

ENVIRONMENTAL GEOLOGY OF URBAN AND URBANIZING AREAS

A Case Study from the San Marcos Area, Texas

VOLUME 2. PLATES

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DEPARTMENT OF GEOLOGICAL SCIENCES



THE UNIVERSITY OF TEXAS AT AUSTIN



AUGUST 1976



ENVIRONMENTAL GEOLOGY OF URBAN AND URBANIZING AREAS:
A CASE STUDY FROM THE SAN MARCOS AREA, TEXAS

by

THOMAS WALTER GRIMSHAW, B.S., M.A.

DISSERTATION

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT AUSTIN

August 1976



Plates

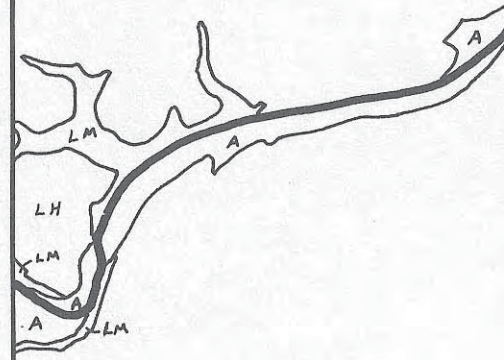
1. Engineering Geology
2. Soils
3. Resources
4. Processes
5. Landform
6. Current Land Use
7. Land Use Control
8. Complete Demand Analysis Hierarchy for a Sanitary Landfill
9. Geologic Map of the Kyle Section
10. Geologic Map of the San Marcos Section



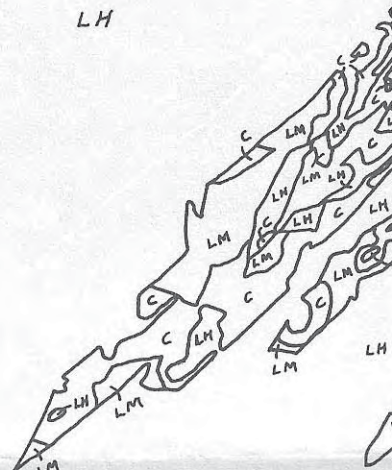
Plate 1

Engineering Geology

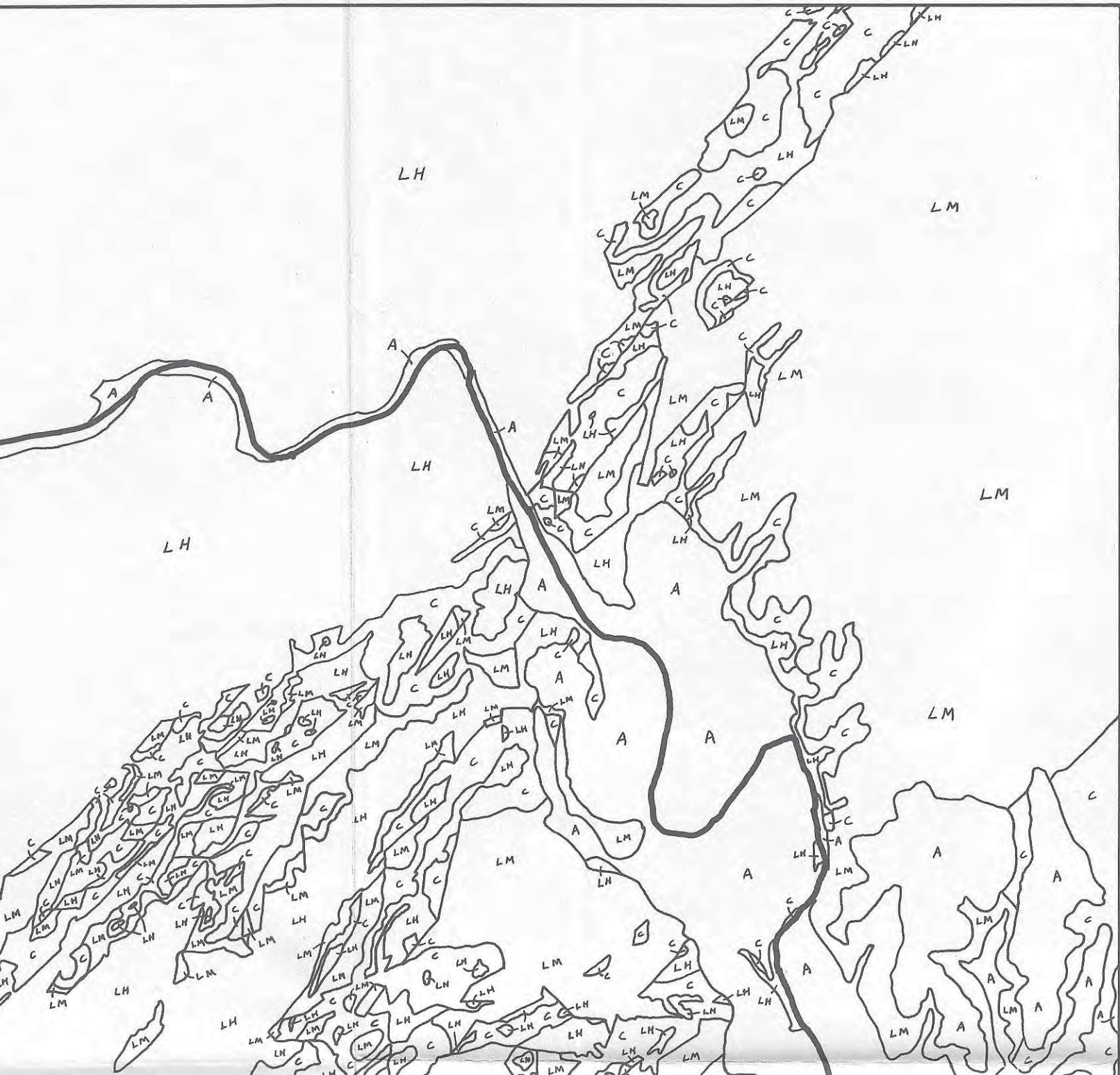
LH



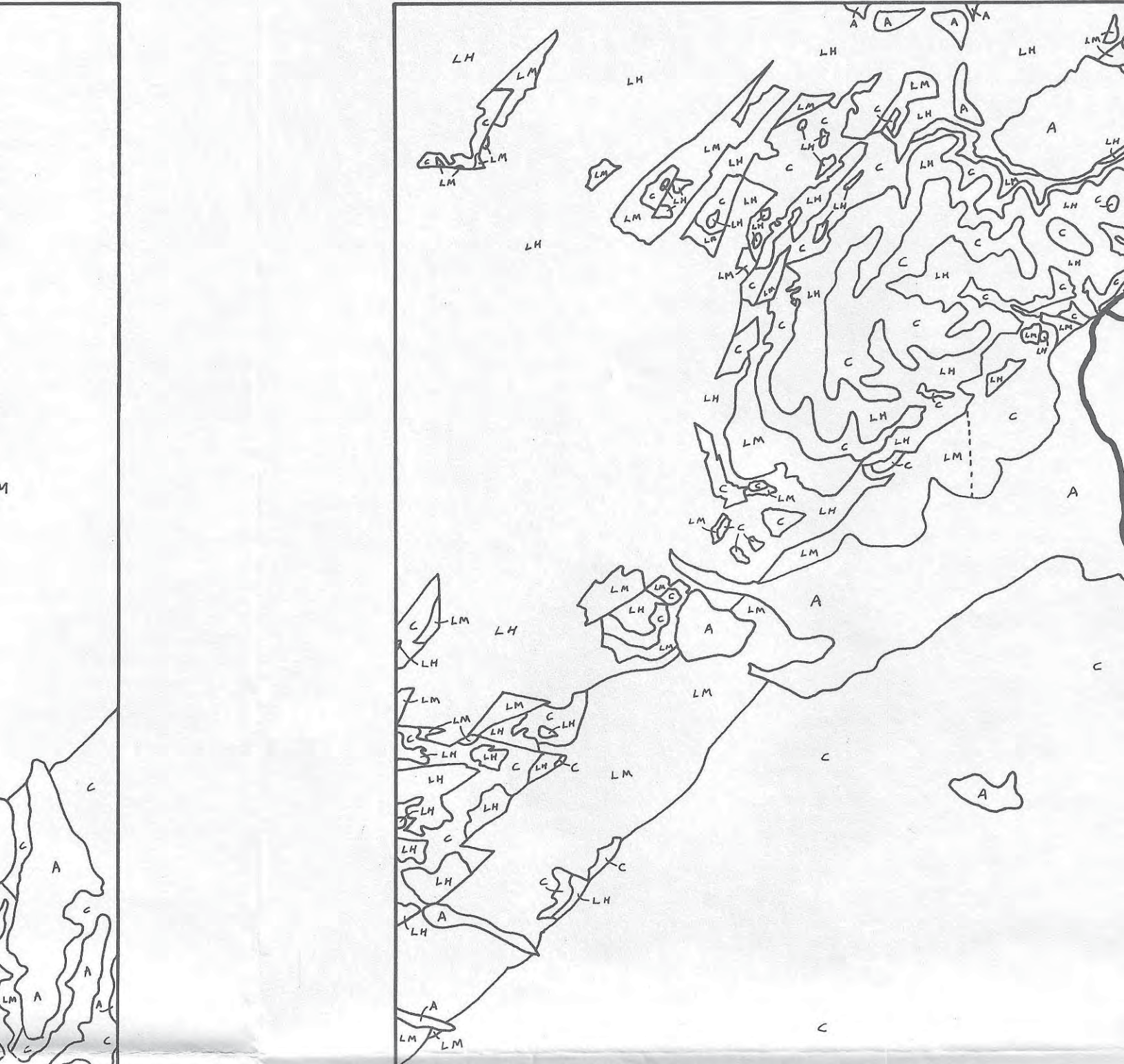
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KYLE SECTION

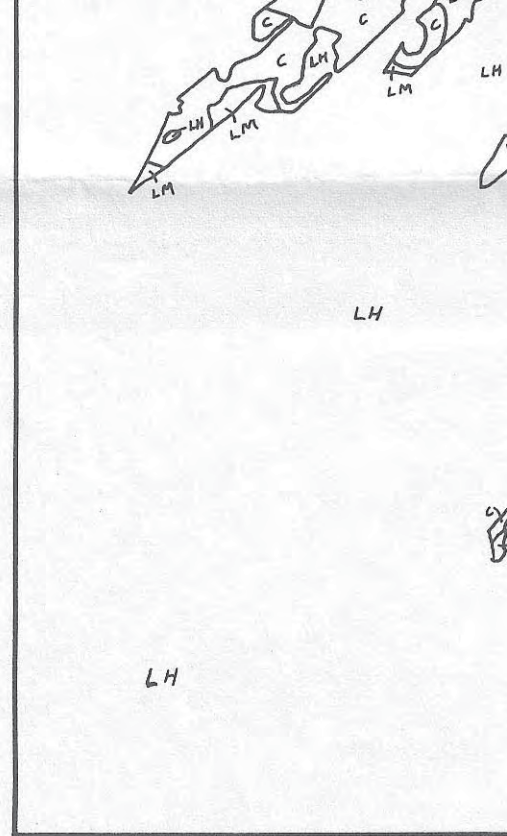


SAN MARCOS



MARCOS SECTION





EXPLANATION (SEE TEXT FOR

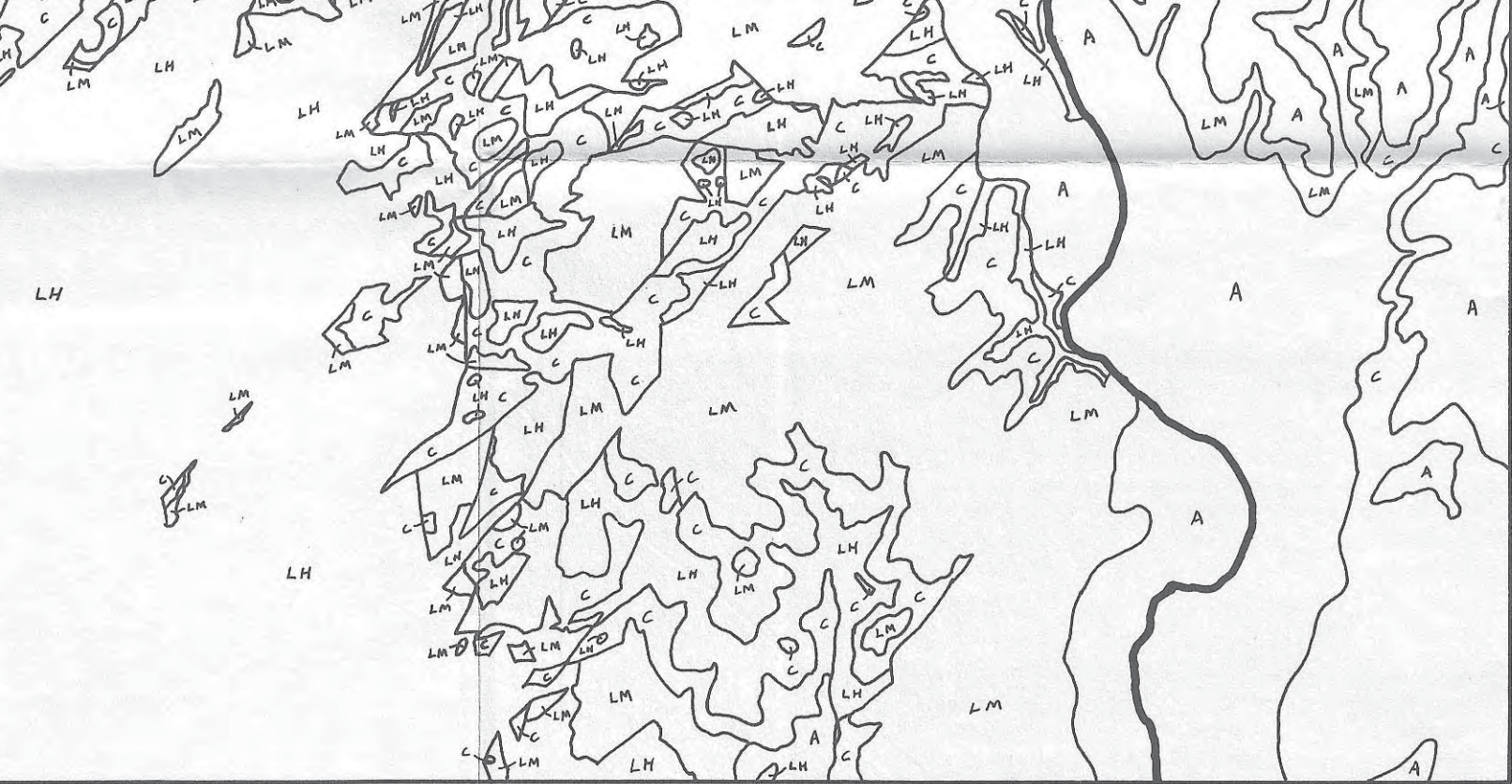
- | |
|----|
| LH |
|----|

 HARD LIMESTONES
- | |
|----|
| LM |
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 MIXED HARD AND SO
- | |
|---|
| C |
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 CLAY
- | |
|---|
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 ALLUVIUM



ENGINE

SEE TEXT FOR DETAILS)

LIMESTONES

HARD AND SOFT LIMESTONES



MAGNETIC DECLINATION

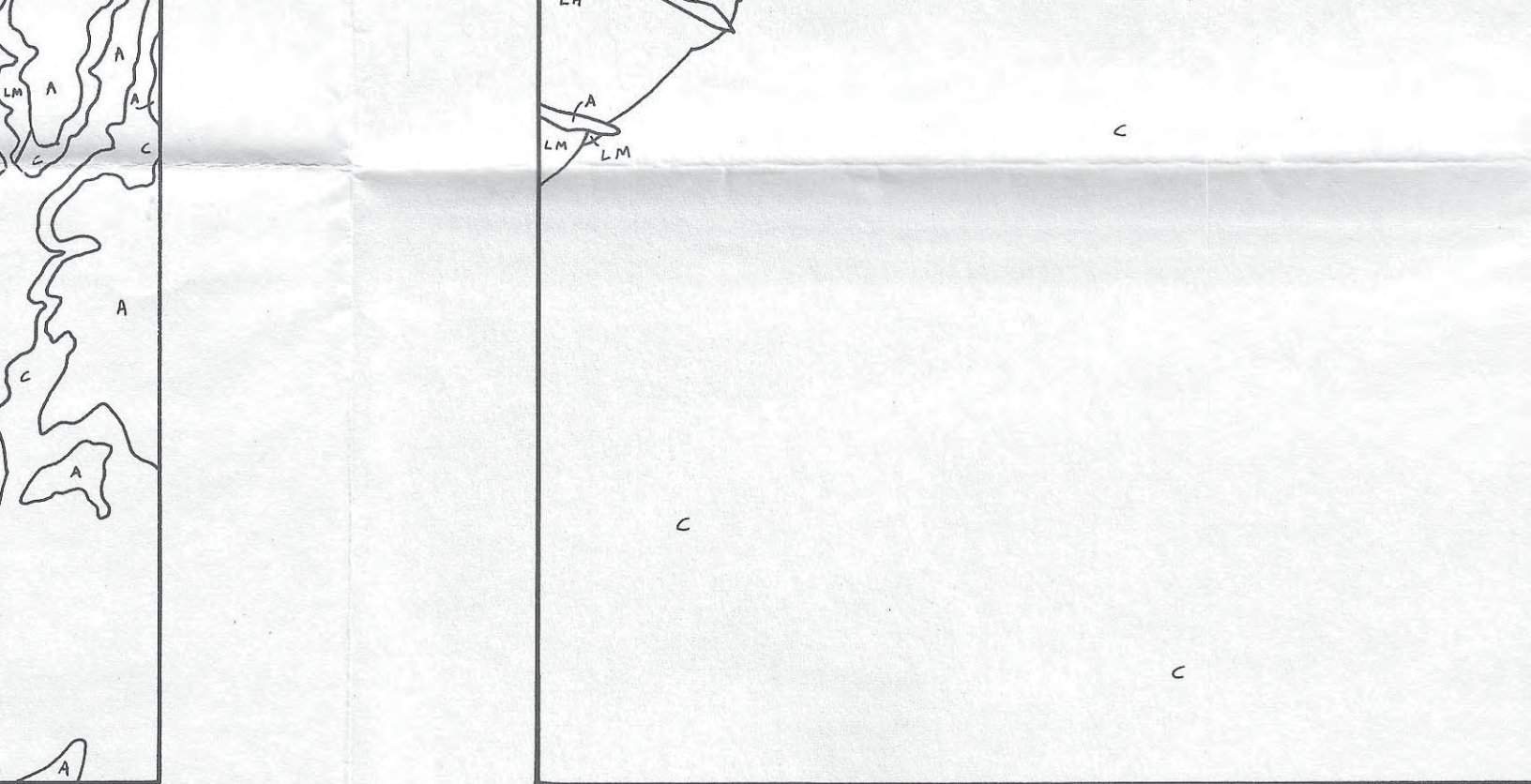
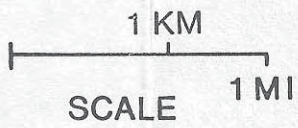


PLATE 1
ENGINEERING GEOLOGY



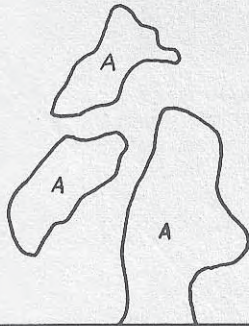


PLATE 1 OF 10

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

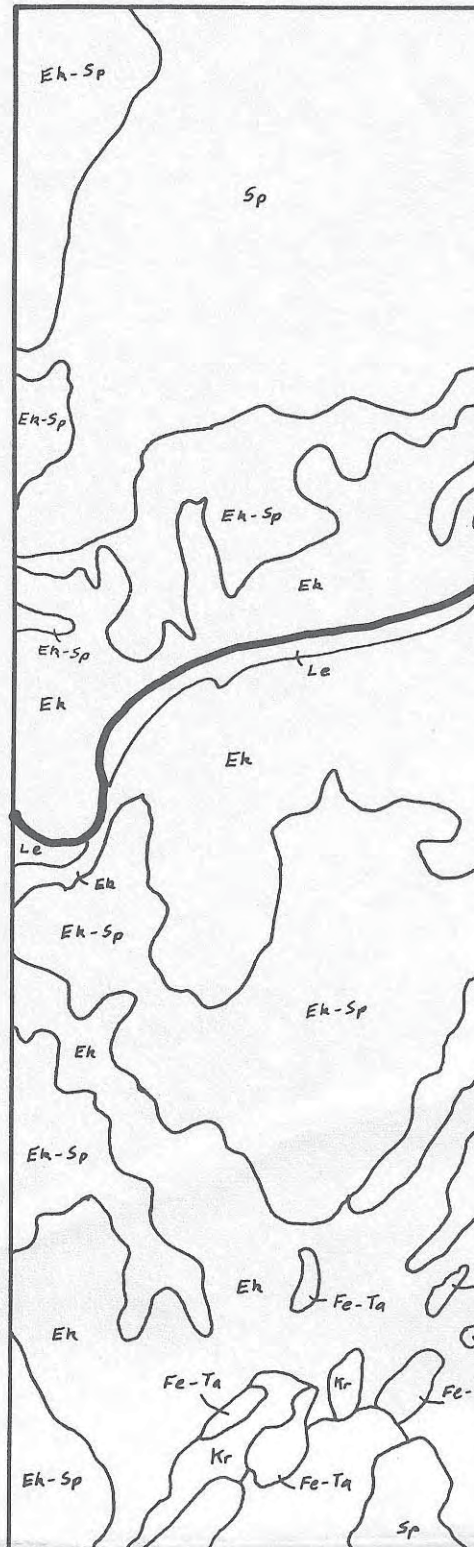
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1976

