASPHALT CONCRETE: dense						
1	SANDY CLAY: silty, fine to medium sand, organics, scattered friable sand pebbles, dark brown (CL-ML)						moist
2							
3							
				4			
4		SPT		4	● (15)		moist
				4			
5							
6	color change to light brown						
7							
8	SILTY SAND: clayey, fine sand, very fine mica, light brown (SM-SC)						
9		SS			● (11)	123	moist
10							
11							
12	limonite staining						
13							
14				6			
	SAND: silty, fine to medium sand, micaceous, tan (SW)	SPT		7	● (9)		moist
15				9			
16							
17	SILTY SAND: fine sand, micaceous, fine organics, limonite, several hard (±) 2" inclusions, light tan (SM)						
18							
19		SS			● (18)		moist to wet
20							

K.C.&A. FORM-16

BORING NO. 11
PLATE NO. 41

PROJECT 7298	LOG OF BORING 11	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ● LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY SAND: (continued) (SM)						-moist to wet
22							
23							
24		B			●(10)		
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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CONSULTING ENGINEERS

LOG OF BORING 12

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	37.0'	STARTED 8-16-72 COMPLETED 8-16-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT PCF.	
1	ASPHALT CONCRETE: dense CLAYEY SAND: silty, fine sand, reddish brown, micaceous (SC-SM)						-moist
2							
3							
4		SS			● (17)		-moist
5							
6	varies in silt and clay content						
7							
8							
9		SPT		8			
				8	● (11)		-moist
10				7			
11							
12							
13							-wet
14		SS			● (30)	92	
15							
16							
17							
18	SILTY/CLAYEY SAND: limonite (SM-SC)						
		SPT		4			
19				6	● (32)		
				9			

PROJECT 7298	LOG OF BORING 12	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
	SILTY/CLAYEY SAND:						-wet
21	(continued) (SM-SC)						
22							
23							
24							
							-wet
25	SILTY SAND: fine green (SM)						
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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LOG OF BORING 13

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	42.4'	STARTED 8-16-72 COMPLETED 8-16-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL NAT. LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
1	SANDY CLAY: fine sand, few sand pebbles (friable), dark brown, minor organic (black) (CL-OL)						-moist
2							
3							
4		SPT		2 5 6	(20)		-moist to wet
5	---- color change to light brown with mica (CL)						
6							
7							
8							
9		SS			(16)	121	-moist
10	SILTY SAND: clayey, fine sand, micaceous, light brown (SM-SC)						
11							
12							
13							
14		SPT		6 6 7	(14)		-moist
15							
16							
17							
18							
19	SILTY CLAY: fine sand, micaceous, light brown limonite stains (CL)	SS			(12)	104	
20							

BORING NO. 13
PLATE NO. 43

PROJECT 7298	LOG OF BORING 13	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL NAT. LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY CLAY: (continued) (CL)						-moist
22							
23							
24							
25							
26	TOTAL DEPTH 25.0'						
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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LOG OF BORING 14

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	42.4'	STARTED 8-16-72 COMPLETED 8-16-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE (in feet)	CLASSIFICATION OF MATERIALS	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1–2	SAND/CLAY/SILT: fill material--concrete, rubble, etc. (CL-ML)						-dry
3	CLAYEY SAND: fine to medium sand, silty, dark brown, black organics (SC-SM)						-moist
4		SS			● (16)	118	-moist
5–8	color change to brown with mica						
9–12	CLAYEY SAND: silty, micaceous, fine to medium sand, very dense, limonite, brown (SC-SM)	SPT		6 12 27	● (18)		-moist to wet
13–17	SAND: slight silt content, fine grained, micaceous, limonite stained, brown (SW)	SS			● (9)	123	-moist
18–20	SAND: silty, clayey, micaceous, limonite, brown (SW)	SPT		12 16 18	● (14)		-moist

K.O. & A. FORM - 16

BORING NO. 14
PLATE NO. 44

PROJECT 7298	LOG OF BORING 14	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — NAT. ● — LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
	SAND: (continued) (SW)						-moist
21							
22							
23							
24							
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

Hazardous Materials Management
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LOG OF BORING 15

SHEET 1 OF 3

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	36.7'	STARTED 8-17-72 COMPLETED 8-17-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SURFACE GRAVEL: loose						
1	SANDY CLAY: silty, fine sand, small friable pebbles, reddish brown (CL-ML)						-moist to dry
2							-moist
3		SS			(14)	133	
4	CLAYEY SAND: silty, fine to medium sand, few pea sized clay pebbles, reddish brown (SC-SM)						
5							
6							
7							
8	---- limonite stains & micaceous						
9		SS			(13)	117	-moist
10							
11							
12							
13							
14	---- color change to brown	SPT		6 5 9	(20)		-moist to wet
15							
16							
17							
18							
19							

PROJECT 7298	LOG OF BORING 15	SHEET 2 OF 3

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	CLAYEY SAND: fine sand, silty, micaceous, limonite stains (SC-SM)						wet
				7			
22		SPT		12	(27)		
	fine white lime(?) inclusions			14			
23							
24							
25		B			(13)		moist
26	SILTY SAND: fine, micaceous, minor clay, brown (SM)						
27							
28							
	SAND: fine sand, clean,	SS			(5)	117	moist to
29	micaceous, tan, several pea sized clay lumps (SW)						dry
30							
31							
32							
33							
				8			
34		SPT		14	(8)		moist
	SILTY/CLAYEY SAND: (SM-SC)			12			
35	SAND/SILT/CLAY: mixed, micaceous, limonite stained						
36	clay lumps (±) pea sized, mottled tan & brown						
37	(SM-SC)						
38							moist
	SILTY/CLAYEY SAND: fine,						
39	micaceous, limonite stained, brown, clay lumps	B					
40	to 1" (SM-SC)						moist to
		SS			(21)	96	wet
41							
42							
43							
44	SILTY/SANDY CLAY: calcareous, limonite, micaceous, numerous shell fragments,						
45	greenish tan (CL-ML)						

F.O.B.A. FORM-16A

BORING NO. 15

PROJECT 7298

LOG OF BORING 15

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
45							
	SILTY/SANDY CLAY:						
46	(continued) (CL-ML)						-moist
	CLAY: calcareous, numerous	B			● (15)		
47	shell fragments, limonite,						
	greenish tan (CL)						
48							
49	COQUINA: numerous fragments						
	dense, well cemented, brown						
50	to tan						
	SILTY SAND: fine, micaceous,						
51	reddish brown (SM)						
	TOTAL DEPTH 51.0'						

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LOG OF BORING 16

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	36.0'	STARTED 8-17-72 COMPLETED 8-17-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF	
	GRASS: sod-roots						-moist
1, 2, 3, 4	SANDY CLAY: fine sand, silty, organics (roots), dark brown (CL-OL)						
5	SANDY CLAY: fine sand, silty, variable sand content, micaceous, reddish brown (CL)	SS			● (17)	118	-moist
6		B			● (18)		-moist to wet
7, 8							
9		SPT		5, 4, 6	● (16)		-moist
10, 11, 12, 13, 14							
15, 16, 17, 18	SILTY/CLAYEY SAND: fine to medium, several clay lumps, micaceous, reddish brown (SM-SC)						-moist
19, 20	SILTY SAND: fine to medium sand, micaceous, limonite, light brown (SM)	SS			● (11)	113	-moist

K.O.B. FORM-16

BORING NO. 16
PLATE NO. 46

PROJECT 7298	LOG OF BORING 16	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
	SILTY SAND: (continued)						
21	(SM)						
22							
23							
	scattered clay lumps,						
24	greater clay content	B			● (19)		-moist to wet
	(SM-SC)						
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 17

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	37.5'	STARTED	8-17-72
		COMPLETED	8-17-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SURFACE GRAVEL: loose						
1	SAND: silty, clayey, dark brown (SW)						-moist
2							
3							-moist
4	SANDY CLAY: silty, red (CL)	SS			● (16)	119	
5							
6	SILTY SAND: slight clay content, fine sand, several small clay lumps (±) 1/2", reddish brown (SM)						
7							
8							
9		SPT		5 8 5	● (15)		-moist
10	increased clay content (SM-SC)	B			● (14)		
11							
12							
13							
14		SS			● (13)	123	-moist
15							
16							
17							
18							
19	SILTY SAND: fine to medium sand, micaceous, limonite stains, light brown (SM)	SPT		8 13 15	● (10)		-moist
20							

K.O. & A. FORM - 16

BORING NO. 17
PLATE NO. 47

PROJECT 7298	LOG OF BORING 17	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ NAT. ● LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY SAND: fine to medium sand, variable clay content, micaceous, light brown, several 2" sized brown clay inclusions (SM)						-moist
22							
23							
24							
25							
26	TOTAL DEPTH 25.0'						
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 18

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	37.7'	STARTED 8-18-72 COMPLETED 8-18-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SURFACE GRAVEL: loose						-dry
1	SILTY SAND: fine sand, hard, dark brown clay clods						-dry to moist
2	(broken fragments), micaceous, red (SM-SC)						
3	---- gradational color change						-moist
4	to brown	SS			● (13)	116	
5							
6							
7							
8							
				10			
9		SPT		10	● (13)		-moist
				15			
10							
11	SAND: fine to medium sand, micaceous, numerous silty						
12	clay lumps, brown (SP)						
13							
14		B			● (7)		-moist to dry
15							
16							
17							
18	---- color change to light brown						
19		SS			● (14)	116	-moist
20							

K.O. & A. FORM-16

BORING NO. 18
PLATE NO. 48

KEN O'BRIEN & ASSOCIATES
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LOG OF BORING 18

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	37.7'	STARTED 8-18-72 COMPLETED 8-18-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SURFACE GRAVEL: loose						-dry
1	SILTY SAND: fine sand, hard, dark brown clay clods (broken fragments), micaceous, red (SM-SC)						-dry to moist
2							
3	---- gradational color change to brown						-moist
4		SS			● (13)	116	
5							
6							
7							
8							
				10			
9		SPT		10	● (13)		-moist
				15			
10							
11	SAND: fine to medium sand, micaceous, numerous silty clay lumps, brown (SP)						
12							
13							
14		B			● (7)		-moist to dry
15							
16							
17							
18	---- color change to light brown						
19		SS			● (14)	116	-moist
20							

K.O. & A. FORM-16

BORING NO. 18
PLATE NO. 48

PROJECT 7298	LOG OF BORING 18	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
	SAND: (continued) (SP)						-moist
21							
22	(homogeneous)						
23							
24							
25		B			●(11)		
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							

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LOG OF BORING 19

SHEET 1 OF _

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	39.9'	STARTED 8-18-72 COMPLETED 8-18-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
1	SILTY SAND: fine sand, clayey, dark brown (SM-SC)						-moist to dry
2							
3	SANDY CLAY: silty, fine sand, limonite staining, reddish brown (CL-ML)						-moist
4	SILTY SAND: clayey, fine sand, numerous silty clay lumps, limonite stained, brown (SM-SC)	SS			● (11)	122	
5							
6	Note: silt & clay content variable						
7	CLAYEY SAND: silty, fine sand, micaceous, brown (SC-SM)						
8							
9		SPT		5 10 13	● (17)		-moist
10							
11	SILTY SAND: clayey, micaceous, fine sand, brown (SM-SC)						
12							
13							
14							-moist
15							
16							
17	color change to light brown & limonite staining						
18							
19		SPT		7 11 13	● (17)		
20							

K.O. & A. FORM - 16

BORING NO. 19
PLATE NO. 49

PROJECT 7298	LOG OF BORING 19	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ NAT. ● LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY SAND: (continued) (SM-SC)						-moist
22							
23							
24							
25							
26	TOTAL DEPTH 25.0'						
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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LOG OF BORING 20

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	32.5'	STARTED	8-21-72
		COMPLETED	8-21-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	SAND/GRAVEL: loose SILTY/SANDY CLAY: fine sand, fill material, soft, dark brown (CL-ML)						moist
2							
3							
4							
5							moist
6	CLAYEY SAND: silty, fine to medium sand, brown (SC-SM)						
7		SS			●(16)	111	
8	SILTY SAND: clayey, fine sand, brown (SM-SC)						moist
9							
10							
11							
12							
13							
14	SILTY SAND: fine sand, micaceous, brown, clayey (SM-SC)	SPT		5 8 8	●(13)		moist
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 19

BORING NO. 20
PLATE NO. 50

PROJECT 7298	LOG OF BORING 20	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY SAND: clayey, micaceous, fine grained, limonite stained, brown (SM-SC)						
22							
23							wet
24		SS			● (37)	97	
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

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LOG OF BORING 21.

SHEET 1 OF 2

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	32.5'	STARTED 8-21-72 COMPLETED 8-21-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
18" Bucket Auger	Disturbed/ Undisturbed	140 lbs falling 30"	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SAND/GRAVEL: loose						
1	SANDY CLAY: silty, dark brown (CL-ML)						-moist
2							
3							
4							
5							-moist
6							
7	color change to reddish brown, scattered pebbles to 1/8"	SS			● (13)		
8							
9							
10							
11							
12							
13							-moist
14	SILTY SAND: clayey, micaceous, fine sand, color change to brown (SM-SC)						
15							
16							
17							-moist to dry
18	SAND: silty, scattered clay inclusions, micaceous, brown (SW-SP)						
19		SS			● (7)		
20							

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BORING NO. 21

PROJECT 7298	LOG OF BORING 21	SHEET 2 OF 2 .

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SAND: silty, scattered clay inclusions, fine sand, micaceous, brown (SW-SP)						-moist
22							
23							
24							
25							
	TOTAL DEPTH 25.0'						
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
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41							
42							
43							
44							

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LOG OF BORING 22

SHEET 1 OF 2

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 31.6'	DATE OF BORING STARTED 8-22-72 COMPLETED 8-22-72
TYPE & DESIGNATION OF DRILL 18" Bucket Auger	SAMPLES Disturbed/ Undisturbed	HAMMER 140 lbs falling 30"	DEPTH TO WATER None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE (in feet)	CLASSIFICATION OF MATERIALS	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
	SAND/GRAVEL: loose						-moist
1	CLAYEY SAND: silty, organics, fine sand, dark brown (SC-SM)						
2							
3							
4							
	color change to reddish brown	SS			●(14)	116	-moist
5							
6							
7							
8							
9							
10							
11							
	SILTY SAND: fine sand, brown, slightly clayey (SM)						-moist
12							
13							
14		SS			●(11)		
15							
16							
17							-moist
	SILTY/CLAYEY SAND: fine sand, micaceous, scattered hard clay inclusions, brown (SM-SC)						
18							
19							
20							

K.C. & A. FORM-16

BORING NO. 22
PLATE NO. 52

PROJECT 7298	LOG OF BORING 22	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
21	SILTY/CLAYEY SAND: (continued)						-moist
22	SANDY/SILTY CLAY: fine sand, micaceous, brown (CL-ML)						
23							
24		SS			●(26)	93	
25							
26	TOTAL DEPTH 25.0'						
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
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LOG OF BORING IX

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	33.7'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: fine sand, silty, dark brown (CL-OL)						-moist
2							
3							-moist
4	SANDY CLAY: fine sand, silty, reddish brown (CL)						
	TOTAL DEPTH 4.0'						
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 18

BORING NO. 1X
PLATE NO. 53

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LOG OF BORING 1A

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	34.4'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: silty, fine sand, dark brown (CL-OL)						-moist
2							
3							
4	OIL-SATURATED CLAY: fine sand, silty, dark brown to black (OL)						-moist
5							
6	SANDY CLAY: silty, fine sand, reddish brown (CL)						
7	TOTAL DEPTH 6.0'						
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.C. & A. FORM - 16

BORING NO. 1A
PLATE NO. 54

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1B

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	34.7'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	OIL-SATURATED CLAY: fine sand, silt, heavily oil saturated, odorous, dark brown, organic (CL-OL)						-moist
2							
3							
4							
5							-moist
6	SANDY CLAY: fine sand, silty, reddish brown (CL)						
7							
8							
9							
10							
11	TOTAL DEPTH 10.0'						
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.C. & A. FORM - 15

BORING NO. 1B
PLATE NO. 55

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1C

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	35.1'	STARTED 8-22-72 COMPLETED 8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT - PCF.	
1	SANDY CLAY: fine sand, silty, dark brown (CL-OL)						
2							-moist
3	OIL-SATURATED CLAY: fine sand, silty, odorous, brown to black (OL)						
4							
5							-moist
6	SANDY CLAY: silty, fine sand, reddish brown (CL)						
	TOTAL DEPTH 6.0'						
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Hazardous Materials ... JAN 7 1982 Co. of ... LOS ANGELES

K.O. & A. FORM - 16

BORING NO. 1C
PLATE NO. 56

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1D

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	35.0'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ ● NAT. ■ LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WT. 3HT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: silty, fine sand, light to dark brown (CL)						-dry to moist
2	OIL-SATURATED CLAY: silty, fine sand, heavy oil saturation, odorous, brown to black (OL)						
3							
4							
5							
6	SANDY CLAY: silty, fine sand, reddish brown (CL)						
	TOTAL DEPTH 6.0'						
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 14

BORING NO. 1D

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1E

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	35.2'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	SANDY CLAY: silty, fine sand, light to dark brown (CL)						-moist
2	OIL-SATURATED CLAY: silty, fine sand, heavily oil saturated, odorous, dark brown to black (OL)						
3							
4							
5							
6							-moist
7	SANDY CLAY: silty, fine sand, reddish brown (CL)						
	TOTAL DEPTH 7.0'						
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 16

BORING NO. 1E
PLATE NO. 58

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1F

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	35.5'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	SANDY/SILTY CLAY: (CL-ML)						-dry
1	OIL-SATURATED CLAY: silty, odorous, brown to black (OL)						-moist
2							-moist
3							
4							
	SILTY SAND: clayey, fine sand, greenish brown (SM)						
5							-moist
6							
	TOTAL DEPTH 6.0'						
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 16

BORING NO. 1F
PLATE NO. 59

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1G

SHEET 1 OF 1

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 35.8'	DATE OF BORING STARTED 8-22-72 COMPLETED 8-22-72
TYPE & DESIGNATION OF DRILL 24" Bucket Auger	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ NAT. ● LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: silty, fine sand, light to dark brown (CL)						-moist
2							
3							
4							
5							-wet
6	OIL-SATURATED CLAY: silty, fine sand, extreme oil saturation, odorous, black (OL)						
7							-moist
8	SANDY CLAY: silty, fine sand, reddish brown (CL)						
	TOTAL DEPTH 8.0'						
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K. O. & A. FORM - 18

BORING NO. 1G
PLATE NO. 60

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 1H

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	36.2'	STARTED	8-22-72
		COMPLETED	8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: silty, fine sand, light to dark brown (CL)						-moist to wet
2	OIL-SATURATED CLAY: silty, fine sand, heavily oil saturated, extremely odorous, dark brown to black (OL)						
3							
4							
5							-moist
6	SANDY CLAY: silty, fine sand, reddish brown (CL)						
7							
	TOTAL DEPTH 7.0'						
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K. O. & A. FORM - 16

BORING NO. 1H
PLATE NO. 61

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING II

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	36.3'	STARTED 8-22-72 COMPLETED 8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1–2	SANDY CLAY: silty, fine sand, light to dark brown (CL)						
3–6	OIL-SATURATED CLAY: silty, fine sand, extreme heavy oil saturation, black (OL)						
7–8	SILTY SAND: slight clay content, fine sand, slight odor, greenish brown (SM)						
9–20	TOTAL DEPTH 8.0'						

Hazardous Materials Mgt.
JAN 7 1982
California D of Health Services
LOS ANGELES

E.O. & A. FORM - 16

BORING NO. II

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 2A

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	37.9'	STARTED 8-22-72 COMPLETED 8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL NAT. LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
	SANDY CLAY: dark brown (CL)						-dry -moist
1	OIL-SATURATED CLAY:						
2	extremely odorous, oil-saturated clay, silty,						
3	very little fine sand, black, viscous tar & oil (OL)						
4							
5							
6							collapsed
7							
8							
9							
10							
11							
12							
13	(hole collapsed due to soft tar & oil)						
	TOTAL DEPTH 13.0'						
14							
15							
16							
17							
18							
19							
20							

JAN 7 1982

K.O. & A. FORM - 16

BORING NO. 2A

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 2B

SHEET 1 OF 1

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 37.7'	DATE OF BORING STARTED 8-22-72 COMPLETED 8-22-72
TYPE & DESIGNATION OF DRILL 24" Bucket Auger	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: fine sand, light to dark brown (CL)						-moist
2							
3							
4							
5	OIL-SATURATED CLAY: silty, heavy oil/tar saturation, very odorous, dark brown to black (OL)						
6							
7	refusal due to concrete slab fragment						
8	TOTAL DEPTH 7.5'						
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K. O. & A. FORM - 16

BORING NO. 2B
PLATE NO. 64

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 2C

SHEET 1 OF 2

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	SURFACE ELEVATION 37.8'	DATE OF BORING STARTED 8-22-72 COMPLETED 8-22-72	
TYPE & DESIGNATION OF DRILL 24" Bucket Auger	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: silty, fine sand, scattered pebbles to cobbles, dark brown (CL-OL)						-moist
2							
3							
4							
5							
6							
7							
8							-moist to wet
9	OIL-SATURATED CLAY: mixed oil & tar, organics, odorous, soft, black (OL)						
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K. O. & A. FORM - 16

BORING NO. 2C
PLATE NO. 65

PROJECT 7298	LOG OF BORING 2C	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL ▲ NAT. ● LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
20							
	OIL-TAR SATURATED:						-soft
21	(continued) (OL)						
22							
23	hole collapsed @ 23.0'						
	TOTAL DEPTH 23.0'						
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

8

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 2D

SHEET 1 OF 2

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 37.6'	DATE OF BORING STARTED 8-22-72 COMPLETED 8-22-72
TYPE & DESIGNATION OF DRILL 24" Bucket Auger	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL NAT. LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SANDY CLAY: silty, fine sand, few pebbles, dark brown (CL-OL)						
2							-moist
3	OIL-SATURATED CLAY: silty, fine sand, scattered pebbles & cobbles to 3", odorous, heavy oil saturation, dark brown to black (OL)						
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.C. & A. FORM - 16

BORING NO. 2D
PLATE NO. 66

PROJECT 7298	LOG OF BORING 2D	SHEET 2 OF 2

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ NAT. ● LL ■; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
20							
	OIL-SATURATED CLAY:						
21	(continued)						-moist
	SANDY CLAY: silty, fine						
22	sand, pebbles to 3/8",						
	light brown (CL)						
23							
24							
25							
26							
27							
28							
29							
30							
	TOTAL DEPTH 30.0'						
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 2E

SHEET 1 OF 1

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION 39.3'	DATE OF BORING STARTED 8-22-72 COMPLETED 8-22-72
TYPE & DESIGNATION OF DRILL 24" Bucket Auger	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1, 2, 3, 4	SANDY CLAY: silty, fine sand, angular pebbles & gravel to 1", light to dark brown (CL)						-moist
5	SANDY CLAY: silty, fine sand, color change to brown (CL)						-moist
6, 7, 8, 9, 10	SILTY SAND: clayey, fine to medium sand, scattered hard clay inclusions, greenish brown (SM)						-moist
11, 12, 13, 14, 15, 16, 17, 18, 19, 20	TOTAL DEPTH 10.0'						

Hazardou
JAN 7 1982
LOS ANGELES

K.O. & A. FORM - 16

BORING NO. 2E
PLATE NO. 67

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BORING 2F

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO.,INC. SHELL CHEMICAL PLANT PROPERTY	39.7'	STARTED 8-22-72 COMPLETED 8-22-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Bucket Auger	None	None	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	SANDY CLAY: silty, fine to medium sand, scattered gravel to 1-1/2", reddish brown (CL)						-dry to moist
2							-moist
3	SANDY CLAY: silty, fine to medium sand, dark brown (CL)						
4							
5	color change to brown						
6							
7							
8							-moist
9	SILTY SAND: clayey, fine sand, micaceous, limonite stained, brown (SM)						
10							
	TOTAL DEPTH 10.0'						
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.C. & A. FORM - 16

BORING NO. 2F
PLATE NO. 68

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BACKHOE 2 (Retest)

SHEET 1 OF 1

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	SURFACE ELEVATION ---	DATE OF BORING STARTED 8-28-72 COMPLETED 8-28-72	
TYPE & DESIGNATION OF DRILL 24" Backhoe Bucket	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0, 2.0, 3.0, 4.0, 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	CLAYEY SAND/SANDY CLAY: heavily oil-saturated, brown to black, very viscous, sticky, odorous (SC-CL-OL)						-moist
2							
3							
4							hole caved to 15'x15'
5							
6							
7							
8							
9							
10							
11							
12							
13	----						
14	concrete, clay pipe, wood, steel, etc. (old dump) concrete slab ± 4'x5'x6"						
15							
16	TOTAL DEPTH 15.0'						
17							
18							
19							
20							

K.O. & A. FORM - 16

BORING NO. 2 (Retest)
PLATE NO. 69

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BACKHOE 23

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	--	STARTED 8-25-72 COMPLETED 8-25-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Backhoe Bucket	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1–5	OIL-SATURATED CLAY: fine to medium sand, silty, heavy oil saturation, organic, extremely odorous, dark brown (OL)						
6–10	CHEMICALLY-SATURATED CLAYEY/SILTY SAND: fine to medium sand, odorous, light greenish brown (SC-SM-OL)						
11–20	TOTAL DEPTH 10.0'						

K.O. & A. FORM - 16

BORING NO. 23
PLATE NO. 70

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BACKHOE 24

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	--	STARTED	8-25-72
		COMPLETED	8-25-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Backhoe Bucket	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % PL NAT. LL 1.0 2.0 3.0 4.0 5.0	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SILTY SAND: fine to medium, tan (SM)						-moist
2	SANDY CLAY: slightly odorous, dark brown (CL-OL)						
3	SANDY CLAY: fine sand, brown (CL)						
4							
5							-moist
6	CLAYEY/SILTY SAND: fine to medium, brown (SC-SM)						
7							
8							
9	TOTAL DEPTH 8.0'						
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.O. & A. FORM-16

BORING NO. 24
PLATE NO. 71

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BACKHOE 25

SHEET 1 OF 1

PROJECT CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY		SURFACE ELEVATION --	DATE OF BORING STARTED 8-25-72 COMPLETED 8-25-72
TYPE & DESIGNATION OF DRILL 24" Backhoe Bucket	SAMPLES None	HAMMER None	DEPTH TO WATER None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	CLAYEY/SILTY SAND: slight chemical odor, light to dark brown (SC-SM)						-moist
2							
3							
4							
5							
6							
	TOTAL DEPTH 6.0'						
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

K.O. & A. FORM - 18

BORING NO. 25
PLATE NO. 72

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BACKHOE 26

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	--	STARTED	8-25-72
		COMPLETED	8-25-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Backhoe Bucket	None	None	None

LOCATION: Refer to Plate No.

