ECOLOGY AND ENVIRONMENT, INC.

DALLAS, TEXAS

MEMORANDUM

TO: Ed Sierra, RPO Region VI

THRU: K. H. Malone, Jr., FITOM

FROM: Brian K. Boerner, FIT Chemist

DATE: January 23, 1989

SUBJ: Preliminary Assessment Report for Child's Truck Equipment Site
Houston, Texas (TXD008080749)
TDD# F06-8812-24
PAN FTX0869PAA

XREF IN SA Vol. 1

The Child's Truck Equipment Site is located on approximately 1.4 acres of land along the 800 block of North Velasco, Lat. 29°45'37"N, Long. 95°20'15"W. Child's Trucking site is on privately owned land. Exact dates of ownership or previous realty information is unknown.

The purpose of this Preliminary Assessment is to identify the hazards present and the effects of tentative off-site migration.

1. BACKGROUND/OPERATING HISTORY

Insufficient information exists concerning the operations of the Child's trucking site. A problem may exist in an area near the back of the site that was leased to Lead Products Company, Inc. (TXD008080715). From 1935 to 1945, Lead Products Co., Inc., located at 709 N. Velasco used spent battery casings as fill material on the Child's property. It was observed in a recent off-site reconnaissance inspection by the FIT, that the lot was overgrown and vacant. On the front section of the Child's property was an inactive City of Houston incinerator. In addition, excavation work seemed to be occurring on-site. The site is not regulated. It is currently being sampled by ENSR (Reference 22).

2. WASTE CONTAINMENT/HAZARDOUS SUBSTANCES IDENTIFICATION

The waste disposed of as fill material was identified in a letter from Lead Products Company to the EPA (References 3 and 6). In an attachment to this letter, a fill area of approximately 16,000 $ft.^2$ was identified. Assuming a depth of 6 ft., an estimated waste volume is approximately 96,000 $ft.^3$ or 3556 $yds.^3$. The contaminant is residual lead which has adapted to the fill material (battery casings). The exact volume of fill or number of casings are unknown.

PRELIMINARY REPORT
This does not constitute final opinion of EPA

Screened by GH-ES
Date DJW 3/14/89

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3. PATHWAY CHARACTERISTICS

a. Air Pathway Characteristics

The gaseous and particulate mobility potentials at the Lead Products and Child's Truck Equipment sites are low due to a soil cover on the disposal area. Gaseous mobility is unlikely due to the nature of the contaminant (lead). Particulate mobility, however, is of concern where excavation of the soil is occurring. Photographs taken during the January 5, 1989 FIT reconnaissance inspection of the Child's site show disturbed soil or excavation work in the vicinity of the alleged disposal site.

b. Ground Water Characteristics

The most important water bearing units in the Houston area are the Chicot and Evangeline aquifers. The Chicot includes all sedimentary deposits from the land surface to the top of the Evangeline aquifer, approximately 1000 feet thick (Reference 9). It is composed of interbedded sands, silts and clays of the Willis Sand, Bentley and Montgomery Formations, and Beaumont Clay, all Pleistocene Age. The underlying Evangeline aquifer is the most important source of fresh ground water in the Houston area. It is approximately 2000 feet thick in this area and extends from the base of the Chicot to the underlying Burkeville confining layer (Reference 5). The Evangeline is composed of the Goliad Sand, Pliocene in age, and the Fleming Formation of Miocene age. Lithologically, it is characterized by layers of sand and gravel with interbedded clay and silt layers (References 19 and 20).

The City of Houston utilizes a combination of ground water and surface water to supply drinking water to residences within 4 miles of the Lead Products site (Reference 21). Four City of Houston water wells are located within 3 miles of the site (Reference 2). These wells are screened in the Evangeline aquifer at depths of 580 to 1160 feet (References 15 and 21). A net precipitation of -6.5 inches per year has been estimated (Reference 1).

c. Surface Water Characteristics

Surface drainage from the Lead Products and the bordering Child's Truck Equipment sites is controlled by a drainage ditch that flows northeast toward Buffalo Bayou (Figures 1 and 2). The distance from the northeast property line of Lead Products Company to the point of entry into Buffalo Bayou is approximately 1500 feet (Reference 1).

Buffalo Bayou flows east-southeast and enters the turning basin approximately four miles downstream of the site. From this point until it enters the bay, the Bayou becomes the Houston Ship Channel. The 15-mile downstream in-water segment lies entirely within the Houston Ship Channel. Surface water along this migration pathway is used for limited recreation (canoeing), navigation, and by industries along the channel for once-through cooling water. It is not used for irrigation or drinking water (Reference 8).

The size of the drainage area is approximately the area of the site--.5 acres (Reference 6), since there are no areas upgradient of the site (Reference 2). The average annual-stream flow for Buffalo Bayou is 320 cfs (Reference 2). The two-year, 24-hour rainfall is 5 inches (Reference 7). The Lead Products and Child Truck Equipment sites are not located in a flood plain. Therefore, the potential for flooding is minimal (Reference 5).

d. On-Site Pathway Characteristics

Residual lead is believed to be present in a fill area located across the back portion of the lot. It is not known if any sort of liner system or runoff diversion plan is in use on this site. During the FIT reconnaissance inspection in January 1989, soil in the area (believed to be the lead disposal area) was involved in excavation work, possibly exposing the waste in the process. With the waste exposed, the soil became susceptible for migration via air and direct exposure pathways. The waste disposal areas are readily accessible to the general population due to breeches in the site security methods. The site is located in a heavily traveled, active, large, industrial area.

4. TARGETS

There are at least four water wells that service the metropolitan Houston area within four miles of the site (Reference 15). All of Houston is serviced by a system which receives its water from a combination of these wells and surface water from Lake Houston (Reference 21). Water is obtained from Buffalo Bayou, the closest downgradient surface water to the site, for industrial use only. The Buffalo Bayou is primarily a stormwater outlet with limited recreational use (Reference 19). Buffalo Bayou is not a source of consumptive water.

The site is currently surrounded by a fence, but there are several areas in which the integrity of the fence has either been destroyed or is non-existent. Located within 0.25 miles of the site are several single family dwellings, parks and commercial and industrial areas. No known environmentally sensitive areas are located within four miles of the site.

5. OTHER REGULATORY INVOLVEMENT

No official litigation against the site by the Texas Water Commission (TWC) or by the City of Houston has begun. Negotiations between the owners of Lead Products and the city and TWC have begun. ENSR Construction is currently collecting soil samples for the identification of waste quantity and migration (Reference 22).

In an effort to expedite waste removal on-site, Lead Products Company, Inc., has introduced an option to recover the lead from the contaminated soil. Due to recent reclassification of the waste present on-site, transportation of these wastes to a smelter is currently not economically feasible. Efforts are still underway to allow this route of waste removal.

6. CONCLUSIONS

Child's Truck Equipment Site is a facility which was leased to Lead Products Company, Inc., for an unknown use. During Lead Products tenure at the Child's Truck Equipment Site, an area located near the rear of the property was backfilled with spent battery casings, and saturated with residual lead. The site is currently inactive and security on the property is minimal.

The closest well is located approximately 2 miles from the site. This well, in conjunction with other wells and surface water, supply the drinking water to the City of Houston. Buffalo Bayou, the closest downgradient surface water, has industrial and limited recreational uses.

In view of the mobility potentials via each pathway and its security potential for NPL consideration, the FIT recommends no further remedial action.

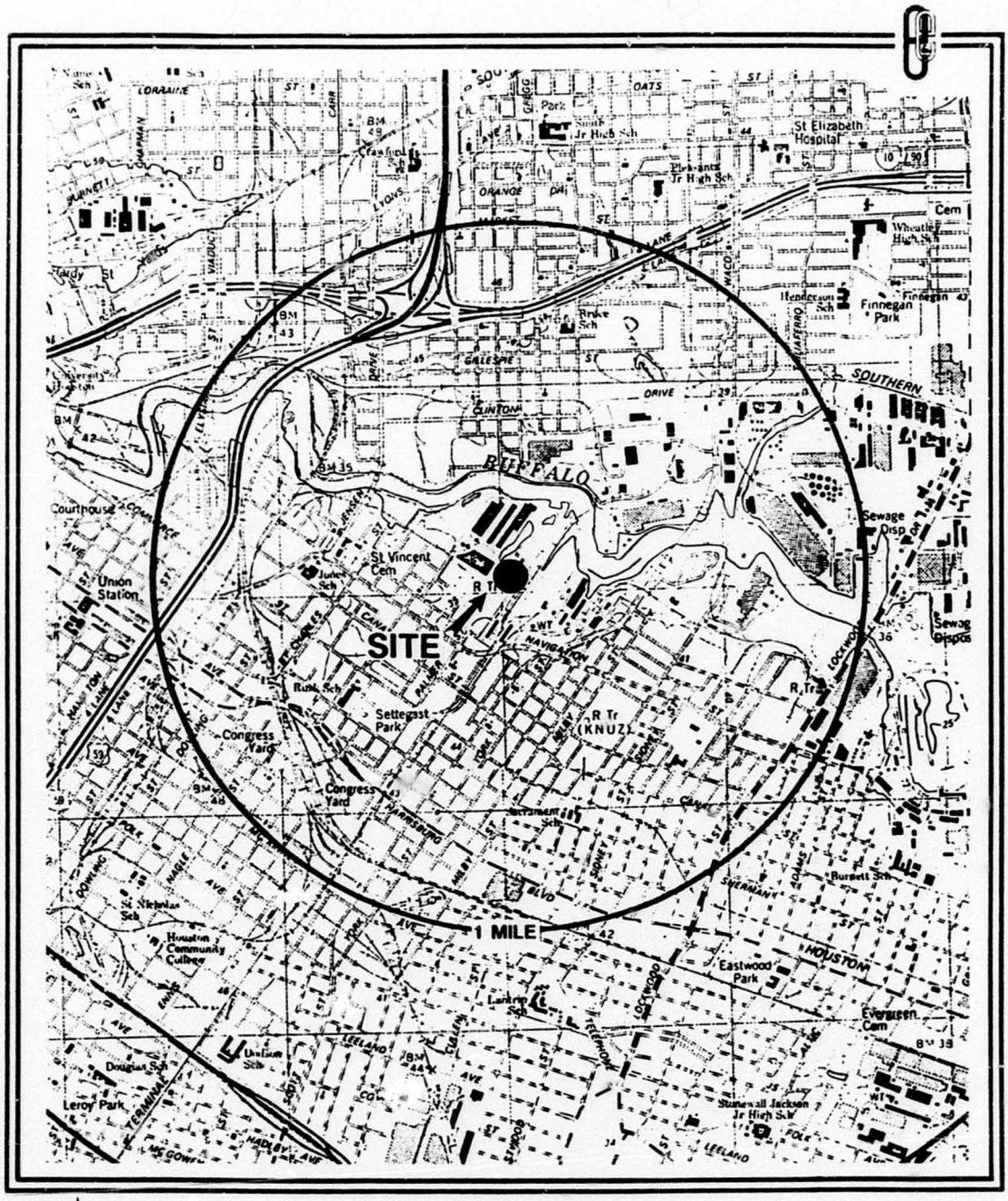

FIGURE 1
SITE LOCATION
CHILD'S TRUCK EQUIPMENT SITE
HOUSTON, TEXAS

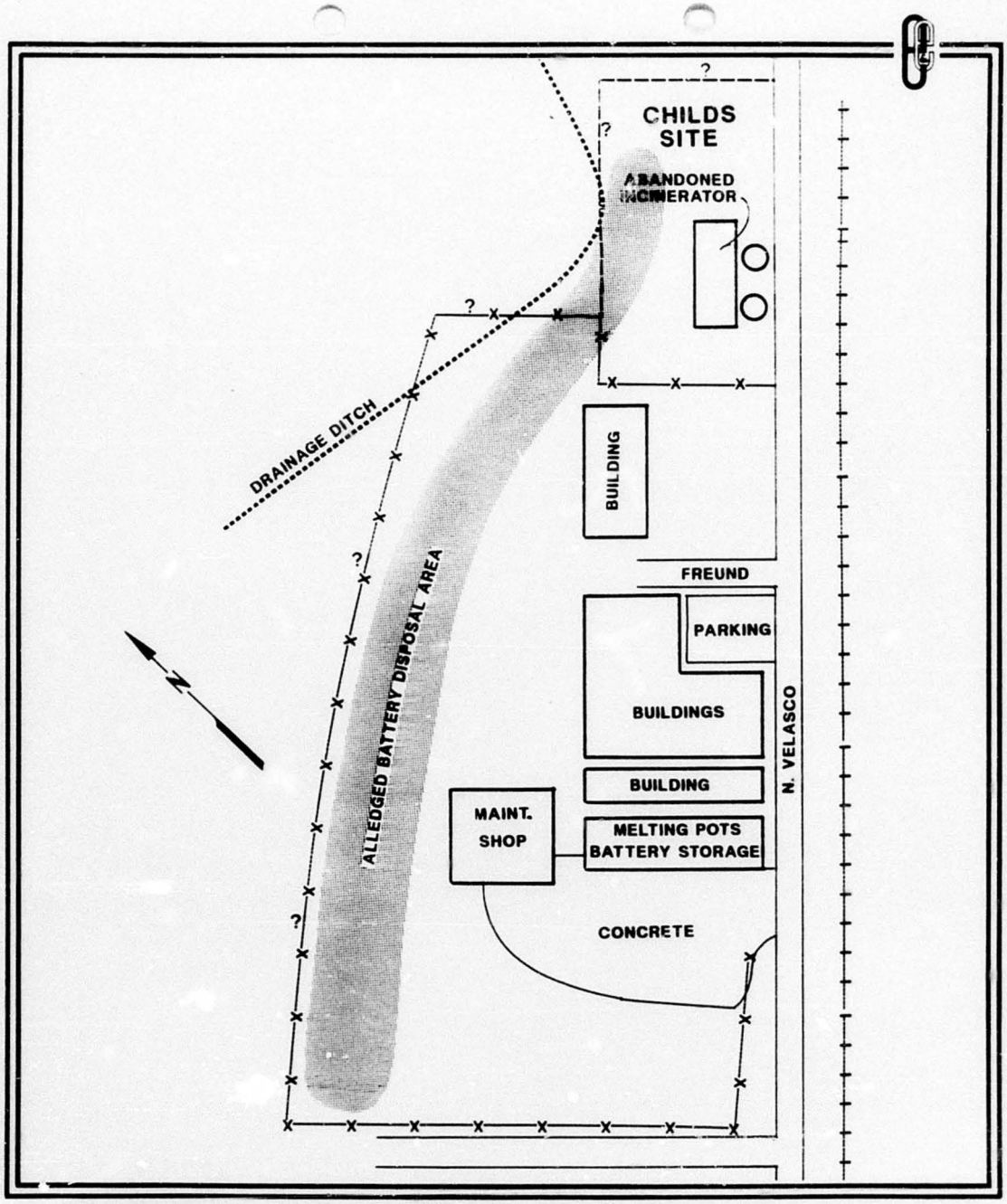

FIGURE 2
SITE SKETCH
LEAD PRODUCTS CO. FACILITY
HOUSTON, TEXAS
TXD008080715

DECLASSIFIED
Date: DUW
SF: 3/24/89 or ORC:

*****CONFIDENTIAL*****~~PRE-DECISIONAL~~ DOCUMENT*****
PRESCORE ANALYSIS HRS SCORESHEET

Site Name: Child's Truck Equipment Company
EPA ID No: TXD008080749
TDD No.: F06-8812-24
City: Houston
County: Harris

Site Evaluator: FR F. A. Verhalen
Date: 1/24/89

POTENTIAL RELEASES

[ ] Groundwater
[ ] Surface Water
[X] Air
[X] On-site/direct contact

SCORING SCENARIOS		Preliminary	Projected
GROUNDWATER ROUTE SCORE (Sgw)	=	14.15	24.49
SURFACE Water Route SCORE (Sw)	=	4.85	10.91
AIR ROUTE SCORE (Sa)	=	0	0
TOTAL SCORE (Sm)	=	8.65	15.49

NEW HRS MODEL CONSIDERATIONS

GROUNDWATER ROUTE: N/A

SURFACE WATER ROUTE: N/A

AIR ROUTE: Potential of air release may exist due to disturbances in soil.

ON-SITE ROUTE: Insufficient barriers increase the likelihood of exposure.

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****

***** GROUND WATER ROUTE WORKSHEET ******

	Preliminary	Ref.	Projected	Ref.
1 OBSERVED RELEASE	0		0	
2 ROUTE CHARACTERISTICS				
DEPTH TO AQUIFER OF CONCERN (x2)	0	15	0	15
NET PRECIPITATION	1	Ref. 1	1	Ref. 1
PERMEABILITY OF UNSATURATED ZONE	0	Ref. 19, p. 10 Refs. 20 & 1	1	Ref. 19, p. 10 Refs. 20 & 1
PHYSICAL STATE	3	3	3	3
ROUTE CHARACT. SCORE =	4		5	
3 CONTAINMENT	3	3	3	3
4 WASTE CHARACTERISTICS				
TOXICITY/PERSISTENCE	18	11, 12, 3	18	11, 12, 3
HAZARDOUS WASTE QUANTITY	8	6 Attachment A	8	6 Attachment A
WASTE CHARACT. SCORE =	26		26	
5 TARGETS:				
GROUNDWATER USE (x3)	6	21 Attachment A	6	21 Attachment A
DISTANCE TO NEAREST WELL /POPULATION SERVED	20	Refs. 10, 13, 15 (16, 17, 18, 2) (Attachment A)	30	Refs. 10, 13, 15 (16, 17, 18, 2) (Attachment A)
TOTAL TARGETS SCORE =	26		36	
GROUNDWATER ROUTE SCORE =	14.15		24.49	

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****

***** SURFACE WATER ROUTE WORKSHEET *****

	Preliminary	Ref.	Projected	Ref.
1 OBSERVED RELEASE	0		45	7, Attachment A
2 ROUTE CHARACTERISTICS				
FACILITY SLOPE AND INTERVENING TERRAIN	0	2	0	2
1-yr., 24-hr. RAINFALL	3	1	3	1
DISTANCE TO NEAREST SURFACE WATER (x2)	4	2	4	2
PHYSICAL STATE	3	3	3	3
ROUTE CHARACT. SCORE =	10		10	
3 CONTAINMENT	2	Attachment A 22, 7	3	Attachment A 22, 7
4 WASTE CHARACTERISTICS:				
TOXICITY/PERSISTENCE	18	3, 11, 12	18	3, 11, 12
HAZ. WASTE QUANTITY	8	6, Attachment A	8	6, Attachment A
WASTE CHARACT. SCORE =	26		26	
5. TARGETS:				
SURFACE WATER USE (x3)	6	8, 9	6	8, 9
DISTANCE TO A SENSITIVE ENVIRONMENT (x2)	0	4	0	4
POPULATION SERVED/DISTANCE TO DOWNSTREAM WATER INTAKE	0	21	0	21
TOTAL TARGETS SCORE =	6		6	
SURFACE WATER ROUTE SCORE =	4.85		10.91	

*****CONFIDENTIAL*****PRE-DECISIONAL DOCUMENT*****

***** AIR ROUTE WORK SHEET ******

	Preliminary	Ref.	Projected	Ref.
1 OBSERVED RELEASE	0		0	
DATE AND LOCATION:				
2 WASTE CHARACTERISTICS:				
REACTIVITY AND INCOMPATIBILITY	1	11	1	11
TOXICITY (x3)	9	11	9	11
HAZARDOUS WASTE QUANTITY	8	3, 6	8	3, 6
WASTE CHARACT. SCORE =	18		18	
3 TARGETS:				
POP. WITHIN 4 MILES	24	13	24	13
DISTANCE TO SENSITIVE ENVIRONMENT (x2)	0	4	0	4
LAND USE	3	2	3	2
TOTAL TARGETS SCORE =	27		27	
AIR ROUTE SCORE =	0		0	

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S_M WORKSHEET

Preliminary

	S	S^2
Groundwater Route Score (Sgw)	14.15	200.22
Surface Water Route Score (Ssw)	4.85	23.52
Air Route Score (Sa)	0	0
$Sgw^2 + Ssw^2 + Sa^2$		223.74
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2}$		14.96
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2} / 1.73 = S_M =$		8.65

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S_M WORKSHEET

Projected

	S	S^2
Groundwater Route Score (Sgw)	24.49	599.76
Surface Water Route Score (Ssw)	10.91	119.03
Air Route Score (Sa)	0	0
$Sgw^2 + Ssw^2 + Sa^2$		718.79
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2}$		26.81
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2} / 1.73 = S_M =$		15.49

ATTACHMENT A

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT SUPPLEMENT SHEET

	Additional Remark and/or explanation
SW/GW Section Waste Quantity	Disposal area is 200 feet x 80 ft = 16,000 ft^2 Using a default depth of 6 ft., area of waste = 96,000 $ft.^3$ = 3556 yds^3 Assuming worst case that all the area is filled with the pollutant, the HRS value for waste quantity is 8.
GW Section Targets-Use	Drinking water is obtained from city for projected surface and groundwater sources and water is mixed. Score = 2 x 3 = 6
GW Section Targets - Distances to nearest well.	Well locations were obtained from well logs and the City of Houston. Well logs showed wells close to the site; however, the status of these wells were unknown. Contact with appropriate sources was made to confirm the existence and the state of the wells.
Surface Water-Observed Release	Lead was detected in water samples taken from the site. This water has the potential to migrate into the surface water, therefore, the possibility of an unobserved release to SW exist.
Surface Water-Containment	Lead cores were removed from the plastic casing and dispensed of in the fill area. The casings were assumed to have been broken to remove the core, thus, allowing the waste to enter the landfill.

REFERENCES

Reference Number	Description of the Reference
1	Uncontrolled Hazardous Waste Site Ranking System. A Users Manual. 47FR31219-31243, 16 July 1982 (Appendix A, CERCLA).
2	USGS 7.5 Minute Series topographic map. Houston Heights, Texas. 1982. Bellaire, Texas. 1982. Settegast, Texas. 1982. Park Place, Texas. 1982.
3	ROC. To: U.S. EPA Region VI, Dallas, Texas. From: Robert Simonds, President of Lead Products Company, Inc. Re: CERCLA Section 103(e) Notification. 10/11/88.
4	ROC. To: Julie Massey, U.S. Fish and Wildlife Service. From: Kelley Bowles, FIT Geologist, EPA Region VI. Re: Sensitive Environments along Buffalo Bayou. 1/19/89.
5	ROC. To: Henry Flemming, Galveston District ACOE. From: Brian Boerner, FIT Chemist, EPA Region VI. Re: Flood Plains near Buffalo Bayou. 1/10/89
6	EPA Notification of Hazardous waste Site Form 22133 for Child's Trucking. 10/20/88.
7	ROC. To: Robert Simonds, President of Lead Products. From: Mary DeAnda, District Supervisor, City of Houston Health Department. Re: Results of site sampling. 2/18/85.
8	ROC. To: Dr. Herbert McKee, City of Houston Health Department. From: Kelley Bowles, FIT Geologist, EPA Region VI. Re: Lead Products facility site and Buffalo Bayou. 1/19/89.
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11	SAX, N. Irving. 1984. Dangerous Properties of Industrial Materials, Sixth Edition. Van Nostrand Reinhold Company.
12	Occupational Health League. Hazline Service, Chemical Review of Lead.

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13	U.S. Department of Commerce. Bureau of the Census. Number of Inhabitants. 1980. Census of Population. Texas Edition.
14	Ibid. Houston area. 1980. Census of Population and Housing.
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16	ROC. To: Jerry Purczinsky, Assistant Manager Neils Espersen Bldg., Houston. From: Brian K. Boerner, FIT Chemist, EPA Region VI. Re: Wells in Building. 1/10/89.
17	ROC. To: Dorothy Castanos, Vice-President, Commerce Building, Houston. From: Brian Boerner, FIT Chemist, EPA Region VI. Re: Wells in Building. 1/10/89.
18	ROC. To: A. E. "Buddy" Smith, Building Manager 1100 Milam Building. From: Brian K. Boerner, FIT Chemist, EPA Region VI. Re: Wells in Building. 1/10/89.
19	Jergensen, Donald G., USGS. Analog Studies of Groundwater Hydrology in the Houston District, Texas. Report 190. February 1975.
20	Baker, E. T., USGS Stratigraphic and Hydrogeologic Framework of Part of the Coastal Plain of Texas. Report 236. July 1979.
21	ROC. To: Don McInnes, City of Houston Public Works. From: Kelley Bowles, FIT Geologist, EPA Region VI. Re: Groundwater and surface water use by the City of Houston. 1/5/89.
22	ROC. To: Eddie Elliott, TWC District 7. From: F. A. Verhalen, FIT Environmental Scientist, EPA Region VI. Re: TWC Regulatory History of Lead Products Company. 1/15/89.

PG 1 OF 2

NO 1

PHOTOGRAPHER/WITNESS

Kelly L Bowles fvechole

DATE / TIME / DIRECTION

1/5/89 - 1108 - N to S

COMMENTS

PANORAMA of city of Houston INCINERATOR; alleged Location of former Child Trucking Equipment Co Site

PHOTOGRAPHER/WITNESS

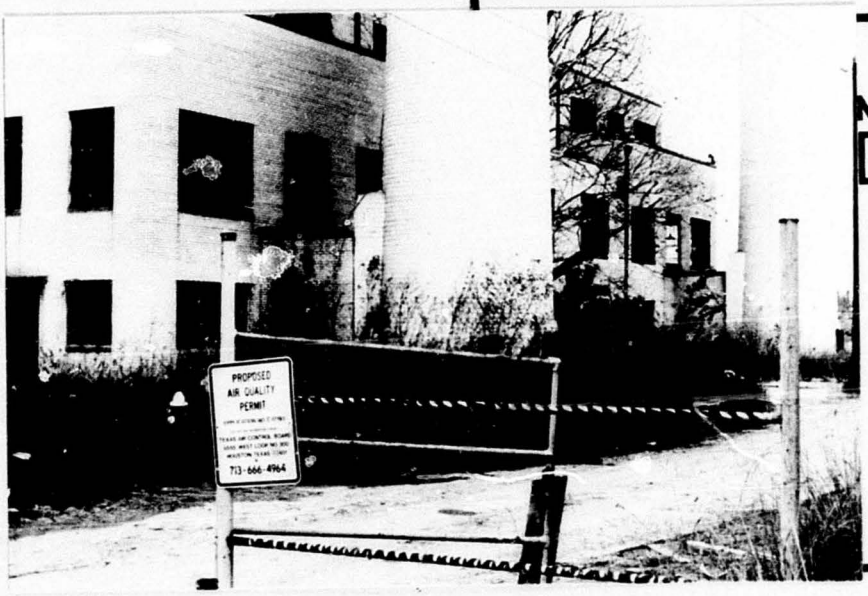
Kelly L Bowles fvechole

DATE / TIME / DIRECTION

COMMENTS

Ibid 1

NO. 2



1 2 6 6

NO. 3

PHOTOGRAPHER/WITNESS

Billy Boles [illegible]

DATE / TIME / DIRECTION

1/5/89 - 1129 - NNW

COMMENTS

Streetmaker at Lead Products Broadway

PHOTOGRAPHER/WITNESS

Billy Boles [illegible]

DATE / TIME / DIRECTION

1/5/89 - 1110 - W

COMMENTS

Photo of Standing water at the South end of City of Houston incinerator

NO. 4

REF. 03

Lead Products Co.
INCORPORATED
Fabricators

PHONE (713) 224-9546 709 NORTH VELASCO P.O. BOX 1341

HOUSTON, TEXAS 77251-1341

October 11, 1988

U.S. EPA Region 6
Sites Notification
First Interstate Tower
1445 Ross Avenue
Dallas, Texas 75202

Re: CERCLA Section 103(c) Notification

Dear Sir or Madam:

For the past several years, various lead companies in Houston have been negotiating with the Texas Water Commission concerning the hazardous nature of discarded lead batteries. We have recently learned that the TWC has decided that the lead batteries and lead-contaminated soils are not considered as a "by-product" under the TWC regulations. We have been advised that inasmuch as the batteries contain lead, the disposal of these substances may be regulated under CERCLA. Our lawyers have further advised us that under Secion 103(c) of CERCLA, our company was to have notified the EPA by June 9, 1981, of the location of all facilities in which hazardous substances were disposed. Inasmuch as we are unable to locate any company records that indicate that such notification was given, we are providing the requested notification herein.

By way of background information, the following is a brief history of the operations of the company. Lead Products Company, Inc. is a small corporation which began as a lead smelting business in the 1930's. Lead was removed from discarded batteries and utilized to make pipes and other equipment. After the majority of lead was removed from the batteries, they were used as fill material at our plant site and two other nearby locations. It is our understanding that all of the lead could not be removed from the batteries and therefore the buried batteries contain some residual lead. We believe this type of disposal ceased in the mid-1960's.

We have attached for your information three sets of the notification form that was published in the April 15, 1981, Federal Register. We have provided forms for the following locations:

RECEIVED
OCT 20 1988
6W-EA

Lead Products Co.
INCORPORATED
Fabricators

PHONE (713) 224-9546 709 NORTH VELASCO P.O. BOX 1341
HOUSTON, TEXAS 77251-1341

(1) Lead Products Company, Inc. facility located at 709 N. Velasco in Houston. This is our present plant site. We believe the disposal activities occurred at this location from approximately 1945 until sometime in the 1950's.

(2) Childs Truck Equipment Inc. site located in the 800 block of N. Velasco in Houston. Prior to being located at the present address, the company rented this site from its owners. We understand that lead batteries may have been used for fill material at this site from approximately 1935 until 1945.

(3) KNUZ Radio Tower site located at 315 North Ennis in Houston. During the 1950's and 1960's, our company contracted with the owner of the Radio Tower to provide batteries for fill material for the property.

At the present time Lead Products is undertaking an investigation to determine the extent of contamination at the plant site. We are currently involved in negotiations with the City of Houston on this matter and will be contacting the Texas Water Commission to determine the proper remedial action to be performed. We are also attempting to obtain permission from the present owners of the Childs site to obtain samples from that location. Lead Products presently does not have any plans to take any action at the Radio Tower site.

We trust the information provided herein will be sufficient to meet the notification requirements under the regulations. If you require any additional information, please do not hesitate to call me at (713) 224-9546.

Very truly yours,

LEAD PRODUCTS COMPANY, INC.

Robert Simonds

Robert Simonds, President

RECEIVED
OCT 20 1988
6W-EA

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 04	
TO: Julie Massey Ecological Services U.S. Fish & Wildlife Service (713) 750-1700	From: Kelly Bowles FIT Geologist Kelly Bowles	Date: 1/19/89 Time: 2:10 p.m.

SUBJECT Sensitive Environments along Buffalo Bayou.

SUMMARY OF COMMUNICATION

Q. Are there any critical habitats of endangered species or other sensitive environments along Buffalo Bayou in the City of Houston?

A. No, there are no Federally designated critical habitats for endangered species along Buffalo Bayou. The edges of the Bayou are fairly industrialized, so there are no Federally designated sensitive environments along the banks.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REFERENCES

Reference Number	Description of the Reference
1	Uncontrolled Hazardous Waste Site Ranking System. A Users Manual. 47FR31219-31243, 16 July 1982 (Appendix A, CERCLA).
2	USGS 7.5 Minute Series topographic map. Houston Heights, Texas. 1982. Bellaire, Texas. 1982. Settegast, Texas. 1982. Park Place, Texas. 1982.
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5	ROC. To: Henry Flemming, Galveston District ACOE. From: Brian Boerner, FIT Chemist, EPA Region VI. Re: Flood Plains near Buffalo Bayou. 1/10/89
6	EPA Notification of Hazardous waste Site Form 22133 for Child's Trucking. 10/20/88.
7	ROC. To: Robert Simonds, President of Lead Products. From: Mary DeAnda, District Supervisor, City of Houston Health Department. Re: Results of site sampling. 2/18/85.
8	ROC. To: Dr. Herbert McKee, City of Houston Health Department. From: Kelley Bowles, FIT Geologist, EPA Region VI. Re: Lead Products facility site and Buffalo Bayou. 1/19/89.
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22	ROC. To: Eddie Elliott, TWC District 7. From: F. A. Verhalen, FIT Environmental Scientist, EPA Region VI. Re: TWC Regulatory History of Lead Products Company. 1/15/89.

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 05	
TO: Henry Flemming Technician, ACOE Galveston District (409) 766-3076	From: Brian Boerner FIT Chemist Brian Boerner	Date: 1/10/89 Time: 1243 hours

SUBJECT Flood Plains of Houston.

SUMMARY OF COMMUNICATION

Area around 800 N. Velasco is in Zone C, which is out of the flood plain.

Information from F.I.R.M., Map Panel # 480-296-0125-6, September 27, 1985 ed.

Map is being sent to FIT office.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

OVERSIZE DOCUMENT

The page that occupies this position in the paper document is:

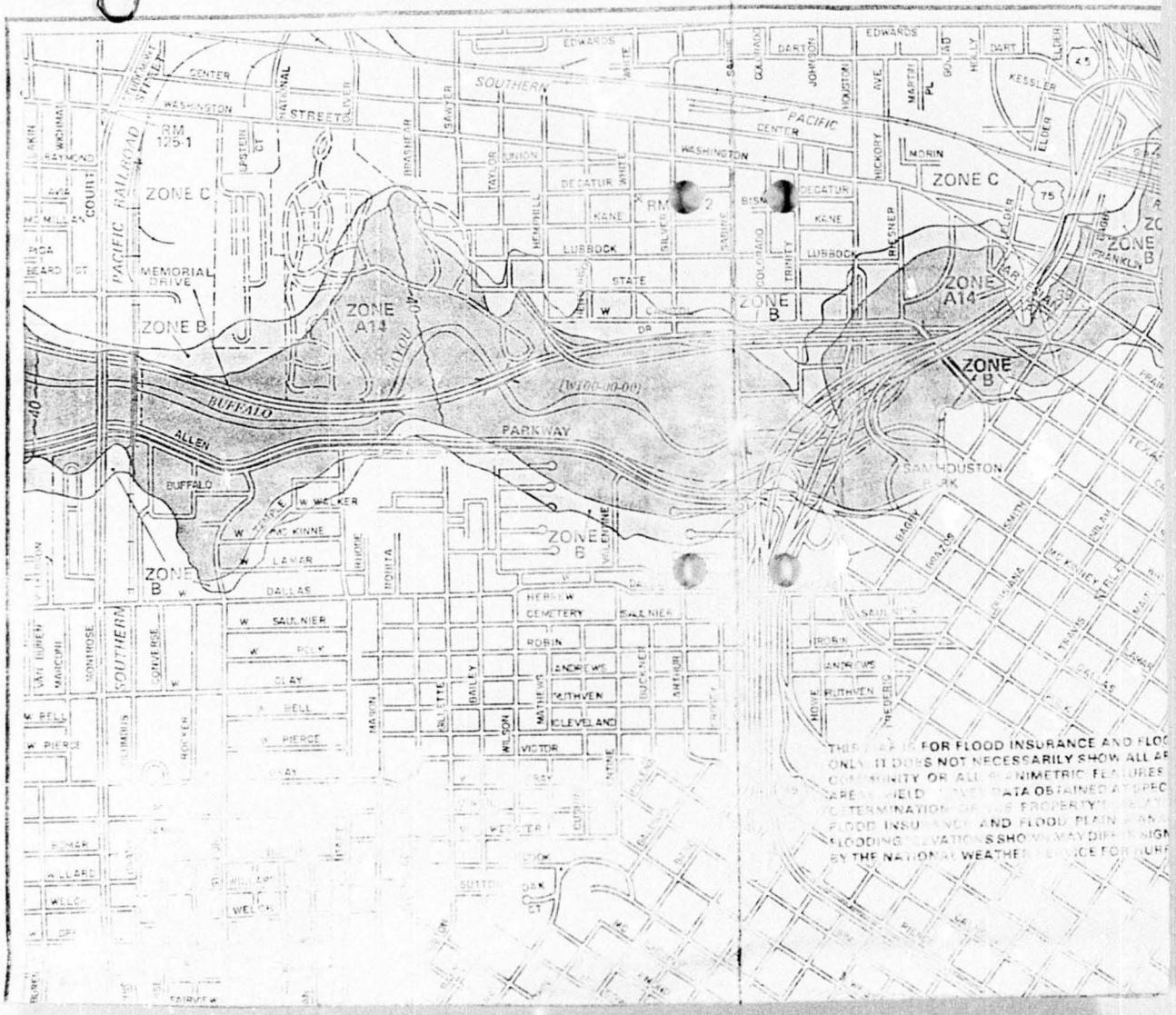
Oversized document number:

TXD008080749
SFSA VOL02

on the roll of 35mm film.