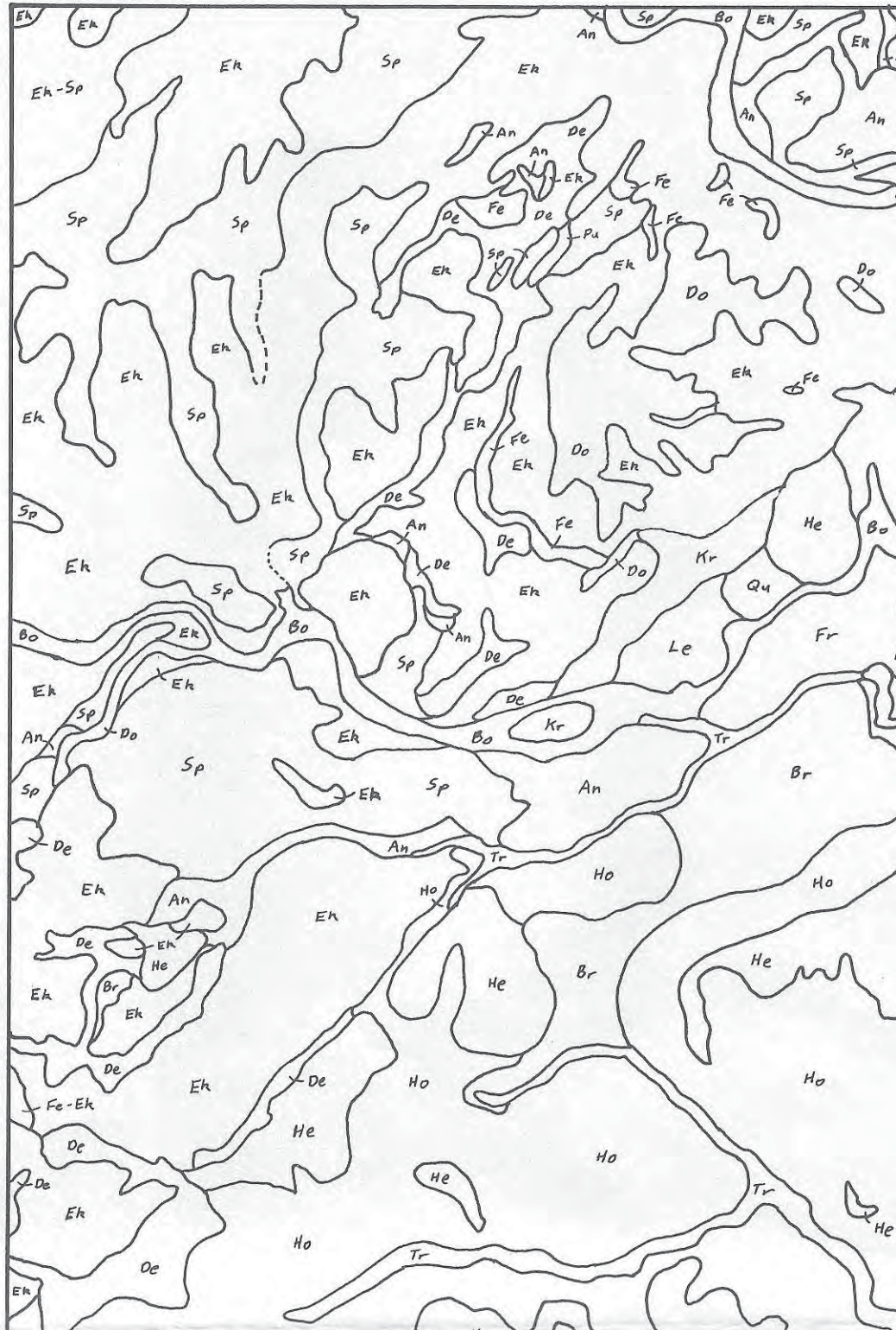


Plate 2

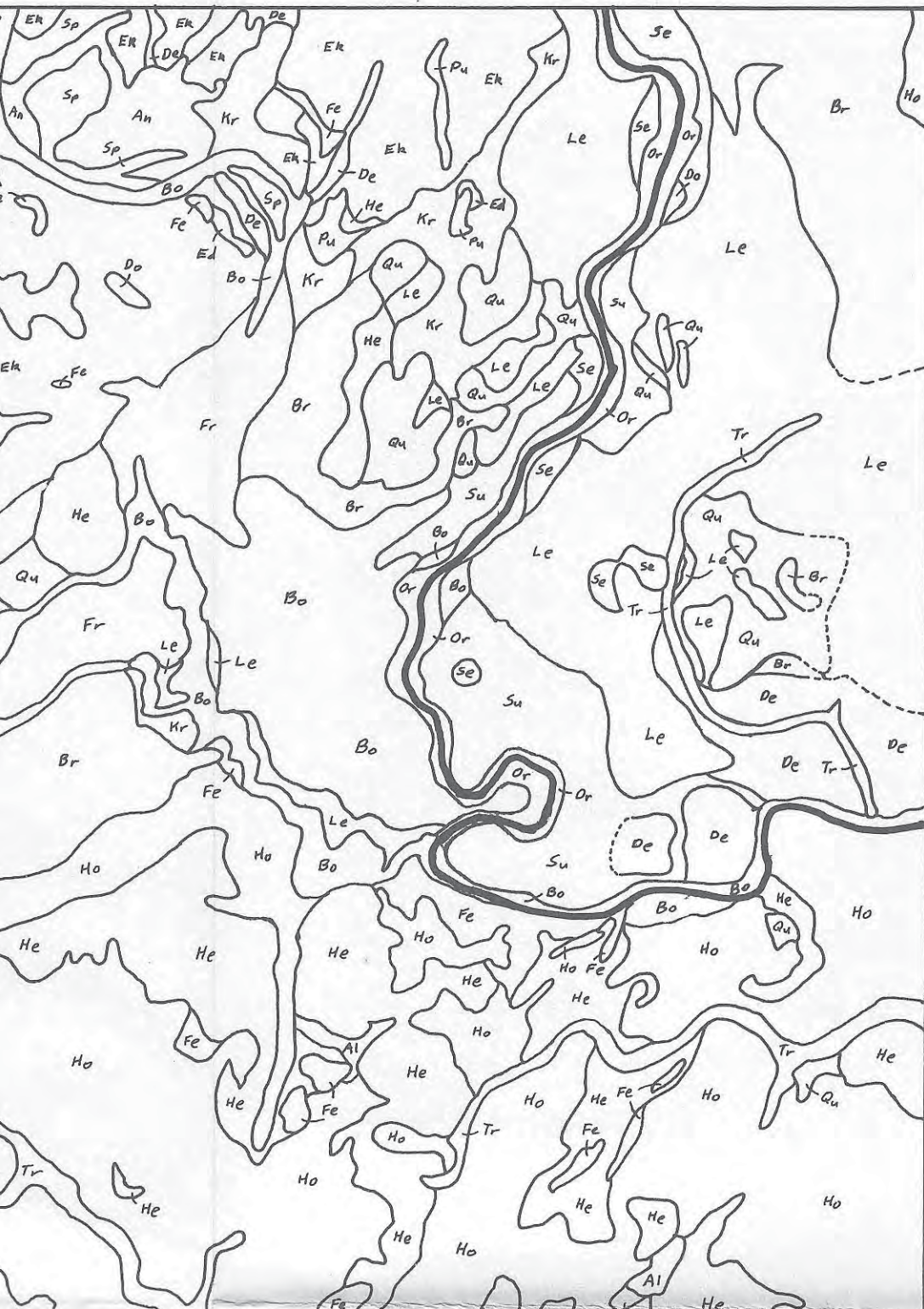
Soils

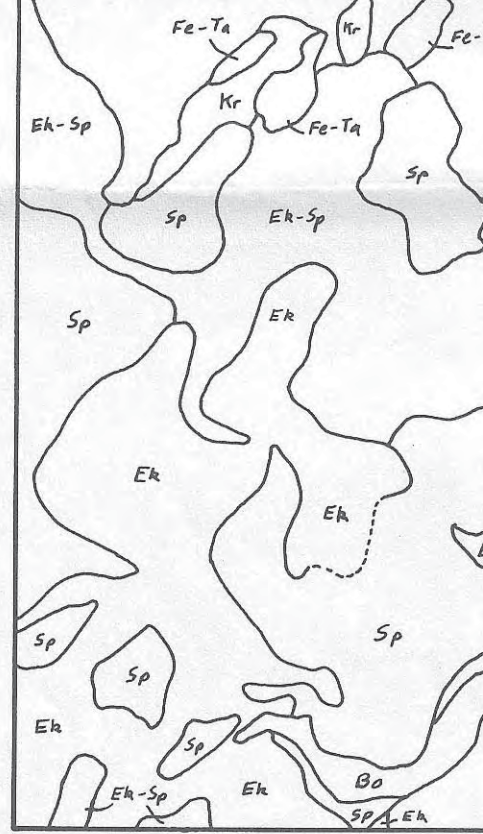


SAN MARCO



MARCOS SECTION





EXPLANATION: SOIL SERIES

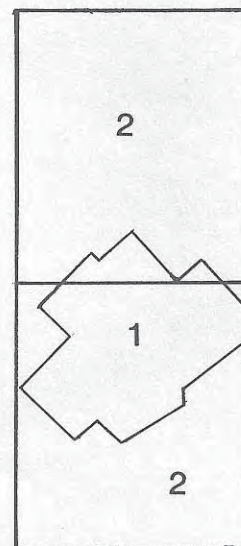
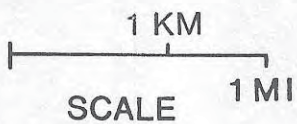
(SEE TEXT FOR DETAILS)

- | | |
|--------------|--------|
| AL- ALTOGA | HO- HO |
| AN- ANHALT | KR- KR |
| BO- BOSQUE | LE- LE |
| BK- BRACKETT | OR- OR |
| BR- BRANYON | PU- PU |
| DE- DENTON | QU- QU |
| DO- DOSS | SE- SE |
| EK- ECKRANT | SP- SP |
| ED- EDDY | ST- ST |
| FE- FERRIS | SU- SU |
| FR- FRIO | TR- TR |
| HE- HEIDEN | VO- VO |



PLATE 2 SOILS

MAPPING CREDITS



1. LOWTHER,
2. SOIL SURV
IN SAN MA
(UNPUBLIS

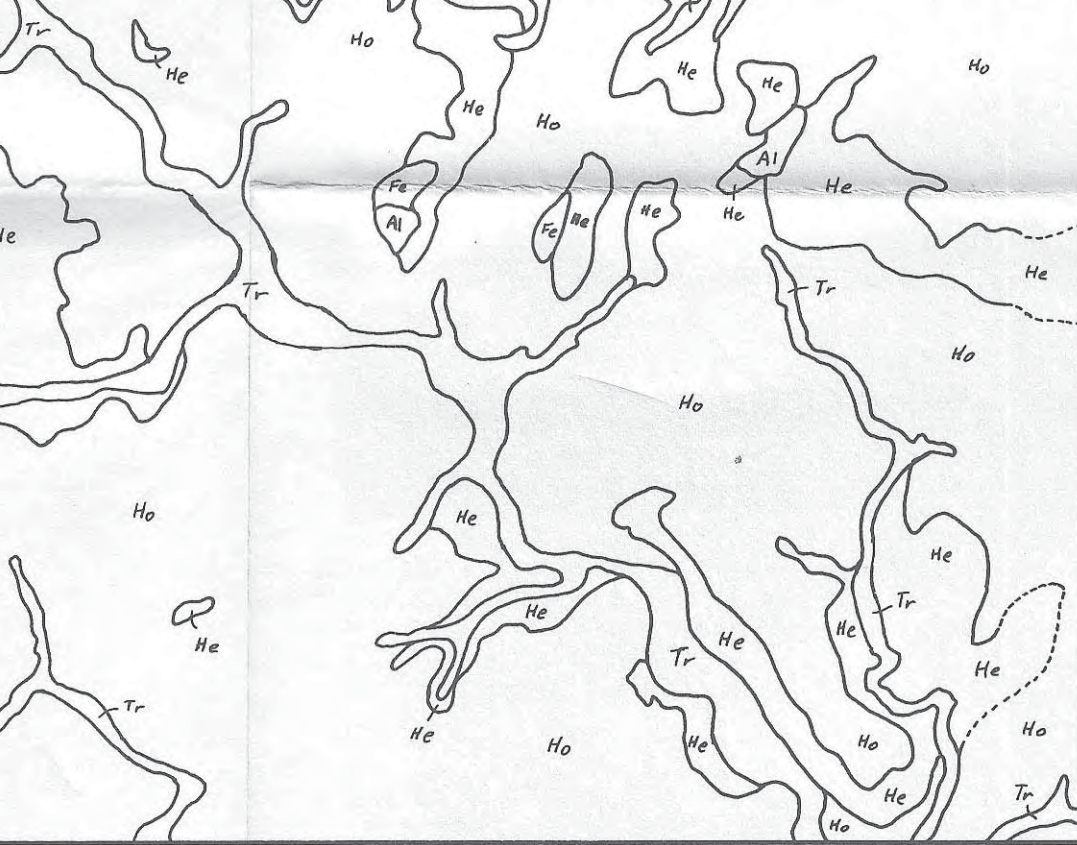


PLATE 2 OF 10

LOWTHER, 1972

SOIL SURVEY PARTY
IN SAN MARCOS
(UNPUBLISHED)

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

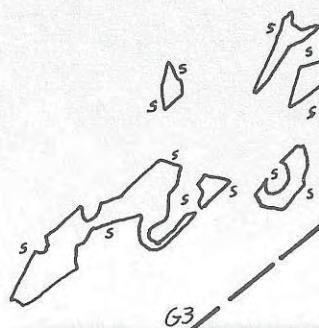
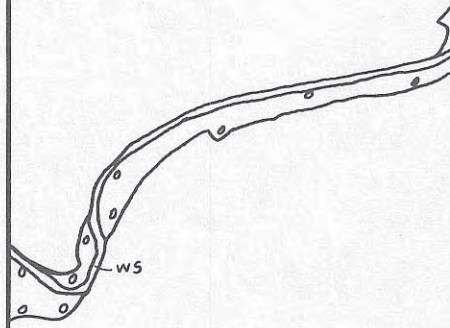
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1976



Plate 3

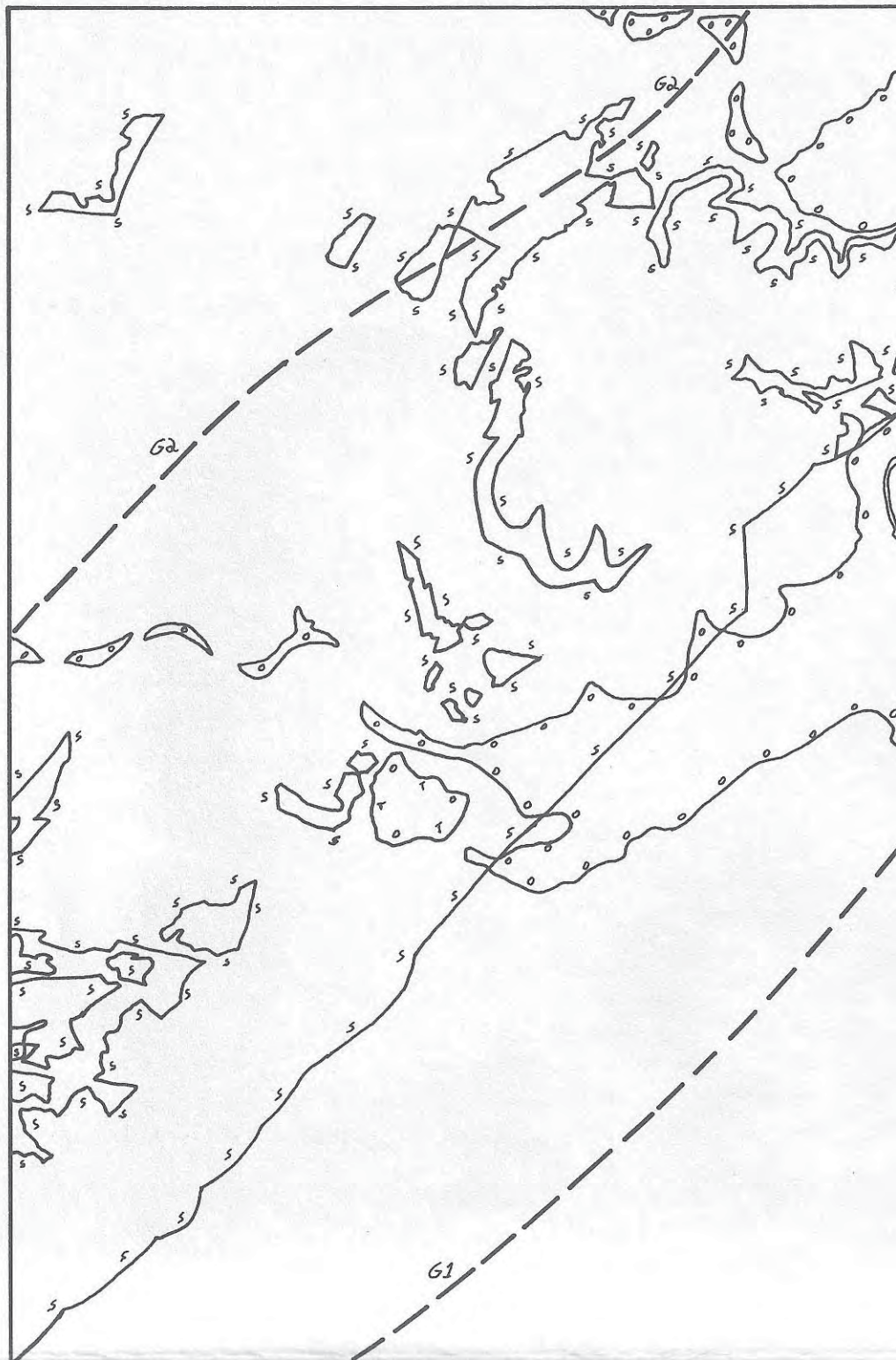
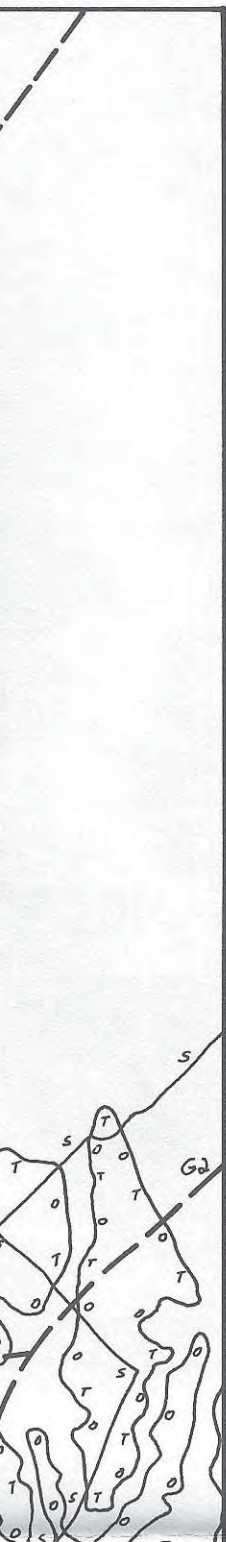
Resources



KYLE SECTION

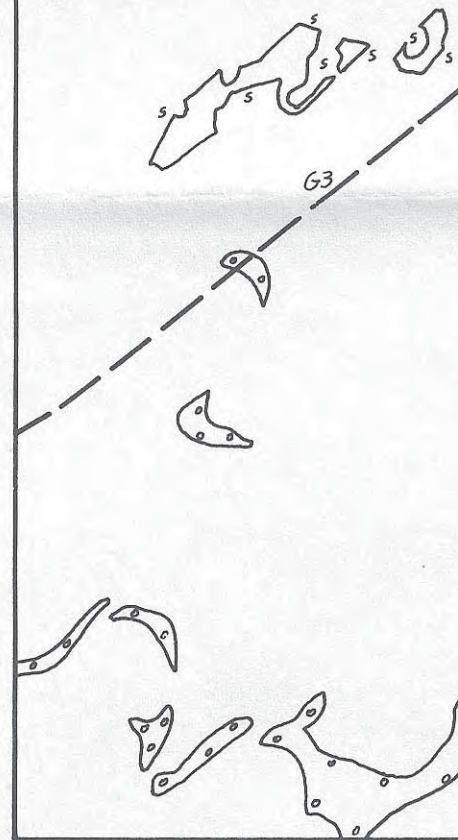


SAN MARCO



MARCOS SECTION





EXPLANATION (SEE

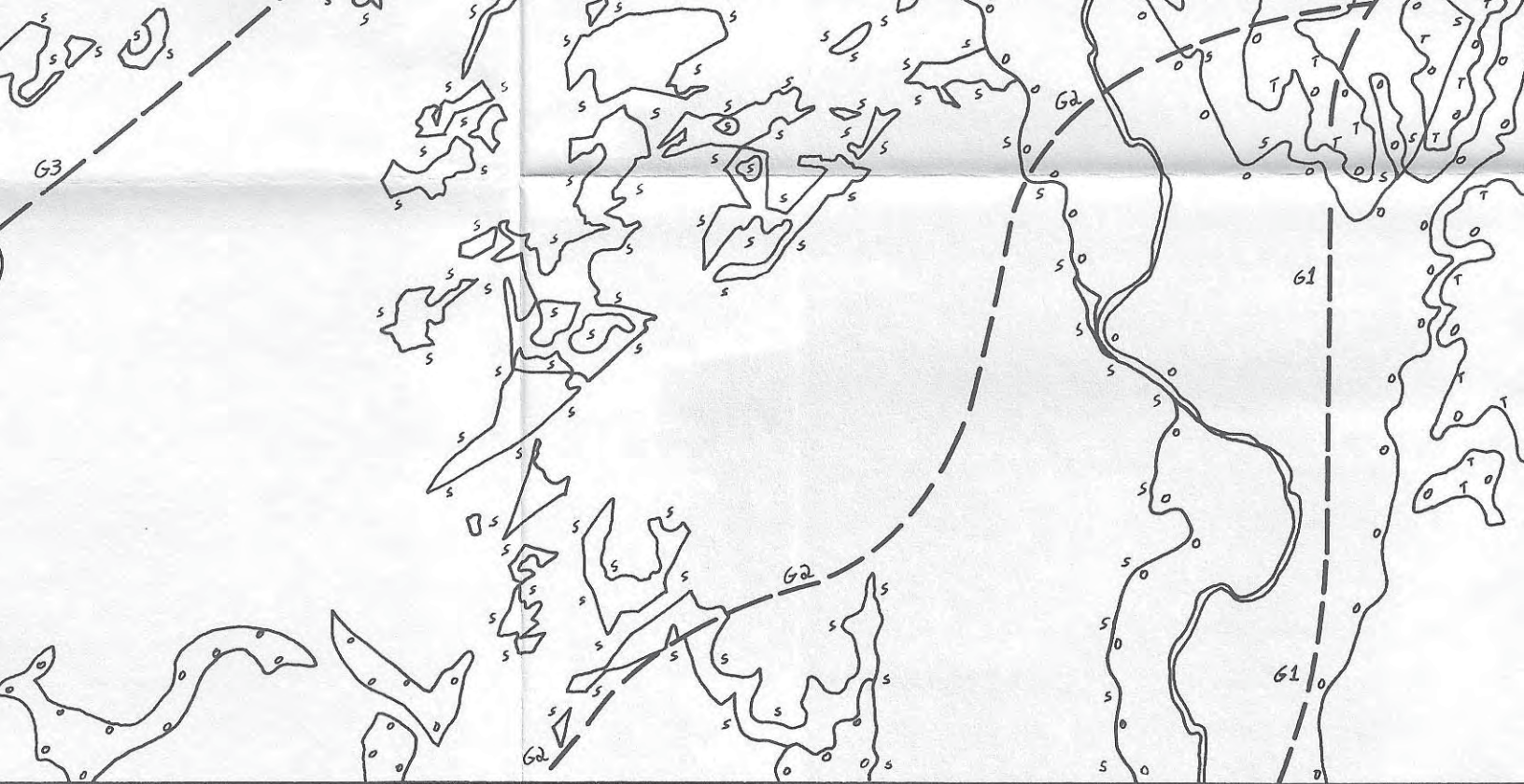
AGGREGATES

- CRUSHED STONE
- SAND AND GRAVEL
- SAND AND GRAVEL

WATER

- SURFACE WATER
- GROUND WATER, 2
- GROUND WATER, 1
- GROUND WATER, 2

(RESOURCES ARE PO
THE SIDE OF THE L

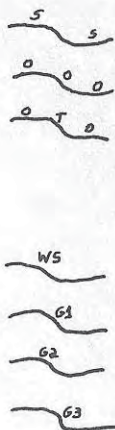


ION (SEE TEXT FOR DETAILS)

- TES
- ED STONE
- ND GRAVEL (LOWER TERRACE)
- ND GRAVEL (UPPER TERRACE)

- SE WATER
- D WATER, ZONE 1
- D WATER, ZONE 2
- D WATER, ZONE 3

ES ARE POTENTIALLY AVAILABLE ON
OF THE LINE WITH THE SYMBOL)



MAGNETIC DECLINATION

R

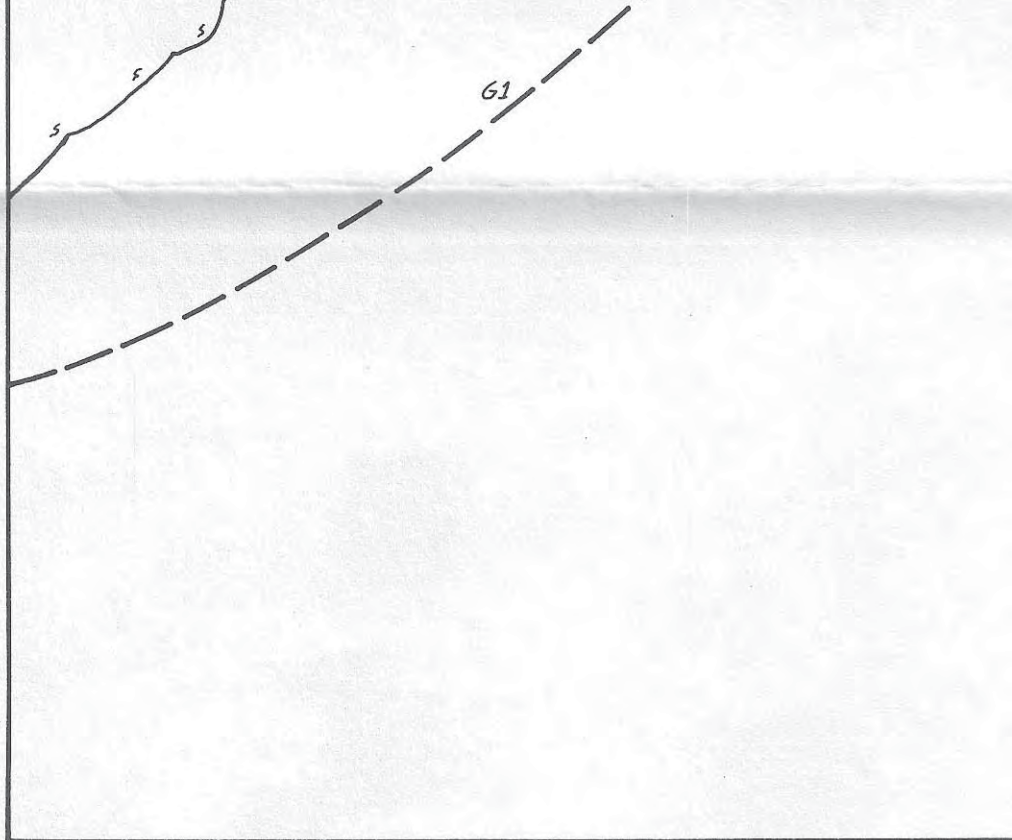
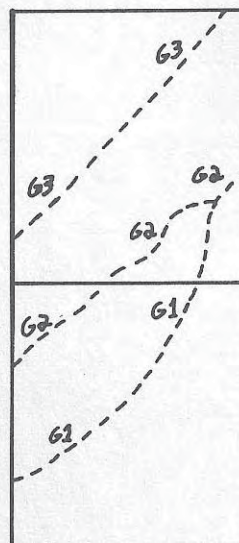
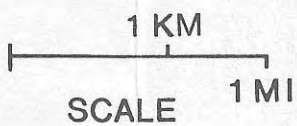
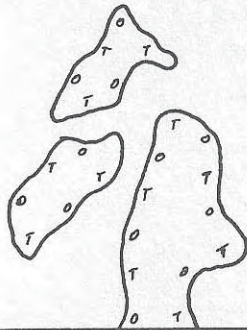


PLATE 3 RESOURCES

MAPPING CREDITS



- G1 BAD WATER LI
U. S. GEOLOGI
OFFICE IN SAN
- G2 TRANSMISSIBIL
GAL PER FOOT
FROM KLEMT
- G3 THIS STUDY



WATER LINE FROM
L. GEOLOGICAL SURVEY
CE IN SAN ANTONIO.

