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MINERAL RESOURCES SURVEY, SEVEN ADDITIONAL VALLEYS, NEVADA/UTAH--ETC(U)

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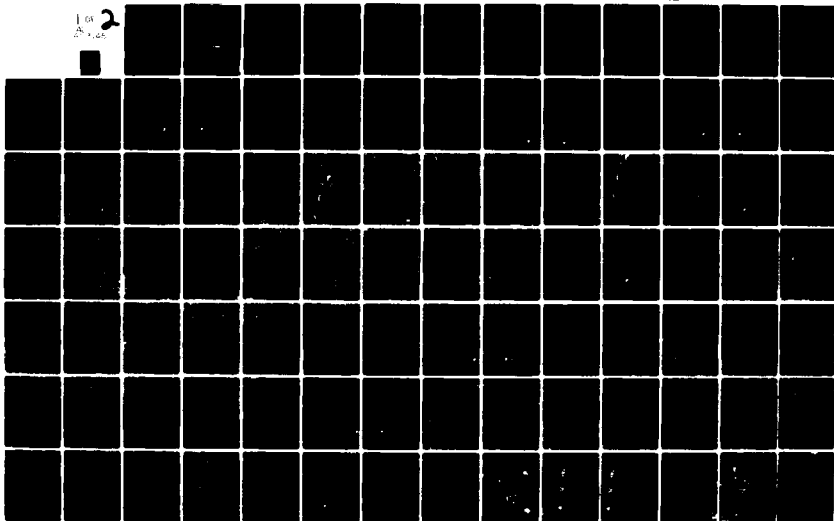
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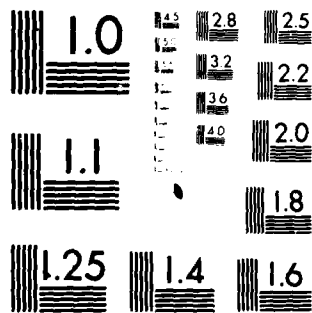
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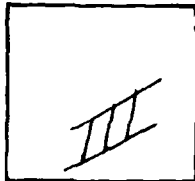


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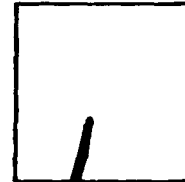
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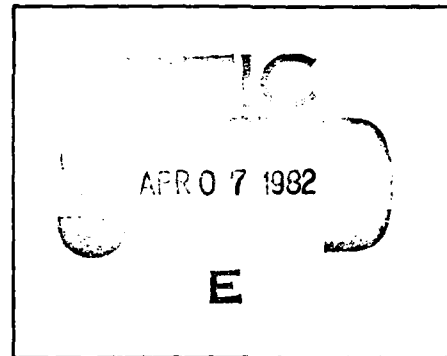
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The Earth Technology Corporation

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MINERAL RESOURCES SURVEY
SEVEN ADDITIONAL VALLEYS
NEVADA/UTAH SITING AREA

VOLUME III

Prepared for:

U. S. Department of the Air Force
Ballistic Missile Office
Norton Air Force Base, California 92409

Prepared by:

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23 June 1981

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Results of the evaluation of the mineral- and energy- resource potential of seven MX valleys in Nevada shows that besides the existing mining activities which occur in many mining districts in this area, a large portion of the area is also interpreted to possess high, good, and speculative potential for new economic discoveries to the year 2000 and beyond.		

MINING DISTRICT	COUNTY	TOWNSHIP & RANGE	PHYSIOGRAPHIC SETTING
CHERRY CREEK.	White Pine	T23-24N, R62-63E	Cherry Creek Range
TELEGRAPH	White Pine	T21-22N, R62-63E,	N Egan Range
HUNTER	White Pine	T20-21N, R62E	Egan Range
GRANITE	White Pine	T19-21N, R62-63E	Egan Range
ROBINSON	White Pine	T16-17N, R61-62E	Cent Egan Range
WHITE PINE	White Pine	T16N, R57-58E	N White Pine Range
PANCAKE SUMMIT	White Pine	T18N, R56E	S Newark Valley
BALD MOUNTAIN	White Pine	T24N, R57E	S. Ruby Mts.
NEWARK	White Pine	T19N, R55E	E Diamond Mts.
PINTO	White Pine — Eureka	T18N, R54E	Silverado Mtn
EUREKA	Eureka	T18-19N, R53E	Fish Creek Range
LONE MTN.	Eureka	T20N, R51E	Lone Mtn
MT. HOPE	Eureka	T22N, R51-52E	S. Sulphur Springs Range
ANTELOPE	Eureka	T23N, R49-50E	Roberts Mts.
ROBERTS	Eureka	T24N, R48E	Simpson Park Mts
DRY CREEK	Lander	T19N, R46E	S. Simpson Park Mts.

GEOLOGIC ENVIRONMENT

GEOGRAPHIC SETTING	COMMODITIES PRODUCED		CARBONATE REPLACEMENT	VEINS, LODES, FISSURES	DISSEMINATED IN SEDIMENTARY ROCK	DISSEMINATED IN IGNEOUS ROCK	PLACER	HOST ROCKS	
	MAJOR	MINOR						AGE	FORMATION
Range	Ag, Au, Pb, Cu	Zn, W	X	X			X	Є	Prospect Mtn Qtzt Є Lincoln Peak Fm Є Dunderberg Sh Є Pole Canyon Ls
	—	Au, W	X	X			X(?)		Various Lower Paleozoic Rocks
	Pb, Cu, Ag	Au	X	X					Mid-Paleozoic Dolomites
	Pb, Ag, Cu, Au	Zn, W(?)	X	X				Є	Prospect Mtn Qtzt Paleozoic Carbonates
Range	Cu	Ag, Au, Pb, Zn, Fe, Mn	X	X	X	X			TP-Ely Ls ; P-Rib Hill SS; M-Joanna Ls & Chainman; K-Altered Qtz-monz porph.
Range	Ag, Pb, Cu, Zn	Au, W	X	X				O-S-	Dolomites of Hanson Ck Fm. Lone Mtn Fm. Nevada Fm. D-Guilmette Ls.
Key	Coal	Sandstone, Perlite						T-	Rhyolite & SS M-Diamond Peak Fm
	Ag, Cu	Au, W	X	X			X		Paleozoic Carbonates (Undiff) T-Qtz-monz porphyry
	Ag, Pb	Zn, Au, Cu, W	X	X				D-	Nevada Fm
	Ag, Au	Cu, Pb, Zn	X	X				Є	Hamburg Dolomite Windfall Ls
Range	Ag, Au, Cu, Pb, Zn	—	X	X				Є	Eldorado Dolomite Є Hamburg Dolo. & Windfall Ls.
	Zn	Pb, Ag, Cu	X	X				D-	Devil's Gate Ls
Range	Zn	Pb, Ag, Cu, Au	X	X				O-	Vinini Fm (Sh, chert) P-Garden Valley Fm (ls)
	Pb, Zn	Ag	X	X				O-	Vinini Fm (ls facies) S-Lone Mtn Dolomite
Range	Pb, Zn	Ag, Cu	X	X				D-	Nevada Fm (Ls. facies)

RELATED STRUCTURAL - TECTONIC ELEMENTS

ROCKS FORMATION	MINERAL BELT	ANTLER OROGENIC BELT	LINEAMENT	CALDERA - VOLCANIC CENTER	PAST PRODUCTION (In Dollars)	CURRENT PRODUCTION	OTHER INFORMATION
Qtz Fm					> 4,800,000	Yes	Ag mine & leach operation; Active exploration
Paleozoic Rocks					Unknown	No	Active exploration in the Egan Range
Polomites					> 200,000	No	Active exploration, uranium occurs in the Birch mine
Qtz ates					> 200,000	No	Active exploration
Rib Hill SS, Chainman; monz porh.	X			X	> 1,000,000,000	No	Presently inactive, Largest production value any district in Nevada
Hanson Ck Fm Lane Min. Fm Nevada Fm.	X				> 30,000,000	Yes	Ag mine & leach, Active drilling for Cu-Mo-W porphyry on Mt. Hamilton
S Fm	X				Unknown	No	Active metals exploration in all of the Pancake Range
ates (Undiff) phyry					> 30,000	Yes	Active exploration; Dissem Au occurs in sh, Diamond Pk Fm.
					> 500,000	Yes	Bay State Mine, intermittent production
omite	X	X		X	> 225,000	Yes	Active Ag production & leach mill
omite & Windfall Ls.	X	X		X	± 122,000,000	Yes	Active re-evaluation ongoing, Open-pit Au; Ag mines & leach, Ruby Hill Proj currently inactive
s.	X	X			± 781,000	No	
chert) Fm (ls)		X			> 1,400,000	Yes	Large porphyry molybdenum deposit in T rhyolitic intrusive currently being drilled Exxon Minerals Co.
y. facies) omite	X	X	NNR		> 30,000	No	Low-grade oil shale deposits in Virgin Fm
s. facies)	X	X	NNR		> 30,000	No	Current Cu-Mo porphyry exploration.

STRUCTURAL - ELEMENTS

LINEAMENT	CALDERA - VOLCANIC CENTER	PAST PRODUCTION (In Dollars)	CURRENT PRODUCTION	OTHER INFORMATION
		> 4,800,000	Yes	Ag mine & leach operation; Active exploration
		Unknown	No	Active exploration in the Egan Range
		> 200,000	No	Active exploration; uranium occurs in the Birch mine
		> 200,000	No	Active exploration
	X	> 1,000,000,000	No	Presently inactive, Largest production value of any district in Nevada
		> 30,000,000	Yes	Ag mine & leach; Active drilling for Cu-Mo-W porphyry on Mt. Hamilton
		Unknown	No	Active metals exploration in all of the Pancake Range
		> 30,000	Yes	Active exploration; Dissem Au occurs in sh of Diamond Pk. Fm.
		> 500,000	Yes	Bay State Mine, intermittent production
	X	> 225,000	Yes	Active Ag production & leach mill
	X	± 122,000,000	Yes	Active re-evaluation ongoing, Open-pit Au, Ag mines & leach; Ruby Hill Proj currently inactive
		± 781,000	No	
		> 1,400,000	Yes	Large porphyry molybdenum deposit in Tert. rhyolitic intrusive currently being drilled by Exxon Minerals Co.
NNR		> 30,000	No	Low-grade oil shale deposits in Vinini Fm
NNR		> 30,000	No	Current Cu-Mo porphyry exploration.

MT. HOPE	Eureka 5	T22N, R51-52E	S. Sulphur Springs
ANTELOPE	Eureka	T23N, R49-50E	Roberts Mts
ROBERTS	Eureka	T24N, R48E	Simpson Park Mts
DRY CREEK	Lander	T19N, R46E	S Simpson Park Mts.
SPENCER HOT SPRINGS	Lander	T16-17N, R45-1/2-46E	N.E. Big Smokey Vall
INDIAN BLUE	Nye	T15N, R46E	N. Toquima Range
NORTHUMBERLAND	Nye	T13N, R45-46E	Toquima Range
DANVILLE	Nye	T11N, R48E	Monitor Range
GOLD HILL	Nye	T11N, R44E	Toquima Range
JEFFERSON CANYON	Nye	T10N, R44-45E	Toquima Range
ROUND MTN.	Nye	T9-10N, R44E	Toquima Range
BARCELONA	Nye	T9N, R45E	Toquima Range
BELMONT	Nye	T8-9N, R45E	Toquima Range
MANHATTAN	Nye	T8N, R43-44E	S. Toquima Range
TWIN RIVER	Nye	T12-13N, R41-42E	Toiyabe Range
JETT	Nye	T10-11N, R42E	S. Toiyabe Range
HORSE CANYON	Nye	T9N, R41-42E	S.E. Toiyabe Range
COLTON	Nye	T8-9N, R40E	S. Toiyabe Range
CLOVERDALE	Nye	T9N, R39E	S. Shoshone Range
EASTER BLUE (Republic)	Nye	T7N, R39E	N.W. Royston Hills
ROYSTON	Nye	T5-6N, R39-40E	Royston Hills
SAN ANTONE	Nye	T5-6N, R42E	NW San Antonio Mts.
TONOPAH	Nye - Esmeralda	T2-3N, R42-43E	San Antonio Mts.

Lone Mtn	Zn	Pb, Ag, Cu	X	X				C-Hamburg
S. Sulphur Springs Range	Zn	Pb, Ag, Cu, Au	X	X				O-Vinini Fm (P-Garden Valley)
Roberts Mts.	Pb, Zn	Ag	X	X				O-Vinini Fm (S-Lone Mtn)
Simpson Park Mts.	Pb, Zn	Ag, Cu	X	X				D-Nevado Fm.
S. Simpson Park Mts.	Turquoise	—	X(?)	X				Paleozoic ? - S
E. Big Smokey Valley	W	Ag, Cu	X(?)	X				O-Ls in contact granite
Toquima Range	Turquoise	—	X	X				Paleozoic ? calc
Toquima Range	Au, Barite, Ag	Turquoise	X (Ba)	X (Ag-Au)	X (Au)			O-Pogonip Fm (siltstone) - A D-Slaven Chert T+ Paleozoic - (Ag)
Monitor Range	Ag	Sb, Au		X				O-S-Lone Mtn. T-Welded Tuff
Toquima Range	Au	Ag		X				T-Welded rhyolite (argillized sil)
Toquima Range	Ag	Au, Sb		X				T-Welded Tuff; Porphyry C-O-Undiff meta
Toquima Range	Au	Ag		X		X	X	T-Rhyolite welded tuff and tuff
Toquima Range	Ag, Hg	Au, Pb		X	X (Hg)			C-O-Palmetto, Cal Fm (meta - K-Granitics
Toquima Range	Ag	Au, Pb, Cu, Turquoise	X	X			X	C-O-Undifferentiated slates
Toquima Range	Au	Ag, Sb	X	X			X	C-Gold Hill Fm. (B ls.) T-Andesite - Rhyo
Toiyabe Range	Ag, Au, W	Pb, Zn, Ba		X			X	C-Gold Hill Fm. K-Granitic Pluton P-Devils Fm. (cal
Toiyabe Range	Hg, Sb	Ag, Au, Pb, Cu		X				Late Paleozoic Un C-Gold Hill Fm. P-Devils Fm.
Toiyabe Range	Hg	—		X				L Paleozoic - Und
Toiyabe Range	F	—		X				T-Rhyolite welded
Shoshone Range	Au	Ag, Cu		X			X	T-Rhyolite/Qtz-ls silicified)
Royston Hills	Ag, Turquoise	Pb, Cu, Zn Diatomite	X	X				T-Luning Fm (L M-P-Pablo Fm (L
Royston Hills	Turquoise	Ag, Au, Cu, Pb		X				M-P-Pablo Fm (meta-chert
San Antonio Mts.	Mo, Ag	Cu, Pb, Au		X		X		

O - Lower Gila Ls.	X	X	7		± 781,000	No	
O - Vinini Fm (Sh, chert) P - Garden Valley Fm (ls)		X			> 1,400,000	Yes	Large porphyry rhyolitic intrusive Exxon Minerals Co
O - Vinini Fm (ls facies) S - Lone Mtn Dolomite	X	X	NNR		> 30,000	No	Low-grade oil shale
D - Nevada Fm (Ls facies)	X	X	NNR		> 30,000	No	Current Cu-Mo po
Paleozoic ? - Shale		X			?	?	
O - Ls in contact with Jurassic granite		X			± 200,000	No	Contact meta depos
Paleozoic ? calc-sh		X			?	?	
O - Pagonip Fm (?) (silicified limey siltstone) - Au D - Slaven Chert (Ba) T - Paleozoic - (Ag-Au)		X		X	> 1,500,000	Yes	One Au & two oper Active exploration
O - S - Lone Mtn. Dolo. (?) T - Welded Tuff (Sb)		X	PS(?)		> 32,000	No	Sb production from S of the Danville D. Drawing II
T - Welded rhyolite tuff (argillized silicified)		X		X	Value Uncertain	Yes	Same environment & Current development of old dumps
T - Welded Tuff, Qtz - Rhyolite Porphyry C - O - Undiff meta - ls, & meta - sltst		X		X	> 535,000	No	Complex thrust, caldera environment Current ex
T - Rhyolite welded tuff, non-welded tuff and tuff breccia	X	X		X(?)	? (Dissem) > 7,900,000 (Lode) > 11,000,000 (Placer)	Yes	Round Mtn open pit Au Est reserves > 5 million
C - O - Palmetto, Carrara, Wood Canyon Fm (meta-sed) K - Granitics	X	X			± 200,000 (Ag, Au, Pb) > 115,000 (Hg)	Yes	Active exploration for molybdenum in granitic precious metals
C - O - Undifferentiated Carbonates & slates	X	X	PR		3,800,000 (Recorded) 15,000,000 (Est)	No	Active exploration in district
C - Gold Hill Fm (inter-bedded schist & ls.) T - Andesite - Rhyolite	X	X	PR		> 10,700,000 (1964) (Over 270,000,000 at \$500/oz Au)	Yes	Hg, W, Ni occurrences mines, intermittent plac future reserves > \$170
C - Gold Hill Fm K - Granitic Pluton P - Diablo Fm (calc-sh)		X	PS	X	> 2,000,000 (± 500,000, W)	No	Active exploration
Late Paleozoic Undiff. (Hg) C - Gold Hill Fm. } (Sb, others) P - Diablo Fm. }	X	X		X	(Hg) > 68,000 (Sb) > 40,000 (Other) > 1,000	No	Active exploration; Golconda thrust (?) pres
L Paleozoic - Undiff.	X	X		X	?	No	Kleinhampl and others (I and Horse Canyon Distric production shown in Jeff Horse Canyon
T - Rhyolite welded tuff	X	X	PR(?)	X	None Recorded	No	Possible unreported meta poorly defined
T - Rhyolite/Qtz-latite (argillized silicified)	X	X	PR(?)	X	< 20,000	No	Area has been recently alluvial (placer) areas
R - Luning Fm (Ls member) M-P - Pablo Fm (greenstone)		X			> 130,000 (Metals) > 130,000 (? - Turq.)	Intermittent	
M-P - Pablo Fm (greenstone, meta-chert)		X	WL		> 5,000,000 (Turq) > 26,000 (Other)	No	Current exploration - re-e
K - Aplitic porphyry (Mo) T - Tonopah Fm (prec metals)		X	WL		> 625,000	Yes	Anaconda Co - Hall Mo in 1981 - Est. reserves 0.13% Mo

		> 1,400,000	Yes	Large porphyry molybdenum deposit in terr. rhyolitic intrusive currently being drilled by Exxon Minerals Co
NNR		> 30,000	No	Low-grade oil shale deposits in Vinini Fm
NNR		> 30,000	No	Current Cu-Mo porphyry exploration
		?	?	
		± 200,000	No	Contact meta deposit
		?	?	
	X	> 1,500,000	Yes	One Au & two operating barite mines, Active exploration
PS(?)		> 32,000	No	Sb production from the King Solomon Mine 15 mi S of the Danville District as shown on Drawing II
	X	Value Uncertain	Yes	Same environment & lithology as Round Mtn., Current development activity & re-working old dumps
	X	> 535,000	No	Complex thrust, caldera margin, intrusive environment. Current exploration activity.
	X(?)	? (Dissem) > 7,900,000 (Lode) > 11,000,000 (Placer)	Yes	Round Mtn open pit Au mine - Est reserves: > 5 million oz Au
		± 200,000 (Ag, Au, Pb) > 115,000 (Hg)	Yes	Active exploration for possible porphyry molybdenum in granitic plutons and for precious metals
PR		3,800,000 (Recorded) 15,000,000 (Est)	No	Active exploration in the western part of the district
PR		> 10,700,000 (1964) (Over 270,000,000 at \$500/oz Au)	Yes	Hg, W, Ni occurrences present; Three operating mines, intermittent placer mining. Estimated future reserves: > \$170,000,000
PS	X	> 2,000,000 (± 500,000, W)	No	Active exploration
	X	(Hg) > 68,000 (Sb) > 40,000 (Other) > 1,000	No	Active exploration; Golconda thrust (?) present
	X	?	No	Kleinhampl and others (1980) combine the Jett and Horse Canyon Districts, but most of the Hg production shown in Jett probably came from Horse Canyon.
PR(?)	X	None Recorded	No	Possible unreported metal production, district is poorly defined
PR(?)	X	< 20,000	No	Area has been recently re-staked in the alluvial (placer) areas
		> 130,000 (Metals) > 130,000 (?-Turq.)	Intermittent	
WL		> 5,130,000 (Turq.) > 26,000 (Other)	No	Current exploration - re-evaluation
WL		> 625,000	Yes	Anaconda Co - Hall Mo mine to begin operating in 1981 - Est reserves of +140mm tons over 0.13 % MoS ₂
WL, WS	X	150,000,000	Yes	Active re-evaluation of several mines in the district