Titled:

RL0-HS-R-TXM001


ZONE C
ZONE B
ZONE A14
RM 125-1
MEMORIAL DRIVE
PACIFIC RAILROAD
SOUTHERN
PACIFIC
BUFFALO
PARKWAY
ALLEN
BUFFALO
SAM HOUSTON PARK
EDWARDS
WASHINGTON
CENTER
DECATUR
KANE
LUBBOCK
STATE
DALLAS
SAULNIER
ROBIN
ANDREWS
RUTHVEN
CLEVELAND
VICTOR
HEBREW CEMETERY
CLAY
BELL
PIERCE
GRAY
WESTER
SUTTON
OAK
MORIN
KESSLER
ELDER
FRANKLIN
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COMMUNITY OR ALL PLANIMETRIC FEATURES
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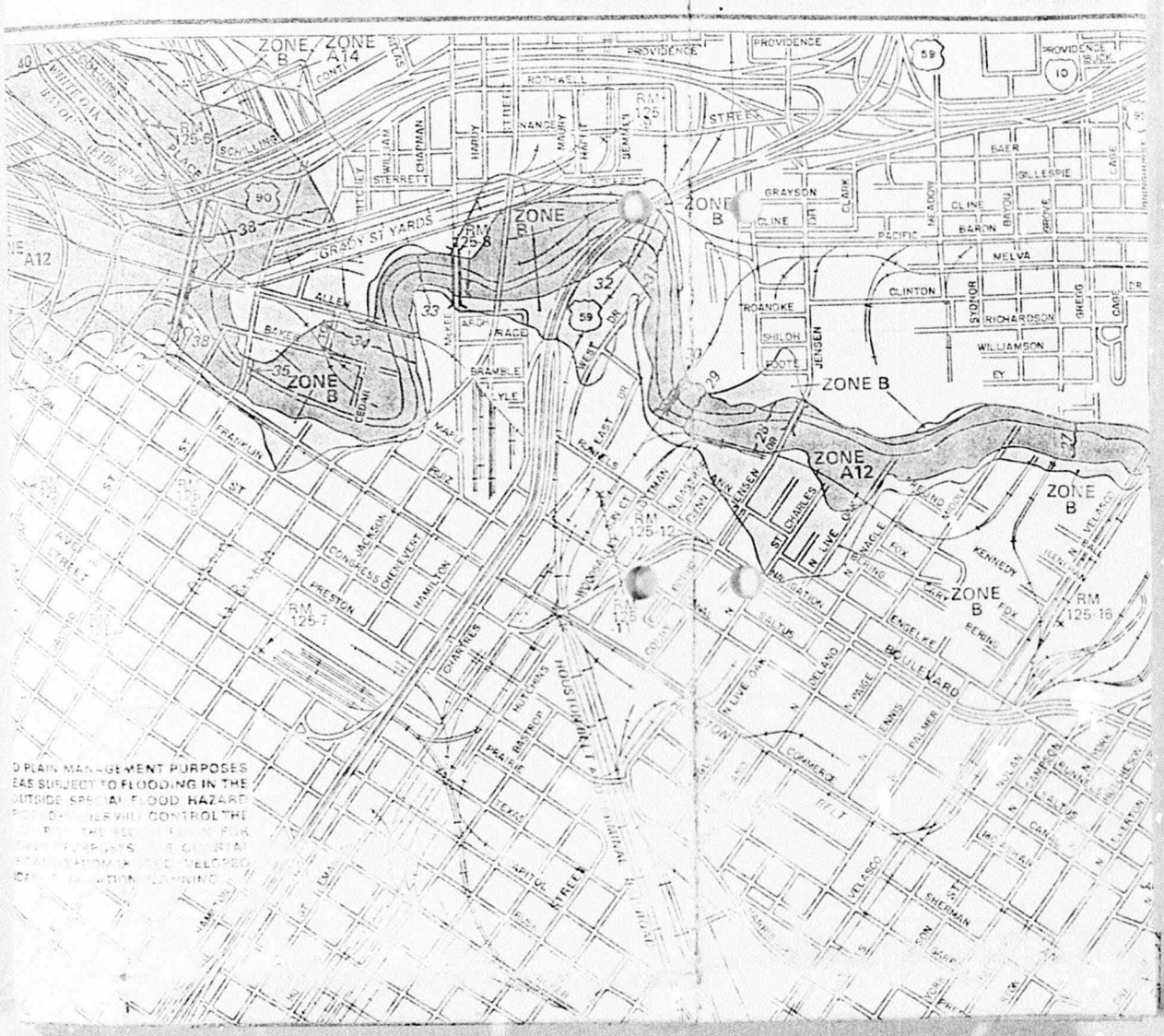
FLOOD INSURANCE AND FLOOD PLAIN
FLOODING ELEVATIONS SHOWN MAY DIFF
BY THE NATIONAL WEATHER SERVICE FOR HURR


ZONE B
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ROTHWELL
STREET
RM 125-6
RM 125-8
RM 125-9
RM 125-7
RM 125-12
RM 125-16
GRADY ST YARDS
ZONE B
ZONE A12
GRAYSON
CLINE
PACIFIC
BAER
GILLESPIE
BARON
MELVA
CLINTON
ROANOKE
SHILOH
FOOTE
RICHARDSON
WILLIAMSON
JENSEN
BRAMBLE
FRANKLIN
CONGRESS
PRESTON
HAMILTON
CHARTRES
HUTCHINS
BASTROP
PRAIRIE
TEXAS
CAPITOL
HOUSTON BELT
ST CHARLES
N LIVE OAK
KENNEDY
ENGELKE
BOULEVARD
COMMERCE
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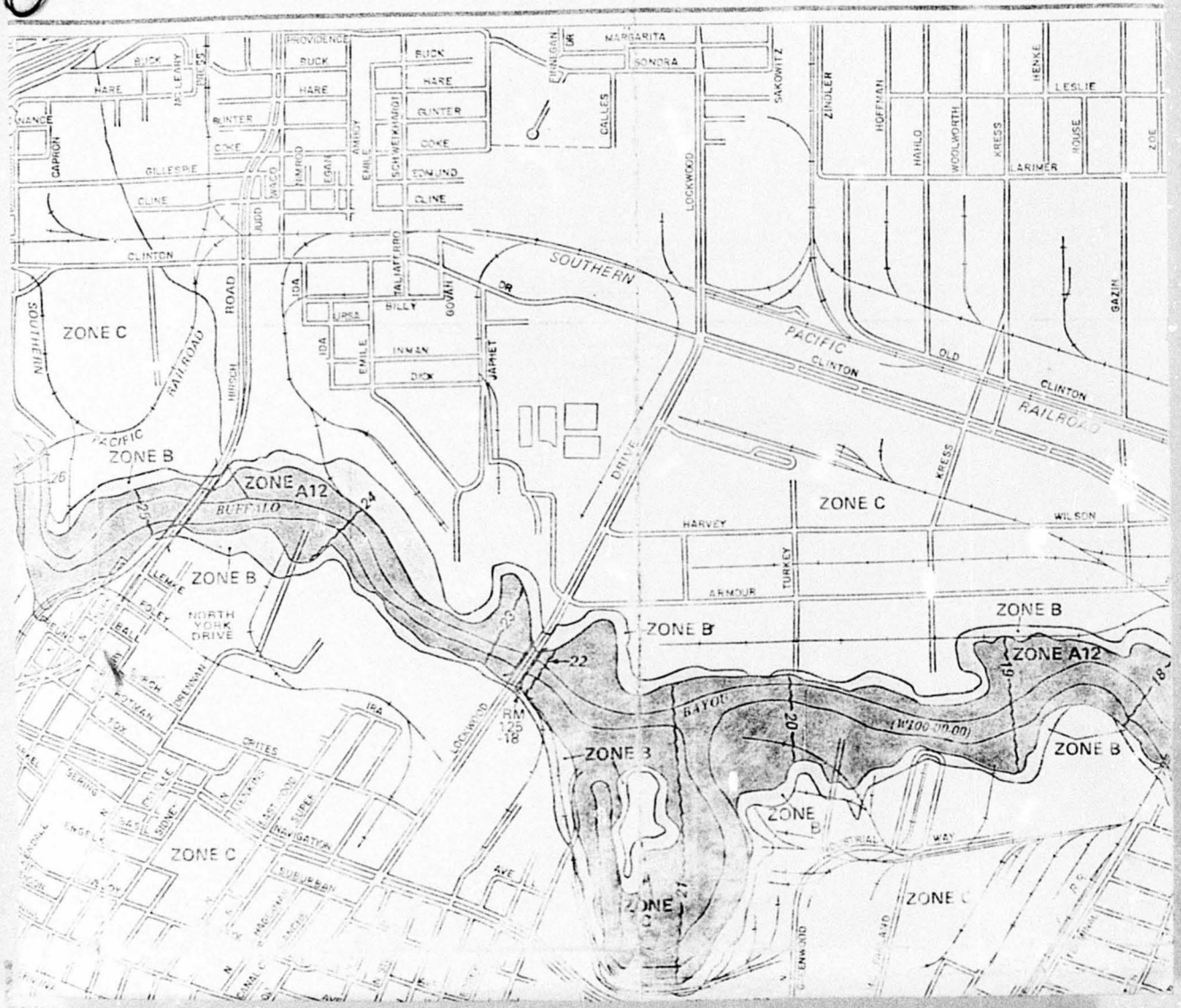
EAS SUBJECT TO FLOODING IN THE
OUTSIDE SPECIAL FLOOD HAZARD
CONTROL THE



ZONE C
ZONE B
ZONE A12
BUFFALO
BAYOU
NORTH YORK DRIVE
SOUTHERN PACIFIC RAILROAD
CLINTON
OLD CLINTON
HARVEY
WILSON
ARMOUR
TURKEY
KRESS
LOCKWOOD
DRIVE
JAPHET
GOVAN
BILLY
INMAN
DICK
EMILE
IDA
TALIAFERRO
SCHWEIKHARDT
EDMUND
CLINE
GILLESPIE
GUNTER
COKE
BUCK
HARE
PROVIDENCE
MARGARITA
SONORA
CALLES
SAKOWITZ
ZINDLER
HOFFMAN
HAHLO
WOOLWORTH
LARIMER
HENKE
LESLIE
ROUSE
ZOE
GAZIN
CAPRON
HIRSCH
ROAD
JUDD
WACO
HAMROD
EGAN
AMROY
FINNEGAN
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RM 125 -18
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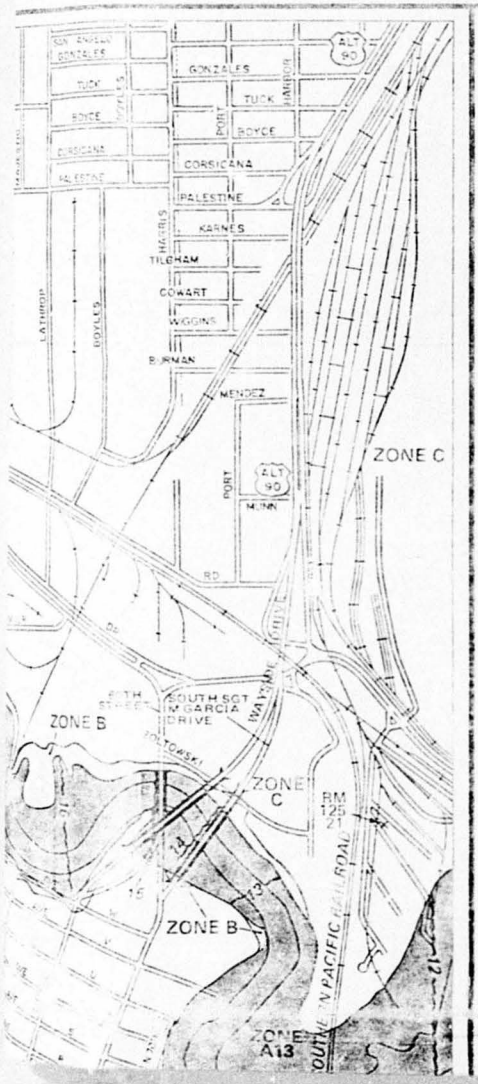


KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	
Zone Designations*	ZONE B / ZONE A1 / ZONE A5 / ZONE B
100-Year Flood Boundary	
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

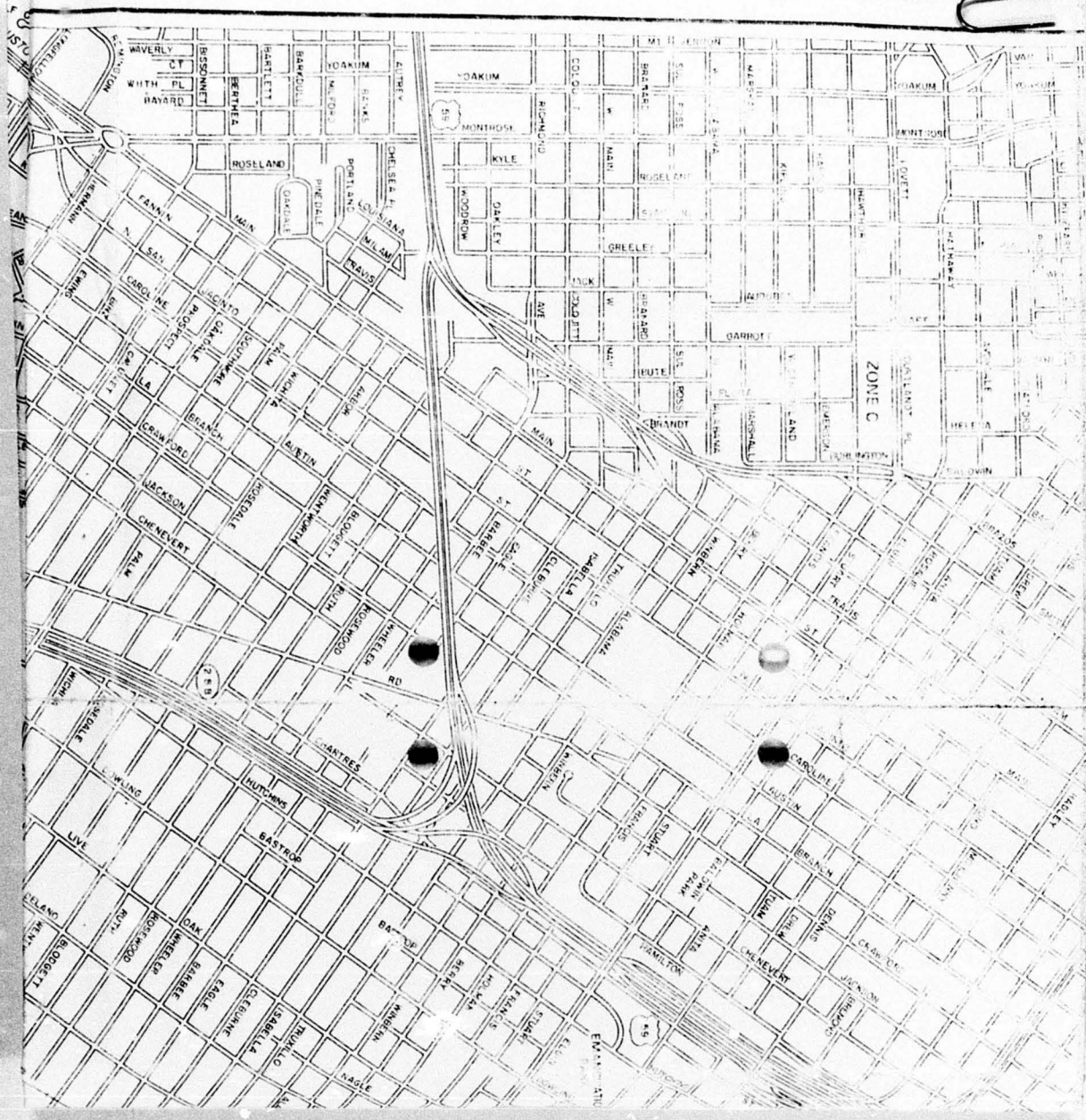
**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
A	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
AH	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.


ZONE C
YOAKUM
MONTROSE
ROSELAND
GREELEY
GARROTT
BRANDT
BUTE
MAIN
KYLE
OAKLEY
WOODROW
PORTLAND
LOUISIANA
MILAM
TRAVIS
FANNIN
CAROLINE
JACINTO
PROSPECT
OAKDALE
SOUTHWOOD
PALM
WICHITA
ARBOR
BRANCH
AUSTIN
CRAWFORD
JACKSON
CHENEVERT
ROSEDALE
WENTWORTH
BLODGETT
RUTH
ROSEWOOD
WHEELER
BARBEE
EAGLE
CLEBURNE
ISABELLA
TRUXILLO
ALABAMA
WINBERN
FRANCIS
STUART
BERRY
HOLMAN
NAGLE
CHARTRES
HUTCHINS
BASTROP
LIVE
OAK
DENNIS
DREW
ANITA
HAMILTON
BALDWIN PARK
HAWTHORN
HATHAWAY
LOVETT
HELENA
BALDWIN
BRAZOS
PORLINGTON
EMERSON
MARSHALL
BERTHEA
BARTLETT
BARKDULL
MILFORD
BANKS
AUTREY
CHELSEA
PINEDALE
OAKDALE
WAVERLY
BISSONNET
BAYARD
RICHMOND
COLQUITT
BRAYARD
SUL ROSS
MARSHALL
ALABAMA
KIRBY
LAND
EMERSON
PORLINGTON
GARLANDT PL
ARDOSE
ANDALE
HELENA
BALDWIN
BRAZOS
DREW
ANITA
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CAROLINE
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HERMANN
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ROSELAND
YOAKUM
MONTROSE
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RM 125-13
RM 125-14
RM 125-15
GALVESTON
EASTWOOD AVENUE
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CAPITOL
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GRACE
HUNT
ESTELLE
GARROW
JENKINS
ST. AUGUSTINE
JULLEN
WALKER
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STREET
LEELAND
PEASE
JEFFERSON
COYLE
HARBY
ZONE C
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BELT
FREEWAY
GULF
CULLEN
ATHENS
ERNESTINE
EDDINGTON
DIEZ
MUNGER
SCHARPE
LOMBARDY
DUMBLE
VAUGHN
DRY
ROAD
ATHLETIC FIELD PARK
UNIVERSITY OF HOUSTON
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CANFIELD
NAPOLEON
SCOTT
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RM 125-25
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AND
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CLAREMONT
MULFORD
HILLMAN
BROOKSIDE
JEFFERSON
COUNTRY CLUB
PINEHURST
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ESPERANZA
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PASADENA
TELEPHONE
TELLEPSEN
KOLFAHL
COLLIER
LANSING
HACKNEY
DES MARNES
DESMARE
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BARREMORE
MEADOWLAWN
FAIRFIELD
WILDWOOD
S. WAYSIDE DRIVE
ALT 90
SANTIAGO
ESPERANZA
VISTA
PASADENA

This map is for flood insurance and flood plain management purposes only; it does not necessarily show all areas subject to inundation or all planimetric features outside flood hazard areas. The coastal flooding elevations shown may differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

For adjoining map panels, see separately printed Index To Map Panels.

Coastal base flood elevations shown on this map include the effects of wave action.

Coastal base flood elevations apply only landward of 0.0 NGVD.

INITIAL IDENTIFICATION:
DECEMBER 27, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
APRIL 8, 1977

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 26, 1970

FLOOD INSURANCE RATE MAP REVISIONS:

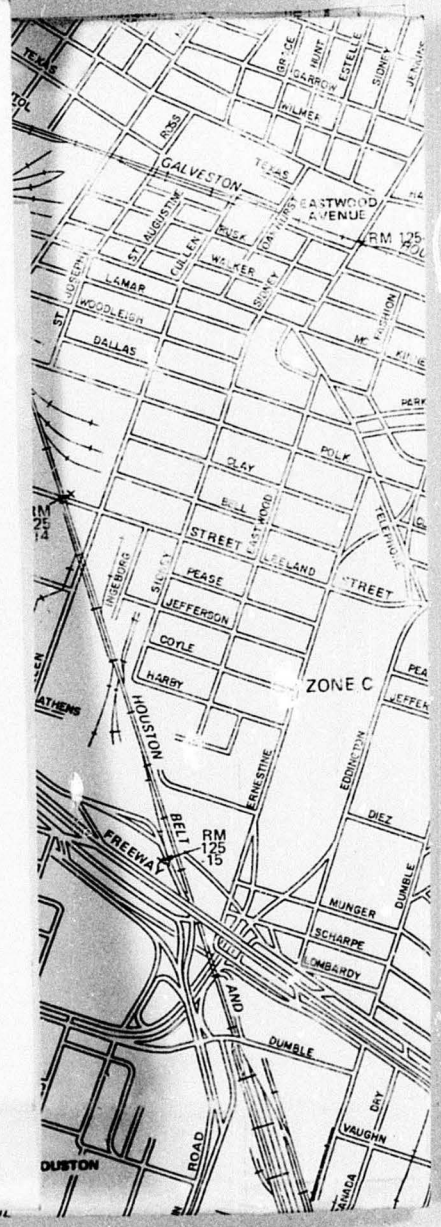
March 10, 1972 - to add zone designations.
July 1, 1973 - to change zone designations.
July 10, 1978 - to reflect curvilinear flood boundaries, to add special flood hazard areas, include areas of Clear Lake City Map.
December 11, 1979 - to change corporate limits, to add and reduce special flood hazard areas, to add rated zones.
September 27, 1985 - to change special flood hazard areas, to add special flood hazard areas, to change base flood elevations, to add base flood elevations, to add street names, to add streets, to change zone designations, and to change corporate limits.

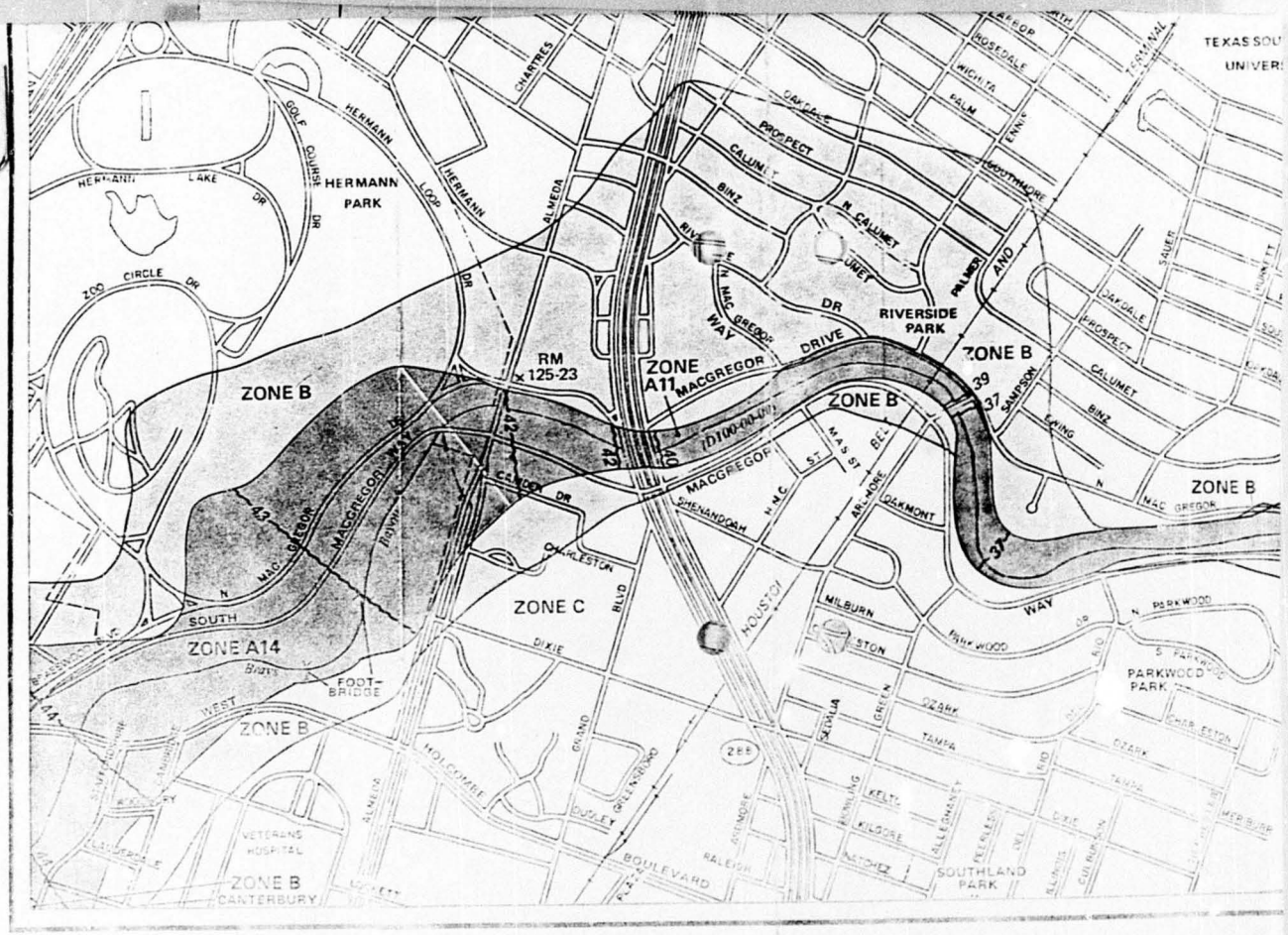
To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

N

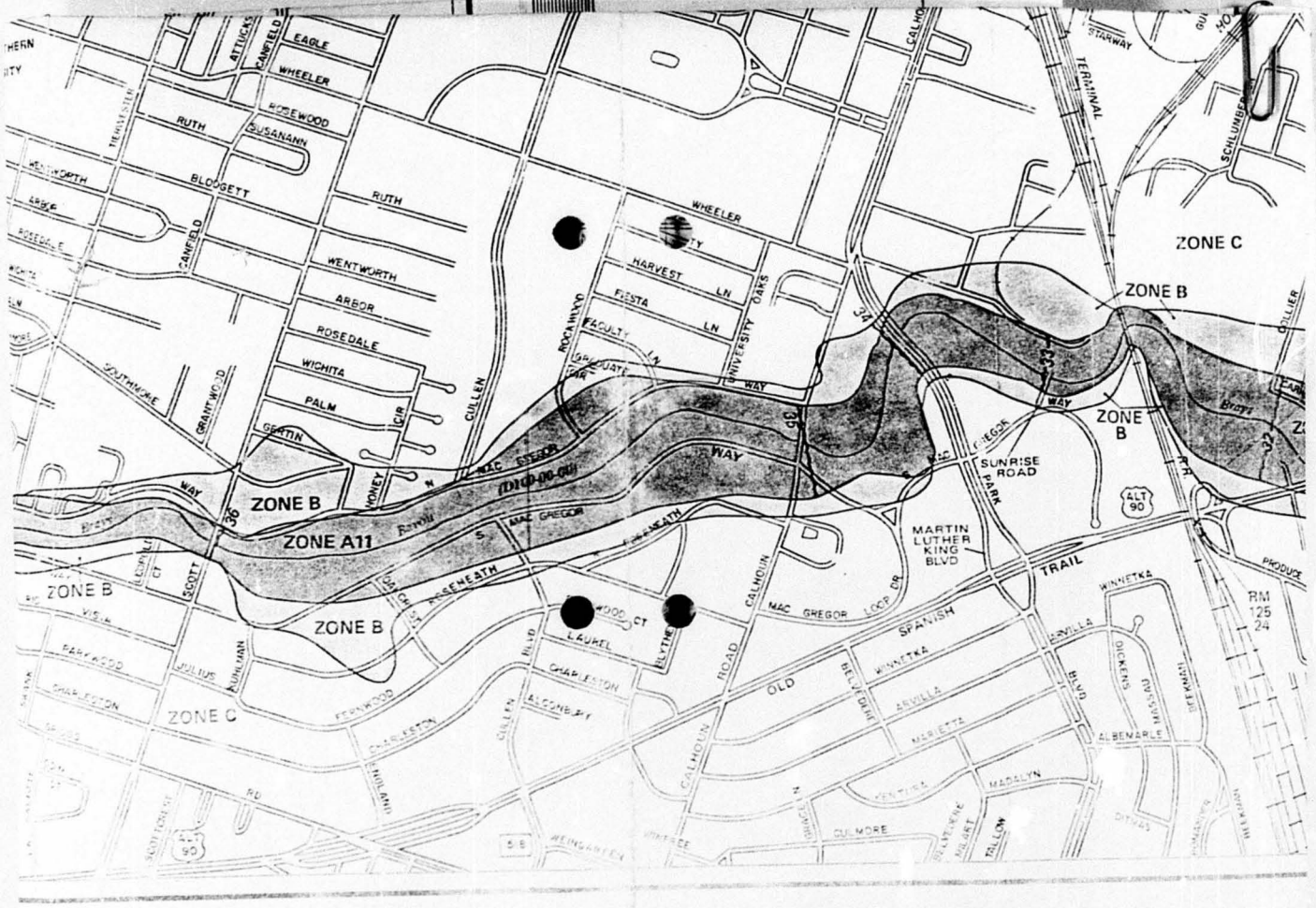
APPROXIMATE SCALE
1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM





HERMANN PARK
HERMANN LAKE DR
GOLF COURSE DR
HERMANN LOOP DR
ZOO CIRCLE DR
ALMEDA
CHARTRES
OAKDALE
PROSPECT
CALUMET
BINZ
N CALUMET
RIVERSIDE PARK
ZONE B
RM 125-23
ZONE A11
MACGREGOR DRIVE
MACGREGOR WAY
(D100-00-00)
CAMDEN DR
SHENANDOAH
OAKMONT
ZONE C
CHARLESTON
BLVD
HOUSTON
MILBURN
PARKWOOD
PARKWOOD PARK
ZONE A14
SOUTH
FOOT-BRIDGE
WEST
DIXIE
OZARK
TAMPA
HOLCOMBE
GRAND
GREENSBORO
DUDLEY
BOULEVARD
RALEIGH
KILGORE
NATCHEZ
ALLEGHANY
SOUTHLAND PARK
VETERANS HOSPITAL
ZONE B CANTERBURY
SAMPSON
EWING
SAUER
ROSEDALE
WICHITA
PALM
ENNIS
SOUTHMORE
TERMINAL
TEXAS SOU
UNIVERS


ZONE C
ZONE B
ZONE B
ZONE A11
ZONE B
ZONE B
ZONE C
ZONE B
ZONE C
EAGLE
WHEELER
ROSEWOOD
RUTH
BLODGETT
WENTWORTH
ARBOR
ROSEDALE
WICHITA
PALM
GERTIN
HARVEST LN
FIESTA LN
FACULTY LN
UNIVERSITY OAKS
CULLEN
MAC GREGOR
ROSEHEATH
SUNRISE ROAD
MARTIN LUTHER KING BLVD
SPANISH TRAIL
OLD
CALHOUN ROAD
MAC GREGOR LOOP DR
WINNETKA
ARVILLA
MARIETTA
ALBEMARLE
MADALYN
CULMORE
TALLOW
CHARLESTON
ALCONBURY
LAUREL
FERNWOOD
JULIUS
PARKWOOD
SCOTT
SOUTHMORE
GRANTWOOD
HONEY
CIR
TERMINAL
STARWAY
SCHLUMBERGER
COLLIER
PRODUCE
RM 125 24
ALT 90
ALT 90
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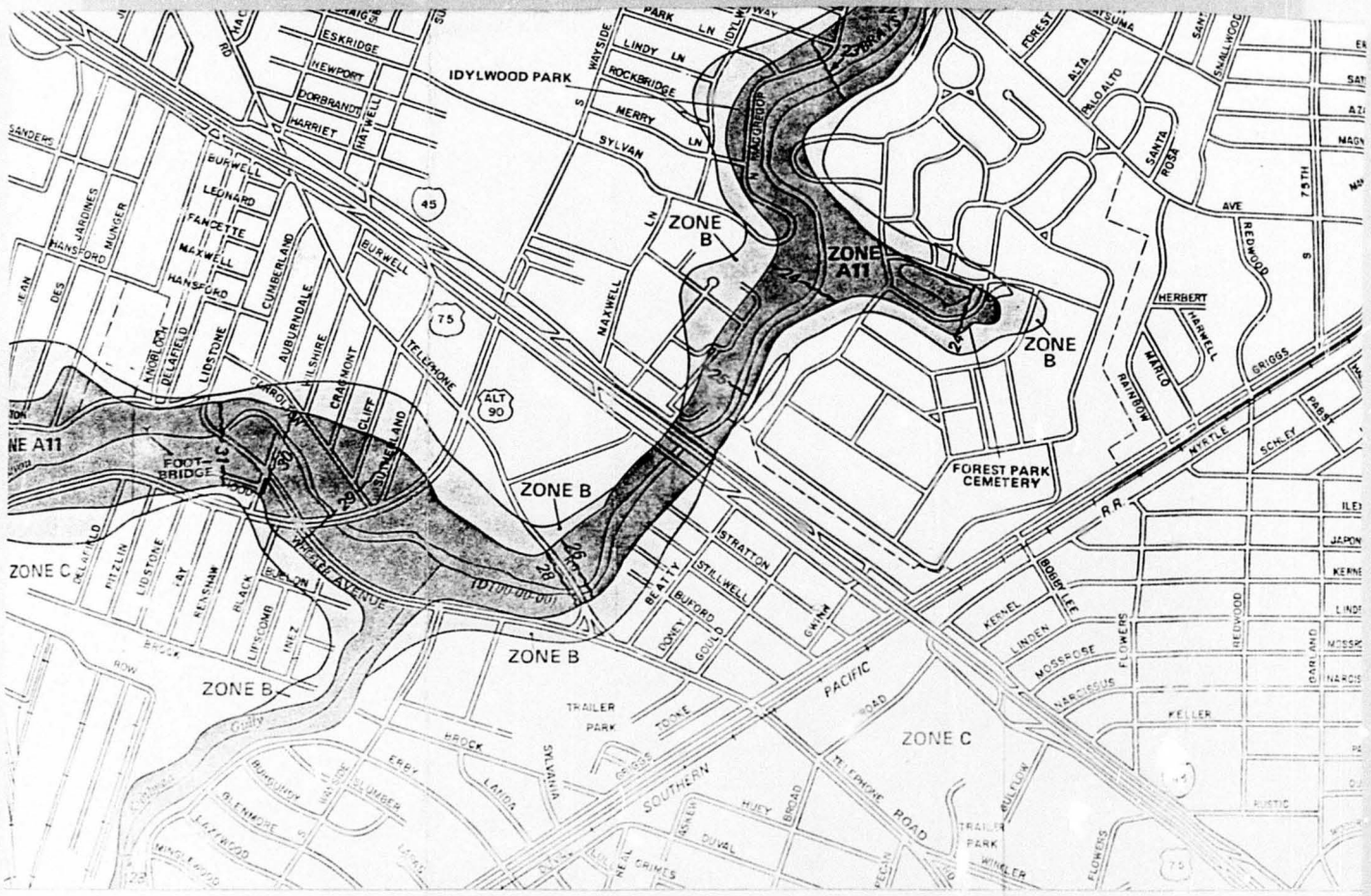
ZONE C


IDYLWOOD PARK
ZONE B
ZONE A11
ZONE B
ZONE B
ZONE B
ZONE B
ZONE C
ZONE C
FOREST PARK CEMETERY
FOOT-BRIDGE
TRAILER PARK
TRAILER PARK
SOUTHERN PACIFIC ROAD
R.R.
ESKRIDGE
NEWPORT
DORBRANDT
HARRIET
HATWELL
LINDY LN
ROCKBRIDGE
MERRY LN
SYLVAN
WAYSIDE
BURWELL
LEONARD
FANCETTE
MAXWELL
HANSFORD
CUMBERLAND
AUBURNDALE
WILSHIRE
CRAGMONT
CLIFF
TELEPHONE
ALT 90
75
45
ALTA
PALO ALTO
SANTA ROSA
REDWOOD
HERBERT
HARWELL
MARLO
RAINBOW
GRIGGS
MYRTLE
SCHLEY
PABST
STRATTON
STILLWELL
BUFORD
BEATTY
GOULD
DONEY
GWINN
KERNEL
LINDEN
MOSSROSE
NARCISSUS
FLOWERS
KELLER
BOBBY LEE
BROCK
SYLVANIA
LANDA
ERBY
HUEY
DUVAL
GRIMES
WINKLER
BULFLOW
BROAD
TOOKE
PITZLIN
LIDSTONE
FAY
KENSHAW
BLACK
LIPSCOMB
INEZ
BOLDEN
WHITTIER AVENUE
ROW
BURGUNDY
GLENMORE
LAXWOOD
MINGLEWOOD
SLUMBER
ASKEW
REAL
PECAN
RUSTIC
GARLAND
SANDERS
JARDINES
MUNGER
DES
JEAN
KNOBLOCH
DELAFIELD
ALTA
SMALLWOOD
75TH
AVE

ZONE B
ZONE C
ZONE A13

FIRM

FLOOD INSURANCE RATE MAP

CITY OF HOUSTON, TEXAS

HARRIS COUNTY,
FORT BEND COUNTY,
MONTGOMERY COUNTY

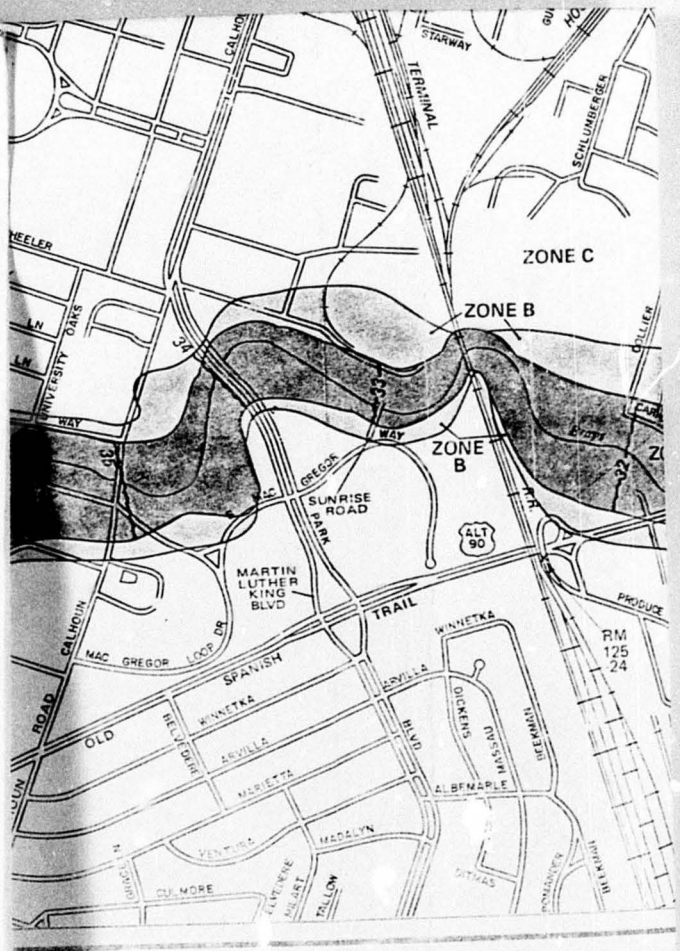
PANEL 125 OF 195

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
480296 0125 C

MAP REVISED:
SEPTEMBER 27, 1985

Federal Emergency Management Agency



NOTES TO USER

EPA Notification of Hazardous Waste Site

United States
Environmental Protection
Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and must be mailed by June 9, 1981

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies

A Person Required to Notify:
Enter the name and address of the person or organization required to notify

Name: Lead Products Company, Inc.
Street: P. O. Box 1341
City: Houston State: TX Zip Code: 77231

B Site Location:
Enter the common name (if known) and actual location of the site

Name of Site: Childs Truck Equipment Site*
Street: 800 block of N. Velasco (P.O. Box 931, 77001)
City: Houston County: Harris State: TX Zip Code: 77003

C Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form

Name (Last, First, and Title): Robert Simonds, President
Phone: (713) 224-9546

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OCT 20 1988
6W-EA

D Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site

From (Year): Approx. 1935 To (Year): 1945

E Waste Type. Choose the option you prefer to complete

Option 1. Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I, Description of Site

General Type of Waste. Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category

1 [ ] Organics
2 [ ] Inorganics
3 [ ] Solvents
4 [ ] Pesticides
5 [X] Heavy metals
6 [ ] Acids
7 [ ] Bases
8 [ ] PCBs
9 [ ] Mixed Municipal Waste
10 [ ] Unknown
11 [ ] Other (Specify)

Source of Waste Place an X in the appropriate boxes

1 [ ] Mining
2 [ ] Construction
3 [ ] Textiles
4 [ ] Fertilizer
5 [ ] Paper, Printing
6 [ ] Leather Tanning
7 [ ] Iron, Steel Foundry
8 [ ] Chemical, General
9 [ ] Plating, Polishing
10 [ ] Military, Ammunition
11 [ ] Electrical Conductors
12 [ ] Transformers
13 [ ] Utility Companies
14 [ ] Sanitary, Refuse
15 [ ] Photofinish
16 [ ] Lab, Hospital
17 [ ] Unknown
18 [X] Other (Specify)
Lead Smelting Recovery Operations

Option 2. This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261)

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located

D008		

* Office address:

Childs Truck Equipment, Inc.
3125 Navigation
Houston, Texas 77003

Notification of Hazardous Waste Site — **Side Two**

F Waste Quantity

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1 ☐ Piles
2 ☐ Land Treatment
3 ☒ Landfill
4 ☐ Tanks
5 ☐ Impoundment
6 ☐ Underground Injection
7 ☐ Drums, Above Ground
8 ☐ Drums, Below Ground
9 ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet: Unknown
gallons: Unknown

Total Facility Area

square feet: Unknown
acres: Less than 1/2 acre

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None

Unknown

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

Please see attached map.

RECEIVED
OCT 20 1988
6W-EA

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Lead Products Company operated on-site for a period of approximately 10 years from 1935 until 1945. Discarded lead batteries were used as fill material on a small area of site.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other."

Name: Robert Simonds
Street: P. O. Box 1341
City: Houston State: TX Zip Code: 77251
Signature: [signature] Date: 10/11/88

☐ Owner, Present
☐ Owner, Past
☐ Transporter
☐ Operator, Present
☒ Operator, Past
☐ Other

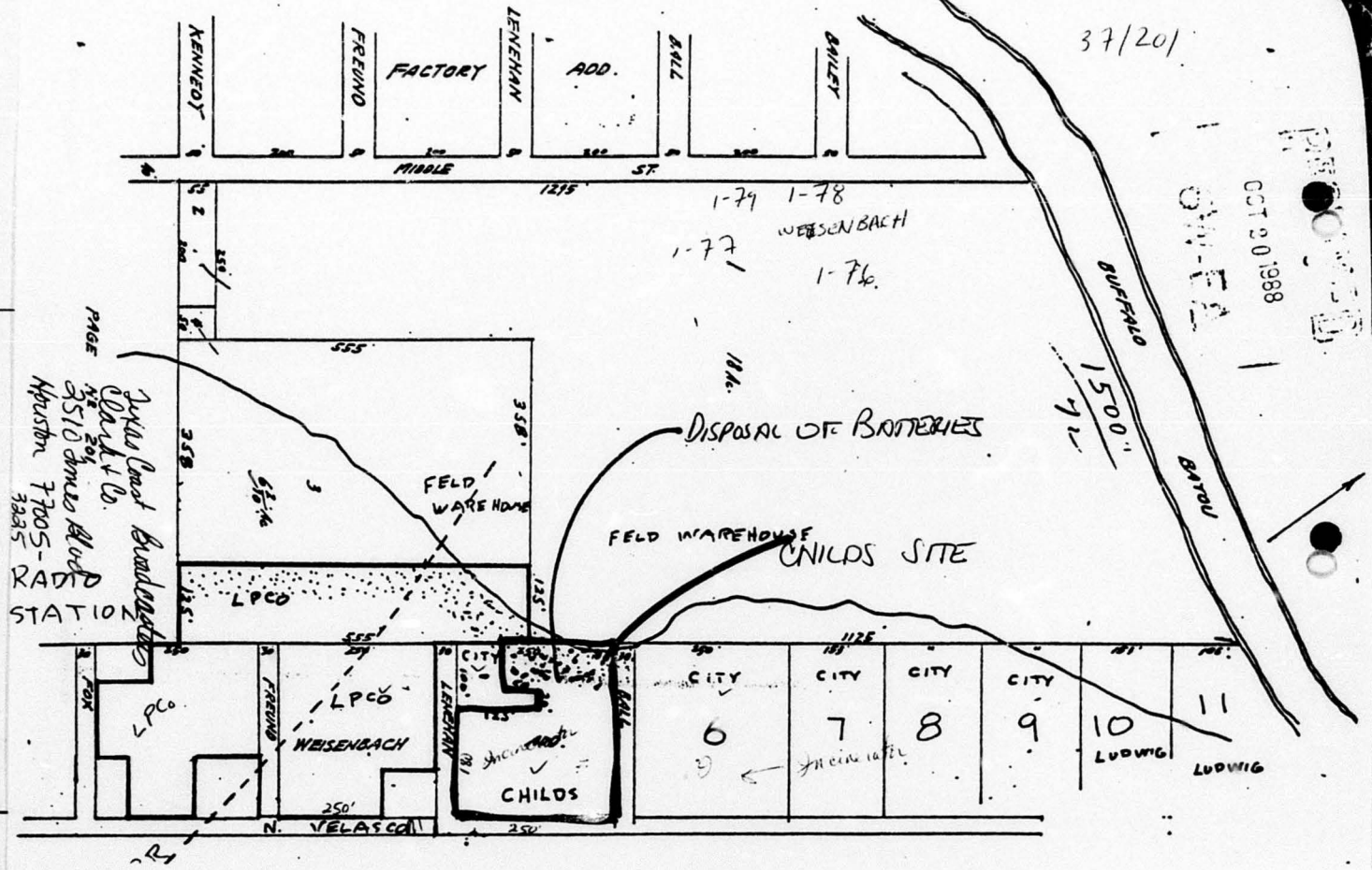
[illegible]
[illegible]

12/142

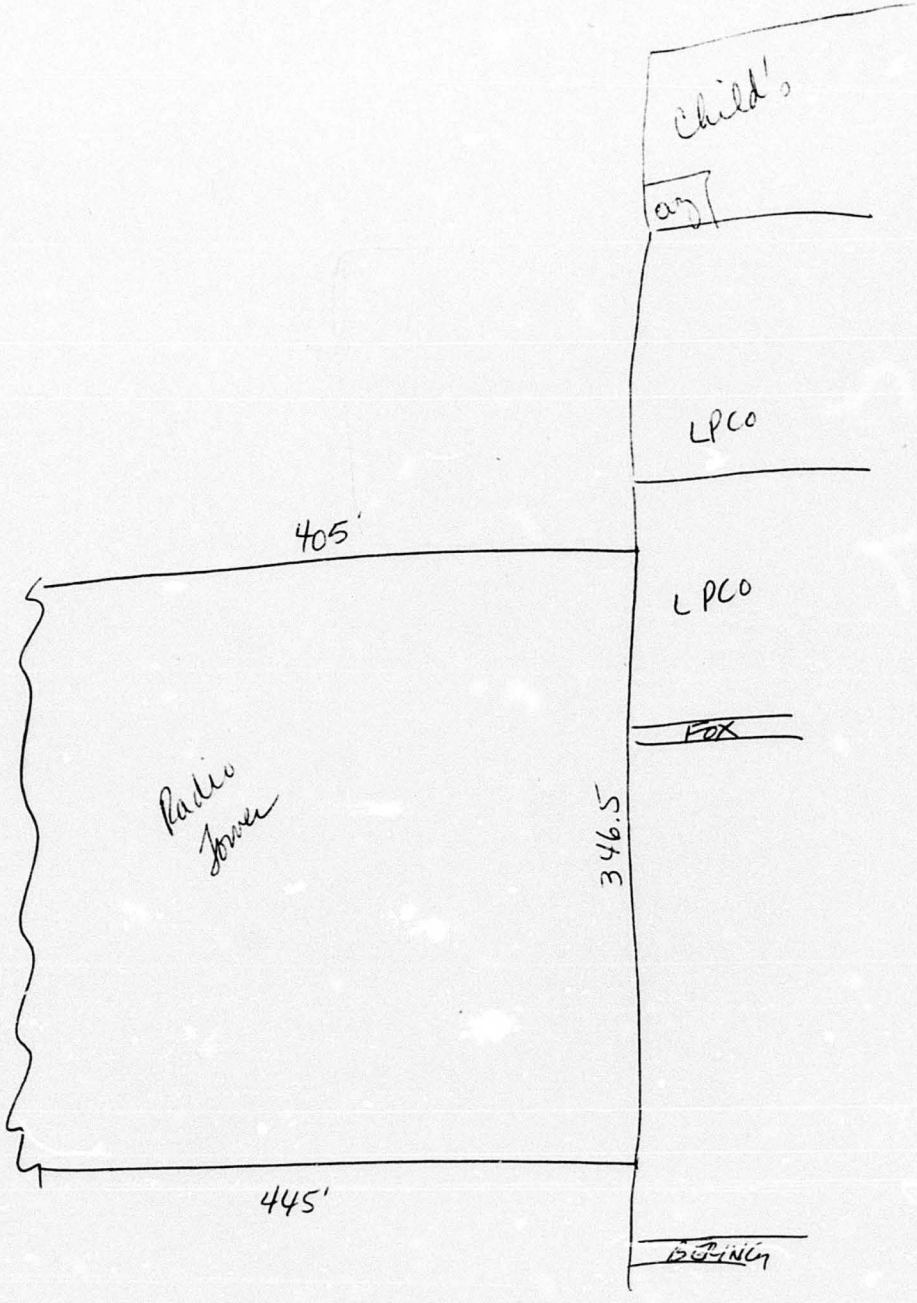
11/161

36 p. 247

37/201



OCT 20 1988


Child's
ag
LPCO
405'
LPCO
FOX
Radio Tower
346.5'
445'
BERNICK

TWC Files

REF. 07

Y OF HOUSTON

Health Department/Engineering
7411 Park Place · Houston, Texas 77087 · 713/645-4759
610-4399

Kathryn J. Whitmire, M.D.