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL ▲ — ● NAT. — ■ LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
1	ASPHALT CONCRETE: dense SANDY CLAY: fine to medium sand, dark brown (CL)						-moist
2							
3	?						
4							
5							-moist
6	SANDY CLAY: fine to medium sand, silty, color change to brown (CL)						
7							
8							
9	TOTAL DEPTH 8.0'						
10							
11							
12							
13							
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K. C. & A. FORM - 16

BORING NO. 26
PLATE NO. 73

KEN O'BRIEN & ASSOCIATES
CONSULTING ENGINEERS

LOG OF BACKHOE 27

SHEET 1 OF 1

PROJECT	SURFACE ELEVATION	DATE OF BORING	
CABOT, CABOT & FORBES C.C.&F. WESTERN DEVELOPMENT CO., INC. SHELL CHEMICAL PLANT PROPERTY	--	STARTED	8-25-72
		COMPLETED	8-25-72

TYPE & DESIGNATION OF DRILL	SAMPLES	HAMMER	DEPTH TO WATER
24" Backhoe Bucket	None	None	None

DEPTH FROM SURFACE	CLASSIFICATION OF MATERIALS (in feet)	SYMBOL	SAMPLE INTERVAL	PENETRATION RESISTANCE	MOISTURE CONTENT % (PL, NAT., LL; 1.0 2.0 3.0 4.0 5.0)	DRY UNIT WEIGHT-PCF.	
	LOCATION: Refer to Plate No.						
1	SILTY SAND: fine to medium sand, tan (SM)						-moist
2	SANDY CLAY: fine to medium sand, slightly organic near upper contact, dark brown (CL)						
3							
4							
5							
6							-moist
7	SANDY CLAY: fine to medium sand, color change to brown (CL)						
8							
9	TOTAL DEPTH 8.0'						
10							
11							
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15							
16							
17							
18							
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K.O. & A. FORM - 16

BORING NO. 27
PLATE NO. 74

U 0001122

October 7, 1988

Coca-Cola Enterprises
1334 South Central Avenue
Los Angeles, California

Project No: 10221-00
Report No: 8-0368

Attention: Mr. Raul Ramirez

Subject: Preliminary Results of an Environmental Assessment of the South Bay Warehouse Facility
Pacific Gateway Drive
Torrance, California

Gentlemen:

Pursuant to our recent conversations regarding an environmental assessment at the subject property, this letter is to inform you that an area of subsurface contamination has been found. During drilling operations for a geotechnical (foundation) investigation, our field geologist noted a possible petroleum hydrocarbon odor in Boring Number B-3. This boring is located near the northwest corner of the site. First phase laboratory analysis of a soil sample collected from this boring showed concentrations of petroleum hydrocarbons of 850 mg/kg. Additional analyses of this sample are currently being conducted to determine the individual constituents of the hydrocarbons identified in this sample. In the time between drilling operations and now, it has been determined that a clarifier exists at or near the location of B-3. At your direction, we are currently in the process of scheduling drilling equipment to further investigate the horizontal and vertical extent of the contamination and we anticipate implementing the drilling on Monday, October 10, 1988.

In terms of the ramifications of the finding of this clarifier and apparently related soil contamination, there will be a cost to someone associated with this site to remove the clarifier and in some way mitigate all resulting contaminated materials. This mitigation is in accordance with current Federal, State, and local guidelines regulating contamination of this nature. We recommend that Coca-Cola address this issue in their transaction to purchase

this site. We will keep you informed of all results as this investigation progresses. If you have any questions, please call.

Very truly yours,

STONEY-MILLER CONSULTANTS, INC.

Gary T. Carlin /jz

Gary T. Carlin
Consulting Environmental Geologist

GTC:jz

DEPART. OF HEALTH SERVICES ALBERT J. ARELLANO
STATE OF CAL. JK
SR. WASTE MGT. ENG.
213/590-4920
ATSS 635-4920

STONEY-MILLER CONSULTANTS, INC.
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

July 10, 1989

Project No: 10221-00
Page No: 1

California Department Of Health Services
Toxic Substance Control Division
245 West Broadway
Room 350
Long Beach, California 90802

Subject: Recently acquired property of Coca Cola Enterprises in the Carson - Torrance area of the City Of Los Angeles, California at 19875 Pacific Gateway Drive.

Gentlemen:

Pursuant to our recent conversations, this letter has been prepared to provide your agency with a chronological sequence of events which have led to the current status of the subject property. In order to simplify the presentation, individual events and associated data are summarized in separate paragraphs below.

- In September, of 1988, Coca Cola Enterprises retained Stoney-Miller Consultants, Inc. (SMC), to assess the subject site prior to Coca Cola's purchase. The general scope of SMC's work was initially to conduct a subsurface investigation to evaluate if the underlying soil properties of the site are geotechnically suitable for the construction of proposed installations. Additionally, the SMC scope of work included assessment of the site and vicinity for potential environmentally threatening problems that would have presented a financial risk to Coca Cola upon purchase. In the initial phase of the SMC investigation, a layer of a petroleum contaminated soil was found in one boring located near the northwest corner of the site. A sample of the soil layer was submitted to an analytical laboratory, (Truesdail Laboratories, Inc. in Tustin, California), for a series of analyses.

  Because the type of material found was unknown, SMC requested a recommendation of the method of analyses which could identify the contaminants. Truesdail Laboratories recommended that because the material exhibited heavy petroleum based characteristics, an initial analysis using EPA Method 418.1 be

conducted on the sample. Results of these analyses showed that the sample contained 856 mg/kg of Total Petroleum Hydrocarbons (TPH). Based on these results, Truesdail recommended that the sample also be analyzed using EPA Method 8270 for Semi-Volatile Organics. Results of the analyses showed that relatively high concentrations of Naphthaline (9,400 ug/kg) and Phenanthrene (7,700 ug/kg) were contained in the sample. No other volatile organics were found in the sample. A photocopy of the analyses results are included as Appendix A to this letter. A general conclusion can be made that if the sample analyzed is representative of the subsurface contamination at the site, it represents a negligible threat to environmental or public safety. This conclusion is based on the relatively low concentrations of any contaminants found and that the soluability of the contaminants are likely very low.

Following a review of the results of these analyses, SMC was directed to conduct a subsurface investigation to establish the vertical and horizontal limits of the contamination. A series of hand auger borings was excavated in the area of contamination. During the initial hand drilling operations, an observation was made that the limits of contamination could be established by physical observations. Selected soil samples were submitted to Truesdail for analyses to verify that physical observations were accurate. That is, a series of apparently clean and contaminated samples were analyzed. the results of laboratory analyses showed that physical observations were accurate. Thus, the remainder of the investigation was based on physical observations. These laboratory findings substantiate the conclusion presented above that the contaminants found appear to have a very low soluability. Following the investigation, SMC estimated that approximately 1,000 cubic yards of contaminated soil existed in the subsurface near the northwest corner of the site. The investigation also showed that a possible underground storage tank existed near the center of the contamination.

- An agreement was made between Coca Cola and the previous owners of the site. The results of the agreement were that Coca Cola would purchase the site and remove and dispose of the soil according to pertinent government regulatory standards.

- Following the purchase of the site, SMC was directed to contact appropriate government agencies to permit the removal of the possible tank and associated contaminated soil. SMC contacted the City Of Los Angeles Fire Department and was directed to obtain a permit to remove an unknown tank and advised that associated soil could be removed in conjunction with the tank removal. A licensed hazardous waste contractor, Ancon from Willmington, California was retained to obtain the permit and conduct removals. A small concrete structure was found during removal operations and to date approximately 2,000 cubic yards

of contaminated soil has been removed and disposed. Following a series of data submittals, the soil has been accepted at and transported to a Class I disposal facility, the I.T. Imperial Facility located at 5295 South Garvey Road, Westmoreland, California 92281. The laboratory data submitted to the disposal facility is included as Appendix B and photocopies of the manifests of soil which has been shipped to date is included as Appendix C of this letter.

- In conjunction with the removal of the known contaminated soil, a demolition contractor was retained by Coca Cola to remove the previously existing building and related structures from the site. This included the removal of all paving materials. After the paving materials were removed, additional contaminated soil was found along the northern portion of the site, just east of the recently removed contaminated soil area. At that time SMC was directed to conduct a site wide subsurface investigation to determine if there is any indication that additional areas of contamination exist at the site. The investigation consisted of the excavation of a series of hand auger borings randomly spaced throughout the site. Some additional contaminated areas have been found and are shown on the attached site map. When indications of contamination were found, additional borings were excavated to establish the limits. Coca Cola directed SMC to collect representative soil samples for laboratory analyses to establish the toxicity of currently existing contaminated soil. A series of five soil samples, which were physically observed to be contaminated with hydrocarbons were submitted to Truesdail for analyses. The samples were again analyzed using both EPA Methods 418.1 and 8270, TPH and Semi-volatile organics respectively. Results of these analyses showed that no semi-volatile organics are present in the soil samples but that a range of TPH (24 to 2,760 mg/kg) are associated with the samples. A photocopy of these results are included as Appendix D of this letter. Because the currently known contamination was found outside the area where an underground tank was suspected, the LAFD was contacted and advised of the results. The LAFD representative requested that we contact the County Of Los Angeles Health Department (LAHD) to continue the cleanup process. A LAHD representative, Mr. Tom Klinger, informed SMC and Coca Cola that his department did not have an adequately large staff to pursue a problem that was not an immediate public health risk and that we should contact the California Department of Health Services for further assistance.

Coca Cola is currently evaluating whether to remove the remaining contaminated soil or to conduct additional evaluations and to determine if it is technically feasible to allow the

contamination to remain in place. Any technical assistance your department can offer would be appreciated. Because some soil has been removed from the site, steps must be implemented to document that the remaining excavations are clean. As a minimum, this will require that a grid system of samples be collected from the bottom of the apparently clean excavation and the samples analyzed. We assume that a representative from your department will be required to witness sampling activities. SMC and Coca Cola would appreciate your cooperation in this matter.

Please be advized that Coca Cola is prepared to implement a program to fully comply with current government regulatory standards or interpretations thereof regarding the subsurface contamination at the subject site. If you have any questions regarding this matter, please call either Gary T. Carlin with SMC at (714) 380-0599 or Raul Ramirez with Coca Cola at (213) 746-5555.

Very Truly Yours
Stoney-Miller Consultants, Inc.

Gary T. Carlin
Consulting Environmental Geologist

Michael J. Miller
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
MICHAEL J. MILLER
NO. 537
EXP. 3/31/90
GEOTECHNICAL
STATE OF CALIFORNIA

December 11, 1898

Mr. Jim Ross
California Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

RE: 19875 PACIFIC GATEWAY DRIVE, CARSON, CALIFORNIA, SUBSURFACE INVESTIGATION REPORT.

Enclosed please find a copy of a report entitled:

"Subsurface Investigation
Proposed Coca-Cola Distribution Facility
Carson, California"

This report presents the findings, conclusions, and actions proposed to allow construction to proceed on the subject site.

Please review this at your earliest convenience, and contact us at (602) 829-6311 should you have any questions.

Sincerely,

U.S. TECHNICAL ENVIRONMENTAL CONSULTING, INC.

Peter A. Beaver
Senior Project Manager

Steven M. Myers, R.G.
President

Reviewed by:
Ted R. Moore, R.G.

/weh

cc: R. Ramirez, CCE - West
J. Scandura, DHS

WORD PROCESSING REQUEST

Today's Date: 12/13/89 11/29/89

Due Date: Tomorrow 11/29/89

Requestor: ~~[illegible]~~ Wyle

Promised Report Date:

Job #: 89007

Title: Subsurface Investigation Proposed Coca-Cola ~~Bottling~~ DISTRIBUTING Facility, Carson, California

☐ Draft

☐ Final

Reviewed By: S. Myers

Date:

Instructions:

Completed By: WA

Date: 12/1

005 000375

SUBSURFACE INVESTIGATION
PROPOSED COCA-COLA
DISTRIBUTION FACILITY
CARSON, CALIFORNIA

JOB NO. 89007

EXECUTIVE SUMMARY

This report sets forth the activities undertaken and proposed to allow construction of a Coca-Cola Bottling Company distribution facility at 19875 Pacific Gateway Drive in Carson, California. This report is being submitted to your agency for review and comment because in the course of the preliminary construction activities, non-volatile petroleum hydrocarbons and polynuclear aromatic hydrocarbons (PNAs) were found in the uppermost soil layers on the site. These materials occur in concentrations which could possibly be considered to be hazardous.

It appears that the hydrocarbon contamination identified on the site originated from prior site uses. Neither the current nor the previous owner of the site engaged in activities that could account for the presence of the hydrocarbon materials. Based on communications with the Department of Health Services (DOHS), it is believed that this site was once part of a petrochemical manufacturing complex whose activities have also negatively affected other sites in the nearby area.

Based on a preliminary contaminant assessment report, prepared by Stoney-Miller Consultants, Irvine, California, the original intention was to excavate and remediate all soil contaminated with non-volatile hydrocarbons at levels exceeding 100 ppm. Stoney-Miller had estimated 3,000 to 5,000 cubic yards of this material on-site. As additional soil sampling and analytical testing was conducted by Western Technologies Inc. (WTI), it appeared that the amount of contaminated soil was substantially underestimated. Subsequent exploration by WTI indicated approximately 30,000 to 50,000 cubic yards of soil containing hydrocarbon concentrations greater than 100 ppm. Based on the revised volume of contaminated soil, it was determined that the costs to remediate this larger amount of material would be excessive, in fact exceeding the worth of the parcel. In addition, low levels of PNAs might still remain on the site after the proposed remediation process was completed.

In consideration of all the above, it was decided to excavate and isolate soil containing hydrocarbon concentrations in excess of 1000 ppm and PNAs at detectable levels. Based on the exploration conducted by WTI, the amount of material involved with this scenario is approximately 1800 cubic yards. This material has been excavated and is currently stockpiled on the site pending approval of a remedial action plan by the necessary regulatory agencies.

Various treatment processes for remediation were considered, but either the costs were determined to be excessive or the effectiveness of the methods was uncertain given the materials on this particular site. Also, consideration was given to the proposed industrial use of the site, the fine grained nature of the soil at the site (permeability of 1.0×10^{-8} cm/sec), and the occurrence of similar contamination elsewhere in the area. Based on the facts mentioned above, the decision was made to isolate the contaminated material on site by burial and capping.

This proposed remedial action will serve to isolate the material of concern and reduce the potential for contact with or migration of the constituents. It is the intention of Coca-Cola to proceed with this proposed course of action unless there are insurmountable objections raised by your agency. The present schedule for building construction provides for burial of the material to begin in mid-January, 1990.

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SUBSURFACE INVESTIGATION
PROPOSED COCA-COLA DISTRIBUTION FACILITY
CARSON, CALIFORNIA

JOB NO. 89007

1.0 INTRODUCTION

U.S. Technical Environmental Consulting, Inc. (USTEC) has completed a site contamination assessment and formulated a remedial action plan at the proposed Coca-Cola distribution facility at 19875 Pacific Gateway Drive, Carson, California. The location of this site is shown on Figure 1.

This investigation was initiated at the request of Coca-Cola Enterprises - West (CCE) to evaluate the vertical and lateral extent of hydrocarbon contamination identified on the site and to recommend potential remedial alternatives.

This report documents field procedures, observations, analytical results, remediation methods, and conclusions.

2.0 PROJECT BACKGROUND

The subject site is located at 19875 Pacific Gateway Drive, Carson, California. The area of the site is approximately 7.5 acres and measures 500 by 650 feet with the longer dimension fronting on Pacific Gateway Drive. When the site was acquired by the present owner (CCE) in 1988, it was occupied by a building which covered approximately 80% of the site. This building was subsequently demolished to allow construction of a new warehouse and trucking distribution facility. There are no structures presently on site. Historical records indicate this location is located within 1,300 feet of the Del Amo Hazardous Waste site (Appendix A).

Prior to the start of the planned construction activities for the new facilities, a geotechnical investigation was undertaken by Stoney-Miller Consultants. A copy of this report is attached as Appendix B. Borings conducted during the course of this investigation revealed the presence of a foreign substance that was detected both visually and by odor. A limited environmental investigation was then implemented by Stoney-Miller which identified an initial area of concern (PEXC, Figure 2). The results of chemical analysis of soil samples from this area showed levels of non-volatile petroleum hydrocarbons and polynuclear aromatic hydrocarbons (PNAs). No volatile organic compounds were detected then or in subsequent investigations with the exception of one sample. Based on recommendations from Stoney-Miller, the material in this limited area (PEXC) was excavated and disposed off-site at a Class I disposal facility. Additional drilling and sampling was carried out on the site but few samples were analyzed chemically and the environmental investigation was terminated without fully assessing the contamination at the site. The results of chemical analysis of samples of soil removed from PEXC are included in Appendix C.

Based on the interpretation of the limited data acquired from the initial investigation, the conclusion was made by Stoney-Miller that approximately 5000 cubic yards of material contaminated with non-volatile petroleum hydrocarbons at levels exceeding 100 ppm were present on the site. Also, it was assumed that the PNAs previously detected had only occurred in the area that was excavated and removed.

Following the completion of the limited environmental investigation by Stoney-Miller, Western Technologies Inc. (WTI) was retained by CCE to review the environmental work completed to date and provide additional recommendations. Based on the information described above, WTI recommended that CCE isolate the 5000 cubic yards and bioremediate the material in a lined, capped cell, constructed below grade, which would only minimally interfere with construction of the proposed facility and future operations at the site. Work was started by WTI to begin isolating the contaminated material from the rest of the soil on the site. During this phase of work, while trying to confirm by sampling and analysis that the excavated areas were clear of contamination, it was determined that the initial assumptions made by Stoney-Miller were not valid.

As a result of these unexpected findings, the excavation work was halted and a more detailed and comprehensive site sampling and chemical analysis program was initiated by WTI. Following the completion of this phase, new conclusions were reached by WTI. These conclusions were that approximately 50,000 cubic yards of soil containing in excess of 100 ppm TPHC was present on the site. However, contamination was shown to be limited to the upper five feet or less of soil. In addition, PNAs were still present on the site at levels above the analytical detection limit. In summary, it was decided to excavate and isolate only that soil where non-volatile hydrocarbon concentrations exceeded 1000 ppm or where PNAs were detected at any level. The excavation and isolation phase of work was then continued to meet these new conditions. This work has been completed resulting in approximately 1800 yards of non-volatile hydrocarbon and PNA contaminated material stockpiled on site. Construction of the proposed building is presently underway.

Following the completion of the exploration process, WTI was replaced as CCE's environmental consultant by U.S. Technical Environmental Consulting, Inc. (USTEC). USTEC was formed by personnel previously employed by WTI.

3.0 SUBSURFACE EXPLORATION PROCEDURES AND ANALYTICAL TEST RESULTS

3.1 PIPELINE EXPLORATION AND REMOVAL

This section details the field excavation work and the results of sampling and analysis conducted by WTI on the subject site. Work began on September 13, 1989 with a search for buried utilities on the site.

Several pipelines had been exposed by previous excavation activities. The contents, if any, of the lines were unknown. In order to determine if any material was contained in the lines, it was necessary to locate all utilities that entered the site underground. This was done by digging a trench around the perimeter of the site to a depth of 5 feet.

During this procedure, 14 separate lines were encountered ranging from 10-inch to 1-inch steel lines. The lines entered the site from the north and east. The respective utilities were contacted and they determined that the lines found were not from off-site utilities. On September 20 all the lines found were tapped to determine possible contents or if they were still in service. None of the lines were found to be in service.

All the identified lines were cut and capped or plugged at the property line and then removed from the site by excavation. The lines themselves were cut up and recycled as scrap steel. The bases of the trenches were sampled and then backfilled with compacted material. The location of trench samples are shown on Figures 2 and 5. Laboratory results are presented in Appendix D.

3.2 SOILS EXCAVATION

On September 22, 1989, a mobile laboratory capable of performing EPA Method 418.1 analyses was brought on the site. At the same time, an excavator was brought in to start removing the soil from an area identified from the previous site survey that was determined by visual means to be contaminated. This excavation was located on the east side of the property (EXC-1, Figure 2) approximately 50 feet from the property line. This excavation was intended to remove the overburden material above an area of soil that was thought to be contaminated. Samples of the overburden material and the so-called contaminated material were taken and analyzed and there was found to be no significant difference in values. At this time the decision was made to stop excavation in these previously identified areas and complete a more thorough site survey.

Table I summarizes the results of analyses and the location and depth of the samples taken on September 22, 1989. All sample locations are called out on Figures 2 through 5. All analytical results are included in Appendix D.

TABLE I

SUMMARY OF SOIL SAMPLE RESULTS
SEPTEMBER 22, 1989

Sample No.	Depth	TPHC Value
EXC1-1	3′	260 ppm
EXC1-0-1	6"	57 ppm
EXC1-0-2	6"	86 ppm
EXC1-0-3	6"	85 ppm
EXC1-0-4	6"	48 ppm
E1 Grade A	3′	200 ppm
E1 Grade B	3′	97 ppm
E1 Grade C	3′	150 ppm
S-1 Grade E	6"	140 ppm
S-2 Grade W	6"	150 ppm
EXC-1-A4	4′	122 ppm
EXC-1-B5	5′	61 ppm
EXC-1-C6	6′	74 ppm

3.3 SOIL SAMPLING

The sampling of the surface of the entire site was conducted on September 25 through 27. Samples were collected on a 50 by 100 foot grid and depths for all the samples in this episode were from 6 inches to 1 foot. Samples were also taken from the bottom of the excavation (PEXC) to confirm the removal of the contamination identified by Stoney-Miller. Sample locations are shown on Figure 2. The sample results were reported on September 28 and are summarized in Table II.

Coca-Cola Enterprises
Job No. 89007

TABLE II

SUMMARY OF SOIL SAMPLE RESULTS
SEPTEMBER 25-27, 1989

Sample No.	Depth	TPHC Value
S1	6"-1'	300 ppm
S2	6"-1'	5600 ppm
S3	6"-1'	150 ppm
S4	6"-1'	2600 ppm
S5	6"-1'	140 ppm
S6	6"-1'	250 ppm
S7	6"-1'	90 ppm
S8	6"-1'	42 ppm
S9	6"-1'	2400 ppm
S10	6"-1'	96 ppm
S11	6"-1'	68 ppm
S12	6"-1'	460 ppm
S13	6"-1'	146 ppm
S14	6"-1'	210 ppm
S15	6"-1'	120 ppm
S16	6"-1'	100 ppm
S17	6"-1'	180 ppm
S18	6"-1'	160 ppm
S19	6"-1'	340 ppm
S20	6"-1'	40 ppm
S21	6"-1'	40 ppm
S22	6"-1'	80 ppm
S23	6"-1'	190 ppm
S24	6"-1'	770 ppm
S25	6"-1'	17.2 ppm
S26	6"-1'	7.33 ppm
S27	6"-1'	116 ppm
S28	6"-1'	75.2 ppm
S29	6"-1'	165 ppm
S30	6"-1'	88.9 ppm
S31	6"-1'	668 ppm
S32	6"-1'	326 ppm
S33	6"-1'	879 ppm
S34	6"-1'	369 ppm

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TABLE II CONTINUED

SUMMARY OF SOIL SAMPLE RESULTS
SEPTEMBER 25-27, 1989

Sample No.	Depth	TPHC Value
S35	6"-1'	103 ppm
S36	6"-1'	345 ppm
S37	6"-1'	467 ppm
S38	6"-1'	23.5 ppm
S39	6"-1'	245 ppm
S40	6"-1'	2070 ppm
S41	6"-1'	56 ppm
S42	6"-1'	1090 ppm
S43	6"-1'	21.8 ppm
S44	6"-1'	2780 ppm
S45	6"-1'	324 ppm
S46	6"-1'	125 ppm
S47	6"-1'	800 ppm
S48	6"-1'	455 ppm
S49	6"-1'	2.92 ppm
S50	6"-1'	2110 ppm
S51	6"-1'	47.6 ppm
S52	6"-1'	869 ppm
S53	6"-1'	286 ppm
PEXC-1	4'	63 ppm
PEXC-2	4'	351 ppm
PEXC-3	4'	1790 ppm
PEXC-4	4'	895 ppm
PEXC-5	4'	37 ppm

On September 25, while samples were being collected and analyzed from elsewhere on the site, excavation was continued adjacent to the area where the excavation from the earlier phase of work had been performed (PEXC, Figures 4 and 5), in particular to remove some pipelines that had been exposed but not fully uncovered. Obvious heavy non-volatile hydrocarbon material was encountered in the course of removing these pipelines. This soil was removed and samples were taken from the base of the excavated trench areas and analyzed to show removal of contamination. Samples were also taken from under the other

pipelines that had shown traces of petroleum products discovered during tapping. Confirmation samples were taken after the soil determined visually to be contaminated was removed. The results were reported on September 28, 1989.