		R42E	
HORSE CANYON	Nye	T9N, R41-42E	S E. Toiyabe Range
COLTON	Nye	T8-9N, R40E	S. Toiyabe Range
CLOVERDALE	Nye	T9N, R39E	S. Shoshone Range
EASTER BLUE (Republic)	Nye	T7N, R39E	N.W. Royston Hills
ROYSTON	Nye	T5-6N, R39-40E	Royston Hills
SAN ANTOINE	Nye	T5-6N, R42E	NW San Antonio Mts.
TONOPAH	Nye - Esmeralda	T2-3N, R42-43E	San Antonio Mts
CROW SPRINGS	Nye - Esmeralda	T5N, R39E	Royston Hills
DIVIDE	Esmeralda	T2N, R42E	S. San Antonio Mts.
KLONDYKE	Esmeralda	T1N, R43E	S. San Antonio Mts.
LONE MTN.-WEEPAH	Esmeralda	T2N, R40-41E	Gen. Thomas Hills
MONTEZUMA	Esmeralda	T2-3S, R42-43E	Montezuma Range
GOLDFIELD	Esmeralda - Nye	T2-3S, R42-43E	Goldfield Hills
DIAMONDFIELD	Esmeralda	T2S, R42-43E	Goldfield Hills
TOGNONI SPRINGS	Nye	T2-3S, R43E	E. Goldfield Hills

PRIMARY SOURCES OF DATA: Albers & Stewart, 1972; Bonham & Garside,
Hose & Others, 1977; Stewart & Carlson, 197

ABBREVIATIONS USED FOR LINEAMENTS: Walker Lane - WL; Warm Spring

Pyabe Range	Hg	—		X				L - Paleozoic - Undiff
Pyabe Range	F	—		X				T - Rhyolite welded tuff
Pyabe Range	Au	Ag, Cu		X			X	T - Rhyolite/Qtz-latitude (silicified)
Pyabe Hills	Ag, Turquoise	Pb, Cu, Zn Diatomite	X	X				T - Luning Fm (Ls meta) M-P - Pablo Fm (greenstone)
Pyabe Hills	Turquoise	Ag, Au, Cu, Pb		X				M-P - Pablo Fm (greenstone meta-chert)
Pyabe Antonio Mts.	Mo, Ag	Cu, Pb, Au		X		X		K - Aplite porphyry (Mo) T - Tonopah Fm (precursor)
Pyabe Antonio Mts.	Ag, Au	Pb, Zn		X				T - Mizpah Trachyte (andesite) Fraction Tuff (rhyolite flow)
Pyabe Hills	Turquoise	—		X				K - Qtz - monz T - Excelsior Fm (tuff)
Pyabe Antonio Mts.	Ag, Au	—		X				T - Fraction Breccia (rhyolite ash flow)
Pyabe Antonio Mts.	Ag	Au		X				E - Emigrant Fm (ls) K - Granite (Qtz - monz.?)
Pyabe Thomas Hills	Au, Ag	Turquoise, Pb, Cu, Zn		X				PC - Wyman Fm (meta-) E - Mule Springs Ls
Pyabe Thomas Range	Ag, Pb	Bi, Cu	X	X				E - Poleta Fm (ls - sh) PC - Various ls units
Pyabe d Hills	Au	Bi, Cu, Ag		X		X	X	T - Dacite, andesite (silicified)
Pyabe d Hills	Au, Ag	—		X				T - Dacite, andesite (silicified)
Pyabe Field Hills	None	None				X		T - Andesite

Pyabe & Garside, 1979; Hose & Others, 1976; Humphrey, 1960; Kleinhampl, 1980; Mardirosian, 1974; Nold & Carlson, 1978; Tingley, 1980a, b, c

Pyabe; Warm Springs - WS; Pancake Range - PR; Pritchards Station - PS, Northern Nevada Rift - NNR

Paleozoic - Undiff	X	X		X	?	No	Kleinhampl and others and Horse Canyon District production shown in Jett Horse Canyon
T - Rhyolite welded tuff	X	X	PR(?)	X	None Recorded	No	Possible unreported meta poorly defined
T - Rhyolite/Qtz-latite (argillized silicified)	X	X	PR(?)	X	< 20,000	No	Area has been recently alluvial (placer) areas
R - Luning Fm (Ls member) M-P - Pablo Fm (greenstone)		X			> 130,000 (Metals) > 130,000 (?-Turq)	Intermittent	
M-P - Pablo Fm (greenstone, meta-chert)		X	WL		> 5,130,000 (Turq) > 26,000 (Other)	No	Current exploration - re-e
K - Aplite porphyry (Mo) T - Tonopah Fm (prec metals)		X	WL		> 625,000	Yes	Anaconda Co - Hall Mo in 1981 - Est reserves of 0.13 % Mo S ₂
T - Mizpah Trachyte (andesite); Fraction Tuff (rhy welded ash flow)		X	WL, WS	X	150,000,000	Yes	Active re-evaluation of district
K - Qtz - monz R - Excelsior Fm (tuff-bre)		X	WL		?	No	
T - Fraction Breccia (rhy, qtz latite ash flow)		X	WL	X	> 3,500,000	Yes	Falcon Exploration - Tonop
E - Emigrant Fm (ls) K - Granite (Qtz - monz ?)		X	WL		> 67,000	No	Active exploration, possi
PE - Wyman Fm (meta-siltst & ls) E - Mule Springs Ls		X	WL		> 1,380,000	Yes	Lone Mtn Mining Co - Tu Active exploration, Sparta Lone Mtn and Weepah
E - Poleta Fm (ls - sh) PE - Various ls units		X	WL		> 220,000	No	Intrusive rhyolites flank Active exploration
T - Dacite, andesite (silicified, alunitized)		X	WL	X	> 90,000,000	Yes	Placer, Active exploration grade Au in place and f
T - Dacite, andesite (silicified - alunitized)		X	WL	X	> 52,000	No	Actual production probab
T - Andesite		X	WL		None Recorded	No	Native sulfur occurrence

dirosian, 1974; Nolan & Hunt, 1967;

ado Rift - NNR

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	GEOLOGY, LOCATION, AND HISTORY OF THE ORIGINAL DISTRICTS IN THE MX AND MINERAL RESOURCES SUMMARY 30 APR 81

	X	?	No	Kleinhampl and others (1980) combine the Jett and Horse Canyon Districts, but most of the Hg production shown in Jett probably came from Horse Canyon
PR(?)	X	None Recorded	No	Possible unreported metal production, district is poorly defined
PR(?)	X	< 20,000	No	Area has been recently re-staked in the alluvial (placer) areas
		> 130,000 (Metals) > 130,000 (?-Turq)	Intermittent	
WL		> 5,130,000 (Turq) > 26,000 (Other)	No	Current exploration - re-evaluation
WL		> 625,000	Yes	Anaconda Co - Hall Mo mine to begin operating in 1981 - Est reserves of +140mm tons aver 0.13 % MoS ₂
WL, WS	X	150,000,000	Yes	Active re-evaluation of several mines in the district
WL		?	No	
WL	X	> 3,500,000	Yes	Falcon Exploration - Tonopah-Divide Ag mine
WL		> 67,000	No	Active exploration, possible development
WL		> 1,380,000	Yes	Lone Mtn Mining Co - Turquoise Active exploration, Spatial association of ore to Lone Mtn and Weepah plutons.
WL		> 220,000	No	Intrusive rhyolites flank the district Active exploration
WL	X	> 90,000,000	Yes	Placer, Active exploration for large tonnage, low grade Au in place and from old dumps
WL	X	> 52,000	No	Actual production probably >\$1mm
WL		None Recorded	No	Native sulfur occurrence



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GEOLOGY, LOCATION, AND PRODUCTION
HISTORY OF THE ORGANIZED MINING
DISTRICTS IN THE MX ADDITIONAL VALLEY
MINERAL RESOURCES SURVEY STUDY AREA
30 APR 81
CHART 1

AGE		MAP SYMBOL		GENERALIZED LITHOLOGY
CENOZOIC	QUATERNARY		Qal	Recent alluvium, locally undifferentiated
			Qpl	Playa deposit, locally marshland
			Qs	Recent sand dunes
			Ql	Lakebed deposits
			Qoa	Older alluvium, undifferentiated
	TERTIARY		Qb	Basaltic lava flows
			Tv	Younger volcanic rocks, undifferentiated
			Tb	Mafic volcanic rocks
			Ta	Intermediate volcanic rocks
			Tr	Silicic volcanic rocks - includes shallow intrusives
			Tg	Intrusive rocks undifferentiated, mainly granodiorite and quartz-monzonite, locally mafic
			Ts	Limestone, breccia, conglomerate
			K	Conglomerate, sand, lacustrine limestone
MESOZOIC	CRETACEOUS		Kg	Intrusive rocks-mainly granodiorite and quartz monzonite
			Kv	Older volcanic rocks, undifferentiated
	JURASSIC		Jg	Intrusive rocks, undifferentiated
			J	Sandstone
	TRIASSIC		R	Triassic-undivided
			R m-u	Red beds (non-marine origin) mostly conglomeratic sandstone
			Rl	Siltstone, shale, sandstone, and limestone, typically red
			Pm	Paleozoic, undivided
	PERMIAN		P	Limestone, sandstone, dolomite, gypsum
	PENNSYLVANIAN		Ps	Limestone, mainly lower and Middle Pennsylvanian
	Upper		Sh	Shale, fetid carbonate beds, some sandstone lenses

1

2

1

LITHOLOGY	TYPICAL FORMATION NAMES*	
	WESTERN FACIES (EUGEOSYNCLINAL)	EASTERN FACIES (MIOGEOSYNCLINAL)
metasediments		
metasediments	Esmeralda Fm.	
	Gilbert Andesite, Toiyabe Quartz Latite	Gilbert Andesite, Toiyabe Quartz Latite
low intrusives	Oddie Rhyolite	
mainly granodiorite and		
stone		Newark Canyon Fm.
and quartz-monzonite		
		Dunlap Fm.
conglomeratic sandstone	Excelsior Fm., Luning Fm.	
stone, typically red	Candelaria Fm.	Moenkopi Formation
sum	Darrough Felsite, Pablo Fm., Diablo Fm.	Carbon Ridge Fm., Garden Valley Fm., Rib Hill S.S.
Pennsylvanian		Ely Limestone, Bird Springs Fm.
stone lenses		Chainman Shale, Eleana Fm., Diamond

2

1

3

TYPICAL FORMATION NAMES*		AGGREGATE USAGE (see below)
(EUGEOSYNCLINAL)	EASTERN FACIES (MIOGEOSYNCLINAL)	
		Class 1 to 3
		Class 3
		Class 2
		Class 1 to 3
		Class 1 to 2
		Class 1 to 3
		Class 1 to 3
		Class 1 to 3
Toiyabe Quartz Latite	Gilbert Andesite, Toiyabe Quartz Latite	Class 1 to 3
		Class 1 to 3
		Class 1
		Class 3 to 2
	Newark Canyon Fm.	Class 3 to 2
		No data
		Class 2 to 3
		Class 1 to 3
	Dunlap Fm.	Class 3
		Class 3 to 2
ing Fm.		Class 2
	Moenkopi Formation	Class 3
		Class 1 to 3
ablo Fm., Diablo Fm.	Carbon Ridge Fm., Garden Valley Fm., Gerster Ls., Rib Hill S.S.	Class 1 to 3
	Ely Limestone, Bird Springs Fm.	Class 1 to 2
		Class 1 to 3

PALEOZOIC			Paleozoic, undivided	
PERMIAN			P	Limestone, sandstone, dolomite, gypsum
PENNSYLVANIAN			Pe	Limestone, mainly lower and Middle Pennsylvanian
MISSISSIPPIAN	Upper		Mu	Shale, fetid carbonate beds, some sandstone lenses
	Lower		MI	Limestone, mostly fossiliferous
DEVONIAN	Upper			Shale, soft
	Middle to Lower		Dg	Limestone, Dolomite, sandstone
			Ds	Dolomite
SILURIAN	Upper Middle			Dolomite
				Silurian-Ordovician undivided, mostly dolomite
ORDOVICIAN	Upper		Ou	Dolomite
	Middle		Oe	Quartzite and hard sandstone
	Lower		Op	Limestone, conglomerate
CAMBRIAN	Upper Middle		Em-v	Limestone, shale, dolomite
	Lower		Si	Quartzite, phyllitic shale, limestone
PRECAMBRIAN			PCs	Undifferentiated metasedimentary rocks, chiefly quartzite

AGGREGATE USAGE

The threefold-classification system used to rank the geologic map units within the MX Mineral Area is based mainly on existing test site data. Emphasis was placed on the following ASTM tests: Gradation (C-131), Soundness by use of magnesium sulfate (C-88), and Alkali reactivity (C-289). These were supplemented with field observations made during previous Fugro investigations (Fugro National Inc., 1977 d, e, f) and with test data obtained from the Utah State Department of Highways and the state of Nevada Department of Highways.

Class 1 Aggregate representing suitable concrete and road base material generally requiring only minor

Class 2 Aggregate containing one or more undesirable characteristics which may make it marginally suitable as concrete aggregate material and marginally suitable to suitable as road base material

Class 3 Aggregate considered unsuitable for concrete and road base materials

REFERENCES

- Albers and Stewart, 1972
- Cornwall, 1972
- Keroher and others, 1966
- Langenheim, Jr. and Larson, 1973
- Larson and others, 1977
- Roberts and others, 1967

Chainman		Ely Limestone, Bird Springs Fm.
enses		Chainman Shale, Eleana Fm., Diamond Peak Fm.
		Joana Limestone
		Pilot Shale
		Slaven Chert, Devils Gate Limestone, Guilmette
		Nevada Fm., Rabbit Hills Ls.
		Lone Mountain Fm., Roberts Mountain Fm.
ite		
	Palmetto Fm.	Ely Springs Dolomite, Hanson Creek Fm.
	Palmetto Fm., Vinini Fm., Valmy Fm.	Eureka Quartzite, Fish Haven Dolomite
	Palmetto Fm.	Pogonip Group
		Carrara Fm., Hamburg Dolomite, Lincoln Peak Fm., Windfall Fm., Dunderberg Shale, Geddes Ls., El Dorado Dol., Secret Canyon Shale, Bonanza King Fm., Gold Hill Fm., Pole Canyon Ls.
		Mule Spring Ls., Harkless Fm., Pioche Shale, Emigrant Fm., Prospect Mtn. Quartzite, Poleta Fm., Campito Fm., Wood Canyon
efly quartzite and argillite		Deep Spring Fm., Reed Dolomite, Wyman Fm.

EXPLANATION

ROADS

Primary, all weather, hard surface ————
 Secondary, all weather, hard surface ————
 Light duty, all weather, hard or improved surface ————
 Fair or dry weather, unimproved surface ————
 Trail ————
 Interchange ————

Route markers: Interstate, U.S., State ————

RAILROADS

Standard gauge ————
 Narrow gauge ————
 International ————
 State ————
 County ————
 Park or reservation ————

Landplane airport ————
 Landing area ————
 Dry lake ————
 Landmark: School, Church, Other ————
 Mine ————
 Spot elevation in feet ————
 Marsh or swamp ————
 Intermittent or dry stream ————
 Power line ————

Geologic contact

Fault, dashed where located approximately

Thrust, fault, dashed where located approximately. Saw-teeth

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EXPLANATION
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8	R1B FM S.S.	
	Ely Limestone, Bird Springs Fm.	Class 1 to 2
	Chainman Shale, Eleana Fm., Diamond Peak Fm.	Class 1 to 3
	Joana Limestone	Class 1 to 2
	Pilot Shale	Class 3
	Slaven Chert, Devils Gate Limestone, Guilmette Ls.	Class 1 to 2
	Nevada Fm., Rabbit Hills Ls.	Class 1 to 2
	Lone Mountain Fm., Roberts Mountain Fm.	Class 1
		Class 1 to 2
	Ely Springs Dolomite, Hanson Creek Fm.	Class 1
Valmy Fm.	Eureka Quartzite, Fish Haven Dolomite	Class 1 to 2
	Pogonip Group	Class 2
	Carrara Fm., Hamburg Dolomite, Lincoln Peak Fm., Windfall Fm., Dunderberg Shale, Geddes Ls., El Dorado Dol., Secret Canyon Shale, Bonanza King Fm., Gold Hill Fm., Pole Canyon Ls.	Class 1 to 2
	Mule Spring Ls., Harkless Fm., Pioche Shale, Emigrant Fm., Prospect Mtn. Quartzite, Poleta Fm., Campito Fm., Wood Canyon Fm.	Class 1 to 2
	Deep Spring Fm., Reed Dolomite, Wyman Fm.	Class 1 to 2

EXPLANATION

ROADS

Primary, all weather, hard surface ————
 Secondary, all weather, hard surface ————
 Light duty, all weather, hard or improved surface ————
 Fair or dry weather, unimproved surface ————
 Trail ————
 Interchange ————
 Route markers: Interstate, U.S., State ———— (5) (20) (100)

Single track, Double or Multiple
 Landplane airport ————
 Landing area ————
 Dry lake ————
 Geologic contact ————
 Fault, dashed where located approximately ————
 Thrust, fault, dashed where located approximately. Saw-teeth on upper plate ————
 Landmark: School, Church, Other ————
 Mine ————
 Spot elevation in feet ———— 22'
 Marsh or swamp ————
 Intermittent or dry stream ————
 Power line ————

Geologic contact

Fault, dashed where located approximately

Thrust, fault, dashed where located approximately. Saw-teeth on upper plate

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 DEPARTMENT OF THE AIR FORCE
 BMO/AFRC-MX

EXPLANATION FOR GENERALIZED

GEOLOGIC MAP

PALEOZOIC	DEVONIAN	Upper		Limestone, Dolomite, sandstone
		Middle to Lower		Dolomite
	SILURIAN	Upper Middle		Dolomite
				Silurian-Ordovician undivided, mostly dolomite
	ORDOVICIAN	Upper		Dolomite
		Middle		Quartzite and hard sandstone
		Lower		Limestone, conglomerate
	CAMBRIAN	Upper Middle		Limestone, shale, dolomite
		Lower		Quartzite, phyllitic shale, limestone
	PRECAMBRIAN			PCs

AGGREGATE USAGE

The threefold-classification system used to rank the geologic map units within the MX Mineral Resources Study Area is based mainly on existing test site data. Emphasis was placed on the following ASTM tests: Gradation (C-136), Abrasion (C-131), Soundness by use of magnesium sulfate (C-88), and Alkali reactivity (C-289). These data were supplemented with field observations made during previous Fugro Investigations (Fugro National Inc., 1978, 1980, a, d, e, f) and with test data obtained from the Utah State Department of Highways and the state of Nevada Department of Highways.

Class 1 Aggregate representing suitable concrete and road base material generally requiring only minor beneficiation

Class 2 Aggregate containing one or more undesirable characteristics which may make it marginally suitable as concrete aggregate material and marginally suitable to suitable as road base material

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- Albers and Stewart, 1972
- Cornwall, 1972
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- Langenheim, Jr. and Larson, 1973
- Larson and others, 1977
- Roberts and others, 1967

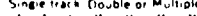
		Slaven Chert, Devils Gate Limestone, Guilmette Ls.	
		Nevada Fm., Rabbit Hills Ls.	
		Lone Mountain Fm., Roberts Mountain Fm.	
	Palmetto Fm.	Ely Springs Dolomite, Hanson Creek Fm.	
	Palmetto Fm., Vinini Fm., Valmy Fm.	Eureka Quartzite, Fish Haven Dolomite	
	Palmetto Fm.	Pogonip Group	
		Cerrera Fm., Hamburg Dolomite, Lincoln Peak Fm., Windfall Fm., Dunderberg Shale, Geddes Ls., El Dorado Dol., Secret Canyon Shale, Bonanza King Fm., Gold Hill Fm., Pole Canyon Ls.	
		Mule Spring Ls., Harkless Fm., Pioche Shale, Emigrant Fm., Prospect Mtn. Quartzite Poleta Fm., Campito Fm., Wood Canyon Fm.	
zite and argillite		Deep Spring Fm., Reed Dolomite, Wyman Fm.	