NSMISSIBILITY OF 1 MILLION
PER FOOT PER DAY
M KLEMT AND OTHERS, 1975

STUDY

PLATE 3 OF 10

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

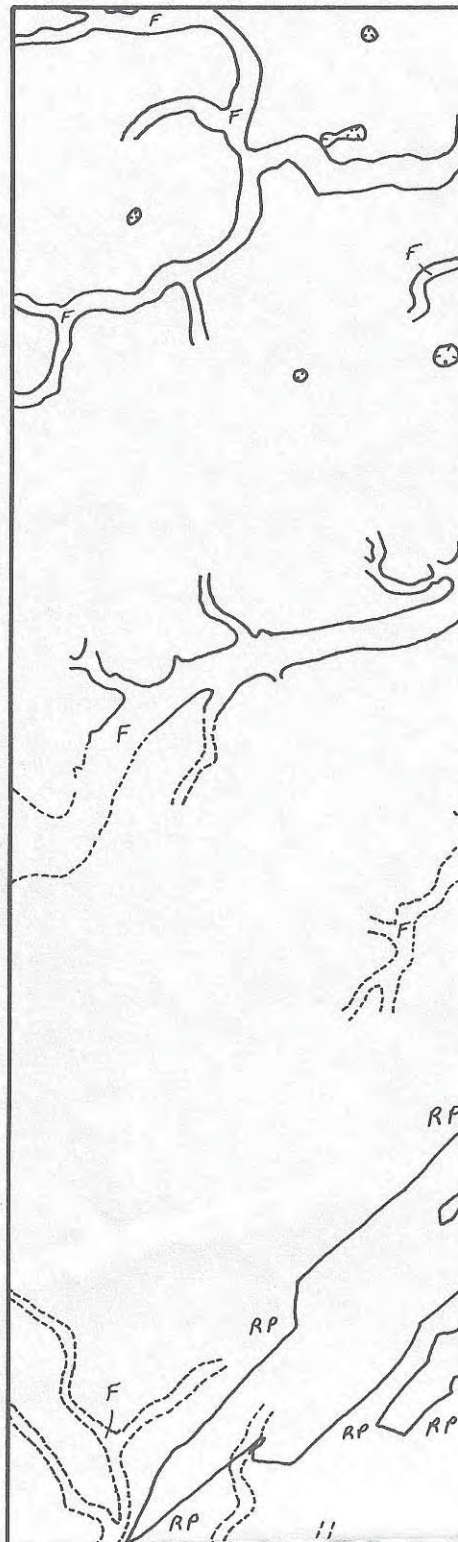
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Plate 4

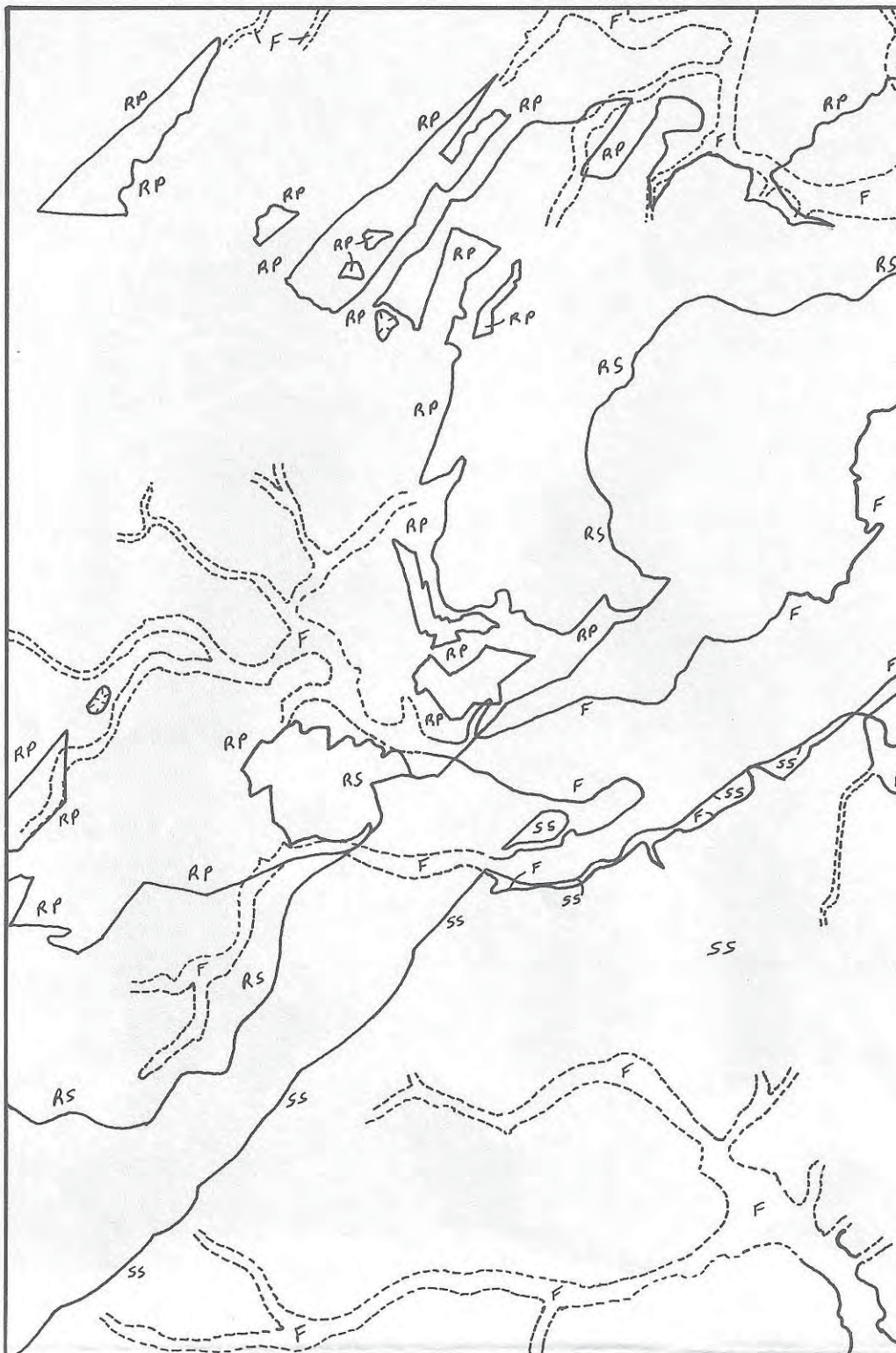
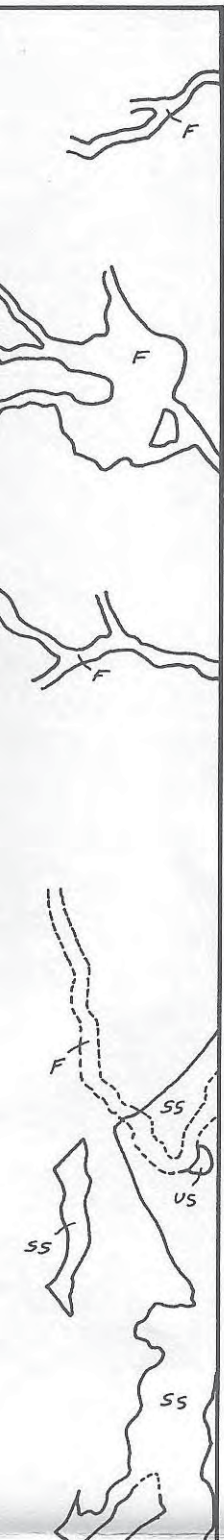
Processes



KYLE SECTION

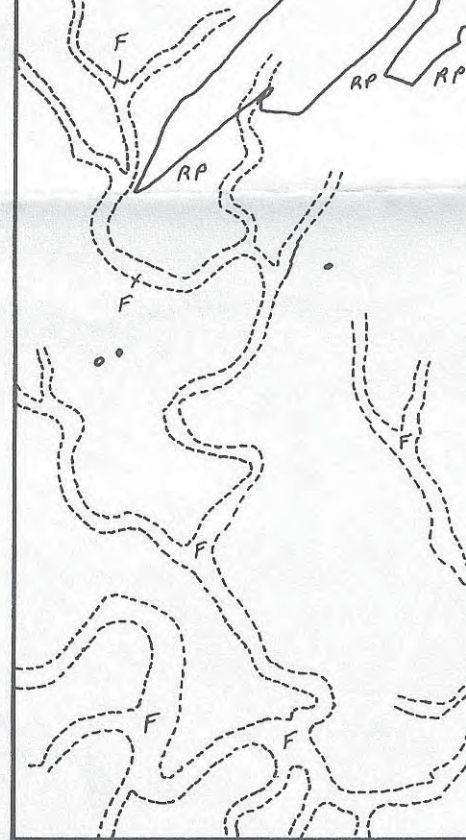


SAN MARCO









MARCOS SECTION

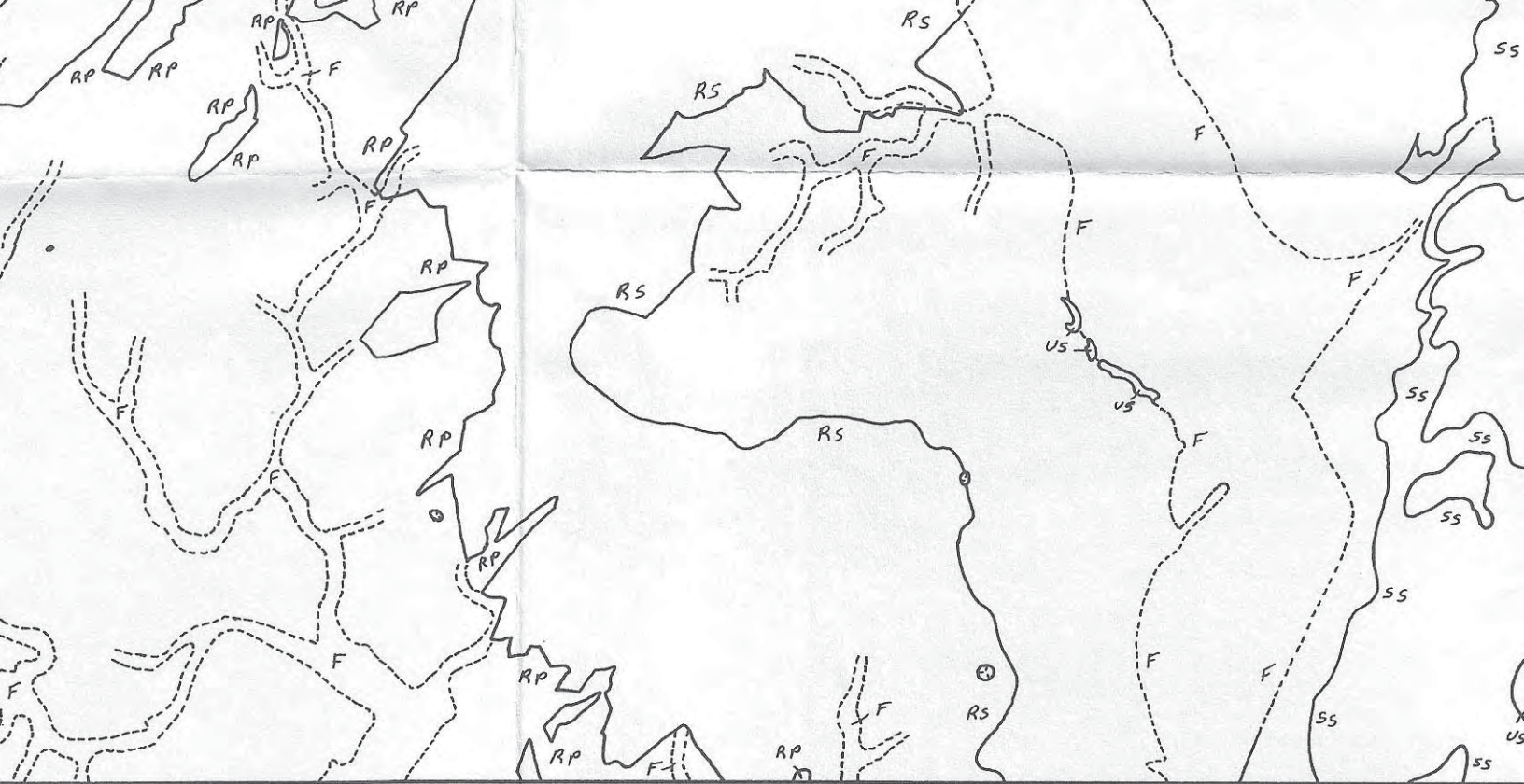




EXPLANATION (SEE TEXT FOR)

-  FLOOD-PRONE AREA
-  AQUIFER RECHARGE
-  AQUIFER RECHARGE
-  POTENTIAL SINKHOLE
-  UNSTABLE SLOPES
-  HIGH SHRINK - SWELL

(PROCESSES ARE AC
OF THE LINE WITH TH



(SEE TEXT FOR DETAILS)

ONE AREA

RECHARGE - PRIMARY

RECHARGE - SECONDARY

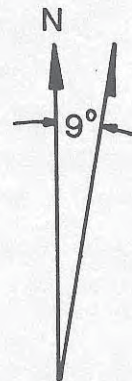
SINKHOLE COLLAPSE

SLOPES

INK - SWELL

ES ARE ACTIVE ON THE SIDE
(NE WITH THE SYMBOL)

PI



MAGNETIC DECLINATION

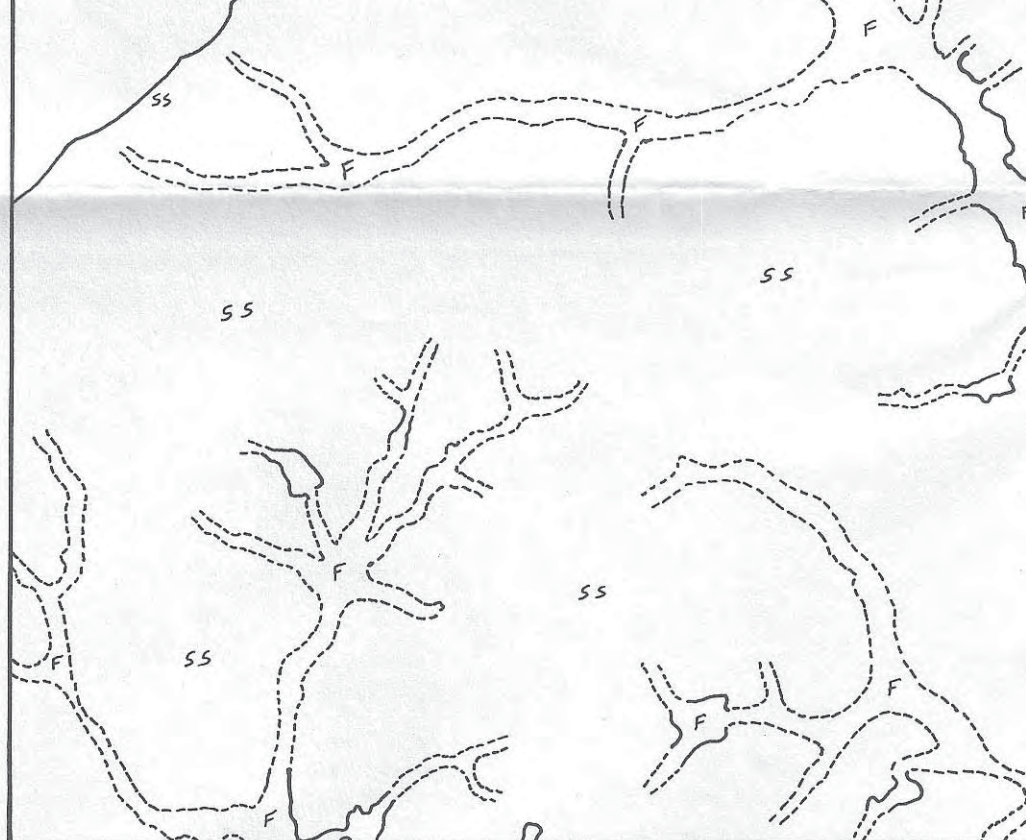
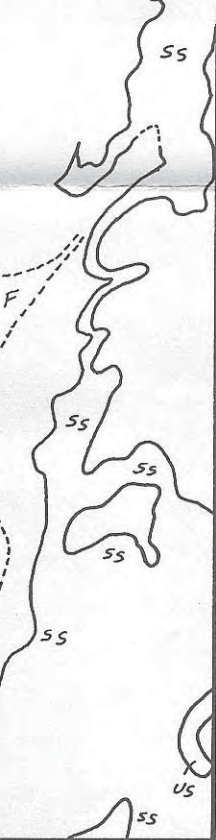
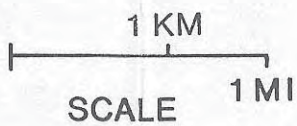
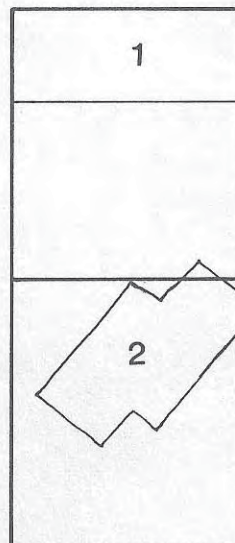


PLATE 4 PROCESSES



MAPPING CREDITS



FLOOD-PRONE

1. U. S. GEOLOGICAL SURVEY, 19...
2. U. S. ARMY CORPS OF ENGINEERS

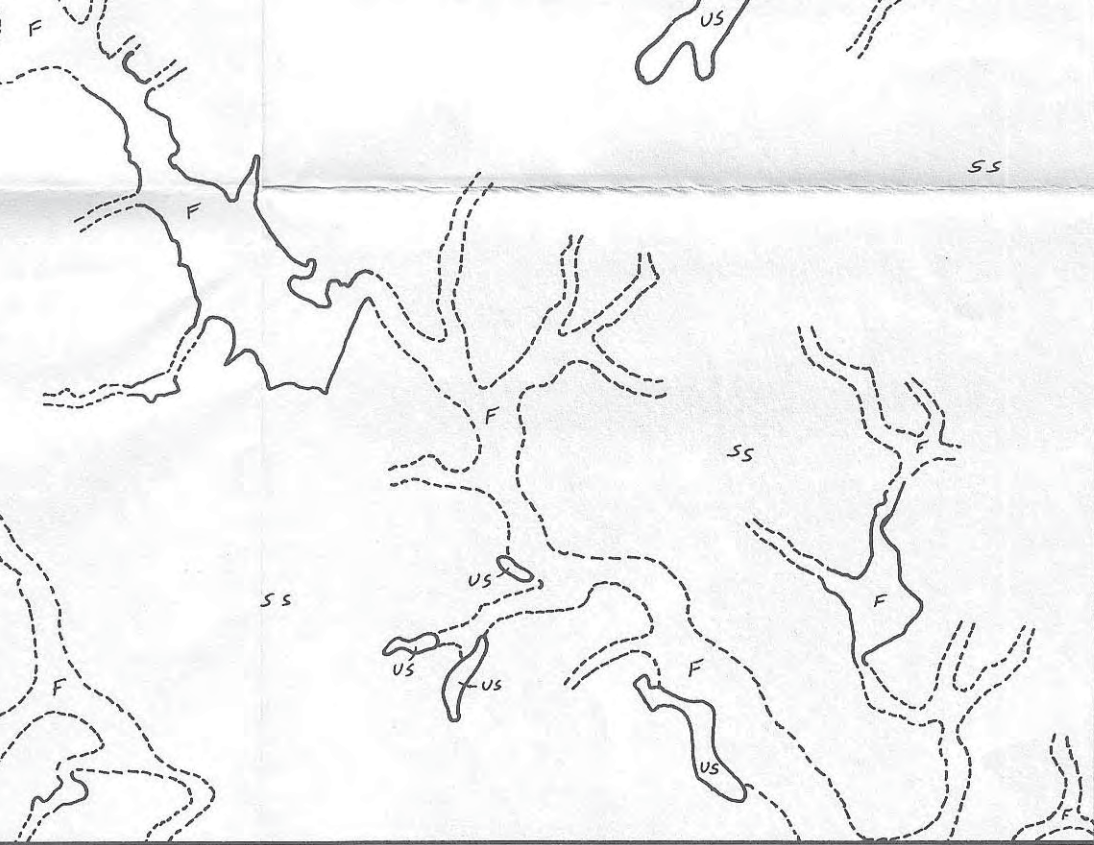


PLATE 4 OF 10

FLOOD-PRONE AREAS

U. S. GEOLOGICAL
SURVEY, 1973

U. S. ARMY CORPS
OF ENGINEERS, 1971

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

DEPARTMENT OF GEOLOGICAL SCIENCES
THE UNIVERSITY OF TEXAS AT AUSTIN

1976

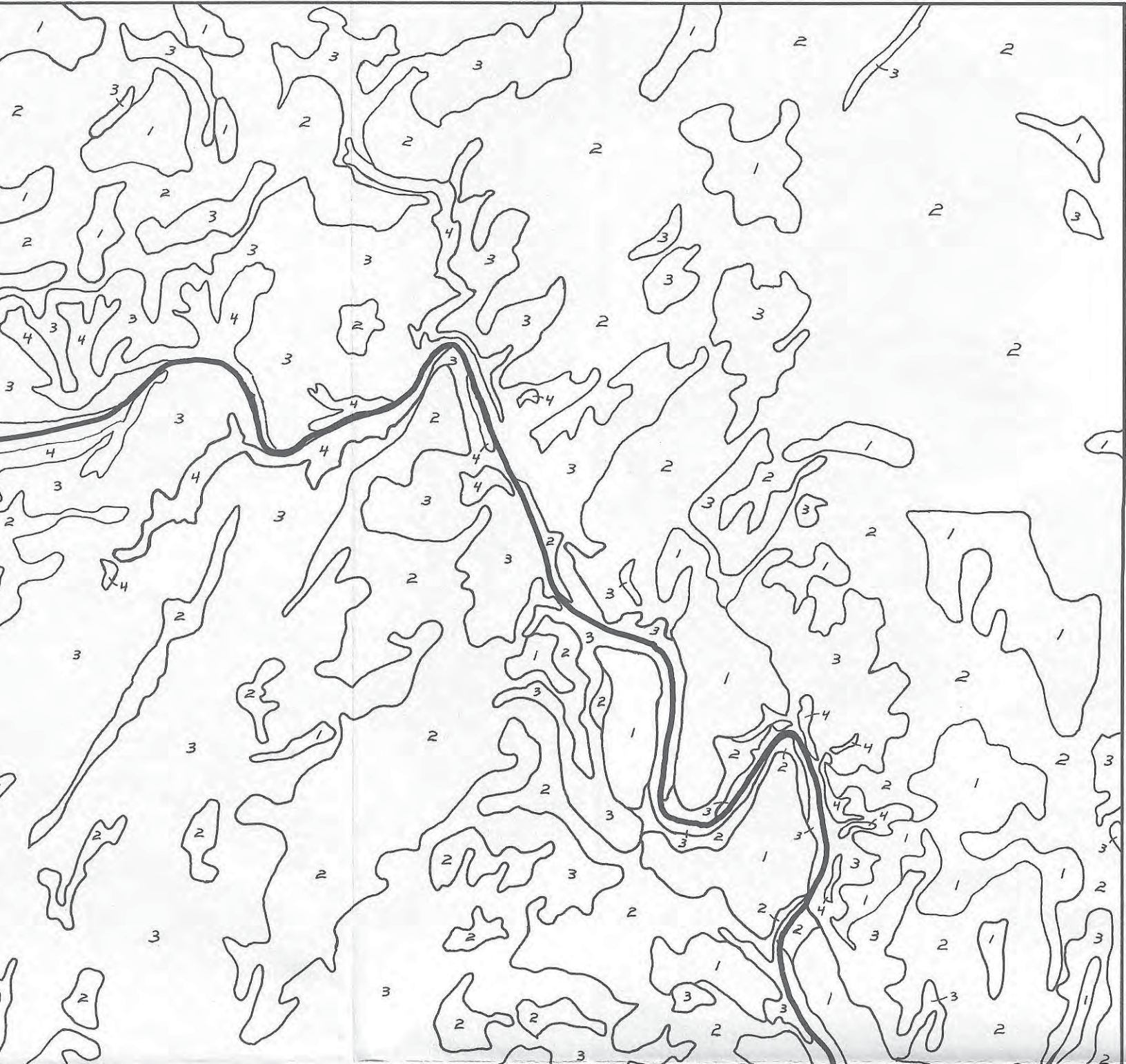


Plate 5

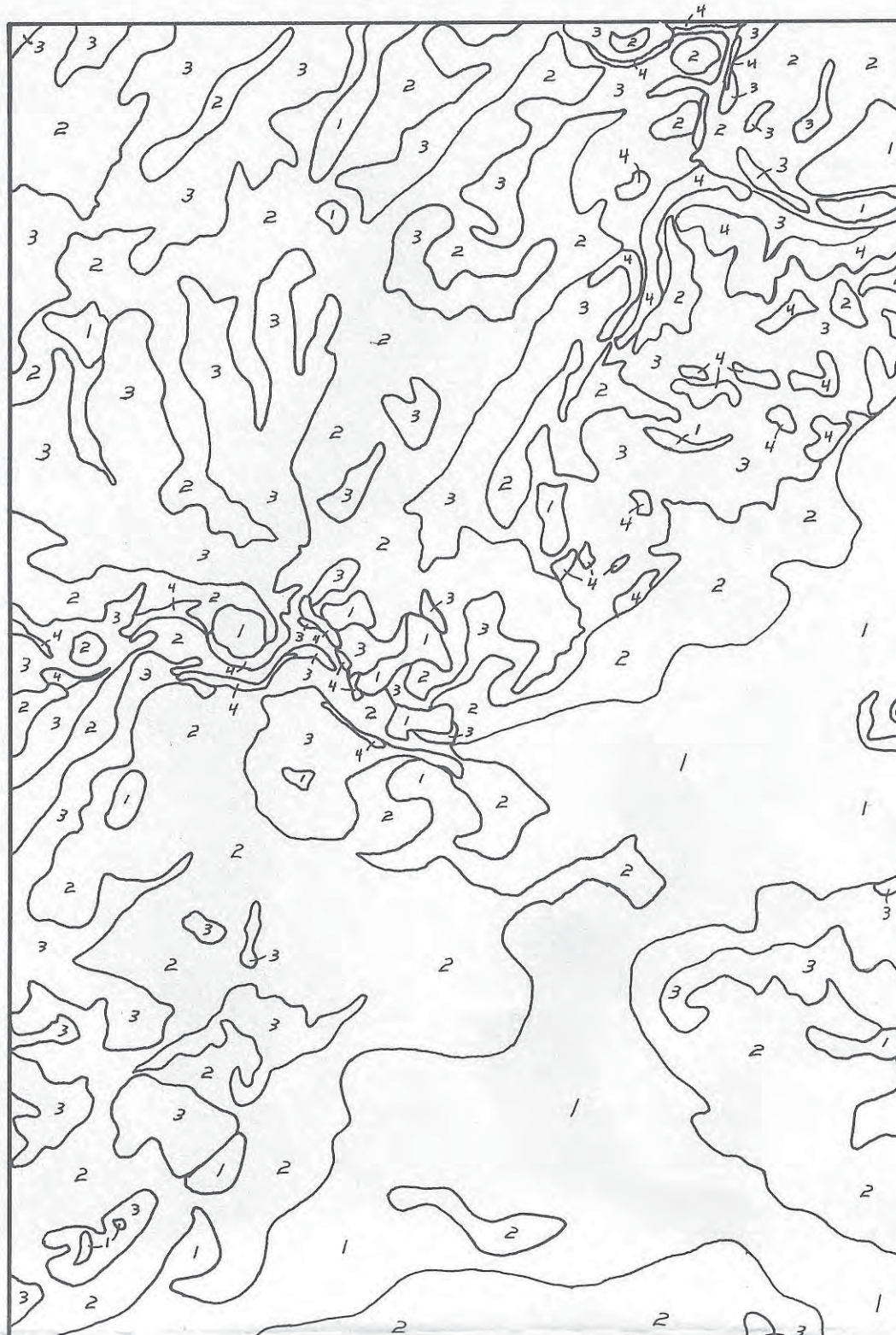
Landform



KYLE SECTION

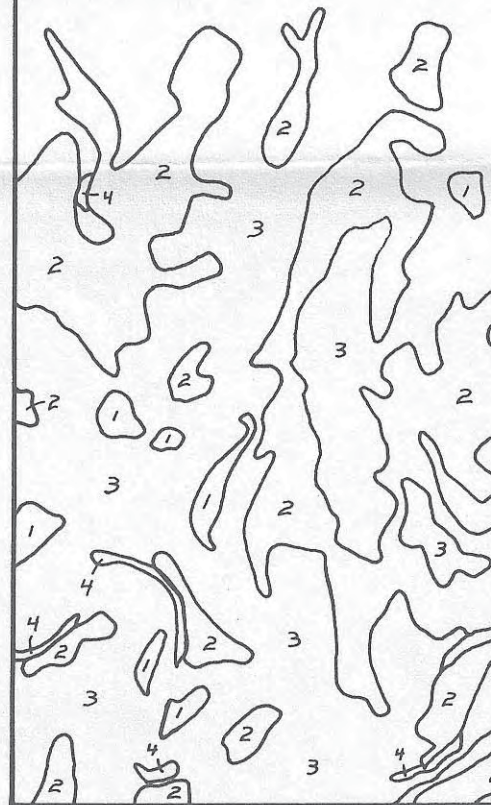


SAN MARCOS



ARCOS SECTION





EXPLANATION (SEE T

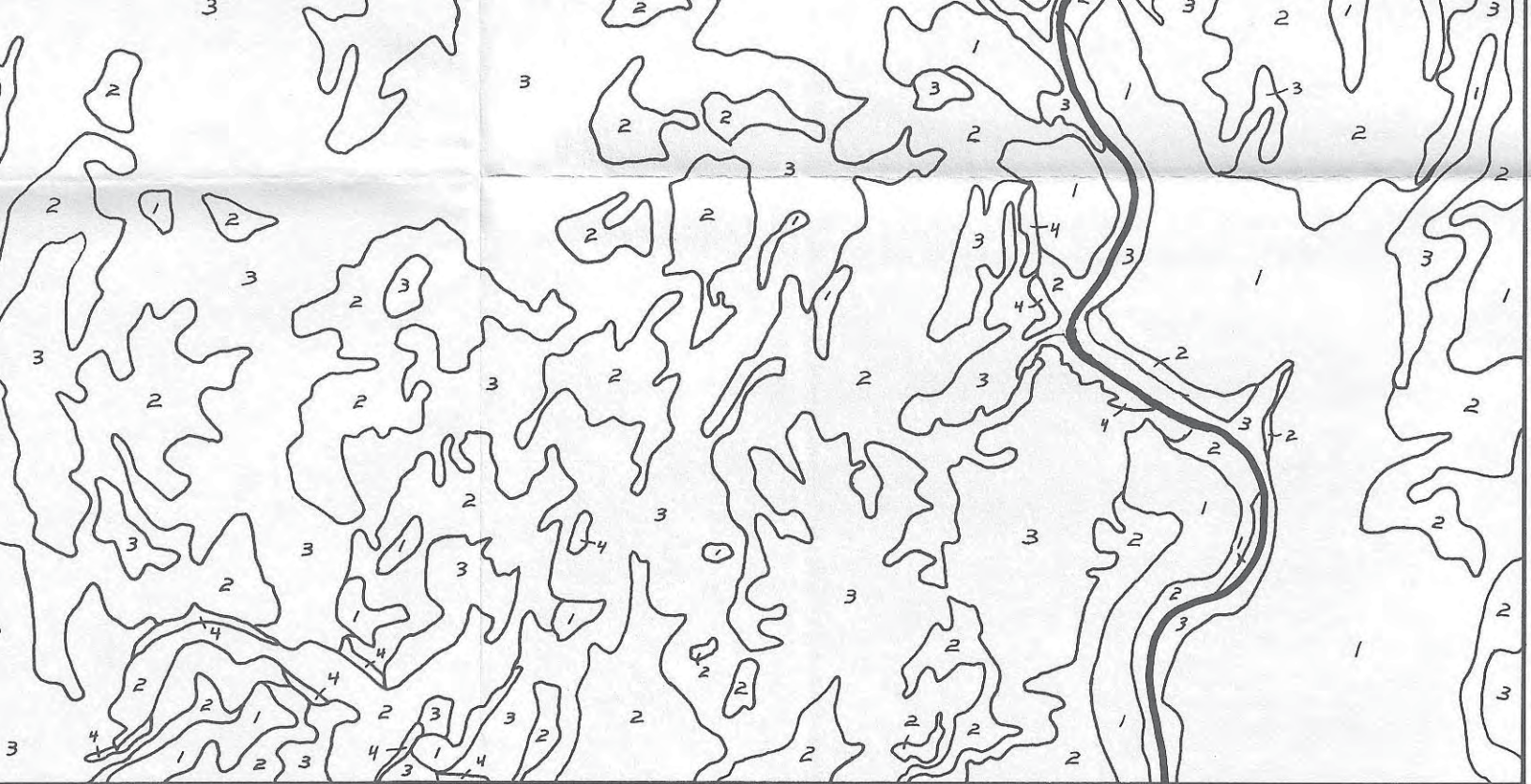
CATEGORY S

1

2

3

4



ON (SEE TEXT FOR DETAILS)