CITY COUNCIL MEMBERS: Larry McKaskle · Ernest McGowen, Sr. · George Greanias · Anthony W. Hall, Jr. · Frank O. Mancuso · John G. Goodner · Christin Hartung
Dale M. Gorczynski · Ben T. Reyes · Jim Westmoreland · Eleanor Tinsley · Jim Greenwood · Johnny Goyen · Judson Robinson, Jr. · CITY CONTROLLER: Lance Lalor

February 18, 1985

Mr. Robert Simonds
Lead Products Company, Inc.
709 North Velasco
Houston, Texas 77003

Reg. No. 31418
EPA I.D. No. TXD008080715

Dear Mr. Simonds:

The Public Health Engineering Bureau of the Department of Public Health sampled and analyzed soil and rainfall run-off from your plant site at 709 North Velasco on 5/17/82, 6/21/82, 12/5/83, 1/9/84, 12/7/84, and 2/14/85.

Our laboratory analyses on the above samples indicated that lead concentrations exceeded the limit established by the Texas Department of Water Resources. The lead results on these samples are as follows:

5/17/82	-	Rain Run-off-Pb 16.2 mg/1, pH 5.1 Notice date: 6/21/82.
6/21/82	-	Wastewater discharge to storm sewer- Pb 8.3 mg/1, Zn 11.54 mg/1, Cu 6.44 mg/1, pH 3.8. Notification meeting with Mr. Robert Simonds on 7/7/82. 7/9/82 Response from Mr. Simonds stating that Resource Engineering Inc. had been retained and that a report of R.E.I.'s recommendations would be ready in 45 days. These were never forthcoming nor received.

FEB 25 1985

12/05/83 - Three (3) soil samples Southwest side of driveway corner off 709 Velasco
Total Pb 19,772 mg/Kg
Southwest side of driveway corner about 809 Velasco
Total Pb 21,265 mg/Kg
Southwest side of driveway corner about 909 Velasco
Total Pb 1,342 mg/Kg

1/09/84 - Water sample taken south of southwest side of driveway corner off 709 Velasco from curb water Pb 15.0 mg/l
Water sample taken at southwest corner of Lenehan Street at Velasco from Curb water Pb 13.0 mg/l

12/07/84 - Four (4) soil samples taken across the lower south quarter of the property. Please see the attached map for exact sample locations.

Location	Date	Sample #	EP Toxicity Pb (mg/l)	Total (Pb) (mg/Kg)
1	12/7/84	84-14698 G	83.5	42,760.42
2	12/7/84	84-14697 G	10.3	819.47
3	12/7/84	84-14696 G	14.0	2,405.19
4	12/7/84	84-14695 G	157.0	25,737.03

2/14/85 - Two (2) soil samples at property line on city easement.

Location	Date	Sample #	EP Toxicity Pb (mg/l)	Total (Pb) (mg/Kg)
2	2/14/85	85-1445 G	70.4	9,518.17
3	2/14/85	85-1446 G	113.25	181,709.38

The Public Health Engineering Bureau of the Department of Health in collaboration with the Texas Department of Water Resources is requesting and requiring that site management and contamination cleanup measures be taken on and adjacent to your plant property in accordance with good engineering practices. An engineer should be retained to weigh the problem and a compliance schedule including a target completion date should be negotiated immediately and periodically updated so as to accomplish substantial environmental improvements on an expedited basis and thereby reduce the threat of harm to the public and the general environment. In addition a final site management and contamination cleanup plan based upon additional testing and analysis should be done by your engineers or other consultants.

In order to be acceptable, the formal written site cleanup plan must include the following items:

1. A site survey specifically directed towards determining the degree and extent of soil contamination. The soil sampling program must be conducted by a person or persons qualified to do such work. Samples taken must be analyzed for total lead and EP-toxicity lead. This survey must be designed and implemented to determine the extent of surface area contamination as well as the depth to which lead contamination exceeds 1000 mg/kg total lead and 2.5 mg/l EP-toxicity lead. Procedures for conducting the EP Toxicity Test are given in Enclosure 1 of this letter.

2. The site survey results must categorize all lead-contaminated soil into the three special waste categories shown below:

Municipal Solid Waste	Lead Concentration	
	EP Toxicity (mg/l)	Total Lead (mg/kg)
Category A	5.0 or greater	greater than 3000
Category B	less than 5.0 → greater than 2.5	less than 3000 greater than 1000
Category C	less than 2.5	less than 1000

3. Based on the survey results, a cleanup plan and timetable for completion of that plan must be developed. The plan must call for removal and proper disposal of all soils that contain lead in concentrations greater than 1000 mg/kg total lead and/or that exhibit EP-toxicity lead concentrations greater than 2.5 mg/l. The cleanup plan must include safety methods and precautions to be utilized when excavating and transporting the contaminated soil.

4. Additional guidelines for the preparation of your plan are as follows:

   a. Soil lead concentrations which are determined in the EP Toxicity Test to equal or exceed 5.0 milligrams/liter are defined as "hazardous waste" and must be

handled in accordance with this agency's hazardous waste rules. Currently there are no municipal solid waste landfills authorized to accept hazardous wastes and any such soil must be either shipped out-of-state to a facility that holds a valid hazardous waste permit (or which is operating under EPA's interim status) or to an in-state commercial Class I industrial waste facility (see Enclosure 2). Category A wastes which exceed 3000 mg/kg total lead, but do not exceed 5.0 mg/l EP-toxicity lead, may be handled at a municipal solid waste site with waste-specific, site-specific written approval from the department.

b. Lead-contaminated soil that qualifies as Category B special waste and does not contain other significant hazardous materials may generally be disposed of in a permitted Type I municipal solid waste site, provided such soils are placed no less than three (3) feet below natural grade in a trench separate from putrescible wastes. The contaminated soil must be covered with no less than six (6) inches of clean earth or Category C material on the day of receipt.

c. Contaminated soil that qualifies as Category C special waste may, provided adequate surface runoff and dust suppression measures are followed, be utilized as daily cover of other wastes below natural grade at a Type I municipal solid waste landfill. Any disposal site wishing to utilize Category C waste in this manner must, however, first outline in writing their plans for handling the waste and must agree to assure that the final disposal of all the contaminated soil will be at least two (2) feet below natural grade. Final cover must be graded to drain and the uppermost two (2) feet must be accomplished with clean earth.

d. Contaminated soils that qualify as Category C material which are not removed from the site must be stabilized or contained in such a manner as to prevent

handled in accordance with this agency's hazardous waste rules. Currently there are no municipal solid waste landfills authorized to accept hazardous wastes and any such soil must be either shipped out-of-state to a facility that holds a valid hazardous waste permit (or which is operating under EPA's interim status) or to an in-state commercial Class I industrial waste facility (see Enclosure 2). Category A wastes which exceed 3000 mg/kg total lead, but do not exceed 5.0 mg/l EP-toxicity lead, may be handled at a municipal solid waste site with waste-specific, site-specific written approval from the department.

b. Lead-contaminated soil that qualifies as Category B special waste and does not contain other significant hazardous materials may generally be disposed of in a permitted Type I municipal solid waste site, provided such soils are placed no less than three (3) feet below natural grade in a trench separate from putrescible wastes. The contaminated soil must be covered with no less than six (6) inches of clean earth or Category C material on the day of receipt.

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d. Contaminated soils that qualify as Category C material which are not removed from the site must be stabilized or contained in such a manner as to prevent

dissemination of contamination to adjacent properties. No surface soils may contain Category C material with total lead concentrations greater than 100 ppm for final approval.

e. Municipal solid waste landfills desiring to accept either Category A nonhazardous (i.e., total lead greater than 3,000 mg/kg, but EP-toxicity lead less than 5.0 mg/e) or Category B wastes must, in addition to outlining for the department their proposed handling procedures, obtain written authorization from TDH prior to accepting such wastes.

f. Complete and accurate records of all activities relating to the removal and disposal of lead-contaminated soil must be provided. A Texas Waste Shipping-Control Ticket (manifest) must be utilized for each shipment of Category A or B municipal special waste. Manifests should also be used for shipments of Category C wastes, but are not required by regulation. In addition, Generator Shipment Summary Reports must be submitted to TDH by no later than the 10th of each month for any shipments of lead-contaminated soil originating during the prior month. In the case of Category A and B special wastes, these reports must be made on TDWR/TDH Form 0040B. Shipping Summary Reports for Category C wastes may be made on the same form or simply summarized in letter format.

g. Regardless of the degree of lead contamination, persons who load, transport, unload or dispose of lead-contaminated soil must utilize adequate dust suppression methods. Methods to be utilized depend on the type of soil, the moisture content of the material and the lead concentration. All Category A and B lead-contaminated soil must be transported in enclosed or covered vehicles.

h. Transporters who haul lead-contaminated soil must agree to comply with appropriate dust control measures to be described in the cleanup plan. Shipment Summary Reports are not required of transporters, but transporters are required by Section 4(c) of the Texas "Solid Waste Disposal Act" to provide record keeping concerning all hazardous wastes hauled.

Your cooperation is appreciated and expected.

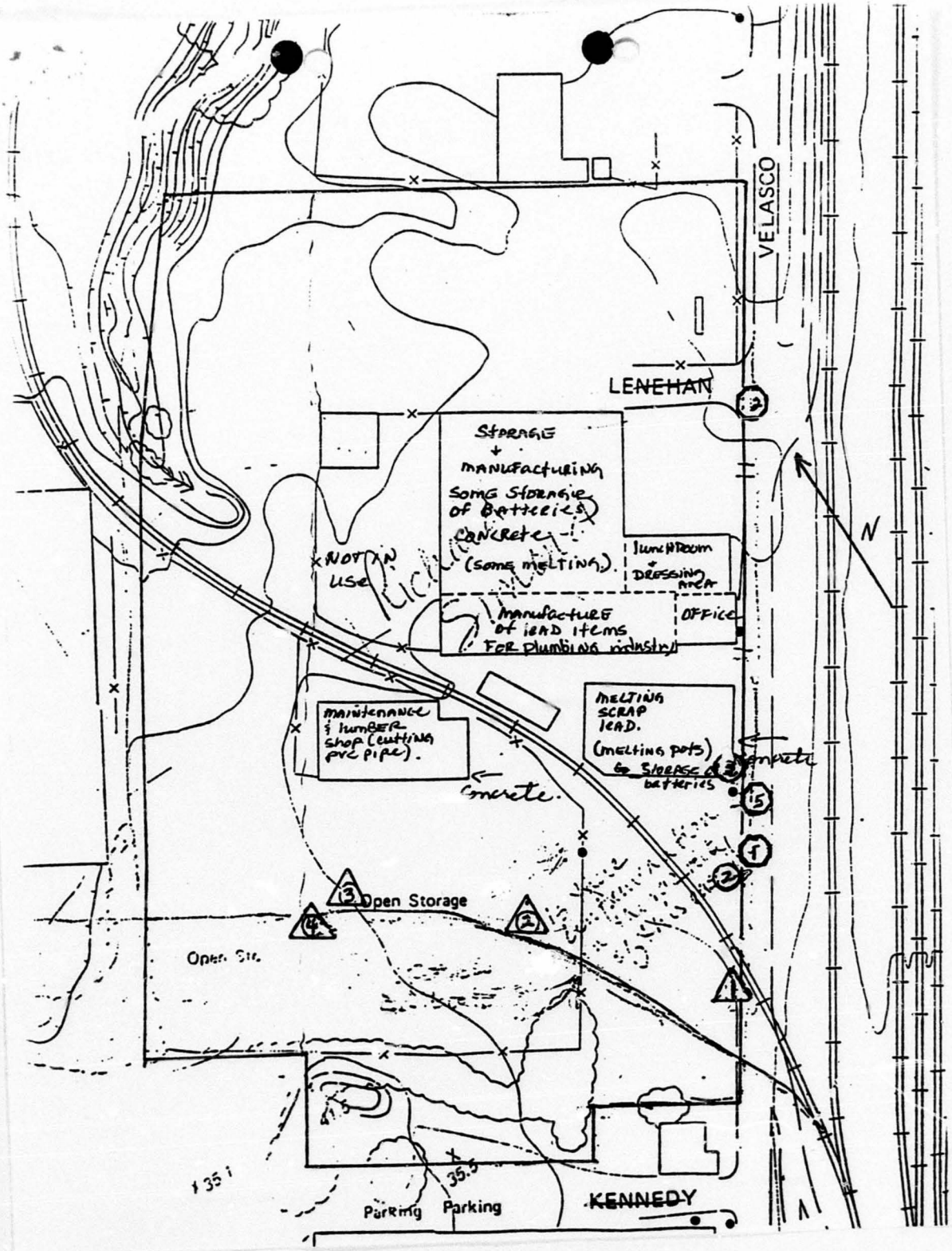
Very truly yours,

Mary L. DeAnda

Mary L. DeAnda
District Supervisor
Public Health Engineering
7411 Park Place, Suite 109
Houston, Texas 77087
(713) 645-4759

MLD:ajp

cc: Herbert C. McKee, Ph.D.
E. M. Quevedo, P.E.
Micheal Smith
Merton J. Coloton, P.E.
Brent Watts
Laura S. Portwood
Margaret J. Livingston


VELASCO
LENEHAN
STORAGE
+
MANUFACTURING
SOME STORAGE
OF BATTERIES
CONCRETE
(SOME MELTING)
LUNCHROOM
+
DRESSING
AREA
OFFICE
NOT IN
USE
MANUFACTURE
OF LEAD ITEMS
FOR PLUMBING INDUSTRY
MAINTENANCE
& LUMBER
SHOP (CUTTING
PVC PIPE).
MELTING
SCRAP
LEAD.
(MELTING POTS)
STORAGE
batteries
Concrete
Concrete
N
Open Storage
Open Sto.
35.5
Parking
Parking
KENNEDY

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	Reference 08
TO: Dr. Herbert McKee Occupational Health City of Houston Health Dept./Engr. (713) 640-4399	From: Kelly Bowles FIT Geologist Kelly Bowles	Date: 1/9/89 Time: 2:25 p.m.

SUBJECT Lead Products facility site and Buffalo Bayou.

SUMMARY OF COMMUNICATION

Q. Has there been any remedial action taken at Lead Products facility site?

A. There has not been any complete remedial action. The company itself is making an attempt to control runoff. There has not been any removal. We are trying to get approval to implement a program to recover the lead from the contaminated soil.

Q. Do you have an estimate of the amount of hazardous material buried on-site?

A. We have no record of the amount. We have data showing the levels of contamination, but no quantity data.

Q. Surface runoff from Lead Products , Inc., feeds into Buffalo Bayou. Do you know what Buffalo Bayou is used for downstream from the site?

A. Buffalo Boyou is used for navigation and by industries along the channel for once-through cooling water. There is no consumptive use and it is not used for drinking water.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 09	
TO: Don McInnes Houston Public Works, Water Production office* (713) 227-6558	From: Kelly Bowles FIT Geologist Kelly Bowles	Date: 1/5/89 Time: 1:00 p.m.

SUBJECT Buffalo Bayou

SUMMARY OF COMMUNICATION

Q. What are the uses of Buffalo Bayou in the City of Houston?

A. Buffalo Bayou is primarily a stormwater outlet, with limited recreation uses. It is not used for irrigation and has no intakes. It is used in places for boating and canoeing.

Q. Is any of the surface water used as a public water supply?

A. In your area, surface water is not used as a public water supply.

*105 Sabine

Houston, Texas

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

RECORD OF COMMUNICATION	(Record of Item Checked Below) ___Phone Call ___Discussion _x_Field Trip ___Conference ___Other(Specify) Reference 10	
TO: Lewis B. Seward, PE & Donald A. McInnes, Public Works Department* (713) 227-6558	From: Michael N. Mitchell and Tony Herald FIT Geologist Michael N. Mitchell	Date: 1/5/89 Time: 10:00 a.m.

SUBJECT Ground and surface water use, City of Houston.

SUMMARY OF COMMUNICATION

Mitchell and Herald met with City of Houston Water Production officials to gather information concerning ground and surface water use in the vicinity of the Fluorocarbon and Lead Products sites in Houston. Mr. Seward and and Mr. McInnes provided records of City of Houston water supply wells within a four-mile radius of both of the sites. When asked about surface water use of Buffalo Bayou, they stated there is no surface water withdrawal from Buffalo Bayou for public water supply use in the City of Houston.

*City of Houston

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REF. 11

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VAN NOSTRAND REINHOLD COMPANY

NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

SYNS:
1-DODECANETHIOL
M-DODECYL MERCAPTAN
1-DODECYL MERCAPTAN
M-LAURYL MERCAPTAN
1-MERCAPTODODECANE
NCI-C60935

TOXICITY DATA: CODEN:
cyt-rat-ihl 5020 ug/m3/16W BZARAZ 27,102,74

Reported in EPA TSCA Inventory, 1980.
THR: See mercaptans. MUT data.
Fire Hazard: Low.
To Fight Fire: Alcohol foam.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

LAURYLPYRIDINIUM LAURYLXANTHATE

CAS RN: 14917965 NIOSH #: UU 5775000
mf: $C_{17}H_{30}N \cdot C_{13}H_{25}OS_2$; mw: 509.98

TOXICITY DATA: 2 CODEN:
skn-rbt 500 mg/24H MOD 28ZPAK -,174,72
eye-rbt 20 mg/24H SEV 28ZPAK -,174,72
orl-rat LD50:802 mg/kg 28ZPAK -,174,72

THR: MOD orl. A skn, eye irr.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

LAURYL SULFATE, SODIUM SALT, CONDENSED WITH 3 MOLES OF ETHYLENE OXIDE

NIOSH #: OF 5725000

SYNS:
SODIUM SALT OF SULFATED BROAD-CUT COCONUT ETHOXY(3EO) ALCOHOL
SODIUM SALT OF SULFATED ETHOXYLATE OF BROAD-CUT LAURYL ALCOHOL

TOXICITY DATA: 2 CODEN:
skn-rbt 10 mg MLD JSCCA5 22,411,71
skn-rbt 230 mg/5W open MLD JSCCA5 22,411,71
skn-gpg 115 mg/5W open MLD JSCCA5 22,411,71

THR: A skn irr.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

LAVANDIN OIL

CAS RN: 8022159 NIOSH #: OF 6097500

Main constituent is Linalool; found in plant Lavanoula Hybrida Reverchon; prepared by steam distillation of the flowering stalks of the plant.

SYN: OIL OF LAVANDIN

TOXICITY DATA: 2 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76

Reported in EPA TSCA Inventory, 1980.
THR: A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVATAR

NIOSH #: OF 6097840

Coal tar distillates in a shampoo base.

TOXICITY DATA: CODEN:
mma-sat 25 ug/plate TOLED5 3,325,79

THR: MUT data.
Disaster Hazard: When heated to decomp it emits acr smoke and fumes.

LAVENDER ABSOLUTE

NIOSH #: OF 610000

Found in the flowers of Lavandula Officinalis chaix. Th main constituent is Linalyl Acetate; prepared from alco holic extract of a residue, which is extracted from plan material using an organic solvent; a dark green liquid

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:4250 mg/kg FCTXAV 14(5),443,76

THR: LOW orl; A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER OIL

CAS RN: 8000280 NIOSH #: OF 6110000

Main constituent is linalyl acetate. Found in the plant Lavandulaofficinalif choix (Fam. Labiate). Prepared by steam distillation of the flowering stalks of the plant.

SYNS:
LAVENDEL OEL (GERMAN)
OIL OF LAVENDER

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:9040 mg/kg PHARAT 14,435,59

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LD-813

CAS RN: 64083052 NIOSH #: OF 6730000

Commercial mixture of aromatic amines containing approx. 40% MOCA

TOXICITY DATA: 3 CODEN:
orl-rat TDLo:37 gm/kg/2Y-C:CARC TXAPA9 31,159,75

THR: An exper CARC. See also aromatic amines.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

LEAD

CAS RN: 7439921 NIOSH #: OF 7525000
mf: Pb; mw: 207.19

Bluish-gray, soft metal. mp: 327.43°, bp: 1740°, d: 11.34 @ 20°/4°. vap. press: 1 mm @ 973°.

SYNS:
C.I. 77575
LEAD FLAKE
LEAD S2
OLOW (POLISH)

OXICITY DATA: 3	CODEN:
c -rat TDLo:790 mg/kg (MGN)	AEHLAU 23,102,71
orl-rat TDLo:1140 mg/kg (14D pre-21D post)	PHMCAA 20,201,78
orl-mus TDLo:1120 mg/kg (MGN)	AEHLAU 23,102,71
orl-mus TDLo:6300 mg/kg (1-21D preg)	EXPEAM 31,1312,75
orl-mus TDLo:12600 mg/kg (1-21D preg)	EXPEAM 31,1312,75
orl-mus TDLo:4800 mg/kg (1-16D preg)	BECTA6 18,271,77
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXPEAM 25,56,69
orl-dom TDLo:662 mg/kg (1-21W preg)	TXAPA9 25,466,73
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXPEAM 25,56,69
orl-wmn TDLo:450 mg/kg/6Y:CNS	JAMAAP 237,2627,77
ipr-rat LDLo:1000 mg/kg	EQSSDX 1,1,75
orl-pgn LDLo:160 mg/kg	HBAMAK 4,1289,35

Carcinogenic Determination: Indefinite IARC** 23, 325,80.

TLV: AIR: 0.15 mg/m3 DTLVS* 4,243,80; *Toxicology Review:* TRBMAV 33(1),85,75; PGMJAO 51(601),783,75; JDSCAE 58(12),1767,75; IRXPAT 12,1,73; CTPHBG 55,147,71; CTOXAO 6(3),377,73; QURBAW 7(1),75,74; RREVAH 54,55,75; JAVMA4 164(3),277,74; AEMBAP 40,239,73; CTOXAO 5(2),151,72; FOREAE 7,313,42; KOTTAM 11(11),1300,75; GEIGAI 20(3),291,73; STEVA8 2(4),341,74; CLCHAU 19,361 73; AJMEAZ 38,409,65; 85DHAX PB,254,72; PDTNBH 6,204,77; AMTODM 3,209,77. OSHA Standard: Air: TWA 200 ug/m3 (SCP-O) FEREAC 39,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 102,191,195,200,208,214,262, VOL 3 S341. Reported in EPA TSCA Inventory, 1980.

THR: See lead compounds. A hmn CNS. HIGH orl; MOD irr. A common air contaminant. It is a ± CAR of the lungs and kidney and an exper TER.

Fire Hazard: Mod, in the form of dust when exposed to heat or flame. See also powdered metals.

Explosion Hazard: Mod, in the form of dust when exposed to heat or flame.

Incomp: NH_4NO_3, ClF_3, H_2O_2, NaN_3, Na_2C_2, Zr. disodium acetylide; oxidants.

Disaster Hazard: Dangerous; when heated, emits highly tox fumes; can react vigorously with oxidizing materials.

For further information see Vol. 1, No. 1 of *DPIM Report.*

LEAD ACETATE

CAS RN: 301042 NIOSH #: AI 5250000
mf: $C_4H_6O_4 \cdot Pb$; mw: 325.29

Trihydrate, colorless crystals or white granules or powder. Slightly acetic odor; slowly effloresces; d: 2.55; mp: 75° when rapidly heated. Decomp above 200°; very sol in glycerol. Keep well closed.

SYNS:

ACETIC ACID LEAD (2+) SALT
ACETATE DE PLOMB (FRENCH)
BLEIACETAT (GERMAN)
LEAD (2+) ACETATE
LEAD(II) ACETATE
LEAD DIACETATE
LEAD DIBASIC ACETATE
NORMAL LEAD ACETATE
PLUMBOUS ACETATE
SALT OF SATURN
SUGAR OF LEAD

TOXICITY DATA: 3	CODEN:
dns-rat:ipr 50 ug/kg	PSEBAA 143,446,73
spm-mus-par 1 gm/kg	ARTODN 46,159,80
orl-rat TDLo:7854 mg/kg (6-16D preg)	FCTXAV 13,629,75
orl-rat TDLo:1800 mg/kg (1-22D preg/14D post)	TOLED5 7,373,80
orl-rat TDLo:113 gm/kg (70D pre-21D post)	PBBHAU 8,347,78
orl-mus TDLo:3150 mg/kg (1-21D preg)	CRSBAW 170,1319,76
orl-mus TDLo:4800 mg/kg (1-8D preg)	CRSBAW 172,1037,78
orl-mus TDLo:9 gm/kg (7-21D preg)	CRSBAW 170,1319,76
ipr-mus TDLo:35 mg/kg (8D preg)	BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXMPA6 7,208,67
ivn-ham TDLo:50 mg/kg (8D preg)	EXPEAM 25,56,69
ipr-pgn LDLo:150 mg/kg	ARTODN 46,265,80
cyt-hmn:lym 1 mmol/L/24H	TXCYAC 10,67,78
cyt-mus-orl 16800 mg/kg/4W	JTEHD6 2,619,77
cyt-mky-orl 5760 mg/kg/64W	MUREAV 45,77,77
ipr-mus TDLo:15 mg/kg/(8D preg):TER	BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXMPA6 7,208,67
orl-rat TDLo:250 gm/kg/47W-C:ETA	BJCAAI 16,283,62
ipr-rat LDLo:204 mg/kg	JPETAB 38,161,30
ipr-mus LD50:120 mg/kg	COREAF 256,1043,63
orl-dog LDLo:300 mg/kg	HBAMAK 4,1289,35
scu-dog LDLo:80 mg/kg	HBAMAK 4,1289,35
ivn-dog LDLo:300 mg/kg	EQSSDX 1,1,75
scu-cat LDLo:100 mg/kg	HBAMAK 4,1289,35
scu-rbt LDLo:300 mg/kg	HBAMAK 4,1289,35
ivn-rbt LDLo:50 mg/kg	EQSSDX 1,1,75
scu-frg LDLo:1600 mg/kg	HBAMAK 4,1289,35

Carcinogenic Determination: Animal Positive IARC** 23,325,80; Human Suspected IARC** 23,325,80. *Toxicology Review:* ADTEAS 5,51,72; ENVRAL 13,36,77; 85DHAX Pb,256,72. OSHA Standard: Air: TWA 200 ug(Pb)/m3 (SCP-O) FEREAC 29,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. An exper + CARC, TER, ETA. A susp hmn CARC; HIGH ipr, orl, scu, ivn. See also lead compounds. A poison. An insecticide.

Disaster Hazard: When heated to decomp it emits tox fumes of Pb.

Incomp: $KBrO_3$; acids, sol sulfates, citrates, tartrates, chlorides, carbonates, alkalies, tannin phosphates, resorcinol, salicylic acid, phenol, chloral hydrate, sulfites, vegetable infusions, tinctures.

For further information see Vol. 1, No. 4 of *DPIM Report.*

LEAD ACETATE, BASIC

CAS RN: 1335326 NIOSH #: OF 8750000
mf: $C_4H_{10}O_8Pb_3$; mw: 807.71

Obtained from Occupational Health League on Hotline

REF. 12

LEAD

FORMULA
PB

SYNONYMS
WHITE LEAD
C.I. PIGMENT METAL 4
C.I. 77575
LEAD FLAKE
KS-4
LEAD S2
SI
SD
S 1
PLUMBUM
OHS12510

PERMISSIBLE EXPOSURE LIMIT
50 UG(PB)/M3 OSHA TWA
150 UG(PB)/M3 ACGIH TWA
0.10 MG(PB)/M3 NIOSH RECOMMENDED TWA
INDEFINITE ANIMAL CARCINOGEN (IARC)
TERATOGENIC DATA (RTEC)
MUTAGENIC DATA (RTEC)
CERCLA HAZARD RATINGS - TOXICITY 3 - IGNITABILITY 0 - REACTIVITY 2 - PERSISTENCE 3

TOXICOLOGY: LEAD IS A CUMULATIVE NEUROTOXIN. THE PRINCIPAL SYMPTOMS OF POISONING ARE GASTROINTESTINAL UPSET, PERIPHERAL NEUROPATHY, AND ANEMIA.
ACUTE POISONING FOLLOWING INGESTION OF SOLUBLE LEAD COMPOUNDS CAUSES METALLIC TASTE, ABDOMINAL PAIN, VOMITING, DIARRHEA, BLACK STOOLS, OLIGURIA, COLLAPSE AND COMA.
CHRONIC EXPOSURE FROM INGESTION, INHALATION, OR SKIN ABSORPTION IS CHARACTERIZED BY CENTRAL NERVOUS SYSTEM AND GASTROINTESTINAL DISTURBANCES AND ANEMIA.
THE THRESHOLD LIMIT VALUE WAS SET TO PREVENT SYSTEMIC EFFECTS.
ORL-WMN TDLO: 450 MG/KG/6 YR
ORL-PGN LDLO: 160 MG/KG
IPR-RAT LDLO:1000 MG/KG

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION
NONE SPECIFIED

PHYSICAL DESCRIPTION
BLUISH-WHITE, SILVERY, GRAY METAL. HIGHLY LUSTROUS WHEN FRESHLY CUT TARNISHES UPON EXPOSURE TO AIR. MALLEABLE.

CHEMICAL AND PHYSICAL PROPERTIES
MOLECULAR WEIGHT: 207.19
BOILING POINT AT 1 ATM, F: 3164 F
SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE
FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC): INCOMBUSTABLE
VAPOR PRESSURE @ 20 C, MMHG: 0.00MM
MELTING POINT, F: 622 F

UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: INCOMBUSTABLE
LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: INCOMBUSTABLE
SPECIFIC GRAVITY: 11.3437 AT 61 F

INCOMPATIBILITIES
STRONG OXIDIZERS
PEROXIDES
ACTIVE METALS
SODIUM
POTASSIUM

PERSONAL PROTECTIVE EQUIPMENT
29CFR1910.1025 LEAD
(G) PROTECTIVE WORK CLOTHING AND EQUIPMENT
(1) PROVISION AND USE. IF AN EMPLOYEE IS EXPOSED TO LEAD ABOVE THE PEL, WITHOUT REGARD TO THE USE OF RESPIRATORS OR WHERE THE POSSIBILITY OF SKIN OR IRRITATION EXISTS, THE EMPLOYER SHALL PROVIDE AT NO COST TO THE EMPLOYEE AND ASSURE THAT THE EMPLOYEE USES THE APPROPRIATE PROTECTIVE WORK CLOTHING AND EQUIPMENT SUCH AS, BUT NOT LIMITED TO:
(I) COVERALLS OR SIMILAR FULL-BODY WORK CLOTHING;
(II) GLOVES, HATS, AND SHOES OR DISPOSABLE SHOE COVERLETS; AND
(III) FACE SHIELDS, VENTED GOGGLES, OR OTHER APPROPRIATE PROTECTIVE EQUIPMENT WHICH COMPLIES WITH SECTION 1910.133 OF THIS PART.

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

0.5 MG/M3
- HIGH-EFFICIENCY PARTICULATE RESPIRATOR

2.5 MG/M3
- HIGH-EFFICIENCY PARTICULATE RESPIRATOR
  WITH A FULL FACE-PIECE

50 MG/M3
- POWERED AIR-PURIFYING RESPIRATOR
  WITH A HIGH-EFFICIENCY FILTER
- TYPE 'C' SUPPLIED-AIR RESPIRATOR
- SUPPLIED-AIR RESPIRATOR
  OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW MODE

100 MG/M3
- TYPE 'C' SUPPLIED-AIR RESPIRATOR
- SUPPLIED-AIR RESPIRATOR
  WITH A FULL FACE-PIECE
  OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW MODE
- TYPE 'C' SUPPLIED-AIR RESPIRATOR
- SUPPLIED-AIR RESPIRATOR
  WITH A FULL FACE-PIECE, HELMENT, OR HOOD
  OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW MODE

FIREFIGHTING
- SELF-CONTAINED BREATHING APPARATUS
  WITH A FULL FACE-PIECE
  OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

SYMPTOMS
- SPERM COUNT DEPRESSION
- INSOMNIA
- HEADACHE
- OPTIC NEURITIS
- GINGIVAL BLACK LINE
- ANOREXIA
- WEIGHT LOSS
- MALNUTRITION
- CONSTIPATION
- ABDOMINAL PAIN
- HYPERTENSION
- ANEMIA
- TREMORS
- WRIST DROP
- REPRODUCTIVE EFFECTS
- ENCEPHALOPATHY
- METALLIC TASTE
- VOMITING
- DIARRHEA
- OLIGURIA
- COLLAPSE
- COMATOSE
- IRRITABILITY
- APATHY
- FATIGUE
- NERVOUSNESS
- INCOORDINATION
- ARTHRALGIA
- NUMBNESS EXTREMITIES
- FOOTDROP
- ATAXIA
- CRANIAL NERVE PARALYSIS
- CONVULSIONS
- DELIRIUM
- DIZZINESS
- WEAKNESS
- STUPOR
- VISUAL DISTURBANCE
- PALLOR
- LASSITUDE
- SALIVATION
- NOCTURIA
- ALBUMINURIA

UREMIA
GLYCOSURIA
HEMATURIA
PROTEINURIA
MUSCULAR ATROPHY
MUSCULAR ACHE

FIRST AID PROCEDURES FOLLOWING EXPOSURE

IF THIS CHEMICAL GETS INTO THE EYES, IMMEDIATELY WASH THE EYES WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. GET MEDICAL ATTENTION IMMEDIATELY. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.

IF THIS CHEMICAL GETS ON THE SKIN, IMMEDIATELY WASH CONTAMINATED SKIN WITH SOAP OR MILD DETERGENT & WATER. IF THIS CHEMICAL SOAKS CLOTHING, IMMEDIATELY REMOVE CLOTHING & WASH SKIN WITH SOAP OR MILD DETERGENT & WATER. GET MEDICAL ATTENTION PROMPTLY.

IF A PERSON BREATHES IN LARGE AMOUNTS OF THIS CHEMICAL, MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

INGESTED LEAD:
EMERGENCY TREATMENT - REMOVE BY GASTRIC LAVAGE WITH DILUTE MAGNESIUM SULFATE OR SODIUM SULFATE SOLUTION OR BY EMESIS. TREAT CEREBRAL EDEMA WITH MANNITOL AND PREDNISOLONE OR OTHER CORTICOSTEROID.
ANTIDOTE - INITIATE URINE FLOW. GIVE 10% DEXTROSE IN WATER INTRAVENOUSLY, 10-20 ML/KG, FOR ONE TO TWO HOURS. IF URINE FLOW DOES NOT START, GIVE 20% SOLUTION OF MANNITOL, 5-10 ML/KG INTRAVENOUSLY, OVER TWENTY MINUTES. LIMIT FLUID TO REQUIREMENTS, AND CATHETERIZATION MAY BE NECESSARY IN COMA. URINE OUTPUT SHOULD BE 350-500 ML/M2/DAY. EXCESSIVE FLUIDS MAY INCREASE EDEMA. FOR ACUTE ENCEPHALOPATHY, GIVE DIMERCAPROL, 4 MG/KG INTRAMUSCULARLY, EVERY FOUR HOURS FOR 30 DOSES. FOUR HOURS LATER, GIVE CALCIUM DISODIUM EDETATE AT SEPARATE INJECTION SITE, 12.5 MG/KG INTRAMUSCULARLY, EVERY FOUR HOURS AS 20% SOLUTION, WITH 0.5% PROCAINE ADDED, FOR TOTAL OF 30 DOSES. IF SIGNIFICANT IMPROVEMENT DOES NOT OCCUR BY FOURTH DAY, INCREASE NUMBER OF INJECTIONS BY TEN FOR EACH DRUG. FOR PATIENTS RESPONDING WELL WITHOUT ENCEPHALOPATHY, DISCONTINUE DIMERCAPROL AFTER THIRD OR FOURTH DAY AND REDUCE EDETATE TO 50 MG/KG/DAY FOR REMAINING FIVE DAYS. TWO TO THREE WEEKS AFTER FIRST COURSE, IF BLOOD LEAD LEVEL REMAINS ABOVE 80 UG/DL, GIVE SECOND COURSE OF THIRTY INJECTIONS EACH OF BOTH DRUGS. COURSES OF CALCIUM DISODIUM EDETATE SHOULD NOT EXCEED 500 MG/KG, WITH AT LEAST ONE WEEK BETWEEN COURSES.

FOR OTHER SYMPTOMATIC PATIENTS, THE COURSE OF DIMERCAPROL AND CALCIUM DISODIUM EDETATE CAN BE SHORTENED OR CALCIUM DISODIUM EDETATE ONLY CAN BE GIVEN IN A DOSAGE OF 50 MG/KG INTRAVENOUSLY AS 0.5% SOLUTION IN 5% DEXTROSE IN WATER OR NORMAL SALINE BY INFUSION OVER NOT LESS THAN EIGHT HOURS FOR NOT MORE THAN FIVE DAYS. FOLLOW WITH PENICILLAMINE, 500-750 MG/DAY ORALLY FOR ONE TO TWO MONTHS OR UNTIL URINE LEAD

LEVEL DROPS BELOW 0.3 MG/24 HOURS.
(ANTIDOTES MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL)
FURTHER TREATMENT - TREAT ACUTE ENCEPHALOPATHY.
SPECIAL TREATMENT - DIALYSIS IS MANDATORY FOR IMPAIRED RENAL FUNCTION. CORRECT WRIST AND FOOT DROP BY SPLINTING. TOXICITY OF TETRAETHYL LEAD AND TETRAMETHYL LEAD DOES NOT RESPOND TO CHELATION THERAPY. GIVE DIAZEPAM TO CONTROL HYPERACTIVITY.
(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

ACUTE RENAL FAILURE - TREAT SHOCK. FOR HEMOLYTIC REACTIONS, GIVE SODIUM BICARONATE, 5 G EVERY 1-2 HOURS AS NECESSARY TO MAINTAIN AN ALKALINE URINE.
(MEDICATION MUST BE GIVEN BE QUALIFIED MEDICAL PERSONNEL).
(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

HYPERACTIVITY/DELIRIUM/MANIA - PROTECT PATIENT FROM PHYSICAL INJURY. AVOID MECHANICAL RESTRAINTS. REASSURE PATIENT IN A CALM, QUIET MANNER. AVOID STRANGE SENSORY STIMULI. ABSOLUTE SILENCE SHOULD BE AVOIDED, HOWEVER. USE RELATIVES AND FRIENDS AS ATTENDANTS TO REDUCE APPREHENSION. USE ONE OF THE FOLLOWING DRUGS:

- PARALDEHYDE, 4-16 ML ORALLY IN CRACKED ICE, MILK, FRUIT JUICE, OR WHISKEY; OR 8-32 ML IN TWO VOLUMES OF VEGETABLE OIL RECTALLY.
- SCOPOLAMINE HYDROBROMIDE, 0.5 MG SUBCUTANEOUSLY.
- CHLORPROMAZINE (THORAZINE), 25-50 MG BY DEEP INTRAMUSCULAR INJECTION OR ORALLY. REPEAT AT INTERVALS OF 4-6 HOURS.
- PROMAZINE (SPARINE), 50-100 MG ORALLY, INTRAMUSCULARLY, OR INTRAVENOUSLY AT INTERVALS OF 4-6 HOURS.
- DIAZEPAM, 2-5 MG INTRAVENOUSLY AT A RATE OF 1 MG/MIN.

(MEDICATION MUST BE GIVEN BY QUALIFIED MEDICAL PERSONNEL)
(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

GASTRIC LAVAGE - GIVE PATIENT GLASS OF WATER PRIOR TO PASSING OF STOMACH TUBE. LAY PATIENT ON ONE SIDE, WITH HEAD LOWER THAN WAIST. IMMOBILIZE A STRUGGLING PATIENT WITH A SHEET OR BLANKET. MEASURE DISTANCE ON TUBE FROM MOUTH TO EPIGASTRIUM, MARK TUBE WITH INDELIBLE MARKING OR TAPE. REMOVE DENTURES AND OTHER FOREIGN OBJECTS FROM MOUTH. OPEN MOUTH, USE GAG IF NECESSARY. EXTEND HEAD BY LIFTING THE CHIN. PASS TUBE OVER TONGUE AND TOWARD BACK OF THROAT WITHOUT EXTENDING HEAD OR NECK. IF OBSTRUCTION IS MET BEFORE THE MARK ON TUBE REACHES LEVELS OF TEETH, DO NOT FORCE, BUT REMOVE TUBE AND REPEAT PROCEDURE UNTIL TUBE PASSES TO MARK. PLACE END OF TUBE IN GLASS OF WATER. IF TUBE IS OBSTRUCTED WHEN INTRODUCED ABOUT HALFWAY TO THE MARK, IT MAY HAVE ENTERED TRACHEA.