EXPLANATION

ROADS

Primary, all weather, hard surface 
 Secondary, all weather, hard surface 
 Light duty, all weather, hard or improved surface 
 Fair or dry weather, unimproved surface 
 Trail 
 Interchange 
 Route markers: Interstate, U.S., State 

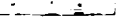
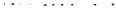
RAILROADS

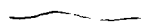
Standard gauge 
 Narrow gauge 
 BOUNDARIES
 International 
 State 
 County 
 Park or reservation 

Landplane airport 

Landing area 

Dry lake 

Landmark: School, Church, Other 
 Mine 
 Spot elevation in feet 
 Marsh or swamp 
 Intermittent or dry stream 
 Power line 



Geologic contact



Fault, dashed where located approximately



Thrust, fault, dashed where located approximately. Saw-teeth on upper p

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EXPLANATION FOR
 GEOLOGIC

30 APR 81

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	Slaven Chert, Devils Gate Limestone, Guilmette Ls.	Class 1 to 2
	Nevada Fm., Rabbit Hills Ls.	Class 1 to 2
	Lone Mountain Fm., Roberts Mountain Fm.	Class 1
		Class 1 to 2
	Ely Springs Dolomite, Hanson Creek Fm.	Class 1
my Fm.	Eureka Quartzite, Fish Haven Dolomite	Class 1 to 2
	Pogonip Group	Class 2
	Carrara Fm., Hamburg Dolomite, Lincoln Peak Fm., Windfall Fm., Dunderberg Shale, Geddes Ls., El Dorado Dol., Secret Canyon Shale, Bonanza King Fm., Gold Hill Fm., Pole Canyon Ls.	Class 1 to 2
	Mule Spring Ls., Harkless Fm., Pioche Shale, Emigrant Fm., Prospect Mtn. Quartzite, Poleta Fm., Campito Fm., Wood Canyon Fm.	Class 1 to 2
	Deep Spring Fm., Reed Dolomite, Wyman Fm.	Class 1 to 2

EXPLANATION

ROADS

- Primary, all weather, hard surface
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- Light duty, all weather, hard or improved surface
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- Trail
- Interchange
- Route markers: Interstate, U.S., State

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- Landing area
- Dry lake
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- Miner
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- Marsh or swamp
- Intermittent or dry stream
- Power line

Geologic contact

Fault, dashed where located approximately

Thrust, fault, dashed where located approximately. Saw-teeth on upper plate



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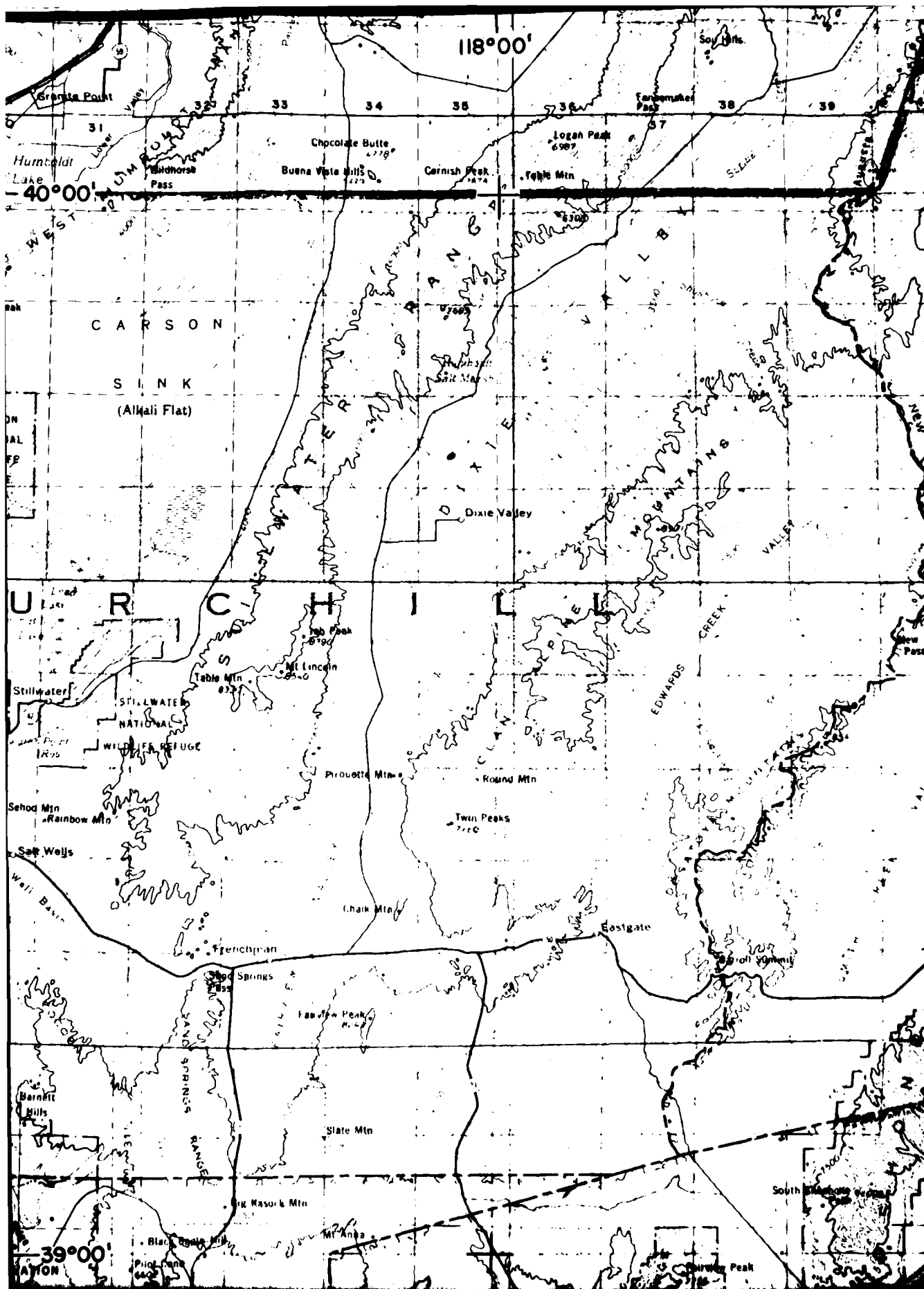
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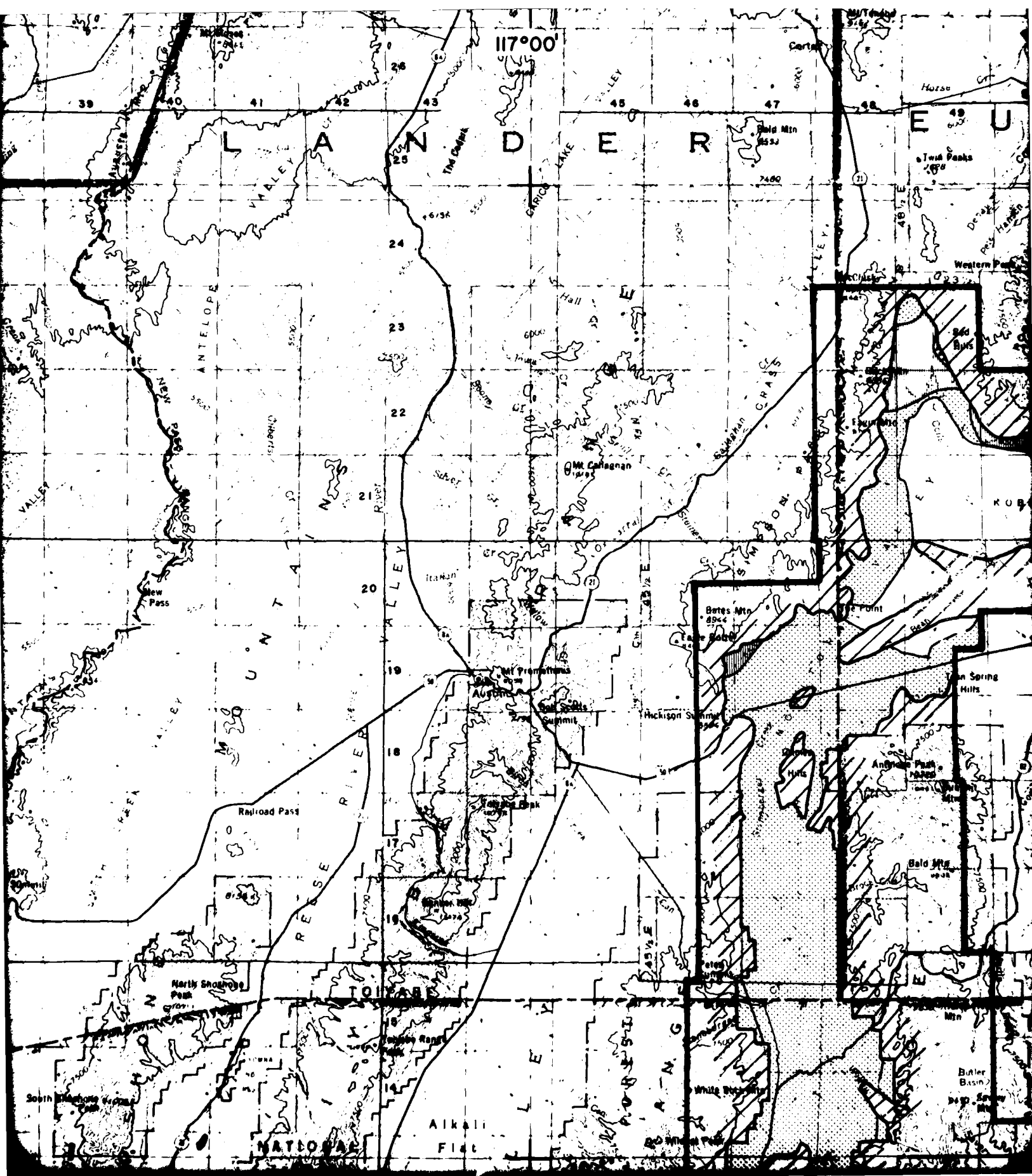
EXPLANATION FOR GENERALIZED
GEOLOGIC MAP

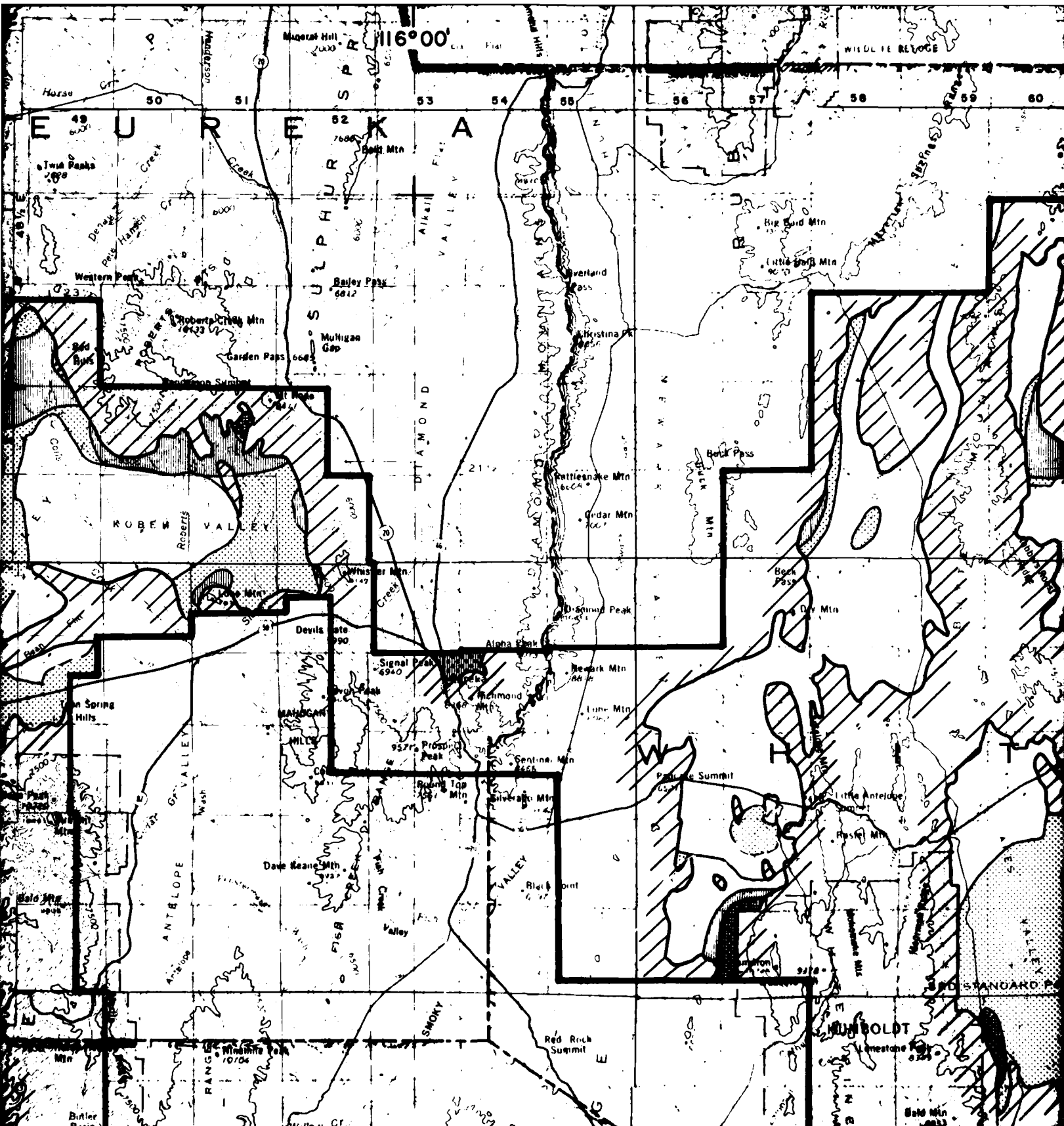
30 APR 81

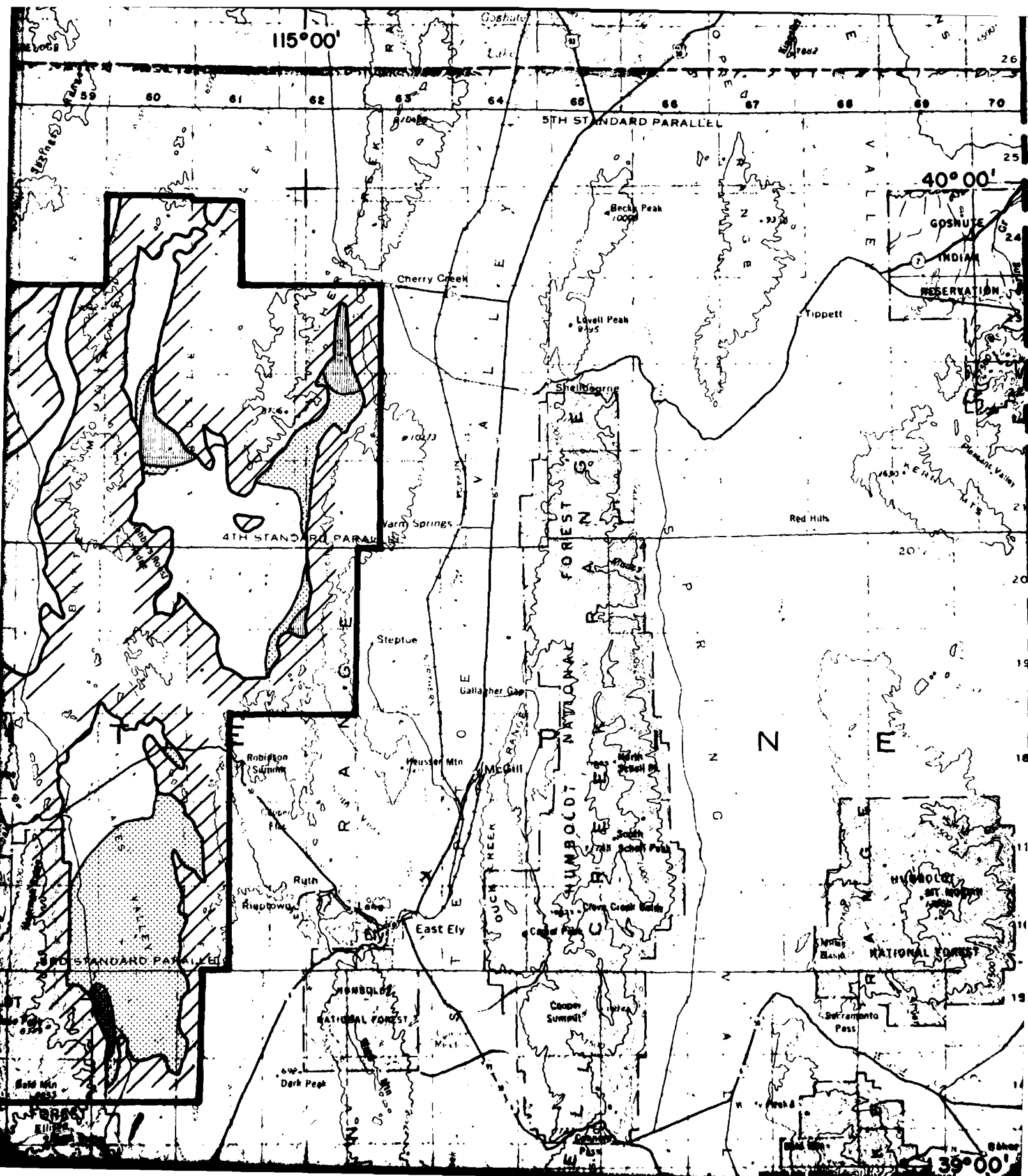
CHART 2

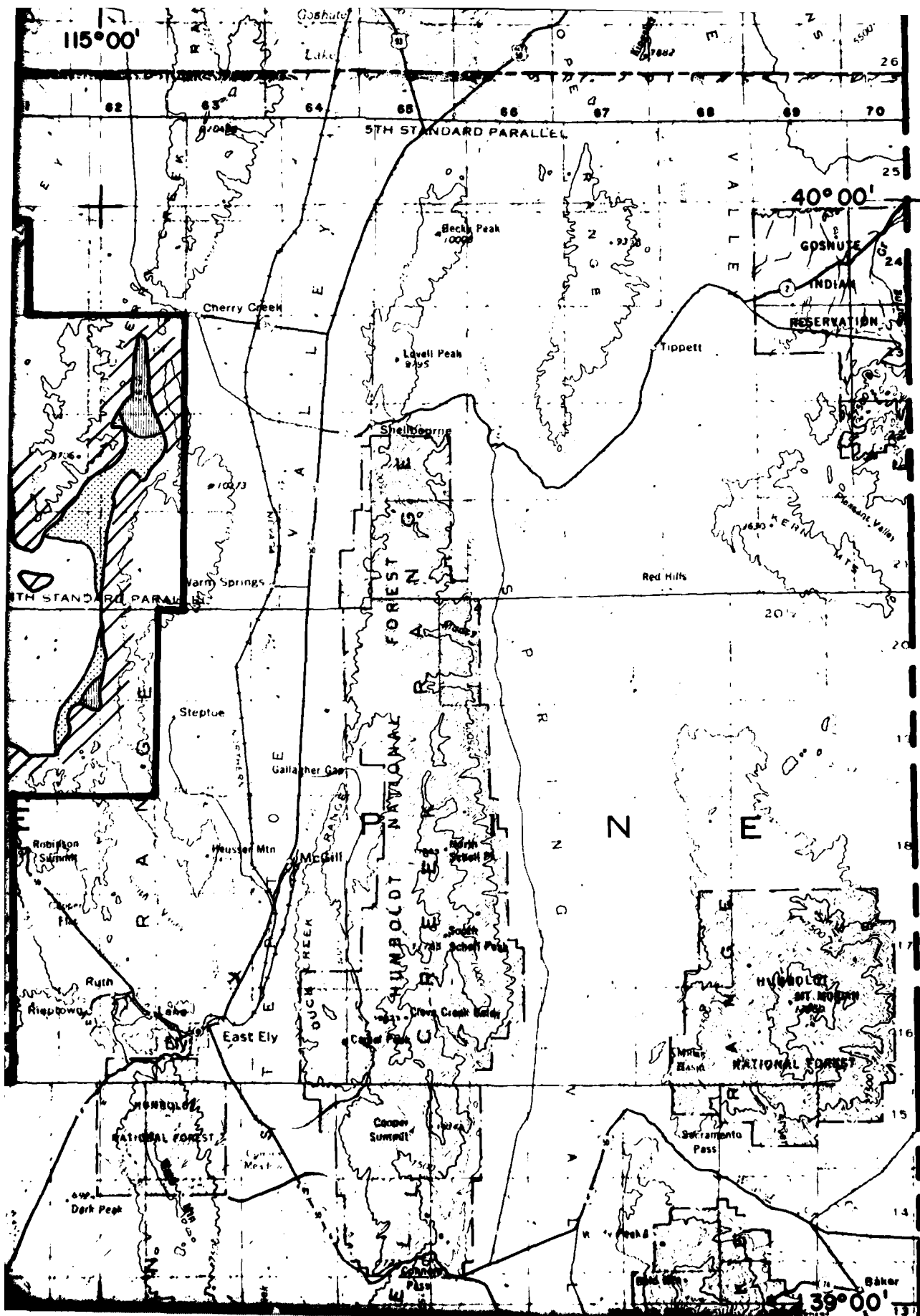
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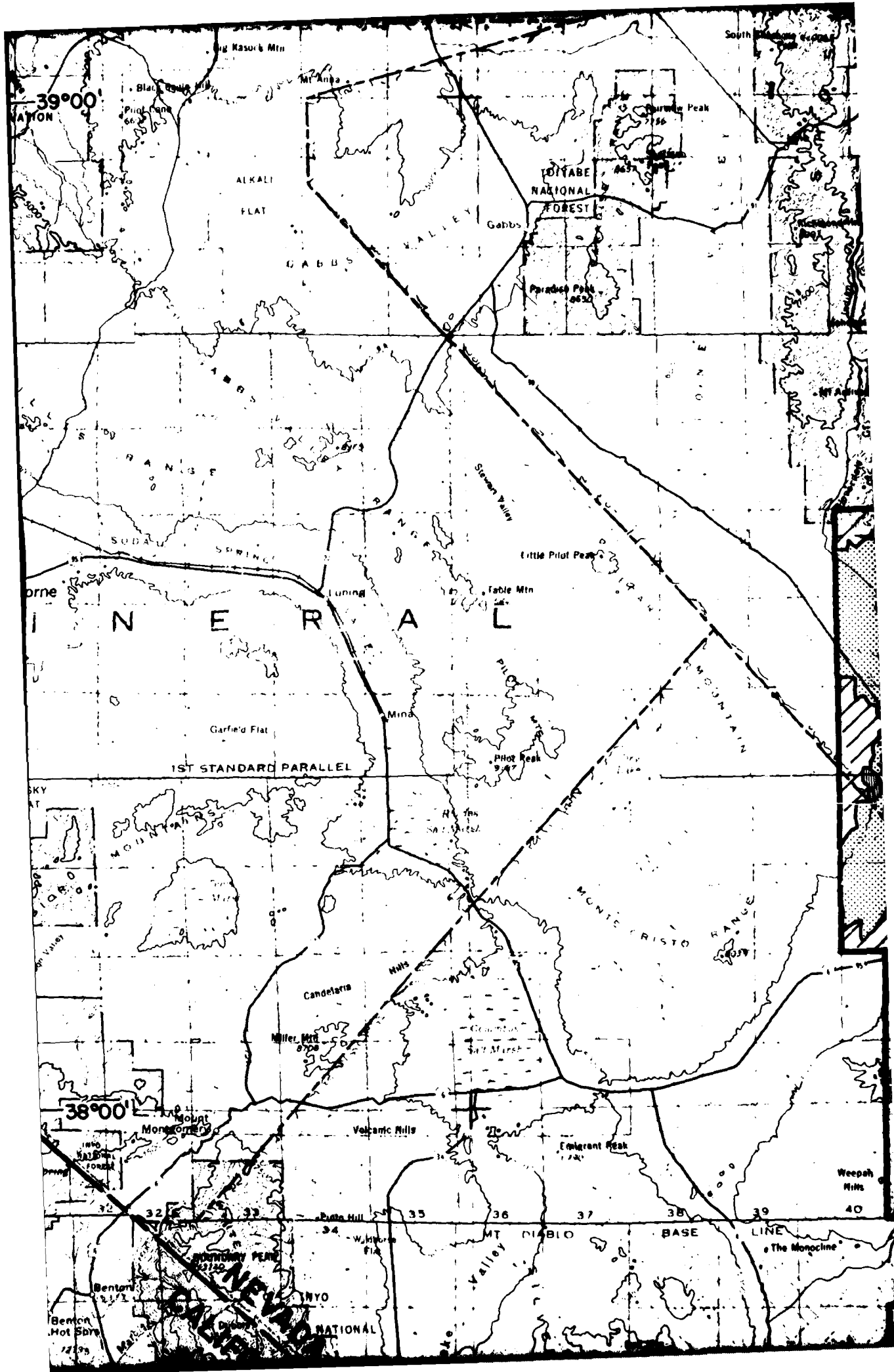