ORY SLOPE RANGE

< 2%

2-5%

5-15%

> 15%



MAGNETIC DECLINATION

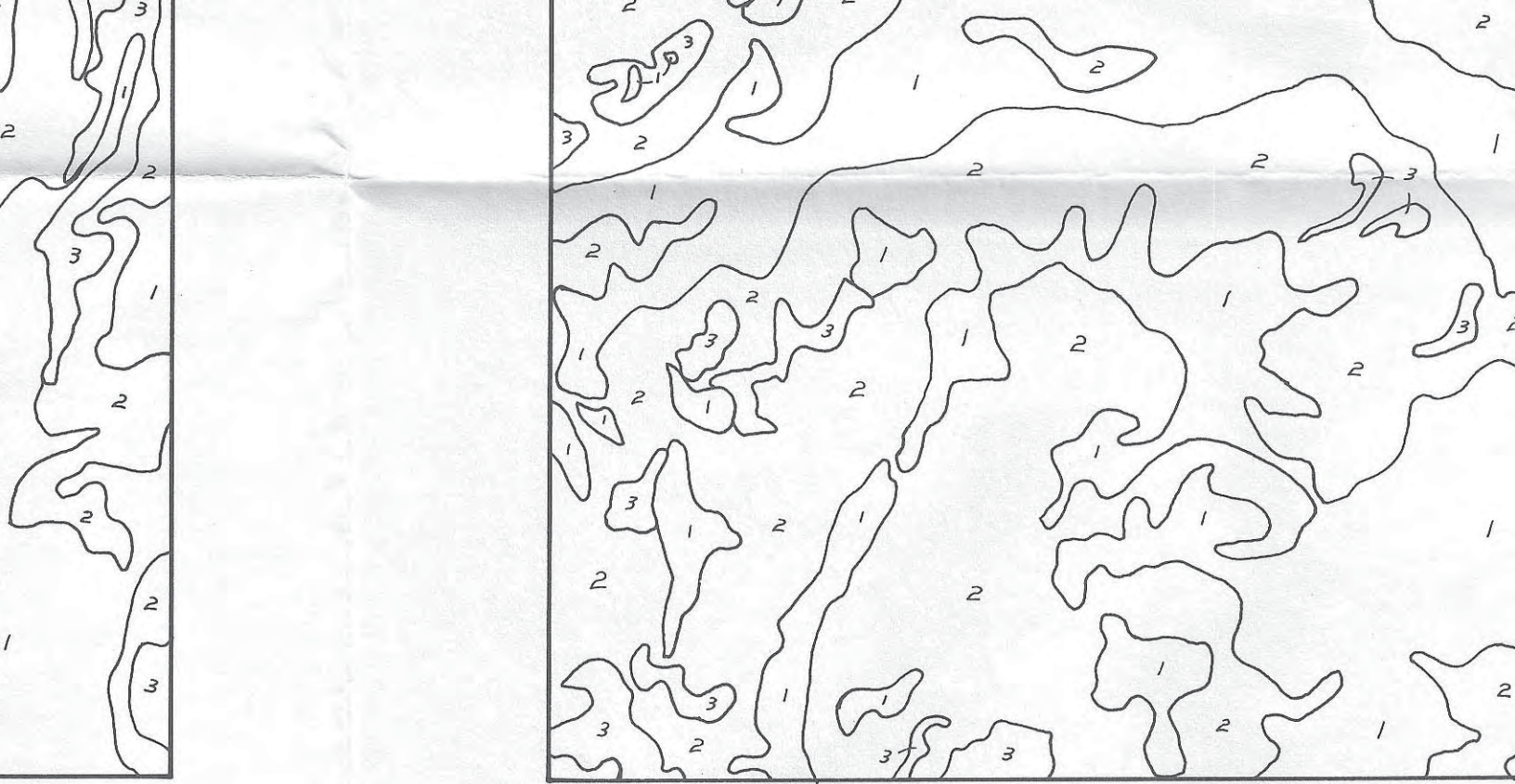


PLATE 5 LANDFORM

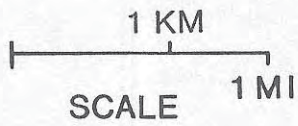




PLATE 5 OF 10

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

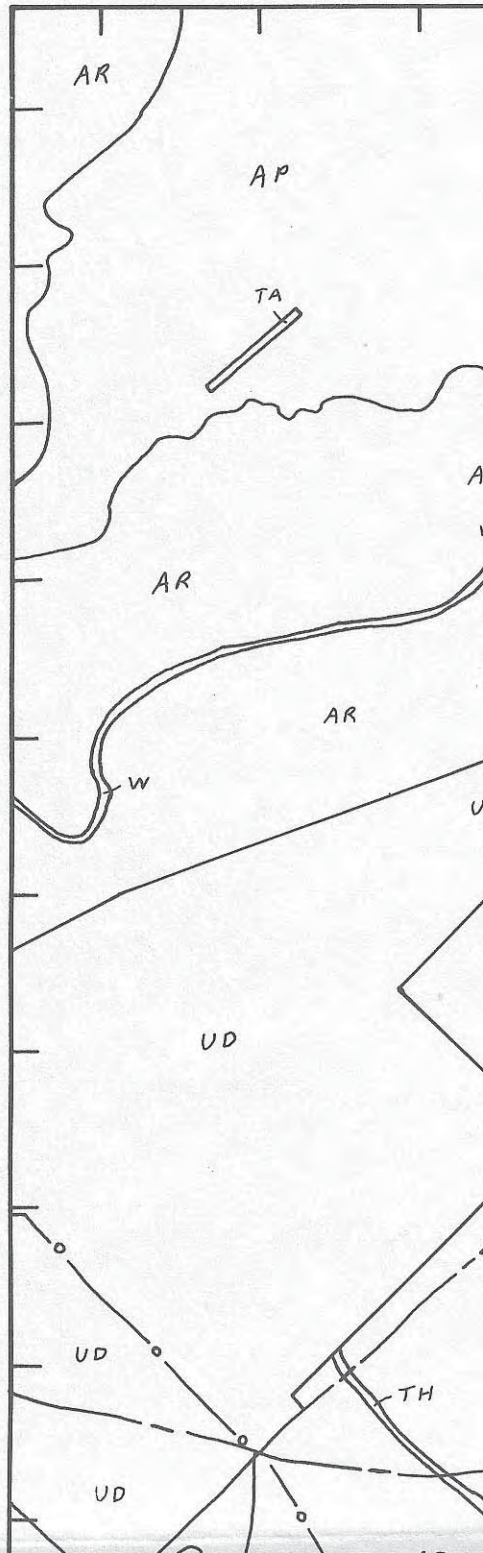
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THE UNIVERSITY OF TEXAS AT AUSTIN

1976

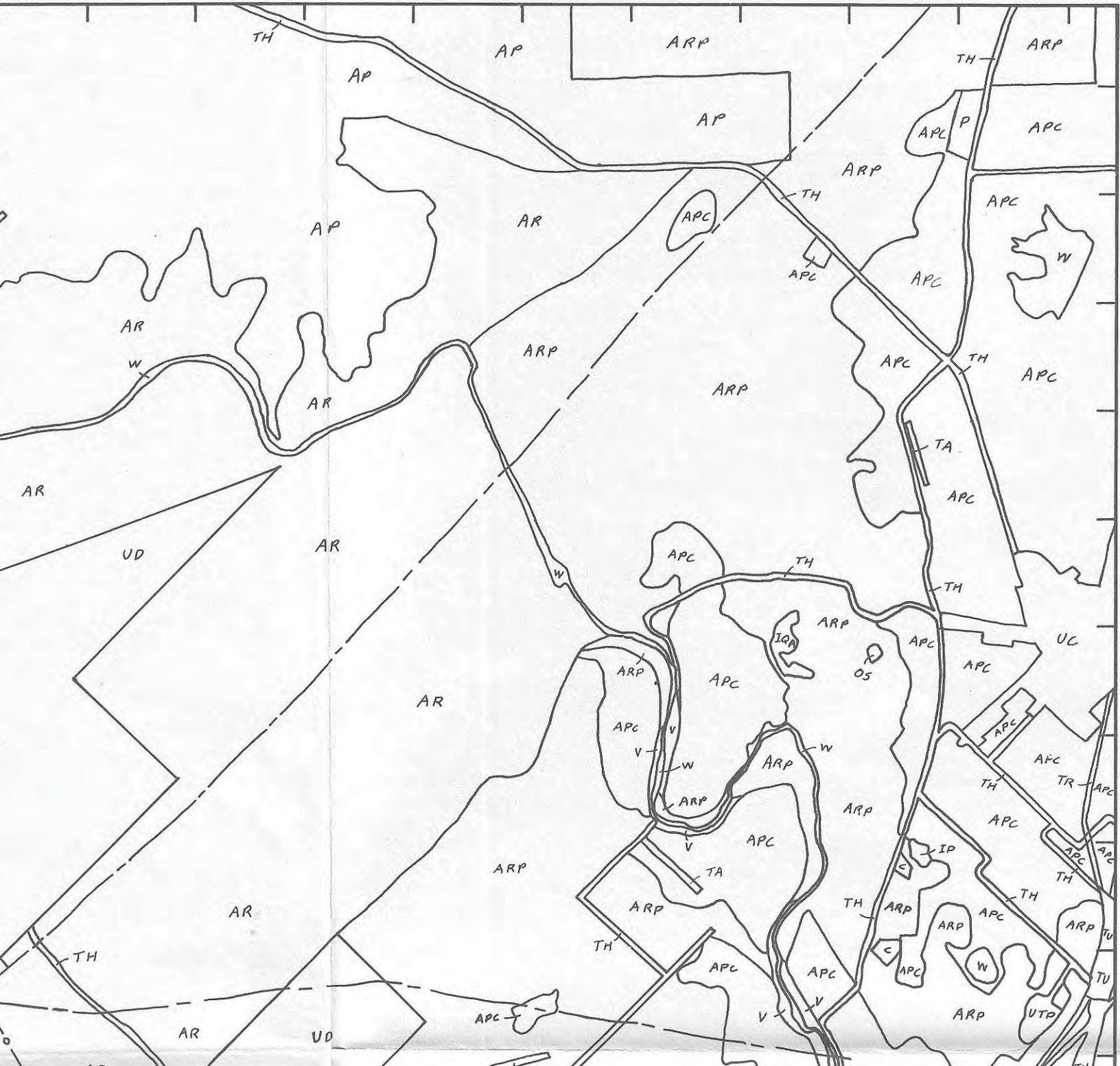


Plate 6

Current Land Use



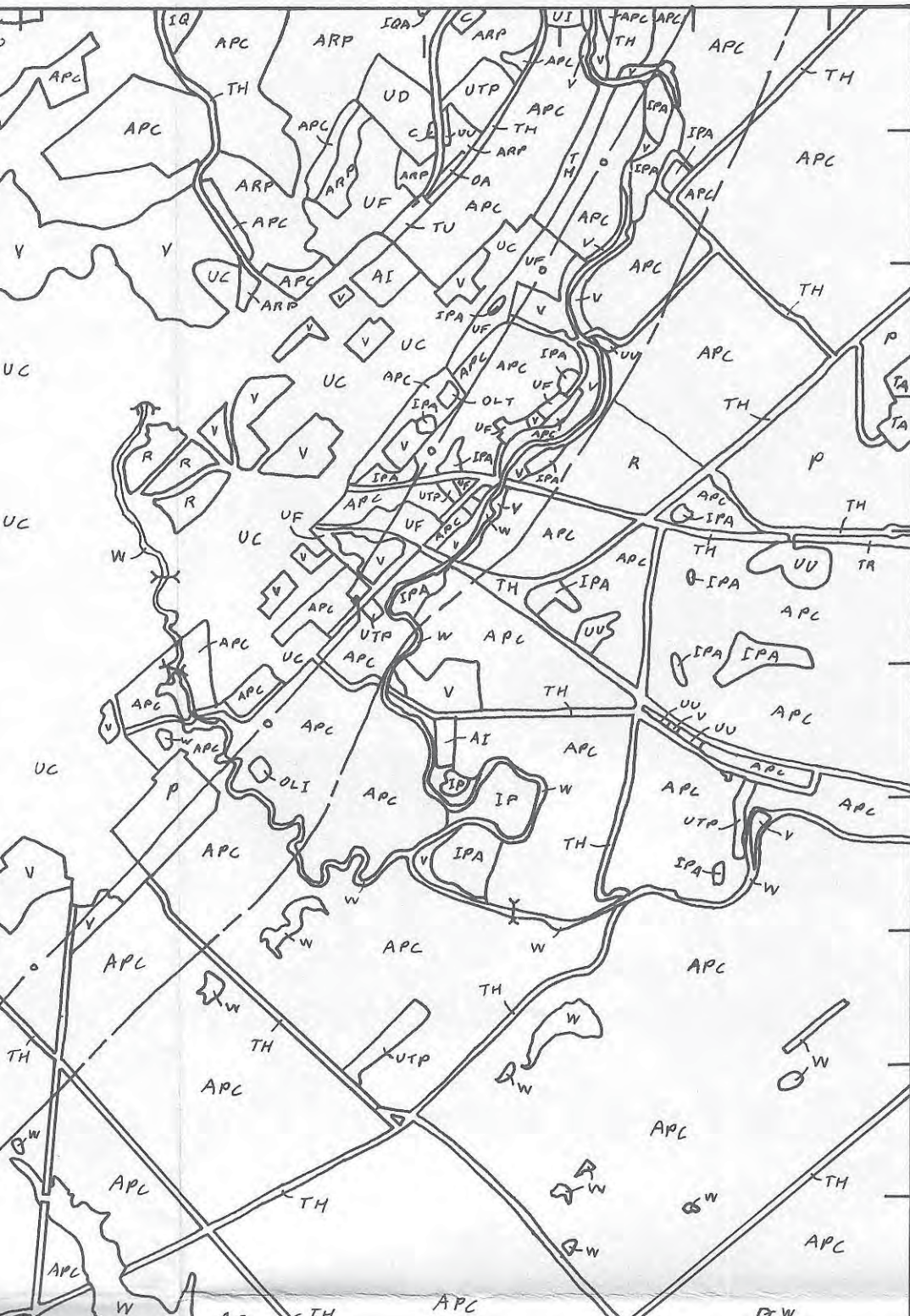
KYLE SECTION

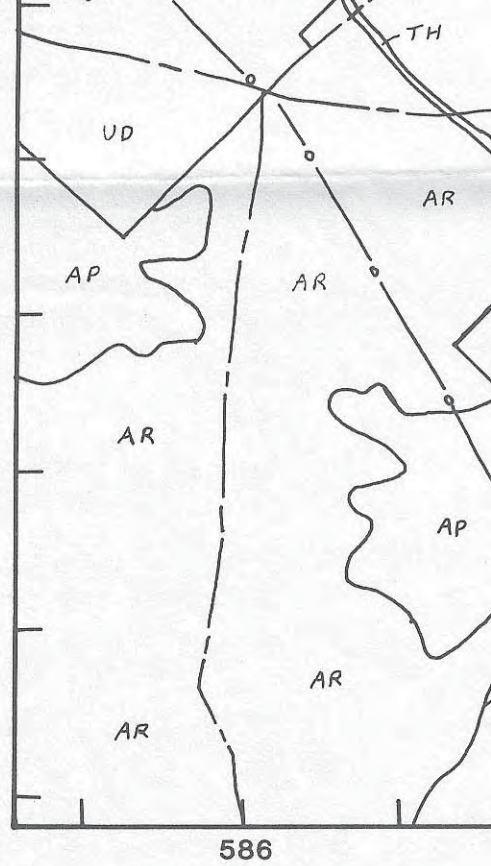


SAN MARCOS



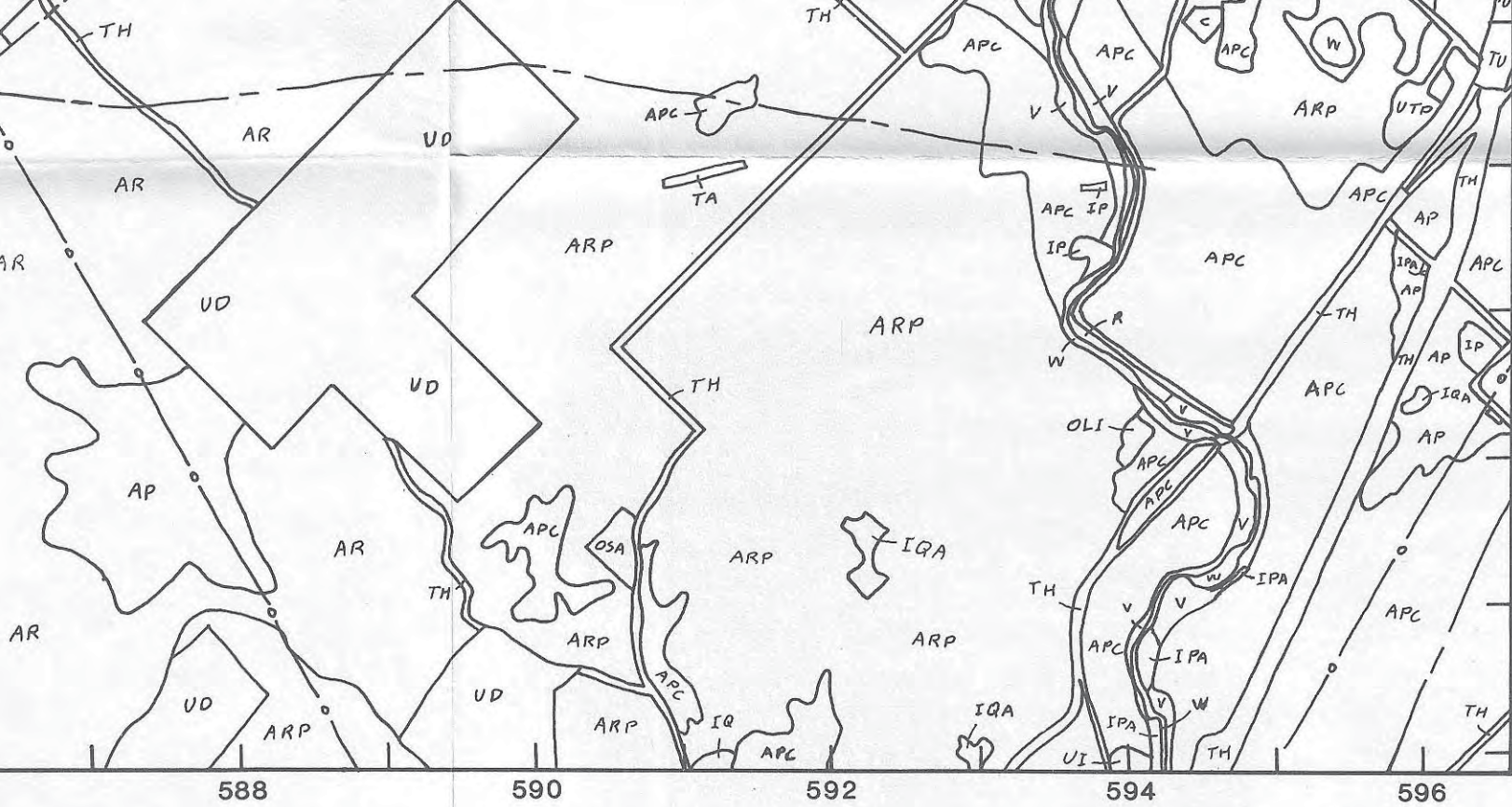
ARCOS SECTION





EXPLANATION (SEE TAB

- A AGRICULTUR
- U URBAN SITUS
- I URBAN INPU
- O URBAN OUTP
- T TRANSPORTA
- V VACANT LAN
- R RECREATION
- P PUBLIC LAND
- C CEMETERIES
- W WATER BODI



(SEE TABLE 3.3 IN TEXT FOR SUBCATEGORIES)

- AGRICULTURAL USES
- URBAN SITUS ACTIVITIES
- URBAN INPUT ACTIVITIES
- URBAN OUTPUT ACTIVITIES
- TRANSPORTATION FACILITIES
- VACANT LAND
- RECREATIONAL ACTIVITIES
- PUBLIC LAND
- CEMETERIES
- WATER BODIES

CURRE



MAGNETIC DECLINATION

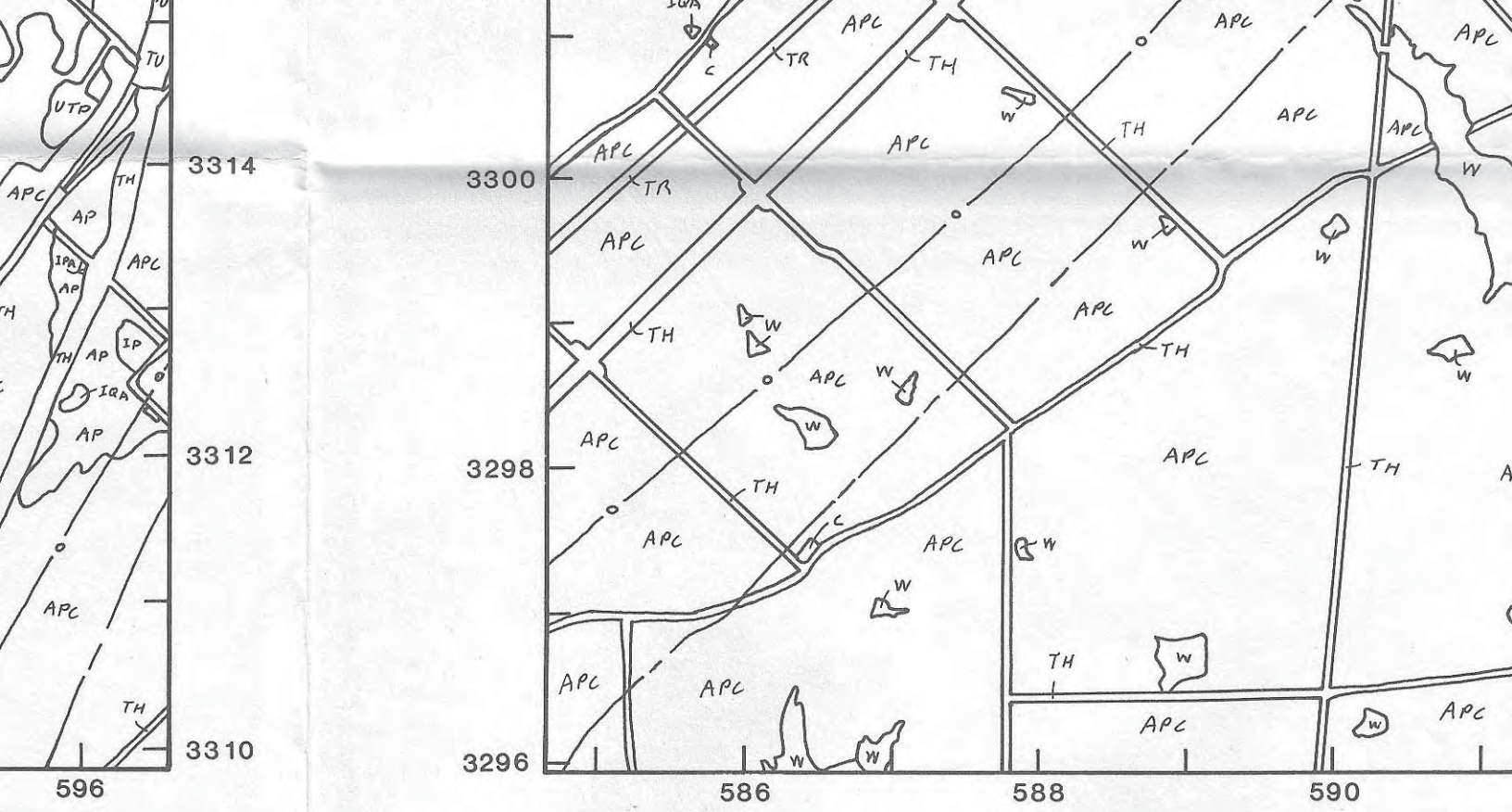
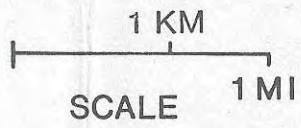