Table III summarizes the data from this sampling. Samples NE-1, SP2-1, and Solvent Trench were from material that was subsequently removed.

TABLE III

SUMMARY OF SAMPLE RESULTS
SEPTEMBER 25, 1989

Sample No.	Depth	TPHC Value
Pipe trench NE-1	5′	620 ppm
Pipe trench NE-2	6′	ND (1.0)
CP-1	6′	ND (1.0)
CP-2	6′	ND (1.0)
CPG-1	4′	ND (1.0)
CPG-1	4′	ND (1.0)
SP-1	4′	ND (1.0)
SP2-1	4′	583 ppm
SP2-2	5′	ND (1.0)
SP2-3	5′	ND (1.0)
Solvent trench	4′	120 ppm
CP-3	4′	ND (1.0)
Pipe trench 4	4′	6.20 ppm

3.4 TEST PIT SAMPLING

Ten test pits were dug in the area of the proposed building to determine if there was a relation between the depth of contamination and the boundary between what appeared to be imported fill material and the underlying native soil. The pits were dug to a depth of 5 feet which extended into the native soil and samples were taken at 3,4, and 5 foot depths (Figure 4). The results of chemical analysis of soil samples from the 5-foot depth indicated TPHC concentrations below laboratory detection, with the exception of sample Grd-3-5′. This area was not excavated due to the level of contamination which did not exceed 1,000 ppm. The area in the vicinity of sample Grd-2 was excavated due to the levels of TPHC reported.

These results were reported on September 29 and are summarized in Table IV.

TABLE IV

SUMMARY OF SOIL SAMPLE RESULTS
TEST PITS IN AREA OF PROPOSED BUILDING

Sample No.	Depth	TPHC Value (ppm)
Grd-1-3′	3′	14.6
Grd-1-4′	4′	13.1
Grd-1-5′	5′	ND (1.0)
Grd-2-3′	3′	6020.0
Grd-2-4′	4′	ND (1.0)
Grd-2-5′	5′	ND (1.0)
Grd-3-3′	3′	285
Grd-3-4′	4′	66.2
Grd-3-5′	5′	281
Grd-4-3′	3′	139
Grd-4-4′	4′	ND (1.0)
Grd-4-5′	5′	ND (1.0)
Grd-5-3′	3′	ND (1.0)
Grd-5-4′	4′	ND (1.0)
Grd-5-5′	5′	ND (1.0)
Grd-6-3′	3′	ND (1.0)
Grd-6-4′	4′	7.18
Grd-6-5′	5′	ND (1.0)
Grd-7-3′	3′	76
Grd-7-4′	4′	ND (1.0)
Grd-7-5′	5′	ND (1.0)
Grd-8-3′	3′	3.10
Grd-8-4′	4′	ND (1.0)
Grd-8-5′	5′	ND (1.0)
Grd-9-3′	3′	ND (1.0)
Grd-9-4′	4′	ND (1.0)
Grd-9-5′	5′	ND (1.0)
Grd-10-3′	3′	308
Grd-10-4′	4′	ND (1.0)
Grd-10-5′	5′	ND (1.0)

The six samples with elevated TPH values, (EXC1-1, Grd-2-3′, Grd-10-3′, PEXC-3, S4, and S2) from all the previous sampling episodes were also analyzed for PNAs by EPA Method 8310. These results were reported on October 15 and are summarized in Table V.

TABLE V

SUMMARY OF SOIL SAMPLE RESULTS
PNAs - OCTOBER 15, 1989

Sample No.	Depth	PNA Values (ppm)
EXC1-1	3′	<0.83/0.17 (ND)
Grd-2-3′	3′	<0.83/0.17 (ND)
Grd-10-3′	3′	<0.83/0.17 (ND)
EXC1-1	3′	<0.83/0.17 (ND)
PEXC-3	4′	Naphthalene 6.4
		Acenaphthylene 3.2
		Fluorene 2.0
		Phenanthrene 2.9
		Anthracene .32
		Chrysene .75
S4	6"	<0.83/0.17 (ND)
S2	6"	<0.83/0.17 (ND)

3.5 SOIL SAMPLING AND EXCAVATION

On October 12, the soil in the location of the proposed building was sampled at a depth of 6-inches in six places and analyzed for PNAs. Also, four composite samples were taken from the surface of the stockpiled, excavated soil and also analyzed for PNAs. These results are summarized in Table VI. Sample locations are shown on Figure 4.

TABLE VI

SUMMARY OF SOIL SAMPLE RESULTS
PNAs - OCTOBER 12, 1989

Sample No.	Depth	PNA Values (ppm)
S-A	6"	<0.83/0.17 (ND)
S-B	6"	<0.83/0.17 (ND)
S-C	6"	<0.83/0.17 (ND)
S-D	6"	<0.83/0.17 (ND)
S-E	6"	Chrysene 0.21
S-F	6"	<0.83/0.17 (ND)
SC-1	6"	<0.83/0.17 (ND)
SC-2	6"	Fluorene 0.36
		Phenanthrene 0.78
		Pyrene 0.44
SC-3	6"	<0.83/0.17 (ND)
SC-4		<0.83/0.17 (ND)
		Fluorene 0.48
		Phenanthrene 0.71
		Pyrene 0.26
		Chrysene 0.25

On October 17 work was resumed to excavate and stockpile soil from the areas that showed detectable levels of PNAs and/or TPH above 1000 ppm. These areas were EXC-A, EXC-B, EXC-C, PEXC-1A, and PEXC-1B (Figure 4). When excavation was completed, conformation samples were taken to show that the contamination had been removed from these areas.

These results were reported on November 9 and are summarized in Table VII.

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TABLE VII

SUMMARY OF SOIL SAMPLE RESULTS
EXCAVATION AREAS EXC-A, EXC-B, EXC-C, AND PEXC

Sample No.	Depth	Value (ppm) 418.1	8310
EXC-A1	3′	9	<0.83/0.17 (ND)
EXC-A2	3′	13	<0.83/0.17 (ND)
EXC-B1	2′	2	<0.83/0.17 (ND)
EXC-B2	2′	ND (1.0)	
EXC-C1	1.5′	8	
PEXC-1A	7′	ND (1.0)	
PEXC-1B	4′	ND (1.0)	

The site work was determined to be complete as of October 25 and all the excavated material is currently stockpiled on the western portion of the site in the area designated Excavated Soil Stockpile (Figure 4).

3.6 BIOASSAY TEST RESULTS

Composite samples SC-2 and SC-4, taken from the stockpiled soil, had detectable levels of PNAs. Both of these samples were subjected to a bioassay (see Appendix E) to show toxicity as set forth in Title 22. The results of the bioassay were negative indicating that soil from the site with detectable levels of PNA is not toxic as defined by Title 22. The results of these analyses are presented in Appendix E.

3.7 SAMPLING PROCEDURES

Throughout this project, surface soil samples were collected with a trowel and stored in glass jars. The trowel was decontaminated between samples by washing in Alconox detergent and rinsing in distilled water. Samples at depths exceeding 6 inches were collected in hand driven brass tubes after the desired depth was attained by hand augering. Storage of samples was in ice chests at approximately 4°C until field analyses were performed or transport to the laboratory was completed.

All Method 418.1 analyses were performed in the field on the same day as the samples were taken or in a certified laboratory facility within 24 hours after the sample was collected. All Method 8310 analyses were performed in a certified laboratory with samples received at the laboratory within 12 hours after collection.

4.0 TREATMENT AND DISPOSAL OPTIONS

Throughout the project several treatment and disposal options were considered. The relative merits and short-comings of these options are discussed below.

4.1 OFF-SITE DISPOSAL

Disposal of the contaminated material off-site at a Class I facility is an acceptable practice and has the advantage that the material is no longer present on the site. Disadvantages are the costs for transportation, disposal and taxes, and the long-term liability associated with the potential failure of operators of the selected disposal site to remain in compliance.

4.2 BIOREMEDIATION

This process is viable for the reduction of hydrocarbon components and has the advantage of being amendable to be carried out on site. The costs to accomplish this option are favorable, however, it is customarily done on the surface of the ground and requires large areas of a site for undefined lengths of time in order to accomplish significant reductions. These drawbacks were to be overcome on this site by conducting the bioremediation in a lined cell to be constructed below grade. This would allow the above ground uses of the site to continue and at the same time allow the bioremediation process to progress to completion. Additionally, an effort was made to identify licensed facilities where bioremediation could be undertaken off-site, but none were located.

As the latest site sampling and analysis work was completed, it became evident that there were low levels of PNAs present that would have to be dealt with. The effect of bioremediation on these compounds was studied and it was found that bioremediation has little effect on PNAs in the relatively low concentrations found on the site. Therefore, if this option was conducted it would potentially reduce the non-volatile hydrocarbons to acceptable levels, but there would still be PNAs remaining at unreduced levels.

4.3 INCINERATION

This disposal option has the advantage of assuring complete destruction of the material with little long-term liability, but with the highest costs of any option considered. The costs for transportation, taxes, and disposal would exceed the worth of the parcel.

4.4 BLENDING INTO ASPHALT PRODUCT

This method would take the contaminated soil and blend it into an asphalt product as a portion of the aggregate. The costs for this process were in an acceptable range, however the process has no beneficial effect on the PNA fractions and there was no facility of this type identified which is permitted to accept PNAs.

4.5 SOIL WASHING

This option would consist of washing the soil with a suitable solvent and then disposing of the solvent-hydrocarbon mixture. The drawbacks are that the process is relatively unproven and that the costs to provide the service from one of the few commercial scale contractors available are in excess of those for off-site disposal.

4.6 SOLIDIFICATION/FIXATION

This process has had proven success on inorganic materials, with less success demonstrated on organic materials, mainly with respect to their long-term resistance to leaching. It was felt that this would be an experimental technique for this application. The costs to perform this process were in the middle range of those considered.

4.7 ENTOMB IN-PLACE

This option consists of taking the contaminated material and physically isolating it below grade so that the potential for contact or migration is substantially reduced. This method is particularly applicable to this site due to the low permeabilities of the soil (see Appendix F), the depth to groundwater of greater than 50 feet (see Appendix G), similar contamination on adjacent properties, and the proposed industrial use of the site. The costs are also among the lowest of any option considered.

A disadvantage to this option is that the material remains on-site, and at some time in the future, it may fall under a different regulatory framework that might require its removal.

Additional long term liability to the property may exist as a result of the following:

- Future construction which could contact and impact buried material.
- Change in site usage or conditions could permit contamination migration to groundwater.
- Decreased ability for future sale of property.

5.0 PROPOSED REMEDIATION METHOD

The option of entombment in place is the preferred option to remediate the non-volatile hydrocarbon and PNA contaminated soil at this site.

The proposed location for the burial of the material will be in the western portion of the site beneath part of the proposed paved asphalt parking area (See Figure 3, Area A). The approximate dimensions at the base of the excavation where the contaminated material is to be placed will be 120 by 400 by 4 feet in depth. The material will be placed to a thickness of one foot and covered by three feet of compacted clay.

The base of the excavation will be compacted to 95% maximum density once the desired depth of excavation is attained. The contaminated material will be placed in 8-inch lifts and compacted to 95% of maximum density after the placement of each lift. Once all the contaminated soil is placed, the cap will be constructed of clean on-site clay material installed in 8-inch lifts and compacted to 95% after each lift and also after final rough grading is completed.

The optimum soil moisture content, as determined from earlier laboratory testing, will be maintained in the field. The degree of compaction will be field monitored under the supervision of a Soils Engineer registered in the State of California.

The surface of the compacted soil will be graded with a minimum slope of 2% to promote surface runoff. Following finish grading and compaction, the sub-grade aggregate and asphalt paving will be installed.

6.0 CONCLUSIONS

The physical act of isolating the materials with a compacted clay cover would greatly reduce the potential of contact below that exhibited in its present state. Migration of the material would also be reduced due to the low solubilities and mobilities of both the non-volatile hydrocarbon and the PNA components. The entombment is considered to be an appropriate option for this site due to its proximity to other sites where similar material is present. The subsequent industrial use of the site is also compatible with this option as the proposed facility will be used for warehousing, product distribution and vehicle maintenance. No bottling activities are to be performed at this facility and public access will be restricted.

7.0 UNCERTAINTY AND LIMITATIONS

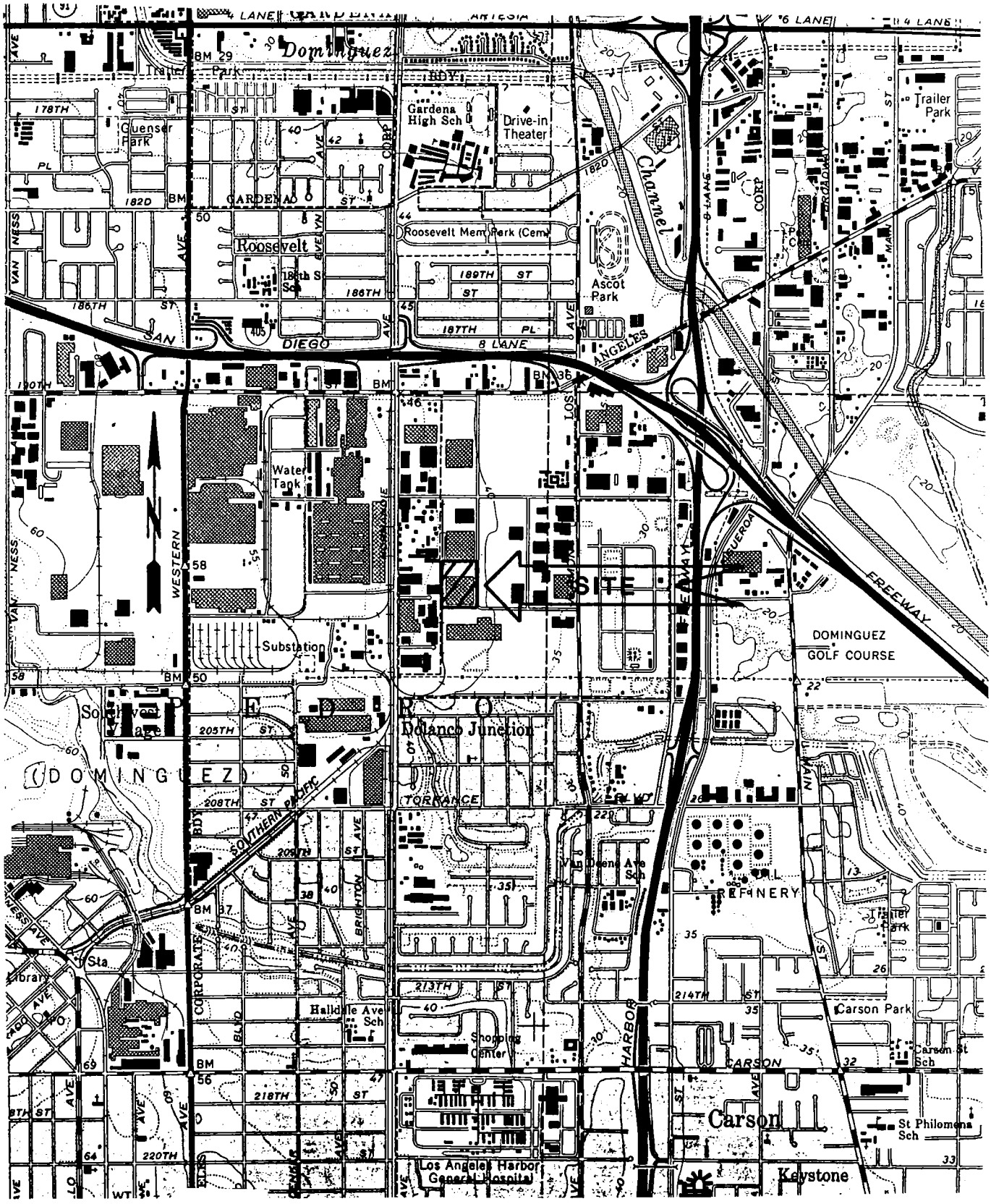
The scope of this evaluation is limited to: observations and analytical results collected during the on-site investigation; interviews with knowledgeable persons; interviews with public agency and public utility company personnel; and reviews of readily available published and unpublished reports, literature, and aerial photographs. As a result, these conclusions are based on information supplied by others and interpretations by qualified personnel.

The behavior of subsurface contaminants is a complex phenomenon. Geochemistry, hydrogeology, and the geotechnical sciences are characterized by uncertainty. USTEC's conclusions regarding the subsurface contamination are based solely upon information cited in this report. The professional services provided and judgements rendered on this project meet current professional standards and do not carry any other guarantee.

Subsurface Investigation
Proposed
Coca-Cola Distribution Facility
Carson, California

Vicinity Map

Figure 1



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89007	P. Beaver	V. Townsend	USTEC

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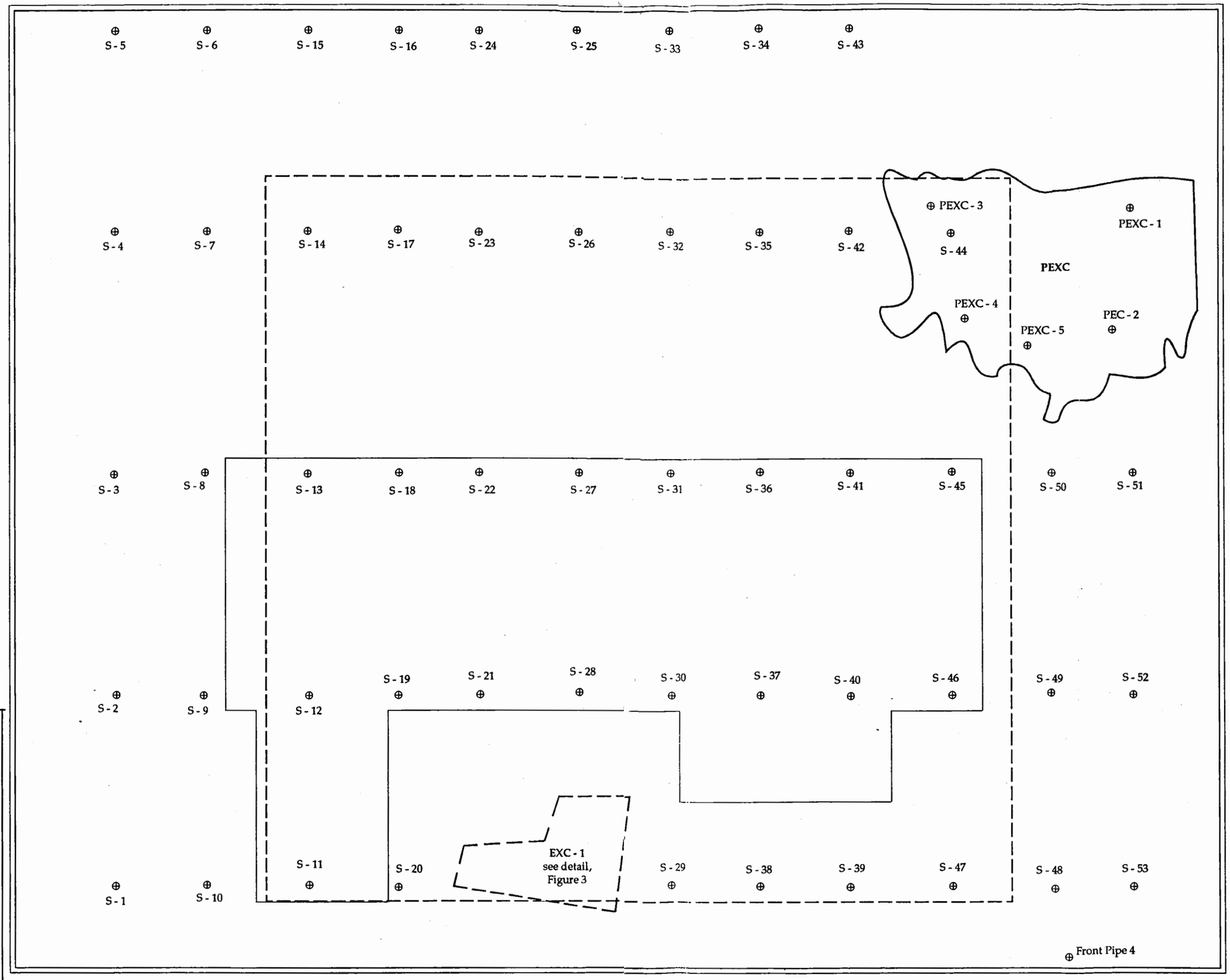
Subsurface Investigation
Proposed
Coca-Cola Distribution Facility
Carson, California

Sample Location Map

Figure 2



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Legend

- Property Boundry
- Prior Structure Boundry
- Proposed Structure Boundry
- Excavation Boundry
- S-53 Soil Sample Location
- Excavation Boundry

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SUBSURF1 PM3 pg - 2

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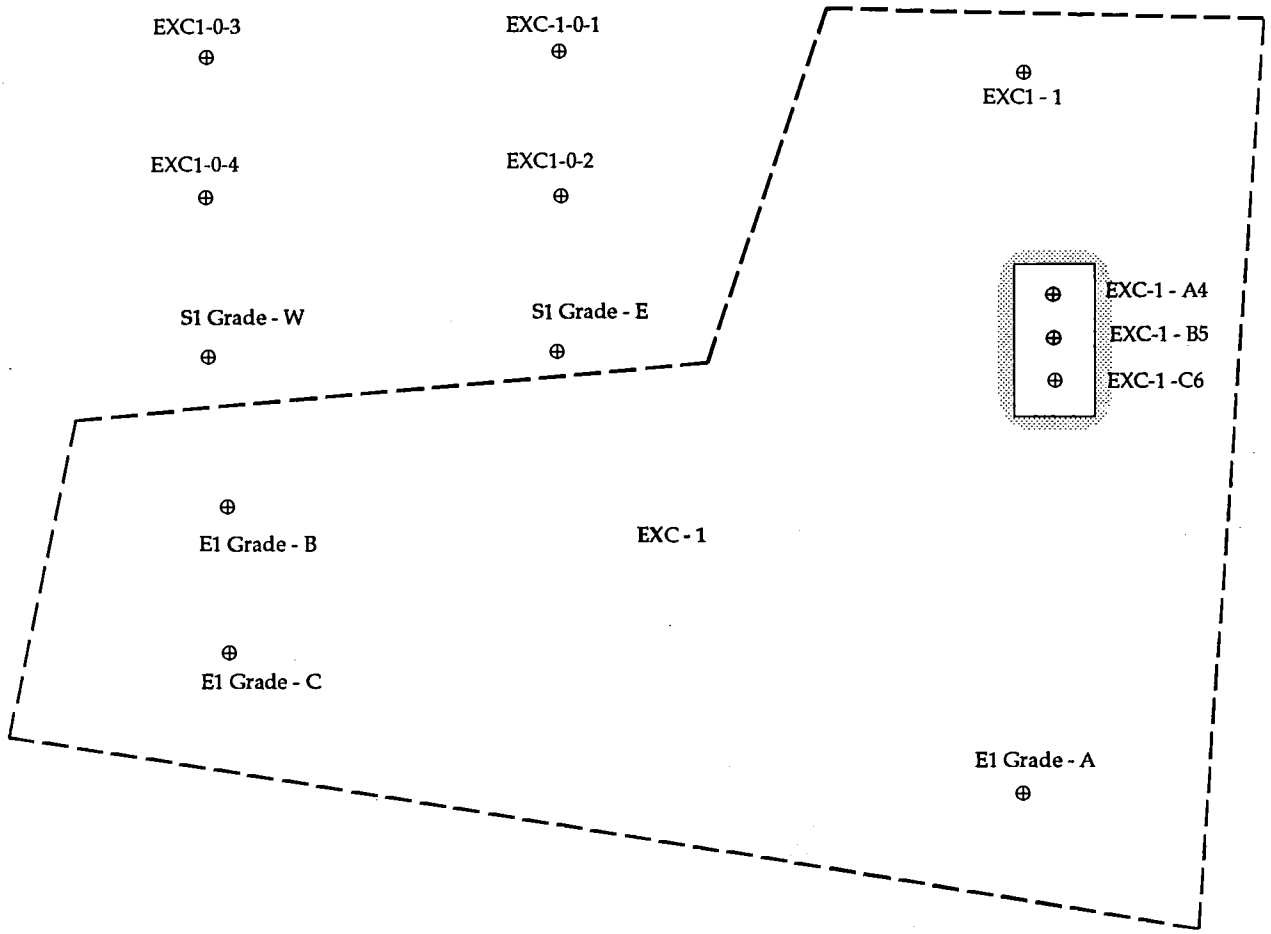
Subsurface Investigation
Proposed
Coca-Cola Distribution Facility
Carson, California