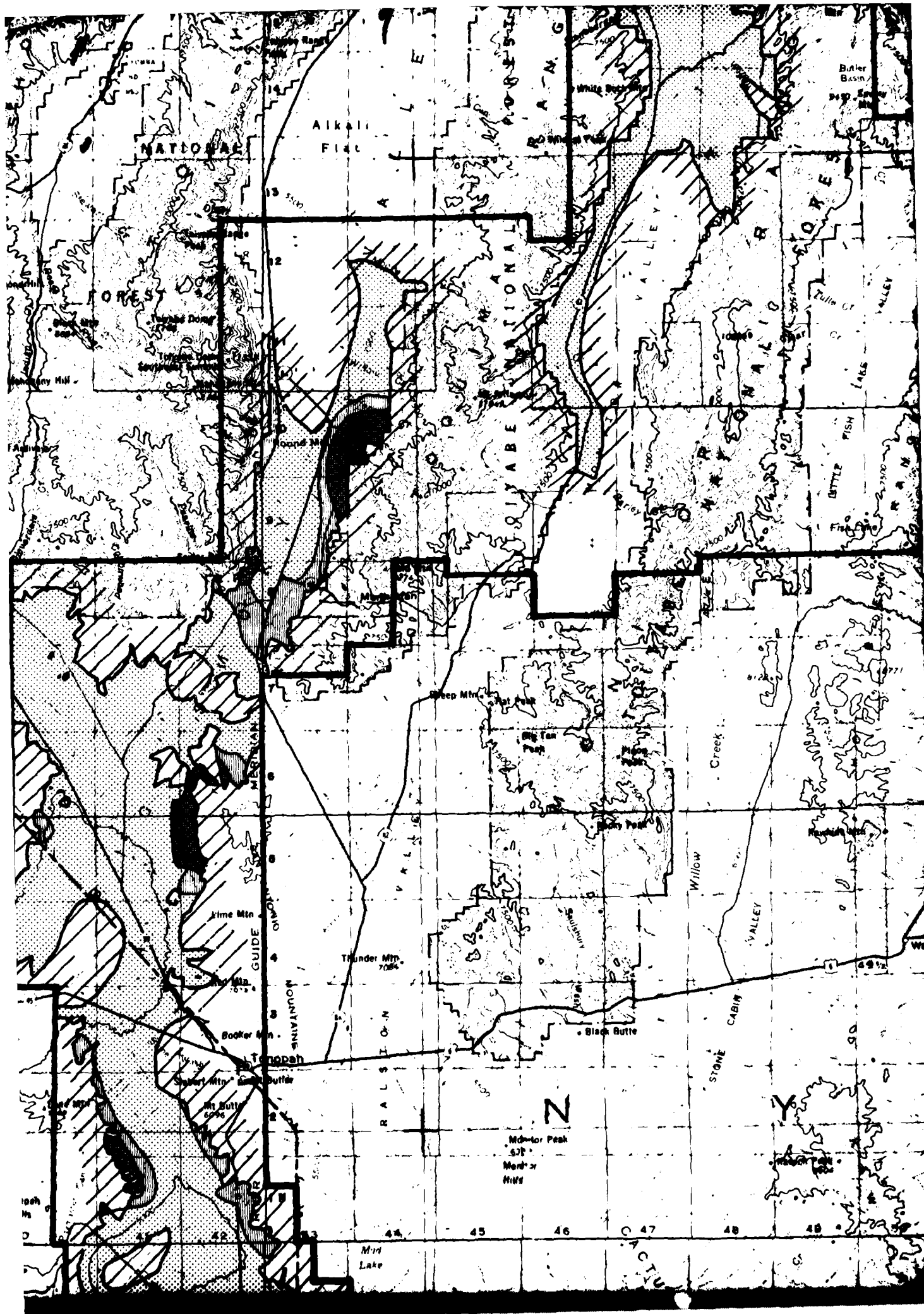


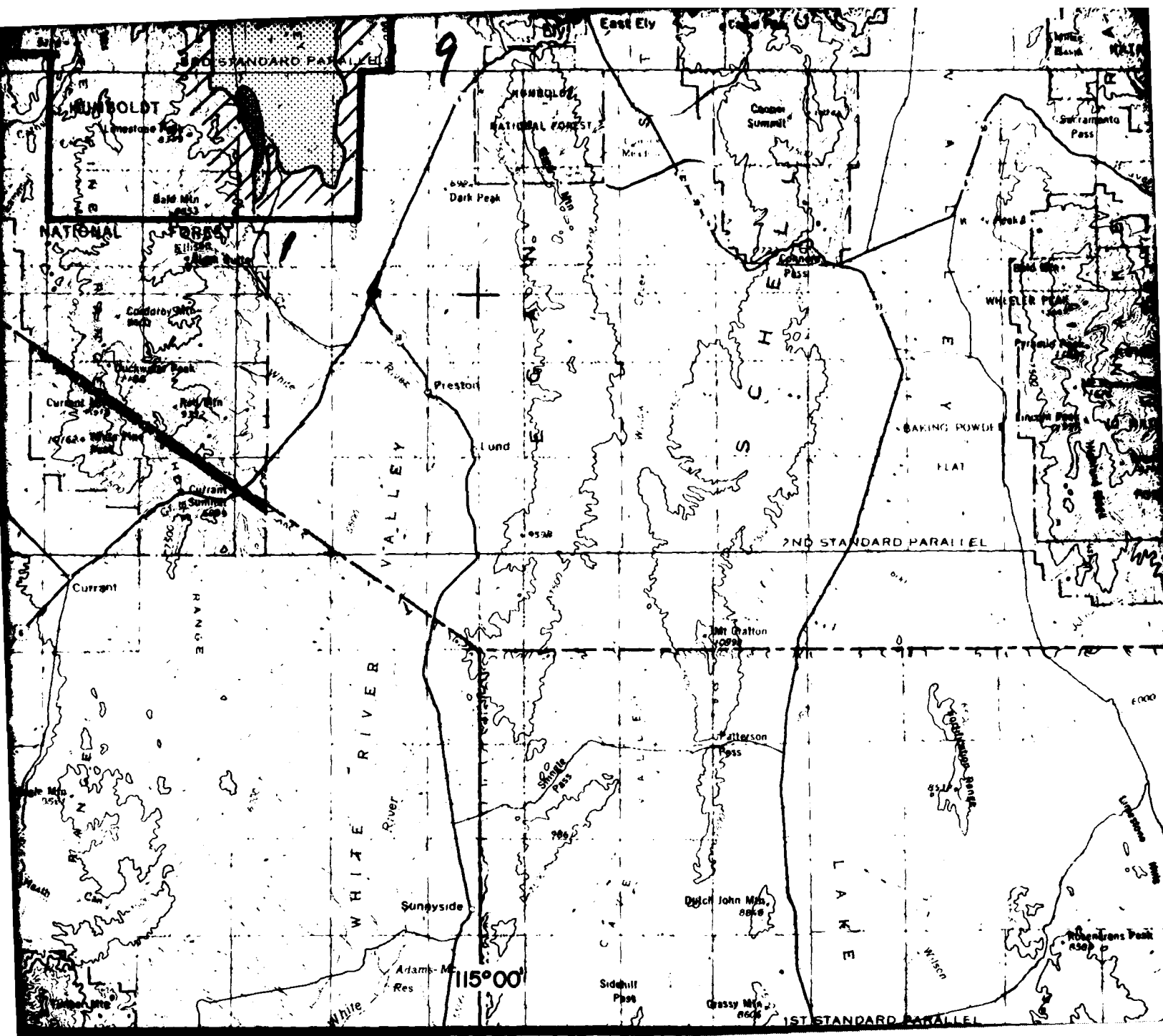


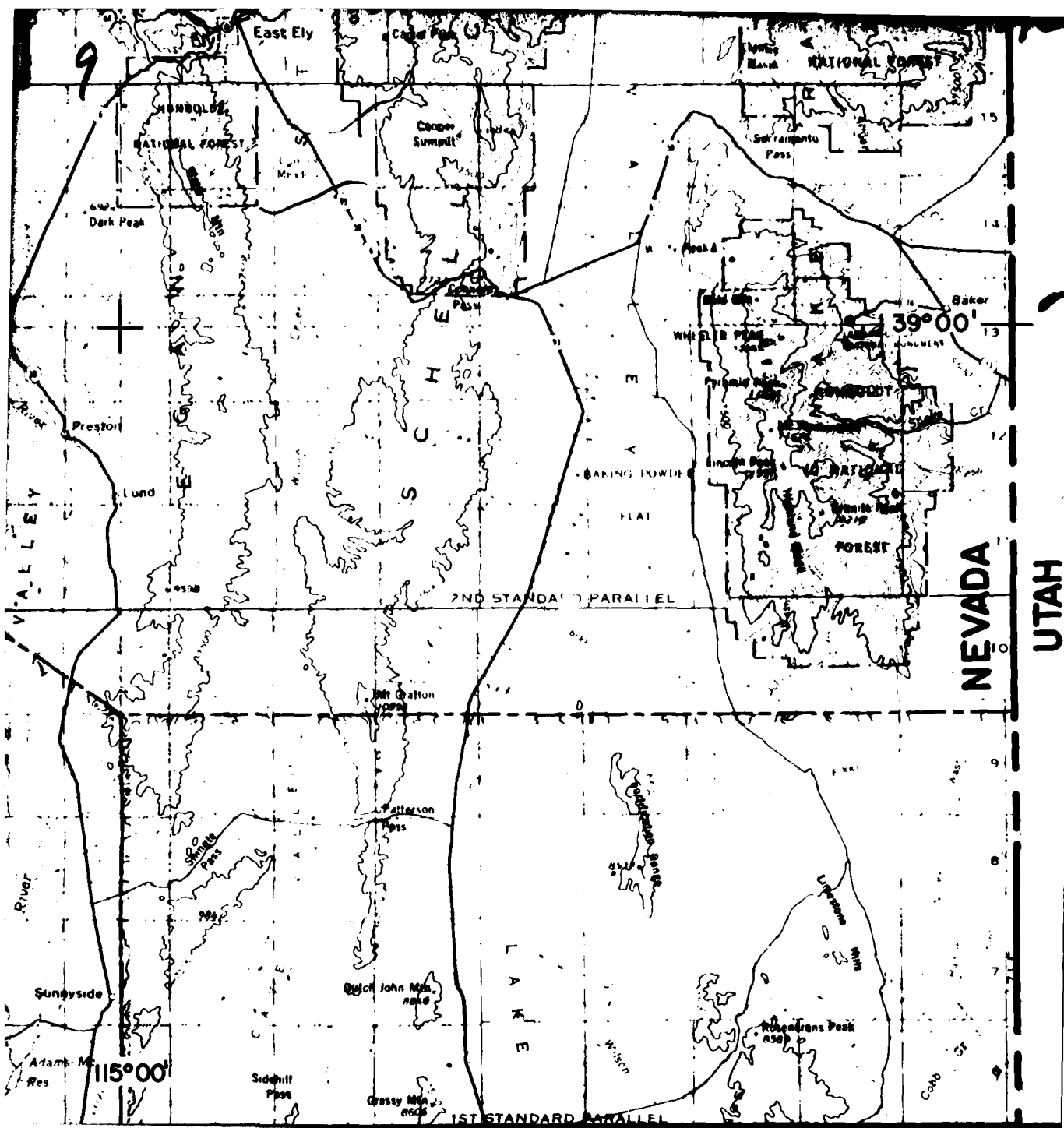


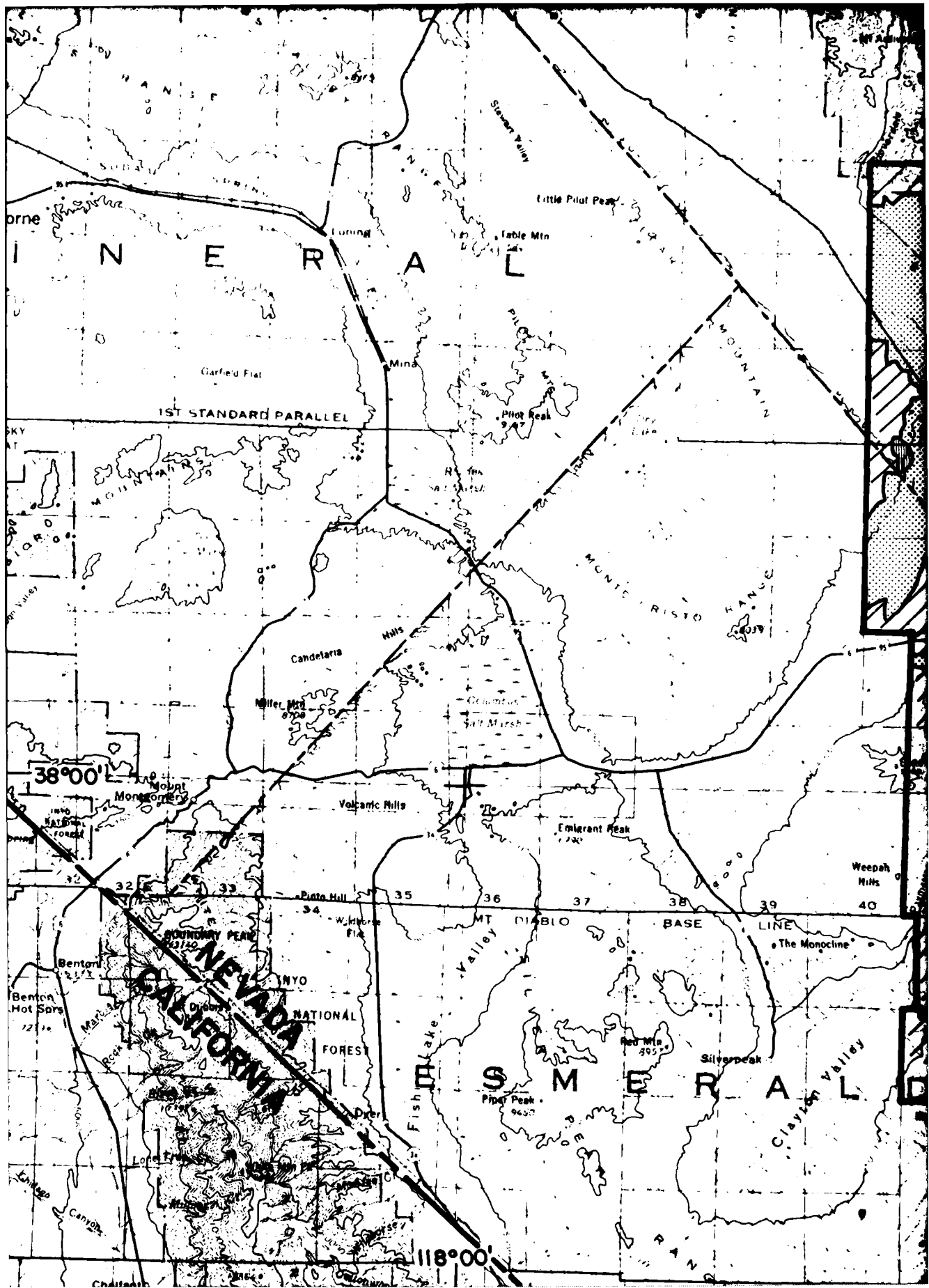


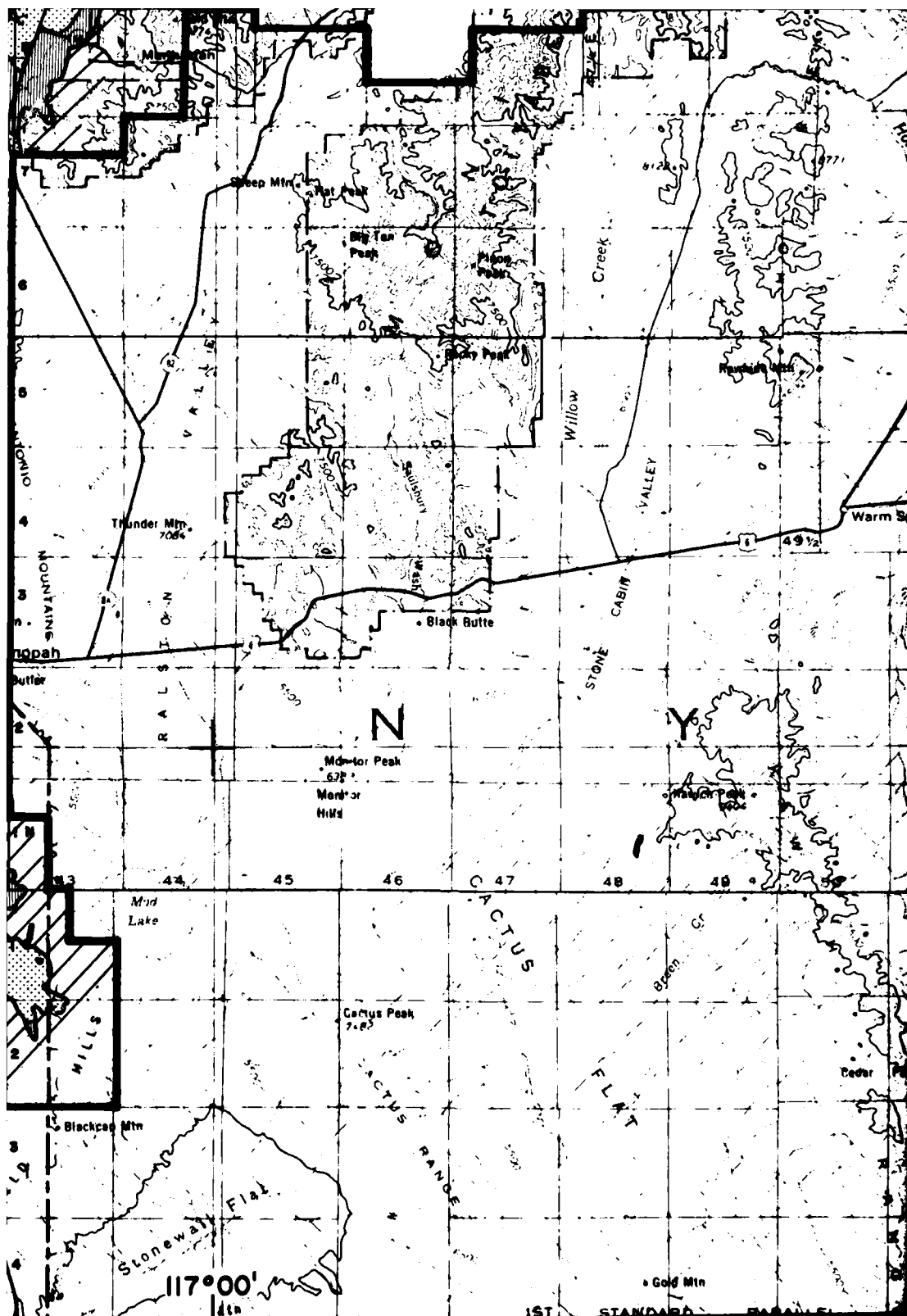


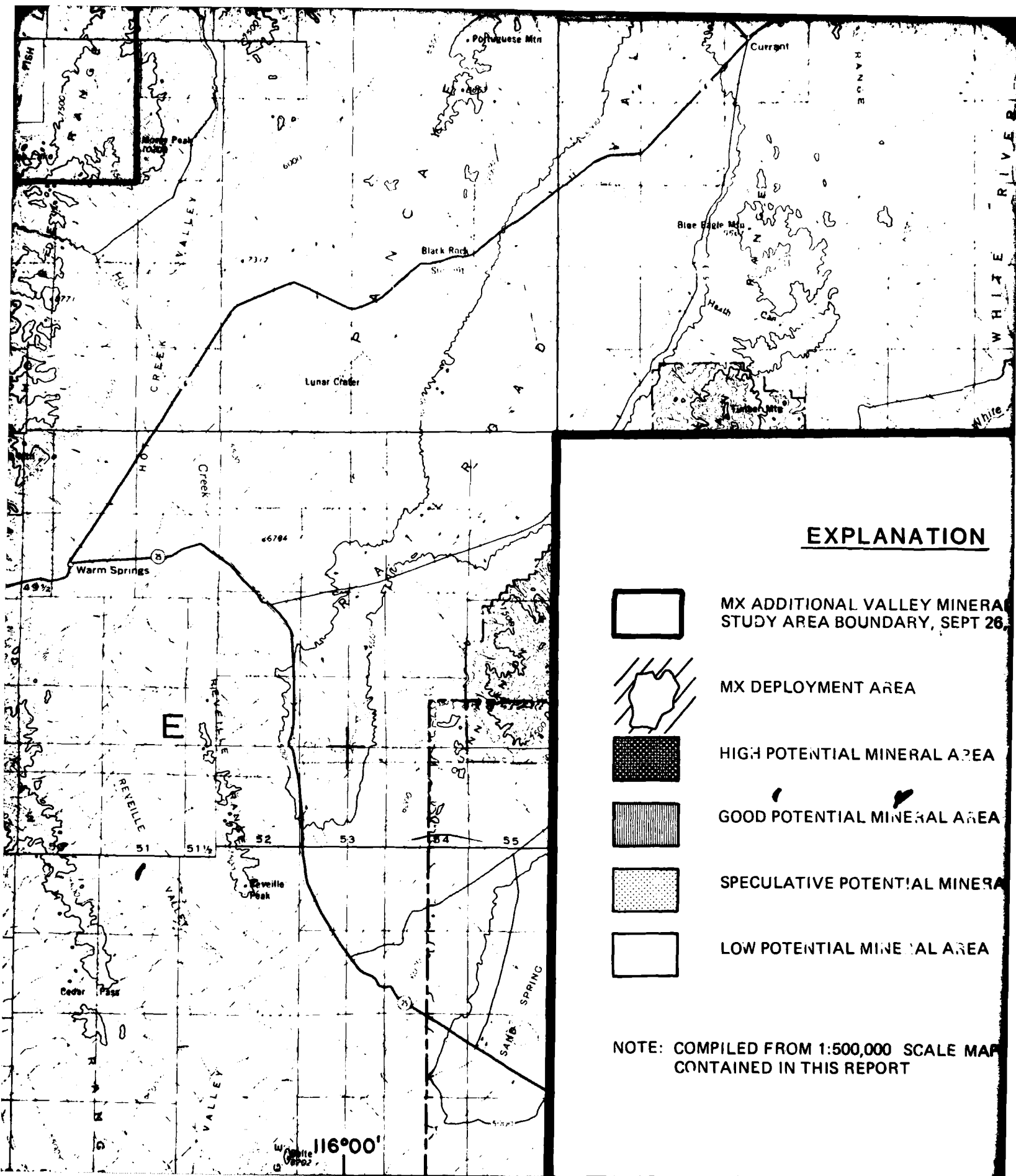












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Y MINERAL RESOURCES SURVEY
Y, SEPT 26, 1980

SCALE 1: 500,000