PLATE 6

CURRENT LAND USE



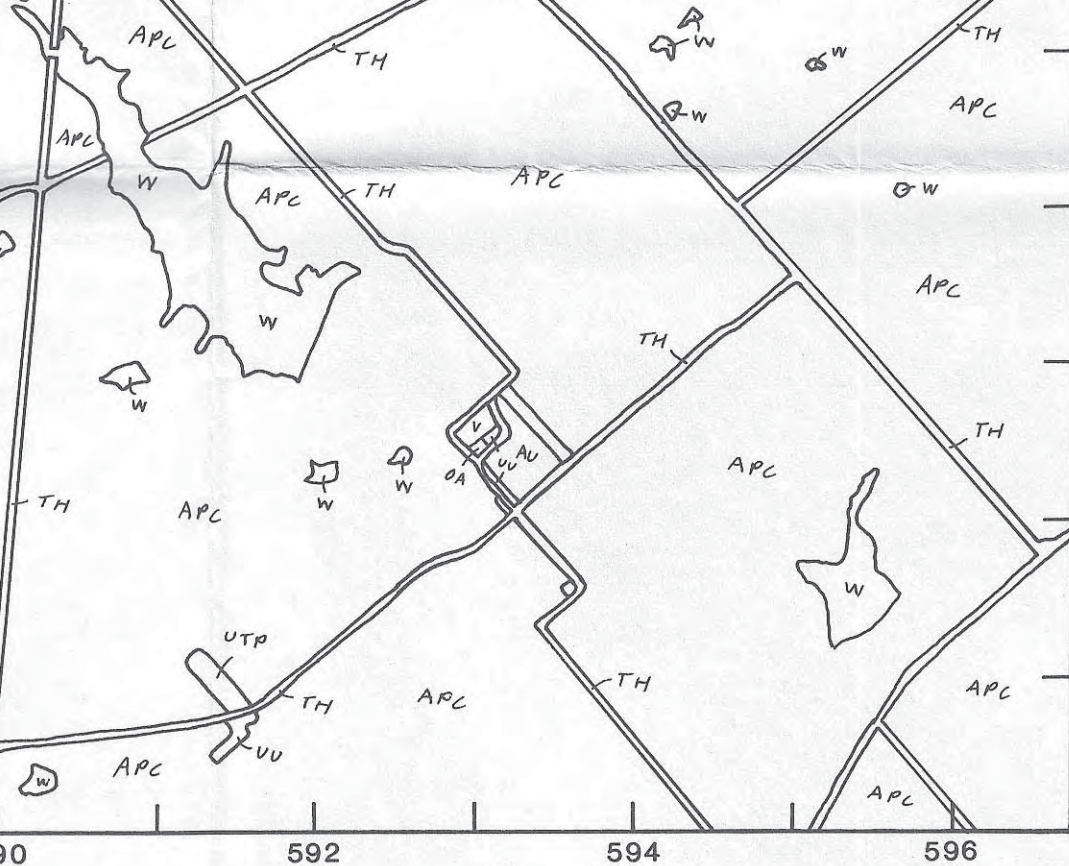


PLATE 6 OF 10

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

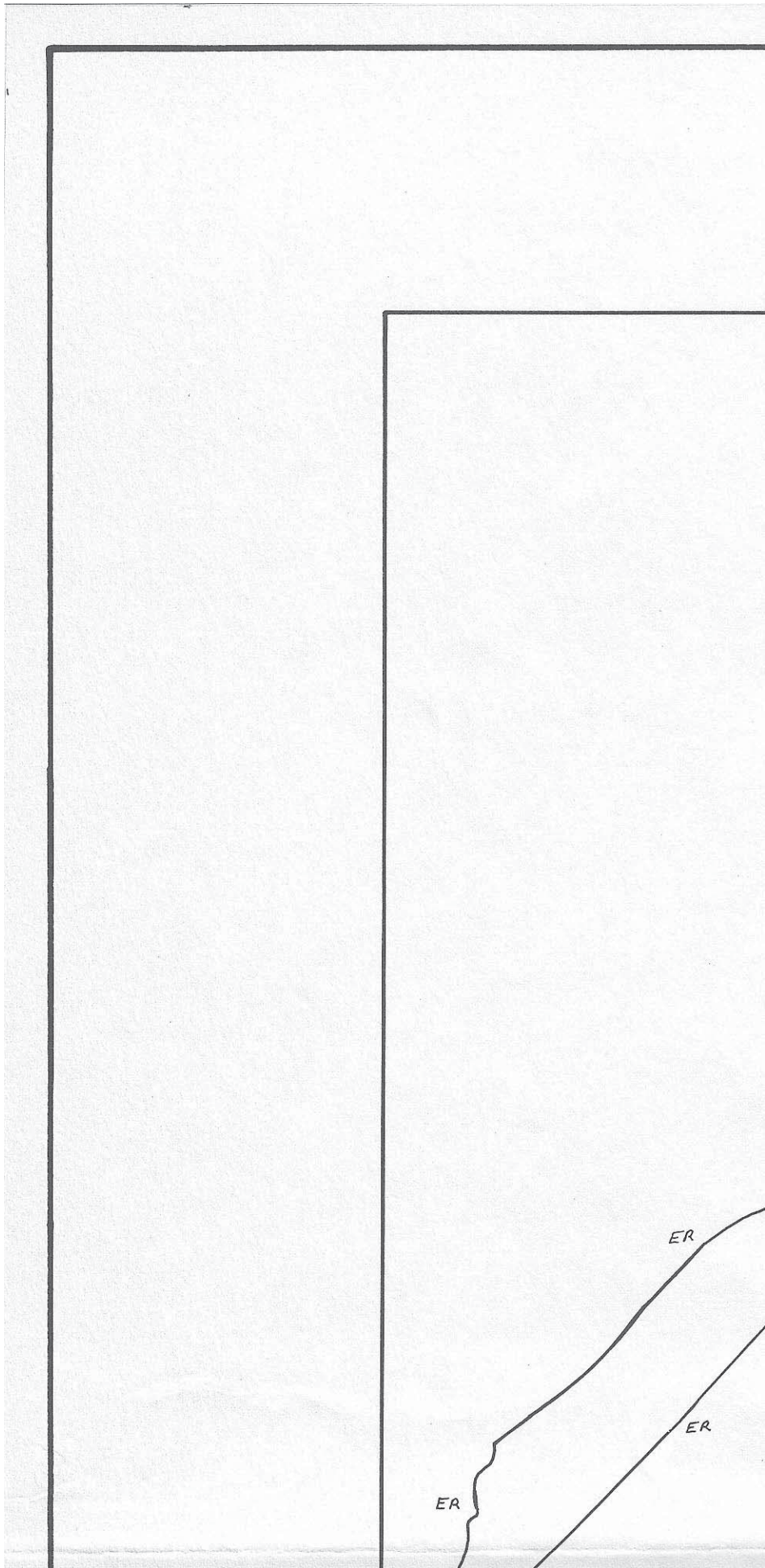
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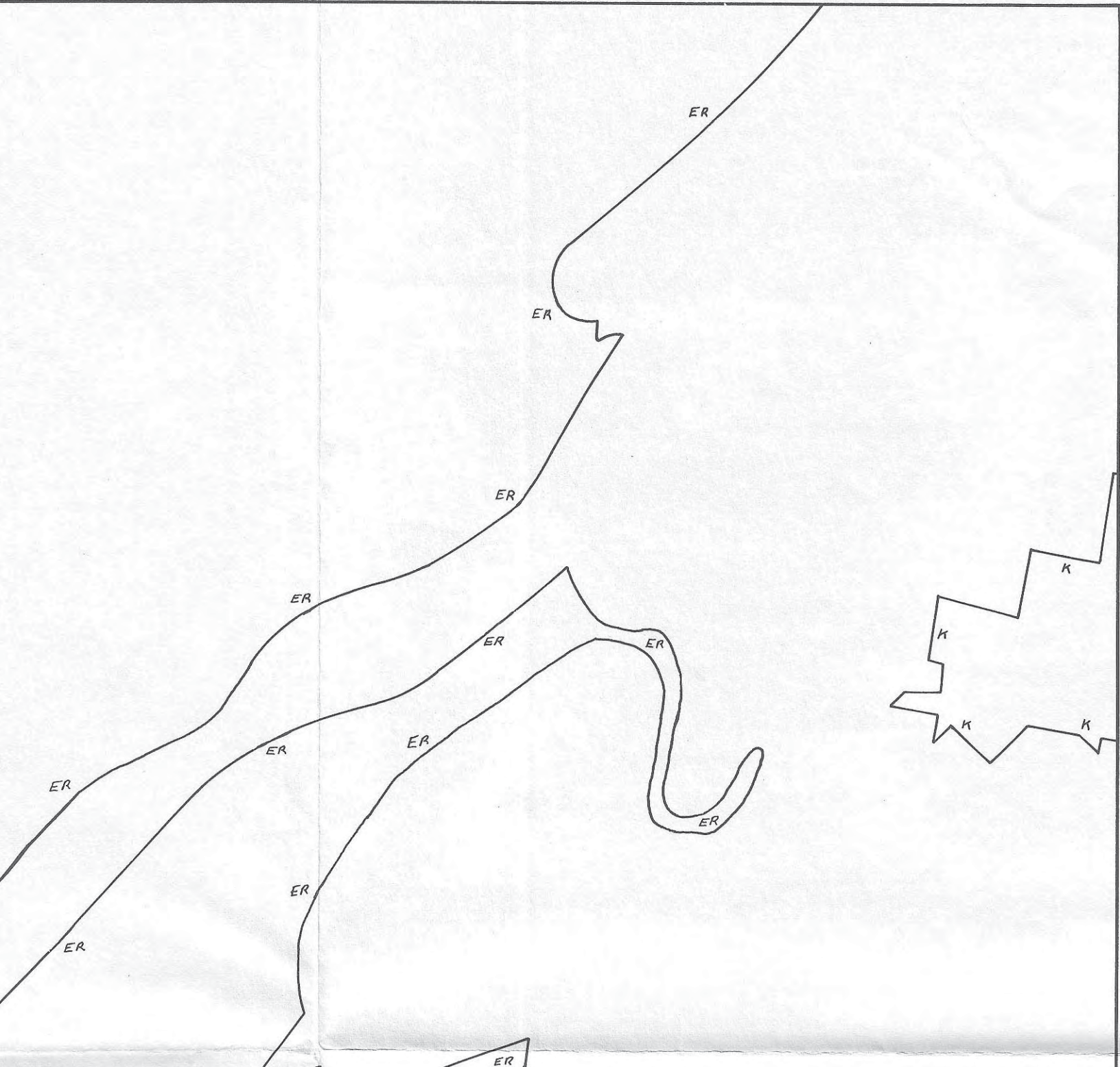


Plate 7

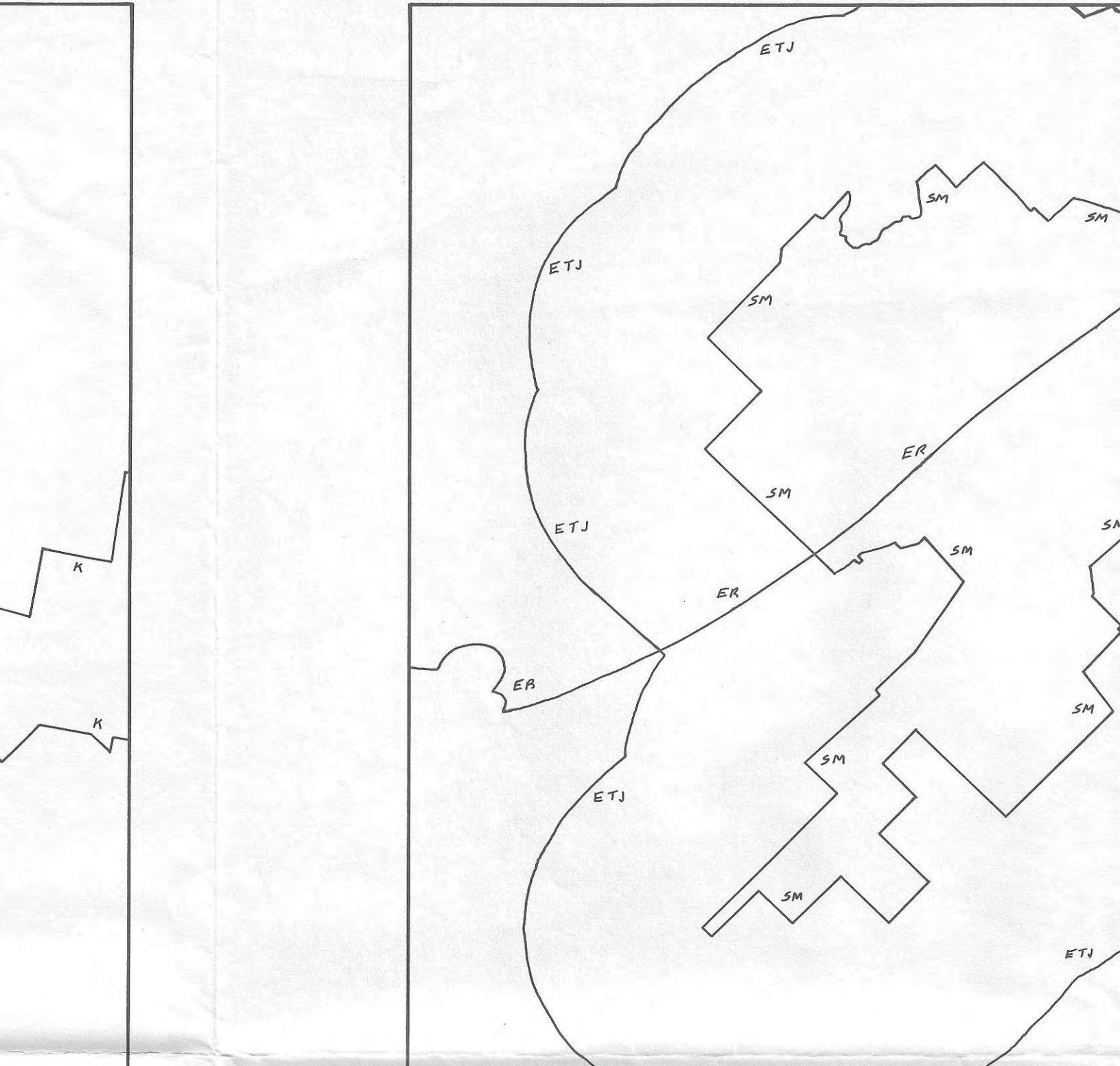
Land Use Control



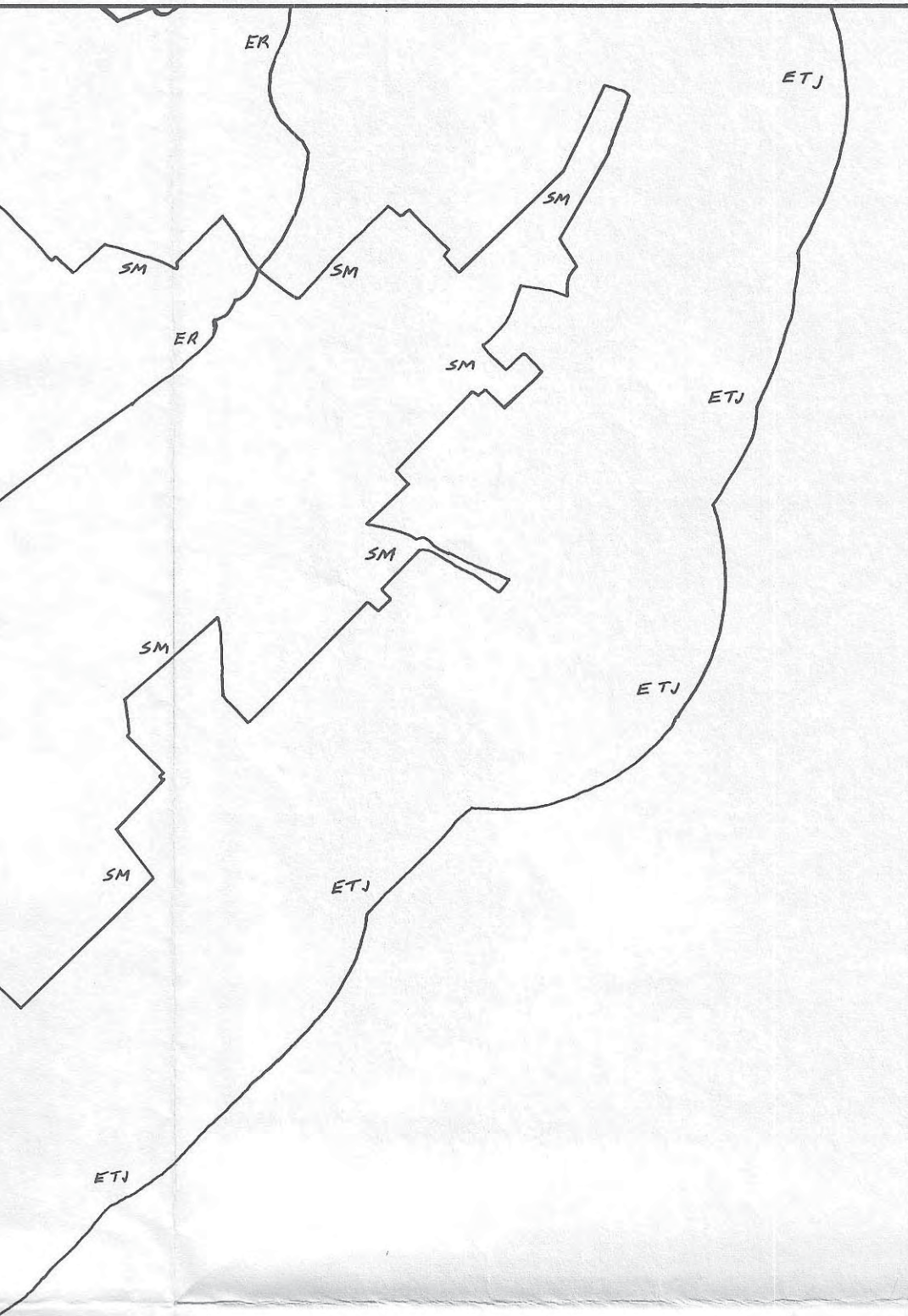
KYLE SECTION

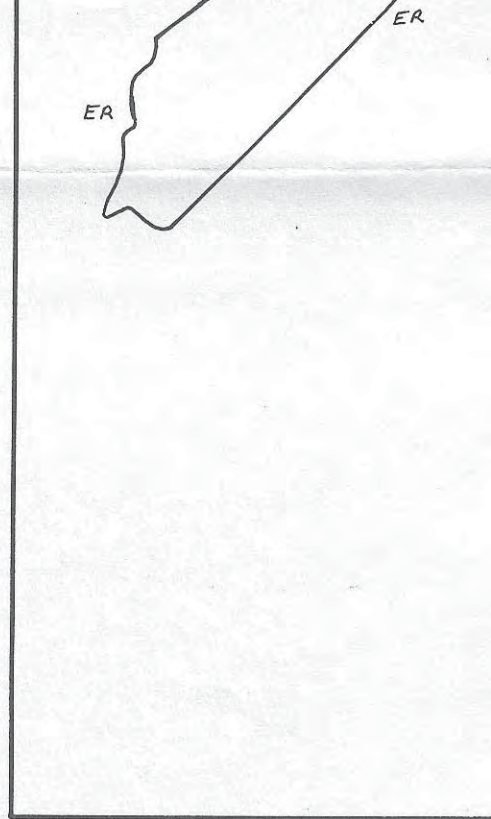


SAN MARCOS



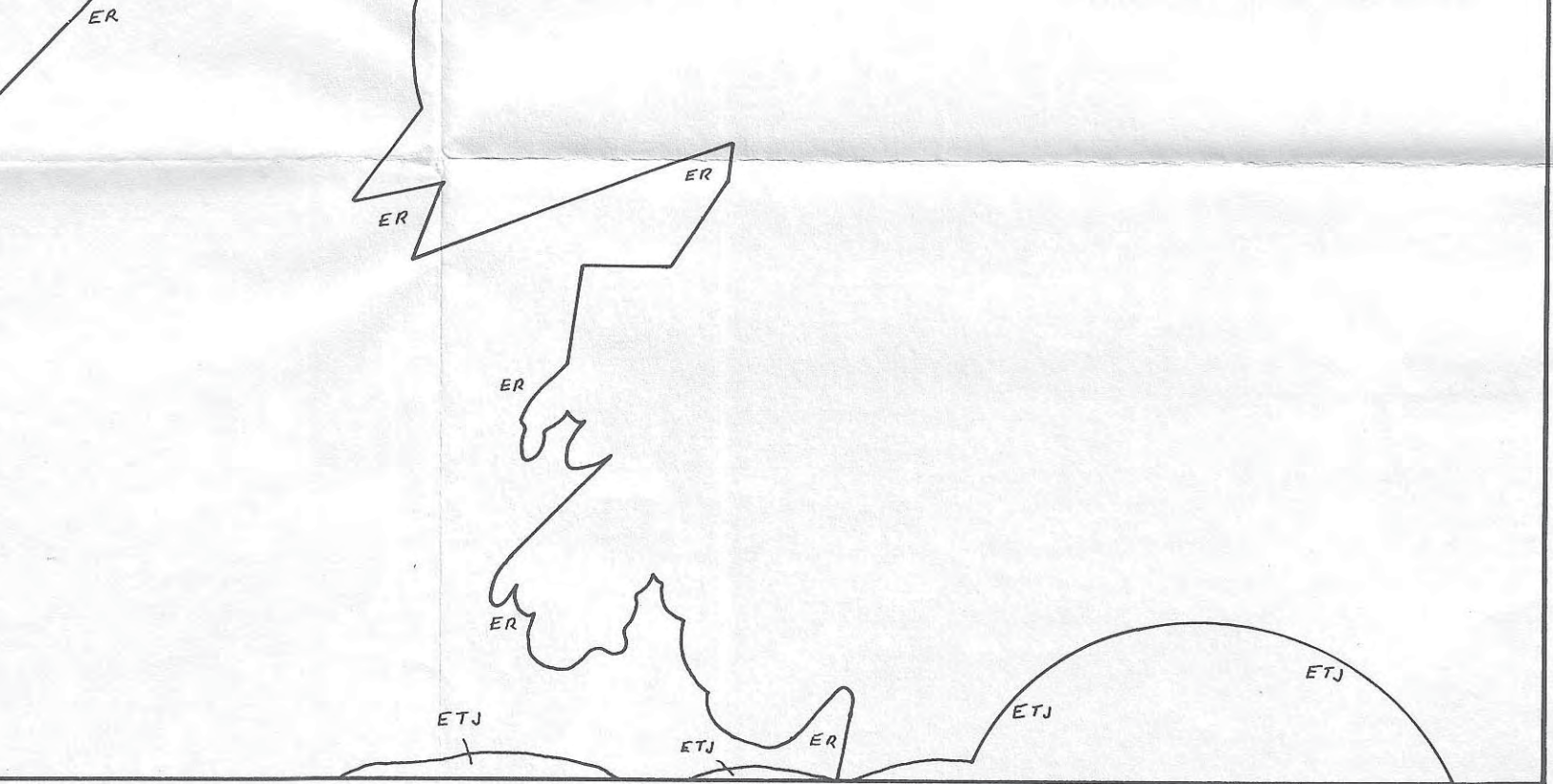
ARCOS SECTION





EXPLANATION

- | | |
|-----|--|
| SM | SAN MARCOS C |
| ETJ | SAN MARCOS EX |
| K | KYLE CITY LIMIT |
| ER | EDWARDS AQUIF
AS RECOGNIZE
WATER QUALITY |



MARCOS CITY LIMITS

LAND U

MARCOS EXTRATERRITORIAL JURISDICTION

CITY LIMITS

ARDS AQUIFER RECHARGE ZONE
COGNIZED BY THE TEXAS
ER QUALITY BOARD



MAGNETIC DECLINATION

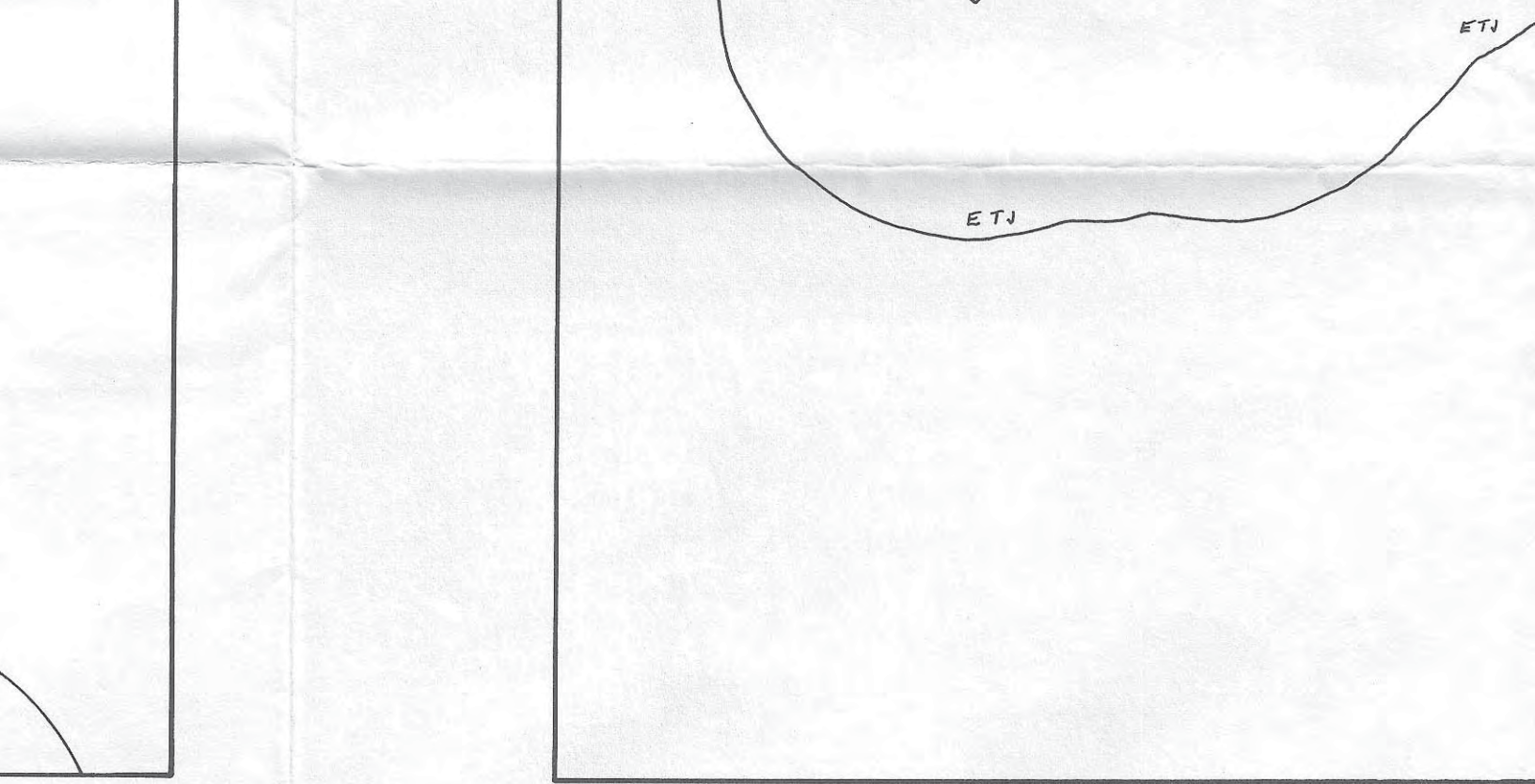
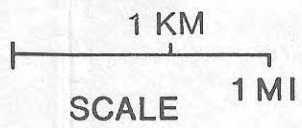