AFTER TUBE IS PLACED IN STOMACH, ASPIRATE FIRST TO REMOVE STOMACH CONTENTS BY IRRIGATION SYRINGE. SAVE STOMACH CONTENTS FOR EXAMINATION, AND REPEAT INTRODUCTION AND WITHDRAWAL OF 100-300 ML WARM WATER UNTIL AT LEAST 3 LITERS OF CLEAR RETURN ARE OBTAINED. USE ACTIVATED CHARCOAL AT BEGINNING OF LAVAGE TO AID IN POISON INACTIVATION. LEAVE 50 GRAMS OF CHARCOAL SUSPENDED IN WATER IN THE STOMACH. IF INTRODUCTION AND REMOVAL OF LAVAGE FLUID BY GRAVITY

REQUIRES MORE THAN FIVE MINUTES, ASSIST WITH ASEPTIC SYRINGE. PREVENT ASPIRATION WITH CUFFED ENDOTRACHEAL TUBE. AVOID GIVING LARGE QUANTITIES OF WATER.

MASSAGE OF EPIGASTRIUM WHILE STOMACH TUBE IS BEING ASPIRATED MAY AID IN POISON REMOVAL.

IF PATIENT COMATOSE, INTUBATE TRACHEA WITH CUFFED ENDOTRACHEAL TUBE. SUCCINYLCHLORINE MAY BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL TO EASE INSERTION OF TRACHEAL CATHETER PRIOR TO PASSAGE OF STOMACH TUBE.
(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

ORGANS
- CENTRAL NERVOUS SYSTEM
- CARDIOVASCULAR SYSTEM
- GASTROINTESTINAL
- KIDNEYS
- REPRODUCTIVE SYSTEM
- GINGIVAL TISSUE

SPECIAL DIAGNOSTIC TESTS
- COMPLETE BLOOD COUNT
- URINALYSIS
- BLOOD LEAD
- URINE LEAD AS EXPOSURE INDEX
- BLOOD ERYTHROCYTE PROTOPORPHYRIN
- BLOOD ERYTHOCYTE GAMMA-AMINOLEVULINIC ACID DEHYDRATASE
- URINE LEAD EXCRETION >0.08 MG/DAY
- URINE COPROPORPHYRIN >0.8 MG/L
- URINE GAMMA-AMINOLEVULINIC ACID >6 MG/L

BULLETINS
- IMPAIRMENT OF CENTRAL NERVOUS SYSTEM FUNCTION IN LEAD-EXPOSED ADULTS OCCURRED IN THE ABSENCE OF PERIPHERAL NERVOUS SYSTEM DERANGEMENT AND INCREASED IN SEVERITY WITH INCREASING LEAD DOSE. BR. J. IND. MED., 1984, 41(3), 352-361.
- TOXIC SUBSTANCES CONTROL ACT SECTION 8(E) REPORT, AN UPDATE OF TWO EARLIER MORTALITY STUDIES OF MALE EMPLOYEES OF LEAD BATTERY OR LEAD PRODUCTION PLANTS, SHOWS A STATISTICALLY SIGNIFICANT EXCESS OF DEATHS FROM STOMACH AND RESPIRATORY TUMORS.

SPECIAL INFORMATION

ECOLOGY & ENVIRONMENT, INC.

PC80-1-A45
Tex.

CHARACTERISTICS OF THE POPULATION

Number of Inhabitants

TEXAS

HA
215.T5
1980

REF. 13

1980

Census of Population

U.S. Department of Commerce
BUREAU OF THE CENSUS

1980 Census of Population

VOLUME 1
CHARACTERISTICS OF THE POPULATION

CHAPTER A

Number of Inhabitants

PART 45

TEXAS

PC80-1-A45

Issued March 1982

U.S. Department of Commerce
Malcolm Baldrige, Secretary
Joseph R. Wright, Jr.,
Deputy Secretary
Robert G. Dederick,
Assistant Secretary for
Economic Affairs

BUREAU OF THE CENSUS
Bruce Chapman,
Director

Data Index

This index provides a summary listing of the tables in which the particular data are presented. For a listing of the individual tables and their page numbers, see page 1.

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Table 2. **Land Area and Population: 1930 to 1980**

[Counts relate to counties as defined at each census. For meaning of symbols, see introduction]

Counties	1980 land area: Square miles	1980 land area: Square kilometers	1980 population: Number	1980: Per square mile	1980: Per square kilometer	Percent change: 1970 to 1980	Percent change: 1960 to 1970	Population 1970	1960	1950	1940	1930
The State	262 017	678 623	14 229 191	54.3	21.0	27.1	16.9	11 198 655	9 579 677	7 711 194	6 414 824	5 824 715
Anderson	1 077	2 789	38 381	35.6	13.8	38.1	-1.3	27 789	28 162	31 875	37 092	34 643
Andrews	1 501	3 888	13 323	8.9	3.4	28.5	-22.9	10 372	13 450	5 002	1 277	736
Angelina	807	2 089	64 172	79.5	30.7	30.0	23.9	49 349	39 814	36 032	32 201	27 803
Aransas	280	726	14 260	50.9	19.6	60.2	37.1	8 902	7 006	4 252	3 469	2 219
Archer	907	2 350	7 266	8.0	3.1	26.2	-5.7	5 759	6 110	6 816	7 599	9 684
Armstrong	910	2 356	1 994	2.2	0.8	5.2	-3.6	1 895	1 966	2 215	2 495	3 329
Atascosa	1 218	3 154	25 055	20.6	7.9	34.0	-0.7	18 696	18 828	20 048	19 275	15 654
Austin	656	1 698	17 726	27.0	10.4	28.2	0.4	13 831	13 777	14 663	17 384	18 860
Bailey	827	2 141	8 188	9.9	3.8	-3.8	-4.6	8 487	9 090	7 592	6 318	5 186
Bandera	793	2 053	7 084	8.9	3.5	49.2	22.0	4 747	3 892	4 410	4 234	3 784
Bastrop	895	2 318	24 726	27.6	10.7	42.9	2.2	17 297	16 925	19 622	21 610	23 888
Baylor	862	2 233	4 919	5.7	2.2	-5.8	-11.4	5 221	5 893	6 875	7 755	7 418
Bee	880	2 280	26 030	29.6	11.4	14.5	-4.3	22 737	23 755	18 174	16 481	15 721
Bell	1 055	2 732	157 889	149.7	57.8	26.8	32.3	124 483	94 097	73 824	44 863	50 030
Bexar	1 248	3 232	988 800	792.3	305.9	19.1	20.9	830 460	687 151	500 460	338 176	292 533
Blanco	714	1 848	4 681	6.6	2.5	31.2	-2.5	3 567	3 657	3 780	4 264	3 842
Borden	900	2 330	859	1.0	0.4	-3.3	-17.5	888	1 076	1 106	1 396	1 505
Bosque	989	2 561	13 401	13.6	5.2	22.2	1.5	10 966	10 809	11 836	15 761	15 750
Bowie	891	2 307	75 301	84.5	32.6	9.3	14.9	68 909	59 971	61 966	50 208	48 563
Brazoria	1 407	3 644	169 587	120.5	46.5	56.6	42.1	108 312	76 204	46 549	27 069	23 054
Brazos	588	1 524	93 588	159.2	61.4	61.4	29.1	57 978	44 895	38 390	26 977	21 835
Brewster	6 169	15 977	7 573	1.2	0.5	-2.7	20.9	7 780	6 434	7 309	6 478	6 624
Briscoe	887	2 298	2 579	2.9	1.1	-7.7	-21.9	2 794	3 577	3 528	4 056	5 590
Brooks	942	2 439	8 428	8.9	3.5	5.3	-7.0	8 005	8 609	9 195	6 362	5 901
Brown	936	2 424	33 057	35.3	13.6	27.7	4.6	25 877	24 728	28 607	25 924	26 382
Burleson	668	1 731	12 313	18.4	7.1	23.1	-10.5	9 999	11 177	13 000	18 334	19 848
Burnet	994	2 575	17 803	17.9	6.9	55.9	23.3	11 420	9 265	10 356	10 771	10 355
Caldwell	546	1 413	23 637	43.3	16.7	11.6	23.0	21 178	17 222	19 350	24 893	31 397
Calhoun	540	1 399	19 574	36.2	14.0	9.8	7.5	17 831	16 592	9 222	5 911	5 385
Callahan	899	2 329	10 992	12.2	4.7	34.0	3.5	8 205	7 929	9 087	11 568	12 785
Cameron	905	2 345	209 727	231.7	89.4	49.4	-7.1	140 368	151 098	125 170	83 202	77 540
Camp	203	525	9 275	45.7	17.7	15.9	2.0	8 005	7 849	8 740	10 285	10 063
Carson	924	2 392	6 672	7.2	2.8	4.9	-18.3	6 358	7 781	6 852	6 624	7 745
Cass	937	2 426	29 430	31.4	12.1	21.9	2.7	24 133	23 496	26 732	33 496	30 030
Castro	899	2 329	10 556	11.7	4.5	1.6	16.5	10 394	8 923	5 417	4 631	4 720
Chambers	616	1 596	18 538	30.1	11.6	52.1	17.4	12 187	10 379	7 871	7 511	5 710
Cherokee	1 052	2 725	38 127	36.2	14.0	19.1	-3.4	32 008	33 120	38 694	43 970	43 180
Childress	707	1 831	6 950	9.8	3.8	5.2	-21.6	6 605	8 421	12 123	12 149	16 044
Clay	1 085	2 811	9 582	8.8	3.4	18.6	-3.3	8 079	8 351	9 896	12 524	14 545
Cochran	775	2 006	4 825	6.2	2.4	-9.4	-17.0	5 326	6 417	5 928	3 735	1 963
Coke	908	2 352	3 196	3.5	1.4	3.5	-14.0	3 087	3 589	4 045	4 590	5 253
Coleman	1 277	3 308	10 439	8.2	3.2	1.5	-17.4	10 288	12 458	15 503	20 571	23 669
Collin	851	2 205	144 576	169.9	65.6	116.0	62.2	66 920	41 247	41 692	47 190	46 180
Collingsworth	909	2 354	4 648	5.1	2.0	-2.3	-24.2	4 755	6 276	9 139	10 331	14 461
Colorado	964	2 498	18 823	19.5	7.5	6.7	-4.5	17 638	18 463	17 576	17 812	19 129
Comal	555	1 438	36 446	65.7	25.3	50.8	21.8	24 165	19 844	16 357	12 321	11 984
Comanche	930	2 409	12 617	13.6	5.2	6.0	0.2	11 898	11 865	15 516	19 245	18 430
Concho	992	2 570	2 915	2.9	1.1	-0.7	-20.0	2 937	3 672	5 078	6 192	7 645
Cooke	893	2 312	27 656	31.0	12.0	17.8	4.0	23 471	22 560	22 146	24 909	24 136
Coryell	1 057	2 737	56 767	53.7	20.7	60.8	47.4	35 311	23 961	16 284	20 226	19 999
Cottle	895	2 319	2 947	3.3	1.3	-8.0	-23.8	3 204	4 207	6 099	7 079	9 395
Crane	782	2 026	4 600	5.9	2.3	10.3	-11.2	4 172	4 699	3 965	2 841	2 221
Crockett	2 806	7 268	4 608	1.6	0.6	18.6	-7.7	3 885	4 209	3 981	2 809	2 590
Crosby	898	2 327	8 859	9.9	3.8	-2.5	-12.2	9 085	10 347	9 582	10 046	11 023
Culberson	3 815	9 880	3 515	0.9	[illegible]	-3.3	22.7	3 429	2 794	1 825	1 653	1 228
Dallam	1 505	3 899	6 331	4.3	1.7	8.6	-4.6	6 012	6 302	7 640	6 494	7 830
Dallas	880	2 279	1 556 390	1768.6	682.9	17.2	39.5	1 327 695	951 527	614 799	398 564	325 691
Dawson	903	2 338	16 184	17.9	6.9	-2.5	-13.5	16 604	19 185	19 113	15 367	13 573
Deaf Smith	1 497	3 878	21 165	14.1	5.5	11.4	44.1	18 999	13 187	9 111	6 056	5 979
Delta	278	720	4 839	17.4	6.7	-1.8	-15.9	4 927	5 860	8 964	12 858	13 138
Denton	911	2 359	143 126	157.1	60.7	89.2	59.5	75 633	47 432	41 365	33 658	32 822
De Witt	910	2 358	18 903	20.8	8.0	1.3	-9.8	18 660	20 683	22 973	24 935	27 441
Dickens	907	2 348	3 539	3.9	1.5	-5.3	-24.7	3 737	4 963	7 177	7 847	8 601
Dimmit	1 307	3 386	11 367	8.7	3.4	15.8	-10.5	9 039	10 095	10 654	8 542	8 828
Donley	929	2 406	4 075	4.4	1.7	11.9	-18.2	3 641	4 449	6 216	7 487	10 262
Duval	1 795	4 649	12 517	7.0	2.7	6.8	-12.5	11 722	13 398	15 643	20 565	12 191
Eastland	924	2 394	19 480	21.1	8.1	7.7	-7.3	18 092	19 526	23 942	30 345	34 156
Ector	903	2 340	115 374	127.8	49.3	24.5	1.8	92 660	90 995	42 102	15 051	3 958
Edwards	2 120	5 492	2 033	1.0	0.4	-3.5	-9.1	2 107	2 317	2 908	2 933	2 764
Ellis	939	2 432	59 743	63.6	24.6	28.1	7.5	46 638	43 395	45 645	47 733	53 936
El Paso	1 014	2 626	479 899	473.3	182.7	33.6	[illegible]	359 291	314 070	194 968	131 067	131 597
Erath	1 080	2 796	22 560	20.9	8.1	24.4	[illegible]	18 141	16 236	18 434	20 760	20 804
Falls	770	1 995	17 946	23.3	9.0	3.7	-18.6	17 300	21 263	26 724	35 [illegible]	38 771
Fannin	895	2 318	24 285	27.1	10.5	7.0	-4.9	22 705	23 880	31 253	41 064	41 163
Fayette	950	2 460	18 832	19.8	7.7	6.7	-13.4	17 650	20 384	24 176	29 246	30 708
Fisher	897	2 322	5 891	6.6	2.5	-7.1	-19.3	6 344	7 865	11 023	12 932	13 563
Floyd	992	2 570	9 834	9.9	3.8	-11.0	-10.7	11 044	12 369	10 535	10 659	12 409
Foard	703	1 821	2 158	3.1	1.2	-2.4	-29.2	2 211	3 125	4 216	5 237	6 315
Fort Bend	876	2 268	130 846	149.4	57.7	150.1	29.1	52 314	40 527	31 056	32 963	29 718
Franklin	294	762	6 [illegible]	23.4	9.0	30.3	3.7	5 291	5 101	6 257	8 378	8 494
Freestone	888	2 300	14 830	16.7	6.4	33.4	-11.2	11 116	12 525	15 696	21 138	22 589
Frio	1 133	2 934	13 785	12.2	4.7	23.5	10.4	11 159	10 112	10 357	9 207	9 411
Gaines	1 504	3 895	13 150	8.7	3.4	13.4	-5.5	11 593	12 267	8 909	8 136	2 800
Galveston	399	1 033	195 940	491.1	189.7	15.4	21.0	169 812	140 364	113 066	81 173	64 401
Garza	895	2 317	5 336	6.0	2.3	0.9	-20.0	5 289	6 611	6 281	5 678	5 556
Gillespie	1 061	2 749	13 532	12.8	4.9	28.2	5.0	10 553	10 048	10 520	10 670	11 020
Glasscock	900	2 332	1 304	1.4	0.6	12.9	3.9	1 155	1 118	1 089	1 193	1 263
Goliad	859	2 224	5 193	6.0	2.3	6.7	-10.4	4 869	5 429	6 219	8 796	10 093
Gonzales	1 068	2 765	16 863	15.8	6.1	3.1	-8.2	16 375	17 845	21 164	26 075	28 337
Gray	921	2 385	26 386	28.6	11.1	-2.1	-14.5	26 949	31 535	[illegible]	23 911	22 090
Grayson	934	2 419	89 796	96.1	37.1	7.9	13.9	83 225	73 043	70 467	69 499	65 843

Table 2. **Land Area and Population: 1930 to 1980**—Con.

(Counts relate to counties as defined at each census. For meaning of symbols, see introduction)

Counties	1980 land area: Square miles	1980 land area: Square kilometers	Population 1980: Number	1980: Per square mile	1980: Per square kilometer	Percent change 1970 to 1980	Percent change 1960 to 1970	1970	1960	1950	1940	1930
Gregg	273	707	99 487	364.4	140.7	31.0	9.4	75 929	69 436	61 258	58 027	15 778
Grimes	799	2 070	13 580	17.0	6.6	14.6	-6.7	11 855	12 709	15 135	21 960	22 642
Guadalupe	713	1 847	46 708	65.5	25.3	39.2	15.6	33 554	29 017	25 392	25 596	28 925
Hale	1 005	2 604	37 592	37.4	14.4	10.1	-7.2	34 137	36 798	28 211	18 813	20 189
Hall	876	2 270	5 594	6.4	2.5	-7.0	-17.9	6 015	7 322	10 930	12 117	16 966
Hamilton	836	2 165	8 297	9.9	3.8	15.3	-15.2	7 198	8 488	10 660	13 303	13 523
Hansford	921	2 385	6 209	6.7	2.6	-2.2	2.3	6 351	6 208	4 202	2 783	3 548
Hardeman	688	1 782	6 368	9.3	3.6	-6.3	-17.9	6 795	8 275	10 212	11 073	14 532
Hardin	898	2 326	40 721	45.3	17.5	35.8	21.8	29 996	24 629	19 535	15 875	13 936
Harris	1 734	4 492	2 409 547	1389.6	536.4	38.3	40.1	1 741 912	1 243 158	806 701	528 961	359 328
Harrison	908	2 353	52 265	57.6	22.2	16.6	-1.7	44 841	45 594	47 745	50 900	48 937
Hartley	1 462	3 786	3 987	2.7	1.1	43.3	28.1	2 782	2 171	1 913	1 873	2 185
Haskell	901	2 333	7 725	8.6	3.3	-9.2	-23.8	8 512	11 174	13 736	14 905	16 669
Hays	678	1 757	40 594	59.9	23.1	46.9	38.7	27 642	19 934	17 840	15 349	14 915
Hemphill	903	2 338	5 304	5.9	2.3	72.0	-3.2	3 084	3 185	4 123	4 170	4 637
Henderson	888	2 301	42 606	48.0	18.5	61.0	21.5	26 466	21 786	23 405	31 822	30 583
Hidalgo	1 569	4 064	283 229	180.5	69.7	56.0	0.3	181 535	180 904	160 446	106 059	77 004
Hill	968	2 508	25 024	25.9	10.0	10.7	-4.5	22 596	23 650	31 282	38 355	43 036
Hockley	908	2 351	23 230	25.6	9.9	13.9	-8.7	20 396	22 340	20 407	12 693	9 298
Hood	425	1 101	17 714	41.7	16.1	178.2	17.0	6 368	5 443	5 287	6 674	6 779
Hopkins	789	2 044	25 247	32.0	12.4	21.9	11.4	20 710	18 594	23 490	30 274	29 410
Houston	1 234	3 197	22 299	18.1	7.0	24.9	-7.8	17 855	19 376	22 825	31 137	30 017
Howard	901	2 334	33 142	36.8	14.2	-12.3	-5.8	37 796	40 139	26 722	20 990	22 888
Hudspeth	4 566	11 827	2 728	0.6	0.2	14.0	-28.4	2 392	3 343	4 298	3 149	3 728
Hunt	840	2 176	55 248	65.8	25.4	15.2	21.7	47 948	39 399	42 731	48 793	49 016
Hutchinson	871	2 257	26 304	30.2	11.7	7.6	-29.0	24 443	34 419	31 580	19 069	14 848
Irion	1 052	2 724	1 386	1.3	0.5	29.5	-9.6	1 070	1 183	1 590	1 963	2 049
Jack	920	2 382	7 408	8.1	3.1	10.4	-9.5	6 711	7 418	7 755	10 206	9 046
Jackson	844	2 185	13 352	15.8	6.1	2.9	-7.6	12 975	14 040	12 916	11 720	10 980
Jasper	921	2 386	30 781	33.4	12.9	24.7	11.7	24 692	22 100	20 049	17 491	17 064
Jeff Davis	2 258	5 847	1 647	0.7	0.3	7.9	-3.5	1 527	1 582	2 090	2 375	1 800
Jefferson	937	2 428	250 938	267.8	103.4	1.8	0.3	246 402	245 659	195 083	145 329	133 391
Jim Hogg	1 136	2 943	5 168	4.5	1.8	11.0	-7.3	4 654	5 022	5 389	5 449	4 919
Jim Wells	867	2 245	36 498	42.1	16.3	10.5	-4.4	33 032	34 548	27 991	20 239	13 456
Johnson	731	1 892	67 649	92.5	35.8	47.8	31.8	45 769	34 720	31 390	30 384	33 317
Jones	931	2 410	17 268	18.5	7.2	7.2	-16.5	16 106	19 299	22 147	23 378	24 233
Karnes	753	1 951	13 593	18.1	7.0	1.0	-10.2	13 462	14 995	17 139	19 248	23 316
Kaufman	788	2 042	39 015	49.5	19.1	20.4	8.2	32 392	29 931	31 170	38 308	40 905
Kendall	663	1 717	10 635	16.0	6.2	52.7	18.3	6 964	5 889	5 423	5 080	4 970
Kenedy	1 389	3 598	543	0.4	0.2	-19.9	-23.3	678	884	632	700	701
Kent	878	2 275	1 145	1.3	0.5	-20.2	-17.0	1 434	1 727	2 269	3 413	3 851
Kerr	1 107	2 867	28 780	26.0	10.0	47.9	15.8	19 454	16 800	14 022	11 650	10 151
Kimble	1 250	3 237	4 063	3.3	1.3	4.1	-1.0	3 904	3 943	4 619	5 064	4 119
King	914	2 367	425	0.5	0.2	-8.4	-27.5	464	640	870	1 066	1 193
Kinney	1 359	3 519	2 279	1.7	0.6	13.6	-18.2	2 006	2 452	2 668	4 533	3 980
Kleberg	853	2 209	33 358	39.1	15.1	0.6	10.4	33 166	30 052	21 991	13 344	12 451
Knox	845	2 189	5 329	6.3	2.4	-10.8	-24.0	5 972	7 857	10 082	10 090	11 368
Lamar	919	2 381	42 156	45.9	17.7	16.9	5.3	36 062	34 234	43 033	50 425	48 529
Lamb	1 013	2 623	18 669	18.4	7.1	5.1	-18.8	17 770	21 896	20 015	17 606	17 452
Lampasas	714	1 850	12 005	16.8	6.5	28.8	-1.0	9 323	9 418	9 929	9 167	8 677
La Salle	1 517	3 929	5 514	3.6	1.4	10.0	-16.0	5 014	5 972	7 485	8 003	8 228
Lavaca	971	2 515	19 004	19.6	7.6	6.1	-11.3	17 903	20 174	22 159	25 485	27 550
Lee	631	1 634	10 952	17.4	6.7	36.1	-10.1	8 048	8 949	10 144	12 751	13 390
Leon	1 078	2 793	9 594	8.9	3.4	9.8	-12.2	8 738	9 951	12 024	17 733	19 898
Liberty	1 174	3 040	47 088	40.1	15.5	42.6	4.5	33 014	31 595	26 729	24 541	19 868
Limestone	931	2 410	20 224	21.7	8.4	11.7	-11.3	18 100	20 413	25 251	33 781	39 497
Lipscomb	933	2 417	3 766	4.0	1.6	8.0	2.3	3 486	3 406	3 658	3 764	4 512
Live Oak	1 057	2 737	9 606	9.1	3.5	43.4	-14.6	6 697	7 846	9 054	9 799	8 956
Llano	939	2 432	10 144	10.8	4.2	45.4	33.2	6 979	5 240	5 377	5 996	5 538
Loving	671	1 737	91	0.1	0.1	-44.5	-27.4	164	226	227	285	195
Lubbock	900	2 331	211 651	235.2	90.8	18.0	14.7	179 295	156 271	101 048	51 782	39 104
Lynn	888	2 300	8 605	9.7	3.7	-5.5	-16.6	9 107	10 914	11 030	11 931	12 372
McCulloch	1 071	2 775	8 735	8.2	3.1	1.9	-2.8	8 571	8 815	11 701	13 208	13 883
McLennan	1 031	2 669	170 755	165.6	64.0	15.7	-1.7	147 553	150 091	130 194	101 898	98 682
McMullen	1 163	3 012	789	0.7	0.3	-27.9	-1.9	1 095	1 116	1 187	1 374	1 351
Madison	473	1 224	10 649	22.5	8.7	38.4	14.0	7 693	6 749	7 996	12 029	12 227
Marion	385	997	10 360	26.9	10.4	21.6	5.8	8 517	8 049	10 172	11 457	10 371
Martin	914	2 367	4 684	5.1	2.0	-1.9	-5.8	4 774	5 068	5 541	5 556	5 785
Mason	934	2 418	3 653	3.9	1.5	9.7	-11.2	3 356	3 780	4 945	5 378	5 511
Matagorda	1 127	2 919	37 828	33.6	13.0	35.5	8.4	27 913	25 744	21 559	20 066	17 678
Maverick	1 287	3 333	31 398	24.4	9.4	73.5	24.7	18 093	14 508	12 292	10 071	6 126
Medina	1 331	3 448	23 164	17.4	6.7	14.4	7.1	20 249	18 904	17 013	16 106	13 989
Menard	902	2 337	2 346	2.6	1.0	-11.3	-10.7	2 646	2 964	4 175	4 521	4 447
Midland	902	2 335	82 636	91.6	35.4	26.3	-3.4	65 433	67 717	25 785	11 721	8 005
Milam	1 019	2 639	22 732	22.3	8.6	13.5	-10.0	20 028	22 263	23 585	33 120	37 915
Mills	748	1 938	4 477	6.0	2.3	6.3	-5.7	4 212	4 467	5 999	7 951	8 293
Mitchell	912	2 363	9 088	10.0	3.8	0.2	-19.4	9 073	11 255	14 357	12 477	14 183
Montague	928	2 403	17 410	18.8	7.2	13.6	2.9	15 326	14 893	17 070	20 442	19 159
Montgomery	1 047	2 713	128 487	122.7	47.4	159.7	84.4	49 479	26 839	24 504	23 055	14 588
Moore	905	2 343	16 575	18.3	7.1	17.9	-4.8	14 060	14 773	13 349	4 461	1 555
Morris	256	663	14 629	57.1	22.1	18.8	-2.1	12 310	12 576	9 433	9 810	10 028
Motley	959	2 483	1 950	2.0	0.8	-10.5	-24.1	2 178	2 870	3 963	4 994	6 812
Nacogdoches	929	2 433	46 786	49.8	19.2	28.7	29.7	36 362	28 046	30 326	35 392	30 290
Navarro	1 068	2 767	35 323	33.1	12.8	13.4	-9.5	31 150	34 423	39 916	51 308	60 507
Newton	935	2 422	13 254	14.2	5.5	13.7	12.4	11 657	10 372	10 832	13 700	12 524
Nolan	915	2 369	17 359	19.0	7.3	7.0	-14.5	16 220	18 963	19 808	17 309	19 323
Nueces	847	2 195	268 215	316.7	122.2	12.9	7.2	237 544	221 573	165 471	92 661	51 779
Ochiltree	919	2 380	9 588	10.4	4.0	-1.2	3.5	9 704	9 380	6 022	4 213	5 224
Oldham	1 485	3 846	2 283	1.5	0.5	1.1	17.1	2 258	1 938	1 672	1 385	1 404
Orange	362	938	83 838	231.6	89.4	17.8	17.9	71 170	60 357	49 567	17 382	15 149
Palo Pinto	949	2 458	24 062	25.4	9.8	-16.9	41.2	28 962	20 516	17 154	18 456	17 576
Panola	812	2 102	20 724	25.5	9.9	30.4	-5.8	15 894	16 870	19 250	22 513	24 063
Parker	902	2 337	44 609	49.5	19.1	31.6	48.[illegible]	33 86[illegible]	22 880	21 528	20 482	18 759

Table 2. **Land Area and Population: 1930 to 1980**—Con.

[Counts relate to counties as defined at each census. For meaning of symbols, see introduction]

Counties	1980 land area		Population									
			1980			Percent change						
	Square miles	Square kilometers	Number	Per square mile	Per square kilometer	1970 to 1980	1960 to 1970	1970	1960	1950	1940	1930
Parmer	885	2 291	11 038	12.5	4.8	5.0	9.7	10 509	9 583	5 787	5 890	5 869
Pecos	4 776	12 371	14 618	3.1	1.2	6.3	15.0	13 748	11 957	9 939	8 185	7 812
Polk	1 061	2 749	24 407	23.0	8.9	68.8	4.3	14 457	13 861	16 194	20 635	17 555
Potter	902	2 336	98 637	109.4	42.2	9.0	-21.7	90 511	115 580	73 366	54 765	46 080
Presidio	3 857	9 990	5 188	1.3	0.5	7.1	-11.3	4 842	5 460	7 354	10 925	10 154
Rains	243	629	4 839	19.9	7.7	29.0	25.4	3 752	2 993	4 266	7 334	7 114
Randall	917	2 376	75 062	81.9	31.6	39.3	58.9	53 885	33 913	13 774	7 185	7 071
Reagan	1 173	3 039	4 135	3.5	1.4	27.7	-14.4	3 239	3 782	3 127	1 997	3 028
Real	697	1 806	2 469	3.5	1.4	22.7	-3.2	2 013	2 079	2 479	2 420	2 197
Red River	1 054	2 729	16 101	15.3	5.9	12.6	-8.8	14 298	15 682	21 851	29 769	30 923
Reeves	2 626	6 802	15 801	6.0	2.3	-4.4	-6.3	16 526	17 644	11 745	8 006	6 407
Refugio	771	1 997	9 289	12.0	4.7	-2.2	-13.5	9 494	10 975	10 113	10 383	7 691
Roberts	915	2 369	1 187	1.3	0.5	22.8	-10.0	967	1 075	1 031	1 289	1 457
Robertson	864	2 237	14 653	17.0	6.6	1.8	-10.9	14 389	16 157	19 908	25 710	27 240
Rockwall	128	332	14 528	113.5	43.8	106.2	19.9	7 046	5 878	6 156	7 051	7 658
Runnels	1 056	2 734	11 872	11.2	4.3	-1.9	-19.4	12 108	15 016	16 771	18 903	21 821
Rusk	932	2 415	41 382	44.4	17.1	21.3	-6.4	34 102	36 421	42 348	51 023	32 484
Sabine	486	1 258	8 702	17.9	6.9	21.1	-1.6	7 187	7 302	8 568	10 896	11 998
San Augustine	524	1 357	8 785	16.8	6.5	11.8	1.8	7 858	7 722	8 837	12 471	12 471
San Jacinto	572	1 482	11 434	20.0	7.7	70.6	8.9	6 702	6 153	7 172	9 056	9 711
San Patricio	693	1 795	58 013	83.7	32.3	22.7	5.0	47 288	45 021	35 842	28 871	23 836
San Saba	1 136	2 943	6 204	5.5	2.1	12.0	-13.2	5 540	6 381	8 666	11 012	10 273
Schleicher	1 309	3 391	2 820	2.2	0.8	23.8	-18.4	2 277	2 791	2 852	3 083	3 166
Scurry	900	2 332	18 192	20.2	7.8	15.4	-22.6	15 760	20 369	22 779	11 545	12 188
Shackelford	915	2 369	3 915	4.3	1.7	17.8	-16.7	3 323	3 990	5 001	6 211	6 695
Shelby	791	2 048	23 084	29.2	11.3	17.3	-3.9	19 672	20 479	23 479	29 235	28 627
Sherman	923	2 390	3 174	3.4	1.3	-13.2	40.4	3 657	2 605	2 443	2 026	2 314
Smith	932	2 415	128 366	137.7	53.2	32.2	12.4	97 096	86 350	74 701	69 090	53 123
Somervell	188	488	4 154	22.1	8.5	48.7	8.4	2 793	2 577	2 542	3 071	3 016
Starr	1 226	3 175	27 266	22.2	8.6	54.0	3.3	17 707	17 137	13 948	13 312	11 409
Stephens	894	2 315	9 926	11.1	4.3	18.0	-5.3	8 414	8 885	10 597	12 356	16 560
Sterling	923	2 390	1 206	1.3	0.5	14.2	-10.3	1 056	1 177	1 282	1 404	1 431
Stonewall	925	2 396	2 406	2.6	1.0	0.4	-20.6	2 397	3 017	3 679	5 589	5 667
Sutton	1 455	3 768	5 130	3.5	1.4	61.6	-15.1	3 175	3 738	3 746	3 977	2 807
Swisher	902	2 336	9 723	10.8	4.2	-6.3	-2.2	10 373	10 607	8 249	6 528	7 343
Tarrant	868	2 248	860 880	991.8	383.0	20.3	32.9	715 587	538 495	361 253	225 521	197 553
Taylor	917	2 375	110 932	121.0	46.7	13.4	-3.2	97 853	101 078	63 370	44 147	41 023
Terrell	2 357	6 105	1 595	0.7	0.3	-17.8	-25.4	1 940	2 600	3 189	2 952	2 660
Terry	886	2 296	14 581	16.5	6.4	3.3	-13.3	14 118	16 286	13 107	11 160	8 883
Throckmorton	912	2 363	2 053	2.3	0.9	-6.9	-20.3	2 205	2 767	3 618	4 275	5 253
Titus	412	1 068	21 442	52.0	20.1	28.4	-0.5	16 702	16 785	17 302	19 228	16 003
Tom Green	1 515	3 923	84 784	56.0	21.6	19.3	9.9	71 047	64 630	58 929	39 702	36 033
Travis	989	2 562	419 573	424.2	163.8	42.0	39.3	295 516	212 136	160 980	111 053	77 777
Trinity	692	1 791	9 450	13.7	5.3	23.9	1.7	7 628	7 539	10 040	13 705	13 637
Tyler	922	2 389	16 223	17.6	6.8	30.7	16.4	12 417	10 666	11 292	11 948	11 448
Upshur	587	1 521	28 595	48.7	18.8	36.3	6.0	20 976	19 793	20 822	26 178	22 297
Upton	1 243	3 220	4 619	3.7	1.4	-1.7	-24.7	4 697	6 239	5 307	4 297	5 948
Uvalde	1 564	4 052	22 441	14.3	5.5	29.4	3.2	17 348	16 814	16 015	13 246	12 945
Val Verde	3 150	8 158	35 910	11.4	4.4	30.7	12.3	27 471	24 461	16 635	15 453	14 934
Van Zandt	855	2 214	31 426	36.8	14.2	41.8	16.0	22 155	19 091	22 593	31 155	32 315
Victoria	887	2 297	68 807	77.6	30.0	28.0	15.7	53 766	46 475	31 241	23 741	20 048
Walker	786	2 036	41 789	53.2	20.5	51.0	28.9	27 680	21 475	20 163	19 868	18 528
Waller	514	1 331	19 798	38.5	14.9	38.6	18.3	14 285	12 071	11 961	10 280	10 014
Ward	836	2 164	13 976	16.7	6.5	7.4	-12.7	13 019	14 917	13 346	9 575	4 599
Washington	610	1 580	21 998	36.1	13.9	16.7	-1.6	18 842	19 145	20 542	25 387	25 394
Webb	3 363	8 709	99 258	29.5	11.4	36.2	12.5	72 859	64 791	56 141	45 916	42 128
Wharton	1 086	2 814	40 242	37.1	14.3	9.6	-3.7	36 729	38 152	36 077	36 158	29 681
Wheeler	905	2 343	7 137	7.9	3.0	10.9	-19.0	6 434	7 947	10 317	12 411	15 555
Wichita	606	1 570	121 082	199.8	77.1	0.4	-2.4	120 563	123 528	98 493	73 604	74 416
Wilbarger	947	2 453	15 931	16.8	6.5	3.8	-13.5	15 355	17 748	20 552	20 474	24 579
Willacy	589	526	17 495	29.7	11.5	12.4	-22.5	15 570	20 084	20 920	13 230	10 499
Williamson	1 137	2 944	76 521	67.3	26.0	15.1	6.5	37 305	35 044	38 853	41 698	44 146
Wilson	807	2 089	16 756	20.8	8.0	28.5	-1.7	13 041	13 267	14 672	17 066	17 606
Winkler	840	2 175	9 944	11.8	4.6	3.2	-29.4	9 640	13 652	10 064	6 141	6 784
Wise	902	2 337	26 575	29.5	11.4	35.0	15.7	19 687	17 012	16 141	19 074	19 178
Wood	689	1 784	24 697	35.8	13.8	32.9	5.3	18 589	17 653	21 308	24 360	24 183
Yoakum	800	2 072	8 299	10.4	4.0	13.0	-8.6	7 344	8 032	4 339	5 354	1 263
Young	919	2 380	19 083	20.8	8.0	23.9	-10.7	15 400	17 254	16 810	19 004	20 128
Zapata	999	2 587	6 628	6.6	2.6	52.3	-0.9	4 352	4 393	4 405	3 916	2 867
Zavala	1 298	3 363	11 666	9.0	3.5	2.5	[illegible]	11 370	12 696	11 201	11 603	10 349

		POP
Liberty	50%	23544
Montgomery	80%	102790
Waller	80%	15838
Fort Bend	60%	78507
Brazoria	50%	84793
Galveston	80%	156752
Chambers	30%	5561
Austin	20%	3545
Harris	100%	2409547
		2,880,877

PHC80-2-184

Census Tracts

HOUSTON, TEX.

STANDARD METROPOLITAN STATISTICAL AREA

Section 1 of 2

REF. 14

1980

Census of Population and Housing

U.S. Department of Commerce
BUREAU OF THE CENSUS

1980 Census of Population and Housing

Census Tracts

HOUSTON, TEX.