Sample Location Map
Detail EXC - 1

Figure 3



Legend

Excavation Boundry

S - 53 Soil Sample Location

Multiple Excavation

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SUBSURF1.PM3 pg - 3

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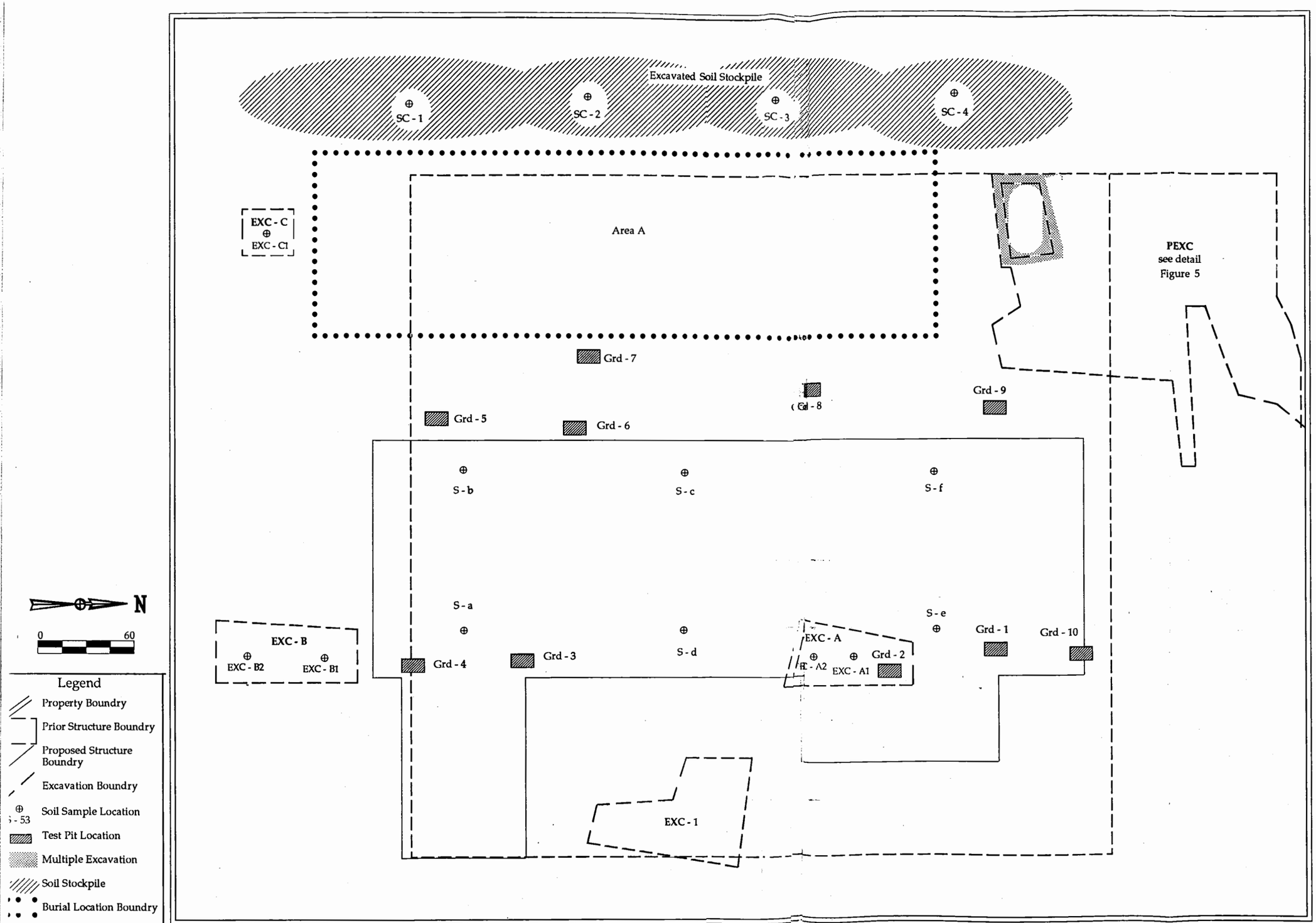
Subsurface Investigation
Proposed
Coca-Cola Distribution Facility
Carson, California

Sample Location Map

Figure 4



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SUBSURF1.PM3 pg - 1

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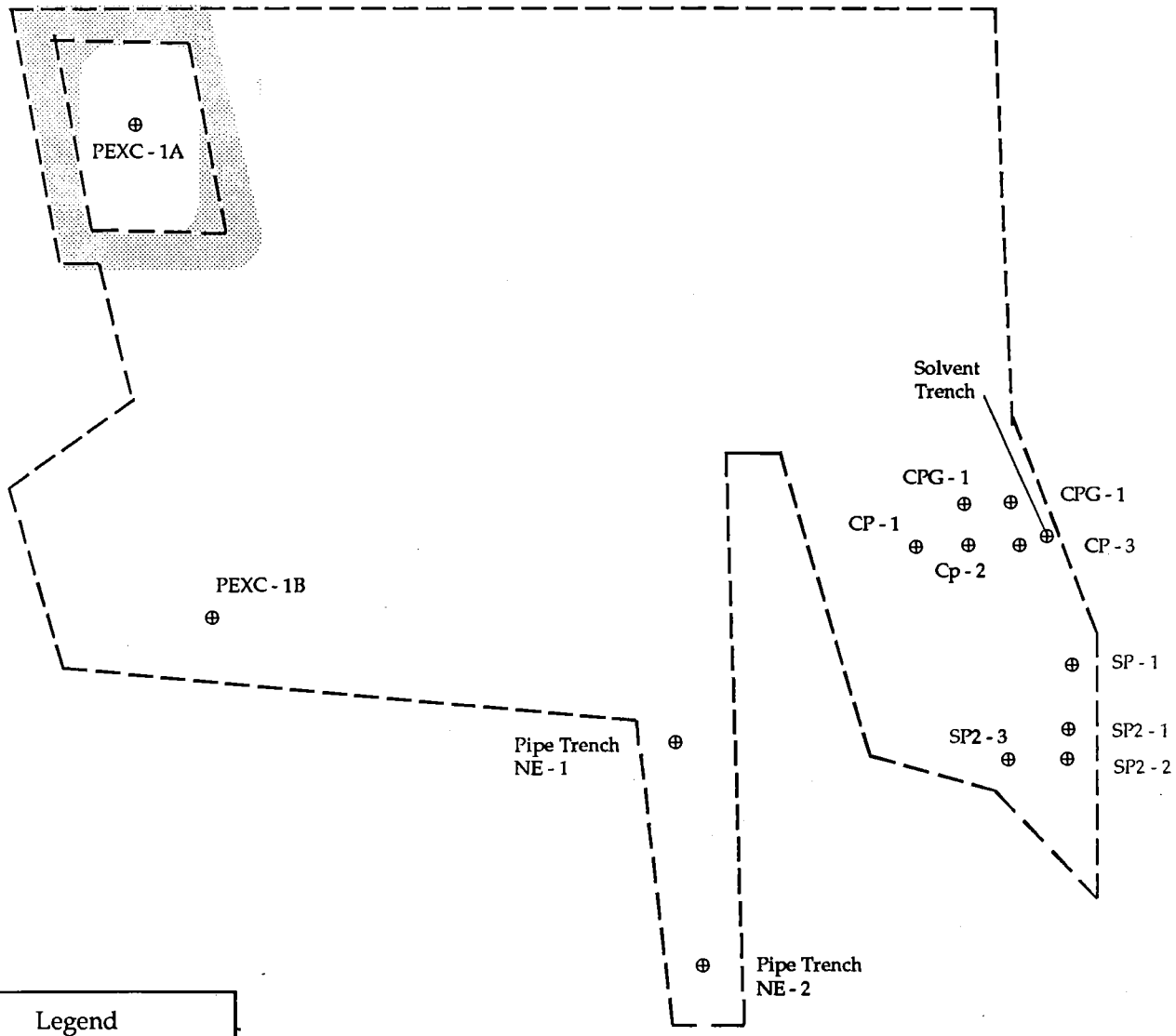
Subsurface Investigation
Proposed
Coca-Cola Distribution Facility
Carson, California

Sample Location Map
Detail PEXC

Figure 5



Legend

Excavation Boundry

S - 53 Soil Sample Location

Multiple Excavation

SUBSURF1.PM3 pg - 3

Job No.:	Reviewed By:	Prepared By:	
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005 000402

STONEY-MILLER CONSULTANTS, INC.

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

November 16, 1988

Coca-Cola Enterprises
1334 South Central Avenue
Los Angeles, California

Project No: 10221-00
Report No: 8-0417

Attn: Mr. Raul Ramirez

Subject: Interim Report of findings of an ongoing Environmental Assessment of the South Bay Warehouse Facility, Pacific Gateway Drive, Torrance, California.

Gentlemen:

1.0 INTRODUCTION

As you are aware Stoney-Miller Consultants, Inc. (SMC) has recently been retained to evaluate the environmental aspects of the subject property. Most recently we have conducted a limited investigation to evaluate and determine the extent of relatively near surface hydrocarbon contamination near the northwest corner of the site. This Interim Report has been prepared to summarize the following information. Included in this interim report are a explanation and presentations of:

- The sequence of events that caused SMC to discover the subsurface hydrocarbon contamination, i.e. background;
- A generalized description of the methods utilized to investigate the limits of hydrocarbon contamination;
- A generalized description of the laboratory analyses utilized during the investigation;
- A summary of the findings of the investigation; and
- A presentation of conclusions and recommendations to Coca Cola Enterprises.

14 HUGHES, SUITE B-101 IRVINE, CA 92718 (714) 380-4886

To protect Coca-Cola's interest in the transaction of purchasing the subject site, we recommend that a full scale investigation be conducted and a report prepared which is suitable for submittal to government regulatory agencies. This investigation and report should be sufficient in scope to provide Coca-Cola with an adequate understanding of the financial ramifications of purchasing a site that is known to have subsurface contamination. This Interim Report should only be considered as a means of conveying the general findings of the investigation of the subsurface hydrocarbon contamination found, to Coca Cola, a party that is not currently the owner of the site but, is interested in understanding the environmental liability that could be inherited by the purchase of the site.

2.0 BACKGROUND, AND INVESTIGATIVE PROCEDURES

SMC was originally retained by Coca-Cola to conduct an investigation which was generally to consist of: an evaluation of the geotechnical (structural) aspects of the site; and an environmental assessment of site and vicinity. The geotechnical investigation was to include drilling and sampling, i.e. physically examining representative soils underlying the site. The environmental assessment was intended to include a nonphysical evaluation, i.e. records research of the evironmental aspects of the site. This type of assessment has in recent years become a routine aspect of

the purchase of commercial property. The exception to this separation of tasks was that a member of our environmental staff was to review the results of the geotechnical drilling and sampling program as part of the environmental assessment. Environmental problems other than the one discussed in this report found to be associated with the site vicinity, for example, there are numerous EPA Superfund Sites located within a few miles of the site. These problems are not presented in this Interim Report, see letter from SMC to Coca-Cola dated October 26, 1988.

During drilling and sampling activities, SMC's field geologist noted a suspicious odor associated with soil samples collected near the northwest corner of the site. This information was reported to our environmental staff and following authorization from Coca-Cola, laboratory analyses of a selected soil sample was conducted. The laboratory chemical staff began their evaluation of the sample by physical examination. The results of the physical examination were that the soil was likely contaminated with a relatively heavy hydrocarbon chemical mixture. The laboratory chemists recommended to SMC that to begin the analyses, an Environmental Protection Agency (EPA) standard analysis Method 418.1 should be performed on the sample.

Results of the 418.1 analyses indicated that 850 mg/kg of Total Petroleum Hydrocarbons were contained in the soil

sample. Subsequently, the chemists recommended that an EPA method 8270 be conducted on the soil sample. Results of the 8270 analyses revealed that relatively low concentrations of semi-volatile hydrocarbons were contained in the sample. These results are included as Appendix A of this Interim Report.

Results of the laboratory analyses were reported verbally to Coca-Cola and additional drilling, soil sampling, and laboratory analyses were authorized. The purpose of this second phase of the investigation was to determine with a limited amount of drilling and sampling, if the hydrocarbons found are an isolated case or a more extensive problem. Results of the second phase of the investigation indicated the possibility that the hydrocarbon contamination could be relatively extensive. A decision was made by SMC and Coca-Cola to conduct laboratory analyses on selected soil samples and review the results prior to continuing with any additional drilling and soil sampling.

Results of drilling and sampling observations and correlation with laboratory results were that when physical observations such as color, texture, and odor indicated that the soil was contaminated, laboratory results verified these observations. Likewise, when physical observations indicated that soils were clean, laboratory analyses verified these observations. Based on this discovery, SMC was authorized by Coca-Cola to

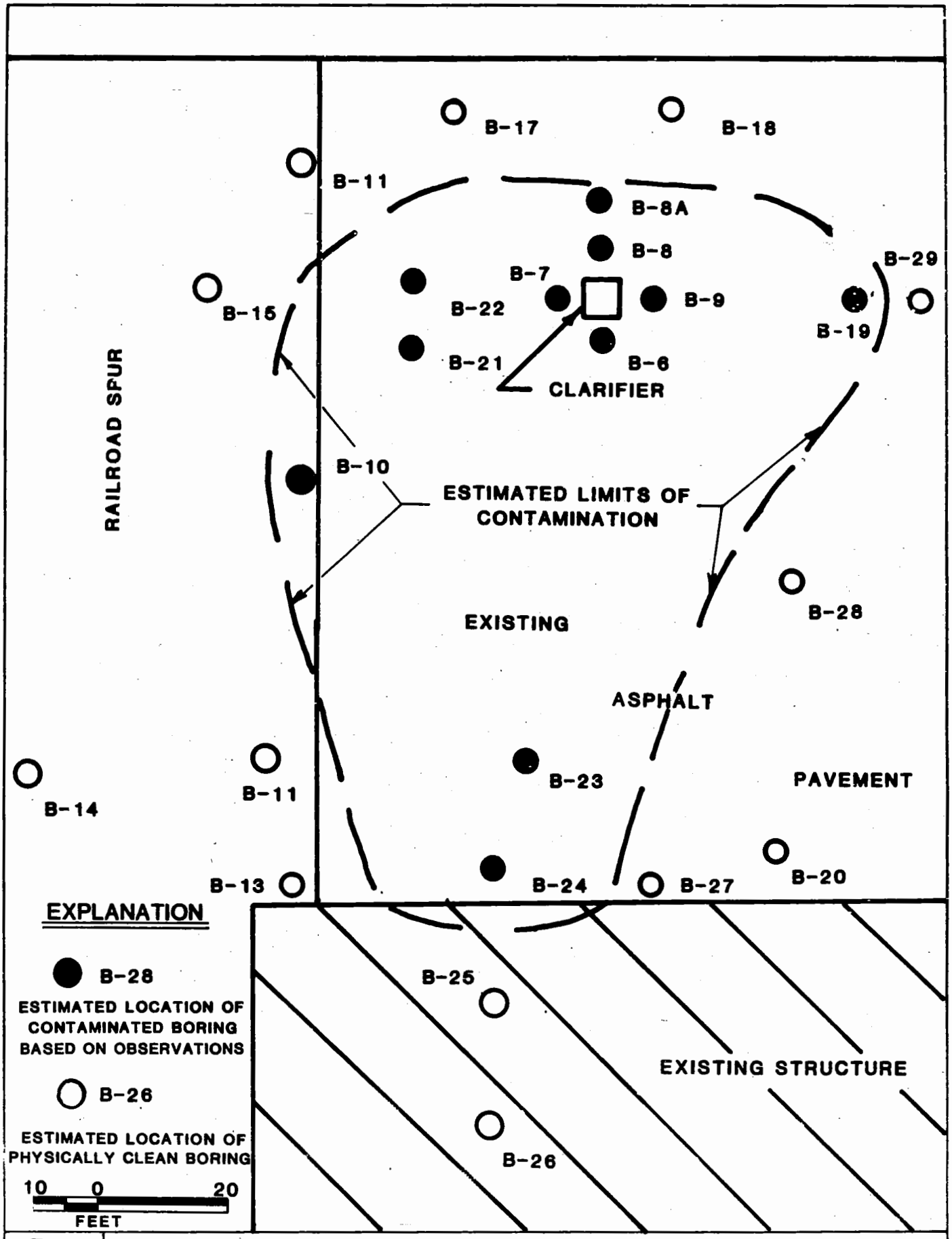
conduct additional drilling and sampling and by physical observation, determine the extent of the hydrocarbon contamination. Thus, a phase three drilling and sampling program was conducted. Soil samples were to be collected and preserved in case labortory analyses became necessary in the future. To date no laboratory analyses have been conducted on soil samples collected during the phase three drilling and sampling program. The samples are currently refrigerated at the SMC facility. SMC has recently been authorized by Coca-Cola to select five representative soil samples from the phase three drilling program for analyses to confirm the physical observations made. Laboratory analyses of these selected soil samples should be completed with ten days.

3.0 SUMMARY OF FINDINGS AND CONCLUSIONS

General findings of the phase 1, 2, and 3 investigation are as follows.

- The vertical and horizontal limits of the hydrocarbon contamination have been established based on physical observations. The horizontal limits of the contamination are shown relative to surrounding structures on Figure 1, a sketch of the site. The maximum depth that contamination was found was approximately 10 feet and the average depth is between 3 and 5 feet.

- Based on the horizontal and vertical limits of the contamination, the volume of contaminated soil appears to be between 750 and 1,000 cubic yards. This is only an estimate, conditions found during the future removal of this soil could change outside of the borings excavated, thus, this volume could vary.



SMC	LIMITS OF CONTAMINATION		
	JOB NO.: 10221-00	DATE: NOVEMBER, 1988	FIGURE:

4.0 RECOMMENDATIONS

- o Prior to the purchase of the subject site, Coca-Cola should be satisfied that the contaminated soil at the site has been thoroughly removed and properly documented or that a suitable arangement is made between the current owner and Coca-Cola that recognizes that clean up costs are likely to be incurred as a result of the finding of this contaminated soil. A general industry "rule of thumb cost" for the removal and legal disposal of hydrocarbon contaminated soil is between $250.00 and $300.00 per cubic yard.

- o The finding of hydrocarbon contaminated soil at this site should be reported to pertinent government regulatory agencies by the owner. And a remediation plan should be proposed and implemented.

5.0 LIMITATIONS OF INVESTIGATION

This Interim Report was prepared using a degree of care and skill ordinarily exercised, under similar circumstances, by reputable Soil Engineers, Geologists, and Environmental Scientists practicing in this or similar localities. No other warranty, expressed or implied is made as to the conclusions and professional advise included in this Plan. This Report was prepared for the use of Coca-Cola Enterprises and is intended for use as a means of final documentation of the contaminated soil discussed herein.

If you have any questions regarding this matter, please call.

Very Truly Yours
Stoney-Miller Consultants, Inc.

Gary T. Carlin
Consulting Environmental Geologist

Attachments: Figure 1 - Site Sketch

APPENDIX

LABROATORY RESULTS

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT **Stoney-Miller Consultants**
14 Hughes, Suite B-101
Irvine, California 92718
Attention: Gary Carlin

DATE October 17, 1988

RECEIVED October 5, 1988

LABORATORY NO. 31002

SAMPLE Soils B-3 - 1' from Coca Cola, Torrance

INVESTIGATION As Requested

RESULTS

Parameter	**Milligrams per Kilogram**
Total Petroleum Hydrocarbons (418.1)	858
Polychlorinated Biphenyls (8080):	
PCB - 1016	ND <0.1
PCB - 1221	ND <0.1
PCB - 1232	ND <0.1
PCB - 1242	ND <0.1
PCB - 1248	ND <0.1
PCB - 1254	ND <0.1
PCB - 1260	ND <0.1

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Julia Nayberg, Manager
Inorganic Chemistry

301 00227

This report applies only to the sample, or samples investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
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CLIENT: **Stoney-Miller Consultants**
14 Hughes, Suite B-101
Irvine, California 92718
Attention: Gary Carlin

DATE: October 17, 1988

RECEIVED: October 5, 1988

SAMPLE: Soils B-3 - 1' from Coca Cola, Torrance

LABORATORY NO.: 31002

INVESTIGATION: As Requested

RESULTS

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PCB - 1016	ND <0.1
PCB - 1221	ND <0.1
PCB - 1232	ND <0.1
PCB - 1242	ND <0.1
PCB - 1248	ND <0.1
PCB - 1254	ND <0.1
PCB - 1260	ND <0.1

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

301 00228

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REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT **Stoney-Miller Consultants, Inc.**

DATE October 17, 1988

RECEIVED October 5, 1988

LABORATORY NO. 31002

SAMPLE

Soil: B-3-1'

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Phenol	660 ug/kg	ND
bis(2-Chloroethyl) ether	660 ug/kg	ND
2-Chlorophenol	660 ug/kg	ND
1,3-Dichlorobenzene	660 ug/kg	ND
1,4-Dichlorobenzene	660 ug/kg	ND
Benzyl Alcohol	1300 ug/kg	ND
1,2-Dichlorobenzene	660 ug/kg	ND
2-Methylphenol	660 ug/kg	ND
bis(2-Chloroisopropyl) ether	660 ug/kg	ND
4-Methylphenol	660 ug/kg	ND
N-Nitroso-Di-N-propylamine	660 ug/kg	ND
Hexachloroethane	660 ug/kg	ND
Nitrobenzene	660 ug/kg	ND
Isophorone	660 ug/kg	ND
2-Nitrophenol	660 ug/kg	ND
2,4-Dimethylphenol	660 ug/kg	ND
Benzoic Acid	3300 ug/kg	ND
bis(2-Chloroethyoxy)methane	660 ug/kg	ND
2,4-Dichlorophenol	660 ug/kg	ND
1,2,4-Trichlorobenzene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

301 00229

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TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31002
CLIENT: Stoney-Miller

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	9,400
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	7,700
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31002
CLIENT: Stoney-Miller

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit* ***	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.
** ND = Not detected, below detection limit.

*** The detection limits were multiplied by 100X.

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT Stoney-Miller Consultants, Inc.
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE October 25, 1988

RECEIVED October 17, 1988

SAMPLE Soils from Coca-Cola, Torrance

LABORATORY NO. 31100

INVESTIGATION

As requested

RESULTS

Sample Identification	MILLIGRAMS PER KILOGRAM Total Petroleum Hydrocarbons (418.1)
B-7-5'	2
B-7-15'	<1
B-8-2 1/2'	8,686
B-8-15'	<1
B-9-5'	210
B-9-15'	<1
B-10-3'	1,880
B-10-10'	<1
B-11-8'	4

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

301 00232

This report applies only to the sample (or samples) investigated and is not necessarily indicative of the quality or condition of apparently similar or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS

RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT: Stoney-Miller Consultants, Inc.
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-7-5'

LABORATORY NO.: 31100-1

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Phenol	660	ug/kg	ND
bis(2-Chloroethyl) ether	660	ug/kg	ND
2-Chlorophenol	600	ug/kg	ND
1,3-Dichlorobenzene	660	ug/kg	ND
1,4-Dichlorobenzene	660	ug/kg	ND
Benzyl Alcohol	1300	ug/kg	ND
1,2-Dichlorobenzene	660	ug/kg	ND
2-Methylphenol	660	ug/kg	ND
bis(2-Chloroisopropyl) ether	660	ug/kg	ND
4-Methylphenol	660	ug/kg	ND
N-Nitroso-Di-N-propylamine	660	ug/kg	ND
Hexachloroethane	660	ug/kg	ND
Nitrobenzene	660	ug/kg	ND
Isophorone	660	ug/kg	ND
2-Nitrophenol	660	ug/kg	ND
2,4-Dimethylphenol	660	ug/kg	ND
Benzoic Acid	3300	ug/kg	ND
bis(2-Chloroethyoxy)methane	660	ug/kg	ND
2,4-Dichlorophenol	660	ug/kg	ND
1,2,4-Trichlorobenzene	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

This report applies only to the sample (or samples) investigated and is not necessarily indicative of the quality or reliability of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-1

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	ND
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	ND
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-1

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT **Stoney-Miller Consultants, Inc.**
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE October 25, 1988

RECEIVED October 17, 1988

SAMPLE B-7-15'

LABORATORY NO. 31100-2

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Phenol	660 ug/kg	ND
bis(2-Chloroethyl) ether	660 ug/kg	ND
2-Chlorophenol	600 ug/kg	ND
1,3-Dichlorobenzene	660 ug/kg	ND
1,4-Dichlorobenzene	660 ug/kg	ND
Benzyl Alcohol	1300 ug/kg	ND
1,2-Dichlorobenzene	660 ug/kg	ND
2-Methylphenol	660 ug/kg	ND
bis(2-Chloroisopropyl) ether	660 ug/kg	ND
4-Methylphenol	660 ug/kg	ND
N-Nitroso-Di-N-propylamine	660 ug/kg	ND
Hexachloroethane	660 ug/kg	ND
Nitrobenzene	660 ug/kg	ND
Isophorone	660 ug/kg	ND
2-Nitrophenol	660 ug/kg	ND
2,4-Dimethylphenol	660 ug/kg	ND
Benzoic Acid	3300 ug/kg	ND
bis(2-Chloroethyoxy)methane	660 ug/kg	ND
2,4-Dichlorophenol	660 ug/kg	ND
1,2,4-Trichlorobenzene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

301 00236

This report applies only to the sample or samples investigated and is not necessarily indicative of the quality or composition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-2

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	ND
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	ND
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-2

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT
Stoney-Miller Consultants, Inc.
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-8-2 1/2'

LABORATORY NO.: 3110 -3

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Phenol	660 ug/kg	ND
bis(2-Chloroethyl) ether	660 ug/kg	ND
2-Chlorophenol	600 ug/kg	ND
1,3-Dichlorobenzene	660 ug/kg	ND
1,4-Dichlorobenzene	660 ug/kg	ND
Benzyl Alcohol	1300 ug/kg	ND
1,2-Dichlorobenzene	660 ug/kg	ND
2-Methylphenol	660 ug/kg	ND
bis(2-Chloroisopropyl) ether	660 ug/kg	ND
4-Methylphenol	660 ug/kg	ND
N-Nitroso-Di-N-propylamine	660 ug/kg	ND
Hexachloroethane	660 ug/kg	ND
Nitrobenzene	660 ug/kg	ND
Isophorone	660 ug/kg	ND
2-Nitrophenol	660 ug/kg	ND
2,4-Dimethylphenol	660 ug/kg	ND
Benzoic Acid	3300 ug/kg	ND
bis(2-Chloroethyoxy)methane	660 ug/kg	ND
2,4-Dichlorophenol	660 ug/kg	ND
1,2,4-Trichlorobenzene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

301 00239

This report applies only to the sample (or samples) investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-3

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	55,500
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	32,600
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	16,600
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	15,100
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	32,400
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	10,100
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-3

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

*** Detection limits are multiplied by 10X.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT **Stoney-Miller Consultants, Inc.**
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE October 25, 1988

RECEIVED October 17, 1988

LABORATORY NO. 31100-4

SAMPLE B-8-15'