PLATE 7 WATER USE CONTROL



MAPPING CREDITS

1. KYLE CITY LIMITS
FROM THE CITY OF KYLE
2. SAN MARCOS CITY LIMITS
FROM THE CITY OF SAN MARCOS
3. EDWARDS RECHARGE ZONE
FROM UNPUBLISHED MAPS OF
AT TEXAS WATER QUALITY BOARD

ETJ

PLATE 7 OF 10

KYLE
LIMITS
SAN MARCOS
RGE ZONE
ED MAPS ON FILE
QUALITY BOARD, 1976

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

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1976



Plate 8

Complete Demand Analysis Hierarchy for a Sanitary Landfill

Volumetric Capacity

Transportation Factors

Prevention of Environmental
Conflict

SANITARY LANDFILL SUITABILITY

Available Area

Potential Depth

Accessibility from Established Roads

Distance from Solid Waste Sources

Prevention of Impact of Environment

Prevention of Environmental Degradation

Prevention of Endangering Landfill Site
Prevention of Degradation of Substrate Properties by Leachate

Public Health Considerations

Pollution Prevention Potential

Prevention of Gas Explosion Hazard

Fire Prevention and Other Safety Considerations

Potential for Disease and Vector Control

→ LCB

Prevention of Air Pollution

Prevention of Pollution of Substrate Proximal to the Landfill

Prevention of Water Pollution

Prevention of Air Pollution by Gas

Prevention of Air Pollution by Smoke

Prevention of Substrate Pollution by Gas

Prevention of Substrate Pollution by Leachate

Prevention of Substrate Pollution by Fill Material Directly

Prevention of Water Pollution by Fill Material Directly

Prevention of Water Pollution by Landfill Gases

Prevention of Water Pollution by Leachate

Gas, → GB

Relative Seriousness of
Soil Pollution

Potential for Soil Exposure
to Leachate

Composition of Leachate
Exposed to Soil

Soil Susceptibility to
Pollution by Leachate

Prevention of Wind-blown Debris

Prevention of Post-operation Mass
Movement

Prevention of Landfill Inundation
by Floods

Prevention of Failure of
Landfill Material

Prevention of Failure of
Earth Material

Prevention of Post-Operation
Mass Movement

Prevention of Surface Washing
and Erosion

Prevention of Failure of Landfill
Material

Prevention of Failure of Earth
Material

Prevention of Gas Production

Composition of Gases Produced

Prevention of Water Exposure
to Gases

Accessibility of Surface Water
to Landfill Gases

Accessibility of Ground Water
to Landfill Gases

Composition of Leachate Produced

Potential for Leachate Renovation

Leachate Filtration Capacity
of Substrate

Contaminant Adsorption
Capacity of Substrate

Prevention of Leachate Movement

Prevention of Surface Water Pollution
by Leachate Escape to Surface

Prevention of Ground Water Pollution
by Leachate Seepage To Subsurface

Prevention of Development of
Leachate Leakage Points

Prevention of Hydrodynamic Flushing
of Leachate to Surface

Proximity to Recharge Zone
of Significant Aquifer

Prevention of Leachate Seepage
into Subsurface

Prevention of Mobilization
of Contaminants

Abundance of Organic Material

Abundance of Inorganic Contaminant
Sources

DEAD BRANCH
CRITERIA

Available Area	X
Potential Depth	
Accessibility from Established Roads	X
Distance from Solid Waste Sources	X
Prevention of Endangering Landfill Site	□
Prevention of Degradation of Substrate Properties by Leachate	
Prevention of Gas Explosion Hazard	△○
Fire Prevention and Other Safety Considerations	○○
Prevention of Air Pollution by Smoke	○
Prevention of Substrate Pollution by Gas	□
Relative Seriousness of Soil Pollution	△
Potential for Soil Exposure to Leachate	
Composition of Leachate Exposed to Soil	⊗
Soil Susceptibility to Pollution by Leachate	⊗
Prevention of Wind-blown Debris	○○
Prevention of Failure of Landfill Material	
Prevention of Failure of Earth Material	⊞
Prevention of Landfill Inundation by Floods	⊞
Prevention of Failure of Landfill Material	
Prevention of Failure of Earth Material	⊞
Prevention of Surface Washing and Erosion	○
Prevention of Gas Production	○○
Composition of Gas Produced	○○
Accessibility of Surface Water to Landfill Gases	
Accessibility of Ground Water to Landfill Gases	
Composition of Leachate Produced	○○
Leachate Filtration Capacity of Substrate	
Contaminant Adsorption Capacity of Substrate	
Potential for Development of Leachate Leakage Points	
Hydrodynamic Conditions for Leachate Flushing to Surface	
Proximity to Recharge Area of Significant Aquifer	⊞
Prevention of Leachate Seepage into Subsurface	
Abundance of Organic Material	⊗
Abundance of Inorganic Contaminant Sources	⊗

Substrate Engineering Properties

Land Value Factors

Aesthetics

PLATE 8 OF 10

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

DEPARTMENT OF GEOLOGICAL SCIENCES
THE UNIVERSITY OF TEXAS AT AUSTIN

1976

COMP

Ease of Excavation and Manipulation

Ease of Vehicle and Equipment Movement

Dry Weather Trafficability

Wet Weather Trafficability

Initial Land Costs

Post-operation Reclamation Value

Potential Land Value Increase from Urbanization Pressure

Engineering Characteristics of Completed Landfill

Potential for Improvement of Landform

Initial Landform

Final Landform

Presence of Offendees

Proximity of Population Center

Offensive Factors

Wind-blown Debris Prevention

Ugly Site Prevention

Prevention of Operational Noise

Odor Prevention

Prevention of Odors from Fill Material

Prevention of Odors from Gas

→ GB

PLATE 8

COMPLETE DEMAND ANALYSIS HIERARCHY FOR A SANITARY LANDFILL

Prevention of Leachate Generation

Prevention of Mobilization of Contaminants

Water Availability for Leachate Generation

Into Subsurface

Abundance of Organic Material

Abundance of Inorganic Contaminant Sources

Temperature

Prevention of Leachate Production by Water Applied for Compaction

Prevention of Submergence of Landfill by Ground Water

Prevention of Surface Water Entry into Landfill

Ambient Temperature

Temperature Increase by Exothermic Reactions in Landfill

Surface Water Abundance (Regional Precipitation)

Surface Water Accessibility to Landfill

GB →

Gas Branch

Gas Production Prevention

Composition of Gas Produced

Prevention of Gas Escape

LCB →

Landfill Cover Branch

Adequacy of Cover Vegetation

Availability of Cover Material

Adequacy of Cover as a Seal

LANDFILL

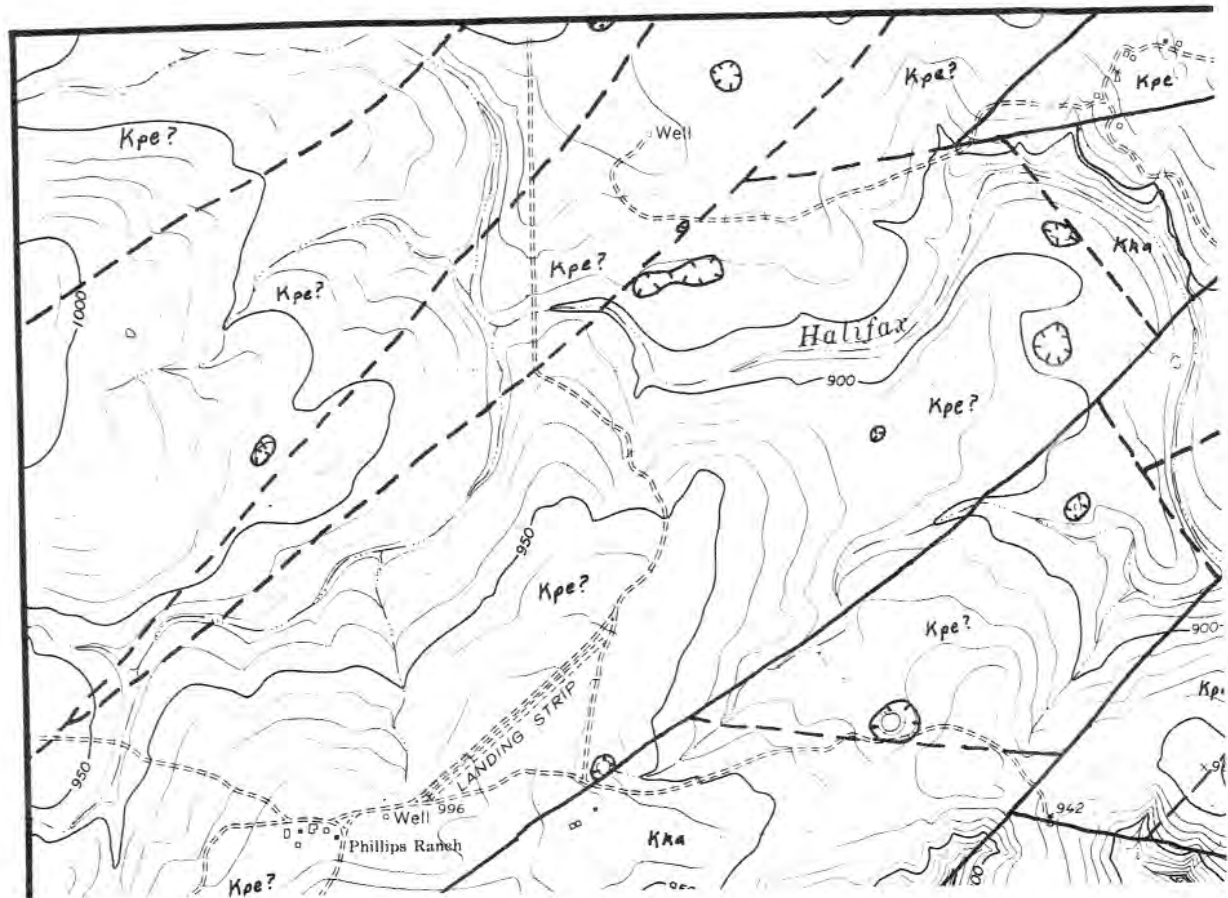
	into subsurface		
	Abundance of Organic Material	⊗	
	Abundance of Inorganic Contaminant Sources	⊗	
	Ambient Temperature	⊙⊗	
	Temperature Increase by Exothermic Reactions in Landfill	⊗	
	Prevention of Leachate Production by Water Applied for Compaction	⊙	
	Prevention of Submergence of Landfill by Ground Water	⊗	
	Surface Water Abundance (Regional Precipitation)	⊙	
Drainage Control Measures	Drainage Control Measures	⊙	
Rate of Surface Water Runoff	Rate of Surface Water Runoff	△	
Potential for Impermeable Cover as a Seal			→ LCB
	Ease of Excavation and Manipulation		
	Dry Weather Trafficability	⊙	
	Wet Weather Trafficability		
	Initial Land Costs	+X	
	Potential Land Value Increase from Urbanization Pressure	+X	
	Engineering Characteristics of Completed Landfill	⊙⊗	
	Initial Landform		
	Final Landform	⊙	
	Proximity of Population Center	X	
	Wind-blown Debris Prevention	⊙⊙	
	Ugly Site Prevention	⊙	
	Prevention of Operational Noise	⊙	
	Prevention of Odors from Fill Material	⊗⊗	
	Gas Production Prevention	⊙⊗	
	Composition of Gas Produced	⊙⊗	
Gas Escape by Solution in Leachate	Prevention of Gas Escape by Solution in Leachate	⊗	
Gas Escape into Surrounding Substrate	Prevention of Gas Escape into Surrounding Substrate		
Gas Escape into Atmosphere			→ LCB
	Adequacy of Cover Vegetation	⊙⊙	
	Availability of Cover Material		
Cover Thickness	Cover Thickness	⊙	
Frequency of Covering	Frequency of Covering	⊙	
Adequacy of Cover Compaction	Adequacy of Cover Compaction	⊙	
Suitability of Cover Material for Compaction to Form a Seal	Suitability of Cover Material for Compaction to Form a Seal		

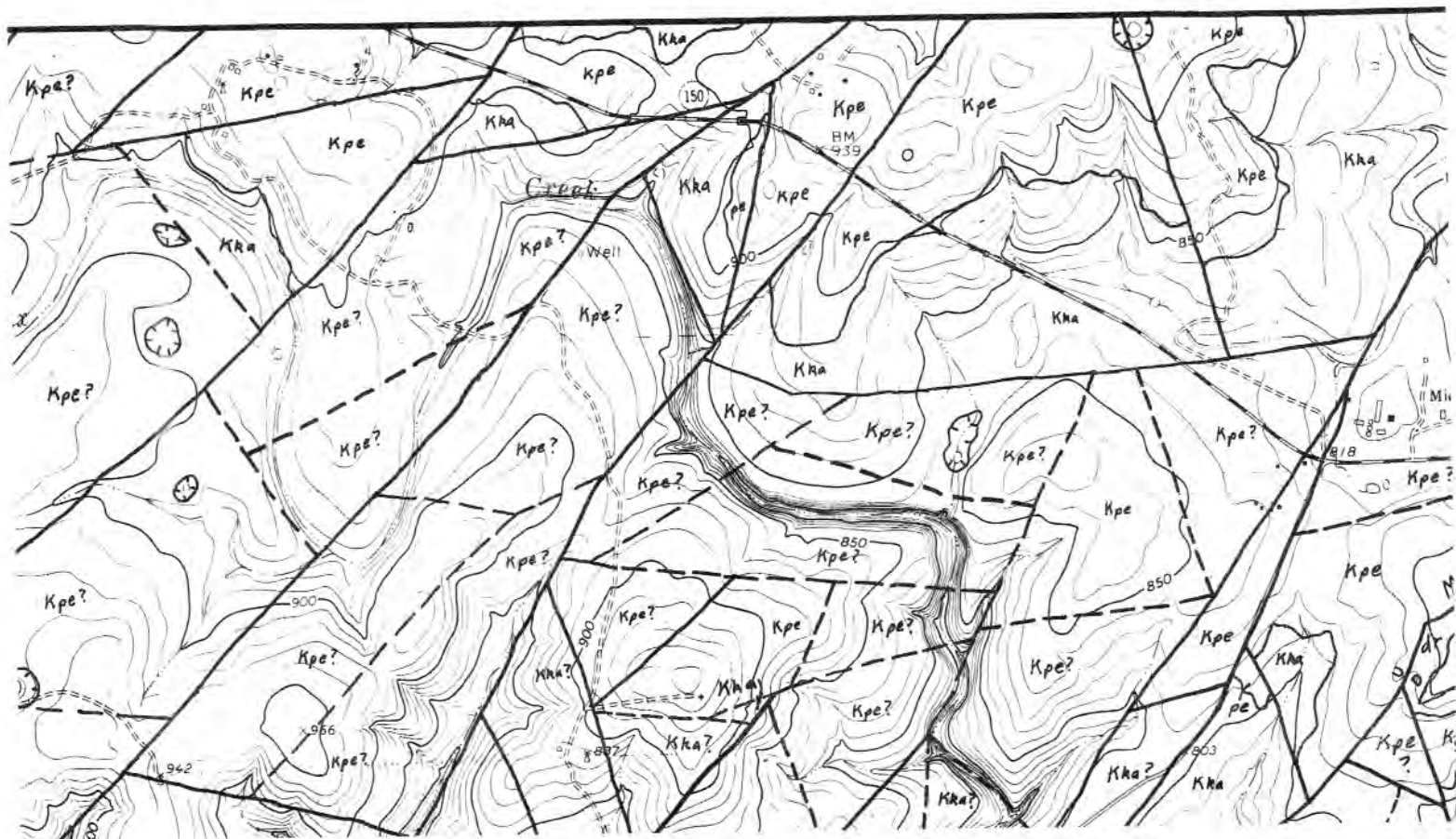


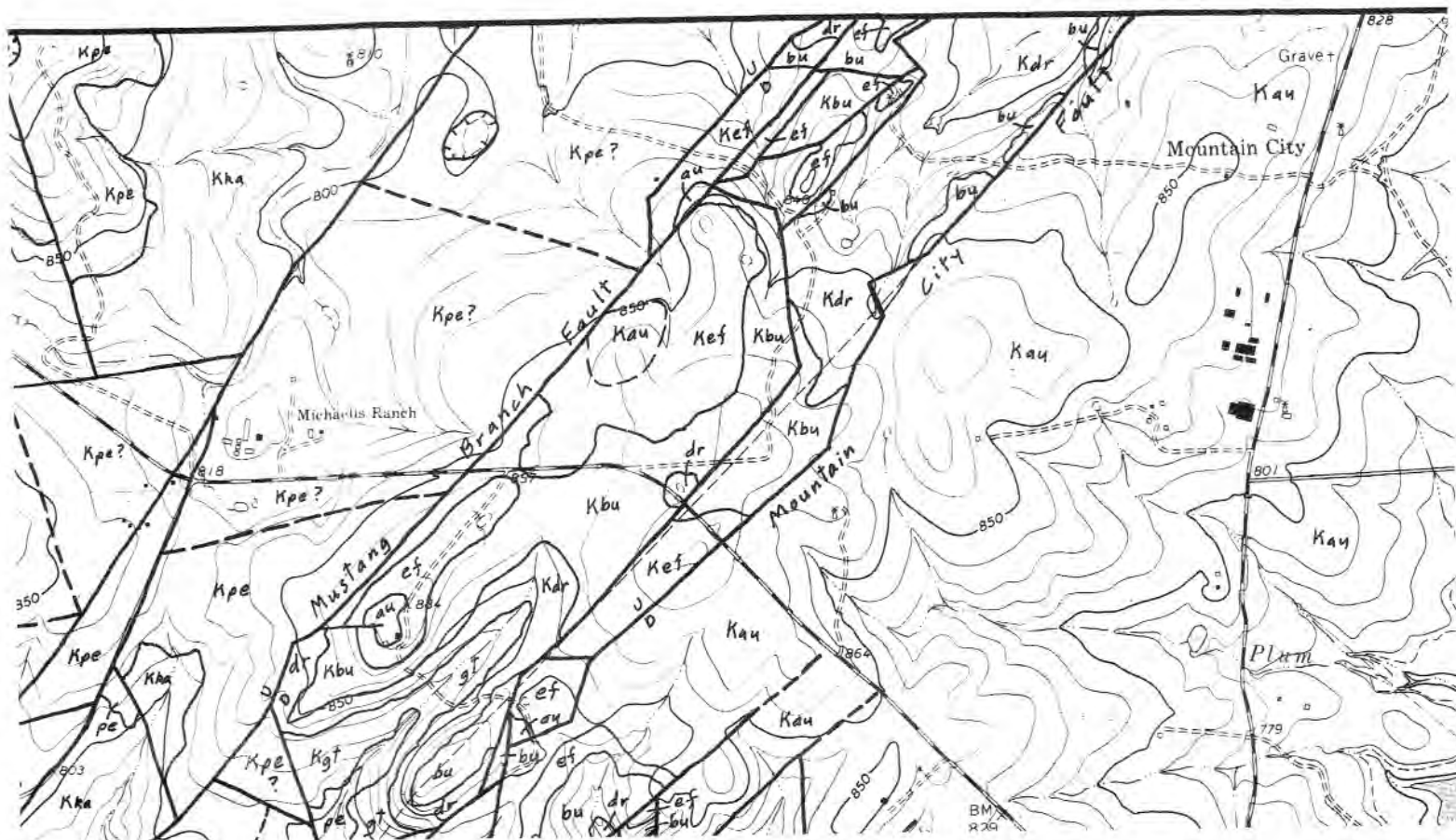
Plate 9

Geologic Map of the Kyle Section

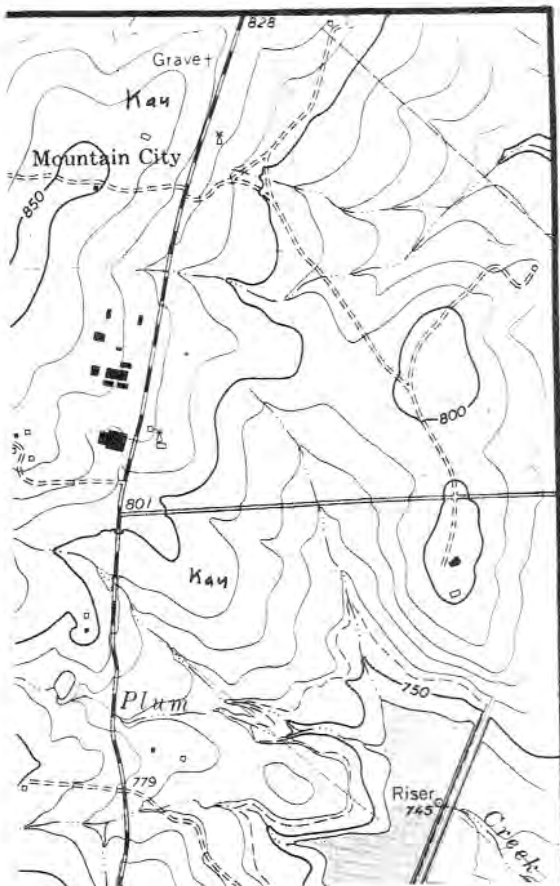
30° 02' 30" 98°







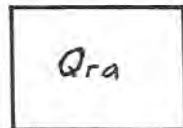
97° 52' 30"



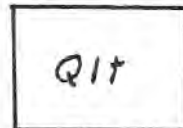
EXPLANATION

MAP UNITS

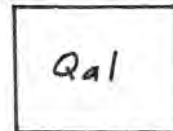
(SEE APPENDIX FOR DESCRIPTIONS)