STANDARD METROPOLITAN STATISTICAL AREA

PHC80-2-184

Section 1: Tables P-1—P-17

Issued July 1983

U.S. Department of Commerce
Malcolm Baldrige, Secretary
Robert G. Dederick,
Under Secretary for
Economic Affairs

BUREAU OF THE CENSUS
Bruce Chapman, Director

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Cloverleaf (CDP), Harris County		Deer Park city, Harris County					Friendswood city (pt.), Harris County	Houston city (pt.), Harris County			
	Tract 0230.01*	Tract 0230.04*	Tract 0360.01	Tract 0360.02	Tract 0360.03*	Tract 0360.04*	Tract 0361*	Tract 0375*	Tract 0121	Tract 0201.01	Tract 0201.02	Tract 0202
AGE												
Total persons	**7 932**	**9 385**	**4 587**	**8 343**	**5 221**	**4 497**	-	-	**2 145**	**3 385**	**5 137**	**8 186**
Under 5 years	668	864	437	642	564	406	-	-	54	267	524	888
5 to 9 years	713	849	453	830	610	436	-	-	51	279	548	865
10 to 14 years	745	722	481	927	520	477	-	-	48	317	473	854
15 to 19 years	800	948	358	914	445	470	-	-	170	363	545	904
20 to 24 years	787	1 151	298	574	398	451	-	-	267	309	496	854
25 to 34 years	1 546	1 614	1 001	1 497	1 279	847	-	-	502	375	659	1 226
35 to 44 years	1 315	1 111	689	1 362	763	627	-	-	302	263	412	762
45 to 54 years	814	967	448	896	396	446	-	-	279	359	421	701
55 to 64 years	401	690	219	515	174	232	-	-	250	350	422	614
65 to 74 years	98	352	95	139	55	77	-	-	154	296	410	378
75 years and over	45	117	108	47	17	28	-	-	58	207	227	140
3 and 4 years	272	348	183	294	226	160	-	-	19	107	208	361
16 years and over	5 652	6 781	3 136	5 736	3 426	3 081	-	-	1 975	2 443	3 477	5 405
18 years and over	5 328	6 426	2 971	5 338	3 237	2 881	-	-	1 932	2 293	3 277	5 045
21 years and over	4 851	5 760	2 822	4 899	3 032	2 613	-	-	1 751	2 096	2 940	4 504
60 years and over	280	739	288	352	137	187	-	-	330	662	842	798
62 years and over	213	607	248	273	110	147	-	-	283	584	756	665
Median	26.6	25.7	27.9	27.4	25.5	25.1	-	-	34.3	28.3	24.8	23.5
Female	**4 002**	**4 594**	**2 281**	**4 159**	**2 541**	**2 215**	-	-	**552**	**1 864**	**2 766**	**3 897**
Under 5 years	323	428	221	309	262	204	-	-	25	132	248	437
5 to 9 years	353	423	212	378	274	218	-	-	23	117	263	412
10 to 14 years	365	356	229	453	264	225	-	-	23	165	231	421
15 to 19 years	410	484	166	454	229	233	-	-	35	196	249	404
20 to 24 years	405	531	158	290	204	222	-	-	55	152	285	365
25 to 34 years	817	736	504	802	643	414	-	-	108	214	379	560
35 to 44 years	665	563	338	673	352	321	-	-	65	164	246	372
45 to 54 years	387	467	205	454	189	216	-	-	73	214	249	335
55 to 64 years	186	330	101	233	86	99	-	-	70	219	252	318
65 to 74 years	58	196	65	80	27	45	-	-	53	162	249	195
75 years and over	33	80	82	33	11	18	-	-	22	129	115	78
3 and 4 years	129	174	91	143	167	81	-	-	9	56	101	184
16 years and over	2 884	3 309	1 580	2 912	1 695	1 519	-	-	474	1 412	1 966	2 544
18 years and over	2 708	3 119	1 503	2 730	1 602	1 428	-	-	466	1 327	1 885	2 377
21 years and over	2 477	2 776	1 439	2 501	1 485	1 287	-	-	438	1 218	1 711	2 154
60 years and over	153	408	188	196	73	97	-	-	105	397	492	424
62 years and over	125	340	166	168	63	76	-	-	92	350	437	357
Median	26.7	25.8	28.2	27.9	25.5	25.1	-	-	35.8	32.6	27.2	23.7
HOUSEHOLD TYPE AND RELATIONSHIP												
Total persons	**7 932**	**9 385**	**4 587**	**8 343**	**5 221**	**4 497**	-	-	**2 145**	**3 385**	**5 137**	**8 186**
In households	7 932	9 385	4 511	8 343	5 221	4 497	-	-	1 116	3 384	5 129	8 163
Householder	2 671	3 358	1 397	2 544	1 527	1 421	-	-	741	1 265	1 788	2 111
Family householder	2 150	2 526	1 274	2 321	1 408	1 190	-	-	154	798	1 184	1 773
Nonfamily householder	521	832	123	223	119	231	-	-	587	467	604	338
Living alone	423	714	104	191	94	173	-	-	541	420	553	261
Spouse	1 872	2 139	1 159	2 069	1 304	982	-	-	114	320	509	1 387
Other relatives	3 186	3 627	1 881	3 632	2 305	1 956	-	-	185	1 662	2 677	4 335
Nonrelatives	203	261	74	98	85	138	-	-	76	137	155	330
Inmate of institution	-	-	76	-	-	-	-	-	456	-	-	-
Other, in group quarters	-	-	-	-	-	-	-	-	573	1	8	23
Persons per household	2.97	2.79	3.23	3.28	3.42	3.16	-	-	1.51	2.68	2.87	3.87
Persons per family	3.35	3.28	3.39	3.46	3.56	3.47	-	-	2.94	3.48	3.69	4.23
Persons 65 years and over	**143**	**469**	**288**	**186**	**72**	**105**	-	-	**212**	**508**	**637**	**518**
In households	143	469	129	186	72	105	-	-	170	502	636	518
Householder	78	305	65	110	31	54	-	-	141	380	467	327
Nonfamily householder	31	142	25	43	5	13	-	-	123	203	233	116
Living alone	31	140	25	[illegible]	5	13	-	-	117	194	220	108
Spouse	26	97	30	38	14	29	-	-	16	55	104	109
Other relatives	39	65	29	35	26	22	-	-	4	46	49	77
Nonrelatives	-	2	5	3	1	-	-	-	9	21	16	5
Inmate of institution	-	-	74	-	-	-	-	-	14	-	-	-
Other, in group quarters	-	-	-	-	-	-	-	-	28	1	1	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN												
Families	**2 150**	**2 526**	**1 274**	**2 321**	[illegible]	**1 190**	-	-	**154**	**798**	**1 184**	**1 773**
With own children under 18 years	1 372	1 379	848	1 534	[illegible]	774	-	-	52	388	628	1 113
Number of own children under 18 years	2 452	2 653	1 543	2 862	[illegible]	1 493	-	-	123	818	1 500	2 756
Married-couple families	**1 872**	**2 139**	**1 159**	**2 069**	**1 304**	**982**	-	-	**114**	**320**	**509**	**1 387**
With own children under 18 years	1 182	1 133	770	1 347	929	617	-	-	34	130	197	896
Number of own children under 18 years	2 147	2 222	1 416	2 559	1 754	1 215	-	-	78	261	454	2 298
Female householder, no husband present	**194**	**288**	**74**	**184**	**70**	[illegible]	-	-	**23**	**415**	**594**	**285**
With own children under 18 years	[illegible]	201	56	144	57	[illegible]	-	-	13	238	404	189
Number of own children under 18 years	239	353	91	241	89	[illegible]	-	-	40	528	989	403
MARITAL STATUS												
Male, 15 years and over	**2 845**	**3 563**	**1 997**	**2 925**	**1 786**	**1 610**	-	-	**1 591**	**1 052**	**1 548**	**2 922**
Single	707	917	300	576	363	424	-	-	630	443	638	974
Now married, except separated	1 930	2 220	1 186	2 102	1 327	1 010	-	-	289	376	570	1 713
Separated	42	64	19	15	11	27	-	-	114	86	118	83
Widowed	20	85	17	17	9	10	-	-	97	76	107	62
Divorced	146	281	75	115	76	139	-	-	371	91	135	120
Female, 15 years and over	**2 961**	**3 387**	**1 619**	**3 019**	**1 741**	**1 568**	-	-	**481**	**1 480**	**2 034**	**2 627**
Single	590	472	205	543	256	278	-	-	106	459	619	588
Now married, except separated	1 922	2 226	1 179	2 111	1 338	1 018	-	-	177	353	554	1 527
Separated	42	85	31	47	22	44	-	-	51	143	223	104
Widowed	135	283	127	132	47	63	-	-	77	321	365	254
Divorced	272	321	77	186	78	165	-	-	70	174	263	154

Table P-1. General Characteristics of Persons: 1980—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0202.99	Tract 0203.01	Tract 0203.02	Tract 0203.03	Tract 0204	Tract 0205.01	Tract 0205.02	Tract 0205.03	Tract 0206.01	Tract 0206.02	Tract 0207.01	Tract 0207.02	Tract 0207.03
AGE													
Total persons	42	3 779	5 853	2 463	3 111	4 020	5 757	2 431	3 512	3 524	2 689	2 753	2 622
Under 5 years	-	404	615	281	231	402	532	211	283	317	241	261	207
5 to 9 years	-	379	685	268	259	326	514	187	291	316	263	318	200
10 to 14 years	-	358	683	235	249	337	509	158	325	353	286	331	258
15 to 19 years	12	375	686	285	274	393	553	254	396	385	344	361	290
20 to 24 years	22	322	573	223	236	347	533	220	328	345	271	233	226
25 to 34 years	4	581	870	406	420	584	849	282	497	442	321	368	360
35 to 44 years	2	347	514	219	291	332	534	214	320	314	255	244	211
45 to 54 years	-	341	538	192	364	388	587	268	335	328	348	261	320
55 to 64 years	2	332	384	163	301	403	578	271	384	302	205	201	274
65 to 74 years	-	222	200	115	297	335	377	205	203	272	106	129	163
75 years and over	-	118	105	76	189	163	191	161	150	150	49	46	113
3 and 4 years	-	147	263	103	95	138	229	83	104	123	96	106	90
16 years and over	42	2 567	3 753	1 612	2 310	2 861	4 092	1 820	2 537	2 462	1 838	1 762	1 892
18 years and over	38	2 416	3 479	1 492	2 199	2 699	3 865	1 720	2 381	2 309	1 699	1 615	1 775
21 years and over	25	2 184	3 044	1 341	2 058	2 458	3 532	1 583	2 140	2 078	1 492	1 429	1 611
60 years and over	2	476	466	259	621	674	843	483	520	553	239	258	404
62 years and over	2	404	389	223	573	593	719	425	445	504	200	213	340
Median	21.6	25.7	22.1	23.3	32.0	27.6	27.3	29.9	27.3	25.8	23.6	22.1	28.0
Female	21	1 998	2 857	1 229	1 685	2 061	3 131	1 288	1 895	1 781	1 386	1 543	1 371
Under 5 years	-	197	308	138	110	195	264	107	147	137	•124	128	101
5 to 9 years	-	189	327	118	131	155	287	94	147	169	145	143	96
10 to 14 years	-	184	338	125	122	184	276	82	163	172	148	160	132
15 to 19 years	6	170	327	134	151	187	311	138	196	194	166	208	140
20 to 24 years	9	155	255	111	135	176	288	109	187	160	123	137	103
25 to 34 years	2	296	415	187	218	292	449	146	260	230	164	239	203
35 to 44 years	2	152	239	106	151	164	286	102	176	170	142	150	120
45 to 54 years	-	173	275	105	187	214	328	143	191	176	195	158	173
55 to 64 years	2	184	187	88	158	217	333	162	211	164	99	110	162
65 to 74 years	-	130	114	69	178	186	203	122	129	143	48	82	83
75 years and over	-	78	72	48	124	91	106	103	88	66	32	28	68
3 and 4 years	-	71	126	47	50	66	113	47	56	47	48	51	43
16 years and over	21	1 798	1 838	817	1 285	1 480	2 245	1 001	1 400	1 273	939	1 069	1 021
18 years and over	19	1 232	1 697	761	1 229	1 399	2 118	942	1 321	1 188	869	977	971
21 years and over	13	1 131	1 494	694	1 146	1 298	1 927	875	1 186	1 078	772	870	890
60 years and over	2	281	261	156	403	376	475	293	307	289	117	159	217
62 years and over	2	246	223	137	374	332	399	259	271	258	97	134	181
Median	21.8	26.8	22.6	24.5	33.6	28.6	27.5	33.0	28.4	27.8	24.3	24.9	30.7
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	42	3 779	5 853	2 463	3 111	4 020	5 757	2 431	3 512	3 524	2 689	2 753	2 622
In households	-	3 770	5 852	2 463	3 105	4 013	5 757	2 429	3 410	3 524	2 689	2 753	2 542
Householder	-	1 147	1 466	690	1 226	1 440	2 081	939	1 201	1 093	783	790	785
Family householder	-	863	1 260	536	723	903	1 359	585	836	835	623	644	610
Nonfamily householder	-	284	206	154	503	537	722	354	365	258	160	146	175
Living alone	-	233	169	135	449	448	647	304	329	216	139	126	163
Spouse	-	620	1 043	441	343	[illegible]	723	268	436	469	403	310	391
Other relatives	-	1 866	3 226	1 278	1 400	1 915	2 740	1 123	1 659	1 821	1 445	1 596	1 325
Nonrelatives	-	137	117	54	136	187	213	99	114	141	58	57	41
Inmate of institution	-	-	-	-	-	-	-	2	40	-	-	-	80
Other, in group quarters	42	9	1	-	6	7	-	-	62	-	-	-	-
Persons per household	-	3.29	3.99	3.57	2.53	2.79	2.77	2.59	2.84	3.22	3.43	3.48	3.24
Persons per family	-	3.88	4.39	4.21	3.41	3.64	3.55	3.38	3.51	3.74	3.97	3.96	3.81
Persons 65 years and over	-	340	305	191	486	498	568	366	353	422	155	175	276
In households	-	340	305	[illegible]	486	497	568	365	317	422	155	175	208
Householder	-	233	206	131	359	349	402	295	230	288	111	114	152
Family householder	-	107	85	67	161	181	177	163	101	94	48	39	63
Living alone	-	101	80	64	151	164	165	148	92	90	46	33	62
Spouse	-	57	53	33	83	63	98	40	43	87	24	31	33
Other relatives	-	44	42	23	38	57	56	17	36	40	19	27	23
Nonrelatives	-	6	4	4	6	28	12	13	8	7	1	3	-
Inmate of institution	-	-	-	-	-	-	-	1	31	-	-	-	68
Other, in group quarters	-	-	-	-	-	1	-	-	5	-	-	-	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	-	863	1 260	536	723	903	1 359	585	836	835	623	644	610
With own children under 18 years	-	473	827	342	318	469	706	243	439	416	375	406	329
Number of own children under 18 years	-	1 183	2 109	846	689	1 026	1 509	501	932	958	838	957	669
Married-couple families	-	620	1 043	441	343	471	723	268	436	469	403	310	391
With own children under 18 years	-	355	721	298	138	223	335	95	204	219	233	176	201
Number of own children under 18 years	-	879	1 857	742	308	493	672	193	422	497	538	406	425
Female householder, no husband present	-	198	152	66	330	332	582	264	341	290	178	306	188
With own children under 18 years	-	110	83	35	166	220	336	130	211	173	125	223	119
Number of own children under 18 years	-	285	195	76	355	484	781	273	471	416	270	538	230
MARITAL STATUS													
Male, 15 years and over	21	1 [illegible]	1 986	831	1 889	1 418	1 898	889	1 175	1 235	920	731	985
Single	21	406	651	269	379	528	691	317	451	443	356	291	328
Now married, except separated	-	740	1 182	484	397	546	783	295	486	537	429	339	440
Separated	-	52	49	23	100	111	149	91	81	95	51	32	37
Widowed	-	29	36	20	54	106	126	74	65	70	34	21	38
Divorced	-	73	68	35	120	127	149	73	92	90	60	48	62
Female, 15 years and over	21	1 398	1 884	848	1 322	1 527	2 385	1 025	1 438	1 303	969	1 112	1 082
Single	21	277	398	186	372	454	667	280	413	363	286	384	285
Now married, except separated	-	681	1 143	472	379	512	772	285	486	510	425	337	428
Separated	-	94	67	29	119	137	260	134	124	100	85	106	70
Widowed	-	184	175	103	313	270	346	232	252	213	88	130	155
Divorced	-	112	101	58	139	157	259	94	163	117	85	155	114

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0207.04	Tract 0208.01	Tract 0208.02	Tract 0208.03	Tract 0209	Tract 0210.01	Tract 0210.02	Tract 0211*	Tract 0212*	Tract 0213.01	Tract 0213.02	Tract 0214.01	Tract 0214.02
AGE													
Total persons	**988**	**1 880**	**4 822**	**5 719**	**751**	**5 473**	**3 222**	-	-	**2 951**	**9 136**	**374**	**2 849**
Under 5 years	80	177	449	566	97	336	238	-	-	234	1 027	49	193
5 to 9 years	94	170	467	556	63	383	269	-	-	228	803	38	225
10 to 14 years	76	153	433	459	53	390	309	-	-	266	465	40	239
15 to 19 years	107	240	482	632	74	571	318	-	-	299	583	41	321
20 to 24 years	98	224	531	632	90	593	290	-	-	212	1 480	24	248
25 to 34 years	149	301	751	801	123	569	382	-	-	443	2 519	47	407
35 to 44 years	98	181	475	471	74	436	260	-	-	400	815	11	321
45 to 54 years	121	173	458	651	67	929	288	-	-	385	593	38	289
55 to 64 years	85	149	393	518	59	729	402	-	-	310	421	46	313
65 to 74 years	60	78	238	303	34	383	313	-	-	127	240	38	193
75 years and over	20	34	145	130	12	154	153	-	-	47	190	32	100
3 and 4 years	28	76	161	243	30	123	84	-	-	113	398	6	75
16 years and over	711	1 339	3 373	4 012	522	4 271	2 341	-	-	2 158	6 752	271	2 135
18 years and over	669	1 247	3 178	3 757	491	4 013	2 206	-	-	2 034	6 581	257	2 006
21 years and over	609	1 096	2 879	3 372	440	3 655	2 033	-	-	1 878	6 027	233	1 813
60 years and over	126	174	573	654	62	822	675	-	-	284	598	94	429
62 years and over	105	139	500	550	56	704	585	-	-	228	517	82	360
Median	27.1	24.4	25.4	25.1	24.4	32.5	28.9	-	-	30.3	25.7	29.4	29.9
Female	**489**	**1 006**	**2 545**	**2 998**	**381**	**2 834**	**1 751**	-	-	**1 489**	**4 600**	**206**	**1 440**
Under 5 years	44	88	226	277	47	161	127	-	-	105	504	12	100
5 to 9 years	45	88	227	282	32	179	138	-	-	116	411	18	118
10 to 14 years	39	77	213	246	30	198	146	-	-	123	232	19	132
15 to 19 years	50	112	231	290	31	253	161	-	-	139	322	25	156
20 to 24 years	47	120	284	321	54	296	144	-	-	116	787	11	128
25 to 34 years	74	167	401	436	61	292	219	-	-	226	1 186	29	194
35 to 44 years	46	104	252	287	37	250	155	-	-	205	346	5	157
45 to 54 years	61	104	269	367	42	509	171	-	-	198	315	27	150
55 to 64 years	45	81	207	277	23	360	238	-	-	155	209	29	153
65 to 74 years	27	44	143	154	19	217	169	-	-	74	145	17	103
75 years and over	11	21	92	61	5	109	83	-	-	32	143	14	49
3 and 4 years	15	34	87	118	17	63	48	-	-	56	198	4	39
16 years and over	348	730	1 833	2 132	265	2 252	1 304	-	-	1 118	3 410	154	1 057
18 years and over	331	685	1 739	2 022	257	2 150	1 237	-	-	1 060	3 323	143	993
21 years and over	297	611	1 582	1 846	232	1 965	1 151	-	-	980	3 004	129	899
60 years and over	57	100	330	339	29	470	382	-	-	158	370	47	218
62 years and over	48	83	290	282	28	408	328	-	-	134	330	41	193
Median	26.2	26.1	26.7	26.6	24.4	36.6	31.2	-	-	31.3	25.3	31.0	29.6
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	**988**	**1 880**	**4 822**	**5 719**	**751**	**5 473**	**3 222**	-	-	**2 951**	**9 136**	**374**	**2 849**
In households	976	1 880	4 813	5 705	751	5 473	3 222	-	-	2 951	8 994	374	2 756
Householder	320	604	1 610	1 772	220	1 761	1 072	-	-	951	3 629	129	926
Family householder	225	464	1 201	1 428	189	1 373	803	-	-	805	2 404	87	662
Nonfamily householder	95	140	409	344	31	388	269	-	-	146	1 225	42	264
Living alone	83	114	365	306	28	366	247	-	-	138	1 042	39	242
Spouse	148	239	665	918	171	1 057	472	-	-	729	1 943	50	565
Other relatives	476	955	2 420	2 883	343	2 549	1 611	-	-	1 238	3 126	186	1 177
Nonrelatives	32	82	118	132	17	106	67	-	-	33	296	9	88
Inmate of institution	-	-	-	-	-	-	-	-	-	-	142	-	-
Other, in group quarters	12	-	9	14	-	-	-	-	-	-	-	-	93
Persons per household	3.05	3.11	2.99	3.22	3.41	3.11	3.01	-	-	3.10	2.48	2.90	2.98
Persons per family	3.77	3.57	3.57	3.66	3.72	3.63	3.59	-	-	3.44	3.11	3.71	3.63
Persons 65 years and over	**80**	**112**	**383**	**433**	**46**	**537**	**466**	-	-	**174**	**438**	**70**	**293**
In households	79	112	383	433	46	537	466	-	-	174	313	70	293
Householder	54	71	269	286	28	381	333	-	-	104	220	55	200
Nonfamily householder	21	23	100	88	9	180	113	-	-	40	126	23	90
Living alone	19	20	93	84	9	176	108	-	-	39	125	21	86
Spouse	14	22	74	81	11	93	85	-	-	39	49	7	51
Other relatives	9	16	36	55	7	59	39	-	-	30	40	8	34
Nonrelatives	2	3	4	11	-	4	9	-	-	1	4	-	8
Inmate of institution	-	-	-	-	-	-	-	-	-	-	117	-	-
Other, in group quarters	1	-	-	-	-	-	-	-	-	-	-	-	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	**225**	**464**	**1 201**	**1 428**	**189**	**1 373**	**803**	-	-	**805**	**2 404**	**87**	**662**
With own children under 18 years	127	274	656	784	112	576	344	-	-	430	1 402	39	343
Number of own children under 18 years	255	530	1 334	1 592	[illegible]	1 101	747	-	-	838	2 393	90	744
Married-couple families	**148**	**239**	**665**	**918**	[illegible]	**1 057**	**472**	-	-	**729**	**1 943**	**50**	**565**
With own children under 18 years	76	127	332	476	105	447	183	-	-	390	1 098	19	308
Number of own children under 18 years	161	232	682	960	218	879	394	-	-	772	1 922	41	675
Female householder, no husband present	**63**	**194**	**443**	**427**	**13**	**247**	**277**	-	-	**53**	**345**	**31**	**56**
With own children under 18 years	45	134	289	280	7	108	147	-	-	30	258	16	25
Number of own children under 18 years	82	275	582	573	17	185	335	-	-	49	401	39	52
MARITAL STATUS													
Male, 15 years and over	**377**	**627**	**1 594**	**1 945**	**261**	**2 078**	**1 066**	-	-	**1 078**	**3 308**	**120**	**1 102**
Single	142	272	605	695	66	698	377	-	-	257	876	39	318
Now married, except separated	166	258	729	990	178	1 160	504	-	-	758	2 023	[illegible]	[illegible]
Separated	22	37	69	92	2	71	62	-	-	9	103	3	25
Widowed	8	16	52	71	6	51	57	-	-	17	61	10	63
Divorced	39	44	139	97	9	98	66	-	-	37	315	12	63
Female, 15 years and over	**361**	**753**	**1 879**	**2 193**	**272**	**2 286**	**1 340**	-	-	**1 145**	**3 453**	**157**	**1 290**
Single	108	256	528	604	56	561	347	-	-	198	627	42	272
Now married, except separated	158	255	723	961	176	1 117	500	-	-	755	2 026	52	600
Separated	26	83	167	162	8	89	90	-	-	20	145	12	27
Widowed	31	74	243	253	17	327	246	-	-	96	307	30	119
Divorced	38	85	218	213	15	192	157	-	-	86	348	21	72

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0249.03*	Tract 0250*	Tract 0251*	Tract 0253*	Tract 0254*	Tract 0263*	Tract 0264*	Tract 0273.99	Tract 0300.22	Tract 0300.23	Tract 0300.24	Tract 0301.01	Tract 0301.02
AGE													
Total persons	**358**	**226**	**2 565**	**182**	-	-	-	**80**	**3 963**	**1 472**	**3 242**	**4 972**	**6 154**
Under 5 years	23	15	209	12	-	-	-	3	446	135	258	544	674
5 to 9 years	20	11	237	14	-	-	-	1	503	138	269	516	690
10 to 14 years	22	20	298	22	-	-	-	-	480	128	222	463	624
15 to 19 years	35	18	239	14	-	-	-	10	491	145	293	483	659
20 to 24 years	31	13	156	20	-	-	-	25	373	110	323	587	618
25 to 34 years	61	30	454	29	-	-	-	19	519	211	591	815	1 010
35 to 44 years	57	22	406	14	-	-	-	9	362	135	340	471	610
45 to 54 years	41	34	271	21	-	-	-	5	312	132	357	422	516
55 to 64 years	42	28	158	25	-	-	-	7	228	103	282	307	390
65 to 74 years	22	25	97	9	-	-	-	1	146	116	201	223	245
75 years and over	4	10	40	2	-	-	-	-	102	119	106	141	118
3 and 4 years	6	7	91	5	-	-	-	1	170	55	104	196	279
16 years and over	286	173	1 764	130	-	-	-	76	2 441	1 048	2 440	3 362	4 044
18 years and over	272	167	1 658	121	-	-	-	74	2 216	987	2 328	3 167	3 776
21 years and over	253	162	1 563	117	-	-	-	60	1 948	909	2 130	2 847	3 357
60 years and over	39	45	200	23	-	-	-	6	342	280	434	495	501
62 years and over	33	41	178	16	-	-	-	2	310	262	376	428	438
Median	32.3	38.7	28.9	28.4	-	-	-	25.5	20.6	28.3	28.7	23.9	23.5
Female	**163**	**107**	**1 281**	**86**	-	-	-	**22**	**1 980**	**730**	**1 586**	**2 379**	**2 878**
Under 5 years	8	7	102	6	-	-	-	1	209	68	138	277	299
5 to 9 years	14	4	126	3	-	-	-	-	256	63	156	247	336
10 to 14 years	8	10	143	10	-	-	-	-	228	68	122	217	305
15 to 19 years	12	6	109	5	-	-	-	5	247	80	140	223	291
20 to 24 years	19	9	75	11	-	-	-	7	168	35	145	249	258
25 to 34 years	24	12	240	14	-	-	-	3	252	99	257	357	451
35 to 44 years	26	13	210	10	-	-	-	3	195	63	151	227	286
45 to 54 years	19	17	121	8	-	-	-	1	179	59	162	199	254
55 to 64 years	20	14	72	14	-	-	-	2	121	47	138	166	184
65 to 74 years	12	11	58	5	-	-	-	-	74	65	112	121	139
75 years and over	1	4	25	-	-	-	-	-	51	83	65	96	75
3 and 4 years	1	3	48	3	-	-	-	1	80	24	46	100	113
16 years and over	131	83	892	67	-	-	-	21	1 239	517	1 141	1 584	1 883
18 years and over	125	82	836	63	-	-	-	20	1 128	481	1 097	1 491	1 767
21 years and over	117	80	791	61	-	-	-	14	997	444	1 000	1 367	1 580
60 years and over	19	21	111	12	-	-	-	1	174	167	231	296	282
62 years and over	16	19	97	9	-	-	-	1	159	160	207	256	251
Median	33.4	38.8	29.5	30.0	-	-	-	22.5	21.2	29.5	28.1	24.4	24.0
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	**358**	**226**	**2 565**	**182**	-	-	-	**80**	**3 963**	**1 472**	**3 242**	**4 972**	**6 154**
In households	358	226	2 565	182	-	-	-	21	3 948	1 358	3 145	4 959	6 127
Householder	149	86	797	59	-	-	-	3	996	403	1 245	1 430	1 679
Family householder	106	74	712	54	-	-	-	3	808	296	693	1 085	1 302
Nonfamily householder	43	12	85	5	-	-	-	-	188	107	552	345	377
Living alone	36	12	79	5	-	-	-	-	145	79	447	260	300
Spouse	91	64	643	48	-	-	-	1	467	207	390	856	1 003
Other relatives	103	76	1 108	73	-	-	-	8	2 320	674	1 265	2 403	3 171
Nonrelatives	15	-	17	2	-	-	-	9	165	74	245	270	274
Inmate of institution	-	-	-	-	-	-	-	-	-	103	49	-	-
Other, in group quarters	-	-	-	-	-	-	-	59	14	11	48	13	27
Persons per household	2.40	2.63	3.22	3.08	-	-	-	7.00	3.96	3.37	2.53	3.47	3.65
Persons per family	2.83	2.89	3.46	3.24	-	-	-	4.00	4.45	3.98	3.39	4.00	4.21
Persons 65 years and over	**26**	**35**	**137**	**11**	-	-	-	**1**	**248**	**235**	**387**	**344**	**363**
In households	26	35	137	11	-	-	-	1	248	136	305	363	360
Householder	16	23	71	6	-	-	-	-	162	89	212	241	244
Nonfamily householder	5	7	24	-	-	-	-	-	61	26	124	113	115
Living alone	5	7	23	-	-	-	-	-	56	20	102	104	108
Spouse	9	10	40	4	-	-	-	-	49	24	46	67	70
Other relatives	1	2	24	1	-	-	-	1	22	19	26	43	41
Nonrelatives	-	-	2	-	-	-	-	-	15	4	21	12	5
Inmate of institution	-	-	-	-	-	-	-	-	-	98	-	-	-
Other, in group quarters	-	-	-	-	-	-	-	-	-	1	2	1	3
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	**106**	**74**	**712**	**54**	-	-	-	...	**808**	**296**	**693**	**1 085**	**1 302**
With own children under 18 years	45	28	450	30	-	-	-	...	541	176	344	679	811
Number of own children under 18 years	71	46	853	56	-	-	-	4	1 504	411	713	1 595	2 113
Married-couple families	**91**	**64**	**643**	**48**	-	-	-	...	**467**	**207**	**390**	**856**	**1 003**
With own children under 18 years	37	25	405	26	-	-	-	...	310	135	174	571	663
Number of own children under 18 years	59	43	785	50	-	-	-	4	874	326	361	1 362	1 750
Female householder, no husband present	**12**	**6**	**53**	**5**	-	-	-	...	**285**	**59**	**229**	**150**	**190**
With own children under 18 years	6	2	36	4	-	-	-	...	213	29	146	80	121
Number of own children under 18 years	8	2	56	6	-	-	-	-	588	61	305	166	305
MARITAL STATUS													
Male, 15 years and over	**160**	**94**	**911**	**67**	-	-	-	**55**	**1 346**	**540**	**1 323**	**1 811**	**2 238**
Single	39	14	195	13	-	-	-	16	532	183	535	592	777
Now married, except separated	92	69	665	49	-	-	-	31	548	251	443	1 043	1 225
Separated	4	1	11	1	-	-	-	1	67	22	122	68	45
Widowed	2	2	9	-	-	-	-	-	45	34	70	37	56
Divorced	23	8	31	4	-	-	-	7	54	50	153	71	105
Female, 15 years and over	**133**	**86**	**910**	**67**	-	-	-	**21**	**1 287**	**531**	**1 170**	**1 438**	**1 938**
Single	10	7	133	8	-	-	-	16	413	117	218	359	441
Now married, except separated	92	67	656	48	-	-	-	1	528	236	422	935	1 101
Separated	4	1	14	3	-	-	-	-	119	19	110	63	87
Widowed	8	9	58	6	-	-	-	-	128	117	194	186	183
Divorced	19	2	49	2	-	-	-	4	99	42	126	95	126

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0302	Tract 0303	Tract 0304.01	Tract 0304.02	Tract 0305.01	Tract 0305.02	Tract 0306	Tract 0307.01	Tract 0307.02	Tract 0308	Tract 0309.01	Tract 0309.02	Tract 0309.03
AGE													
Total persons	**6 654**	**2 127**	**4 643**	**5 206**	**4 250**	**4 251**	**5 119**	**5 780**	**4 900**	**7 431**	**6 049**	**3 086**	**3 110**
Under 5 years	592	197	337	507	364	323	333	379	351	706	559	286	301
5 to 9 years	606	184	319	464	361	356	356	523	358	376	524	166	220
10 to 14 years	489	184	415	486	364	372	390	469	321	294	436	127	153
15 to 19 years	571	227	438	495	314	788	429	478	352	916	505	262	189
20 to 24 years	814	195	391	417	363	761	504	639	577	2 002	649	611	307
25 to 34 years	1 351	264	612	754	667	490	880	1 129	927	1 372	1 123	773	533
35 to 44 years	643	199	405	483	378	305	543	606	422	536	544	265	270
45 to 54 years	488	216	472	456	437	253	545	486	478	506	449	164	233
55 to 64 years	431	193	434	499	400	298	491	397	487	389	475	175	330
65 to 74 years	285	176	426	384	356	178	440	322	360	397	407	164	351
75 years and over	284	92	293	261	246	127	208	152	267	237	282	93	223
3 and 4 years	261	74	144	193	139	119	140	228	139	149	244	84	116
16 years and over	4 760	1 510	3 385	3 639	3 098	3 122	3 947	4 096	3 808	6 299	4 343	2 486	2 399
18 years and over	4 537	1 427	3 199	3 451	2 973	2 963	3 776	3 922	3 662	6 162	4 159	2 397	2 334
21 years and over	4 139	1 293	2 938	3 182	2 779	2 134	3 541	3 633	3 424	4 980	3 800	2 144	2 197
60 years and over	747	355	925	866	758	439	870	653	859	814	921	354	740
62 years and over	674	317	832	767	704	374	789	573	767	752	835	308	687
Median	26.0	27.3	29.8	27.8	30.1	21.0	30.4	26.3	29.6	24.1	26.8	25.7	31.5
Female	**3 245**	**1 091**	**2 338**	**2 765**	**2 240**	**2 336**	**2 663**	**3 013**	**2 716**	**3 576**	**3 073**	**1 427**	**1 616**
Under 5 years	320	99	179	255	157	158	169	286	173	233	335	141	154
5 to 9 years	280	81	218	215	188	176	193	262	164	196	288	92	105
10 to 14 years	248	89	199	258	182	192	173	225	171	145	203	62	64
15 to 19 years	293	114	194	250	156	358	221	259	192	502	248	133	95
20 to 24 years	374	106	228	230	191	404	219	312	301	890	320	282	144
25 to 34 years	579	127	334	402	350	286	430	566	505	494	501	279	249
35 to 44 years	301	106	227	262	167	213	291	312	231	246	251	109	133
45 to 54 years	247	117	236	242	231	154	291	268	300	273	244	78	128
55 to 64 years	227	96	260	254	237	194	272	234	280	220	257	102	183
65 to 74 years	177	97	271	228	208	110	267	180	212	229	244	96	214
75 years and over	199	59	192	169	173	81	137	109	187	148	182	53	147
3 and 4 years	136	32	71	92	61	56	72	128	65	78	119	47	63
16 years and over	2 332	807	1 896	1 983	1 681	1 765	2 081	2 179	2 178	2 976	2 202	1 126	1 274
18 years and over	2 210	761	1 814	1 886	1 624	1 694	1 994	2 092	2 108	2 904	2 112	1 070	1 245
21 years and over	2 028	689	1 688	1 745	1 528	1 292	1 877	1 933	1 960	2 286	1 931	948	1 171
60 years and over	471	198	595	515	496	281	538	404	539	481	552	213	464
62 years and over	436	183	530	465	447	235	486	353	489	448	509	186	435
Median	26.6	28.4	31.7	28.8	31.8	22.4	32.5	27.3	31.2	23.7	27.1	25.1	34.8
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	**6 654**	**2 127**	**4 643**	**5 206**	**4 250**	**4 251**	**5 119**	**5 780**	**4 900**	**7 431**	**6 049**	**3 086**	**3 110**
In households	6 608	2 122	4 624	5 206	4 250	3 365	5 119	5 680	4 665	5 751	6 049	3 086	3 034
Householder	2 243	791	1 852	1 941	1 758	1 289	2 076	2 053	1 781	2 381	2 112	1 315	1 199
Family householder	1 485	496	1 075	1 232	1 000	803	1 210	1 345	1 247	1 319	1 408	731	785
Nonfamily householder	758	295	777	709	758	486	866	708	534	1 062	704	584	414
Living alone	609	263	687	613	[illegible]	448	737	569	438	854	589	468	357
Spouse	1 134	245	419	567	[illegible]	244	650	640	733	974	1 120	551	651
Other relatives	2 828	1 007	2 165	2 465	1 899	1 727	2 064	2 630	1 954	1 847	2 570	961	1 034
Nonrelatives	403	79	188	233	151	105	329	357	197	549	247	259	150
Inmate of institution	-	-	-	-	-	-	-	97	235	-	-	-	18
Other, in group quarters	46	5	18	-	-	886	-	3	-	1 680	-	-	58
Persons per household	2.95	2.68	2.50	2.68	2.42	2.61	2.47	2.77	2.62	2.42	2.86	2.35	2.53
Persons per family	3.67	3.52	3.40	3.46	3.34	3.45	3.24	3.43	3.15	3.14	3.62	3.07	3.15
Persons 65 years and over	**569**	**268**	**719**	**645**	**602**	**305**	**648**	**474**	**627**	**636**	**689**	**257**	**574**
In households	569	267	[illegible]	645	602	305	648	407	426	633	689	257	541
Householder	387	207	555	458	457	256	445	274	258	449	475	156	378
Nonfamily householder	218	134	348	231	253	161	211	104	83	251	247	59	172
Living alone	198	124	320	215	241	156	184	96	73	245	232	57	164
Spouse	90	33	67	107	79	28	108	65	92	128	127	66	130
Other relatives	73	20	75	63	56	21	70	59	65	49	77	29	30
Nonrelatives	19	7	22	17	10	-	25	9	11	7	10	6	3
Inmate of institution	-	-	-	-	-	-	-	67	201	-	-	-	18
Other, in group quarters	-	1	-	-	-	-	-	-	-	1	-	-	15
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	**1 485**	**496**	**1 075**	**1 232**	**1 000**	**803**	**1 210**	**1 345**	**1 247**	**1 319**	**1 408**	**731**	**785**
With own children under 18 years	828	265	525	661	473	477	536	759	575	586	759	332	346
Number of own children under 18 years	1 828	577	1 135	1 443	1 011	1 043	1 052	1 566	1 022	1 095	1 669	583	709
Married-couple families	**1 134**	**245**	**419**	**567**	**442**	**244**	**650**	**640**	**733**	**974**	**1 120**	**551**	**651**
With own children under 18 years	677	109	182	258	[illegible]	102	265	351	278	427	633	252	289
Number of own children under 18 years	1 547	242	358	559	[illegible]	208	519	709	481	827	1 410	464	600
Female householder, no husband present	**248**	**216**	**555**	**549**	**453**	**505**	**459**	**599**	**437**	**245**	**202**	**106**	**96**
With own children under 18 years	128	140	311	366	240	357	248	381	268	140	107	63	42
Number of own children under 18 years	244	303	717	827	523	790	496	813	499	243	213	99	81
MARITAL STATUS													
Male, 15 years and over	[illegible]	**740**	**1 529**	**1 712**	**1 448**	**1 480**	**1 912**	**1 969**	**1 662**	**3 353**	**2 187**	**1 375**	**1 143**
Single	870	274	630	627	563	912	738	845	550	1 940	676	541	305
Now married, except separated	1 312	268	480	605	494	290	725	721	795	1 083	1 247	636	707
Separated	57	66	142	179	118	76	148	147	92	99	54	69	29
Widowed	57	57	116	103	113	48	82	62	65	45	59	16	39
Divorced	174	75	161	198	160	74	219	194	160	186	151	113	63
Female, 15 years and over	**2 397**	**822**	**1 942**	**2 087**	**1 712**	**1 800**	**2 128**	**2 340**	**2 288**	**3 082**	**2 247**	**1 132**	**1 293**
Single	554	235	545	594	[illegible]	680	555	683	629	1 411	474	205	256
Now married, except separated	1 236	267	469	618	480	275	717	714	800	1 025	1 191	592	677
Separated	74	80	225	205	178	190	169	[illegible]	178	84	85	52	34
Widowed	329	151	465	365	387	231	342	290	334	267	303	108	227
Divorced	204	89	238	255	219	224	345	319	267	215	196	95	99

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con												
	Tract 0310	Tract 0311	Tract 0311.99	Tract 0312	Tract 0312.99	Tract 0313.01	Tract 0313.02	Tract 0314.01	Tract 0314.02	Tract 0315	Tract 0316.01	Tract 0316.02	Tract 0317.01
AGE													
Total persons	7 131	10 879	-	7 792	33	5 389	5 432	4 320	3 664	6 102	3 221	1 493	1 719
Under 5 years	812	1 127	-	809	-	571	534	418	441	433	212	23	110
5 to 9 years	687	1 089	-	827	-	431	470	392	329	477	169	20	42
10 to 14 years	654	988	-	748	-	362	437	452	203	460	156	37	27
15 to 19 years	758	1 098	-	771	12	462	394	471	283	526	208	53	24
20 to 24 years	876	970	-	838	13	649	518	398	397	616	428	492	320
25 to 34 years	1 164	1 568	-	1 265	4	1 028	988	687	786	1 057	928	380	643
35 to 44 years	630	966	-	772	2	491	468	551	317	664	350	119	157
45 to 54 years	649	916	-	678	-	351	416	447	303	722	311	95	90
55 to 64 years	461	661	-	533	2	392	481	278	318	486	218	85	112
65 to 74 years	274	454	-	342	-	398	456	152	188	344	148	99	101
75 years and over	166	242	-	209	-	224	270	74	99	317	93	90	73
3 and 4 years	309	468	-	337	-	204	213	171	168	171	73	6	26
14 years and over	5 837	6 657	-	5 272	33	3 931	3 922	2 959	2 651	4 633	2 646	1 409	1 538
18 years and over	4 554	6 212	-	4 951	29	3 746	3 781	2 773	2 547	4 413	2 572	1 385	1 529
21 years and over	4 036	5 590	-	4 461	18	3 421	3 515	2 504	2 332	4 089	2 422	1 311	1 498
60 years and over	625	975	-	787	2	825	995	331	432	850	331	227	233
62 years and over	553	840	-	681	2	749	891	278	366	762	294	209	199
Median	23.8	23.7	-	24.3	21.4	26.6	28.0	25.4	26.7	29.5	29.0	26.9	28.6
Female	3 362	4 880	-	3 647	17	2 684	2 828	2 246	1 739	3 269	1 456	868	743
Under 5 years	397	584	-	373	-	284	246	211	208	205	104	10	43
5 to 9 years	330	541	-	385	-	211	236	175	153	240	73	9	22
10 to 14 years	324	495	-	378	-	189	209	215	96	233	87	17	15
15 to 19 years	363	530	-	357	6	224	175	244	139	253	100	26	11
20 to 24 years	383	404	-	348	5	312	262	215	177	314	200	348	146
25 to 34 years	500	716	-	547	2	453	478	374	334	542	367	188	270
35 to 44 years	299	442	-	351	2	231	241	307	132	355	134	54	61
45 to 54 years	294	464	-	308	-	173	213	231	144	399	144	45	43
55 to 64 years	209	309	-	293	2	224	301	145	162	253	101	53	55
65 to 74 years	159	260	-	183	-	230	274	81	106	215	83	64	45
75 years and over	104	135	-	124	-	153	193	48	68	240	63	54	32
3 and 4 years	143	249	-	154	-	96	95	74	74	86	37	2	11
14 years and over	2 243	3 144	-	2 442	17	1 968	2 116	1 593	1 261	2 520	1 168	830	663
18 years and over	2 102	2 928	-	2 297	15	1 877	2 052	1 493	1 214	2 422	1 138	822	658
21 years and over	1 863	2 648	-	2 074	9	1 715	1 921	1 356	1 104	2 252	1 067	764	643
60 years and over	343	519	-	436	2	497	654	185	243	555	182	143	108
62 years and over	309	454	-	377	2	452	573	158	215	508	169	133	87
Median	23.5	23.5	-	24.7	21.5	27.4	30.5	26.4	27.3	31.4	28.9	25.6	28.4
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	7 131	10 879	-	7 792	33	5 389	5 432	4 320	3 664	6 102	3 221	1 493	1 719
In households	7 125	10 065	-	7 780	-	5 258	5 432	4 320	3 650	5 818	2 998	639	1 611
Householder	2 057	2 718	-	2 152	-	1 894	1 847	1 320	1 314	2 111	1 414	389	898
Family householder	1 514	2 173	-	1 716	-	1 262	1 366	1 095	903	1 443	642	130	360
Husband-wife householder	543	545	-	436	-	632	481	281	411	668	772	259	538
Living alone	425	471	-	349	-	508	386	236	339	548	642	214	438
Spouse	1 188	1 714	-	1 349	-	1 040	1 003	705	737	913	371	112	304
Other relatives	3 511	5 318	-	3 919	-	2 090	2 265	2 120	1 440	2 541	970	59	263
Nonrelatives	369	315	-	360	-	234	317	119	159	253	243	79	146
Inmate of institution	-	-	-	-	-	-	-	-	-	127	131	233	74
Other, in group quarters	6	14	-	12	33	101	-	-	14	157	92	621	34
Persons per household	3.46	3.70	-	3.62	-	[illegible]	2.94	3.14	2.78	2.76	2.12	1.64	1.79
Persons per family	4.10	4.24	-	4.07	-	3.48	3.39	3.58	3.41	3.39	3.09	2.32	2.58
Persons 65 years and over	440	696	-	551	-	622	726	226	287	661	341	189	174
In households	440	696	-	551	-	621	726	226	287	455	166	147	131
Householder	294	455	-	369	-	417	484	139	197	307	120	107	95
Husband-wife householder	148	188	-	136	-	207	204	49	93	161	71	62	55
Living alone	141	179	-	128	-	197	183	45	87	154	63	61	52
Spouse	87	131	-	102	-	142	151	48	61	75	18	33	26
Other relatives	50	96	-	71	-	49	73	35	27	65	21	3	9
Nonrelatives	9	14	-	9	-	13	18	4	2	8	7	4	1
Inmate of institution	-	-	-	-	-	-	-	-	-	115	75	26	43
Other, in group quarters	-	-	-	-	-	1	-	-	-	91	-	16	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	1 514	2 173	-	1 716	-	1 262	1 366	1 095	903	1 443	642	130	360
With own children under 18 years	969	1 375	-	1 036	-	650	679	537	479	757	314	22	128
Number of own children under 18 years	2 276	3 341	-	2 501	-	1 429	1 429	1 [illegible]	1 002	1 411	547	32	180
Married-couple families	1 188	1 714	-	1 349	-	1 040	1 003	705	737	913	371	112	304
With own children under 18 years	800	1 161	-	901	-	549	522	426	402	443	173	17	112
Number of own children under 18 years	1 916	2 858	-	2 205	-	1 216	1 159	859	830	801	321	25	161
Female householder, no husband present	327	395	-	341	-	162	292	308	122	443	280	11	33
With own children under 18 years	144	166	-	116	-	89	134	202	65	288	127	5	13
Number of own children under 18 years	302	360	-	242	-	184	236	394	147	564	208	7	16
MARITAL STATUS													
Male, 15 years and over	2 667	3 615	-	2 897	16	1 995	1 834	1 413	1 409	2 161	1 492	581	877
Single	893	1 165	-	977	16	627	546	483	450	825	693	335	384
Now married, except separated	1 515	2 025	-	1 699	-	1 150	1 097	738	811	1 011	467	154	389
Separated	94	154	-	53	-	41	50	65	38	101	102	23	20
Widowed	56	109	-	61	-	42	37	28	26	69	63	16	20
Divorced	109	162	-	107	-	135	124	99	84	155	167	53	64
Female, 15 years and over	2 311	3 260	-	2 511	17	2 088	2 127	1 645	1 282	2 571	1 192	828	648
Single	518	745	-	552	17	411	387	440	214	791	380	517	207
Now married, except separated	1 313	1 885	-	1 467	-	1 106	1 070	740	782	988	399	170	334
Separated	105	115	-	85	-	45	84	93	32	166	100	13	14
Widowed	241	340	-	274	-	276	388	119	141	354	156	70	41
Divorced	134	183	-	133	-	162	208	253	113	272	157	62	67