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Phenol	660 ug/kg	ND
bis(2-Chloroethyl) ether	660 ug/kg	ND
2-Chlorophenol	600 ug/kg	ND
1,3-Dichlorobenzene	660 ug/kg	ND
1,4-Dichlorobenzene	660 ug/kg	ND
Benzyl Alcohol	1300 ug/kg	ND
1,2-Dichlorobenzene	660 ug/kg	ND
2-Methylphenol	660 ug/kg	ND
bis(2-Chloroisopropyl) ether	660 ug/kg	ND
4-Methylphenol	660 ug/kg	ND
N-Nitroso-Di-N-propylamine	660 ug/kg	ND
Hexachloroethane	660 ug/kg	ND
Nitrobenzene	660 ug/kg	ND
Isophorone	660 ug/kg	ND
2-Nitrophenol	660 ug/kg	ND
2,4-Dimethylphenol	660 ug/kg	ND
Benzoic Acid	3300 ug/kg	ND
bis(2-Chloroethyoxy)methane	660 ug/kg	ND
2,4-Dichlorophenol	660 ug/kg	ND
1,2,4-Trichlorobenzene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

301 00242

This report applies only to the sample (or samples) investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used in whole or in part in any advertising or publicity matter without prior written authorization from these Laboratories.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-4

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	ND
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	ND
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-4

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT: Stoney-Miller Consultants, Inc.
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-9-5'

LABORATORY NO.: 31100-5

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Phenol	660	ug/kg	ND
bis(2-Chloroethyl) ether	660	ug/kg	ND
2-Chlorophenol	600	ug/kg	ND
1,3-Dichlorobenzene	660	ug/kg	ND
1,4-Dichlorobenzene	660	ug/kg	ND
Benzyl Alcohol	1300	ug/kg	ND
1,2-Dichlorobenzene	660	ug/kg	ND
2-Methylphenol	660	ug/kg	ND
bis(2-Chloroisopropyl) ether	660	ug/kg	ND
4-Methylphenol	660	ug/kg	ND
N-Nitroso-Di-N-propylamine	660	ug/kg	ND
Hexachloroethane	660	ug/kg	ND
Nitrobenzene	660	ug/kg	ND
Isophorone	660	ug/kg	ND
2-Nitrophenol	660	ug/kg	ND
2,4-Dimethylphenol	660	ug/kg	ND
Benzoic Acid	3300	ug/kg	ND
bis(2-Chloroethyoxy)methane	660	ug/kg	ND
2,4-Dichlorophenol	660	ug/kg	ND
1,2,4-Trichlorobenzene	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

301 00245

This report applies only to the sample (or samples) investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-5

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	ND
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	ND
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-5

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

*** Detection limits are multiplied by 10X.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT: **Stoney-Miller Consultants, Inc.**
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-9-15'

LABORATORY NO.: 31100-6

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Phenol	660	ug/kg	ND
bis(2-Chloroethyl) ether	660	ug/kg	ND
2-Chlorophenol	600	ug/kg	ND
1,3-Dichlorobenzene	660	ug/kg	ND
1,4-Dichlorobenzene	660	ug/kg	ND
Benzyl Alcohol	1300	ug/kg	ND
1,2-Dichlorobenzene	660	ug/kg	ND
2-Methylphenol	660	ug/kg	ND
bis(2-Chloroisopropyl) ether	660	ug/kg	ND
4-Methylphenol	660	ug/kg	ND
N-Nitroso-Di-N-propylamine	660	ug/kg	ND
Hexachloroethane	660	ug/kg	ND
Nitrobenzene	660	ug/kg	ND
Isophorone	660	ug/kg	ND
2-Nitrophenol	660	ug/kg	ND
2,4-Dimethylphenol	660	ug/kg	ND
Benzoic Acid	3300	ug/kg	ND
bis(2-Chloroethyoxy)methane	660	ug/kg	ND
2,4-Dichlorophenol	660	ug/kg	ND
1,2,4-Trichlorobenzene	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

301 00248

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TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-9

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-6

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	ND
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	ND
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-6

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT: Stoney-Miller Consultants, Inc.
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-10-3'

LABORATORY NO.: 31100-7

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Phenol	660	ug/kg	ND
bis(2-Chloroethyl) ether	660	ug/kg	ND
2-Chlorophenol	600	ug/kg	ND
1,3-Dichlorobenzene	660	ug/kg	ND
1,4-Dichlorobenzene	660	ug/kg	ND
Benzyl Alcohol	1300	ug/kg	ND
1,2-Dichlorobenzene	660	ug/kg	ND
2-Methylphenol	660	ug/kg	ND
bis(2-Chloroisopropyl) ether	660	ug/kg	ND
4-Methylphenol	660	ug/kg	ND
N-Nitroso-Di-N-propylamine	660	ug/kg	ND
Hexachloroethane	660	ug/kg	ND
Nitrobenzene	660	ug/kg	ND
Isophorone	660	ug/kg	ND
2-Nitrophenol	660	ug/kg	ND
2,4-Dimethylphenol	660	ug/kg	ND
Benzoic Acid	3300	ug/kg	ND
bis(2-Chloroethyoxy)methane	660	ug/kg	ND
2,4-Dichlorophenol	660	ug/kg	ND
1,2,4-Trichlorobenzene	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

** ND = Not detected, below detection limit.

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TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-7

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	14,400
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	10,500
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	10,200
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-7

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

*** Detection limits are multiplied by 10X.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

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TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT: **Stoney-Miller Consultants, Inc.**
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-10-10'

LABORATORY NO.: 31100-8

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Phenol	660 ug/kg	ND
bis(2-Chloroethyl) ether	660 ug/kg	ND
2-Chlorophenol	600 ug/kg	ND
1,3-Dichlorobenzene	660 ug/kg	ND
1,4-Dichlorobenzene	660 ug/kg	ND
Benzyl Alcohol	1300 ug/kg	ND
1,2-Dichlorobenzene	660 ug/kg	ND
2-Methylphenol	660 ug/kg	ND
bis(2-Chloroisopropyl) ether	660 ug/kg	ND
4-Methylphenol	660 ug/kg	ND
N-Nitroso-Di-N-propylamine	660 ug/kg	ND
Hexachloroethane	660 ug/kg	ND
Nitrobenzene	660 ug/kg	ND
Isophorone	660 ug/kg	ND
2-Nitrophenol	660 ug/kg	ND
2,4-Dimethylphenol	660 ug/kg	ND
Benzoic Acid	3300 ug/kg	ND
bis(2-Chloroethyoxy)methane	660 ug/kg	ND
2,4-Dichlorophenol	660 ug/kg	ND
1,2,4-Trichlorobenzene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

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301 00254

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TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-8

INVESTIGATION: Base Neutrals Acid Extractables by GC/MS (EPA 8270)

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Naphthalene	660	ug/kg	ND
4-Chloroaniline	1300	ug/kg	ND
Hexachlorobutadiene	660	ug/kg	ND
4-Chloro-3-methylphenol	1300	ug/kg	ND
2-Methylnaphthalene	660	ug/kg	ND
Hexachlorocyclopentadiene	660	ug/kg	ND
2,4,6-Trichlorophenol	660	ug/kg	ND
2,4,5-Trichlorophenol	660	ug/kg	ND
2-Chloronaphthalene	660	ug/kg	ND
2-Nitroaniline	3300	ug/kg	ND
Dimethyl phthalate	660	ug/kg	ND
Acenaphthylene	660	ug/kg	ND
3-Nitroaniline	3300	ug/kg	ND
Acenaphthene	660	ug/kg	ND
2,4-Dinitrophenol	3300	ug/kg	ND
4-Nitrophenol	3300	ug/kg	ND
Dibenzofuran	660	ug/kg	ND
2,4-Dinitrotoluene	660	ug/kg	ND
2,6-Dinitrotoluene	660	ug/kg	ND
Diethylphthalate	660	ug/kg	ND
4-Chlorophenyl phenyl ether	660	ug/kg	ND
Fluorene	660	ug/kg	ND
4-Nitroaniline	3300	ug/kg	ND
4,6-Dinitro-2-methylphenol	3300	ug/kg	ND
N-Nitrosodiphenylamine	660	ug/kg	ND
4-Bromophenyl phenyl ether	660	ug/kg	ND
Hexachlorobenzene	660	ug/kg	ND
Pentachlorophenol	3300	ug/kg	ND
Phenanthrene	660	ug/kg	ND
Anthracene	660	ug/kg	ND
Di-n-butylphthalate	660	ug/kg	ND
Fluoranthene	660	ug/kg	ND
Pyrene	660	ug/kg	ND
Butyl benzyl phthalate	660	ug/kg	ND
3,3'-Dichlorobenzidine	1300	ug/kg	ND
Benzo(a)anthracene	660	ug/kg	ND
bis(2-ethylhexyl)phthalate	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

TRUESDAIL LABORATORIES, INC.

LAB NUMBER: 31100-8

INVESTIGATION: **Base Neutrals Acid Extractables by GC/MS (EPA 8270)**

Constituent	Approximate Detection Limit*	Concentration (ug/kg)**
Chrysene	660 ug/kg	ND
Di-n-octyl phthalate	660 ug/kg	ND
Benzo(b)fluoranthene	660 ug/kg	ND
Benzo(k)fluoranthene	660 ug/kg	ND
Benzo(a)pyrene	660 ug/kg	ND
Indeno(1,2,3-cd)pyrene	660 ug/kg	ND
Dibenz(a,h)anthracene	660 ug/kg	ND
Benzo(g,h,i)perylene	660 ug/kg	ND

* Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected, below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Julia Nayberg

Julia Nayberg, Manager
Inorganic Chemistry

REPORT

TRUESDAIL LABORATORIES, INC.

CHEMISTS - MICROBIOLOGISTS - ENGINEERS
RESEARCH — DEVELOPMENT — TESTING

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92680
AREA CODE 714 • 730-6239
AREA CODE 213 • 225-1564
CABLE: TRUELABS

CLIENT: Stoney-Miller Consultants, Inc.
14 Hughes, Suite B101
Irvine, CA 92718
Attention: Gary Carlin

DATE: October 25, 1988

RECEIVED: October 17, 1988

SAMPLE: B-11-8'

LABORATORY NO.: 31100-9

INVESTIGATION

Base Neutral Acid Extractables by GC/MS (EPA 8270)

RESULTS

Constituent	Approximate Detection Limit*		Concentration (ug/kg)**
Phenol	660	ug/kg	ND
bis(2-Chloroethyl) ether	660	ug/kg	ND
2-Chlorophenol	600	ug/kg	ND
1,3-Dichlorobenzene	660	ug/kg	ND
1,4-Dichlorobenzene	660	ug/kg	ND
Benzyl Alcohol	1300	ug/kg	ND
1,2-Dichlorobenzene	660	ug/kg	ND
2-Methylphenol	660	ug/kg	ND
bis(2-Chloroisopropyl) ether	660	ug/kg	ND
4-Methylphenol	660	ug/kg	ND
N-Nitroso-Di-N-propylamine	660	ug/kg	ND
Hexachloroethane	660	ug/kg	ND
Nitrobenzene	660	ug/kg	ND
Isophorone	660	ug/kg	ND
2-Nitrophenol	660	ug/kg	ND
2,4-Dimethylphenol	660	ug/kg	ND
Benzoic Acid	3300	ug/kg	ND
bis(2-Chloroethyoxy)methane	660	ug/kg	ND
2,4-Dichlorophenol	660	ug/kg	ND
1,2,4-Trichlorobenzene	660	ug/kg	ND

* Detection limits may vary with the type of sample and with the concentration of other species present.

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301 00257

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STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
TOXIC SUBSTANCES CONTROL DIVISION
REGION 4
245 WEST BROADWAY, SUITE 350
LONG BEACH, CA 90802
(213) 590-4868

July 21, 1989

RECEIVED
JUL 24 1989

Mr. Michael J. Miller, P.E.
Stoney-Miller Consultants, Inc.
14 Hughes, Suite B-101
Irvine, California 92718

Attn: Gary Carlin

Dear Mr. Miller:

RECENTLY ACQUIRED PROPERTY OF COCA COLA ENTERPRISES IN THE CARSON-TORRANCE AREA OF THE CITY OF LOS ANGELES, CALIFORNIA AT 19875 PACIFIC GATEWAY DRIVE

We have completed our review of your letter report, hand delivered to this office on July 11, 1989 and have the following comments.

Your property lies about 1,300 feet north of the Del Amo Hazardous Waste Site. This site consists of waste disposal ponds and sumps that were used by a former synthetic rubber manufacturing complex. The types of wastes disposed in these ponds include volatile and semi-volatile organic substances such as benzene, styrene and naphthalene. It is believed that the complex covered the entire area bordered by 190th Street to the north, Del Amo Boulevard to the south, Normandie Avenue to the west, and Varmont Avenue and Hamilton Avenue to the east. Documents in our files indicate that there were manufacturing areas, underground and above ground tanks, underground lines, and possible sumps that may be sources of soil and ground water contamination. Soils and ground water beneath the Del Amo Site are contaminated by hazardous substances believed to have originated from the disposal ponds and sumps.

Because of the contaminant problems associated with the Del Amo disposal areas, we have referred the Site to the U.S. Environmental Protection Agency (EPA) for consideration for the National Priorities List. The Department of Health Services (DHS) Toxic Substances Control Division is also evaluating the entire area of the former rubber manufacturing complex as a source of ground water contamination. The high levels of napthalene and phenanthrene that you discovered at the subject location may be associated with the synthetic rubber manufacturing operations once conducted on your property because these same chemicals were also found at the Del Amo site. We suggest that you make a thorough historical search of your property to determine the types of past operations that may be causing the contamination. Should you have any plans to remediate the contamination on this property, this office would review those plans prior to proceeding.

Mr. Michael J. Miller, P.E.
Page 2
July 21, 1989

If you have any questions, please contact Julia Bussey or Alice Gimeno at (213) 590-4856.

Sincerely,

John Scandura, Chief
Site Mitigation Unit
Region 4 (Long Beach)
Toxic Substances Control Division

Enclosure

HARGIS + ASSOCIATES, INC.
2223 Avenida De La Playa, Suite 300
La Jolla, California 92037
(619) 454-0165
Telecopier (619) 454-5839

David R. Hargis, Ph.D., R.G.
Michael R. Long, R.G.
Terry M. Turner, R.G.
Roger A. Niemeyer, R.G.
Leo S. Leonhart, Ph.D., R.G.
Lanae J. Raymond
Peter T. Quinlan
Mary F. Jones, Ph.D., R.E.A.
Timothy T. Jarvis, Ph.D., R.E.A.

HAVE — Let's discuss this MATT

July 18, 1989

VIA FEDERAL EXPRESS

Mr. Matt Fanoe
COCA-COLA ENTERPRISES
One Coca-Cola Plaza, CCE-819
Atlanta, GA 30301

Re: Request for Property Access to Install a Groundwater Test Well

Dear Mr. Fanoe:

In regards to our telephone conversation of July 14, 1989, the following is the request for access which I mentioned. Please review and forward it to the necessary personnel within your company.

Pursuant to an administrative order from the United States Environmental Protection Agency (EPA) issued to Montrose Chemical Corporation of California (Montrose), this letter is a request for access to the property shown as owned by Coca-Cola Bottling Company of Los Angeles, Torrance, California. The purpose of the requested access is to install and sample, on a regular basis, one groundwater monitor well. The well is part of a groundwater investigation conducted by Montrose and overseen by the EPA that presently includes approximately 60 existing and proposed monitor wells in the immediate area (Figure 1).

The monitoring well is proposed for the northwest portion of the Coca-Cola Bottling Company property located at 19899 Pacific Gateway Drive, in Torrance, California. The field work required under the order involves access for: 1) a small truck mounted hollow stem auger drill rig, operated by sub-contractors to Hargis + Associates, Inc.; 2) Hargis + Associates, Inc. field personnel; and 3) EPA oversight personnel. The initial field work should involve no more than one week, and is planned to commence in late August or early September of 1989. The name and address of the proposed drilling contractor is: Beylik Drilling, Inc., 591 South Walnut, La Habra, California 90631.

The site will be restored to as near its original condition as possible before the field crews leave the property. An example of the proposed surface completion for the monitor wells has been provided (Figure 2).

Other Offices:
Tucson, Arizona
Phoenix, Arizona
Los Angeles, California

HARGIS + ASSOCIATES, INC.

Mr. Matt Fanoe
July 18, 1989
Page 2

Routine future access to the monitor well to collect groundwater samples will also be necessary. Coca-Cola Bottling Company will be given ample notice before any sampling activities take place.

Hargis + Associates, Inc. will telephone you later this week to confirm receipt of this letter and to further discuss this matter. If you have any questions in the interim, please contact Roger Niemeyer, Matthew Wiedlin, or myself. Hargis + Associates, Inc. looks forward to cooperating with you on with matter.

Sincerely,

HARGIS + ASSOCIATES, INC.

Matthew Wiedlin for

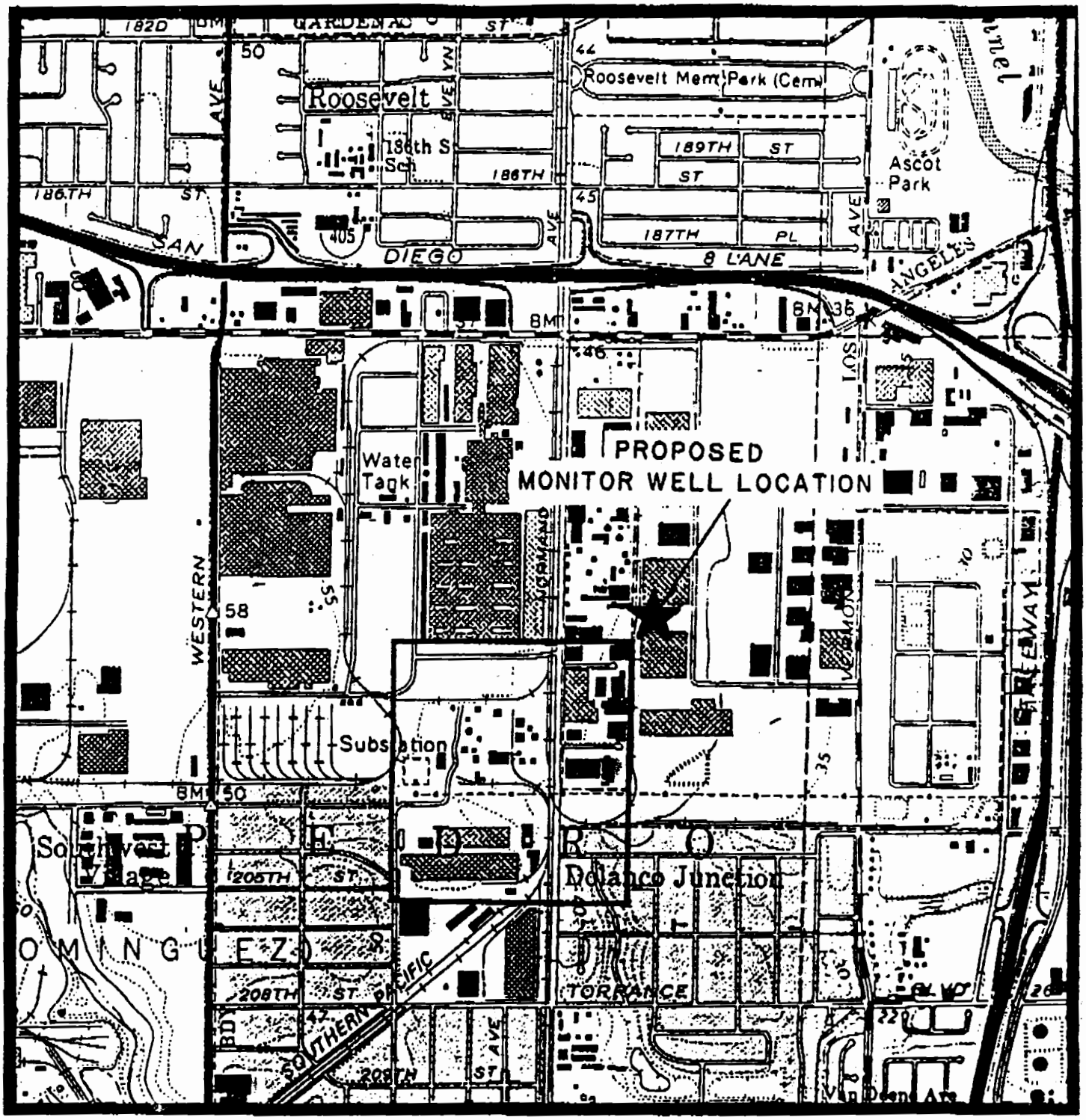
Rush N. Boynton
Hydrogeologist

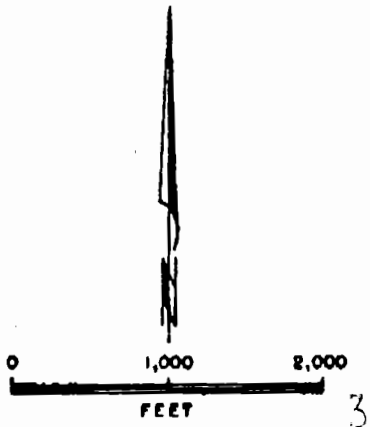
RNB/elm

Enclosures

cc: Karl Lytz, Latham & Watkins
Dan Greeno, Montrose Chemical Co.
Johanna Miller, EPA Region IX

fanoe.ltr





MONTROSE, CALIFORNIA
TORRANCE, CALIFORNIA

APPROXIMATE LOCATION OF STUDY AREA

HARGIS + ASSOCIATES, INC.
Consultants in Hydrogeology
San Diego, California

7/89
FIGURE 1

PREPARED BY _____ REVIEWED BY _____

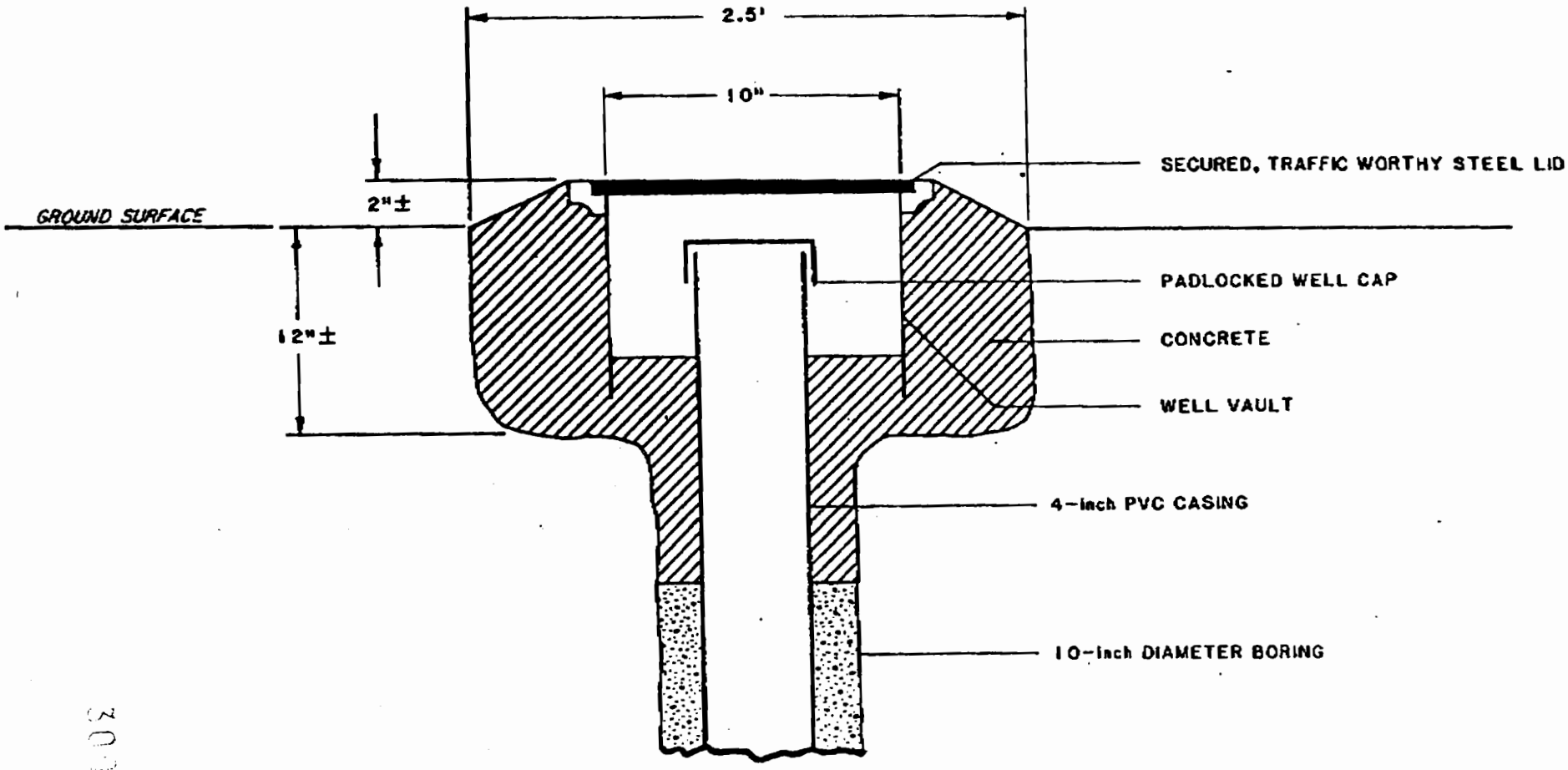


FIGURE 2. CROSS SECTIONAL VIEW OF MONITOR WELL COMPLETION

300 00065

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
TOXIC SUBSTANCES CONTROL DIVISION
REGION 4
245 WEST BROADWAY, SUITE 350
LONG BEACH, CA 90802
(213) 590-4868

July 21, 1989

RECEIVED
JUL 24 1989

Mr. Michael J. Miller, P.E.
Stoney-Miller Consultants, Inc.
14 Hughes, Suite B-101
Irvine, California 92718