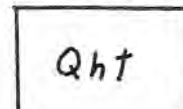
"RECENT" ALLUVIUM



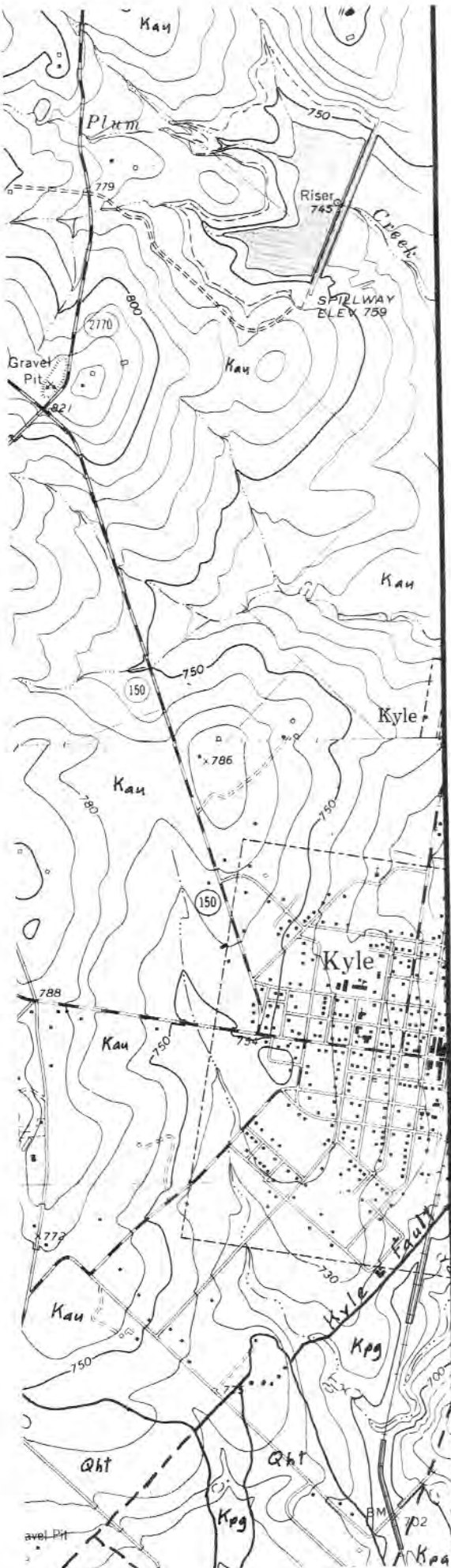
"LOWER"
TERRACE



UNDIFFERENTIATED
ALLUVIUM



QUATERNARY



Q1t

"LOWER" TERRACE

Qal

UNDIFFERENTIATED ALLUVIUM

Qht

"UPPER" TERRACES

Kbe
be

BERGSTROM FM

Kpg
pg

PECAN GAP FM

Ksp
sp

SPRINKLE FM

Kau
au

AUSTIN GP

Kef
ef

EAGLE FORD FM

Kbu
bu

BUDA FM

Kdr
dr

DEL RIO CLAY

Kgt
gt

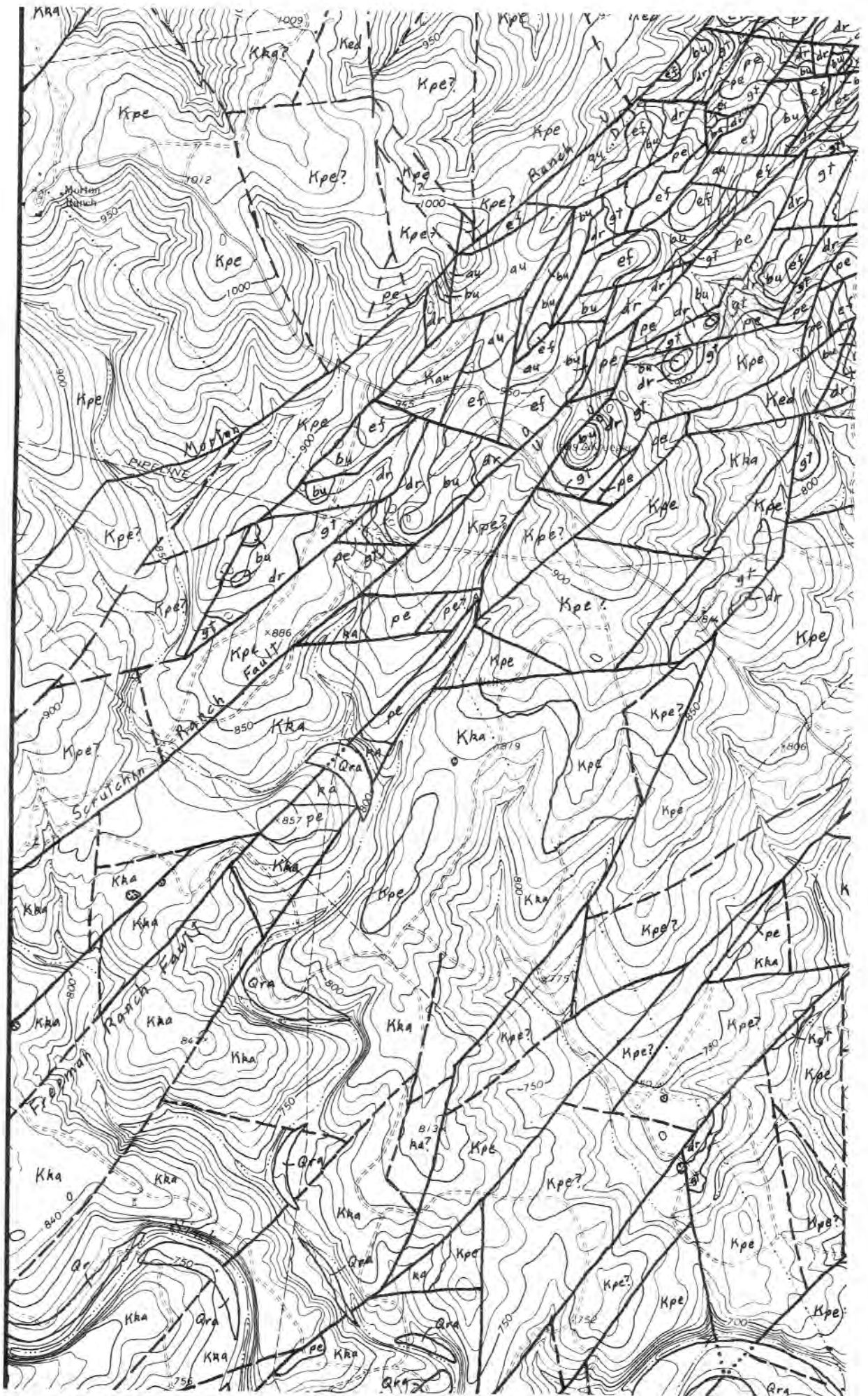
GEORGETOWN FM

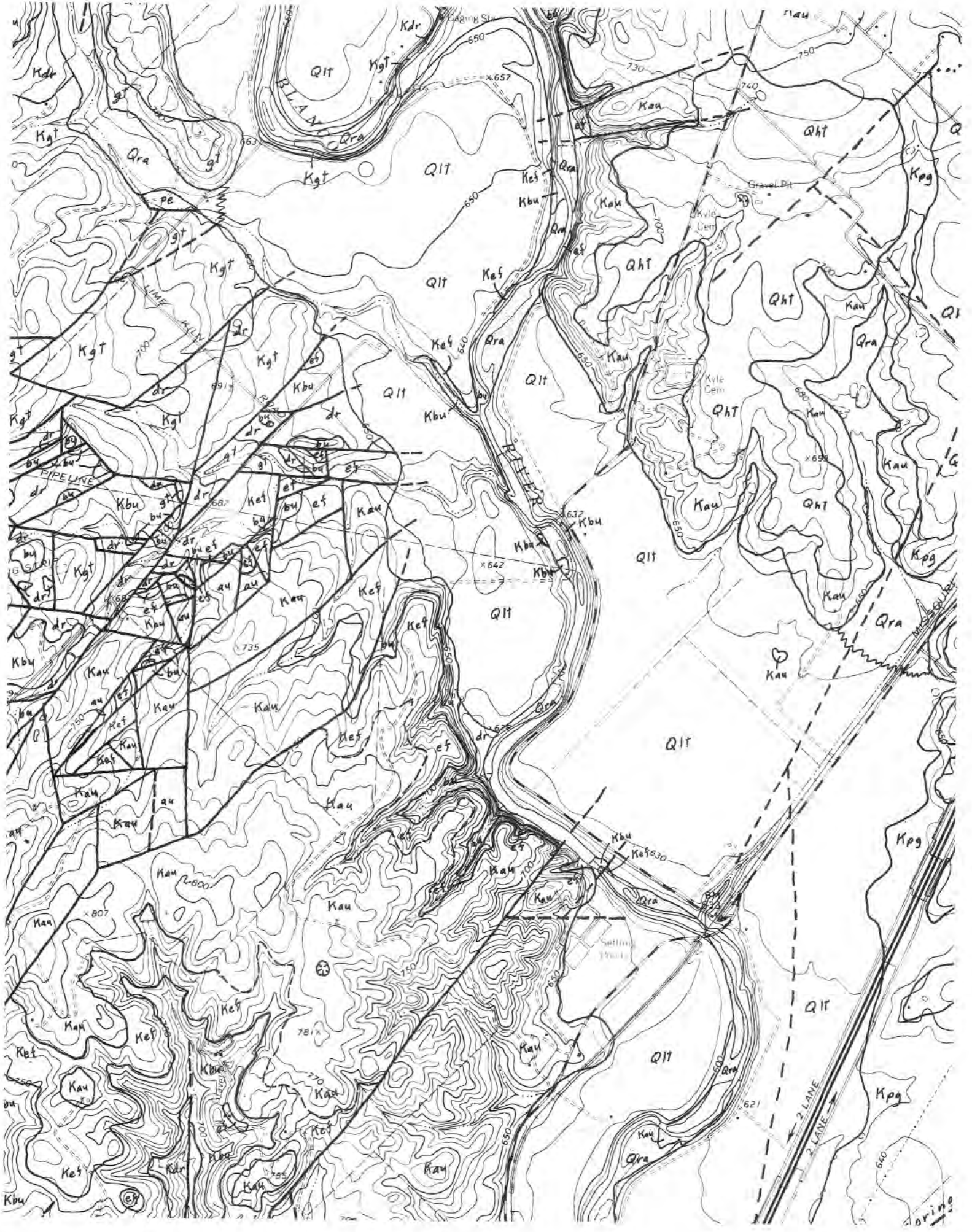
GULF SERIES

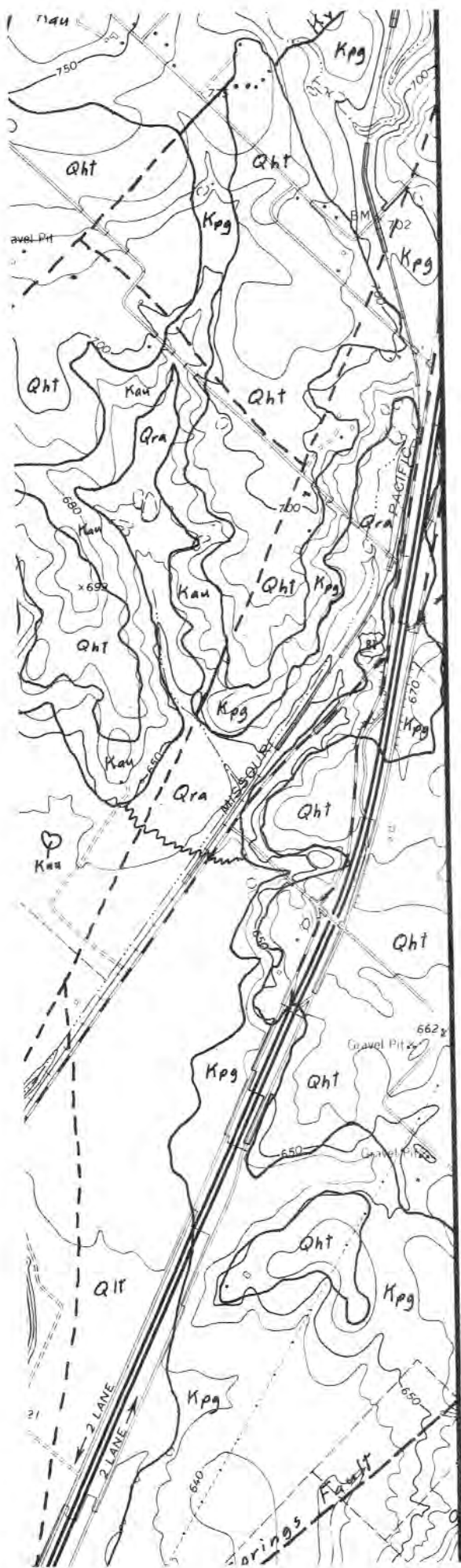
IE SERIES

CRETACEOUS

CRETACEOUS







dr
DEL RIO CLAY

Kgt
gt
GEORGETOWN FM

Kpe
pe
PERSON FM

Kka
ka
KAINER FM

Kgr
gr
GLEN ROSE FM

Ked
ed
EDWARDS GP
UNDIF

COMANCHE SERIES

SYMBOLS

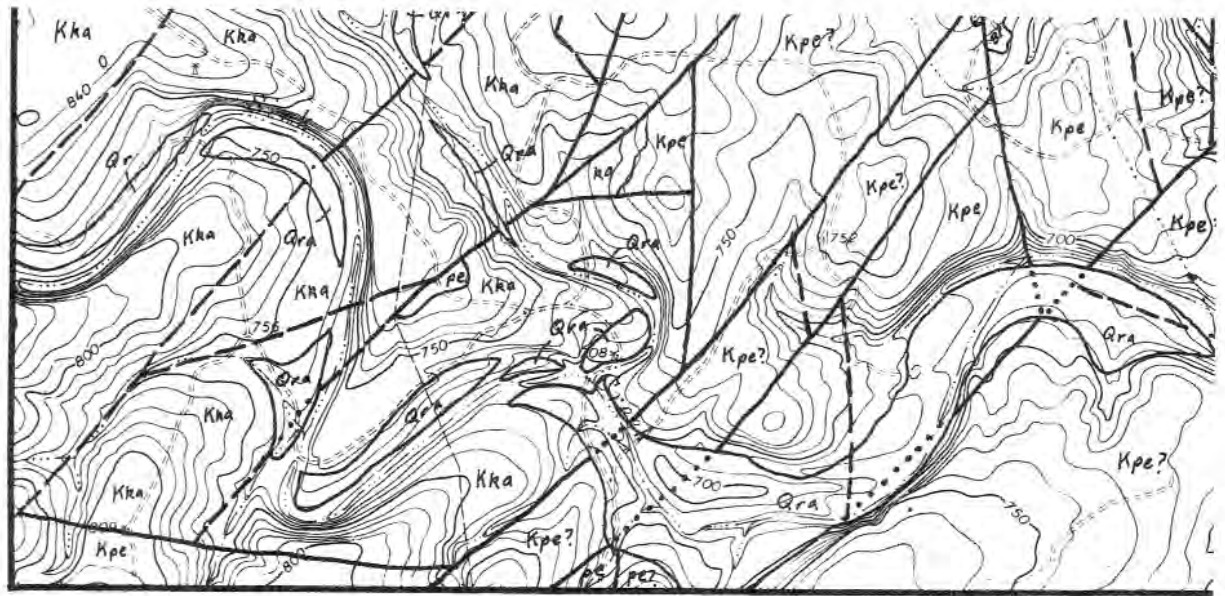

FAULT, WITH DISPLACEMENT


INFERRED FAULT


CONCEALED FAULT

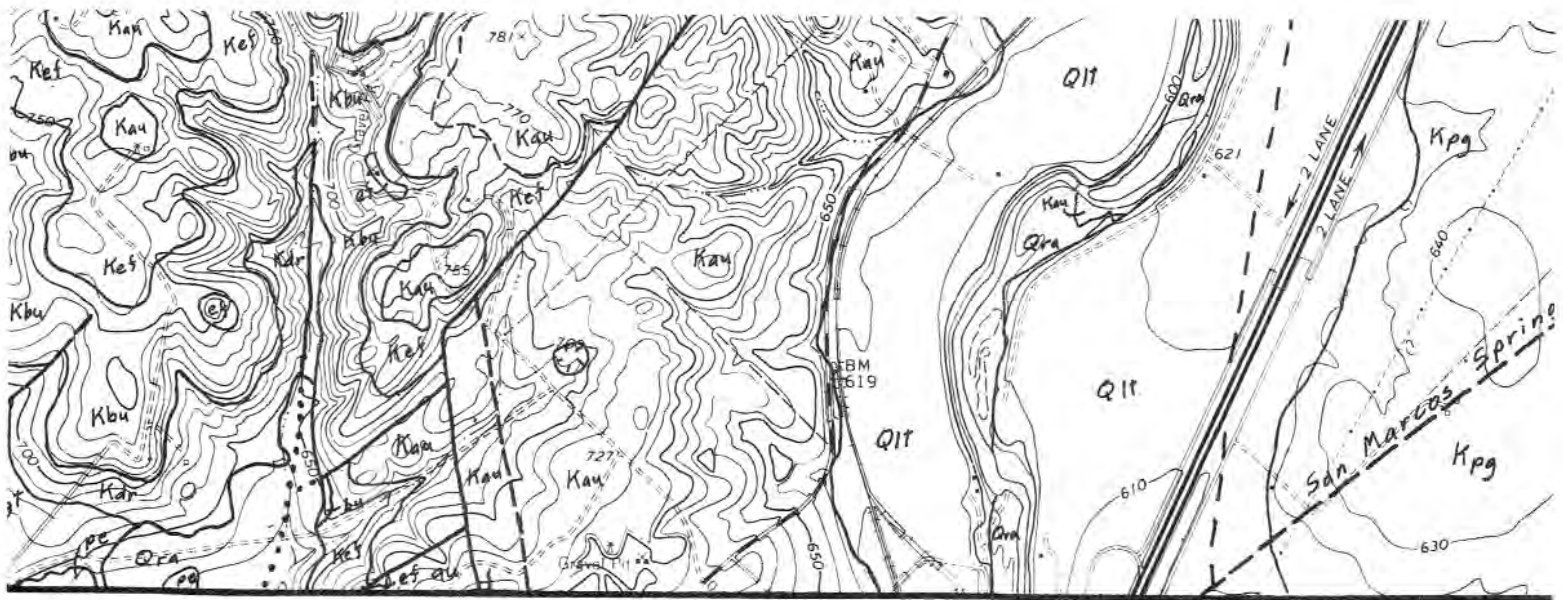

STRATIGRAPHIC CONTACT

29° 55'



BASE MAP :
U. S. GEOLOGICAL SURVEY
MOUNTAIN CITY AND
SAN MARCOS NORTH QUADRANGLES
(SEE FIGURE 3.1 IN TEXT)

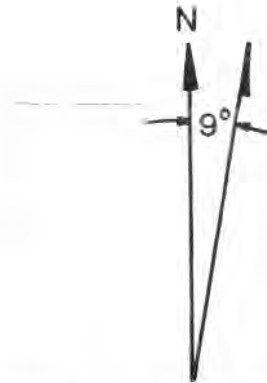
GEOLOGIC
S,



2 KILOMETERS

2 MILES

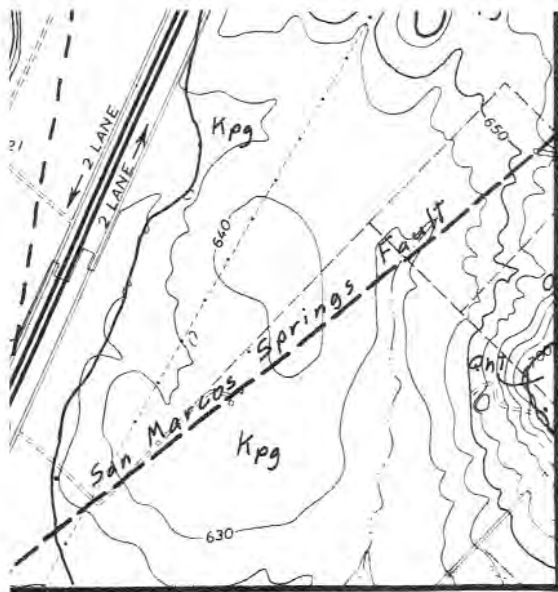
0 FEET
EVEL

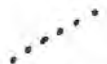






MAGNETIC DECLINATION

ATE 9

F THE KYLE SEC'
S AREA, TEXAS



-  CONCEALED FAULT
-  STRATIGRAPHIC CONTACT
-  INFERRED CONTACT
-  COVERED CONTACT
-  SINKHOLE



MAGNETIC DECLINATION

PLATE 9 OF 10

ENVIRONMENTAL GEOLOGY OF
URBAN AND URBANIZING AREAS

THOMAS W. GRIMSHAW

DEPARTMENT OF GEOLOGICAL SCIENCES
THE UNIVERSITY OF TEXAS AT AUSTIN

1976

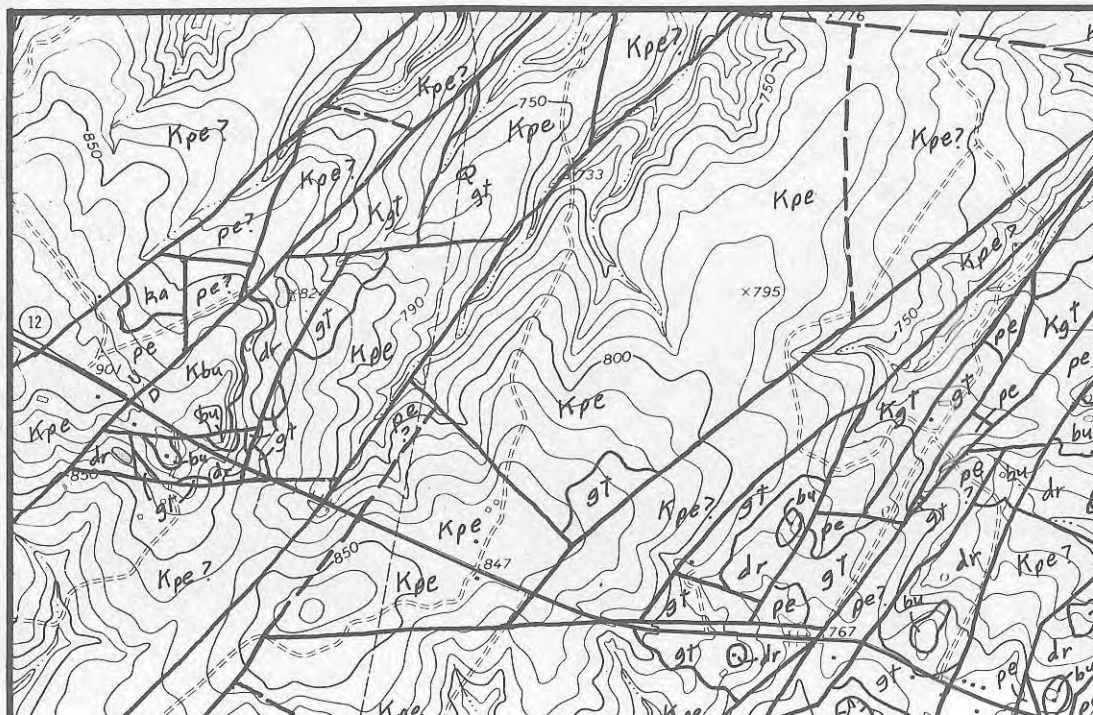
SECTION AS

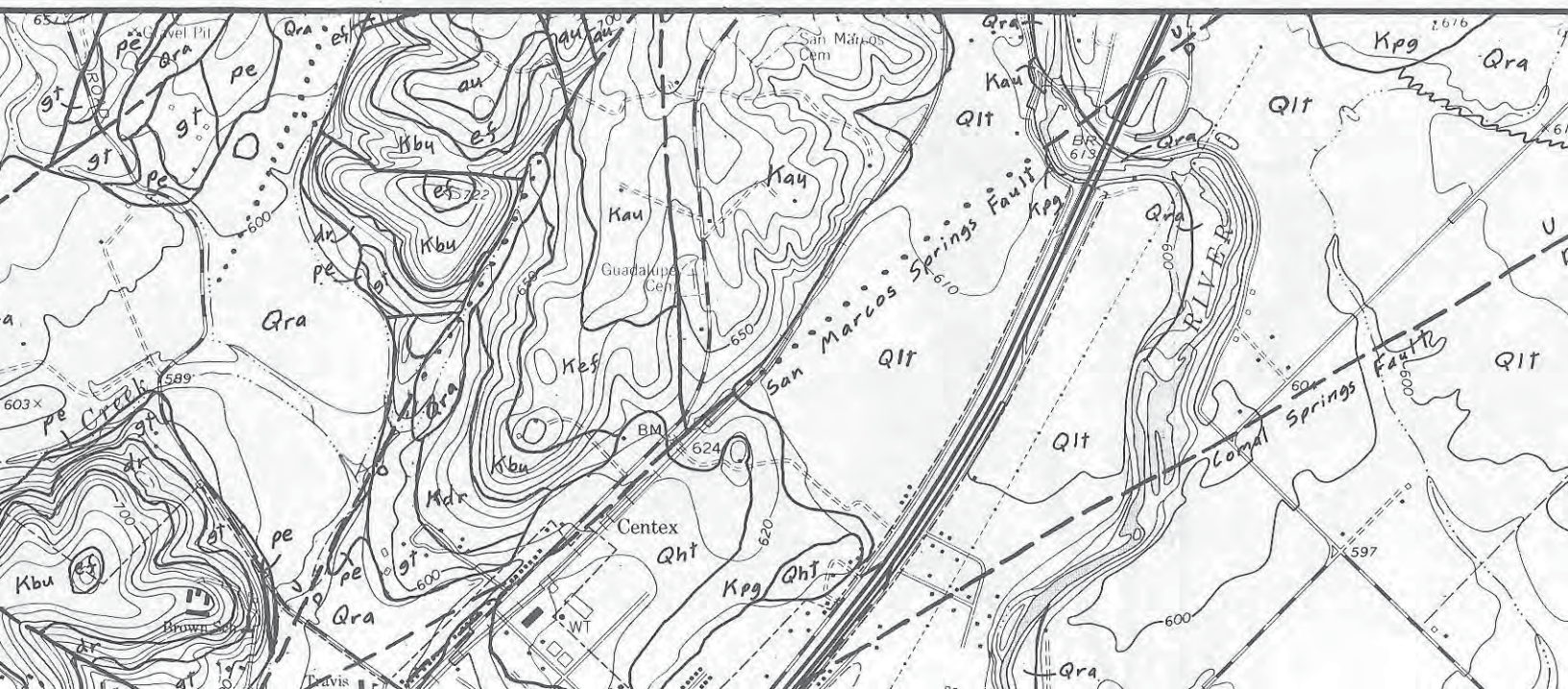


Plate 10

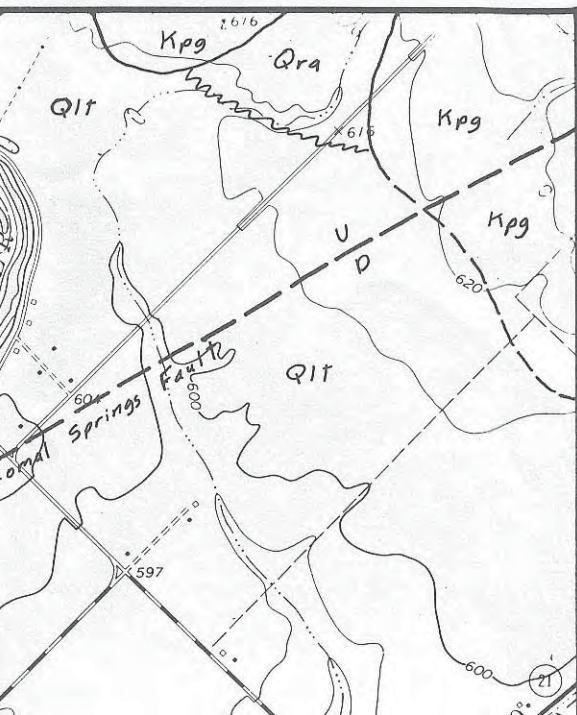
Geologic Map of the San Marcos Section

98°
29° 55'





97° 52' 30"



EXPLANATION

MAP UNITS

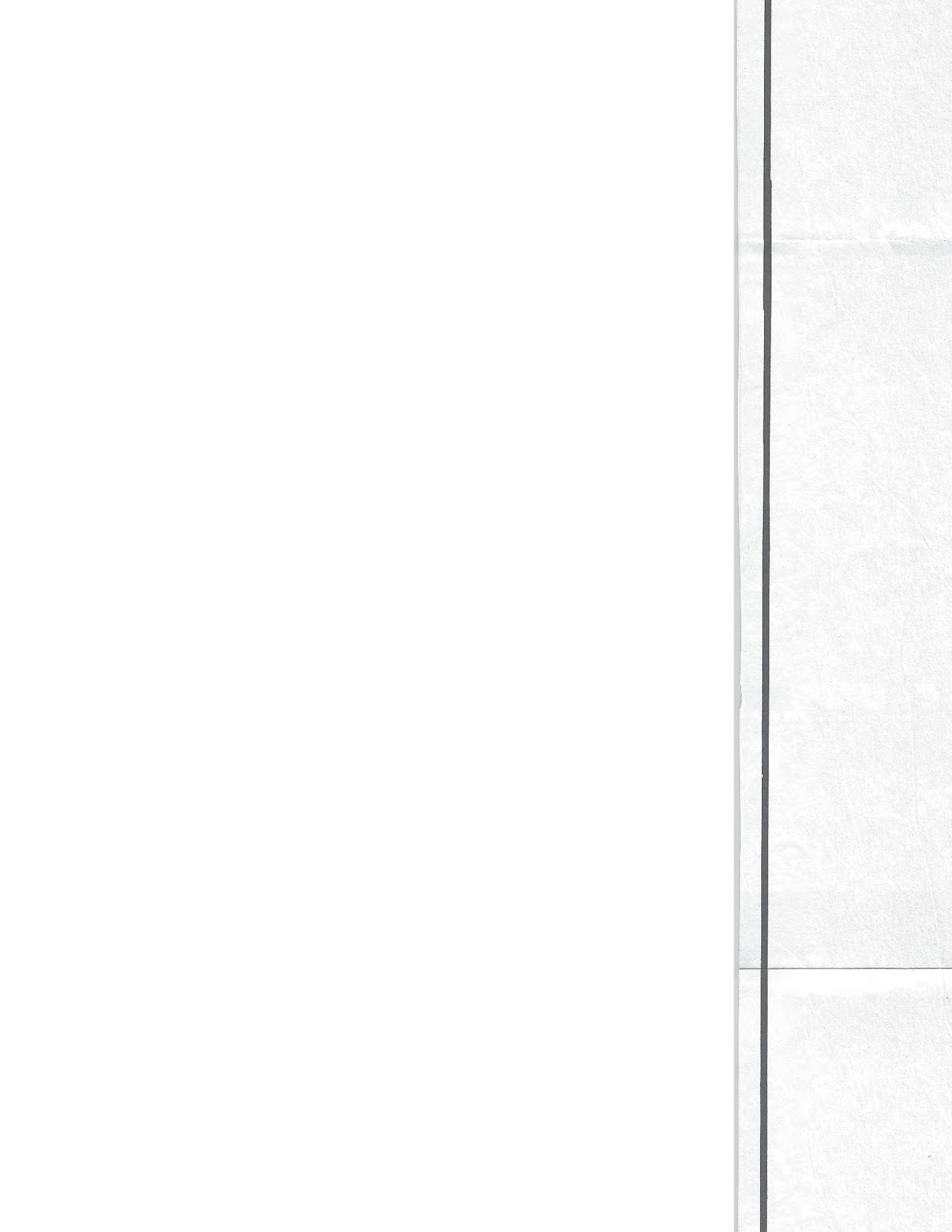
(SEE APPENDIX FOR DESCRIPTIONS)