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0373.02	Tract 0373.03*	Tract 0373.04*	Tract 0400.25	Tract 0400.26	Tract 0401.01	Tract 0401.02	Tract 0402.01	Tract 0402.02	Tract 0403	Tract 0404.01	Tract 0404.02	Tract 0405.01
AGE													
Total persons	9 444	3 332	1	1 150	6 874	2 324	3 472	5 829	4 076	6 757	2 699	3 675	4 141
Under 5 years	459	170	...	78	732	39	261	170	193	145	73	116	221
5 to 9 years	682	174	...	69	766	21	204	140	118	104	46	135	152
10 to 14 years	1 033	145	...	43	677	52	168	118	87	86	39	131	100
15 to 19 years	1 125	187	...	43	748	116	215	257	259	294	102	160	214
20 to 24 years	919	750	...	100	545	297	499	731	585	1 180	481	470	547
25 to 34 years	1 607	1 123	...	237	893	746	1 043	2 068	1 494	2 563	1 042	1 126	1 221
35 to 44 years	1 829	394	...	101	614	262	367	743	449	959	347	494	428
45 to 54 years	1 092	214	...	107	587	299	219	431	315	507	186	302	288
55 to 64 years	485	122	...	138	561	281	203	409	254	429	155	307	312
65 to 74 years	134	37	...	120	464	137	169	430	191	286	115	220	330
75 years and over	79	16	...	116	287	74	124	332	131	204	113	214	328
3 and 4 years	211	63	...	24	276	16	96	63	60	45	21	35	72
16 years and over	7 008	2 806	...	952	4 531	2 181	2 811	5 376	3 659	6 409	2 536	3 266	3 635
18 years and over	6 558	2 752	...	940	4 239	2 126	2 722	5 282	3 575	6 347	2 506	3 209	3 569
21 years and over	5 986	2 562	...	903	3 840	2 079	2 542	5 044	3 335	5 966	2 387	3 089	3 369
60 years and over	390	95	...	292	1 015	334	381	957	445	664	292	571	800
62 years and over	299	74	...	265	898	278	335	886	390	590	260	515	741
Median	28.0	26.4	...	35.6	24.7	32.3	28.0	31.4	29.6	30.2	29.5	31.6	30.8
Female	4 597	1 556	...	472	3 591	1 139	1 545	2 635	1 631	2 630	1 181	1 786	1 883
Under 5 years	236	84	...	30	334	18	125	86	113	70	39	53	111
5 to 9 years	321	95	...	24	372	5	101	74	55	52	19	76	65
10 to 14 years	493	68	...	22	344	18	91	63	39	35	19	66	44
15 to 19 years	518	99	...	23	370	42	101	101	121	159	45	70	98
20 to 24 years	448	370	...	35	283	160	207	312	211	506	231	247	242
25 to 34 years	797	485	...	82	460	335	383	815	505	820	411	496	418
35 to 44 years	918	167	...	27	338	111	133	237	136	261	115	202	151
45 to 54 years	504	93	...	33	311	162	93	202	120	196	75	119	125
55 to 64 years	221	57	...	61	313	104	106	241	122	203	79	157	175
65 to 74 years	87	27	...	59	259	77	115	280	121	174	65	153	216
75 years and over	54	11	...	76	207	47	90	224	88	144	83	147	238
3 and 4 years	113	38	...	10	113	6	56	40	39	27	10	15	33
16 years and over	3 426	1 291	...	391	2 462	1 091	1 220	2 404	1 414	2 459	1 102	1 579	1 648
18 years and over	3 218	1 258	...	381	2 305	1 075	1 179	2 368	1 380	2 426	1 089	1 559	1 615
21 years and over	2 947	1 157	...	367	2 119	1 047	1 090	2 268	1 275	2 226	1 025	1 497	1 530
60 years and over	217	61	...	163	616	198	257	627	275	406	185	375	540
62 years and over	173	54	...	151	552	164	232	587	241	366	167	347	513
Median	28.9	23.8	...	41.3	26.8	33.9	28.2	32.3	29.4	29.8	29.3	31.9	33.4
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	9 444	3 332	1	1 150	6 874	2 324	3 472	5 829	4 076	6 757	2 699	3 675	4 141
In households	9 444	3 332	...	1 005	6 734	2 052	3 464	5 819	4 028	6 547	2 699	3 584	4 141
Householder	3 469	1 827	...	513	2 231	1 406	1 489	3 457	2 170	4 130	1 684	1 983	2 343
Family householder	2 382	763	...	182	1 393	374	639	1 044	650	932	429	731	810
Nonfamily householder	1 087	1 064	...	331	838	1 032	850	2 413	1 520	3 198	1 255	1 252	1 533
Living alone	879	878	...	286	749	918	596	1 870	1 083	2 447	932	1 021	1 279
Spouse	2 125	577	...	138	627	305	456	769	440	692	307	593	607
Other relatives	3 554	684	...	280	3 580	211	1 076	868	761	678	296	657	787
Nonrelatives	296	244	...	74	296	130	441	725	657	1 047	412	351	404
Inmate of institution	-	-	...	110	138	272	-	-	-	2	-	-	-
Other, in group quarters	-	-	...	35	2	-	8	10	48	208	-	91	-
Persons per household	2.72	1.82	...	1.96	3.02	1.46	2.33	1.68	1.86	1.59	1.60	1.81	1.77
Persons per family	3.38	2.65	...	3.30	4.02	2.38	3.40	2.57	2.85	2.47	2.41	2.71	2.72
Persons 65 years and over	213	53	...	236	[illegible]	211	298	762	322	490	228	434	688
In households	213	53	...	145	733	210	293	762	320	486	228	434	658
Householder	117	36	...	108	580	158	212	569	235	346	166	306	504
Nonfamily householder	61	24	...	71	383	105	133	353	140	220	108	176	335
Living alone	59	24	...	69	356	103	123	335	127	204	102	164	326
Spouse	37	8	...	24	66	31	41	140	46	76	35	86	112
Other relatives	55	9	...	10	63	19	34	38	25	51	21	33	34
Nonrelatives	4	-	...	3	24	2	6	15	14	13	6	9	8
Inmate of institution	-	-	...	90	18	1	-	-	-	-	-	-	-
Other, in group quarters	-	-	...	1	-	-	-	-	2	4	-	-	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	2 382	763	...	182	1 393	374	639	1 044	650	932	429	731	810
With own children under 18 years	1 489	359	...	72	857	54	317	324	233	227	125	245	288
Number of own children under 18 years	2 791	526	...	183	2 201	95	667	440	392	349	167	418	500
Married-couple families	2 125	577	...	138	627	305	456	769	440	692	307	593	607
With own children under 18 years	1 318	[illegible]	...	59	378	39	[illegible]	222	151	157	79	193	200
Number of own children under 18 years	2 525	331	...	152	1 062	72	[illegible]	335	258	253	111	343	354
Female householder, no husband present	187	130	...	29	648	48	120	189	134	153	83	95	141
With own children under 18 years	141	110	...	11	431	14	59	86	60	60	38	39	72
Number of own children under 18 years	219	158	...	26	1 037	23	102	117	101	85	48	58	122
MARITAL STATUS													
Male, 15 years and over	3 723	1 534	...	566	2 198	1 114	1 611	2 989	2 254	3 959	1 437	1 702	2 085
Single	1 243	619	...	237	875	580	780	1 653	1 299	2 512	834	813	957
Now married, except separated	2 175	604	...	181	755	326	568	851	513	782	347	631	676
Separated	56	58	...	30	204	38	56	89	76	88	42	33	66
Widowed	21	6	...	46	149	20	27	53	44	60	17	28	44
Divorced	228	247	...	72	175	150	180	343	322	517	197	197	262
Female, 15 years and over	3 567	1 389	...	396	2 541	1 098	1 258	2 413	1 434	2 443	1 104	1 591	1 663
Single	873	375	...	81	780	443	340	784	472	1 042	433	529	416
Now married, except separated	2 161	596	...	156	731	311	509	808	486	739	325	629	639
Separated	66	33	...	16	260	29	32	77	67	[illegible]	[illegible]	36	48
Widowed	140	46	...	96	525	94	171	332	165	228	117	184	326
Divorced	307	259	...	47	245	221	176	411	234	400	208	213	234

Table P-1. General Characteristics of Persons: 1980—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0449*	Tract 0450*	Tract 0451.02*	Tract 0501	Tract 0502	Tract 0503.01	Tract 0503.02	Tract 0504	Tract 0505.01	Tract 0505.02	Tract 0506.01	Tract 0506.02	Tract 0507.01
AGE													
Total persons	-	13	-	27	2 074	7 046	6 509	3 230	1 337	4 219	3 588	5 943	4 381
Under 5 years	-	...	-	1	206	736	649	323	129	356	352	395	326
5 to 9 years	-	...	-	-	227	719	653	342	86	377	204	372	300
10 to 14 years	-	...	-	-	220	735	588	280	79	344	157	292	315
15 to 19 years	-	...	-	2	202	739	718	283	96	449	293	411	278
20 to 24 years	-	...	-	3	191	674	713	359	163	448	488	549	341
25 to 34 years	-	...	-	2	249	1 120	932	522	352	605	835	1 454	831
35 to 44 years	-	...	-	5	159	622	629	297	122	431	353	563	394
45 to 54 years	-	...	-	6	198	548	645	277	88	419	245	457	359
55 to 64 years	-	...	-	1	179	542	502	280	90	357	246	450	365
65 to 74 years	-	...	-	6	164	357	305	165	79	283	245	443	383
75 years and over	-	...	-	1	79	254	175	102	53	150	170	457	309
3 and 4 years	-	...	-	-	76	290	241	138	42	144	118	129	114
14 years and over	-	...	-	26	1 371	4 728	4 489	2 234	1 030	3 061	2 840	4 810	3 202
18 years and over	-	...	-	26	1 306	4 436	4 211	2 120	991	2 889	2 742	4 670	3 089
21 years and over	-	...	-	24	1 182	3 974	3 743	1 924	919	2 599	2 501	4 371	2 915
60 years and over	-	...	-	8	335	869	693	404	174	603	537	1 118	882
62 years and over	-	...	-	8	292	751	594	344	162	521	488	1 010	821
Median	-	...	-	45.5	24.7	24.4	24.5	25.5	28.1	26.9	27.9	30.1	31.0
Female	-	...	-	15	1 071	3 528	3 071	1 484	660	1 943	1 771	3 035	2 173
Under 5 years	-	...	-	1	106	343	279	159	69	172	182	183	173
5 to 9 years	-	...	-	-	92	352	292	169	47	181	95	167	145
10 to 14 years	-	...	-	-	101	368	316	147	37	165	71	148	162
15 to 19 years	-	...	-	1	102	348	313	118	47	211	141	210	130
20 to 24 years	-	...	-	-	85	293	319	153	82	194	230	314	172
25 to 34 years	-	...	-	1	148	535	383	207	138	268	356	638	382
35 to 44 years	-	...	-	2	80	313	306	117	61	186	148	278	176
45 to 54 years	-	...	-	3	104	278	306	129	40	178	121	227	174
55 to 64 years	-	...	-	1	107	305	262	126	53	142	156	256	218
65 to 74 years	-	...	-	5	85	234	191	93	49	149	150	291	246
75 years and over	-	...	-	1	61	159	104	66	37	97	119	323	195
3 and 4 years	-	...	-	-	36	146	105	72	23	67	65	63	59
14 years and over	-	...	-	14	746	2 407	2 124	987	503	1 378	1 407	2 504	1 668
18 years and over	-	...	-	14	714	2 271	2 004	940	483	1 307	1 360	2 428	1 614
21 years and over	-	...	-	13	652	2 060	1 805	858	445	1 168	1 245	2 270	1 532
60 years and over	-	...	-	7	214	538	406	216	111	315	350	746	555
62 years and over	-	...	-	7	182	475	350	198	106	283	314	678	521
Median	-	...	-	54.8	27.7	25.8	25.3	24.8	27.6	26.7	28.7	31.9	32.6
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	-	13	-	27	2 074	7 046	6 509	3 230	1 337	4 219	3 588	5 943	4 381
In households	-	...	-	27	2 055	7 018	6 427	3 051	1 337	4 007	3 588	5 858	4 193
Householder	-	...	-	9	697	2 060	1 703	905	502	1 220	1 508	2 557	1 630
Husband-wife household	-	...	-	7	428	1 526	1 337	624	308	837	851	1 413	1 051
Male householder	-	...	-	2	269	534	366	281	194	383	657	1 144	599
Male living alone	-	...	-	2	235	438	263	223	140	298	528	921	506
Female householder	-	...	-	1	183	1 065	963	409	240	548	635	1 107	841
Other relatives	-	...	-	17	1 074	3 582	3 334	1 544	483	1 982	1 176	1 820	1 535
Spouse	-	...	-	-	101	311	77	193	112	257	269	374	167
Inmate of institution	-	...	-	-	-	-	31	179	-	-	-	62	-
Other, in group quarters	-	...	-	-	19	28	31	-	-	212	-	23	8
Persons per household	-	...	-	3.00	2.95	3.41	3.77	3.37	2.66	3.28	2.38	2.29	2.54
Persons per family	-	...	-	3.57	3.94	4.05	4.21	4.13	3.35	4.02	3.13	3.07	3.26
Persons 65 years and over	-	...	-	7	243	611	480	267	132	433	415	908	692
In households	-	...	-	7	235	611	463	266	132	410	415	853	692
Householder	-	...	-	5	174	433	303	195	89	290	304	629	490
Husband-wife household	-	...	-	2	123	230	126	98	45	138	174	368	240
Male living alone	-	...	-	2	112	220	109	90	41	127	166	350	234
Spouse	-	...	-	-	17	97	83	36	23	57	72	152	153
Other relatives	-	...	-	2	26	72	67	24	16	52	30	63	40
Nonrelatives	-	...	-	-	18	9	10	11	4	11	7	9	9
Inmate of institution	-	...	-	-	-	-	16	1	-	-	-	47	-
Other, in group quarters	-	...	-	-	8	-	1	-	-	23	-	-	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	-	5	-	7	436	1 526	1 337	634	308	837	851	1 413	1 051
With own children under 18 years	-	2	-	-	243	933	790	368	146	435	389	593	470
Number of own children under 18 years	-	...	-	-	621	2 240	1 908	924	298	1 061	711	1 110	963
Married-couple families	-	5	-	1	188	1 066	963	409	260	548	635	1 107	861
With own children under 18 years	-	2	-	-	110	681	619	261	123	320	293	455	387
Number of own children under 18 years	-	...	-	-	265	1 739	1 546	684	253	793	545	872	810
Female householder, no husband present	-	-	-	5	215	[illegible]	267	153	49	215	154	222	157
With own children under 18 years	-	-	-	-	129	[illegible]	143	88	22	103	81	110	68
Number of own children under 18 years	-	...	-	-	348	441	306	205	43	244	138	199	124
MARITAL STATUS													
Male, 15 years and over	-	...	-	12	649	2 391	2 435	1 276	536	1 717	1 452	2 347	1 567
Single	-	...	-	8	273	876	959	460	182	601	487	817	448
Now married, except separated	-	...	-	3	223	1 248	1 217	556	284	707	733	1 196	919
Separated	-	...	-	-	52	62	106	93	9	139	46	54	40
Widowed	-	...	-	1	52	62	62	56	11	78	40	60	46
Divorced	-	...	-	-	49	143	91	111	50	192	146	218	114
Female, 15 years and over	-	...	-	14	772	2 465	2 184	1 089	587	1 425	1 423	2 537	1 696
Single	-	...	-	4	227	588	548	242	98	394	288	574	316
Now married, except separated	-	...	-	2	211	1 165	1 106	453	259	626	679	1 168	879
Separated	-	...	-	-	88	138	115	79	25	78	49	67	31
Widowed	-	...	-	6	179	334	278	155	78	207	209	439	320
Divorced	-	...	-	2	67	240	137	80	47	120	198	289	147

Table P-1. **General Characteristics of Persons: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Census Tracts	Houston city (pt.), Harris County—Con.												
	Tract 0507.02	Tract 0508	Tract 0509.01	Tract 0509.02	Tract 0509.03	Tract 0510	Tract 0511	Tract 0512	Tract 0513	Tract 0514.01	Tract 0514.02	Tract 0515.01	Tract 0515.02
AGE													
Total persons	**5 187**	**5 539**	**3 118**	**3 155**	**6 079**	**4 776**	**6 810**	**7 581**	**3 402**	**3 776**	**2 192**	**4 913**	**2 786**
Under 5 years	474	558	279	277	490	405	570	608	265	360	206	355	200
5 to 9 years	413	504	277	256	439	404	503	462	306	281	190	328	139
10 to 14 years	379	477	230	277	406	388	450	413	212	280	184	273	142
15 to 19 years	433	585	287	364	512	435	538	536	327	286	218	323	184
20 to 24 years	542	616	299	341	507	455	731	806	409	460	268	573	416
25 to 34 years	881	943	552	447	983	603	1 273	1 635	577	686	340	940	841
35 to 44 years	489	487	281	279	530	352	677	686	295	350	187	502	280
45 to 54 years	481	498	271	310	575	447	498	586	243	301	191	419	238
55 to 64 years	502	411	284	280	705	518	618	621	278	297	183	475	190
65 to 74 years	343	287	207	215	641	474	609	649	268	277	156	491	103
75 years and over	250	163	151	109	291	295	343	579	222	198	69	234	52
3 and 4 years	175	216	101	103	181	158	207	230	114	131	61	104	73
16 years and over	3 834	3 883	2 272	2 273	4 670	3 500	5 197	6 001	2 569	2 800	1 573	3 909	2 271
18 years and over	3 666	3 643	2 173	2 115	4 467	3 313	4 972	5 808	2 479	2 698	1 486	3 787	2 198
21 years and over	3 371	3 256	1 993	1 923	4 138	3 043	4 590	5 425	2 199	2 471	1 339	3 539	2 075
60 years and over	825	638	484	444	1 305	1 022	1 262	1 542	627	625	298	976	242
62 years and over	742	564	429	400	1 175	910	1 142	1 419	569	562	262	872	211
Median	28.2	25.2	28.0	26.1	31.3	29.4	29.0	30.0	27.5	28.0	25.7	30.6	28.0
Female	**2 556**	**2 694**	**1 567**	**1 562**	**3 176**	**2 560**	**3 361**	**3 944**	**1 721**	**1 887**	**1 106**	**2 414**	**1 366**
Under 5 years	231	270	133	139	244	198	262	317	144	168	115	160	103
5 to 9 years	199	263	144	116	209	183	231	219	122	124	89	174	65
10 to 14 years	187	228	110	144	214	197	218	222	96	131	92	122	77
15 to 19 years	212	270	130	168	264	208	246	279	166	157	110	162	89
20 to 24 years	238	275	145	150	250	235	352	389	183	218	117	276	209
25 to 34 years	380	403	245	199	462	321	563	723	273	306	155	377	309
35 to 44 years	221	231	134	147	264	199	310	305	148	168	93	221	103
45 to 54 years	246	276	148	171	288	276	252	289	116	158	102	216	129
55 to 64 years	277	234	162	156	403	285	339	358	157	168	100	258	88
65 to 74 years	195	148	129	111	382	253	358	419	159	174	90	283	57
75 years and over	170	96	87	61	196	185	230	424	157	115	41	165	36
3 and 4 years	83	104	48	50	78	81	93	118	64	65	30	46	37
16 years and over	1 895	1 883	1 149	1 131	2 469	1 921	2 508	3 134	1 336	1 430	791	1 933	1 004
18 years and over	1 817	1 763	1 107	1 060	2 367	1 835	2 495	3 031	1 295	1 377	742	1 874	965
21 years and over	1 677	1 602	1 021	966	2 198	1 707	2 335	2 846	1 144	1 261	670	1 748	906
60 years and over	504	348	288	247	800	577	755	1 036	401	380	169	591	136
62 years and over	460	307	259	220	721	512	693	958	367	341	152	533	123
Median	29.5	25.9	29.0	27.9	33.3	32.3	30.3	31.8	29.4	29.3	26.5	32.6	27.2
HOUSEHOLD TYPE AND RELATIONSHIP													
Total persons	**5 187**	**5 539**	**3 118**	**3 155**	**6 079**	**4 776**	**6 810**	**7 581**	**3 402**	**3 776**	**2 192**	**4 913**	**2 786**
In households	5 187	5 536	3 118	3 155	6 079	4 776	6 810	7 581	3 008	3 776	2 192	4 858	2 756
Householder	1 848	1 684	1 072	969	2 181	1 722	2 512	3 351	1 083	1 384	739	2 072	1 358
Family householder	1 210	1 306	785	737	1 633	1 142	1 706	1 748	734	889	498	1 173	513
Nonfamily householder	638	378	287	232	548	580	806	1 603	349	495	241	899	845
Living alone	505	324	252	200	489	535	650	1 354	292	411	196	739	705
Spouse	967	948	632	649	1 360	628	1 347	1 378	578	638	303	898	402
Other relatives	2 069	2 695	1 331	1 611	2 393	2 293	2 613	2 383	1 221	1 557	1 018	1 604	779
Nonrelatives	303	209	83	86	145	133	338	469	126	197	132	284	217
Inmate of institution	-	-	-	-	-	-	-	-	115	-	-	45	22
Other, in group quarters	-	3	-	-	-	-	-	-	279	-	-	10	7
Persons per household	2.81	3.29	2.91	3.26	2.79	2.77	2.71	2.26	2.78	2.73	2.97	2.34	2.03
Persons per family	3.51	3.79	3.50	3.85	3.30	3.56	3.32	3.15	3.45	3.47	3.65	3.13	3.30
Persons 65 years and over	593	450	358	324	932	769	952	1 228	498	475	225	725	158
In households	593	450	358	324	932	769	952	1 228	393	475	225	724	150
Householder	417	310	248	216	600	556	663	948	287	333	164	493	110
Nonfamily householder	213	120	115	71	245	245	304	635	151	164	69	223	59
Living alone	203	115	112	67	237	231	292	608	140	154	67	206	57
Spouse	113	85	72	69	238	132	200	187	69	94	37	166	27
Other relatives	51	49	35	34	85	67	71	68	28	31	21	57	11
Nonrelatives	12	6	3	5	9	14	18	25	9	17	3	8	2
Inmate of institution	-	-	-	-	-	-	-	-	97	-	-	1	5
Other, in group quarters	-	-	-	-	-	-	-	-	-	-	-	-	-
FAMILY TYPE BY PRESENCE OF OWN CHILDREN													
Families	**1 210**	**1 306**	**785**	**737**	**1 633**	**1 142**	**1 706**	**1 748**	**734**	**889**	**498**	**1 173**	**513**
With own children under 18 years	591	746	400	365	715	498	792	771	344	422	254	451	231
Number of own children under 18 years	1 326	1 654	829	804	1 430	1 070	1 595	1 526	795	932	527	967	516
Married-couple families	**967**	**948**	**632**	**649**	**1 360**	**628**	**1 347**	**1 378**	**578**	**638**	**303**	**898**	**402**
With own children under 18 years	481	566	338	255	610	255	639	615	280	312	151	348	185
Number of own children under 18 years	1 082	1 284	703	566	1 269	541	1 318	1 249	668	716	333	770	426
Female householder, no husband present	**188**	**268**	**111**	**197**	**208**	**431**	**261**	**276**	**117**	**196**	**152**	**196**	**73**
With own children under 18 years	95	150	50	104	87	216	127	131	54	93	75	48	33
Number of own children under 18 years	217	317	102	220	157	477	236	236	108	187	183	176	70
MARITAL STATUS													
Male, 15 years and over	**1 982**	**2 067**	**1 182**	**1 182**	**2 235**	**1 617**	**2 637**	**2 912**	**1 260**	**1 391**	**886**	**1 999**	**1 284**
Single	650	750	325	469	568	576	819	957	459	472	287	663	556
Now married, except separated	1 104	1 090	692	540	1 437	685	1 486	1 506	626	697	377	1 019	456
Separated	50	71	30	59	43	107	92	83	33	56	40	66	62
Widowed	47	60	32	40	42	104	65	97	60	45	32	47	21
Divorced	131	86	73	74	145	145	175	269	82	121	68	204	179
Female, 15 years and over	**1 939**	**1 923**	**1 180**	**1 163**	**2 389**	**1 962**	**2 630**	**3 186**	**1 359**	**1 464**	**888**	**1 988**	[illegible]
Single	346	429	207	314	455	492	470	640	336	326	202	439	307
Now married, except separated	1 037	1 022	646	535	1 420	678	1 432	1 463	630	685	338	947	424
Separated	80	101	28	76	64	167	76	97	35	91	60	53	43
Widowed	285	241	183	149	398	395	430	668	250	207	123	313	76
Divorced	201	140	96	89	172	230	242	318	108	155	85	206	150

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Lead Products [illegible]

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201.02 ✓	5137	300.24	3242	401.02	3472
202	8186	301.01	4972	401.01 (1/2)	1162
203.01	3779	301.02	6154	402.01 (1/2)	2915
203.02	5853	302	6654	402.02	4076
203.03	2463	303	2127	403	6757
204	3111	304.01	4642	404.01 (1/3)	891
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205.02	5757	304.02	5206	404.02 (1/4)	919
205.03	2431	305.01	4250		
206.01	3512	305.02	4251	501	27
206.02	3524	306	5119	502	2074
207.03	2622	307.01	5780	503.01	7046
207.04	988	307.02	4900	503.02	6509
207.01 (1/2)	1345	308	7431	504	3230
207.02 1/2	1377	309.01	6049	505.01	1337
208.01 (1/2)	940	309.02	3086	505.02	4219
208.02	4822	309.03	3110	506.01	3588
208.03	5719	310	7131	506.02	5943
210.01 (1/2)	2737	311	10079	507.01 1/2)	2100
209 (1/2)	376	312	7792	507.02 (1/2)	2594
214.01 (1/2)	187	313.01	5359	508	5539
		314.02	3664	509.02	3155
		314.01	4320	509.03 (1/2)	3040
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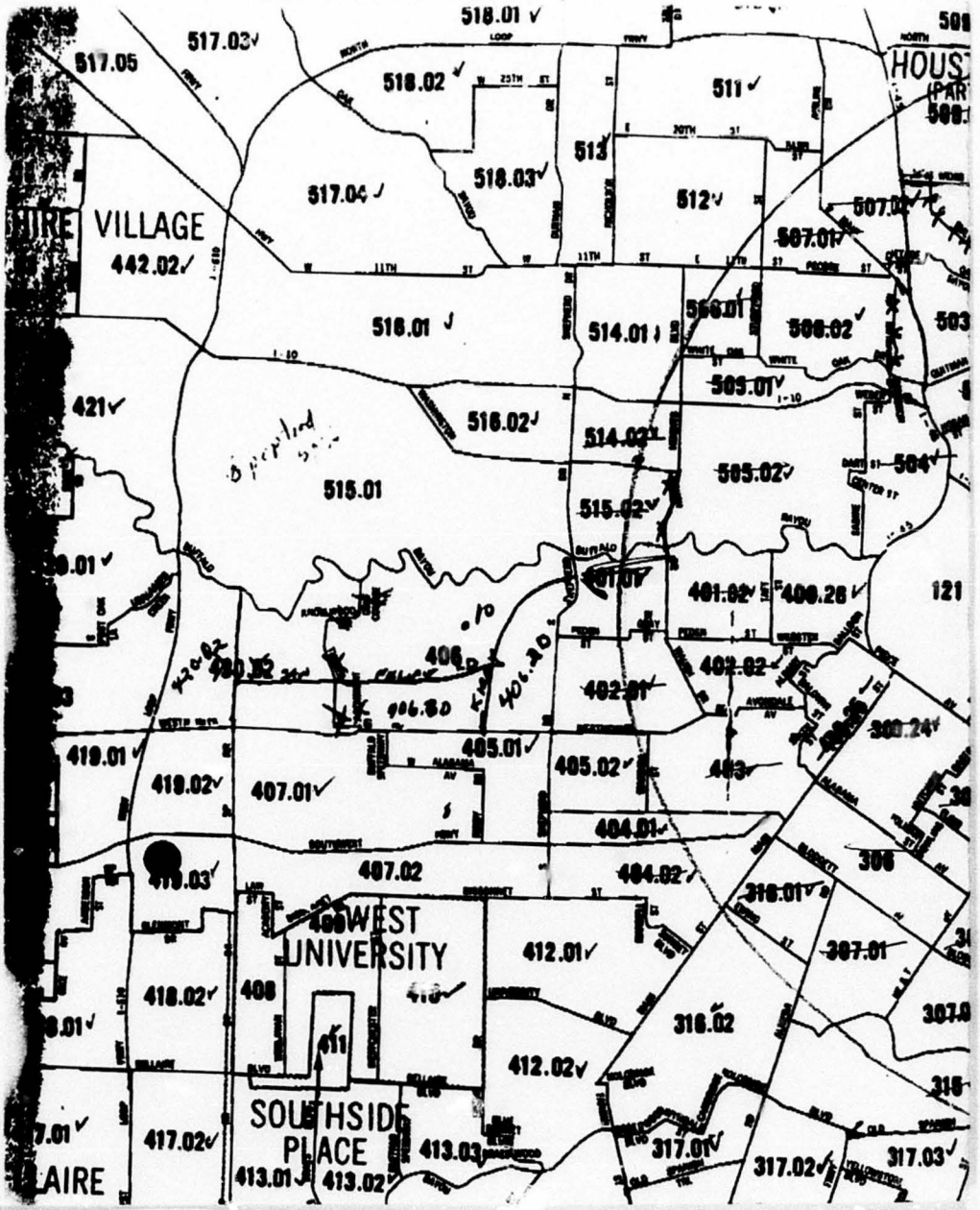
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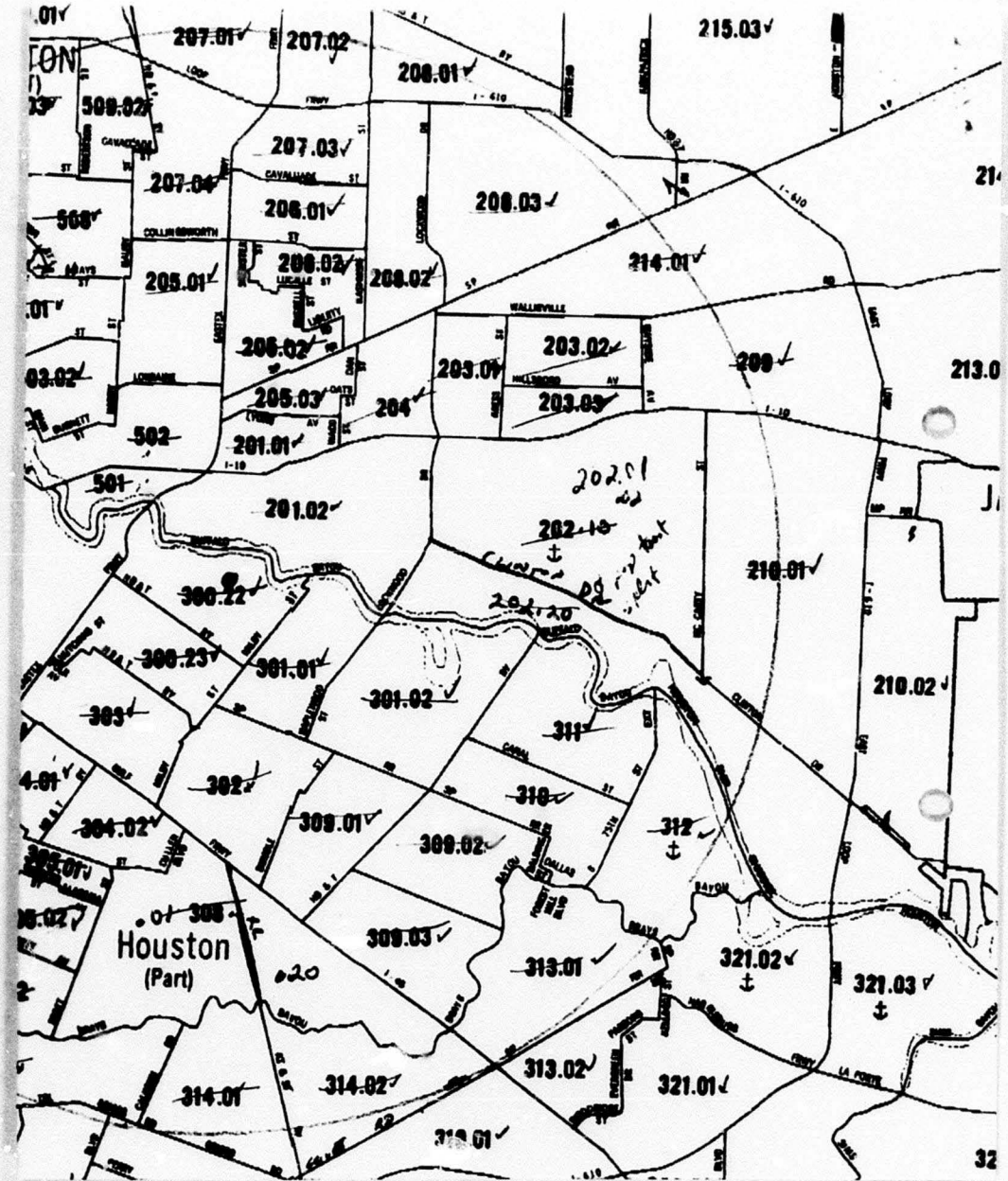

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TEXAS WATER DEVELOPMENT BOARD

REPORT 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS

VOLUME II

RECORDS OF WELLS, 1892-1972

By

R. K. Gabrysch, W. L. Naftel, Gene D. McAdoo, and C. W. Bonnet
United States Geological Survey

This report was prepared by the U.S. Geological Survey
under cooperative agreement with the
Texas Water Development Board
and the
City of Houston

January 1974

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INTRODUCTION

The collection of hydrologic data in Harris County, Texas, was begun by the U.S. Geological Survey on a more or less continuing basis in 1929. The current data-collection program is in cooperation with the Texas Water Development Board and the city of Houston.

The data-collection program consists of an inventory of new large-capacity and other selected wells, the collection of water samples from wells for chemical analyses, an inventory of ground-water pumpage, water-level measurements in observation wells, pumping tests on large-capacity wells, and a compilation of information on land-surface subsidence.

This report presents records of 2,635 wells in 10 areas (Figure 1) in Harris County that have been collected as part of the inventory from 1929 to 1972. Data on geology, hydrology, pumpage, water levels, and

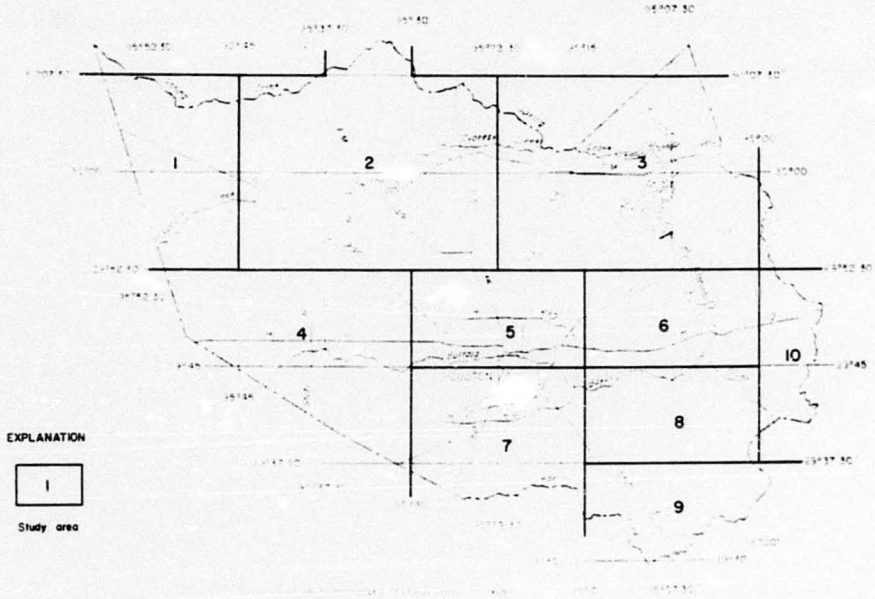

Figure 1.—Location of Areas in Harris County

chemical quality of ground water in Harris County may be obtained from previous publications, some of which are listed in the selected references in this report.

WELL-NUMBERING SYSTEM

The well-numbering system in Texas was developed by the Texas Water Development Board for use throughout the State. Under this system, each 1-degree quadrangle is given a number consisting of two digits. These are the first two digits in the well number. Each 1-degree quadrangle is divided into 7½-minute quadrangles which are given 2-digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7½-minute quadrangle is divided into 2½-minute quadrangles which are given a single digit number from 1 to 9. This is the fifth digit of the well number. Finally, each well within a 2½-minute quadrangle is given a 2-digit number in the order in which it was inventoried, starting with 01. These are the last two digits of the well number.

Only the last three digits of the well number are shown at each location on Figures 2-11; the first four digits are shown in the northwest corner of each 7½-minute quadrangle.

In addition to the 7-digit well number, a 2-letter prefix is used to identify the county. The prefix for Harris County is LJ. The prefix is not included with the well numbers in the table because all wells are in Harris County.

Records of wells in Harris County

All wells are drilled unless otherwise noted in remarks column.

Water level : Reported water levels given in feet; measured water levels given in feet and tenths.

Method of lift and type of power: A, airlift; B, bucket; C, cylinder; CF, centrifugal; E, electric; G, gasoline, oil, butane, or diesel engine; Ng, natural gas; H, hand; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.

Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.

Water bearing unit : C, Chicot aquifer; CU, Upper unit of Chicot aquifer; CL, Lower unit of Chicot aquifer; E, Evangeline aquifer; J, Jasper aquifer.