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AL AREA

SCALE MAPS



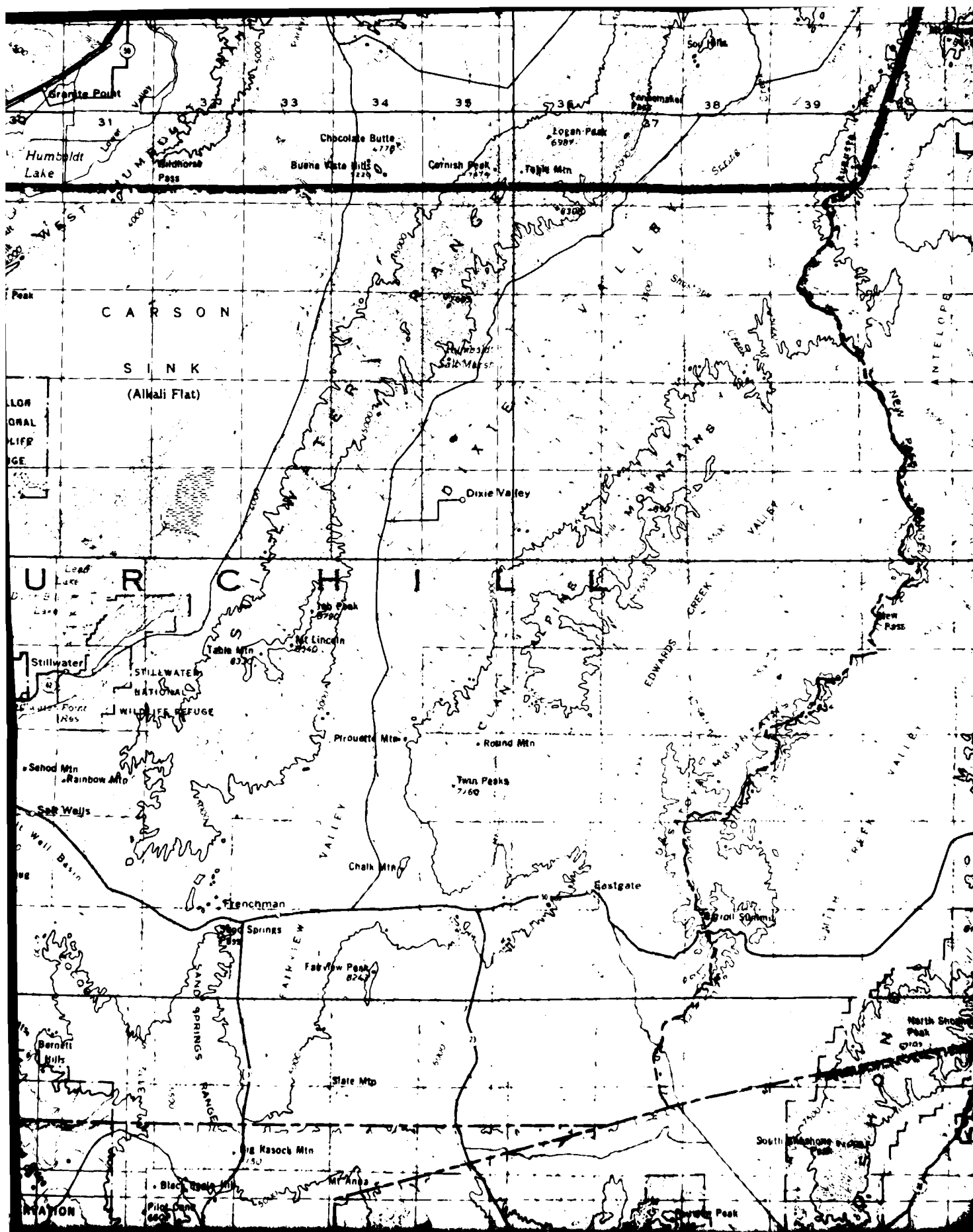
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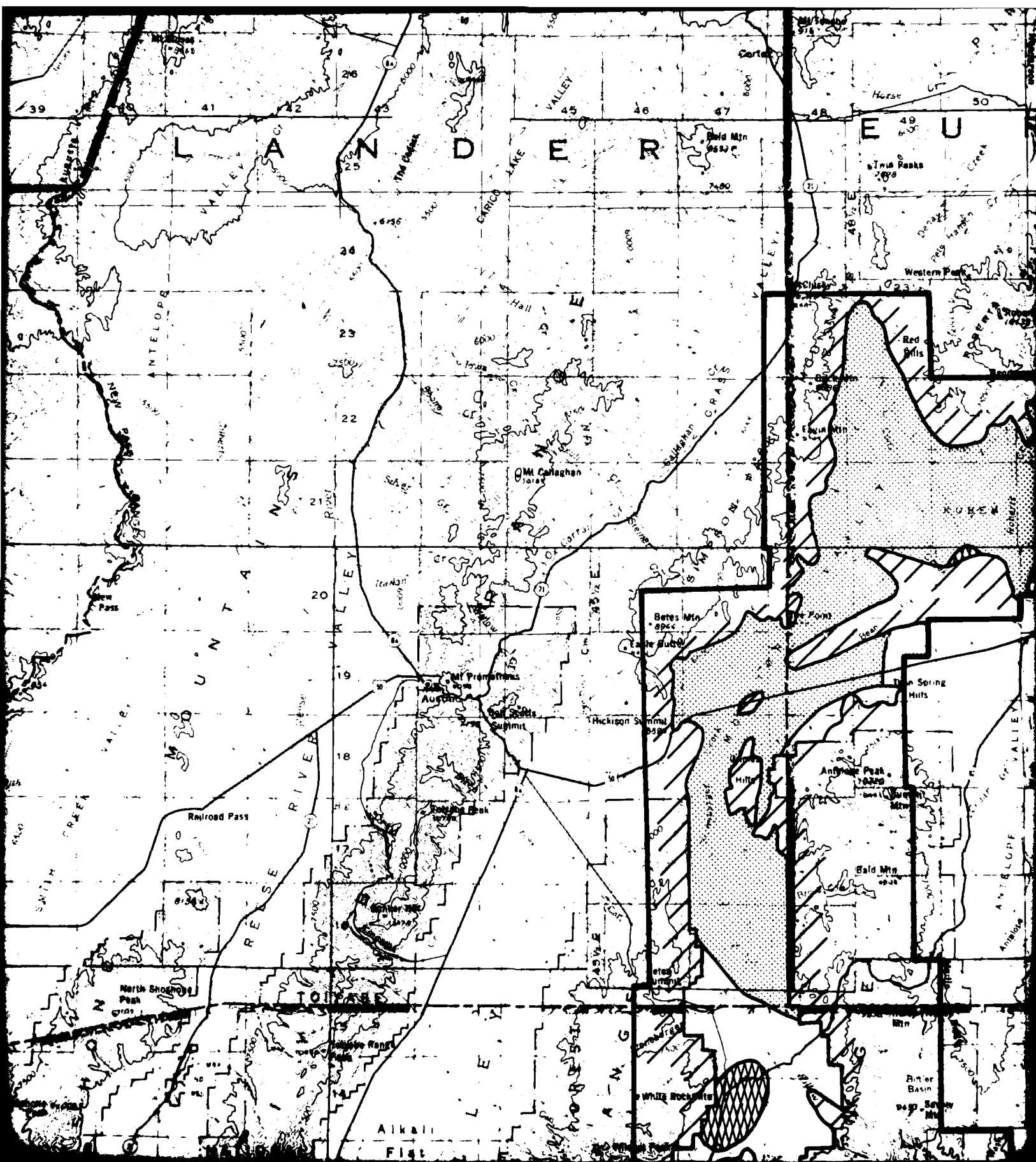
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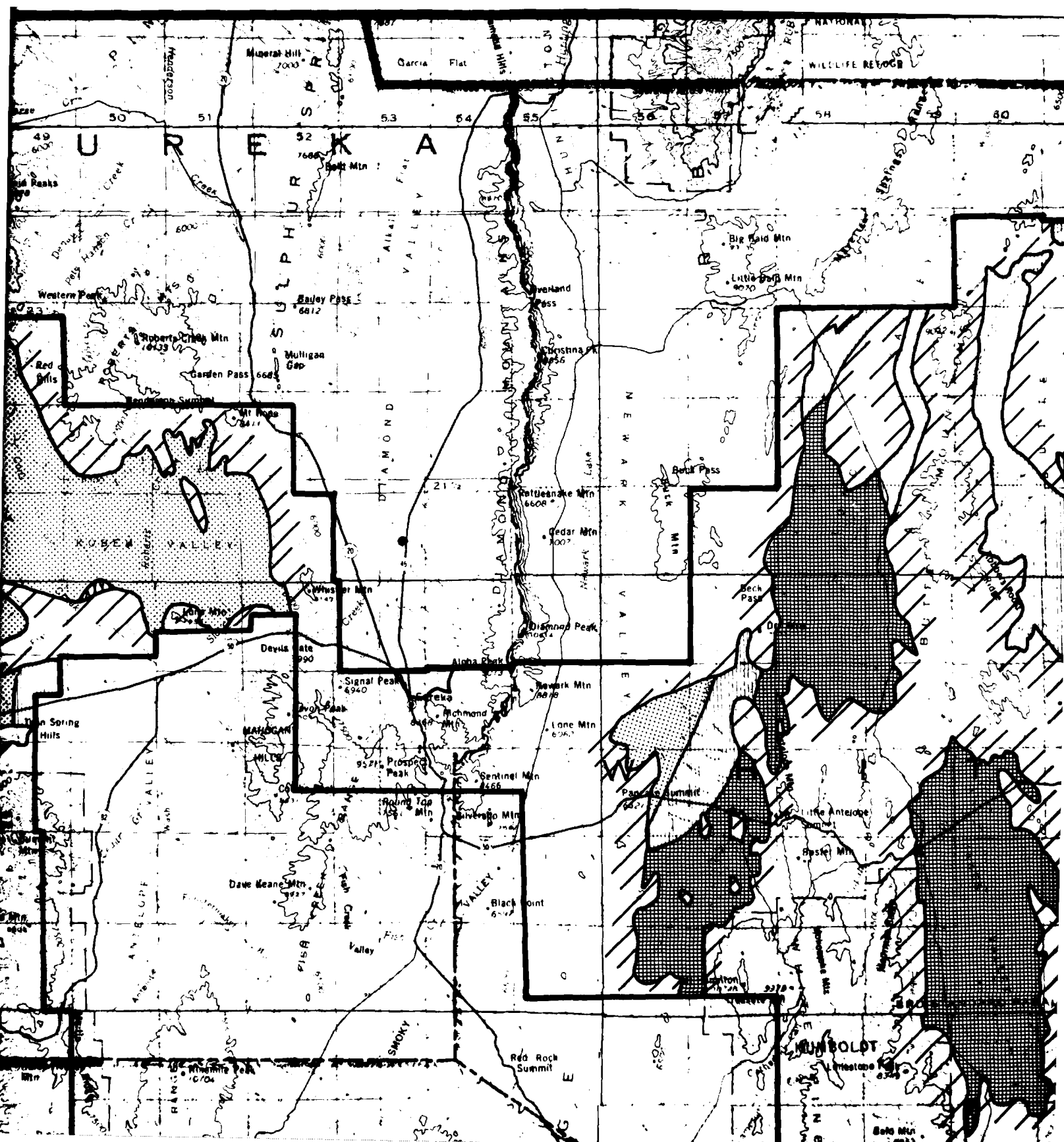
**MX ADDITIONAL VALLEY MINERAL
RESOURCES SURVEY STUDY AREA
COMPILATION OF MINERAL POTENTIAL
IN MX DEPLOYMENT AREAS**