Attn: Gary Carlin

Dear Mr. Miller:

RECENTLY ACQUIRED PROPERTY OF COCA COLA ENTERPRISES IN THE CARSON-TORRANCE AREA OF THE CITY OF LOS ANGELES, CALIFORNIA AT 19875 PACIFIC GATEWAY DRIVE

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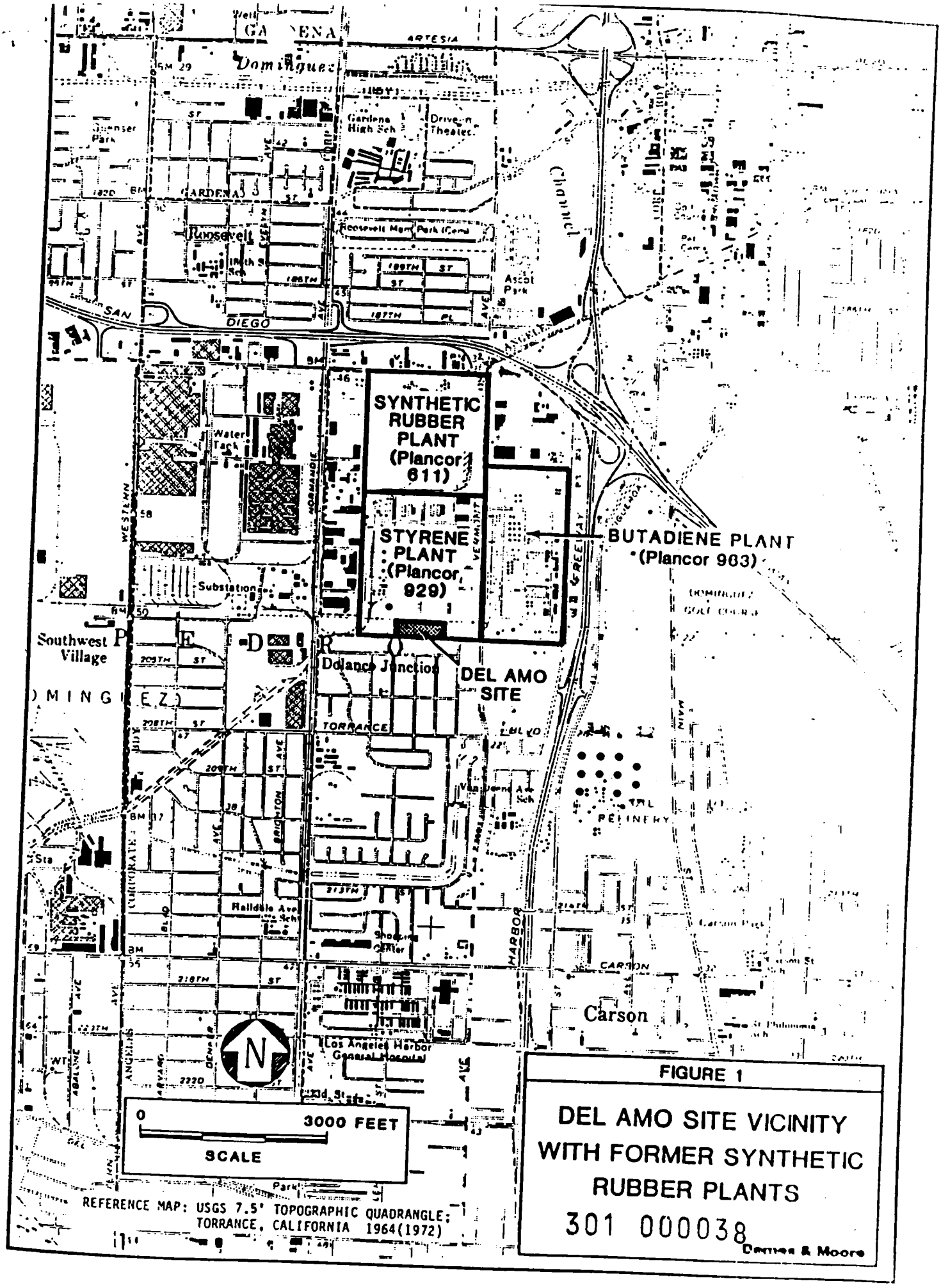
Because of the contaminant problems associated with the Del Amo disposal areas, we have referred the Site to the U.S. Environmental Protection Agency (EPA) for consideration for the National Priorities List. The Department of Health Services (DHS) Toxic Substances Control Division is also evaluating the entire area of the former rubber manufacturing complex as a source of ground water contamination. The high levels of napthalene and phenanthrene that you discovered at the subject location may be associated with the synthetic rubber manufacturing operations once conducted on your property because these same chemicals were also found at the Del Amo site. We suggest that you make a thorough historical search of your property to determine the types of past operations that may be causing the contamination. Should you have any plans to remediate the contamination on this property, this office would review those plans prior to proceeding.

If you have any questions, please contact Julia Bussey or Alice Gimeno at (213) 590-4856.

Sincerely,

John Scandura, Chief
Site Mitigation Unit
Region 4 (Long Beach)
Toxic Substances Control Division

Enclosure



REFERENCE MAP: USGS 7.5' TOPOGRAPHIC QUADRANGLE: TORRANCE, CALIFORNIA 1964(1972)

RESPONSIBLE PARTY-LEAD SITE CLEANUP WORKPLAN

DEL AMO BOULEVARD

I. Site Information

A. Location and Type of Site

Del Amo Boulevard
Between Vermont and Normandie
Torrance, CA 90502
Los Angeles

The site consists of waste disposal ponds that were used by a former synthetic rubber maunfacturing complex. The site operations ceased in the early 1970s and the disposal areas were covered over with soil and later sold to a series of land development corporations. Currently, the site is fenced and posted and there is little visual evidence of disposal activities.

B. Description of Hazardous Wastes

The disposal areas consisted of three large, shallow evaporation ponds and six sumps that were used from the mid-1950s until the mid-1960s for disposal of aqueous sludges produced during synthetic rubber manufacture. These ponds contain high levels of polynuclear aromatic hydrocarbons (PNAs) and lower levels of volatile organic compounds (VOCs).

Substances of concern that were found in various studies include benzene, toluene, ethylbenzene, dichlorobenzene, napthalene, acenaphthylene, acenapthene, fluorene, phenathrene, anthracene, fluoranthene, pyrene, beno(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, dibena(a,h)anthracene, ideno(1,2,3-c,d)pyrene, and benzo(ghi)perylene.

Shallow ground water beneath the site has been found to be contaminated with primarily volatile organic compounds, including benzene, and toluene.

C. Threat to Public Health and Environment

Although the disposal areas have been inactive for some time, residents are located within 500 feet of the site, and may be threatened by contaminants migrating in subsurface soils and ground water. Potential pathways for exposure include release of adverse air emissions during site disturbance, movement of contaminants from the perched water table to deeper drinking water aquifers, and migration of a static organic vapor plume to underlying residential areas. Under current, undisturbed conditions, the site has little impact upon local

air quality.

The degree of health hazard posed by chemical contamination of a site depends on the concentration of the material present and the duration of exposure. DHS policy is to evaluate all listed hazardous substance release sites for the need to take action to abate any acute public health or environmental threats posed by a site. Therefore, the threats described in this document generally represent the potential impact of long-term exposure to specific hazardous substances if: 1) the site is not abated, 2) the substances migrate offsite, and 3) the substances at some point come into contact with human or environmental receptors.

II. Site Status

A. Status of Site Activity

Site characterization studies were conducted by the land owner in 1984 and by the Department in 1986 and 1987. An agreement was signed by potential responsible parties (PRPs) to conduct a feasibility study for remediating the onsite soil contamination under DHS oversight. A ground water study by EPA was conducted mid-1988 to determine if substances released from the Del Amo Site were entering usable aquifers.

B. Projected Revenue Sources

The responsible parties have entered into an enforceable agreement with DHS for oversight/monitoring of their cleanup efforts. DHS has budgeted $200,000 for related direct costs. DHS will recover 100 percent of direct costs plus staff costs and overhead related to the project. DHS expects responsible parties to pay all costs associated with site cleanup.

III. Project Completion Estimates

The estimates shown below reflect completion of major site cleanup phases based on current information regarding this site and responsible party cleanup plans and completed actions.

Task Group	Estimated Completion
1. Site Characterization	
a) Remedial Action Order	March 1988
b) Remedial Investigation/ Feasibility Study	Oct. 1990
2. Remedial Action Plan	April 1991
3. Remedial Action	
a) Design	Oct. 1991
b) Implementation	April 1993
c) Certification	June 1993
4. Cost Recovery and/or Operation and Maintenance	
a) Cost Recovery	June 1994
b) Operation and Maintenance	10-15 yrs

ROY G. WUCHITECH, CAL. BAR NO. 54846
STEPHEN J. O'NEIL, CAL. BAR NO. 127120
SHEPPARD, MULLIN, RICHTER & HAMPTON
333 South Hope Street, 48th Floor
Los Angeles, California 90071

Telephone: (213) 620-1780

Attorneys for Plaintiffs
AMCENA PROPERTIES, INC. and COCA-COLA
BOTTLING COMPANY OF LOS ANGELES

LODGED
SEP - 4 1992
CLERK, U.S. DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
BY DEPUTY

FILE # 232-45265
NAME CCLA v. Shell
CLIP Pleadings
REC'D 9/4/92
DOCKET/ CALENDAR? YES NO
ROY G. WUCHITECH

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

AMCENA PROPERTIES, INC., a California corporation; COCA-COLA BOTTLING COMPANY OF LOS ANGELES, a Delaware corporation, Plaintiffs, v. SHELL OIL COMPANY, a Delaware corporation; SHELL CHEMICAL COMPANY, a Delaware corporation; CC&F WESTERN DEVELOPMENT CO., INC., a California corporation; INTERNATIONAL PROPERTY DEVELOPMENT CO., a California corporation; CC&F WESTERN PROPERTIES, INC., a California corporation; WILLOWDALE INVESTMENTS, INC., a California corporation; CADILLAC FAIRVIEW/ CALIFORNIA, INC., a California corporation; CC&F AND WILLOWDALE WESTERN PROPERTIES, a California general partnership; INTSET INVESTMENT GROUP, a partnership; INTERNATIONALE SET, INC., a California corporation; and the UNITED STATES OF AMERICA, Defendants. AND RELATED CROSS-CLAIMS, COUNTERCLAIMS, AND THIRD-PARTY CLAIMS	Case No. 91-5436 WMB (JRx) SETTLEMENT CONFERENCE STATEMENT OF PLAINTIFFS AMCENA PROPERTIES, INC. AND COCA-COLA BOTTLING COMPANY OF LOS ANGELES DATE: September 10, 1992 TIME: 4:30 p.m. PLACE: Courtroom 7 Not For Filing To Be Lodged In The Courtroom Of The Honorable Harry Hupp

DOCUMENT DC 1-9-93 ATTY DATE 9/10/92 GROUP

Plaintiffs Amcena Properties, Inc. ("Amcena") and the Coca-Cola Bottling Company Of Los angeles ("CCLA") (collectively "Plaintiffs") hereby submit their Settlement Conference Statement in accordance with this Court's order dated August 21, 1992:

I.

PRELIMINARY STATEMENT

A. The Parties.

On October 7, 1991, Plaintiffs Amcena and CCLA filed a Complaint in United States District Court for the Central District of California to recover costs and damages that they had incurred by investigating and remediating contamination found in the soil at 19899 Pacific Gateway Drive in Torrance, California (the "Property"). Plaintiffs sued Shell Oil Company, the United States of America and a group of related partnerships and corporations that had held title to the Property between the years 1942 and 1978, including Cadillac Fairview/ California, Inc. CCLA is the current owner of the Property, while Amcena was the most recent former owner.

The property is a parcel in Torrance within a larger, approximately 290 acre site recently designated as the "Del Amo Superfund Site." On December 20, 1991, Plaintiffs filed their First Amended Complaint, stating claims for relief for recovery of response costs under CERCLA, the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. § 9607 et

seq.), and for contribution under CERCLA (42 U.S.C. § 9613). Plaintiffs also stated a variety of state statutory and common law claims. Included among the common law claims are a claim for continuing nuisance and a claim for fraudulent concealment.

The defendants either answered or filed a motion to dismiss under Fed. R. Civ. P. 12(b)(6). In addition, Shell Oil Company filed a Third Party Complaint naming Dow Chemical Company ("Dow"), Montrose Chemical Company, Uniroyal/Goodrich and Goodyear. Shell alleged that those parties had either owned or operated the facility at the time of the disposal of hazardous substances.

B. Plaintiffs' Damages.

CCLA agreed to purchase the Property from Amcena on September 23, 1988. On October 7, 1988, consultants hired by CCLA discovered that the soil on the Property was contaminated by petroleum hydrocarbons and polynucleated aromatic hydrocarbons ("PNAs"), such as naphthalene, acenaphthalene, and phenanthrene. The PNAs were detected at levels that are considered hazardous. Benzene, toluene, ethylbenzene, styrene, and xylenes were also discovered at hazardous concentrations on the Property. These latter compounds were either used extensively as feed stock by Dow and Shell or were by-products of the styrene production process. Many of these compounds were stored in bulk on or in the vicinity of the Property in tanks with capacities of several thousand gallons. Soils that were heavily contaminated were removed from

the Property and transported to a Class I hazardous waste disposal site.

Additional testing performed on the Property revealed petroleum hydrocarbon contamination around the former structure on the property and underneath its foundation. Soils containing total petroleum hydrocarbon contamination levels above 1000 parts per million were transported to a petroleum recycler. To date, CCLA and Amcena have paid $810,792.48 in response costs. In addition, CCLA and Amcena have incurred $210,360 in attorneys' fees. A breakdown of plaintiffs' damages is attached hereto as Exhibit "A." Those figures do not include attorneys' fees incurred in the last two months.

II.

HISTORY OF THE SITE

A. The Synthetic Rubber Facility.

During World War II, the United States Government constructed a synthetic rubber facility in Torrance, California. The synthetic rubber facility actually consisted of three separate manufacturing plants -- a styrene plant, a butadiene plant and a co-polymer plant. That rubber facility was constructed upon the 290-acre site that was recently designated by the U.S. Environmental Protection Agency ("EPA") as the Del Amo Superfund Site.

The CCLA Property at issue in this lawsuit is located upon land formerly occupied by the styrene plant. The styrene manufacturing facility was operated by Dow Chemical Company between 1943 and 1953. In 1953, the United States offered the facility for sale pursuant to the terms of the Rubber Producing Facilities Disposal Act of 1953.

While Dow operated the plant, the major raw materials from which styrene was made were benzene and propane. Other important materials required for operation of the plant were ammonia, aluminum chloride, sodium hydroxide, sulfur, chlorine, sulfuric acid, and dolomitic lime. The plant consisted of two ethyl benzene units, two hydrogenation units and two styrene purification units.

During ethylene production, propane was thermally cracked, and during the cracking process some PNAs were produced. Process waste streams from all the units were sent to a common disposal system. The waste effluent discharged into an oil separating basin and was settled. From the oil separator outlet, the waste was discharged into a baffled concrete basin for final settling. The discharge was mixed with the effluent from the co-polymer and butadiene plants and all process wastes were emptied into a waste slough. It was common to deposit process water waste in a system of open trenches throughout the property. Other wastes which could not be discharged into the process waste were pumped to diked areas, allowed to drain and dry, and hauled away by truck. Certain photographs show that the CCLA property lies on

top of or near one of those diked lagoons and also near or directly on top of a former crude benzene tank farm.

In 1955, Shell Oil Company purchased the Property. Shell, like Dow and the United States Government, used bogs on the southern end of the Del Amo site as evaporation pits for heavy oily sludge from ethylene production. Shell continued to use one of the two bogs until the mid-1960s. To date no less than eight polynuclear aromatics detected on the CCLA site were also found in these bogs located at the south end of the styrene plant. Dick Dodge served on the site for both Dow and Shell from the early 1940s to the 1960s. He swore under oath that polynuclear aromatics were deposited to the soil at the styrene facility. He had no knowledge whatsoever concerning polynuclear aromatics being associated with asphalt on the CCLA site. As stated previously, five other hazardous compounds unquestionably associated with the styrene facility were also found at the CCLA site.

By 1973, Shell had closed down its operations and sold the Property to Cabot, Cabot & Forbes (CC&F Western Development). CC&F sold an undivided one-half interest in the Property to Willowdale Investments (now Cadillac Fairview/California, Inc.) on March 17, 1976. It is believed that Cadillac Fairview and CC&F Western Development Co., Inc. developed the Property. The development included extensive grading of the soils, which transported contaminants in the soil.

The United States Environmental Protection Agency has designated the 290-acre site as a Superfund site and has applied for it to be placed on the National Priorities List. Shell, Dow, the United States Government, and Cadillac Fairview were named potentially responsible parties with respect to this site. All of those parties signed a Memorandum of Agreement for a Feasibility Study to remediate the site. Shell and Dow collectively agreed to pay 80 percent of the costs of this Feasibility Study, and Cadillac Fairview agreed to pay 5 percent. The cost of this study is likely to exceed $10 million.

Cadillac Fairview sued Dow Chemical and Shell in 1983 with respect to the waste pits on the southern portion of the Del Amo site. Discovery in that action may be used in the Amcena case pursuant to Case Management Order No. 2, which has been signed by all parties.

III.

THE DEFENDANTS ARE LIABLE UNDER CERCLA AND UNDER STATE STATUTORY AND COMMON LAW CLAIMS FOR RELIEF

The dual purposes of CERCLA are (1) to provide for the fast and efficient remediation or clean-up of sites on which "hazardous substances" have come to be located; and (2) allocating liability for the costs of such remediation to the parties responsible. In order to recover against a defendant under CERCLA, a private party must show that: (1) the property is a "facility" within the meaning of CERCLA, 42 U.S.C. §9601(9);

(2) contamination present on the property constitutes a "release" or "threatened release" of a "hazardous substance" from the "facility," 42 U.S.C. §9607; (3) in connection with the "release" or "threatened release," the party has incurred response costs that are consistent with National Contingency Plan, 42 U.S.C. §9607(a)(4); and (4) the defendant is within one of the classes of persons subject to CERCLA liability. Ascon Properties, Inc. v. Mobil Oil Co., 866 F.2nd 1149, 1152 (9th Cir. 1989).

As stated above, the PNAs found on the property were "hazardous substances" under CERCLA. The terms "facility" and "release" are so broadly defined under CERCLA that the Property is clearly a "facility" from which a release of a hazardous substance has occurred. CCLA and Amcena removed the PNAs, benzene, toluene, xylenes, and other materials found in hazardous concentrations on the Property to a Class I facility after conducting an investigation into the extent of the contamination. Their efforts were consistent with the National Contingency Plan.

Two of the classes of persons liable under CERCLA for the costs of remediating contamination on the property are former "owners" and "operators" of the property at the time hazardous substances were released to it. The United States, Dow and Shell are all former owners or operators who owned or operated the Property at the time of the release of hazardous substances. Their liability under CERCLA is strict, joint, and several. See e.g., United States v. Monsanto Co., 858 F.2nd 160, 167 (4th Cir. 1988). Cadillac Fairview is also jointly and severally liable for

contamination because it owned the Property while a release occurred. The definition of "release" is so broad under CERCLA that it includes the migration of contaminants already placed in the soil. Therefore, since Cadillac Fairview was an owner while contaminants migrated through the soil (or were relocated through grading), Cadillac Fairview is also jointly and severally liable for Plaintiffs' remediation costs.

The defendants are also liable under Plaintiffs' common law claims. For example, defendants are liable under plaintiffs' continuing nuisance theory under Mangini v. Aerojet General Corp., 230 Cal.App.3d 1125 (1991). Under Mangini, all parties who created or assisted in the creation of the nuisance are liable to the current owner of the property for damages caused by the nuisance. In addition, all parties who owned the property after the initial contamination and did not abate the nuisance are also liable to the current owner under the theory of continuing nuisance. Since Dow, the United States and Shell created or assisted in the creation of a nuisance, they are all liable under the doctrine of continuing nuisance. Since Cadillac Fairview did not abate the nuisance, Cadillac is also liable under the continuing nuisance theory.

IV.

PRESENT STATUS OF SETTLEMENT NEGOTIATIONS

The parties have engaged in limited, nonproductive settlement discussions. At this time, none of the defendants have made any offer whatsoever to Plaintiffs to settle this case. Plaintiffs have provided defendants with complete documentation of their response costs. Defendants have still offered nothing.

Dated: September 4, 1992

SHEPPARD, MULLIN, RICHTER & HAMPTON

By _____
ROY G. WUCHITECH

Attorneys for Plaintiffs
AMCENA PROPERTIES, INC. and
COCA-COLA BOTTLING COMPANY
OF LOS ANGELES

2\O\P051505T.LH4

EXHIBIT A

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Ancon, Inc.	B013535	28-Apr-89	**$97,805.20**	26-May-89	468473	127138
Ancon, Inc.	B013553-B	31-May-89	**$93,016.60**	2-Aug-89	511381	C.O
Ancon, Inc.	B013759	21-Jun-89	**$219,468.71**	2-Aug-89	511381	C.O. 1

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Brent Petroleum Corp.	238-S	29-Jun-90	$24,163.50	3-Aug-90	742161	66553
Brent Petroleum Corp.	066-S	30-Mar-90	$122,128.50	30-Apr-90	681314	48[illegible]

12

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Stoney-Miller Consultants, Inc.	2450	10-Oct-89	$2,191.50	22-Nov-89	554717	27971
Stoney-Miller Consultants, Inc.	2069	26-Jul-89	$3,186.30	5-Oct-89	554717	27
Stoney-Miller Consultants, Inc.	2124	11-Aug-89	$3,156.90	5-Oct-89	554717	27918
Stoney-Miller Consultants, Inc.	1761	18-May-89	$2,022.30	18-May-89	540636	27901
Stoney-Miller Consultants, Inc.	1574	3-Apr-89	$747.50	28-Jul-89	509500	27901
Stoney-Miller Consultants, Inc.	1639	19-Apr-89	$1,156.40	28-Jul-89	509500	27901
Stoney-Miller Consultants, Inc.	1726	2-May-89	$7,198.10	28-Jul-89	509500	27901
Stoney-Miller Consultants, Inc.	1814	2-Jun-89	$3,442.60	28-Jul-89	509500	27901
Stoney-Miller Consultants, Inc.	1870	14-Jun-89	$2,264.10	28-Jul-89	509500	27901
Stoney-Miller Consultants, Inc.	1514	9-Mar-89	$237.20	9-Jun-89	478774	104270
Stoney-Miller Consultants, Inc.	1254	11-Jan-89	$6,175.50	23-Feb-89	412621	C.O. 1/104270
Stoney-Miller Consultants, Inc.	1108	5-Dec-88	$230.50	30-Dec-88	383497	C.O. 2/104270
Stoney-Miller Consultants, Inc.	1038	18-Nov-88	$12,456.80	30-Dec-88	383497	C.O. 3/104270
Stoney-Miller Consultants, Inc.	2001	12-Jul-89	$9,878.10	5-Oct-89	554717	27
Stoney-Miller Consultants, Inc.	1937	27-Jun-89	$9,078.40	5-Oct-89	554717	27918
Stoney-Miller Consultants, Inc.	2187	22-Aug-89	$29.45	5-Oct-89	554717	104270
Stoney-Miller Consultants, Inc.	921	18-Oct-88	$2,051.50	20-Dec-88	379126	104270
Stoney-Miller Consultants, Inc.	975	27-Oct-88	$440.00	20-Dec-88	379126	104270

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Stu Ledsam Equipment Co.	075-89	16-Sep-89	**$6,744.00**	16-Nov-89	580186	27938
Stu Ledsam Equipment Co.	076-89	22-Sep-89	**$16,515.00**	16-Nov-89	580186	27[illegible]
Stu Ledsam Equipment Co.	077-89	26-Sep-89	**$6,053.00**	16-Nov-89	580186	27938
Stu Ledsam Equipment Co.	090-89	25-Oct-89	**$11,720.00**	24-Nov-89	583570	27938
Stu Ledsam Equipment Co.	075-89	16-Nov-89	**$264.00**	1-Feb-90	629896	27938

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
US Technical Environmental	192006	31-Jan-92	$34.50			5486
US Technical Environmental	111019	30-Nov-91	$327.50			61
US Technical Environmental	111020	30-Nov-91	$54.45			6112
US Technical Environmental	101109	31-Oct-91	$180.00			6810
US Technical Environmental	791105	31-Jul-91	$52.50			6021
US Technical Environmental	391088	29-Mar-91	$175.00			5182
US Technical Environmental	191043	31-Jan-91	$47.50			5120
US Technical Environmental	901131	30-Nov-90	$424.80			3563
US Technical Environmental	901006	31-Oct-90	$753.96			
US Technical Environmental	900857	30-Aug-90	$3,492.02			
US Technical Environmental	900593	31-Jul-90	$1,961.09			
US Technical Environmental	900436	30-Jun-90	$980.71			
US Technical Environmental	900160	29-Apr-90	**$3,384.72**	27-Jun-90	717644	66502
US Technical Environmental	900120	30-Mar-90	**$7,224.05**	23-May-90	694995	665
US Technical Environmental	90-0048	27-Feb-90	**$2,229.15**	17-Aug-90	750324	66539
US Technical Environmental	90-0007	10-Jan-90	**$10,270.57**	17-Aug-90	750324	66539
US Technical Environmental	89054	2-Dec-89	**$5,958.00**	5-Feb-90	631275	48908
US Technical Environmental	89-002	6-Nov-89	**$2,901.16**	6-Dec-89	596119	27970

*The figures not appearing in bold digits have not been confirmed.