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of water	Remarks
60-57-202	Mrs. A. F. Knebel	Unknown	1908	52	20	52	C	281	30.8	Oct. 22, 1963	J,E	D,S	Dug and bored to 52 ft. 20 inch tile casing with open end.
201	Ade Oil Co.	Katy Drilling Co.	1959	778	16 12	301 778	E	287	135.3	Oct. 1963	T,E 100	Irr,S	Screen from 588 to 778 ft. Supplies lake. 2/
302	B. H. Mehrkam	B. E. Petry	1963	120	4	120	C	260	41.8	Oct. 22, 1963	C,W	S	Screen from 114 to 120 ft.
303	Stokes	Unknown	--	60	4	60	C	266	18.1	Nov. 5, 1931	N	N	Well destroyed.
501	B. F. Quinn	Unknown	--	20	3	20	C	255	3.5	May 13, 1931	N	N	Test well. Well destroyed.
502	Dr. Berry	Unknown	--	42	24	42	C	264	34.0	Apr. 13, 1931	B,H	D	Dug well. Reported dug to 86 ft. Measured 42 ft. in 1931.
503	H. H. Strickland	H. H. Stickland	1918	30	10	30	C	245	7.0 13.4	Apr. 13, 1931 Aug. 2, 1933	N	N	Bored well. Wood casing. Well destroyed.
504	C. H. Burton	Unknown	1931	22	10	22	C	245	7.0 6.9	Apr. 13, 1931 Feb. 12, 1962	N	N	Dug well. Well destroyed. 3/
601	Warren Vincent	Roy Turner	1947	734	18 14 12	218 452 734	E,C	277	--	--	T,Ng	Irr	Casing slotted from 100 to 734 ft.
602	Hurricane Fence Co.	Layne Texas Co.	1948	800	20 12 8	250 614 800	E	271	94	Mar. 1948	T,Ng	Irr	315 ft. of slotted casing between 250 and 775 ft. Reported yield 1,525 gpm with 45 ft. drawdown when drilled. 2/
603	Schindler Farms	Katy Drilling Co.	1951	825	24 16 10	300 510 825	E,C	264	--	--	T,E 200	Irr	Casing slotted from 104 to 825 ft. 2
604	B. L. Snowden	B. E. Petry	1938	211	4	211	E	260	37	1938	C,E 1	D,S	Screen from 201 to 211 ft.
605	T. W. Ray	Unknown	1870	71	24 8	40 71	C	276	18.6	Nov. 6, 1931	N	N	Bored well; tile casing; open end. Well destroyed.
606	Elmer Bennett	Unknown	--	100	4	100	C	261	12.1	Nov. 5, 1931	N	N	Bored well. Well destroyed.
607	Schindler Farms	H. H. Strickland	1926	122	4	122	C	256	18.3 78.8	Apr. 13, 1931 Feb. 12, 1971	N	N	1/
608	Schindler Farms Well 2	Layne Texas Co.	1968	857	20 12	369 857	E	264	131	Apr. 8, 1968	T,Ng	Irr	378 ft. of slotted casing between 250 and 843 ft. Reported yield 3,024 gpm with 136 ft. drawdown when drilled. 2
609	Charlie Kaisc	Schoppa Water Well Service	1969	265	4 2½	-- 265	E	275	115	Apr. 29, 1969	Sub,E 1	D	Screen from 255 to 265 ft. 2
610	Owen Glover, Jr.	do	1969	254	4	254	E	274	115	Apr. 20, 1969	Sub,E 1	D	Screen from 244 to 254 ft. 2
901	W. O. Dennison and Sons	Katy Drilling Co.	1954	1,453	20 12	359 1,453	E	229	--	--	T	Irr	Casing slotted from 253 to 1,453 ft. 2/
902	J. C. Jenkins	A. H. Justman	1951	622	20 12	200 622	E	237	--	--	T,E	Irr	Casing slotted from 272 to 622 ft.
904	J. A. Hafner	Unknown	1931	21	3	21	C	246	4.0 7.3	May 1, 1931 Mar. 13, 1936	N	N	Well destroyed. 3/
905	C. I. Garrett	Hiram Bennett	1905	70	6	70	C	245	44.6 47.8	Apr. 25, 1931 Mar. 4, 1960	N	N	Well destroyed. 3/
* 906	do	H. H. Strickland	1900	61	6	61	C	246	45.2 50.4	Apr. 13, 1931 Jun. 14, 1956	J,E	D	3/

See footnotes at end of table.

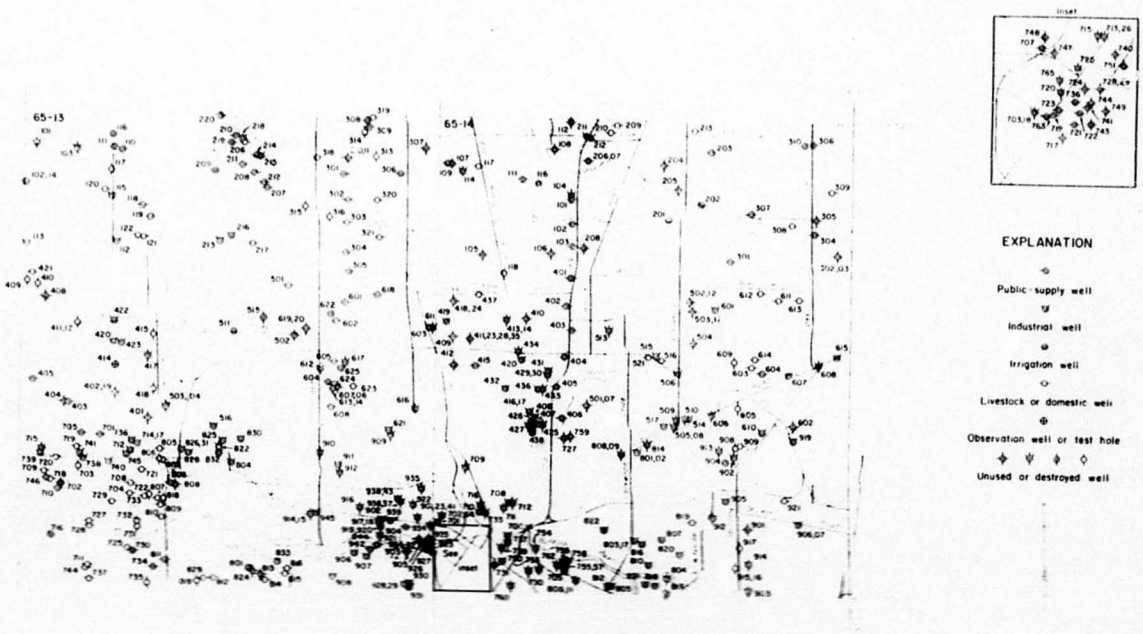

Figure 6
Locations of Wells in Area 5

Records of wells in Harris Count---Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) or below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
65-13-833	J. Ray McDermott	A. Chrysty Kunlmann	1969	633	6 4	590 633	CL	40	297	Aug. 1969	Sub,E	Irr	Screen from 593 to 633 ft. Irrigates grass. 2/
901	Liquid Carbonic Corp.	Texas Water Wells, Inc.	1955	923	12 6	307 923	E	54	--	--	N	N	140 ft. of screen between 500 and 920 ft.
902	Washington Laundry	A. Chrysty Kuhlmann	1958	487	6 4	450 487	CL	54	197	Oct. 23, 1950	--	Ind	Screen from 447 to 487 ft. 2/
• 903	City of Houston Central Well C-19	Texas Water Wells, Inc.	1958	1,980	24 13 12	627 1,000 1,980	E	52	202.6 357.5	Apr. 17, 1948 Feb. 19, 1971	T,E	P	367 ft. of screen between 1,160 and 1,980 ft. Reported yield 2,480 gpm with 60 ft. of drawdown when drilled. 1/
• 904	City of Houston Central Well C-20	do	1949	1,960	24 12	604 1,960	E	46	188.4 355.5	Mar. 22, 1949 Feb. 23, 1971	T,E	P	405 ft. of screen between 1,015 and 1,940 ft. Reported yield 2,435 gpm with 57 ft. drawdown when drilled. 1
• 905	City of Houston Central Well C-21	do	1957	2,020	24 12	606 2,020	F	43	237.9 342.2	Mar. 31, 1957 Feb. 22, 1971	T,E 250	P	410 ft. of screen between 745 and 2,000 ft. Reported yield 2,819 gpm with 72 ft. drawdown when drilled. 1
906	Harris Cream Top Dairy	Layne Texas Co.	1933	514	8	514	CL	51	49	Apr. 1933	T,E 10	Ind	Screen from 462 to 504 ft. Reported yield 120 gpm with 20 ft. drawdown when drilled. 2/
907	Samuel Bingham and Son Manufacturing Corp.	Texas Water Supply Co.	1940	450	6 4	165 450	CL	50	--	--	T,E 5	Ind	
908	Sanitary Farm Dairy	McMasters and Pomeroy	1935	590	8 6	-- 590	CL	57	--	--	T,E 20	Ind	Screen from 520 to 580 ft
909	Creamix Corp.	do	1927	250	8	250	CL	62	67	Mar. 4, 1931	N	N	68 ft. of screen between 173 and 250 ft 2/
910	Fidelity Chemical Corp.	Unknown	1917	465	8	465	CL	62	66	Jan. 23, 1931	N	N	
911	Swift and Company	Layne Texas Co.	1917	670	10 8	-- 670	CL	58	45.8	Jan. 23, 1931	A	Ind	60 ft. of screen between 500 and 670 ft.
912	Houston Cotton Oil Co.	G. C. Warniecke	1893	540	--	--	--	51	48.7	Jan. 11, 1931	N	N	
914	City of Houston	Unknown	1917	558	24	558	C	59	20	Oct. 19, 1928	N	N	Well destroyed.
915	do	Layne Bowler Co.	1918	1,465	24 10 8	-- -- 1,465	E	59	18	Nov. 1918	N	N	Well destroyed.
916	Horlock Ice Co.	J. A. Walling	1925	340	8	340	C	60	69.6 149.6	Jan. 23, 1931 June 12, 1968	N	N	Well abandoned. 3/
917	Henke and Pillot	G. C. Warniecke	Old	575	6	575	C	56	58.0 94.2	Jan. 22, 1931 Apr. 19, 1943	N	N	Well destroyed 3
• 918	do	McMasters and Pomeroy	1929	571	6	571	CL	55	74.7 110.3	Jan. 22, 1931 June 10, 1948	N	N	Screen from 511 to 571 ft. Well destroyed. 2/ 3/
919	Fidelity Products Co.	Layne Bowler Co.	1906	350	6	350	CL	57	66.4 102.3	Jan. 25, 1931 Feb. 3, 1947	N	N	Screen from 315 to 350 ft. Well destroyed. 3/
920	do	Unknown	1920	825	8	825	E	57	77.1 126.0	Jan. 23, 1931 Mar. 8, 1947	N	N	Well destroyed. 3/
• 921	Standard Rice Co.	Layne Bowler Co.	1908	853	6	853	E	50	53 85	Jan. 25, 1931 Nov. 7, 1938	N	N	Screen from 806 to 818 ft. Well destroyed. 2/

See footnotes at end of table.

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water level: Above (+) or below land surface (ft.)	Water level: Date of measurement	Method of lift	Use of water	Remarks
65-14-705	Trinity Portland Cement Co.	Layne Texas Co.	1951	612	14 8	495 612	CL	36	191	Dec. 1951	--	Ind	80 ft. of screen between 300 and 600 ft. Reported yield 120 gpm with 79 ft. drawdown when drilled.
* 707	City of Houston Central Well C-18	do	1945	2,035	24 12	633 2,035	E	25	116.4 323.0	Aug. 20, 1951 Feb. 22, 1971	T.E	P	225 ft. of screen between 884 and 1,969 ft. Measured yield 2,600 gpm with 77 ft. drawdown when drilled. 1/
708	Southern Pacific Railroad	Texas Water Wells, Inc.	1956	1,328	12 6	1,143 1,328	E	50	--	--	T.E	Ind	108 ft. of screen between 1,152 and 1,325 ft. Supplies Hardy St. Yards
709	Crescent Laundry	Layne Texas Co.	1936	235	6 5	160 235	CL	51	59	Mar. 12, 1936	N	N	Screen from 182 to 206 ft. 2/
710	Mid Continental Mud Co.	do	1939	525	8	525	CL	51	--	--	T.E 25	Ind	156 ft. of screen between 188 and 525 ft.
711	Southern Pacific Railroad Well 3	do	1937	932	12	932	E,CL	50	86	Nov. 18, 1937	N	N	119 ft. of screen between 523 and 921 ft. Reported yield 695 gpm with 90 ft. drawdown when drilled.
712	Southern Pacific Railroad	do	1941	969	13	969	E,CL	50	110	May 8, 1941	N	N	129 ft. of screen between 512 and 922 ft. Reported yield 980 gpm with 54 ft. drawdown when drilled. Well destroyed.
* 713	Southland Co.	do	1941	354	13 7	-- 354	CL	40	78	Apr. 9, 1941	N	N	115 ft. of screen between 166 and 351 ft. Formerly supplied ice plant.
* 714	Houston Lighting and Power Co. Gable St. Well 2	do	1939	887	18 10	633 887	E	37	95	Mar. 7, 1939	T.E 75	Ind	91 ft. of screen between 717 and 875 ft. Reported yield 751 gpm with 63 ft. drawdown when drilled. 2/
* 715	Houston Ice and Cold Storage Co.	J. A. Walling	1915	720	6	720	E	40	52.3	Jan. 7, 1931	N	N	Original depth 715 ft. Well destroyed
* 716	Sunshine Laundry	McWasters and Pomeroy	1929	602	8 6	-- 602	E,CL	56	--	--	N	N	Screen from 562 to 602 ft. Well destroyed.
717	Main Building Corp.	Layne Texas Co.	1938	932	10 8	-- 932	E	49	93	June 13, 1938	N	N	60 ft. of screen between 767 and 920 ft. Reported yield 257 gpm with 23 ft. drawdown when drilled.
718	Phenix Dairy Well 1	do	1936	534	8 6	162 534	CL	52	49	May 26, 1936	N	N	58 ft. of screen between 145 and 533 ft. Reported yield 259 gpm with 44 ft. drawdown when drilled. Well destroyed. 2/
719	Oil and Gas Building	Texas Water Supply Corp.	1939	986	8	986	E	52	94	Apr. 19, 1939	T.E 10	P	Screen from 901 to 986 ft. Reported yield 200 gpm when drilled.
* 720	Rice Hotel Laundry	Layne Texas Co.	1936	1,502	10 8 6	221 1,163 1,502	E	52	90	July 23, 1936	N	N	118 ft. of screen between 1,317 and 1,456 ft. Reported yield 650 gpm when drilled. Well destroyed. 2/
721	Commerce Building	do	1939	900	16 8	672 900	E	51	118	Oct. 1939	T.E 40	P	96 ft. of screen between 752 and 882 ft. Reported yield 800 gpm when drilled.
722	South Coast Life Building	Texas Water Supply Corp.	1936	887	10 6	-- 887	E,CL	51	--	--	T.E 40	P	200 ft. of screen between 290 and 887 ft. Reported yield 600 gpm when drilled.
723	Niels Emperson Building	do	1940	900	8 6	-- 900	E	51	--	--	T.E 15	P	Screen from 825 to 885 ft. Reported yield 315 gpm when drilled

See footnotes at end of table.

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water level: Above (+) or below land surface datum (ft.)	Water level: Date of measurement	Method of lift	Use of water	Remarks
65-14-705	Trinity Portland Cement Co.	Layne Texas Co.	1951	612	14 8	495 612	CL	36	191	Dec. 1951	--	Ind	80 ft. of screen between 500 and 600 ft. Reported yield 420 gpm with 79 ft. drawdown when drilled.
* 707	City of Houston Central Well C-18	do	1945	2,035	24 12	633 2,035	E	25	110.4 323.0	Aug. 20, 1971 Feb. 22, 1971	T.E	P	221 ft. of screen between 881 and 1,969 ft. Measured yield 2,600 gpm with 77 ft. drawdown when drilled. 1
708	Southern Pacific Railroad	Texas Water Wells, Inc.	1956	1,328	12 6	1,143 1,328	E	50	--	--	T.E	Ind	108 ft. of screen between 1,152 and 1,325 ft. Supplies Hardy St. Yards.
709	Crescent Laundry	Layne Texas Co.	1936	235	6 5	160 235	CL	51	59	Mar. 12, 1936	N	N	Screen from 182 to 206 ft. 2
710	Mid Continental Mud Co.	do	1939	525	8	525	CL	51	--	--	T.E 25	Ind	156 ft. of screen between 188 and 525 ft.
711	Southern Pacific Railroad Well 3	do	1937	932	12	932	E,CL	50	80	Nov. 18, 1937	N	N	119 ft. of screen between 523 and 971 ft. Reported yield 695 gpm with 40 ft. drawdown when drilled.
712	Southern Pacific Railroad	do	1941	969	13	969	E,CL	50	110	May 8, 1941	N	N	129 ft. of screen between 512 and 922 ft. Reported yield 980 gpm with 54 ft. drawdown when drilled. Well destroyed.
* 713	Southland Co.	do	1941	354	13 7	-- 354	CL	40	78	Apr. 9, 1941	N	N	115 ft. of screen between 166 and 351 ft. Formerly supplied ice plant.
* 714	Houston Lighting and Power Co. Gable St. Well 2	do	1939	887	18 10	633 887	E	37	95	Mar. 7, 1939	T.E 75	Ind	91 ft. of screen between 717 and 873 ft. Reported yield 751 gpm with 63 ft. drawdown when drilled. 2
* 715	Houston Ice and Cold Storage Co.	J. A. Walling	1915	720	6	720	E	40	52.3	Jan. 7, 1931	N	N	Original depth 715 ft. Well destroyed.
* 716	Sunshine Laundry	McMasters and Pomeroy	1929	602	8 6	-- 602	E,CL	56	--	--	N	N	Screen from 592 to 602 ft. Well destroyed.
717	Main Building Corp.	Layne Texas Co.	1938	932	10 8	-- 932	E	49	93	June 13, 1938	N	N	60 ft. of screen between 767 and 920 ft. Reported yield 257 gpm with 23 ft. drawdown when drilled.
718	Phenix Dairy Well 1	do	1936	534	8 6	162 534	CL	52	69	May 26, 1936	N	N	58 ft. of screen between 415 and 533 ft. Reported yield 253 gpm with 44 ft. drawdown when drilled. Well destroyed. 2
719	Oil and Gas Building	Texas Water Supply Corp.	1939	986	8	986	E	52	91	Apr. 19, 1939	T.E 10	P	Screen from 903 to 986 ft. Reported yield 200 gpm when drilled.
* 720	Rice Hotel Laundry	Layne Texas Co.	1936	1,502	10 8 6	221 1,163 1,502	E	52	90	July 23, 1936	N	N	118 ft. of screen between 1,317 and 1,456 ft. Reported yield 650 gpm when drilled. Well destroyed. 2
721	Commerce Building	do	1939	900	16 8	672 900	E	51	118	Oct. 1939	T.E 40	P	96 ft. of screen between 752 and 882 ft. Reported yield 800 gpm when drilled.
722	South Coast Life Building	Texas Water Supply Corp.	1936	887	10 6	-- 887	E,CL	51	--	--	T.E 40	P	200 ft. of screen between 200 and 887 ft. Reported yield 500 gpm when drilled.
723	Niels Esperson Building	do	1940	900	8 6	-- 900	E	51	--	--	T.E 15	P	Screen from 825 to 885 ft. Reported yield 315 gpm when drilled.

See footnotes at end of table.

Records of wells in Harris County--continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water level: Above (+) or below land surface datum (ft.)	Water level: Date of measurement	Method of lift	Use of water	Remarks
65-14-724	Uptown Theatre	Layne Texas Co.	1935	404	16 8	269 404	CL	51	68	Oct. 7, 1935	N	N	Screen from 295 to 301 ft. Reported yield 440 gpm with 50 ft. drawdown when drilled. Test hole drilled to 489 ft. Well destroyed. 2/
• 725	Model Laundry	Southern Engine and Pump Co.	1909	1,875	8	1,875	E	45	102.2	Mar. 29, 1941	N	N	Screen from 1,625 to 1,675 ft. Flowed until 1929. Well destroyed.
• 726	Houston Ice and Cold Storage Co.	J. A. Walling	1915	825	8	825	C?,E	40	--	--	N	N	Well destroyed.
• 727	City of Houston Northeast Well 1	McMasters and Pomeroy	1931	1,876	24 12	300 1,876	E	49	15 241	Mar. 12, 1932 Mar. 9, 1962	N	N	235 ft. of screen between 1,016 and 1,850 ft. Yield 2,260 gpm in Jan. 1942. Reported flowed when drilled. 3/
• 728	Rice Hotel Well 1	Layne Bowler Co.	1913	1,395	8 4	1,221 1,395	E	51	--	--	N	N	Screen from 1,303 to 1,383 ft. Well destroyed.
• 729	Rice Hotel Well 2	J. A. Walling	1926	896	16 12 10	-- -- 896	C?,E	51	--	--	N	N	Well abandoned in 1962.
• 730	Missouri Pacific Lines	Layne Bowler Co.	1907	1,390	8	1,390	E	46	--	--	N	N	100 ft. of screen between 1,276 and 1,390 ft. Well destroyed. 2/
731	Houston Belt and Terminal Railroad	McMasters and Pomeroy	1931	708	10 8	325 708	E,CL	50	79.1	Jan. 7, 1931	N	N	85 ft. of screen between 229 and 708 ft. Formerly supplied Union Railroad Station. Well destroyed. 2/
• 733	Missouri, Kansas and Texas Railroad	Layne Texas Co.	1910	1,638	12 8 6	-- -- 1,638	C?,E	50	51.3 59.1	Jan. 29, 1931 Oct. 24, 1939	N	N	Well destroyed. 2/ 3/
• 736	Niels Esperson Building	do	1925	895	8 6	825 895	E	50	98.6	Feb. 2, 1931	N	N	Screen from 811 to 891 ft. 2/
• 737	Houston Lighting and Power Co. Gable St. Well 1	Taylor and Roberts	1922	873	8 6	798 873	E	45	73.1 119.0	Jan. 21, 1931 Oct. 11, 1940	N	N	110 ft. of screen between 711 and 873 ft. Well destroyed. 2/ 3/
739	Houston Electric Co.	Unknown	1910	1,350	8	1,350	E	10	33.2 94.7	Jan. 8, 1931 Sept. 15, 1942	N	N	Flowed when drilled. Well destroyed. 3/
• 740	Southern Pacific Building	Taylor and Roberts	1923	861	8 6	791 861	E	40	--	--	N	N	97 ft. of screen between 620 and 861 ft. Well destroyed. 2/
741	San Jacinto Hotel	do	1909	884	6 4	-- 884	E	50	121.5 216.8	July 22, 1940 June 11, 1952	N	N	Screen from 821 to 881 ft. Well destroyed. 3/
• 743	Ambassador Apartments	Layne Texas Co.	1910	888	8 6	-- 888	E	50	--	--	N	N	Screen from 813 to 873 ft. Well destroyed.
744	Kress Building	do	1913	542	8	542	CL	50	68.8	Feb. 1, 1931	N	N	Screen from 500 to 540 ft.
• 747	City of Houston Central Well C-16	do	1925	1,535	24 10	151 1,535	E	55	48 188.8	July 10, 1925 Mar. 9, 1948	N	N	198 ft. of screen between 1,179 and 1,512 ft. Yield 1,110 gpm Jan. 1942. Well destroyed. 3/
• 748	City of Houston Central Well D-17	do	1925	980	24 10	151 980	E	40	96.8 229.2	Nov. 17, 1938 Mar. 8, 1957	N	N	141 ft. of screen between 208 and 978 ft. Well destroyed. 3/
749	Texaco Inc. Building	J. E. Roberts	1915	1,335	8 4	1,329 1,335	E	50	60.0 255.2	Jan. 31, 1931 Sept. 25, 1958	N	N	Screen from 1,258 to 1,329 ft. Well destroyed. 3/

See footnotes at end of table.

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
*65-14-750	Burkhart Laundry	McMasters and Pomeroy	1931	1,402	8 6	1,311 1,402	E	50	--	--	T,E 20	Ind	Screen from 1,358 to 1,402 ft. Reported yield 200 gpm in 1941. 2/
* 751	T. J. Bettis Building	Layne Bowler Co.	1923	363	6 4	252 363	CL	40	10	1923	N	N	83 ft. of screen between 206 and 363 ft. Reported yield 100 gpm in 1941.
* 753	Gould Wet Wash Laundry	Layne Texas Co.	1924	1,392	6 4	1,341 1,392	E	41	--	--	N	N	Screen from 1,347 to 1,391 ft. Reported yield 150 gpm in 1940. 2/
754	Zero Ice Co.	Layne Bowler Co.	1923	881	16 10	145 881	CL,E	30	56	Feb. 23, 1938	N	N	180 ft. of screen between 150 and 634 ft. Reported yield 375 gpm with 50 ft. drawdown Feb. 23, 1938. 2/
* 755	Houston Packing Co. Well 1	G. C. Warniecke	1907	1,618	6 5	945 1,618	E	40	72	Feb. 1938	N	N	Screen from 1,556 to 1,616 ft. Reported yield 258 gpm with 60 ft. drawdown Feb. 1938
756	Houston Packing Co. Well 3	Layne Texas Co.	1930	619	12 8	152 619	CL	40	51 102 103.3	May 1930 July 13, 1941 Jan. 30, 1951	T,E 25	Ind	101 ft. of screen between 235 and 611 ft. Reported yield 200 gpm with 22 ft. drawdown July 13, 1941. Test hole drilled to 624 ft. 2/
757	Houston Packing Co. Well 2	McMasters and Pomeroy	1918	417	8	417	CL	40	62.1 76.2	Jan. 8, 1931 Sept. 29, 1941	N	N	83 ft. of screen between 243 and 416 ft. Well destroyed. 2/ 3/
758	Houston Packing Co. Well 4	Layne Texas Co.	1936	424	13 8	259 424	CL	40	71	Dec. 23, 1936	T,E 40	Ind	68 ft. of screen between 339 and 420 ft. Reported yield 500 gpm with 43 ft. drawdown when drilled.
* 759	City of Houston Northeast Well 2	do	1936	1,291	21 12	375 1,291	E,CL	49	92.1 251.3	Nov. 16, 1938 Feb. 14, 1967	N	N	404 ft. of screen between 461 and 1,279 ft. Reported yield 2,010 gpm in Jan. 1942. 3/
760	Coca Cola Bottling Co.	do	1933	824	6	824	E,CL	50	70.4	Aug. 1933	N	N	100 ft. of screen between 524 and 810 ft. Reported yield 425 gpm with 23 ft. drawdown in 1940. 2/
* 762	Lead Products Co.	H. L. Jackson Co.	1953	258	4	258	CL	40	110	Nov. 24, 1955	N	N	Screen from 233 to 258 ft. Reported yield 100 gpm when drilled.
763	Memorial Baptist Hospital	Layne Texas Co.	1963	1,500	14 8	1,285 1,500	E	52	264	May 1963	--	P	148 ft. of screen between 1,293 and 1,490 ft. Reported yield 713 gpm with 39 ft. drawdown when drilled.
* 764	Willborg's Laundry	do	1932	958	6 4	891 958	E	51	70	Apr. 26, 1932	N	N	Screen from 903 to 936 ft. Reported yield 110 gpm with 80 ft. drawdown when drilled. Well destroyed. 2/
* 765	Ineeda Laundry	Taylor and Roberts	1910	975	4	975	E	50	--	--	N	N	Well destroyed.
* 801	Southern Pacific Railroad Well 1	Texas Water Wells, Inc.	1954	1,206	10 6	-- 1,206	E	50	338	Oct. 8, 1970	T,E	Ind	68 ft. of screen between 1,080 and 1,203 ft. Supplies Englewood Yards.
* 802	Southern Pacific Railroad Well 2	do	1954	1,201	10 6	1,065 1,201	E	50	338	Oct. 8, 1970	T,E	Ind	90 ft. of screen between 1,070 and 1,200 ft. Supplies Englewood Yards.
803	The Bama Co.	McMasters and Pomeroy	1950	550	6	550	CL	44	150 154	Mar. 2, 1959 1960	T,E	Ind	
804	McDonough Cement Co.	Texas Water Wells, Inc.	1962	800	12 6	600 800	E	15	264	Feb. 9, 1962	T,E 60	N	75 ft. of screen between 605 and 791 ft. Reported yield 354 gpm with 113 ft. drawdown when drilled.
805	Weingarten's Bakery	Layne Texas Co.	1957	905	10 6	693 905	E	42	252	Mar. 1, 1957	T,E	Ind	80 ft. of screen between 825 and 905 ft.

See footnotes at end of table.

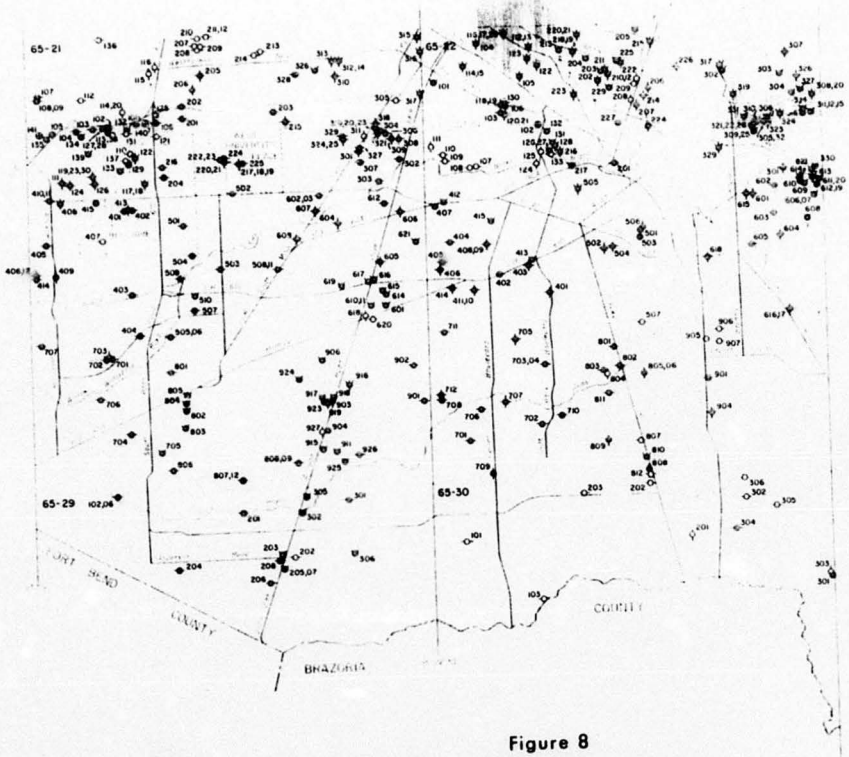

Figure 8
Locations of Wells in Area 7

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water level: Above (+) below land surface datum (ft.)	Water level: Date of measurement	Method of lift	Use of water	Remarks
*65-21-219	City of Southside Place Well 2	McMasters and Pomeroy	1935	998	8 6	850 998	E	56	50 108	Sept. 1935 Jan. 18, 1946	N	N	64 ft. of screen between 911 and 988 ft. Reported yield 250 gpm with 42 ft. drawdown when drilled. Well destroyed. 2/ 3/
219	City of Southside Place Well 3	do	1941	894	13 8	279 894	CL,E	56	84.0 190.3	May 6, 1941 Feb. 28, 1967	N	N	120 ft. of screen between 484 and 889 ft. Reported yield 400 gpm with 33 ft. drawdown when drilled. Well destroyed. 3/
220	City of West University Place	J. A. Walling	1925	650	6	650	C	57	42.4 61.7	Nov. 3, 1931 Aug. 5, 1940	N	N	Well destroyed. 3/
221	do	Unknown	1951	900	8	900	E	60	46.3 53.2	Dec. 21, 1938 Feb. 19, 1941	N	N	Well destroyed. 3/
* 222	City of West University Place Well 5	Layne Texas Co.	1941	1,673	20 12	-- 1,673	E	55	103	June 14, 1941	T,E 150	P	198 ft. of screen between 1,205 and 1,649 ft. Reported yield 2,090 gpm with 67 ft. drawdown when drilled.
* 223	City of West University Place Well 3	do	1938	768	13 6	-- 768	E,CL	55	51	Mar. 13, 1938	T,E 30	P	89 ft. of screen between 632 and 756 ft. Reported yield 530 gpm with 73 ft. drawdown when drilled. 2/
* 224	City of West University Place Well 4	do	1939	1,282	16 8	799 1,282	E	55	74	Nov. 28, 1939	T,E 125	P	153 ft. of screen between 944 and 1,169 ft. Reported yield 1,510 gpm when drilled. 2/
225	City of Southside Place	Texas Water Wells, Inc.	1969	998	12 8	600 998	E	56	282	Aug. 18, 1969	Sub,E 100	P	164 ft. of screen between 614 and 988 ft. Reported yield 457 gpm with 25 ft. drawdown when drilled. Test hole drilled to 1,000 ft. 2/
* 301	City of Houston South End Well 7	Layne Texas Co.	1944	1,750	24 12	630 1,750	E	49	143 321.7	Aug. 16, 1944 Feb. 18, 1970	N	N	234 ft. of screen between 1,365 and 1,735 ft. Reported yield 2,253 gpm with 110 ft. drawdown when drilled. Test hole drilled to 2,508 ft. Plugged back to 1,750 ft. 1/ 2/
* 302	City of Houston South End Well 8	Texas Water Wells, Inc.	1953	1,670	24 12	599 1,670	E	46	209.2 319.6	Sept. 18, 1953 Feb. 10, 1971	T,E 250	P	335 ft. of screen between 710 and 1,650 ft. Measured yield 1,865 gpm with 32 ft. drawdown Sept. 12, 1968. 1/
* 303	City of Houston South End Well 9	El Paso Drilling Co.	1954	1,622	24 12	610 1,622	E	44	243.7 318.1	Oct. 8, 1954 Feb. 10, 1971	T,E 250	P	325 ft. of screen between 680 and 1,690 ft. Measured yield 1,237 gpm with 31 ft. drawdown Sept. 12, 1968. 1/
* 304	City of Houston South End Well 10	Texas Water Wells, Inc.	1958	2,190	24 12	595 2,190	E	50	232.6 328.8	Mar. 4, 1958 Feb. 9, 1971	T,E 250	P	400 ft. of screen between 795 and 2,170 ft. Measured yield 1,804 gpm with 29 ft. drawdown Sept. 12, 1968. 1/
305	Dr. Allaly	H. L. Jackson Co.	1951	279	3	279	CL	51	105	Aug. 8, 1951	J,E	D	Reported 20 ft. of screen.
* 306	City of Houston South End Well 11	Texas Water Wells, Inc.	1962	2,215	24 12	580 2,215	E	49	256.2 318.4	May 6, 1962 Feb. 9, 1971	Sub,E	P	440 ft. of screen between 700 and 2,195 ft. Measured yield 1,404 gpm with 39 ft. drawdown Sept. 13, 1968. Test hole drilled to 2,547 ft. 1/ 2/
307	Herman Hospital	Layne Texas Co.	1937	417	10 5	292 417	CL	45	127.2 207.1	Feb. 19, 1953 Feb. 27, 1970	T,E 25	P	Screen from 366 to 415 ft. Reported yield 260 gpm with 36 ft. drawdown when drilled. 1/ 2/
308	Parklane Apartments	Texas Water Supply Corp.	1939	490	8 6	-- 490	CL	46	--	--	N	N	Screen from 450 to 490 ft. Reported yield 125 gpm when drilled.

See footnotes at end of table.

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water-bearing unit	Altitude of land surface (ft.)	Water level: Above (+) below land surface datum (ft.)	Water level: Date of measurement	Method of lift	Use of water	Remarks
•65-21-916	Gulf Oil Co.	L. Patterson	1935	376	7	376	CL	60	--	--	N	N	40 ft. of screen between 214 and 345 ft. Well destroyed.
• 917	Coastal States Gas Producing Co. Well 1	Layne Texas Co.	1968	470	14 8	350 470	CL	61	234	July 9, 1968	T,E 40	Ind	84 ft. of screen between 350 and 457 ft. Reported yield 357 gpm with 61 ft. drawdown when drilled. 2/
• 918	Coastal States Gas Producing Co. Well 2	do	1968	360	14 8	200 360	C	61	167	Aug. 7, 1968	T,E 40	Ind	94 ft. of screen between 207 and 337 ft. Reported yield 361 gpm with 37 ft. drawdown when drilled. Test hole drilled to 453 ft. 2/
• 919	Texas Brine Corp.	do	--	450±	--	--	C	61	--	--	N	N	Well destroyed.
• 923	Texas Brine Corp. Well 7	Leonard Wickelson	1969	463	13 12	184 463	CL	61	140	Mar. 20, 1969	T,E 60	Ind	Casing slotted from 184 to 459 ft. 2
924	Wanda Petroleum Co.	Katy Drilling Co.	1969	810	14	810	CL,E	60	258	May 28, 1969	T,E	Ind	Casing slotted from 297 to 810 ft. 2
925	Beaumont Well Works Co.	A. Chrysty Kuhlmann	1970	606	8 6	528 606	CL	51	210	Sept. 21, 1970	Sub,E	Ind	Screen from 566 to 606 ft. 2/
926	Bryan Jackson Co.	Lowry Water Wells	1969	239	4 2½	211 239	CL	50	132	Dec. 16, 1969	Sub,E 2	Ind	Screen from 210 to 225 ft. 2
• 927	C. W. Mowery	C. L. Mowery	1922	260	4	260	CL	55	--	--	N	N	Well destroyed.
22-101	Parco Rubber Co.	Lowry Water Wells	1953	434	6 4	240 434	CL	48	--	--	--	Ind	62 ft. of screen between 244 and 426 ft.
• 102	University of Houston Test Well 1	--	1957	2,436	--	--	E	42	--	--	--	--	Test Well. Clay compaction test data in files of U.S.G.S.
• 103	City of Houston Scott Street Well 5	Layne Texas Co.	1963	2,157	24 12	571 2,157	E	45	257.8 328.2	Mar. 22, 1963 Feb. 16, 1971	Sub,E 300	P	418 ft. of screen between 580 and 2,140 ft. Measured yield 3,024 gpm with 79 ft. drawdown when drilled. 1
104	Seven-Up Bottling Co.	do	1937	388	7 5	298 388	CL	47	66	Mar. 7, 1937	N	N	Screen from 340 to 386 ft. Reported yield 85 gpm with 26 ft. drawdown when drilled. 2/
105	Nehi Bottling Co.	Failing Drilling Co.	1934	565	6	565	CL	43	--	--	N	N	Screen from 513 to 565 ft. Reported yield 90 gpm in 1941.
• 106	City of Houston Scott Street Well 5	Layne Texas Co.	1938	957	21 12	473 957	E,CL	44	97.4 223.0	Nov. 15, 1938 Mar. 14, 1963	T,E 150	N	284 ft. of screen between 470 and 545 ft. Reported yield 1,600 gpm with 83 ft. drawdown when drilled. Test hole drilled to 1,001 ft. 2 3/
107	Ben Coyle	Texas Water Supply Corp.	1939	500	6	500	CL	44	--	--	T,E 7½	D	Screen from 460 to 500 ft.
108	Benard Sakowitz	do	1940	285	6	285	CL	44	--	--	T,E 7½	D	Screen from 265 to 285 ft.
109	C. W. Edwards	McMasters and Pomeroy	1938	555	6	555	CL	40	--	--	T,E 7½	D	41 ft. of screen between 470 and 545 ft. Reported yield 165 gpm when drilled.
110	Ben Taub	Texas Water Supply Corp.	1940	295	8 6	265 295	CL	40	--	--	T,E 7½	D	Screen from 265 to 295 ft. Reported yield 100 gpm when drilled.
111	Albert Plummer	do	1936	745	8 7	685 745	E	43	--	--	N	N	Screen from 685 to 745 ft. Well destroyed.
112	Houston Belt and Terminal Railroad Well 1	McMasters and Pomeroy	1924	832	8	832	E	44	--	--	N	N	Well destroyed.

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
*65-22-130	City of Houston Scott Street Well 7	Texas Water Wells, Inc.	1963	1,725	24 12	600 1,725	E	45	275.7 343.0	Feb. 8, 1964 Mar. 8, 1971	T,E 300	P	391 ft. of screen between 705 and 1,715 ft. Measured yield 2,919 gpm with 43 ft. drawdown when drilled. 1
131	Dixon Packing Co.	Pomeroy Drilling Co.	--	900	6	900	E	41	247	Oct. 1963	T,E 10	Ind	
132	Blue Ribbon Packing Co.	do	1964	785	8 6	551 785	E,CL	42	236	May 2, 1964	Sub,E 30	Ind	90 ft. of screen between 570 and 782 ft
133	Fort City Stock Yards	H. J. Swinehart Co.	1968	622	7 4	568 622	CL	35	298	July 17, 1968	Sub,E 20	S	Screen from 569 to 619 ft. Reported yield 190 gpm with 32 ft. drawdown when drilled. 2/
201	Christensen Courts	H. L. Jackson Co.	1948	235	6	235	CL	34	--	--	T,E 10	P	Reported 40 ft. of screen. Reported yield 85 gpm when drilled.
202	Hamms Brewing Co.	Layne Texas Co.	1947	1,133	18 10	831 1,133	E	37	192	Sept. 6, 1947	N	N	180 ft. of screen between 838 and 1,099 ft. Reported yield 933 gpm with 47 ft. drawdown when drilled.
203	Hughes Tool Co. Well 3	do	1948	1,120	22 18 10	522 842 1,120	E	38	194	Sept. 28, 1948	T,E	Ind	155 ft. of screen between 867 and 1,106 ft. Reported yield 980 gpm with 62 ft. drawdown when drilled.
204	Able Supply Co.	Briggs Pump Service	1953	282	4	282	CL	39	134	Sept. 1953	Sub,E 2	Ind	Screen from 272 to 282 ft.
205	Reed Roller Bit Co. Well 3	Layne Texas Co.	1941	1,115	13 7	746 1,115	E	40	120	Nov. 24, 1941	T,E 60	Ind	142 ft. of screen between 856 and 1,066 ft. Reported yield 530 gpm with 51 ft. drawdown when drilled.
206	Houston Golf Club	do	1939	1,131	13 7	-- 1,131	E	33	87	June 9, 1939	N	N	Screen from 1,030 to 1,131 ft. Well destroyed.
207	Houston Golf Club Well 2	do	1934	899	10 6	334 899	E,CL	36	45	Mar. 1934	N	N	75 ft. of screen between 401 and 897 ft. Well destroyed. 2/
208	J. R. Baier	do	1934	309	6 4	269 309	CL	40	62	Oct. 1934	N	N	Screen from 269 to 292 ft. Well destroyed.
209	Mrs. E. F. Sims	McMasters and Pomeroy	1940	590	5 4	196 590	CL	25	87	May 20, 1940	A	D	30 ft. of screen between 543 and 584 ft. Reported yield 140 gpm when drilled.
210	Hughes Tool Co.	Layne Texas Co	1934	1,123	24 10	205 1,123	E	37	--	--	N	N	127 ft. of screen between 853 and 1,103 ft. Formerly supplied Gulf Brewing Co. Well destroyed. 2/
211	Hughes Tool Co. Well 2	do	1926	1,096	24 18 10	162 -- 1,096	E	40	31.0 225.4	May 3, 1926 June 1, 1956	N	N	159 ft. of screen between 838 and 1,096 ft. Well destroyed. 2/ 3/
212	Hughes Tool Co. Well 1	do	1923	694	16 10	85 694	CL,E	40	49.2 79.5	Jan. 8, 1931 Mar. 16, 1945	N	N	101 ft. of screen between 369 and 694 ft. Test hole drilled to 697 ft. Well destroyed. 2/ 3/
213	Gulf Concrete Pipe Co.	I. H. Mowery	1941	276	4 2½	256 276	CL	42	--	--	J,E	Ind	Screen from 256 to 276 ft.
214	Houston Golf Club	Layne Bowler Co.	--	697	24	697	E	33	51.2 237.5	Jan. 16, 1931 Feb. 6, 1964	N	N	Well destroyed. 3
215	Marshall Ice Co.	McMasters and Pomeroy	1928	508	10	508	CL	42	82	June 1941	N	N	87 ft. of screen between 266 and 486 ft. Reported yield 125 gpm with 64 ft. drawdown June 1941. Well destroyed.