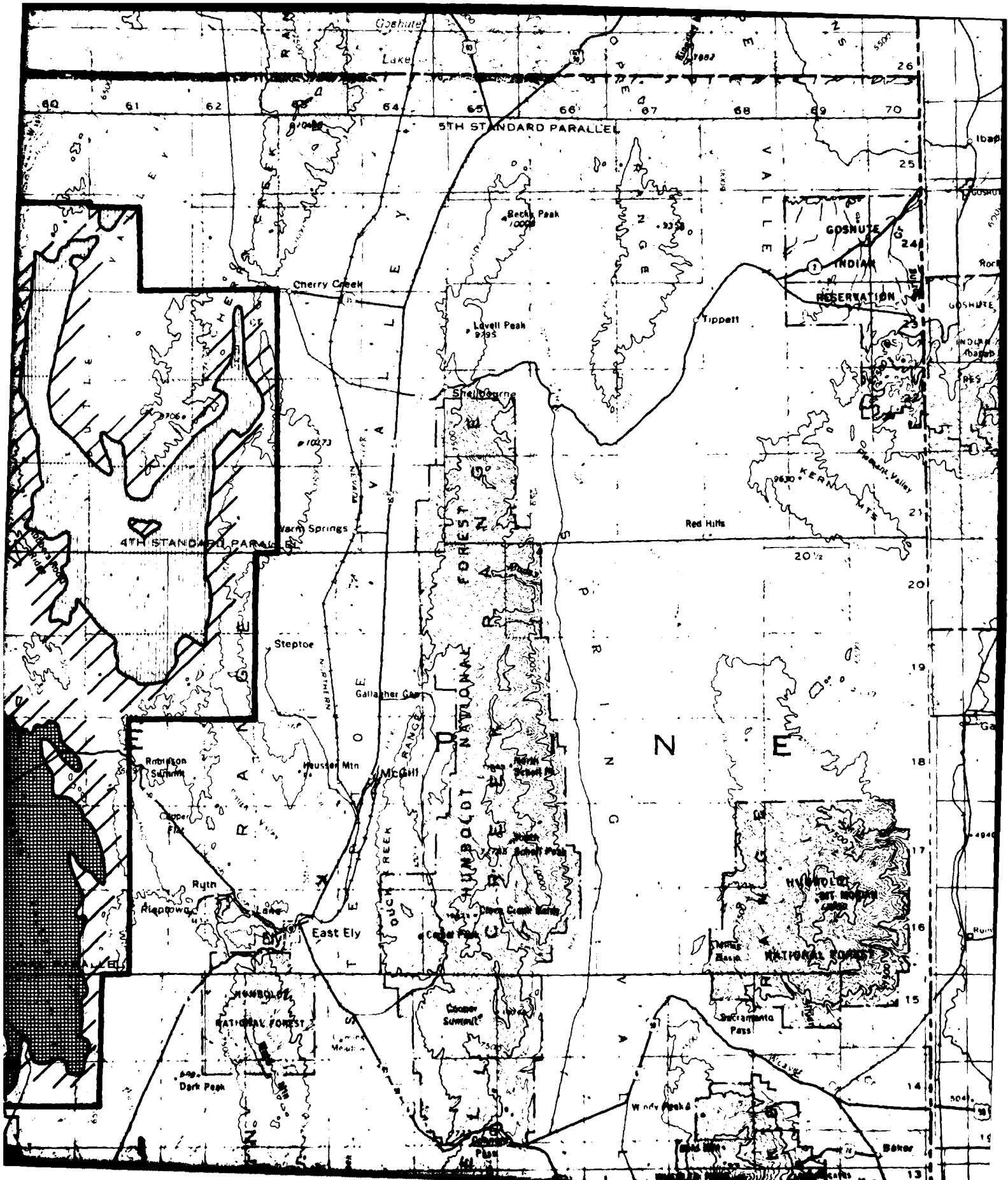
30 APRIL 81

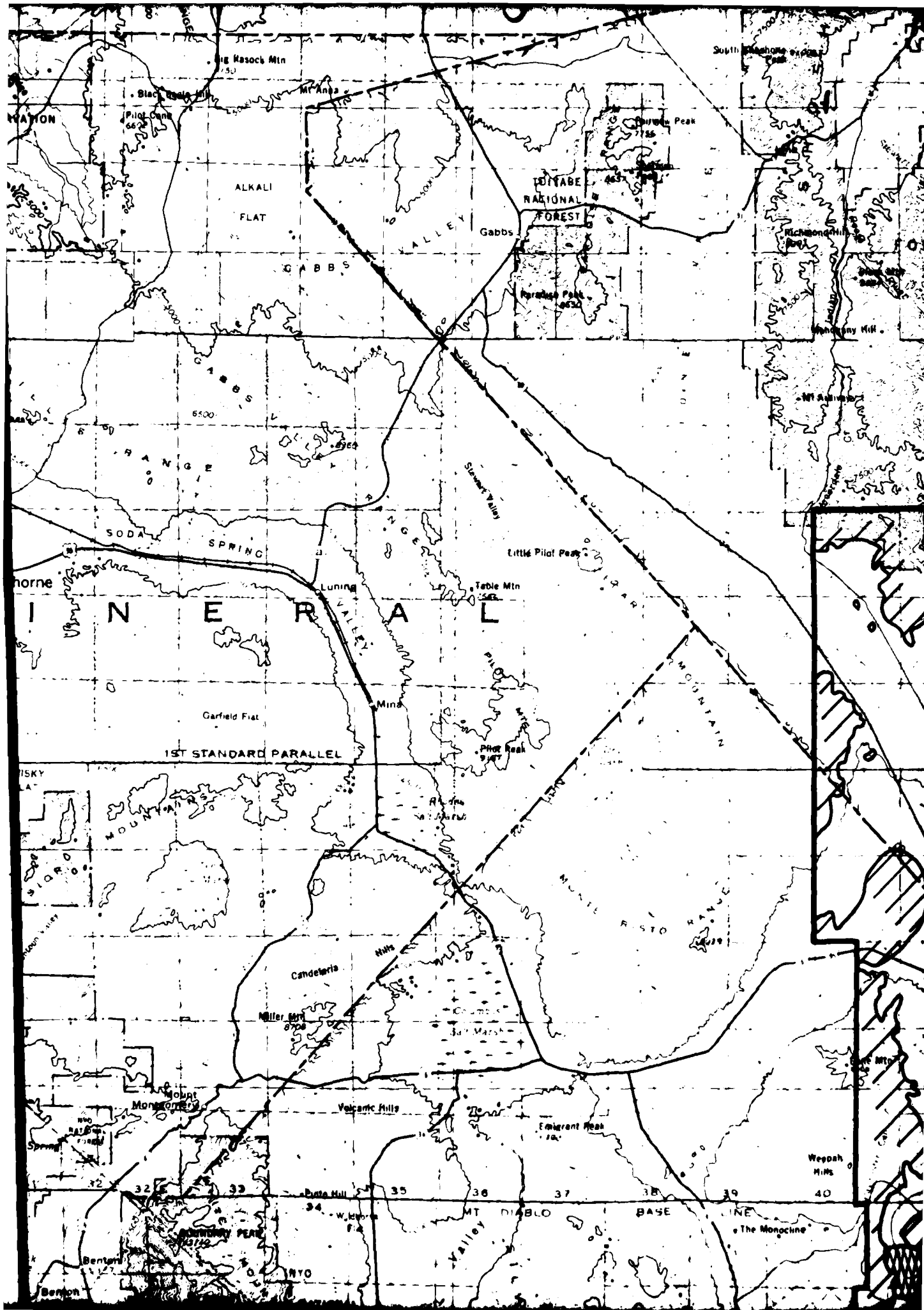
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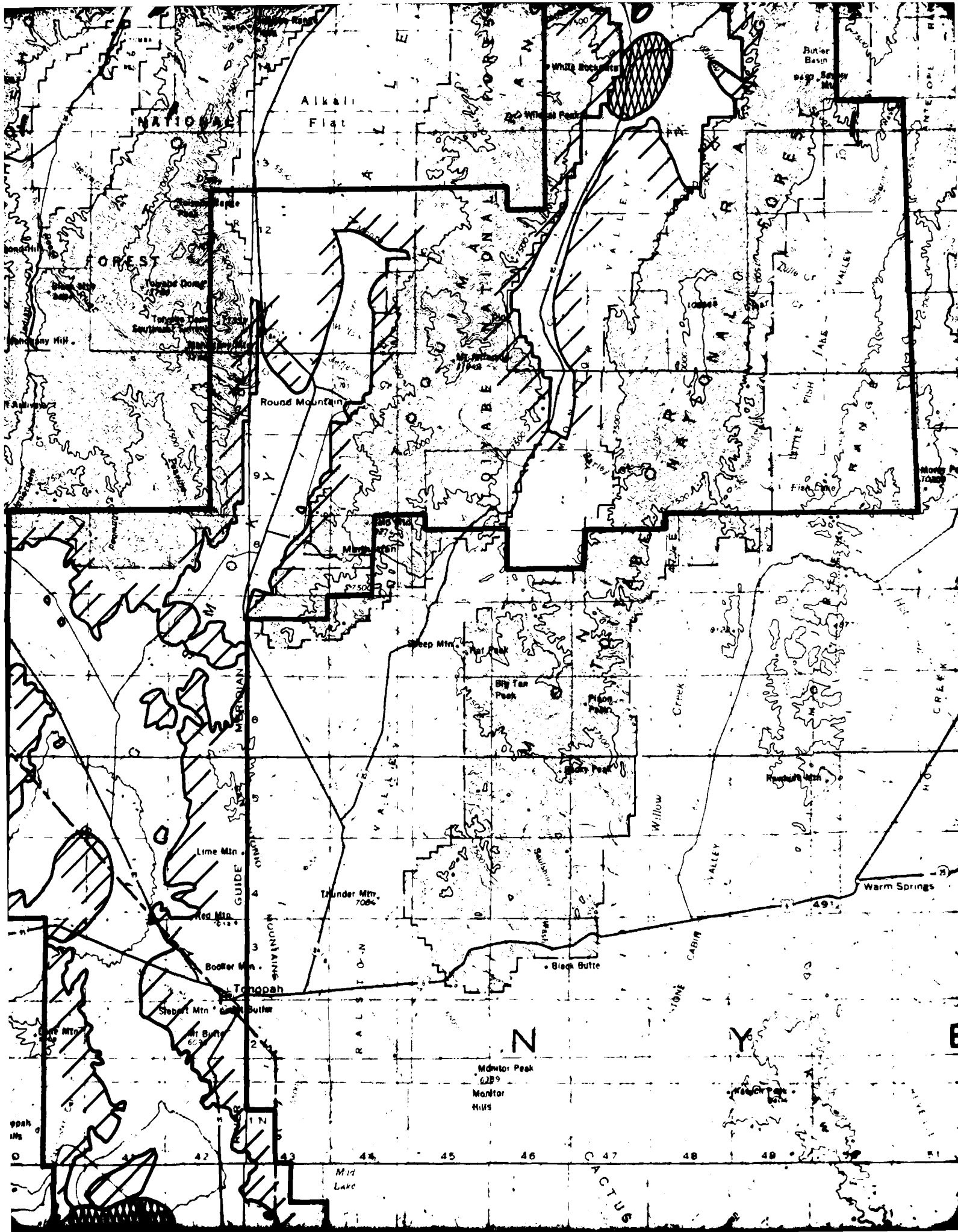