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Western Technologies, Inc.	21790457	1-Sep-89	**$3,838.49**	23-Oct-89	563171	27947
Western Technologies, Inc.	21790599	28-Sep-89	**$12,139.60**	5-Dec-89	593190	C.O
Western Technologies, Inc.	71290758	29-Nov-89	**$39,579.66**	7-Dec-89	596911	C.O. 1
Western Technologies, Inc.	71290873	1-Dec-89	$10,210.79			

16

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Sheppard, Mullin, Richter & Hampton*		As of 6-Jun-92	$115,938.00			

*Does not include attorneys' fees and disbursements incurred and paid by CCLA in response to contamination found on the property at the time of sale.

As of 12-Aug-92

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
Applicable Taxes			$49,234.63			

As of 12-Aug-92

18

CCLA/Pacific Gateway Remediation Costs

Vendor	Inv #	Date	Amt Pd	Date Pd	Check #	PO #
TOTAL			$926,730.48			

19

As of 12-Aug-92

PROOF OF SERVICE BY MAIL

I, the undersigned, declare that I am, and was at the time of service of the papers herein referred to, over the age of 18 years and not a party to the action. I was employed in the County of Los Angeles, State of California, in which county the within mentioned mailing occurred. My business address is Sheppard, Mullin, Richter & Hampton, 333 South Hope Street, 48th Floor, Los Angeles, California 90071. I am familiar with the regular mail collection and processing practices of Sheppard, Mullin, Richter & Hampton for correspondence deposited for mailing with the United States Postal Service. I served the following document:

SETTLEMENT CONFERENCE STATEMENT OF PLAINTIFFS AMCENA PROPERTIES, INC. AND COCA-COLA BOTTLING COMPANY OF LOS ANGELES

by placing a copy in a separate envelope for each addressee named hereafter, addressed to each such addressee respectively as follows:

[PLEASE SEE SERVICE LIST ATTACHED.]

I then sealed the envelope with postage thereon fully prepaid and deposited it for collection and mailing via the United States Postal Service on September 4, 1992. The envelope was sealed and deposited in accordance with the ordinary business practices of Sheppard, Mullin, Richter & Hampton for mailing on September 4, 1992.

[ ] (STATE) I declare under penalty of perjury under the laws of the State of California and the United States of America that the foregoing is true and correct.

[XX] (FEDERAL) I declare that I am employed in the office of a member of the bar of this Court at whose direction the service was made.

Executed on September 4, 1992, at Los Angeles, California.

Alberta Wales

ALBERTA WALES

AMCENA PROPERTIES, INC.; COCA-COLA BOTTLING COMPANY OF LOS ANGELES vs. SHELL OIL COMPANY, ET AL.; USDC Case No. CV 91-5436 WMB (JRx)

SERVICE LIST

Name of Party	Counsel
SHELL OIL COMPANY, Defendant, Third-Party Complainant, and Counter-Defendant	David J. Earle SHELL OIL COMPANY 10 Universal City Plaza Suite 1850 Universal City, CA 91608 Tel: (818) 753-2514 Fax: (818) 753-2508
CADILLAC FAIRVIEW/ CALIFORNIA, INC., Defendant and Cross-Third-Party	Albert M. Cohen, Esquire ARNOLD & PORTER 355 South Grand Avenue 44th Floor Los Angeles, CA 90017-2513 Tel: (213) 243-4000 Fax: (213) 243-4199
UNITED STATES OF AMERICA, Defendant and Cross-Defendant	Lourdes G. Baird UNITED STATES ATTORNEY Peter Hsiao Assistant U.S. Attorney Federal Building, Room 7516 300 N. Los Angeles Street Los Angeles, CA 90012 Tel: (213) 894-2879 Daniel S. Goodman James W. Rubin David A. Dana Environmental Defense Section Environment & Natural Resource Division U.S. DEPARTMENT OF JUSTICE Post Office Box 23986 Washington, D.C. 20026-3986 Tel.: 514-2338/Goodman Tel.: 514-9050/Rubin Tel.: 514-0994/Dana Fax: (202) 514-2584 Paul Yanowitch Torts Branch, Civil Division U.S. DEPARTMENT OF JUSTICE Post Office Box 340 Ben Franklin Station Washington, D.C. 20044) 501-6854

THE UNIROYAL GOODRICH TIRE COMPANY, Third-Party Defendant, Counter-Claimant, and Cross-Claimant	Elizabeth M. Weaver Diane H. Koziol KAYE, SCHOLER, FIERMAN, HAYS & HANDLER 1999 Avenue of the Stars Suite 1600 Los Angeles, CA 90067 Tel: (310) 669-6357 Fax: (213) 669-6407
THE DOW CHEMICAL COMPANY, Third-Party Defendant	Stephen McKae Elsa Starck HARDIN, COOK, LOPER, ENGEL & BERGEZ 1999 Harrison Street 18th Floor Oakland, CA 94612 Tel: (510) 444-3131 Fax: (510) 839-7940
MONTROSE CHEMICAL CORPORATION OF CALIFORNIA, Third-Party Defendant	Karl S. Lytz Ronald R. Stuff LATHAM & WATKINS 701 "B" Street, Suite 2100 San Diego, CA 92101-8197 Tel: (619) 236-1234 Fax: (619) 696-7419

CITY OF LOS ANGELES
CALIFORNIA

BOARD OF
FIRE COMMISSIONERS
485-6032

DAVID W. FLEMING
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RICHARD J. RIORDAN
MAYOR

DEPARTMENT OF FIRE
200 NORTH MAIN STREET
LOS ANGELES, CA 90012

WILLIAM R. BAMATTRE
CHIEF ENGINEER
AND
GENERAL MANAGER

45265
Cores.

Acm 3/21

✓3/22 Copies to:
Reginald Prime, CCE
Mike Lathrope, CCE
Roy Wuchitech, SMRCH

March 7, 1996

Ms. Ann E. Macdonald
Environmental Affairs Manager, West
Coca-Cola Enterprises, Incorporated
7901 Oak Port Boulevard, Suite 1000
Oakland, CA 94621

Dear Ms. Macdonald:

Coca Cola Enterprises, Incorporated
19875 Pacific Gateway Drive
Torrance, California

The Fire Department has reviewed the Underground Storage Tank Removal Report dated February 23, 1996, as submitted by Secor International, Incorporated.

Based on the information provided, this Department has determined that no further action is required at this time.

Please note that this correspondence does not exempt you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at this site. Nor does it exempt you of the responsibility to correct additional or previously unidentified conditions at the site which cause, or thereafter to cause, pollution or nuisance, or otherwise pose a threat to water quality or public health.

If you require additional information from the Los Angeles City Fire Department, please contact Inspector Robert B. Reimers of the Underground Tank Plan Check Unit, at (213) 485-7543.

Very truly yours,

WILLIAM R. BAMATTRE
Chief Engineer and General Manager

Jeffrey J. Mills

Jeffrey J. Mills, Captain I
Commander, Underground Tank Plan Check Unit

JJM:RBR:kz:ugt1230

cc: Mr. B. Peter Bergeron, Secor International Incorporated

DAMES & MOORE

MEMORANDUM

DATE: May 13, 1996

TO: John Dudley, Gib Fates

FROM: David Myers

RE: MW-20 Spill Incident report

CC: Ann Macdonald

On May 9, 1996 a small spill, approximately three gallons, of benzene and contaminated water occurred at the MW-20 Pilot program site. The spilled liquids were entirely contained under plastic sheeting which we had previously laid over the asphalt pavement in our work area. Attached please find a table documenting the time sequence of events and the notifications made after the spill occurred.

All-Terrain Drilling was in the process of drilling a test core for the OWL003A/B piezometer installation, when at a drilling depth of 80 feet, fluid loss from the boring was observed. The drilling was stopped immediately and we observed that there was fluid running out under the plastic adjacent to the bore hole, originating from the location of monitoring well SWL0001. We pulled back the plastic and identified that the fluid was a mixture of formation water and LNAPL from the well. We immediately shut down all equipment in the area, called Laidlaw emergency response and applied Solidasorb to the downhill edge of the plastic sheeting to prevent flow out from under the cover. We then moved all of the equipment off of the sheeting and waited upwind until the arrival of the emergency response crew. I monitored the area downwind of the rig with a photo ionization detector and noted responses of up to four ppm in the area of the main truck gate entrance for Coca Cola. I went in and spoke with the onsite afternoon manager and told him about the spill and suggested to him that he close the gate until the spill was cleaned up. He was very responsive and closed the front gate and switched the traffic to their back gate until I gave him the all clear.

I discussed the clean up options with Miquel De La Torre of Laidlaw and we decided that the best course of action was to use the Solidasorb to soak up the liquid and dispose of it as a solid with our investigative derived waste. Prior to the start of the clean up, all personnel suited up in yellow liquid resistant Tyvek overalls, rubber overboots, nitile gloves, safety glasses and respirators. We pulled back the plastic a little at a time while we were spreading Solidasorb on the ground and using brooms and shovels to work it into the liquid. This was then shoveled into a soil hopper and dumped into one of the RCRA hazardous waste bins located on site. In order to clean up the last of the liquid from

underneath the tub and rig, we vacuumed out the drilling mud tub and pulled the drill rig out of the way. The Solidasorb was again used to clean up the residual liquid and disposed of in the waste bins. We rolled up and disposed of all the plastic in the waste bins and covered the boring with a steel plate for the evening.

5/9/96

Time	Action	Phone Number	Contact
14:00	Spill Occurred	(310) 816-2424	David Myers D&M
14:05	Called Laidlaw Emergency Response	(310) 518-4700	Miquel De La Torre
14:20	Notified Coca Cola Management	Verbal	
14:15	Called Dames & Moore Santa Barbara	(805) 816-2424	John Dudley
14:30	Laidlaw Onsite		
14:45	Called L.A. County Fire Department Hazmat Office	(213) 890-4000	Annett
15:00	Called Calif. State Office of Emergency Services	(800) 852-7550	Charles Benoit Case # 013656
15:30	Completed Clean up of Spill		
16:00	Laidlaw off site, Coca Cola Notified of Clean up.		

DAMES & MOORE
5425 HOLLISTER AVENUE, SUITE 160, SANTA BARBARA, CA 93111
(805) 683-0200 FAX: (805) 683-0201

RECEIVED
NOV 4 1996
By dale 11/4

November 1, 1996

Ms. Ann MacDonald
Environmental Affairs Manager
Coca-Cola Enterprises
7901 Oakport Street
Oakland, California 94621

RE. Response to Your October 28, 1996 Facsimile to David Myers
Construction Activities at Coca-Cola Property
Del Amo Study Area

Dear Ms. MacDonald,

This letter has been prepared in response to several questions outlined in the above-referenced facsimile. These questions relate to two individual issues, as discussed below.

MW-20 Pilot Program Construction Issues

Duration of Construction Activities - The schedule for completion of recent construction at the MW-20 Pilot Program facility remains unchanged, with a total estimated time of approximately four weeks for construction, permitting and system start-up. We estimate these activities will be completed by approximately November 22, 1996.

Noise Potential and Contingency Plan - The retrofitted treatment system is not expected to generate appreciable noise levels. However, upon system start-up, representatives from Coca-Cola will be invited to evaluate the noise levels generated by the treatment system. If noise levels are judged to be unacceptable to Coca-Cola, then appropriate sound abatement measures will be evaluated and implemented.

Revised Pilot Test Duration - The pilot test has remained largely uninterrupted despite the recent construction activity, and is still planned to operate over a period of approximately six-months. The anticipated schedule extends from approximately mid-September 1996 through mid-March 1997.

Pending Construction Activities at the Coca-Cola Building

Data Availability in Proposed Construction Area - Provided with this letter is a summary package describing the nature and availability of analytical results for soil and soil gas samples collected in proximity to the proposed construction area. The summary package includes the following items:

(sba) p:\dgf\delamo\mw20\cokedata.ltr

DAMES & MOORE

- Map of current surface conditions at the Coca-Cola property;
- Map of data availability within the Cola-Cola property and adjoining portions of Pacific Gateway;
- Detail map of data availability in proximity to the proposed construction area, indicating identity of sampling locations; and,
- Table of analytical results for sampling points illustrated on detail map, summarizing the concentrations of chemical compounds detected. Please be aware that the analytical results are applicable only to the specific location and depth of the individual samples collected, and that different conditions may be encountered during excavation and construction activities.

Please contact me at (805) 683-0200, or David Myers at (310) 816-2424 if you have any questions or require further assistance.

Sincerely,
Dames & Moore

John G. Dudley
Del Amo Project Manager

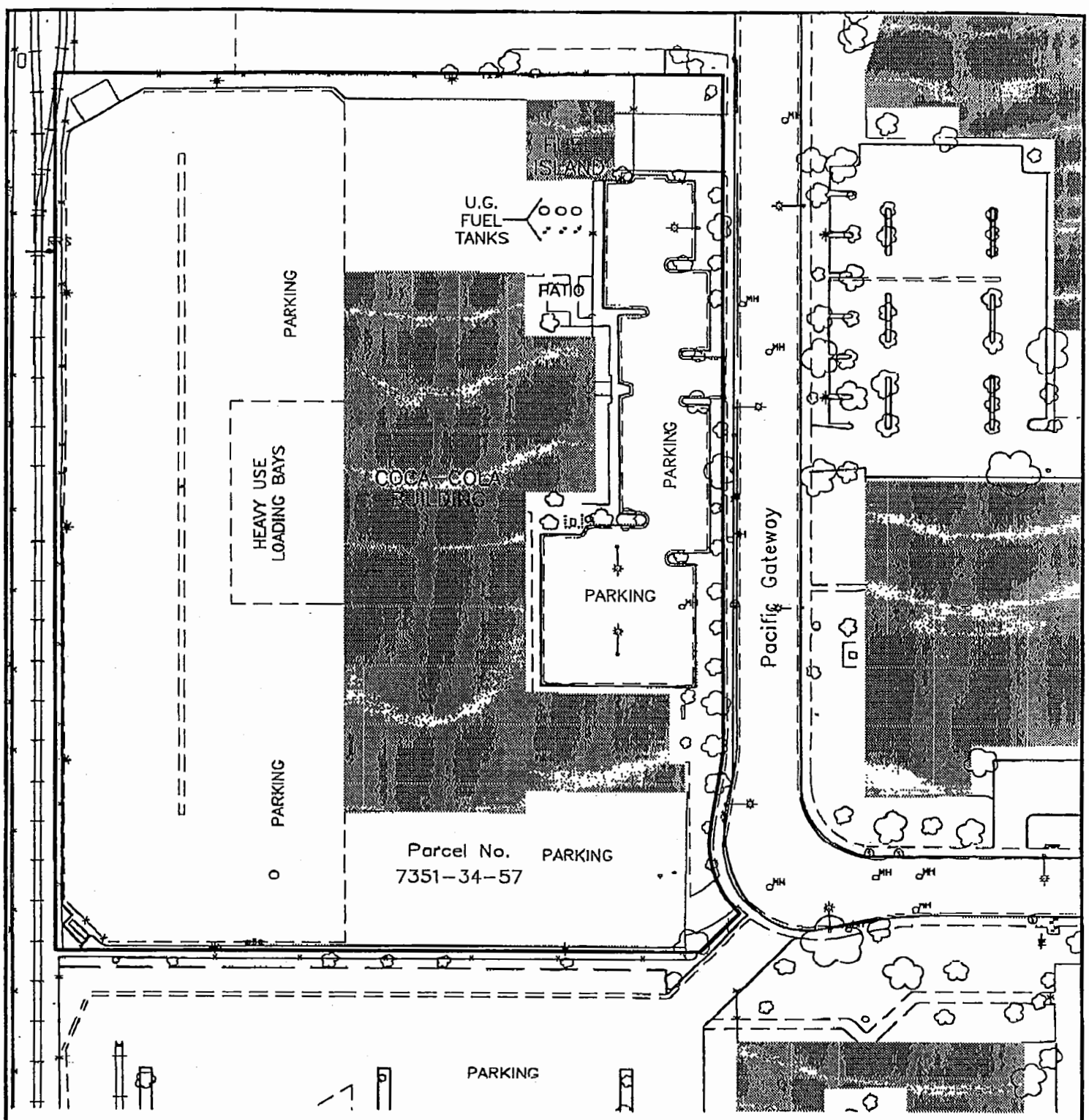
(sba) p:\dgf\delamo\mw20\cokedata.ltr

of the California Health & Safety Code, and petroleum or any fraction thereof as used in CERCLA § 9601(14).

B. "Property" means the Property located at what is commonly known as 19875 Pacific Gateway Drive in Torrance, California and more particularly described as:

> "Parcel C, as shown on 'Parcel Map - LA No. 3041,' in the County of Los Angeles, State of California as filed in Book 61, at Pages 81 and 82 of Parcel Maps, in the Office of the County Recorder of said County."

C. "Surface Zone" means the first twelve (12) feet of soil (including air spaces and soil pore water) measured from the surface as of December 20, 1992, irrespective of the source. "Surface Zone Contamination" means Contamination found within the Surface Zone, and "Surface Zone Contamination Claims" means any claim of any kind arising out of Contamination of the Surface Zone. "Deep Zone Contamination" means Contamination within the soil (including air spaces and soil pore water) and groundwater at all levels beneath the Surface Zone.



N

0 100 200

Scale in Feet

Current Surface Conditions
Coca-Cola Property
Parcel No. 7351-34-57

Del Amo Study Area

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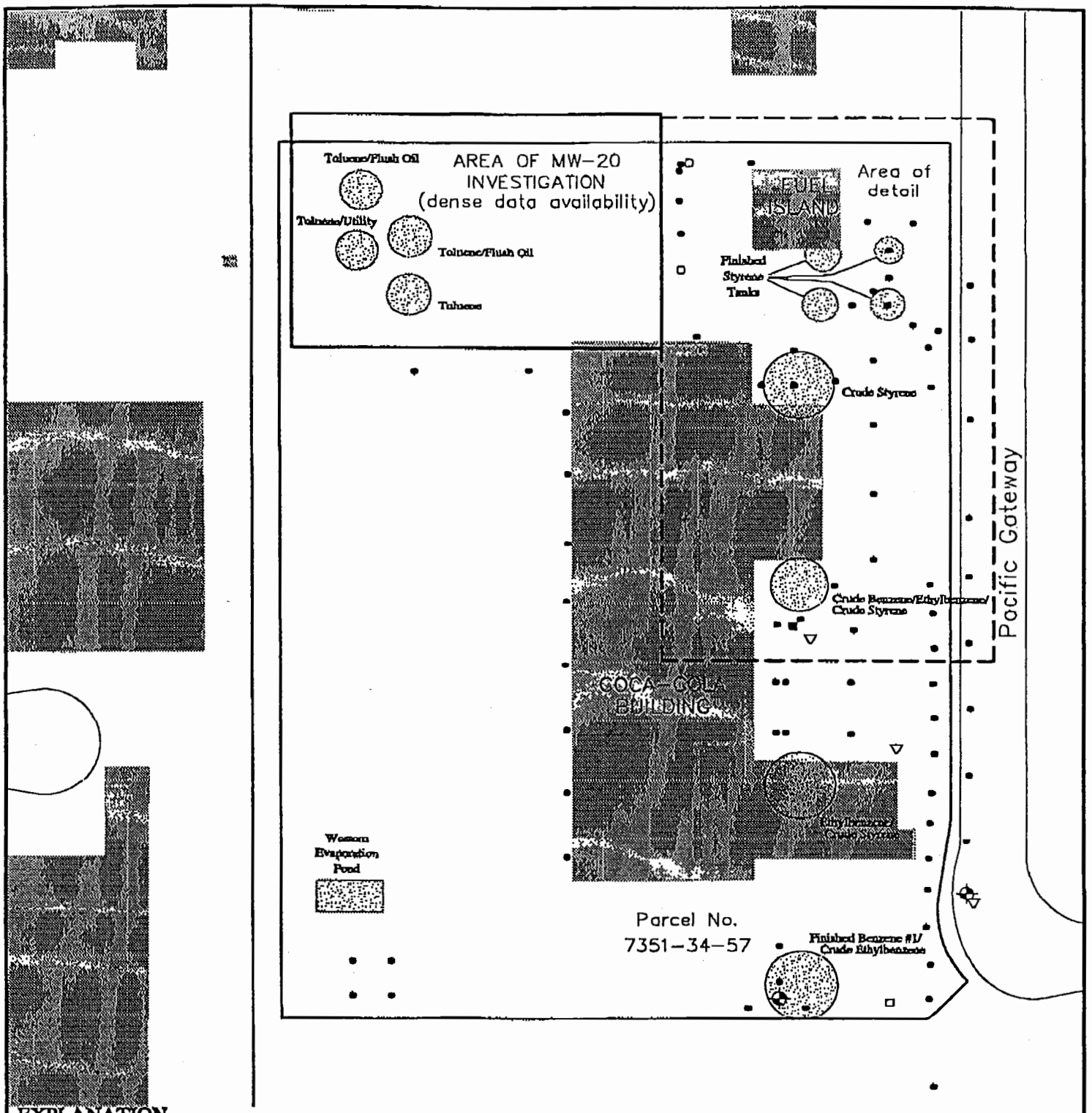
C:\DWGS\CCCSC, 10/30/96 at 15:07



EXPLANATION

- ▽ Deep soil gas sampling location (> 15 foot depth)
- ● Shallow soil gas sampling location (≤ 15 foot depth)
- □ Soil sampling location
- ■ Soil and shallow soil gas sampling location
- ⊕ Groundwater monitoring point
- Historical storage tank or surface feature

N

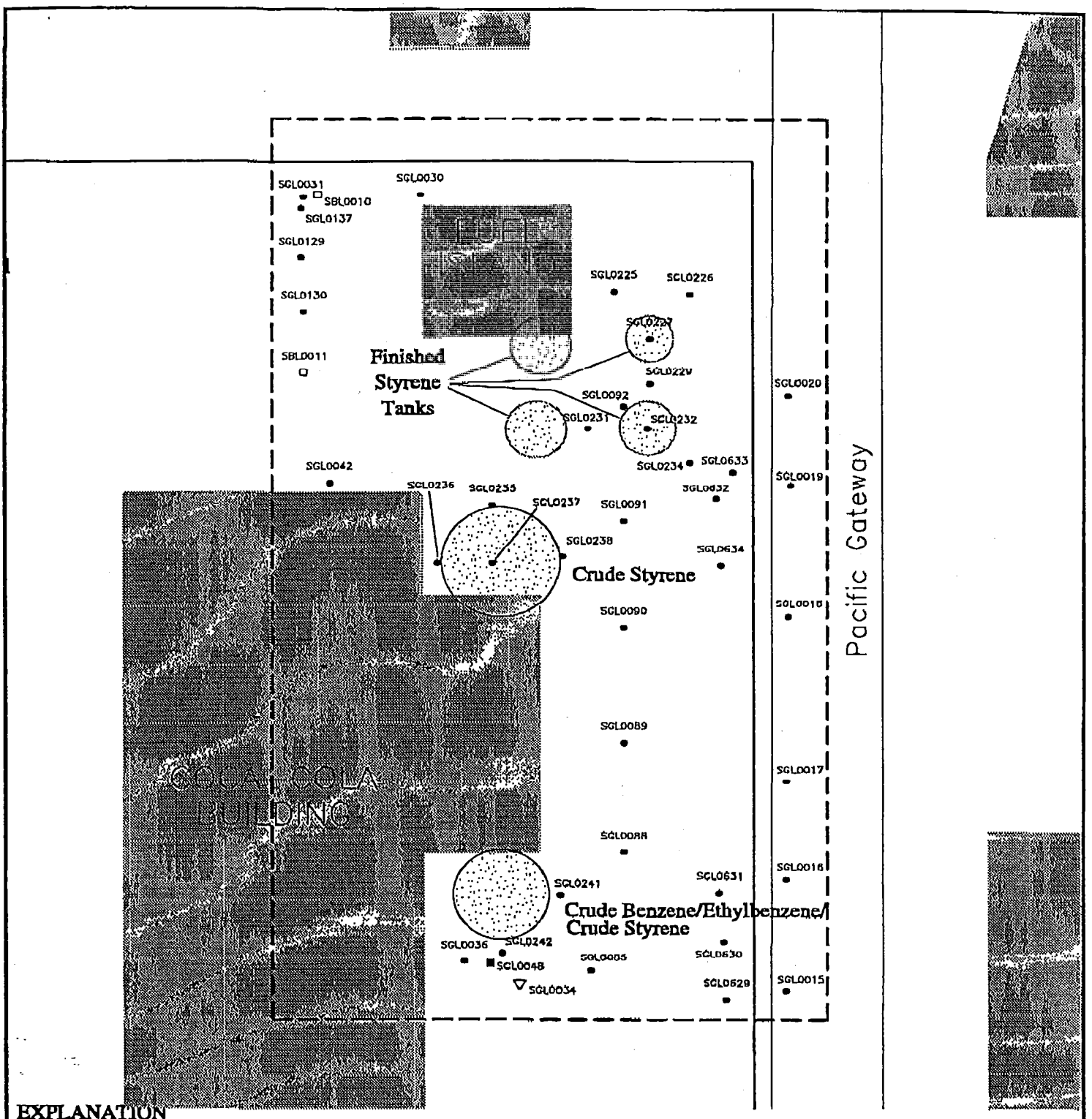
0 100 200
Scale in Feet

Parcel-Wide Data Availability
Coca-Cola Property
Parcel No. 7351-34-57

Del Amo Study Area

DAMES & MOORE

C:\DWGS\CCPWDA, 11/01/96 at 16:37



EXPLANATION

- ▽ Deep soil gas sampling location (> 15 foot depth)
- ● Shallow soil gas sampling location (≤ 15 foot depth)
- □ Soil sampling location
- ■ Soil and shallow soil gas sampling location
- Historical storage tank or surface feature

N

0 60 120

Scale in Feet

Detail of Data Availability
Area of Proposed Construction
Coca-Cola Property
Parcel No. 7351-34-57