See footnotes at end of table.

RECORD OF COMMUNICATION	(Record of Item Checked Below) x Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 16	
TO: Jerry Purczinsky Assistant Manager Niels Epersen Bldg. (713) 224-1663	From: Brian Boerner FIT Chemist Brian Boerner	Date: 1/10/89 Time: 0923 hours

SUBJECT Wells in the building.

SUMMARY OF COMMUNICATION

The two wells in the building have been capped for approximately 20 years.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_ Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 17	
TO: Dorothy Castanos Vice-President Commerce Building (713) 659-6700	From: Brian K. Boerner FIT Chemist Brian Boerner	Date: 1/10/89 Time: 0856 hours

SUBJECT The well in the Commerce Building.

SUMMARY OF COMMUNICATION

The well that supplied the Commerce Building is not in use anymore.

Not sure if the well is still in existence.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 18	
TO: A. E. "Buddy" Smith Bldg. Mgr. 1100 Milam Bldg. (713) 757-4082	From: Brian Boerner FIT Chemist Brian Boerner	Date: 1/10/89 Time: 1417 hours

SUBJECT Well locations.

SUMMARY OF COMMUNICATION

The "1100 Milam Building" is on the location of the Old Oil and Gas Building (Information from the Houston Library). The Oil and Gas Building was torn down in approximately 1970. The 1100 Milam Bldg. does not contain any water wells.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REF. 19

TEXAS WATER DEVELOPMENT BOARD

REPORT 190

ANALOG-MODEL STUDIES OF GROUND-WATER HYDROLOGY IN THE HOUSTON DISTRICT, TEXAS

By

Donald G. Jorgensen
U.S. Geological Survey

This report was prepared by the U.S. Geological Survey
under cooperative agreement with the
Texas Water Development Board
and the City of Houston

February 1975

Second Printing
August 1975

ANALOG-MODEL STUDIES OF GROUND-WATER HYDROLOGY IN THE HOUSTON DISTRICT, TEXAS

INTRODUCTION

Purpose and Scope of the Project

Continual declines of water levels in wells, land-surface subsidence, and salt-water encroachment are problems related to ground-water pumping in the Houston district that necessitate additional studies of the hydrologic system.

This study was begun in 1970 by the U.S. Geological Survey in cooperation with the city of Houston and the Texas Water Development Board. The principal purpose was to develop a means for forecasting declines in the altitudes of the potentiometric surfaces (levels to which water will rise in tightly cased wells) under various conditions of pumping. Because of the complexity of the hydrologic system, an electric analog model was chosen as the most suitable device for analyzing the system and simulating future responses.

This report presents the results of the geologic and hydrologic studies, discusses the theory and construction of the analog model, and presents the simulation of the declines in the altitudes of the potentiometric surfaces as determined by using the model.

Most of the data upon which this report is based are available in reports by the U.S. Geological Survey and the Texas Water Development Board (see references) or in the files of the U.S. Geological Survey in Houston. Data are obtained through a continuing cooperative program of the U.S. Geological Survey, the Texas Water Development Board, the city of Houston, and the city of Galveston.

For those readers interested in using the metric system, metric equivalents of English units of measurements are given in parentheses. The English units used in this report may be converted to metric units by the following conversion factors:

From		Mutiply by	To obtain	
Unit	Abbreviation		Unit	Abbreviation
cubic foot	ft^3	0.028317	cubic meter	m^3
foot	ft	0.3048	meter	m
foot per day	ft/day	0.3048	meter per day	m/day
foot squared per day	ft^2/day	0.0929	meter squared per day	m^2/day
inch	in	2.540	centimeter	cm
million gallons	10^6 gal	3,785	cubic meters	m^3
square mile	mi^2	2.590	square kilometer	km^2

Description of the Area

The Houston district, as used in this report, consists of all of Harris, Waller, and Fort Bend Counties and parts of Galveston, Montgomery, Brazoria, Chambers, and Liberty Counties (Figure 1). The area of the district is approximately 6,600 square miles (17,100 square kilometers).

Figure 1.—Location and Extent of the Houston District

Except for a small area in Montgomery and Waller Counties, the land surface is nearly flat and featureless;

the only significant relief is in the valleys of the streams. The land is generally treeless in the rural areas from Houston southeast to Galveston.

The climate of the Houston district is characterized by mild winters and hot summers. The lowest temperature recorded at Houston was 15°F (-9.5°C) and the maximum temperature was 108°F (42°C). The mean annual temperature is 69.2°F (20.6°C). The 30-year average (1931-60) rainfall at Houston was 45.95 inches (116.7 centimeters); monthly rainfall is distributed uniformly throughout the year.

The Houston district has a large and diversified industrial economy, but also has extensive agricultural developments. Large amounts of water are used by industry for processing and cooling purposes and by rice and cotton growers for irrigation. The rapid growth and development of the district are due in part to the availability of large amounts of inexpensive ground-water supplies. The locations of the major pumping areas are shown on Figure 2.

Previous Studies

Among the more comprehensive earlier reports describing the geology and hydrology of the Houston district is the report by Lang and others (1950). Pettit and Winslow (1957) summarized the geology and ground-water resources of Galveston County. The relation of salt water to fresh ground water in Harris County was discussed by Winslow and others (1957). Land-surface subsidence and its relation to the withdrawal of ground water in the Houston-Galveston area was first reported by Winslow and Doyel (1954) and later by Gabrysch (1969).

Previous ground-water investigations were made in Waller County (Wilson, 1967); Liberty County (Anders and others, 1968); Montgomery County (Popkin, 1971); Fort Bend County (Wesselman, 1972); Brazoria County (Sandeen and Wesselman, 1973); and Chambers County (Wesselman, 1971). These studies provided relatively recent data on the ground-water resources and ground-water development in most of the Houston district exclusive of Harris and Galveston Counties.

A report containing data on ground-water withdrawals and water-level declines in Galveston and Harris Counties was prepared by Gabrysch (1972), and the role of groundwater in the development of the water system for the city of Houston was described in reports by Turner, Collie and Braden, Inc. (1966, 1972).

A report by Wood and Gabrysch (1965) describes the results of the first analog-model study of ground-water hydrology in the Houston district. The usefulness of the first analog model was limited because the simulations required that the aquifers be operated independently of each other and because the results of pumping in the western part of the area could not be simulated. Evaluation of the performance of the first model indicated that improvement in aquifer designation was needed and that the transmissivity of the aquifers and vertical leakage between the aquifers were not adequately modeled.

Acknowledgments

The author expresses his appreciation to Mr. D. E. VanBuskirk of the city of Houston Water Department and to the well owners and drillers who supplied pertinent information for this study. The aquifers in the district were mapped by John Wesselman, U.S. Geological Survey, and the model was designed and constructed by William Bruns, U.S. Geological Survey.

GEOHYDROLOGY

The geologic formations from which most of the ground water is pumped in the Houston district are composed of sedimentary deposits of gravel, sand, silt, and clay. The formations, from oldest to youngest, that form important hydrologic units are: The Catahoula Sandstone and Fleming Formation of Miocene age; the Goliad Sand of Pliocene age; the Willis Sand, Bentley and Montgomery Formations, and Beaumont Clay of Pleistocene age; and alluvium of Quaternary age (Table 1). Correlation of the hydrologic units from northern Montgomery County to the Gulf of Mexico is shown by the chart on Figure 3.

With exception of the alluvium and the Goliad Sand, the formations crop out in belts that are nearly parallel to the shoreline of the Gulf of Mexico. The younger formations crop out nearer the Gulf and the older ones farther inland. All the formations thicken downdip so that the older formations dip more steeply than the younger ones. Locally, however, the occurence of salt domes and faults may cause reversals of the regional dip and thickening or thinning of individual beds.

Salt domes are cylindrical structures resulting from the upward movement of salt masses that are probably of Mesozoic age. In some areas, the salt domes penetrate the uppermost aquifer and nearly reach the surface. In

Table 1.—Geologic and Hydrologic Units Used in This Report and In Recent Reports on Nearby Areas

This report					Wood and Gabrysch (1965)	Sandeen and Wesselman (1969)	Wilson (1967)	Popkin (1971)	Lang, Winslow, and White (1950)	Pettit and Winslow (1957)	Wesselman (1971)	Anders and others (1968)	Wesselman (1972)
System	Series	Stratigraphic unit	Aquifer		Houston district	Brazoria County	Austin and Waller Counties	Montgomery County	Houston district	Galveston County	Chambers and Jefferson Counties	Liberty County	Fort Bend County
Quaternary	Holocene	Quaternary alluvium	Chicot aquifer	Upper unit	Confining layer and Alta Loma Sand of Rose (1943)	Chicot aquifer: Upper unit	Alluvium of the Brazos River	Chicot aquifer	Alluvial deposits	Beach and dune sand	Chicot aquifer: Upper unit	Chicot aquifer	Chicot aquifer: Upper unit
	Pleistocene	Beaumont Clay					Evangeline aquifer (May contain unidentifiable parts of basal Chicot aquifer along the edges of Brazos River flood plain or along southern part of both counties)		Beaumont Clay; "Alta Loma Sand"	Beaumont Clay; "Alta Loma Sand"			
		Montgomery Formation											
		Bentley Formation		Lower unit		Chicot aquifer: Lower unit			Zone 7	Lissie Formation	Chicot aquifer: Lower unit		Chicot aquifer: Lower unit
		Willis Sand							Zone 6				
Tertiary	Pliocene	Goliad Sand	Evangeline aquifer		Heavily pumped layer	Evangeline aquifer		Evangeline aquifer	Zone 5		Evangeline aquifer	Evangeline aquifer	Evangeline aquifer
	Miocene	Fleming Formation	Burkeville confining layer		Zone 2		Burkeville aquiclude	Burkeville aquiclude			Burkeville aquiclude	Burkeville aquiclude	Burkeville aquiclude
			Jasper aquifer	Upper unit			Jasper aquifer	Jasper aquifer: Upper part of Jasper	Zone 4		Jasper aquifer	Jasper aquifer	Jasper aquifer
									Zone 3				
				Lower unit				Lower part of Jasper	Zone 2				
									Zone 1				

most instances, however, the domes pierce only the lower aquifers. Ground-water circulation within the vicinity of the domes may result in salt water contamination.

Faults in the area may have several hundred feet of displacement in the older Tertiary formations, but displacement tends to decrease upward so that the faulting may not be apparent at the surface; generally, the geologic units containing fresh water are not displaced enough to disrupt hydraulic continuity.

Description of the Water-Bearing Units

Chicot Aquifer

The Chicot aquifer is composed of the Willis Sand, Bentley Formation, Montgomery Formation, Beaumont Clay, and Quaternary alluvium (Table 1). The Chicot includes all deposits from the land surface to the top of the Evangeline aquifer (Figure 4).

The basis for separating the Chicot aquifer from the underlying Evangeline aquifer is primarily a difference in hydraulic conductivity, which in part causes the difference in the altitudes of the potentiometric surfaces in the two aquifers.

In most of the Houston district, the Chicot aquifer consists of discontinuous layers of sand and clay of about equal total thickness, and in some parts of the district, the aquifer can be separated into an upper and lower unit. Throughout most of Galveston County and southeast Harris County, the basal part of the lower Chicot aquifer is formed by a massive sand section with high hydraulic conductivity. (See Figure 4.) This sand unit, which is heavily pumped, is known locally as the Alta Loma Sand. In many previous reports, the unit is identified as the Alta Loma Sand of Rose (1943). The term Alta Loma Sand is not often used in this report because the stratigraphic relationships are not clear.

If the upper unit of the Chicot aquifer cannot be defined in a particular area, the aquifer is said to be undifferentiated. The areal extent of the upper unit roughly corresponds to the areal extent of the Beaumont Clay. The areas in which the aquifer cannot be differentiated into units are mostly in the northern part of the district (Figure 5).

Wells that are completed in the uppermost sand layers of the Chicot aquifer and that have water levels that are distinctly higher than water levels in wells completed in the underlying sand layers are considered to produce water from the upper unit.

The transmissivity of the Chicot aquifer ranges from zero to about 20,000 ft^2/day (feet squared per day) or 1,858 m^2/day (meters squared per day). The storage coefficient ranges from 0.0004 to 0.20 (Figure 6). The larger values of the storage coefficient occurs in the northern part of the district where the aquifer is partly or totally under water-table conditions.

Evangeline Aquifer

The Evangeline aquifer, which is the most important source of fresh ground water in the Houston metropolitan area, consists of layers of sand and clay that are present throughout the district except where the unit is pierced by salt domes (Figure 7). The aquifer is underlain by the Burkeville confining layer.

The transmissivity of the Evangeline aquifer ranges from less than 5,000 ft^2/day (460 m^2/day) to about 15,000 ft^2/day (1,400 m^2/day). (See Figure 8.) In general, the horizontal hydraulic conductivity of the Evangeline aquifer is less than the horizontal hydraulic conductivity of the Chicot aquifer, but because the Evangeline is generally thicker than the Chicot, it is generally more transmissive.

The storage coefficient of the Evangeline ranges from about 0.0005 to 0.0002 where it occurs under artesian conditions; in the outcrop area, where the aquifer is under water-table conditions, the storage coefficient ranges from greater than 0.002 to 0.20.

Burkeville Confining Layer

The Burkeville confining layer, which in the outcrop area is in the upper part of the Fleming Formation of Tertiary age, is composed mostly of clay but contains some layers of sand. The Burkeville restricts the flow of water except where it is pierced by salt domes and in the northeastern part of the district where it contains many water-yielding sand layers. The Burkeville is underlain by the Jasper aquifer.

Declines in the Altitudes of the Potentiometric Surfaces

Records of ground-water withdrawals in the Houston district date back to 1887, and records exist for probably 90 percent of the total withdrawals.

Use of ground water increased slowly until about 37, when rapid industrialization increased the rate of . In 1955, surface water from the San Jacinto River Lake Houston) became available, and the use of ground water remained relatively constant until 1962. From 1962 to 1970, the use of ground water increased to about 575 mgd (million gallons per day) or 2.2 million m^3/day (cubic meters per day). The historic withdrawals of ground water for 1890-1970 and the predicted withdrawals for 1971-80 are shown on Figure 9.

The pumping of large quantities of ground water has caused large declines in the altitudes of the potentiometric surfaces in the aquifers, except in the upper unit of the Chicot. The declines from 1890 to 1953, from 1890 to 1960, and from 1890 to 1970 in the lower unit of the Chicot aquifer and in the Chicot aquifer undifferentiated are shown on Figures 10, 11, and 12. Figures 13, 14, and 15 show the decline of the altitude of the potentiometric surface in the Evangeline aquifer for the same periods.

By 1970, the altitude of the potentiometric surface had declined a maximum of about 330 feet (100 meters) in the lower unit of the Chicot aquifer and Chicot aquifer undifferentiated and about 430 feet (130 meters) in the Evangeline aquifer.

Not enough data are available to map the decline of the altitude of the potentiometric surface in the upper unit of the Chicot aquifer.

Houston Area

Nearly all the ground water pumped in the Houston area (Figure 2) is from wells screened in the Evangeline or Chicot aquifers, and many of the wells are screened in both aquifers. (The reader should note that the Houston area is only a part of the Houston district.) The declines of water levels in wells screened in each of the aquifers are shown on Figure 16. Locations of the wells are shown on Figure 2.

Declines in the Evangeline aquifer and the lower unit of the Chicot aquifer have been the greatest. The upper unit of the Chicot is relatively undeveloped; therefore, the decline of water levels shown on Figure 16 for the upper unit of the Chicot is due in part to the discharge of water to the lower unit.

Pasadena Area

The Pasadena area is an industrialized area east of the Houston area and mostly west of the San Jacinto River (Figure 2). Most of the ground water pumped in this area is from the Evangeline aquifer, but a considerable amount is withdrawn from the lower unit of the Chicot in the southeastern part of the area. A small and mostly unrecorded amount is pumped from the upper unit of the Chicot.

Figure 17 shows the decline of water levels in three wells, each of which is screened in a different water-bearing unit. The decline of the altitude of the potentiometric surface in the upper unit of the Chicot is not as great as the decline in either the Evangeline or the lower unit of the Chicot. The decline in the upper unit of the Chicot is attributed to discharge to the lower unit and to a small amount of pumping.

Katy Area

The Katy area is an agricultural area west of the Houston area and includes the northern and western parts of Harris County, about half of Waller County, and northern Fort Bend County (Figure 2).

Ground water is used exclusively in the Katy area and most of it is used for rice irrigation. Most of the water pumped is from the lower unit of the Chicot aquifer, the Chicot aquifer undifferentiated, and the Evangeline aquifer. In the northern part of Fort Bend County, along the Brazos River, some water is pumped from the alluvium, which is a part of the upper unit of the Chicot aquifer.

Figure 18 shows the water-level declines in well LJ-65-04-507, completed in the Chicot aquifer undifferentiated and in well LJ-65-04-607, completed in the Evangeline aquifer. Declines are greater in wells screened in the Evangeline aquifer than in wells screened in the Chicot aquifer undifferentiated.

Baytown-LaPorte Area

The Baytown-LaPorte area extends eastward from the Pasadena area to the Chambers County line (Figure 2). It is primarily an industrial area, in which most of the ground water used is pumped from the lower unit of the Chicot aquifer.

Figure 19 shows the water-level declines in well LJ-65-24-606, screened in the Evangeline aquifer and in well LJ-65-24-501, screened in the lower unit of the Chicot aquifer. Although most withdrawals in the area are from the lower unit of the Chicot, the rate of decline in the Evangeline is nearly as large as the decline in the lower unit of the Chicot.

a result of pumping. The northern part of the district also has the highest vertical leakage, which allows water to move easily from the surface to the Chicot aquifer.

Limitations on Use of the Analog Model

The values of the parameters modeled are rational values for the hydrologic system. Further investigation and new data will allow refinements to be made and will allow more accurate determination of the values for the parameters modeled.

The model was not designed to simulate the effects of one well over a short period of time. The model was designed to simulate the effects of withdrawal of water from a well field for periods of a year or longer.

The model was not designed to predict subsidence accurately; although, the simulation of clay compaction was included. Declines in the altitudes of the potentiometric surfaces are simulated, and these values can be used in calculations to predict subsidence.

Caution should be used in applying the modeled values in equations to predict short-term specific capacity of an individual well. The model simulates leaky-aquifer conditions with clay storage for time intervals greater than 1 year.

Data Required for Improvement of the Model

Observation wells that are screened in only one water-bearing unit are needed for better calibration of the model. The areas where measurements from such observation wells are needed are determined easily by noting the areas in which no potentiometric measurements are shown on Figures 12 and 15.

The accuracy of the model could be improved by better delineation of the water-bearing sands above the basal sand (Alta Loma Sand of Rose, 1943) of the lower unit of the Chicot in the Texas City area. To improve the correlation of observed and measured declines in the altitude of the potentiometric surface in the Texas City area, it was necessary to program extra pumpage

More data are needed on the quantity of ground water pumped for irrigation in the vicinity of Dayton and Liberty and on the quantity of water discharged from flowing and pumped wells prior to 1930 in Galveston County.

The model could be modified to simulate clay compaction more accurately if the storage coefficient for clay compaction is determined accurately for each aquifer. In the present model, the storage coefficient for clay compaction is modeled as existing entirely between the land surface and the centerline of the lower unit of the Chicot aquifer and the Chicot aquifer undifferentiated. To distribute the storage coefficient accurately, more data concerning the characteristics of these clay layers are needed. These data can be obtained from consolidation tests on core samples, records of clay compaction from compaction recorders, and possibly from studies of various types of geophysical logs.

The present model could be modified to be one of the elements of a hybrid analog-digital model that could be used for detailed studies of such problems as salt-water encroachment and land-surface subsidence.

SUMMARY

The Houston district has two major aquifers above the Burkeville confining layer. The uppermost aquifer is the Chicot aquifer, which consists of sand and clay layers that dip gently toward the Gulf of Mexico. In places in the Houston district, the Chicot aquifer can be separated into an upper and a lower unit.

The upper unit, which is not an important source of water for most of the district, can be defined where the altitude of the potentiometric surface differs from the altitude of the potentiometric surface in the lower unit. Where the upper unit cannot be defined, the aquifer is said to be undifferentiated.

The Evangeline aquifer, which is the major aquifer in the district, underlies the Chicot aquifer and consists of sand and clay layers that dip toward the Gulf of Mexico.

The Burkeville confining layer consists mostly of clay layers that form an effective barrier to ground-water flow at nearly all locations except at and near the outcrop of the Evangeline aquifer in Montgomery County.

The large cones of depression in the potentiometric surfaces in the lower unit of the Chicot aquifer, the Chicot aquifer undifferentiated, and the Evangeline aquifer are caused by large withdrawals of water. Water now flows toward the center of these cones, creating a reversal of the original hydraulic gradient in most areas south of Houston. This reversal of the hydraulic gradient has resulted in salt-water encroachment toward the centers of the cones, but

REF. 20

TEXAS DEPARTMENT OF WATER RESOURCES

REPORT 236

STRATIGRAPHIC AND HYDROGEOLOGIC FRAMEWORK OF PART OF THE COASTAL PLAIN OF TEXAS

By

E. T. Baker, Jr.
United States Geological Survey

This report was prepared by the U.S. Geological Survey under cooperative agreement with the Texas Department of Water Resources.

July 1979

STRATIGRAPHIC AND HYDROGEOLOGIC FRAMEWORK OF PART OF THE COASTAL PLAIN OF TEXAS

INTRODUCTION

This report has been prepared to illustrate the stratigraphic and hydrogeologic framework of a part of the Coastal Plain of Texas from the Sabine River to the Rio Grande. It is the outgrowth of a project that has as its ultimate objective the construction of a digital ground-water flow model, if feasible or desirable, of at least a part of the Miocene aquifers in the Gulf Coastal Plain of Texas. The model would serve as a tool for planning the development of the ground-water supplies. Work on the project is being done by the U.S. Geological Survey in cooperation with the Texas Department of Water Resources.

During the course of delineating the Miocene aquifers, which is basic to the design and development of the model, the scope of the study was broadened to include delineations of other hydrogeologic units, as well as delineations of stratigraphic units. As a result, units ranging in age from Paleocene to Holocene were delineated (Table 1). A relationship of stratigraphic units to designated hydrogeologic units was thus established statewide.

Eleven dip sections and 1 strike section are included in this report. The dip sections are spaced about 50 miles (80 km) apart with the most easterly one being near the Sabine River and the most southerly one being near the Rio Grande. Each dip section is about 100 miles (161 km) long and extends from near the coastline to short distances inland from the outcrop of the oldest Miocene formation—the Catahoula Tuff or Sandstone. The strike section, which is about 500 miles (804 km) long (in three segments), extends from the Sabine River to the Rio Grande and joins the dip sections at common control points. This section is from 50-75 miles (80-121 km) inland from the Gulf of Mexico and is essentially parallel to the coastline. The location of the sections and the Catahoula outcrop are shown on Figure 1.

The sections extend from outcrops at the land surface to maximum depths of 7,600 feet (2,316 m) below sea level. Selected faunal occurrences, where known or inferred by correlation from nearby well logs, are included. The extent of sand that contains water having less than 3,000 mg/l (milligrams per liter) of dissolved solids was estimated from the electrical characteristics shown by the logs. This information is included on all of the sections.

Although faulting is common in the Coastal Plain and is complex in some areas, all faults have been omitted from the sections to maintain continuity of the stratigraphic and hydrogeologic boundaries. The disadvantage of such omission is, of course, the representation of an unrealistic and simplistic picture of unbroken strata with uninterrupted boundaries. In reality, many of the faults have not only broken the hydraulic continuity of the strata but more importantly have become barriers to fluid flow or conduits for cross formational flow. The sections are presented in this report as Figures 2-15.

Acknowledgements

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Table 1.--Stratigraphic and Hydrogeologic Framework of Part of the Coastal Plain of Texas

Era	System	Series	Stratigraphic Units	Hydrogeologic Units	Selected Faunal Markers	Remarks
CENOZOIC	Quaternary	Holocene	Alluvium	Chicot aquifer		Quaternary System undifferentiated on sections.
		Pleistocene	Beaumont Clay			
			Montgomery Formation			
			Bentley Formation			
			Willis Sand			
	Tertiary	Pliocene	Goliad Sand	Evangeline aquifer		Goliad Sand overlapped east of Lavaca County.
		Miocene	Fleming Formation	Burkeville confining system	*Potamides matsoni* *Bigenerina nodosaria var. directa* *Bigenerina humblei* *Amphistegina sp.*	
			Oakville Sandstone			Oakville Sandstone included in Fleming Formation east of Washington County.
			Surface: Catahoula Tuff or Sandstone; Subsurface: Upper part of Catahoula Tuff or Sandstone	Jasper aquifer		Catahoula Tuff designated as Catahoula Sandstone east of Lavaca County.
		?	Subsurface: Anahuac Formation	Catahoula confining system (restricted)	*Discorbis nomada* *Discorbis gravelli* *Heterostegina sp.* *Marginulina idiomorpha*	
		?	Subsurface: "Frio" Formation		*Textularia mississippiensis*	Anahuac and "Frio" Formations may be Oligocene in age.
		Oligocene(?)	Surface: Frio Clay; Subsurface: Vicksburg Group equivalent	Not discussed as hydrologic units in this report.	*Textularia warreni*	Frio Clay overlapped or not recognized on surface east of Live Oak County.
		?	Jackson Group: Whitsett Formation: Fashing Clay Member			Indicated members of Whitsett Formation apply to south-central Texas. Whitsett Formation east of Karnes County may be, in part or in whole, Oligocene in age.
			Jackson Group: Whitsett Formation: Callihan Sandstone Member or Tordilla Sandstone Member			
			Jackson Group: Whitsett Formation: Dubose Member		*Marginulina cocoaensis*	
			Jackson Group: Whitsett Formation: Deweesville Sandstone Member			
			Jackson Group: Whitsett Formation: Conquista Clay Member		*Textularia hockleyensis*	
			Jackson Group: Whitsett Formation: Dilworth Sandstone Member		*Massilina pratti*	
		?	Jackson Group: Manning Clay			
		Eocene	Jackson Group: Wellborn Sandstone		*Textularia dibollensis*	
			Jackson Group: Caddell Formation			
			Claiborne Group: Yegua Formation		*Nonionella cockfieldensis* *Discorbis yeguaensis* *Eponides yeguaensis* *Ceratobulimina eximia*	
			Claiborne Group: Cook Mountain Formation			
			Claiborne Group: Sparta Sand			
			Claiborne Group: Weches Formation			
			Claiborne Group: Queen City Sand			
			Claiborne Group: Reklaw Formation			
			Claiborne Group: Carrizo Sand			
			Wilcox Group			
		Paleocene	Midway Group			

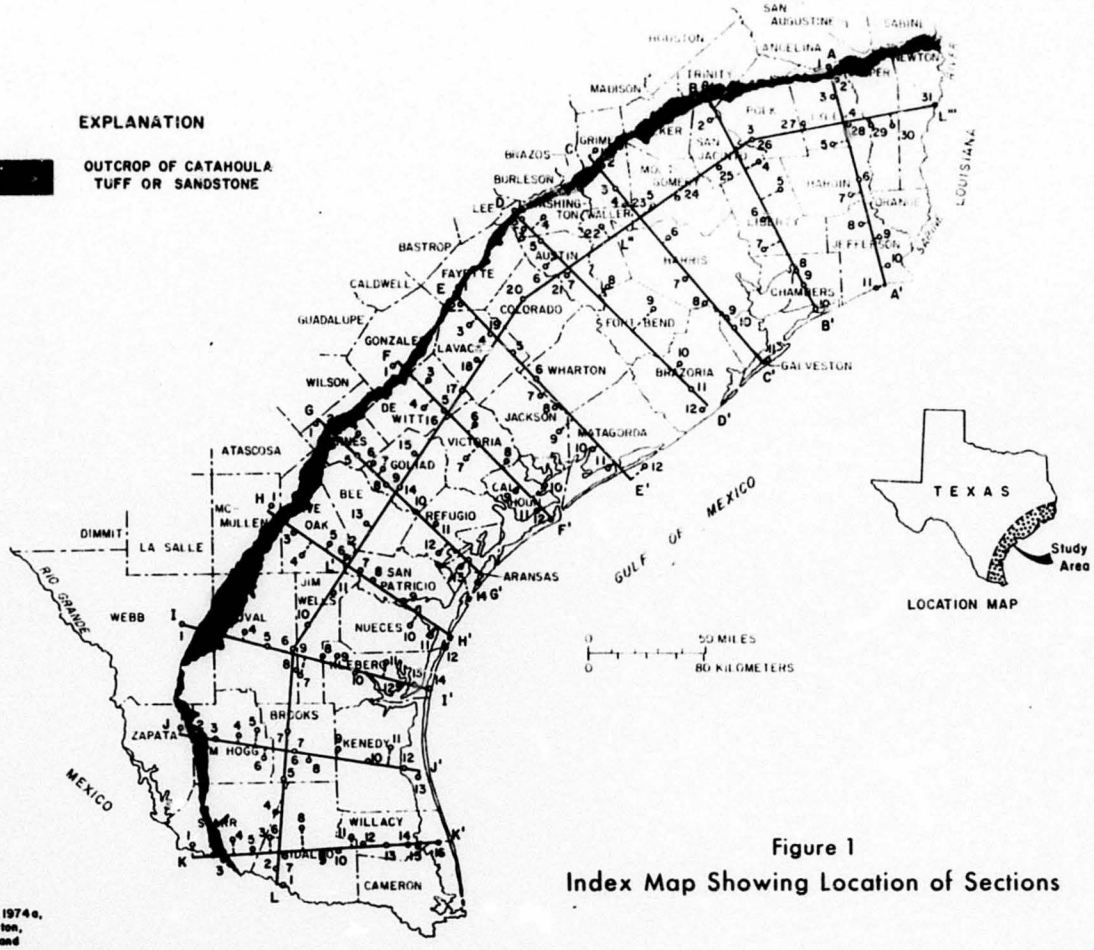

Figure 1
Index Map Showing Location of Sections

Geology from Barnes (1968a, b; 1974a, b; 1975) and modified from Darton, Stephenson, and Gardner (1937) and from Barnes (1976a, b, c)

subsurface correlations of the Catahoula-Fleming contact, as well as formation thicknesses, will continue to differ.

Burkeville Confining System

The Burkeville confining system, which was named by Wesselman (1967) for outcrops near the town of Burkeville in Newton County, Texas, is delineated on the sections from the Sabine River to near the Rio Grande. It separates the Jasper and Evangeline aquifers and serves to retard the interchange of water between the two aquifers.

The Burkeville has been mapped in this report as a rock-stratigraphic unit consisting predominantly of silt and clay. Boundaries were determined independently from time concepts although in some places the unit appears to possess approximately isochronous boundaries. In most places, however, this is not the case. For example, the entire thickness of sediment in the Burkeville confining system in some areas is younger than the entire thickness of sediment in the Burkeville in other places.

The configuration of the unit is highly irregular. Boundaries are not restricted to a single stratigraphic unit but transgress the Fleming-Oakville contact in many places. This is shown on sections D-D' to G-G' and J-J' (Figures 5-8 and 11). Where the Oakville Sandstone is present, the Burkeville crops out in the Fleming but dips gradually into the Oakville because of facies changes from sand to clay downdip.

The typical thickness of the Burkeville ranges from about 300 to 500 feet (91 to 152 m). However, thick sections of predominantly clay in Jackson and Calhoun Counties account for the Burkeville's gradual increase to its maximum thickness of more than 2,000 feet (610 m) as shown on section F-F' (Figure 7).

The Burkeville confining system should not be construed as a rock unit that is composed entirely of silt and clay. This is not typical of the unit, although examples of a predominance of silt and clay can be seen in some logs in sections H-H' and I-I' (Figures 9-10). In most places, the Burkeville is composed of many individual sand layers, which contain fresh to slightly saline water; but because of its relatively large percentage of silt and clay when compared to the underlying Jasper aquifer and overlying Evangeline, the Burkeville functions as a confining unit.

Evangeline Aquifer

The Evangeline aquifer, which was named and defined by Jones (Jones, Turcan, and Skibitzke, 1954) for a ground-water reservoir in southwestern Louisiana, has been mapped also in Texas, but heretofore has been delineated no farther west than Washington, Austin, Fort Bend, and Brazoria Counties. Its presence as an aquifer and its hydrologic boundaries to the west have been a matter of speculation. D. G. Jorgensen, W. R. Meyer, and W. H. Sandeen of the U.S. Geological Survey (written commun., March 1, 1976) recently refined the delineation of the aquifer in previously mapped areas and continued its delineation to the Rio Grande. The boundaries of the Evangeline as they appear on the sections in this report are their determinations.

The Evangeline aquifer has been delineated in this report essentially as a rock-stratigraphic unit. Although the aquifer is composed of at least the Goliad Sand, the lower boundary transgresses time lines to include sections of sand in the Fleming Formation. The base of the Goliad Sand at the outcrop coincides with the base of the Evangeline only in South Texas as shown in sections H-H' to K-K' (Figures 9-12). Elsewhere, the Evangeline at the surface includes about half of the Fleming outcrop. The upper boundary of the Evangeline probably follows closely the top of the Goliad Sand where present, although this relationship is somewhat speculative.

The Evangeline aquifer is typically wedge shaped and has a high sand-clay ratio. Individual sand beds are characteristically tens of feet thick. Near the outcrop, the aquifer ranges in thickness from 400 to 1,000 feet (122 to 305 m), but near the coastline, where the top of the aquifer is about 1,000 feet (305 m) deep, its thickness averages about 2,000 feet (610 m). The Evangeline is noted for its abundance of good quality ground water and is considered one of the most prolific aquifers in the Texas Coastal Plain. Fresh to slightly saline water in the aquifer, however, is shown to extend to the coastline only in section J-J' (Figure 11).

Chicot Aquifer

The Chicot aquifer, which was named and defined by Jones (Jones, Turcan, and Skibitzke, 1954) for a ground-water reservoir in southwestern Louisiana, is the youngest aquifer in the Coastal Plain of Texas. Over the years, the aquifer gradually was mapped westward from Louisiana into Texas where, heretofore, its most

westerly mapped limit was Austin, Fort Bend, and Brazoria Counties. In this report, the delineation of the Chicot was refined in previously mapped areas and extended to near the Rio Grande by D. G. Jorgensen, W. R. Meyer, and W. M. Sandeen of the U.S. Geological Survey (written commun., March 1, 1976).

It is believed that the base of the Chicot in some areas has been delineated on the sections in this report as the base of the Pleistocene. Early work in Southeast Texas indicates that the Chicot probably comprises the Willis Sand, Bentley Formation, Montgomery Formation, and Beaumont Clay of Pleistocene age and any overlying Holocene alluvium (Table 1). The problem that arises in this regard is that the base of the Pleistocene is difficult to pick from electrical logs. Thus any delineation of the base of the Chicot in the subsurface as the base of the Pleistocene is automatically suspect. At the surface, the base of the Chicot on the sections has been picked at the most landward edge of the oldest undissected coastwise terrace of Quaternary age. In practice, the delineation of the Chicot in the subsurface, at least on the sections in Southeast Texas, has been based on the presence of a higher sand-clay ratio in the Chicot than in the underlying Evangeline. In some places, a prominent clay layer was used as the boundary. Differences in hydraulic conductivity or water levels in some areas also served to differentiate the Chicot from the Evangeline.

The high percentage of sand in the Chicot in Southeast Texas, where the aquifer is noted for its abundance of water, diminishes southwestward. Southwest of section G-G' (Figure 8) the higher clay content of the Chicot and the absence of fresh to slightly saline water in the unit is sharply contrasted with the underlying Evangeline aquifer that still retains relatively large amounts of sand and good quality water.

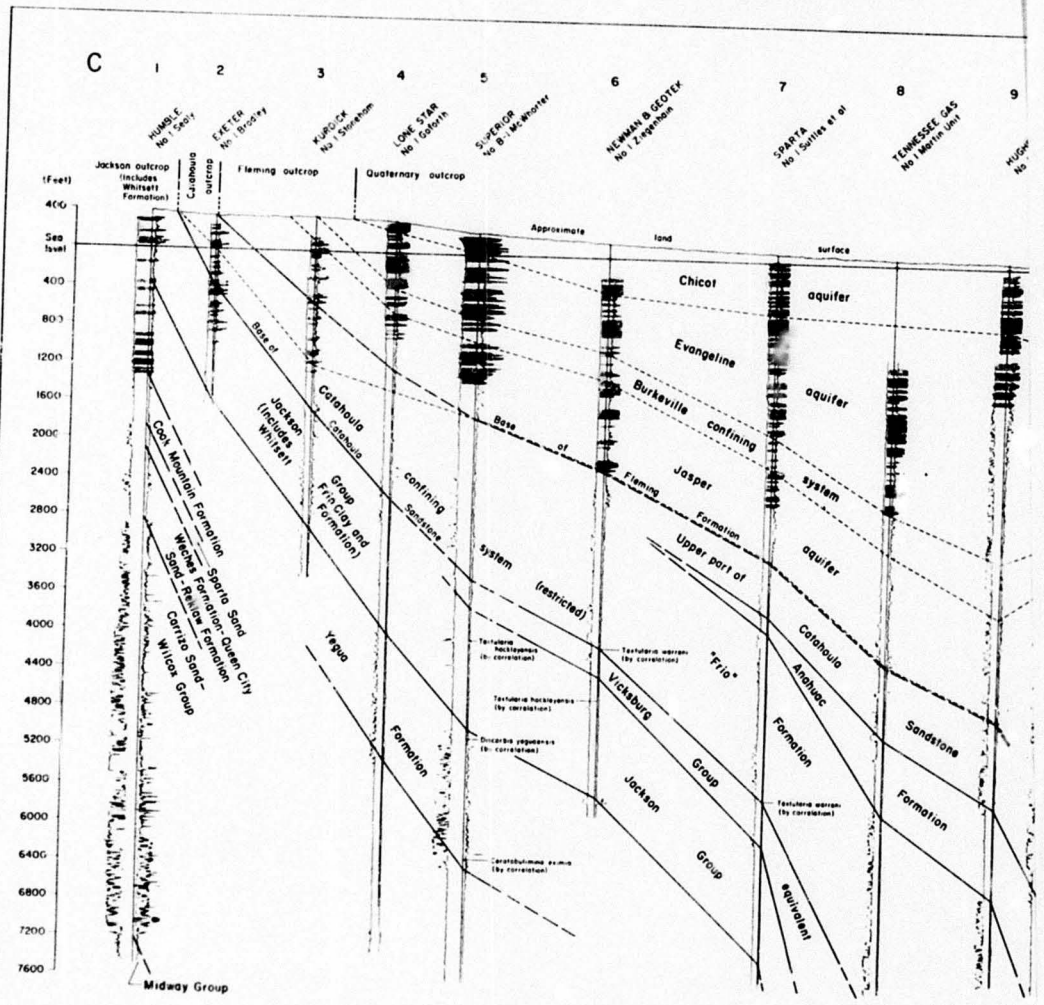

Figure 4
Stratigraphic and Hydrogeologic Section C

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 21	
TO: Don McInnes Houston Public Works, Water Prouduction office (713) 227-6558	From: Kelly Bowles FIT Geologist Kelly Bowles	Date: 1/5/89 Time: 1:00 p.m.

SUBJECT Groundwater and surface water use in the City of Houston.

SUMMARY OF COMMUNICATION

A. Where does the public water supply for the study area in the City of Houston come from?

B. Drinking water for that area is a mixture of surface water and groundwater. Surface water comes from Lake Houston, 17 miles north. Groundwater comes from City of Houston water supply wells, 4 of which are located within 4 miles of your area of concern. Central #19, Central #20, Central #21 and Scott Street #6. Approximately 60% comes from surface water and 40% from groundwater. (See attachment.)

Q. What are the uses of Buffalo Bayou?

A. Buffalo Bayou is primarily a storm sewer outlet with limited recreational uses, such as canoeing. There is no surface water withdrawal from Buffalo Bayou for public water supply use in the City of Houston. It not used for irrigation either.

*105 Sabine

Houston, Texas

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

ATTACHMENT TO REFERENCE 21

			Surface Casing	First Screen	I.D.
Central #18	not active	27 Artesial			
Central #19		715 Gillette	627	1160	1978
Central #20		901 Sawyer	601	1015	1920
Cemtral #21		1901 Memorial Drive	606	747	1985
Northeast #1	Plugged	3400 Delia			
Northeast #2	Plugged	3400 Delia			
Northeast #3	Plugged	3156 Crane			
Scott St.		3346 Scott	571	580	2100

RECORD OF COMMUNICATION	(Record of Item Checked Below) _x_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify) Reference 22	
TO: Eddie Elliott TWC, Deer Park, TX (713) 479-5981	From: F. A. Verhalen FIT Environmental Scientist	Date: 1/3/89 Time: 3:45 p.m.

SUBJECT TWC Regulatory History of Lead Products Company.

SUMMARY OF COMMUNICATION

(1) Lead Products Company, Inc., (2) Childs Trucking Equipment Company, and (3) KNUZ Radio Tower sites are considered to be one site by the TWC. The site is listed as Lead Products Company, Inc.

Lead Products is currently an active recycler of lead. The lead is made into pipes from tire weights. Previously, lead was obtained from cracking batteries. The battery cases were buried (allegedly) from approximately 1935 to 1975 in a pit with approximate dimensions of 150′ x 100′ x 20′ on the Lead Products and former Child's Trucking Equipment Company properties. A portion of the property is now owned by the City of Houston and was used for trash incineration by the city at one time.

No official litigation against the site by the TWC or the city has begun. The Lead Products owners have begun negotiations with the city and TWC and are currently collecting soil samples for analysis. Tony Vaca (713) 520-9030 from ERT (now ENSR Construction) is the project officer for the current sample collection.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.