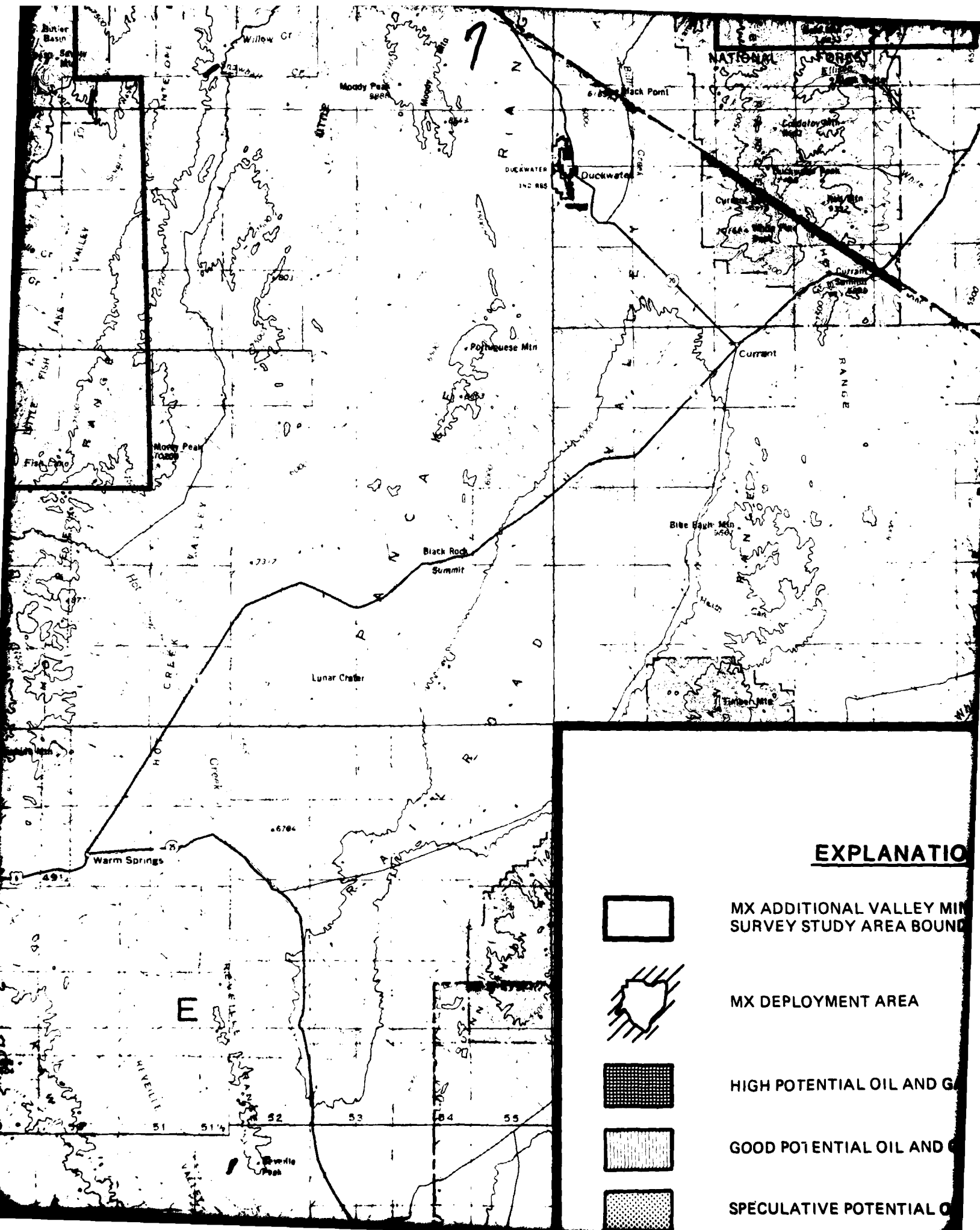


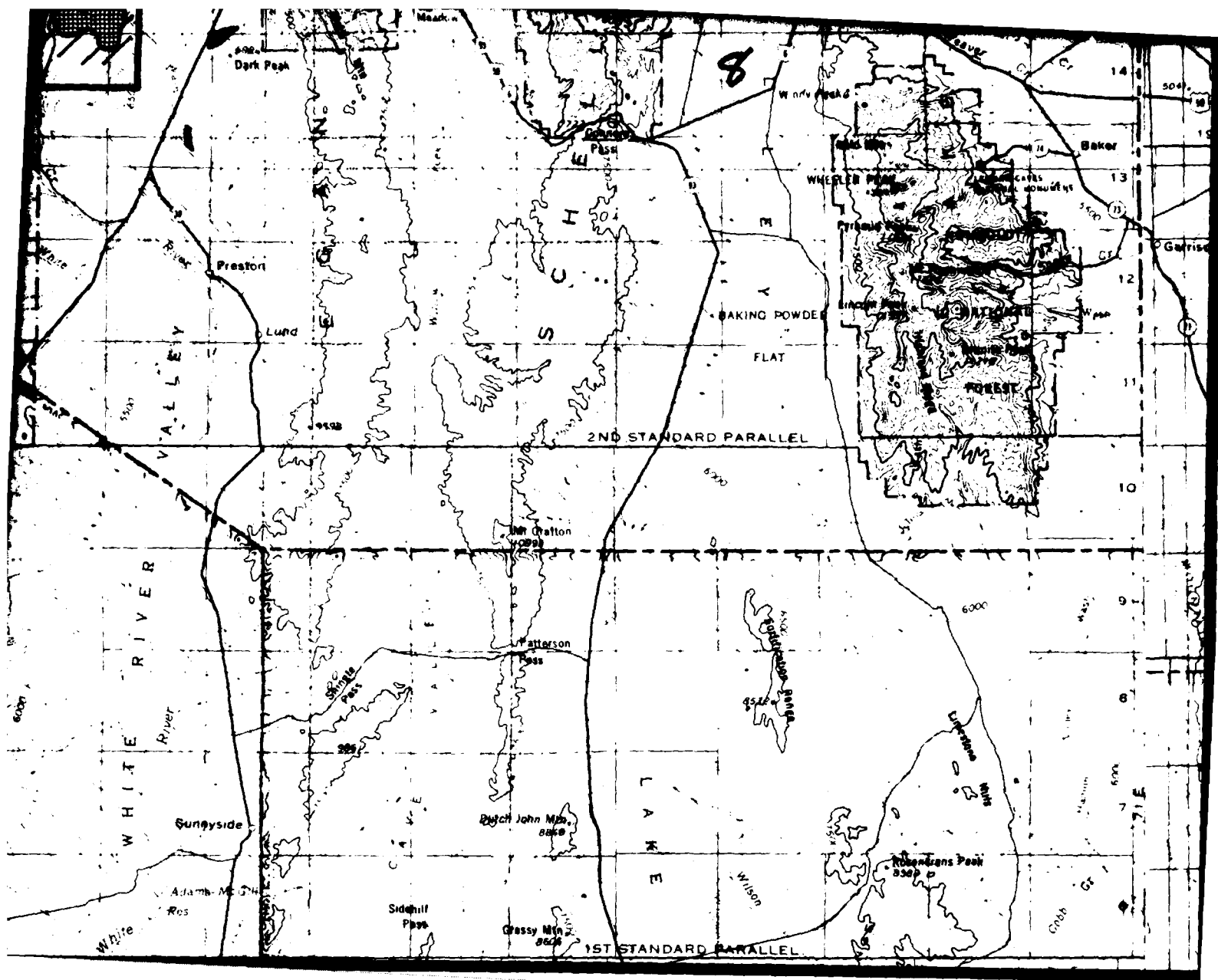


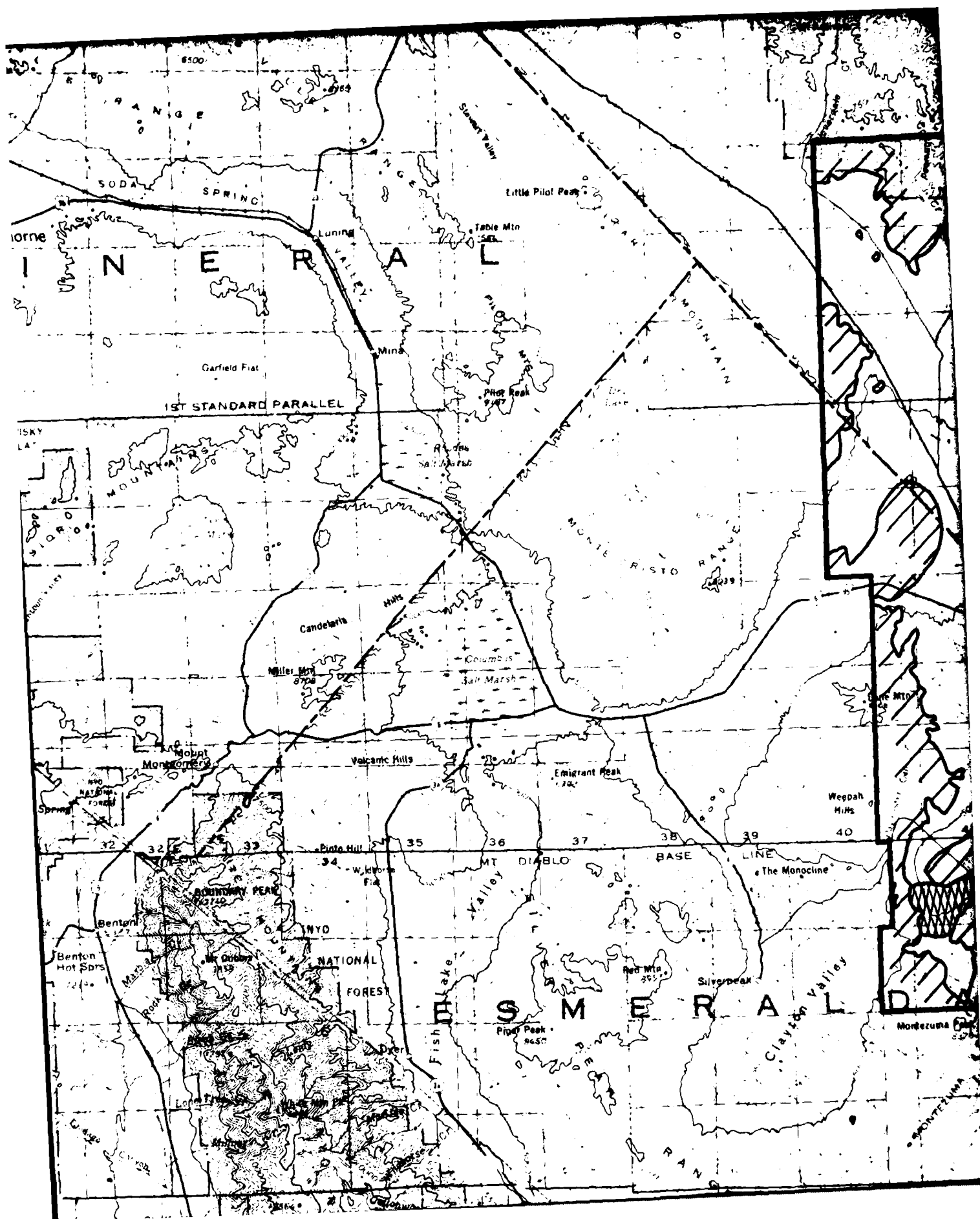


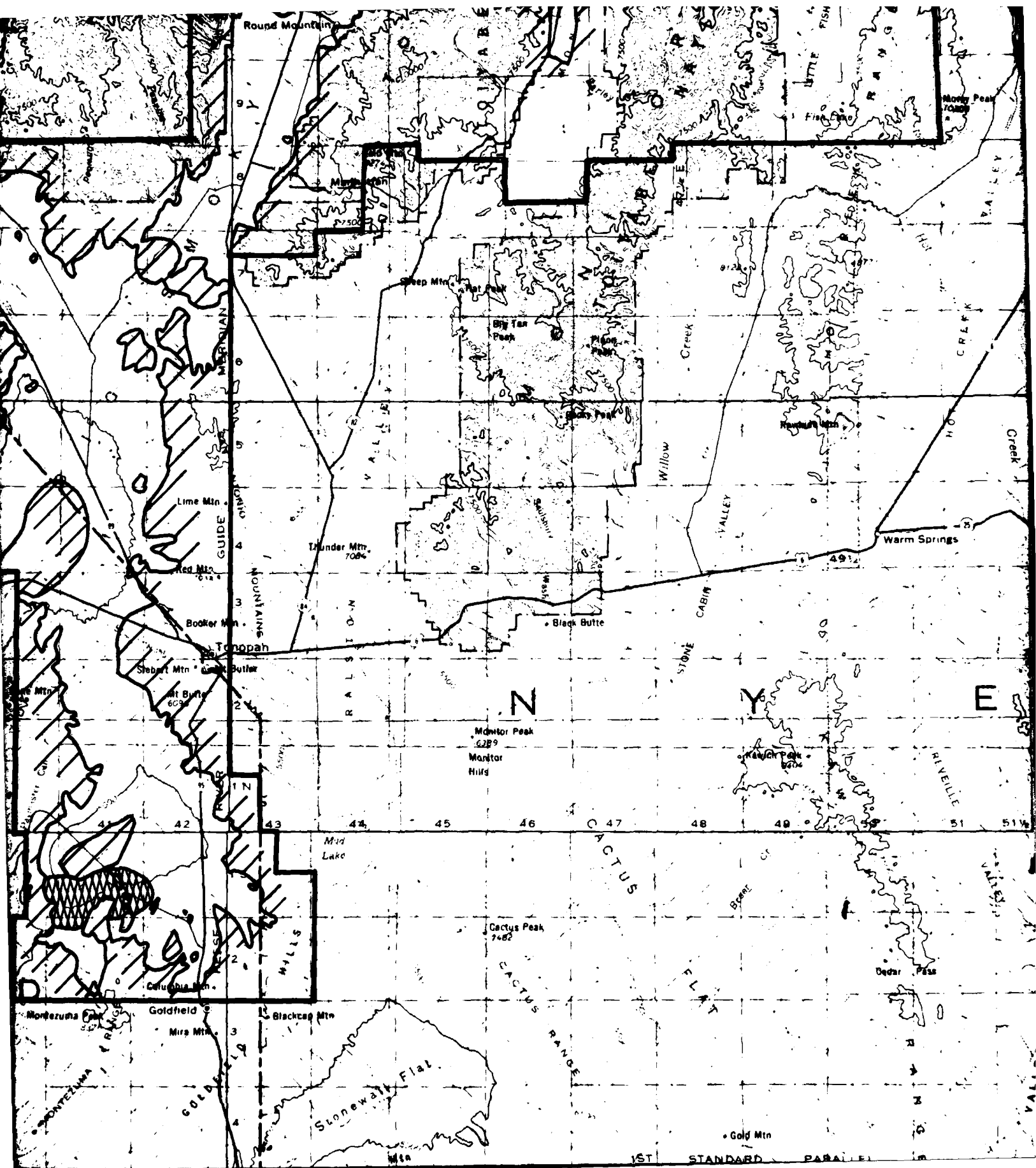


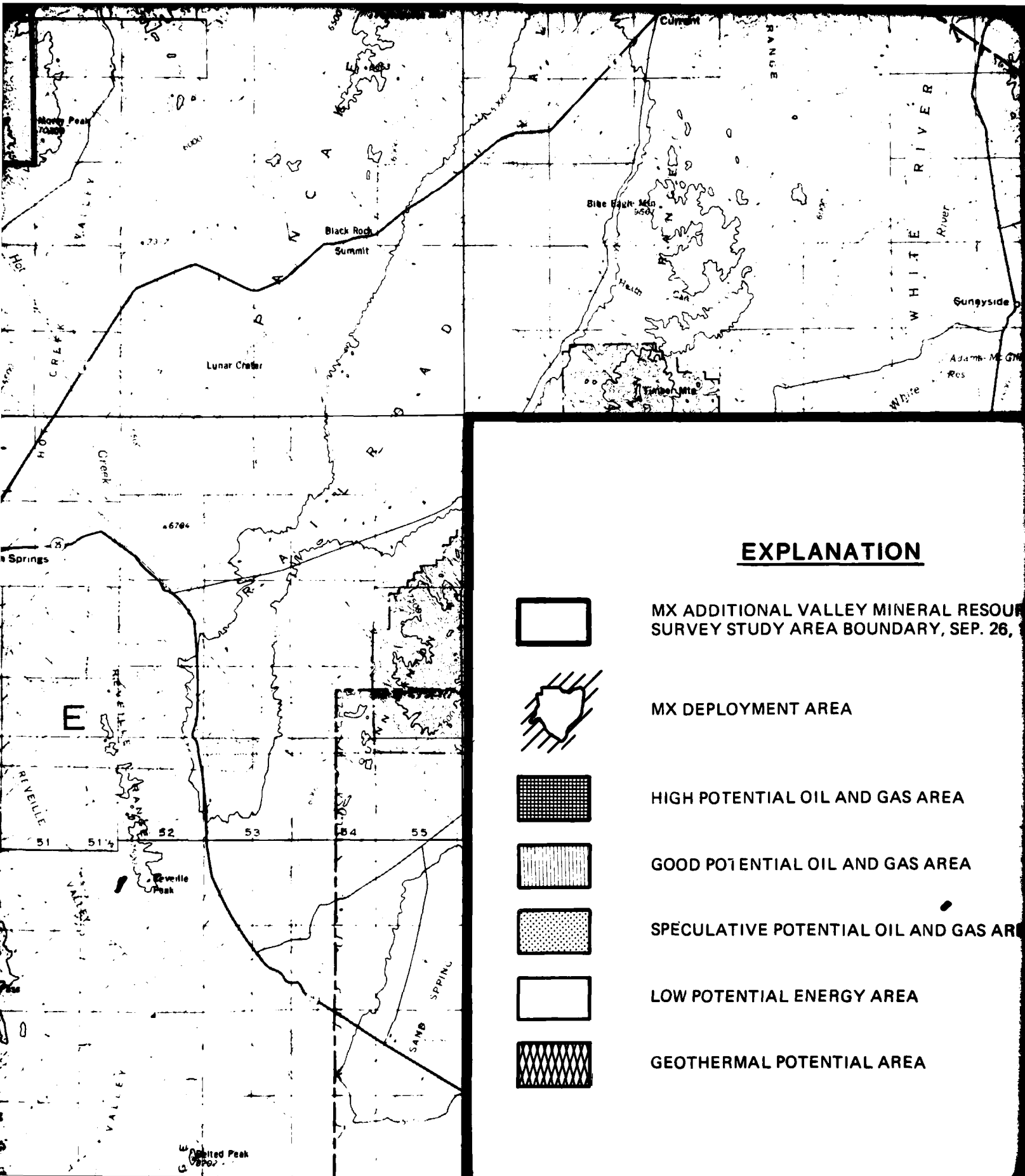












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BOUNDARY, SEP. 26, 1980

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SCALE 1: 500,000

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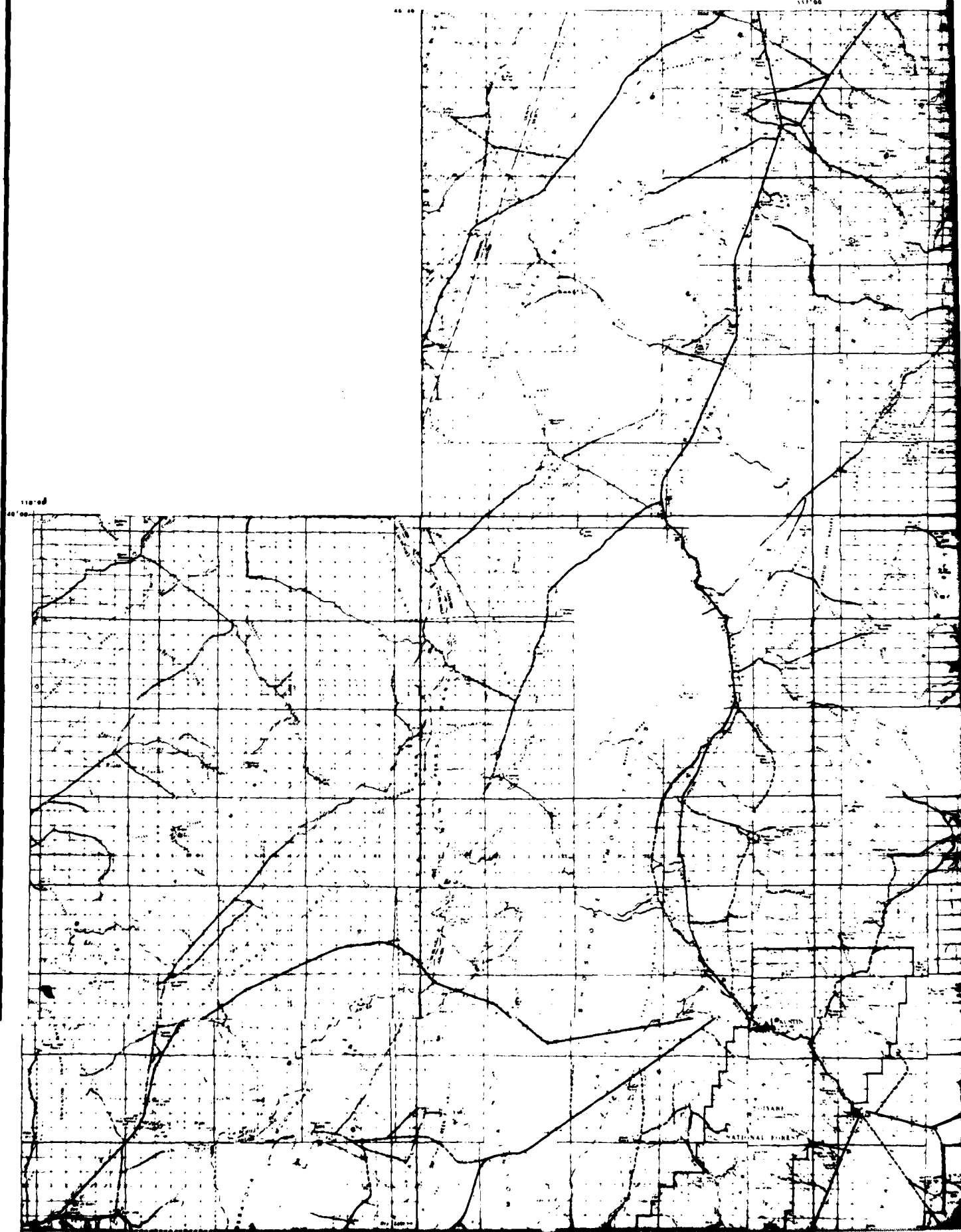
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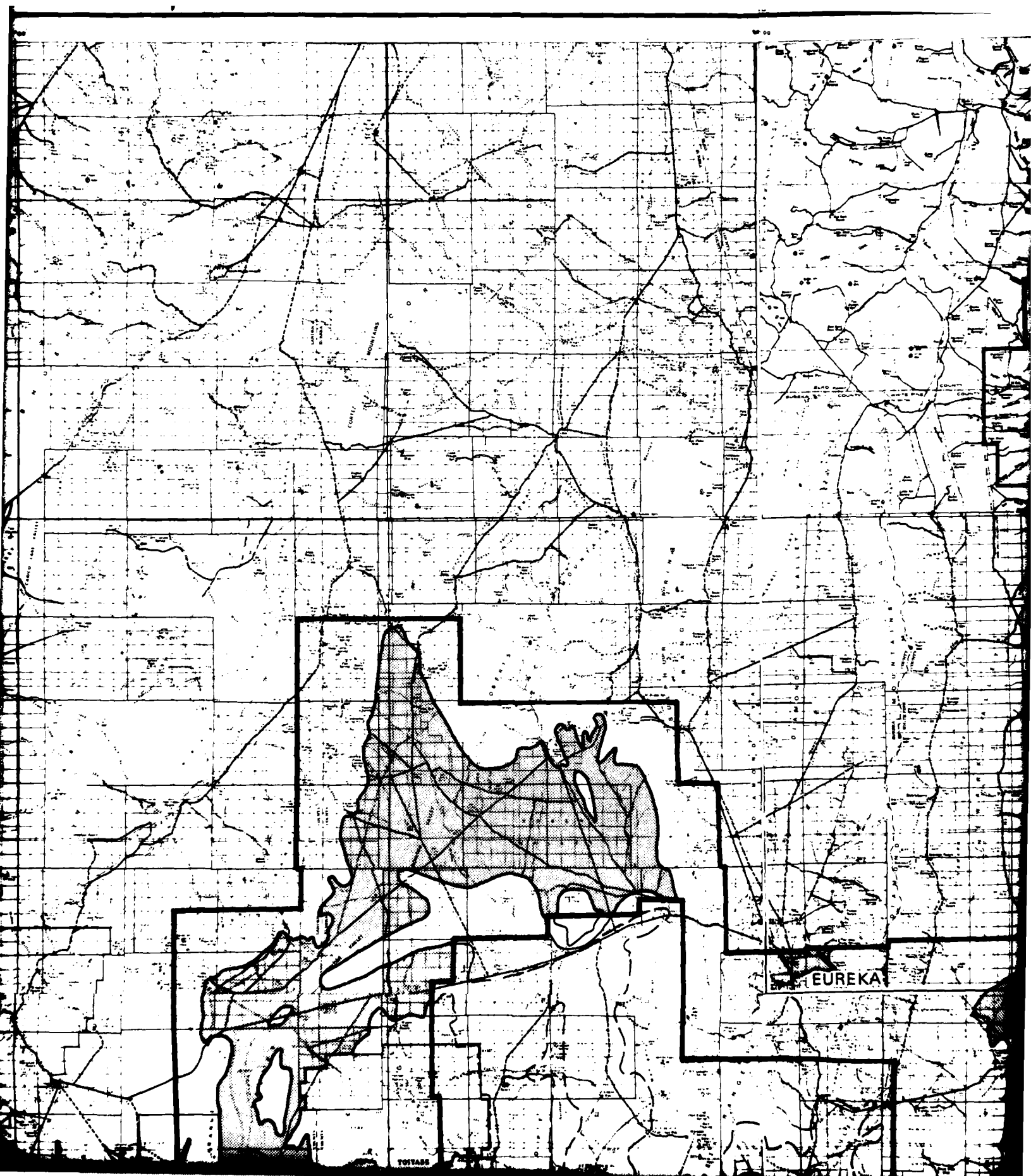
MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY STUDY AREA COMPILATION OF ENERGY POTENTIAL IN MX DEPLOYMENT AREAS