Del Amo Study Area

DAMES & MOORE

C:\DWGS\CCAPC, 11/01/96 at 16:25

Summary of Detected Compounds
Coca Cola Property
Parcel 7351-34-57
Del Amo Study Area

Matrix	Sample Location	Sample Depth (ft.)	Date	Analysis Class	Compound	Concentration
Shallow Soil Gas (<= 15')	SGL0030	0	09/28/92	VOCs by Field GC	Benzene	2,060 ppmv
					Chloroform	0.092 ppmv
					1,2-Dichloroethane	5.61 ppmv
					Toluene	12.9 ppmv
	SGL0031	0	09/28/92	VOCs by Field GC	Benzene	7,510 ppmv
					1,2-Dichloroethane	4.82 ppmv
					Ethylbenzene	1.04 ppmv
					Toluene	2 ppmv
	SGL0036	3	09/30/92	VOCs by Field GC	Benzene	150 ppmv
					Ethylbenzene	120 ppmv
					Toluene	3.19 ppmv
		6	09/30/92	VOCs by Field GC	Benzene	2,120 ppmv
					Chloroform	0.025 ppmv
					Ethylbenzene	9,670 ppmv
					Styrene	11.7 ppmv
					Toluene	190 ppmv
					Trichloroethene	0.015 ppmv
	SGL0042	5	10/01/92	VOCs by Field GC	None Detected	ND ppmv
	SGL0048	9.8	10/05/92	VOCs by Field GC	Benzene	480 ppmv
					Ethylbenzene	1,450 ppmv
					Styrene	3.99 ppmv
					Toluene	14 ppmv
					1,1,1-Trichloroethane	0.011 ppmv
					Trichloroethene	0.015 ppmv
	SGL0085	6	10/08/92	VOCs by Field GC	None Detected	ND ppmv
	SGL0088	6	10/08/92	VOCs by Field GC	Ethylbenzene	0.61 ppmv
					Tetrachloroethene	0.522 ppmv
	SGL0089	6	10/08/92	VOCs by Field GC	Benzene	1.29 ppmv
	SGL0090	6	10/08/92	VOCs by Field GC	Benzene	121 ppmv
					Ethylbenzene	1,780 ppmv
					Tetrachloroethene	0.01 ppmv
					Toluene	94.8 ppmv
	SGL0091	6	10/08/92	VOCs by Field GC	Benzene	3.6 ppmv
					Tetrachloroethene	0.236 ppmv
					Toluene	2.63 ppmv
	SGL0092	6	10/08/92	VOCs by Field GC	Tetrachloroethene	0.022 ppmv
	SGL0129	10	02/24/93	VOCs by Field GC	Ethylbenzene	0.47 ppmv
					Styrene	0.02 ppmv
					Toluene	0.092 ppmv
					1,1,1-Trichloroethane	0.016 ppmv
	SGL0130	10	02/24/93	VOCs by Field GC	Ethylbenzene	1.22 ppmv
					Styrene	0.036 ppmv
					Toluene	0.017 ppmv
					1,1,1-Trichloroethane	0.021 ppmv
	SGL0137	10	02/24/93	VOCs by Field GC	Ethylbenzene	0.488 ppmv
					Styrene	0.02 ppmv

Summary of Detected Compounds
Coca Cola Property
Parcel 7351-34-57
Del Amo Study Area

Matrix	Sample Location	Sample Depth (ft.)	Date	Analysis Class	Compound	Concentration
Shallow Soil Gas (<= 15')	SGL0225	6.5	04/21/93	VOCs by Field GC	Toluene	0.08 ppmv
					Xylenes (Total)	0.08 ppmv
	SGL0226	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0227	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0229	6.5	04/21/93	VOCs by Field GC	Ethylbenzene	0.08 ppmv
	SGL0231	6.5	04/22/93	VOCs by Field GC	Benzene	0.14 ppmv
					Cyclohexane	2.05 ppmv
					Ethylbenzene	0.35 ppmv
	SGL0232	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0234	6.5	05/06/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0235	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0236	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
				VOCs by TO-14	Acetone	0.036 ppmv
					Benzene	0.015 ppmv
					4-Ethyl Toluene	0.0093 ppmv
					Ethylbenzene	0.017 ppmv
					Methyl Ethyl Ketone	0.0064 ppmv
					Methyl isobutyl ketone (MIBK)	0.003 ppmv
					Tetrachloroethene	0.47 ppmv
					Toluene	0.019 ppmv
					1,1,1-Trichloroethane	0.072 ppmv
					Trichloroethene	0.26 ppmv
					1,2,4-Trimethylbenzene	0.015 ppmv
					1,3,5-Trimethylbenzene	0.0032 ppmv
					Xylenes (Total)	0.027 ppmv
	SGL0237	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0238	6.5	04/21/93	VOCs by Field GC	None Detected	ND ppmv
	SGL0241	6.5	04/21/93	VOCs by Field GC	Toluene	0.11 ppmv
					Xylenes (Total)	0.07 ppmv
	SGL0242	6	04/22/93	VOCs by Field GC	Benzene	1.63 ppmv
					Cyclohexane	1.68 ppmv
					1,2-Dibromoethane (EDB)	2.90 ppmv
					Ethylbenzene	16.2 ppmv
				VOCs by TO-14	Benzene	2.3 ppmv
					Ethylbenzene	33 ppmv
		6.5	04/22/93	VOCs by Field GC	Benzene	0.06 ppmv
					Styrene	0.06 ppmv
					Toluene	0.17 ppmv
					Xylenes (Total)	0.21 ppmv
	SGL0629	7	03/25/94	VOCs by Field GC	None Detected	ND ppmv
	SGL0630	7	03/25/94	VOCs by Field GC	None Detected	ND ppmv
	SGL0631	7	03/25/94	VOCs by Field GC	None Detected	ND ppmv
	SGL0632	7	03/25/94	VOCs by Field GC	None Detected	ND ppmv
	SGL0633	7	03/25/94	VOCs by Field GC	None Detected	ND ppmv
	SGL0634	7	03/25/94	VOCs by Field GC	None Detected	ND ppmv

Summary of Detected Compounds
Coca Cola Property
Parcel 7351-34-57
Del Amo Study Area

Matrix	Sample Location	Sample Depth (ft.)	Date	Analysis Class	Compound	Concentration
Deep Soil Gas (> 15')	SGL0034	59	09/29/92	VOCs by Field GC	Benzene	15,600 ppmv
					Chloroform	0.068 ppmv
					Ethylbenzene	240 ppmv
					Toluene	26.6 ppmv
Shallow Soil	SGL0048	10	10/05/92	VOCs by 8240	Acetone	0.094 mg/kg
					Benzene	0.016 mg/kg
					Ethylbenzene	0.022 mg/kg

Summary of Detected Compounds
Coca Cola Property
Parcel PACIFIC GATEWAY
Del Amo Study Area

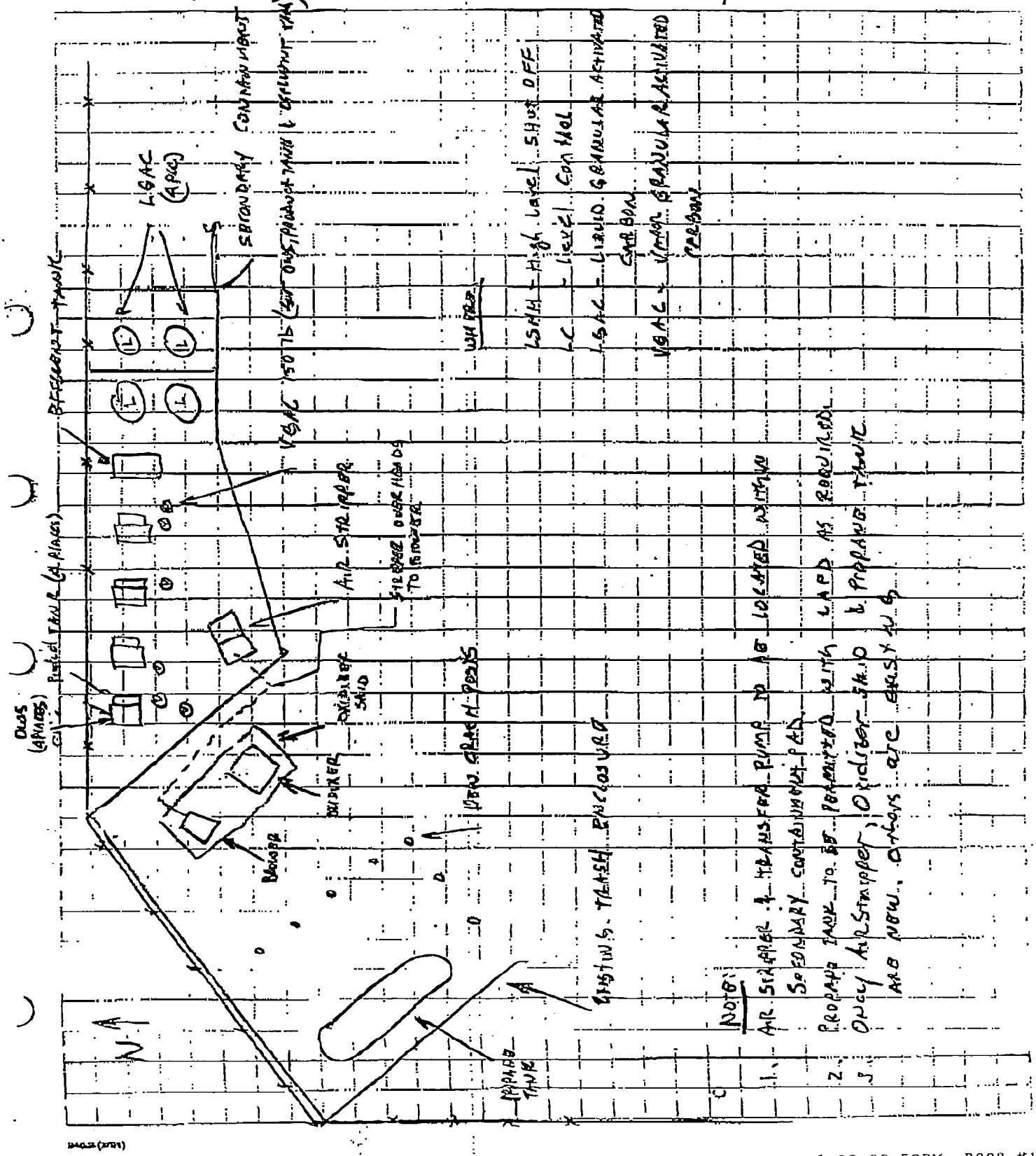
Matrix	Sample Location	Sample Depth (ft.)	Date	Analysis Class	Compound	Concentration
Shallow Soil Gas (<= 15')	SGL0015	6	08/19/92	VOCs by Field GC	Tetrachloroethene	0.0041 ppmv
	SGL0016	6	08/19/92	VOCs by Field GC	None Detected	ND ppmv
				VOCs by TO-14	Benzene	0.0069 ppmv
					4-Ethyl Toluene	0.0017 ppmv
					Ethylbenzene	0.36 ppmv
					Styrene	0.029 ppmv
					Toluene	0.011 ppmv
					1,1,1-Trichloroethane	0.0024 ppmv
					1,2,4-Trimethylbenzene	0.002 ppmv
					Xylenes (Total)	0.0025 ppmv
	SGL0017	6	08/19/92	VOCs by Field GC	Ethylbenzene	2.72 ppmv
					Styrene	0.29 ppmv
	SGL0018	6	08/19/92	VOCs by Field GC	Ethylbenzene	2.26 ppmv
					Styrene	0.2 ppmv
	SGL0019	6	08/19/92	VOCs by Field GC	Benzene	0.15 ppmv
					Ethylbenzene	11 ppmv
					Styrene	0.77 ppmv
					Tetrachloroethene	0.0041 ppmv
					Toluene	0.46 ppmv
					Trichloroethene	0.0034 ppmv
	SGL0020	6	08/19/92	VOCs by Field GC	Tetrachloroethene	0.0041 ppmv
					1,1,1-Trichloroethane	0.0034 ppmv

DAMES & MOORE

Sheet No.	
Calc. No.	
Rev. No.	
By	Date
Chk'd.	Date

Job No. 00216-451-139 Job Del Amo MW-70

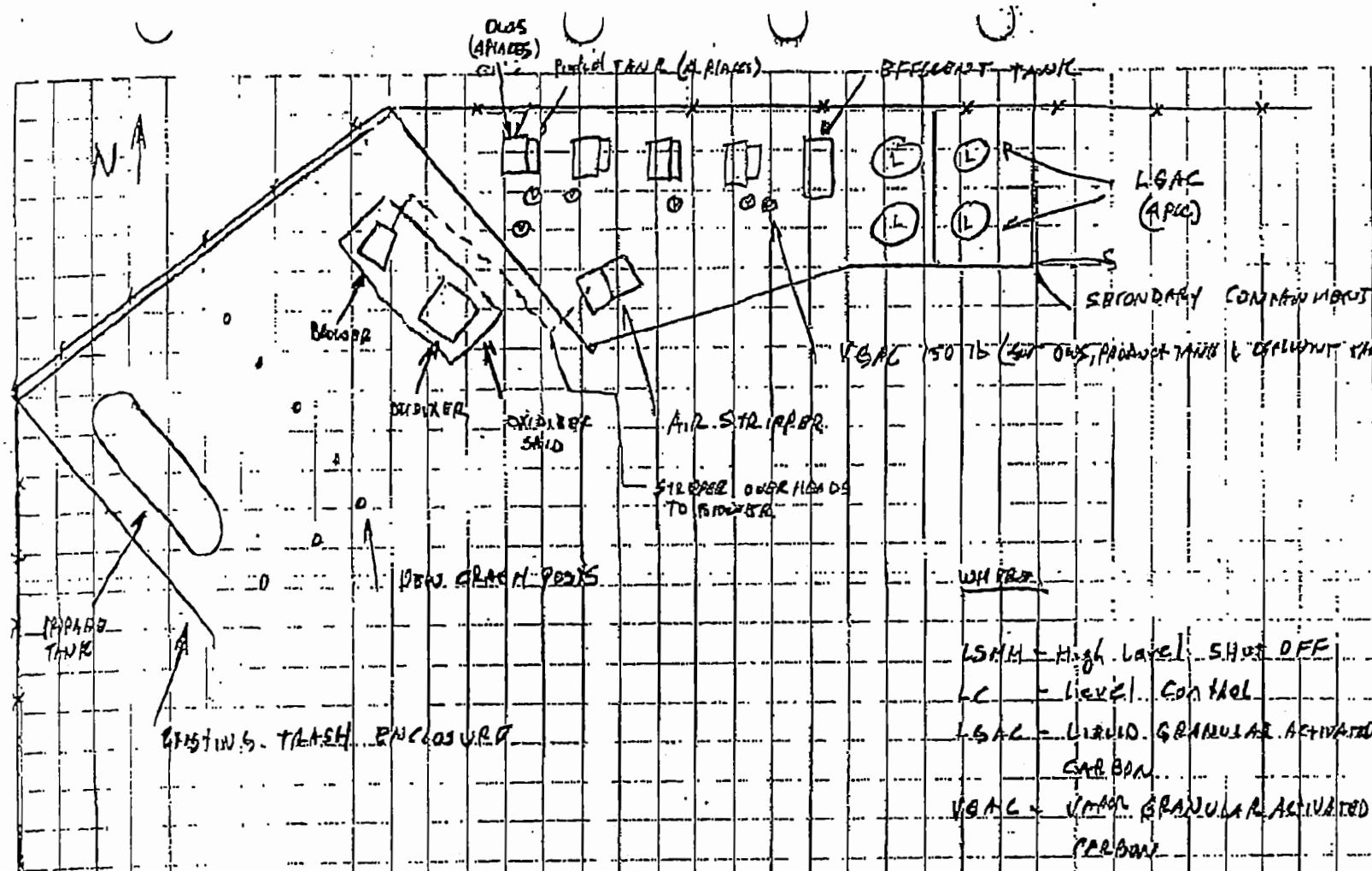
Client Shell / Dow Subject Layout - Revised Treatment, DRAFT



DAMES & MOORE

Job No. 00216-451-139 Job Del Amo MW-70
Client Shell/Dow Subject Layout - Revised Treatment, DRAFT

Sheet No.
Calc. No.
Rev. No.
By Date
Chk'd. Date



WHERE:

LSHH - High Level Shut OFF
LC - Level Control
LGAC - LIQUID GRANULAR ACTIVATED CARBON
VGAC - VAPOR GRANULAR ACTIVATED CARBON

NOTE:

1. AIR STRIPPER & TRANSFER PUMP TO BE LOCATED WITHIN SECONDARY CONTAINMENT PAD.
2. PROPANE TANK TO BE PERMITTED WITH LAPD AS REQUIRED.
3. ONLY AIR STRIPPER, OXIDIZER SKID & PROPANE TANK ARE NEW. OTHERS ARE EXISTING.

ENVIRONMENTAL INCIDENTS
Third Quarter 2008

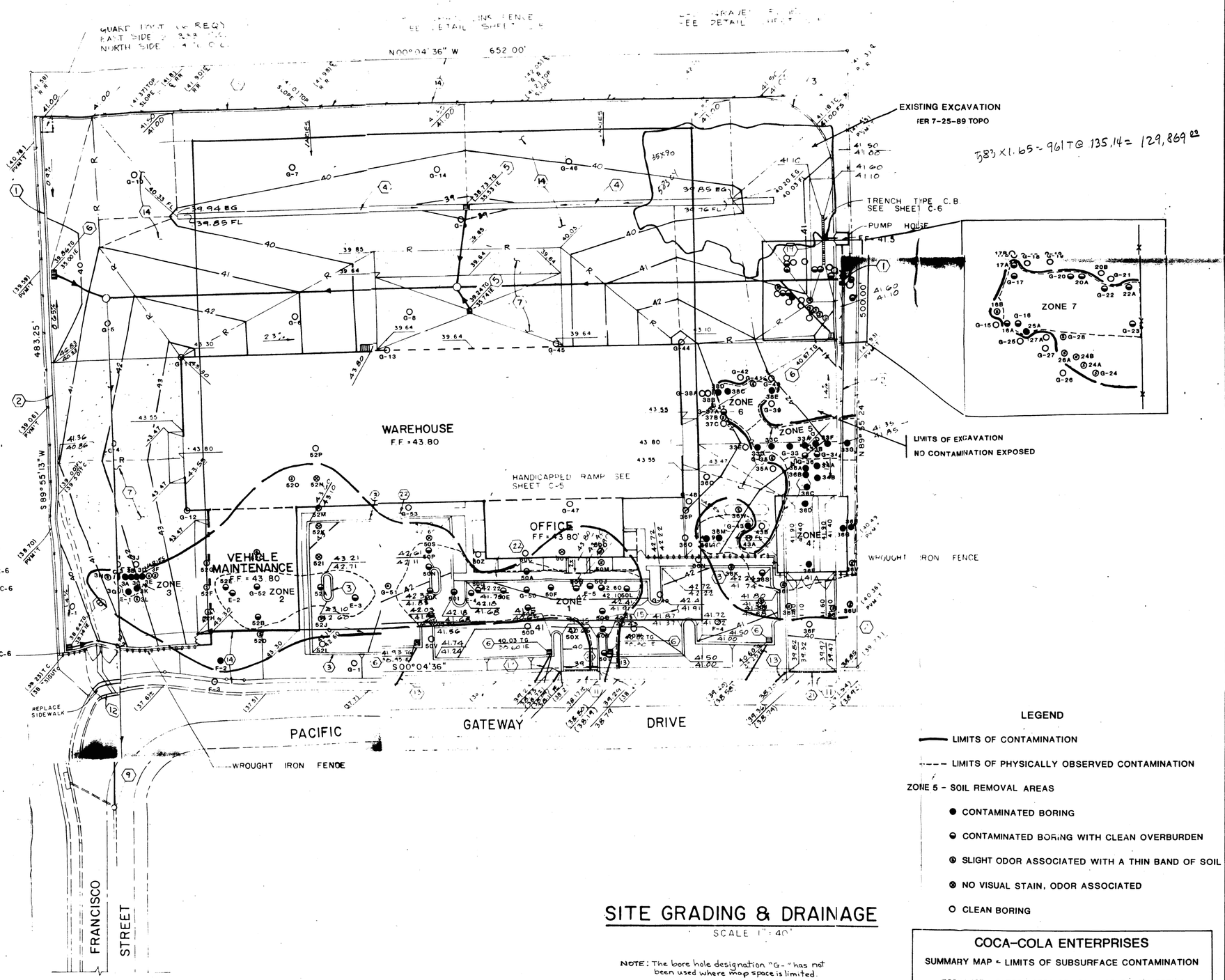
Incident Type	Date	Facility	State	# Incidts	# Fines	$ Fines	# NOVs	$ NOVs	Notes
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
Diesel Fuel Spill	8-20-08	Torrance	CA	1	0	$0	0	$0	Approx. 3-gal. spill to plant asphalt yard from mobile fueling vendor. No storm system impact. Vendor cleaned.
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]
[redacted]									[redacted]

LEGEND

DESCRIPTION	EXISTING	NEW
SPOT ELEVATION	(00.00)	00.00
STORM DRAIN	—SD—	—SD—
ROOF DRAIN		—RD—
HEADWALL W/RIP RAP		
STORM INLET		
GRADE CONTOURS		

CONSTRUCTION NOTES :

1. CONSTRUCT TYPE C INTEGRAL CURB AND GUTTER PER LOS ANGELES CITY STANDARD PLAN NO. S-410-1.
2. CONSTRUCT TYPE C INTEGRAL CURB AND PAVEMENT PER LOS ANGELES CITY STANDARD PLAN NO. S-410-1.
3. CONSTRUCT MODIFIED CURB AND GUTTER PER STANDARD PLAN NO. S-410-1, WITH EDGE OF GUTTER ELEVATION 1/2 INCH BELOW FINISHED SURFACE AT CIPR.
4. CONSTRUCT 4' LONGITUDINAL GUTTER PER A.P.W.A. STANDARD DRAWING NO. 106-D.
5. CONSTRUCT GRATE INLET BASIN PER DETAIL ON SHEET C-5.
6. CONSTRUCT CURB INLET BASIN PER A.P.W.A. STANDARD DRAWING NO. 302-D. (1-GRATE)
7. CONSTRUCT CONCRETE PAVEMENT SECTION PER DETAIL ON SHEET C-5.
8. CONSTRUCT STORM DRAIN PER SCHEDULE HEREON. CONSTRUCT TRENCH PER LOS ANGELES CITY STANDARD PLAN NO. S-251-1, CASE I BEDDING.
9. REMOVE BRICK AND MORTAR AT EXISTING MANHOLE. CONNECT TO EXISTING 24" STUB WITH CONCRETE COLLAR PER LOS ANGELES CITY STANDARD PLAN NO. S-333-0.
10. CONSTRUCT STORM DRAIN MANHOLE PER LOS ANGELES CITY STANDARD PLAN NO. B-1700.
11. CONSTRUCT DRIVEWAY APPROACH PER LOS ANGELES CITY STANDARD PLAN NO. 5440-3, CASE II.
12. CONSTRUCT "TYPE D" CURB AND GUTTER PER LOS ANGELES CITY PLAN NO. S-410-1.
13. INSTALL 4"X14" RECTANGULAR C.I. PIPE PER ALHAMBRA FOUNDRY STD A-470 OR EQUAL
14. CONSTRUCT HEAVY DUTY A.C. PAVEMENT PER DETAIL ON SHEET C-6
15. CONSTRUCT LIGHT DUTY A.C. PAVEMENT PER DETAIL ON SHEET C-6
16. CONSTRUCT SEWER MANHOLE PER L.A. CITY STANDARD PLAN NO S-142-0
17. CONSTRUCT JUNCTION STRUCTURE "B" PER L.A. CITY STANDARD PLAN NO. S-302-1
18. CONSTRUCT SANITARY SEWER CLEANOUT PER DETAIL ON SHEET C-6
19. FLEET WASH SAND TRAP PER DETAIL SHT C-5
20. CONSTUCT SHALLOW SEWER MANHOLE PER L.A. CITY STANDARD PLAN NO S-144-0
21. INSTALL 6"X8" STEEL TROUGH WITH GRATES PER ALHAMBRA FOUNDRY STD A-2446 OR EQUAL
22. CONSTRUCT CONCRETE WALL PER DETAIL ON SHEET C-5



583 X 1.65 = 961 T @ 135.14 = 129,869.00

NORTH

SCALE 40' 0 40' 80' FEET
GRAPHIC SCALE

SITE GRADING & DRAINAGE

SCALE 1" = 40'

NOTE: The bore hole designation "G-" has not been used where map space is limited.

LEGEND

- LIMITS OF CONTAMINATION
- LIMITS OF PHYSICALLY OBSERVED CONTAMINATION
- ZONE 5 - SOIL REMOVAL AREAS
- CONTAMINATED BORING
- CONTAMINATED BORING WITH CLEAN OVERBURDEN
- SLIGHT ODOR ASSOCIATED WITH A THIN BAND OF SOIL
- NO VISUAL STAIN, ODOR ASSOCIATED
- CLEAN BORING

COCA-COLA ENTERPRISES

SUMMARY MAP - LIMITS OF SUBSURFACE CONTAMINATION

TORRANCE - CARSON AREA OF LOS ANGELES, CALIFORNIA

STONEY-MILLER CONSULTANTS, INC.

JOB NO.:	DATE:	PLATE:

LOCATION	DATE	BY	APP.

REVISIONS
APPROVALS

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CARLISLE ASSOCIATES
CONSULTANTS

COCA-COLA BOTTLING CO. OF CALIFORNIA
CARSON, CA.

PROJECT TITLE
SHEET TITLE

DWG. NO.
DATE:

WHEELER & GRAY CONSULTING ENGINEERS
7 RIO HONDO CIRCLE, ST. LA. 90041 (213) 258-3101

SHEET NO.
C3
OF SHEETS