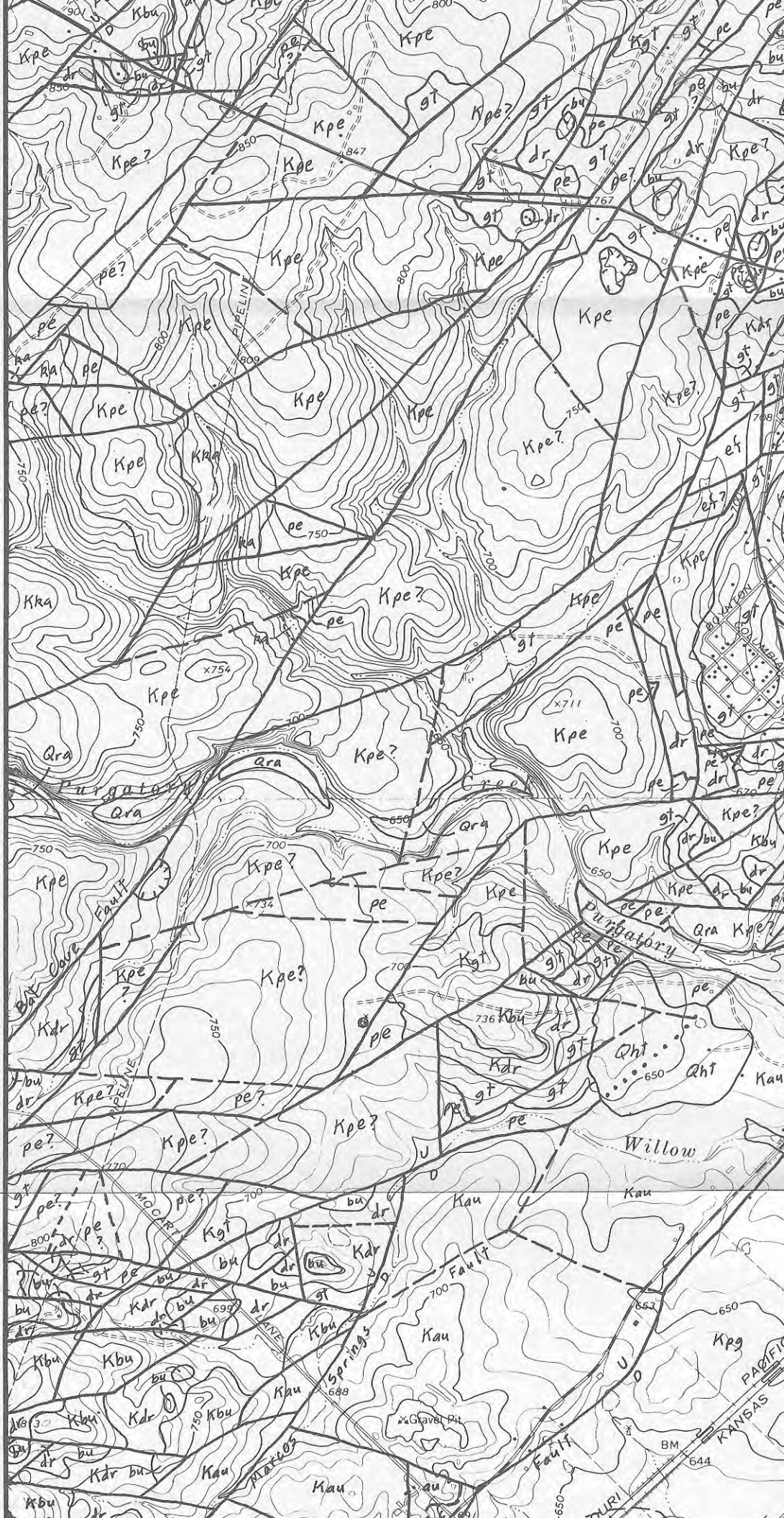
Qra
"RECENT" ALLUVIUM

Qit
"LOWER"

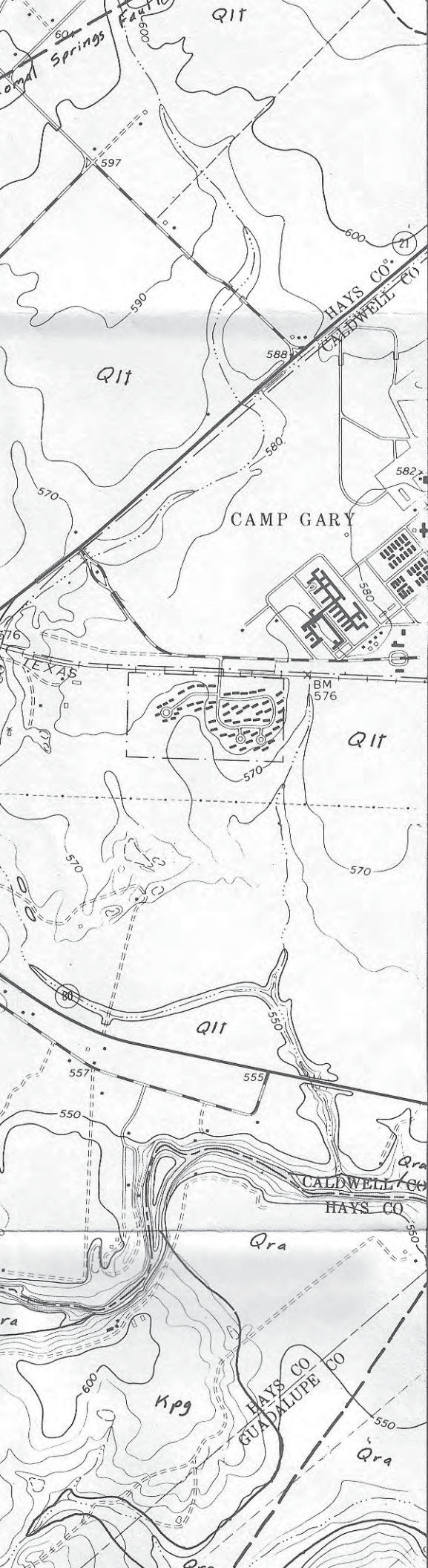
Qal

TERNARY









Qra

"RECENT" ALLUVIUM

Qit

"LOWER" TERRACE

Qal

UNDIFFERENTIATED ALLUVIUM

Qht

"UPPER" TERRACES

Kbe
be

BERGSTROM FM

Kpg
pg

PECAN GAP FM

Ksp
sp

SPRINKLE FM

Kau
au

AUSTIN GP

Kef
ef

EAGLE FORD FM

Kbu
bu

BUDA FM

Kdr
dr

DEL RIO CLAY

Kgt
gt

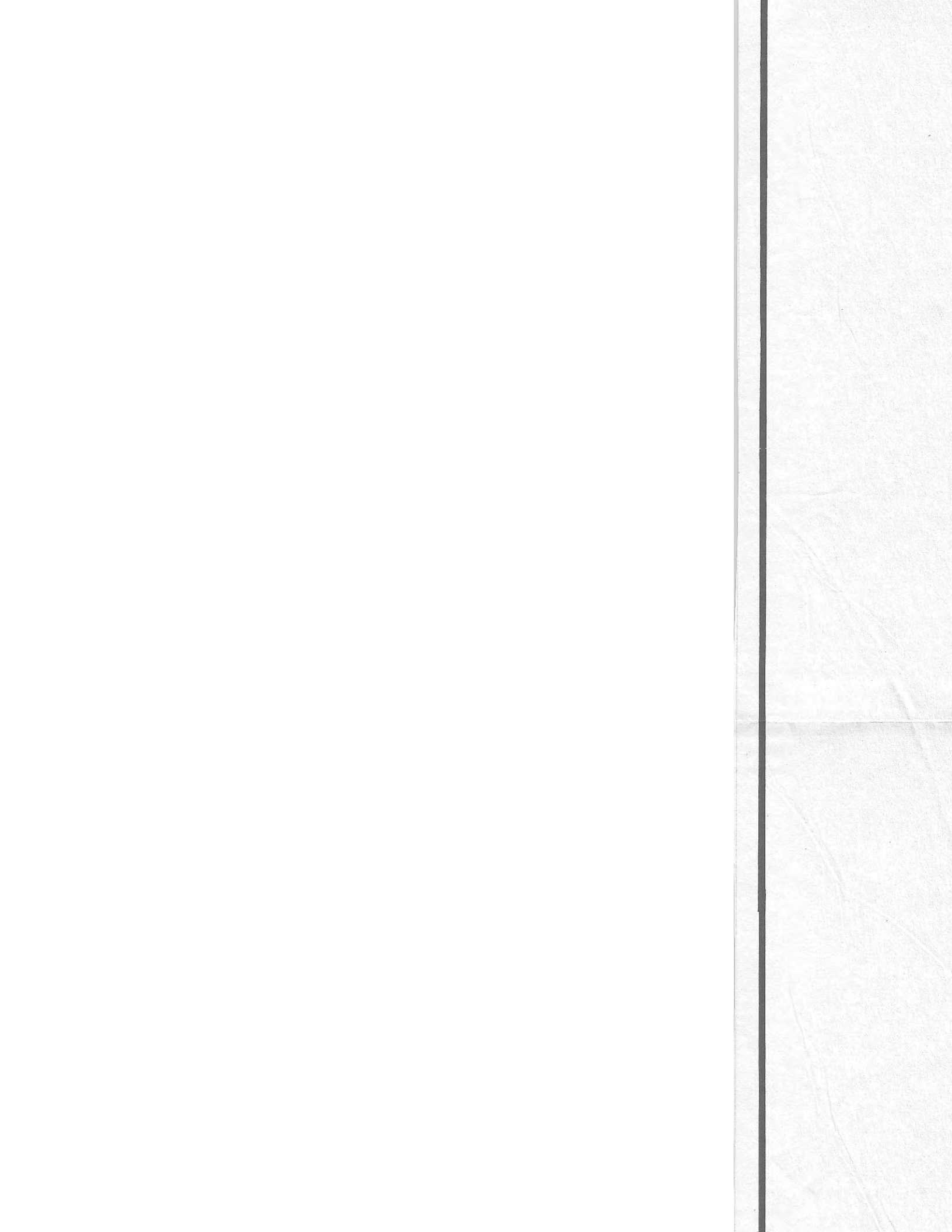
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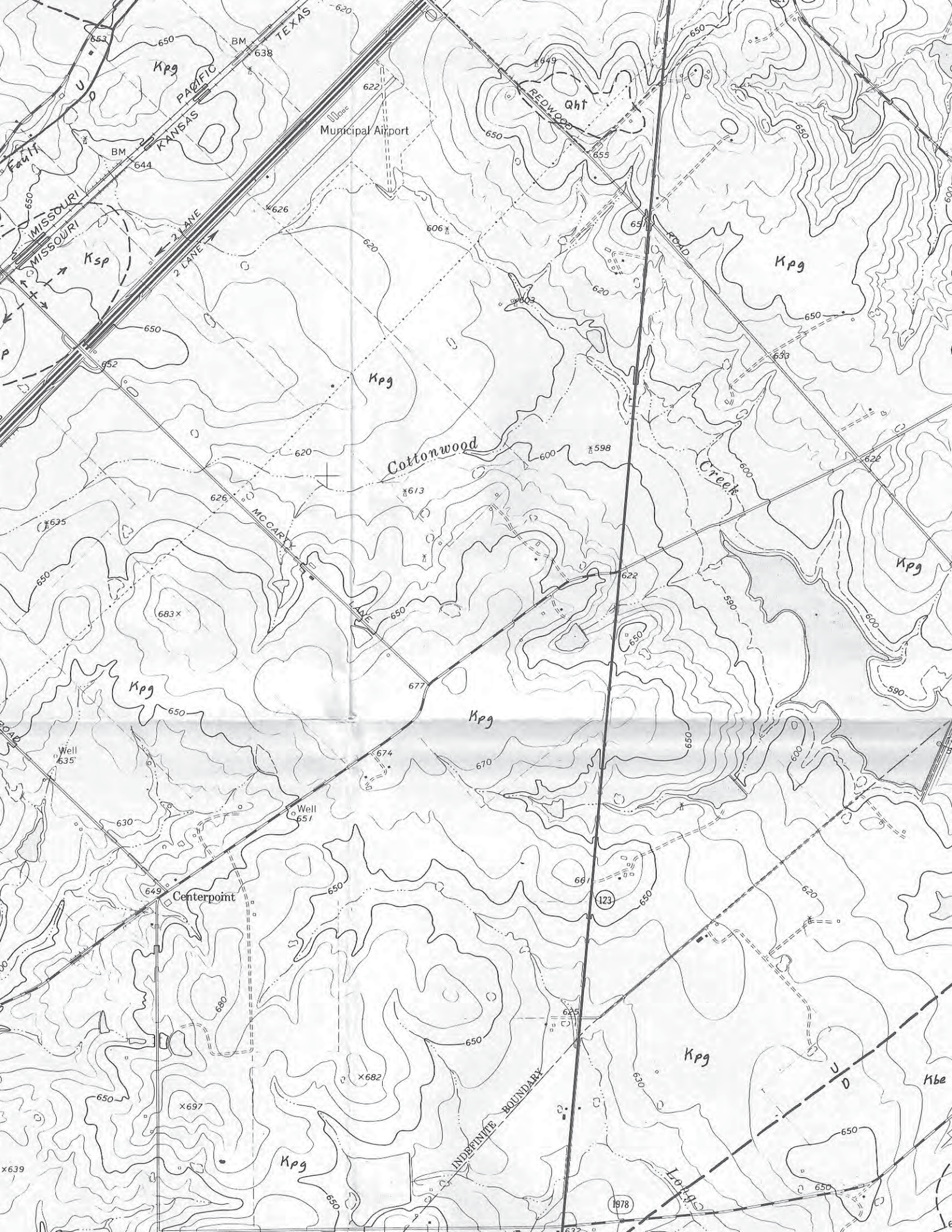
QUATERNARY

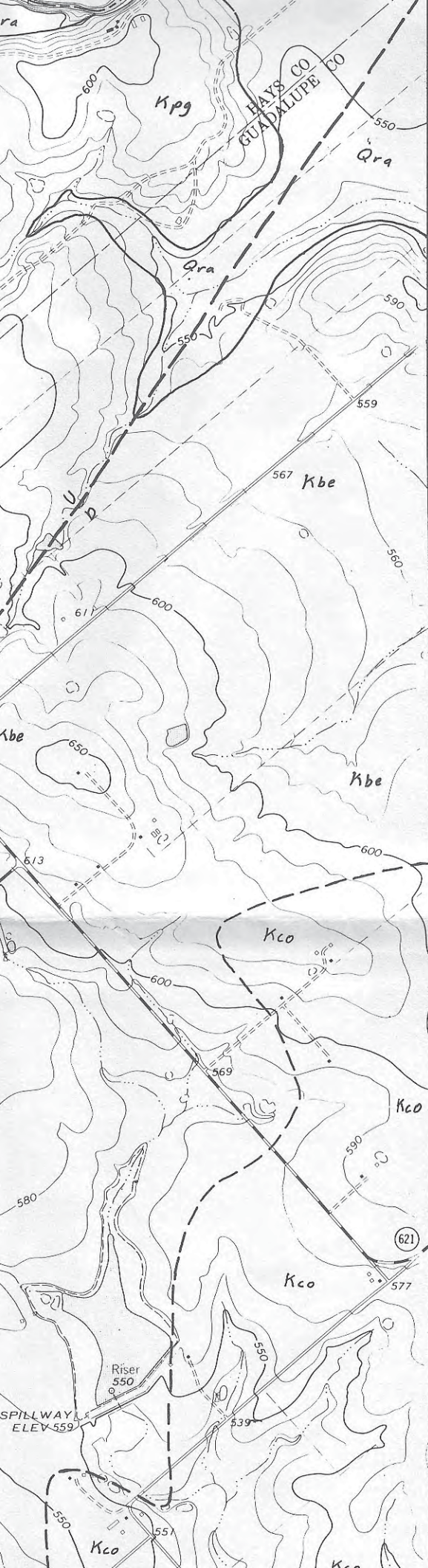
GULF SERIES

CRETACEOUS

SERIES







Kdr
dr

DEL RIO CLAY

Kgt
gt

GEORGETOWN FM

Kpe
pe

PERSON FM

Kka
ka

KAINER FM

Kgr
gr

GLEN ROSE FM

Ked
ed

EDWARDS GP
UNDIF

COMANCHE SERIES

SYMBOLS



FAULT, WITH DISPLACEMENT



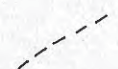
INFERRED FAULT



CONCEALED FAULT

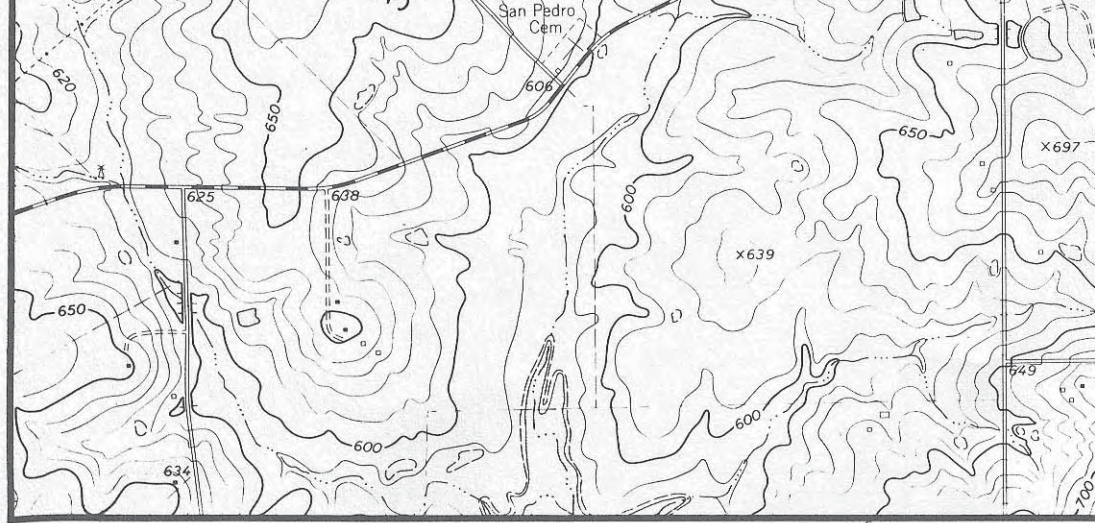


STRATIGRAPHIC CONTACT



29° 47'

29° 47' 30''



BASE MAP :

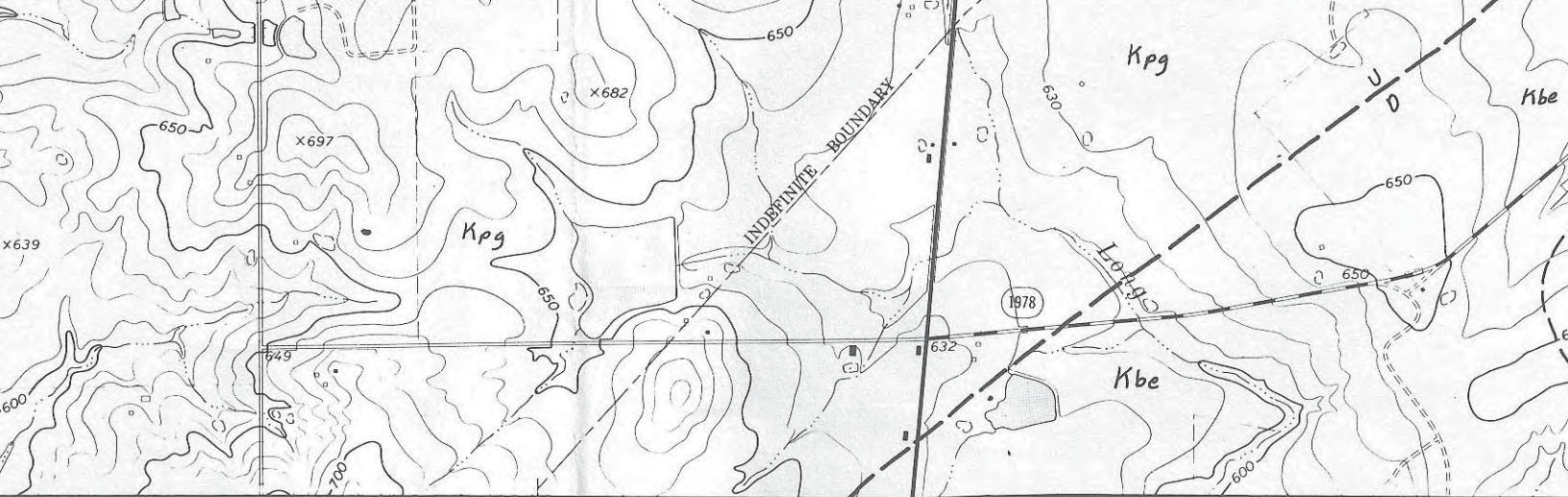
U. S. GEOLOGICAL SURVEY

SAN MARCOS NORTH AND

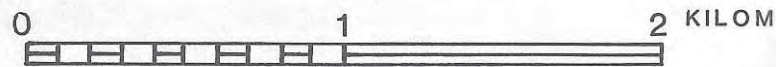
SAN MARCOS SOUTH QUADRANGLES

(SEE FIGURE 3.1 IN TEXT)

GEOLOGIC



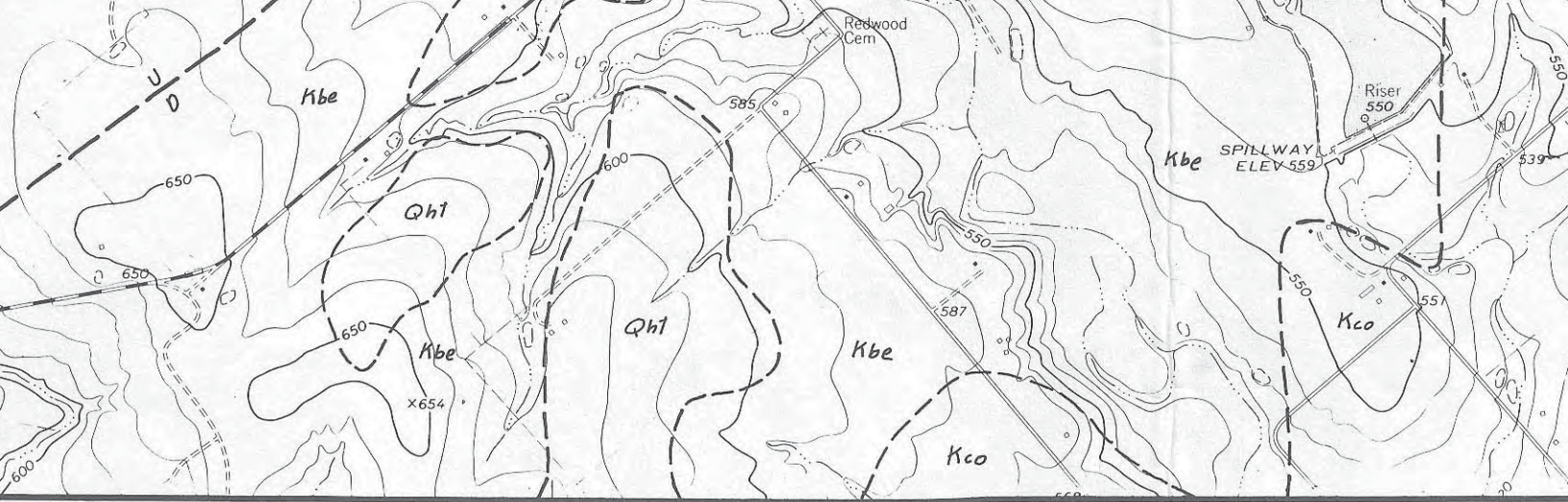
SCALE 1 : 24,000



CONTOUR INTERVAL : 10 FEET
DATUM IS MEAN SEA LEVEL

PLATE

OGIC MAP OF THE S
SAN MARCOS A

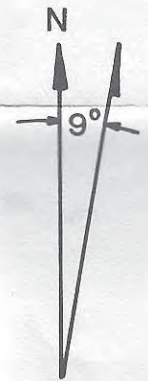


,000

2 KILOMETERS

2 MILES

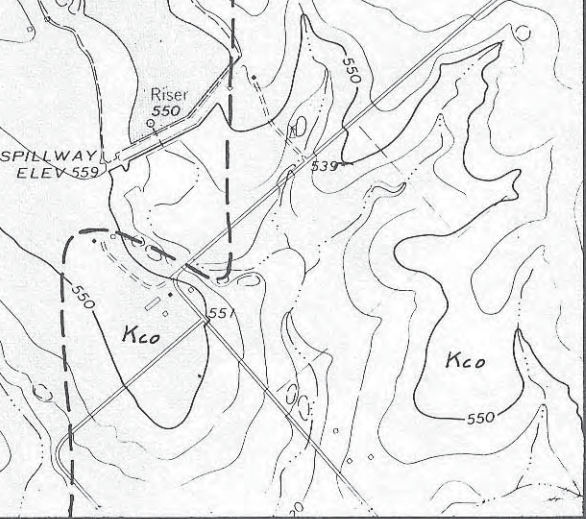
SCALE : 10 FEET
TO SEA LEVEL



MAGNETIC DECLINATION

LATE IO

THE SAN MARCOS S
OS AREA, TEXAS



CONCEALED FAULT

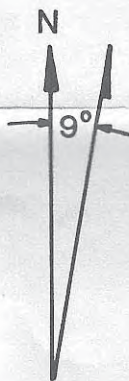
STRATIGRAPHIC CONTACT

INFERRED CONTACT

COVERED CONTACT

SINKHOLE

INFERRED DOME



MAGNETIC DECLINATION

PLATE 10 OF 10

ENVIRONMENTAL GEOLOGY OF
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THE UNIVERSITY OF TEXAS AT AUSTIN

1976

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KAS