30 APR 81

DRAWING 2

E-TR-50

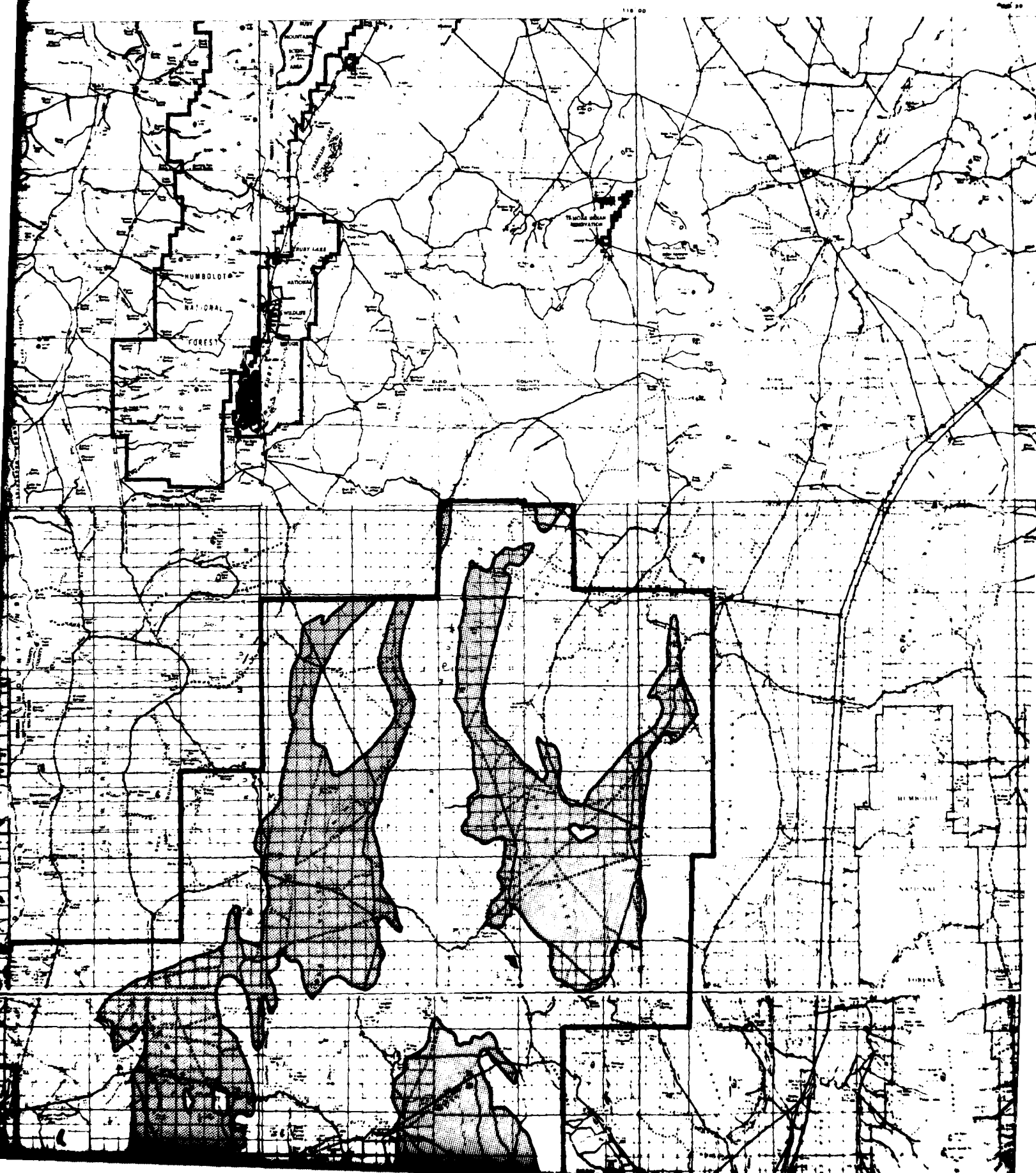


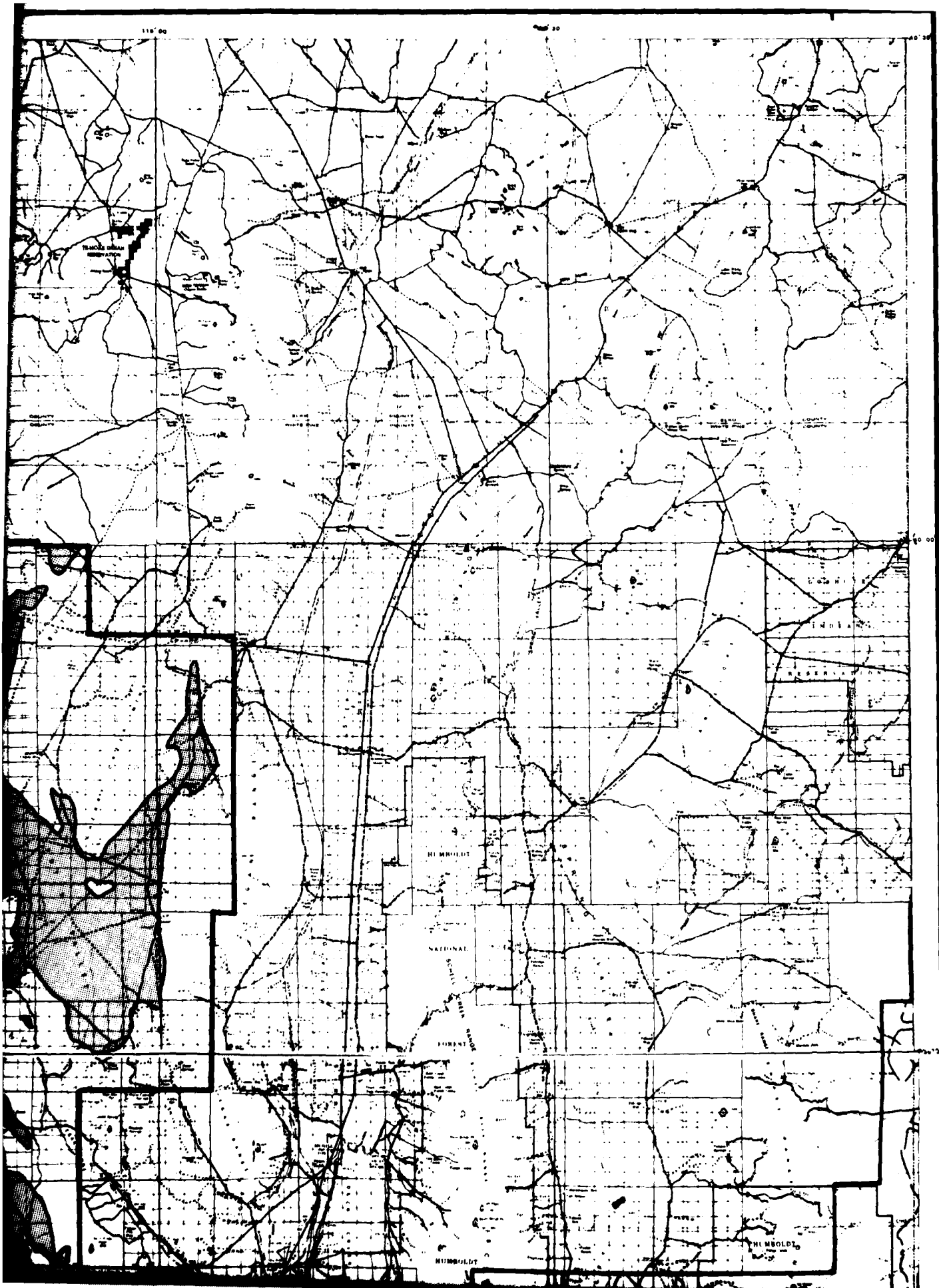


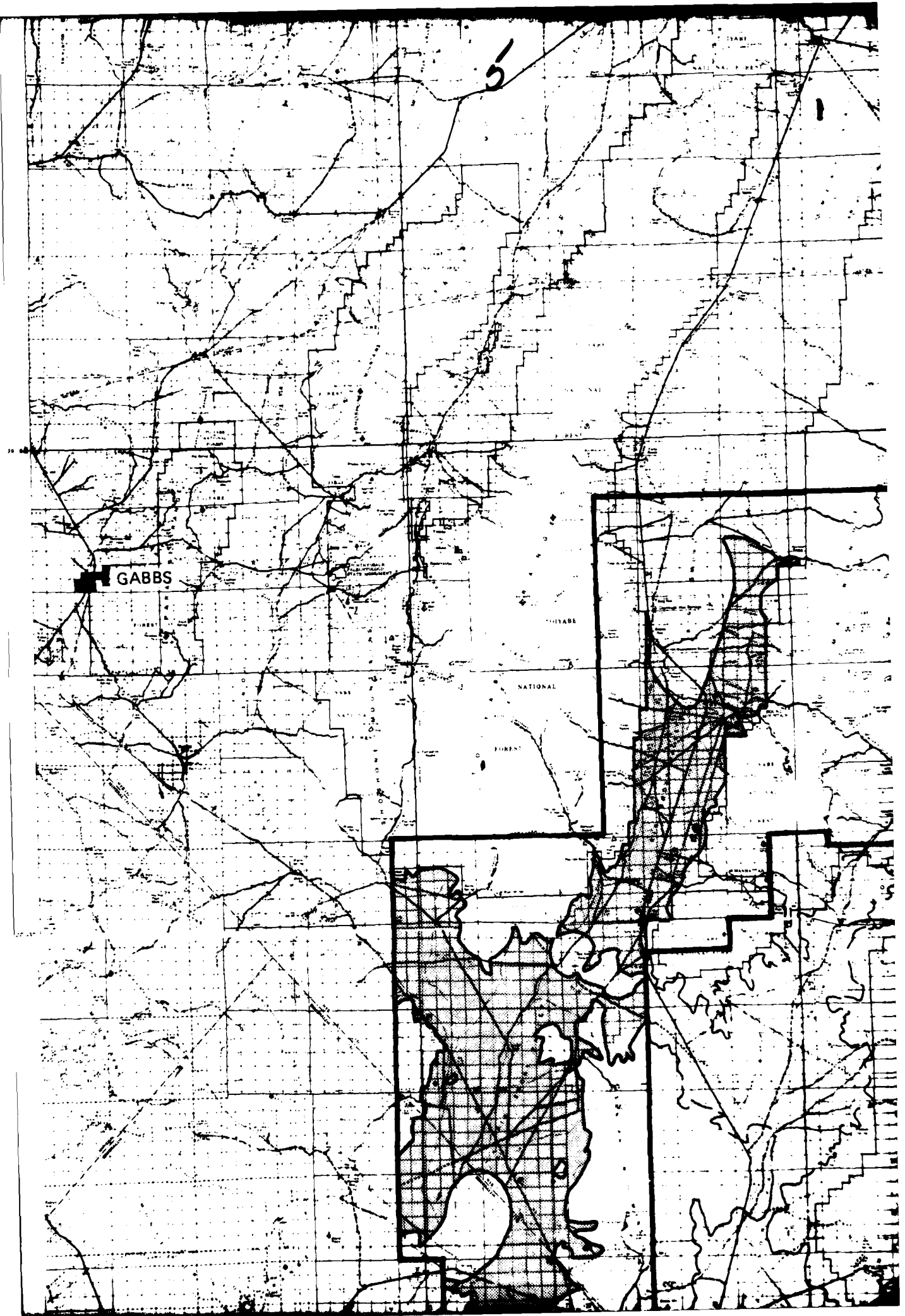
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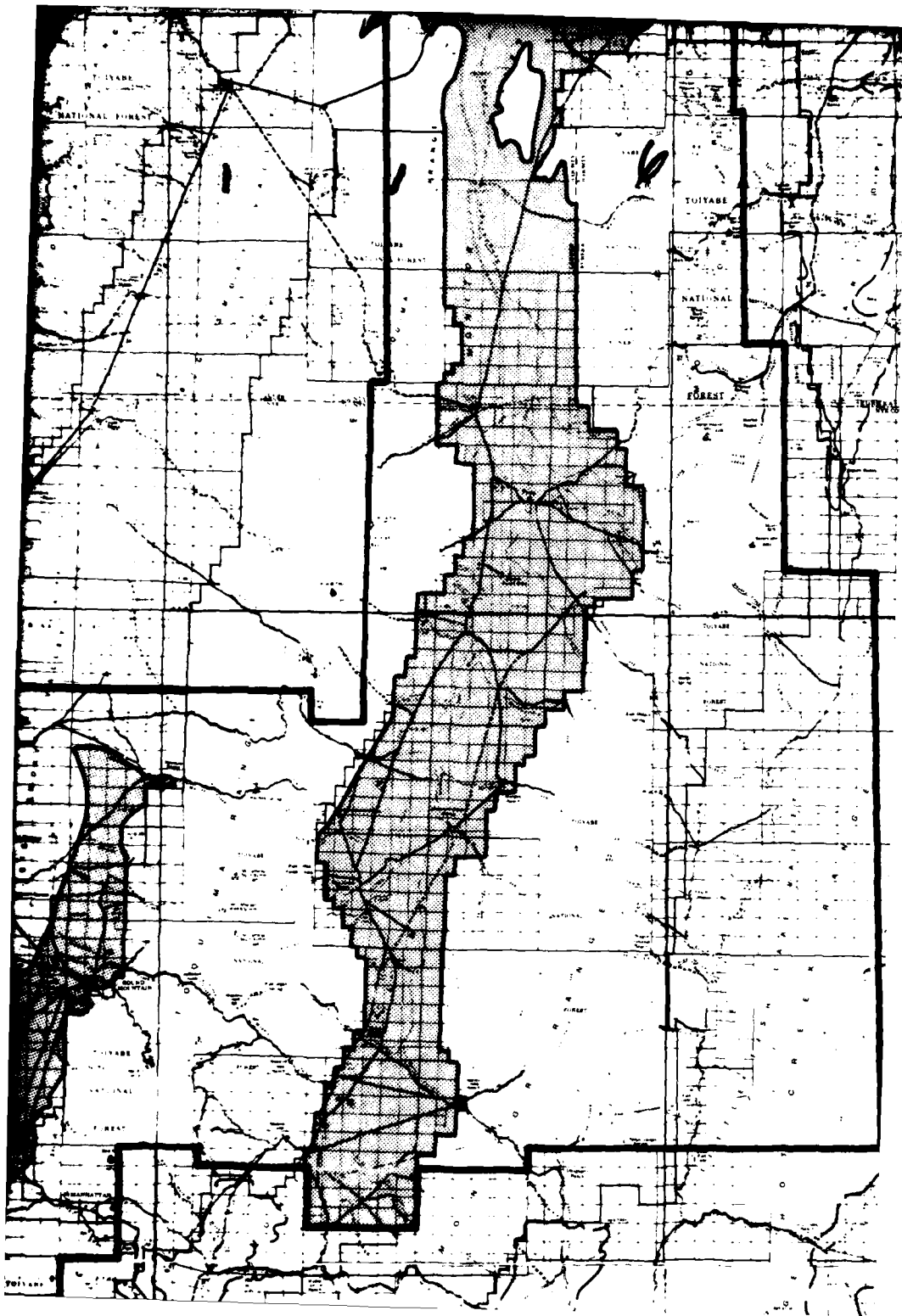
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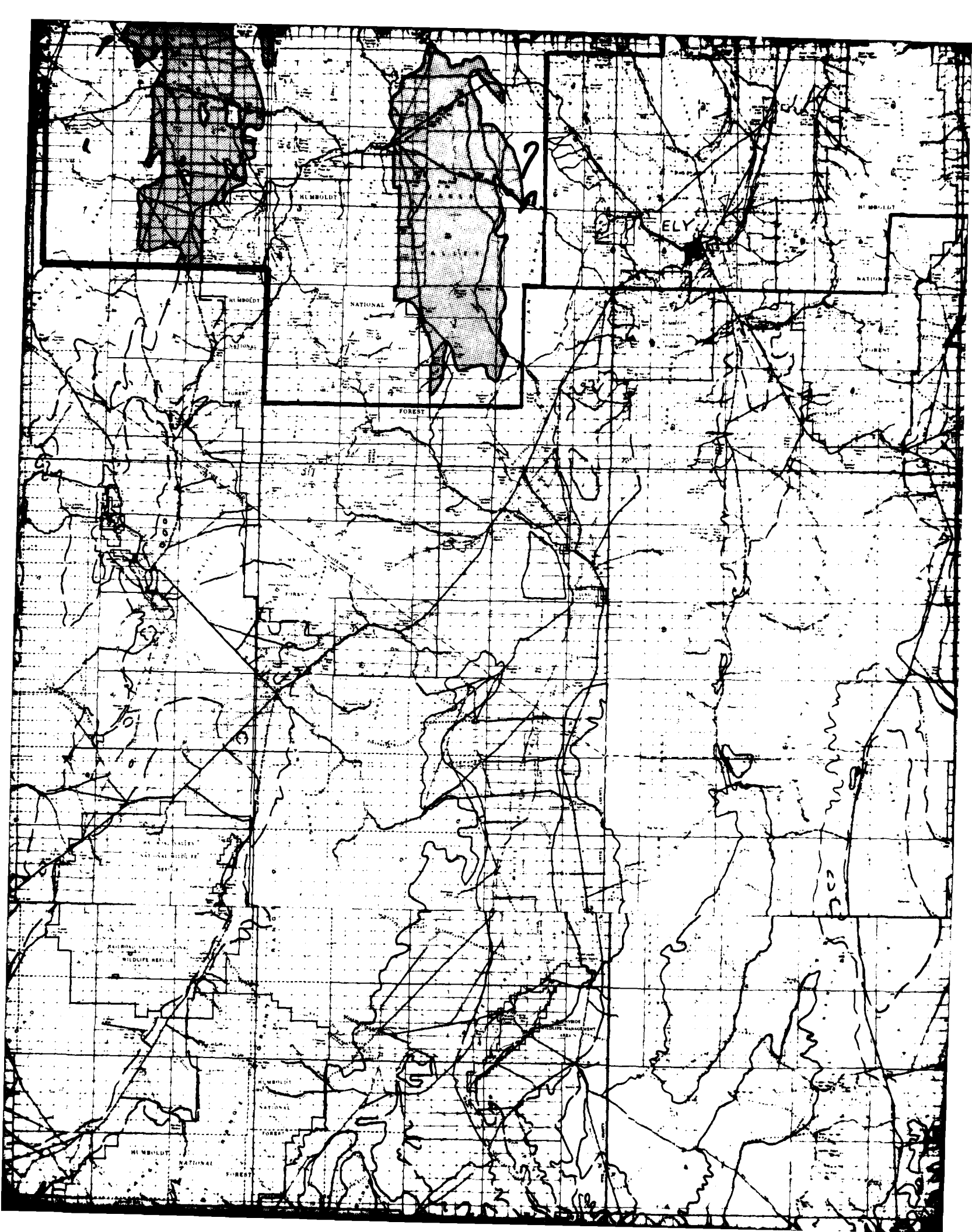
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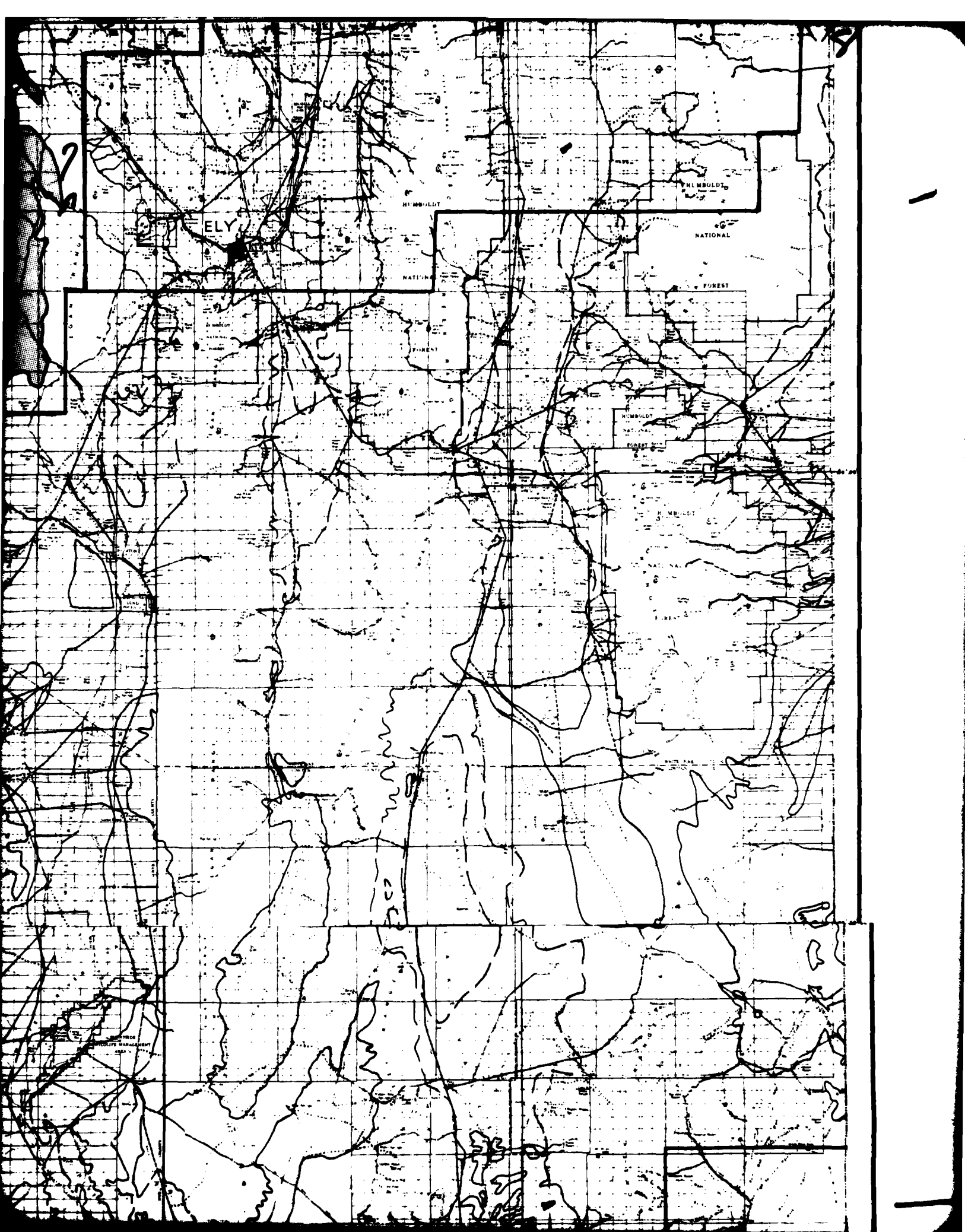


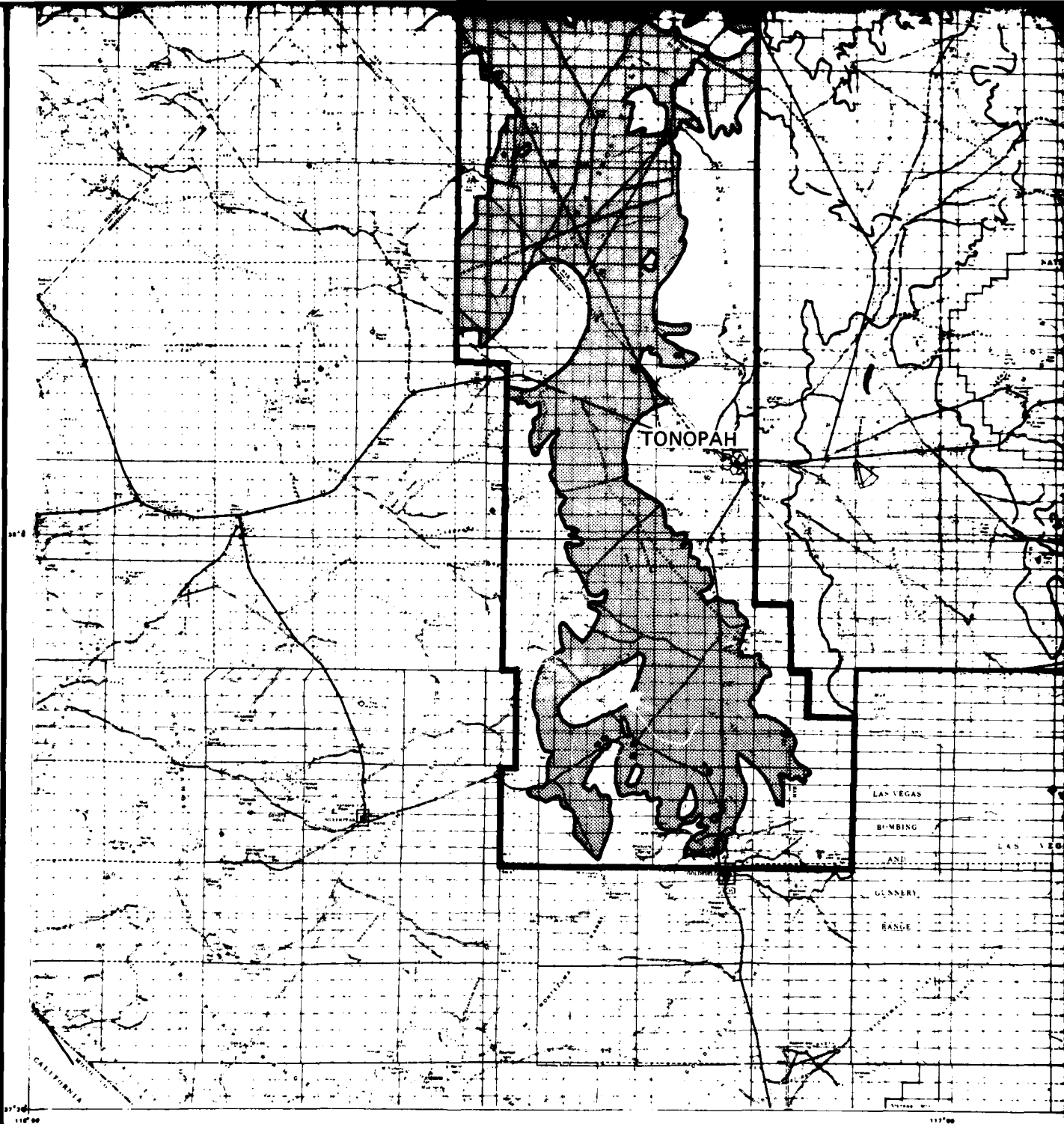










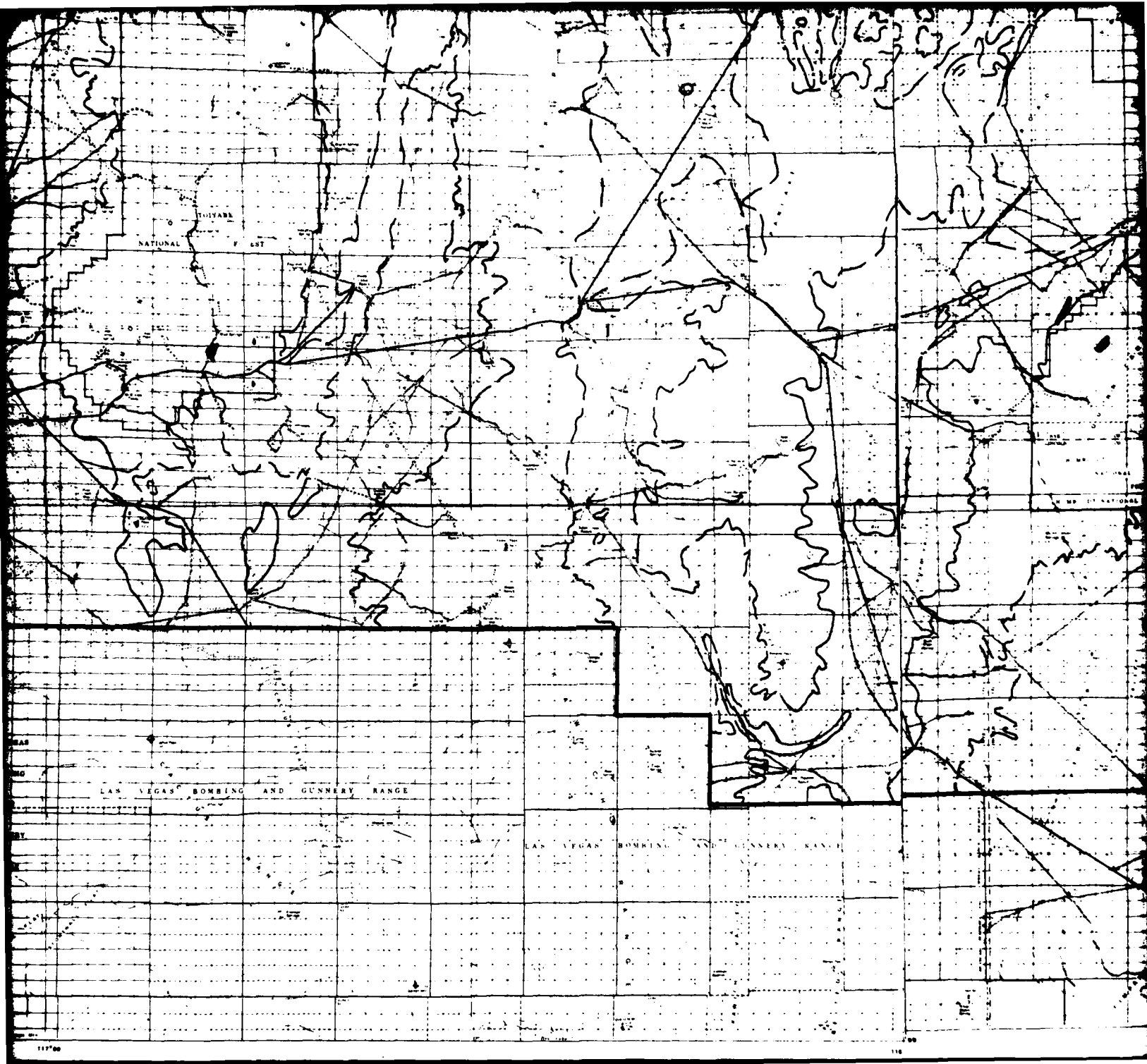


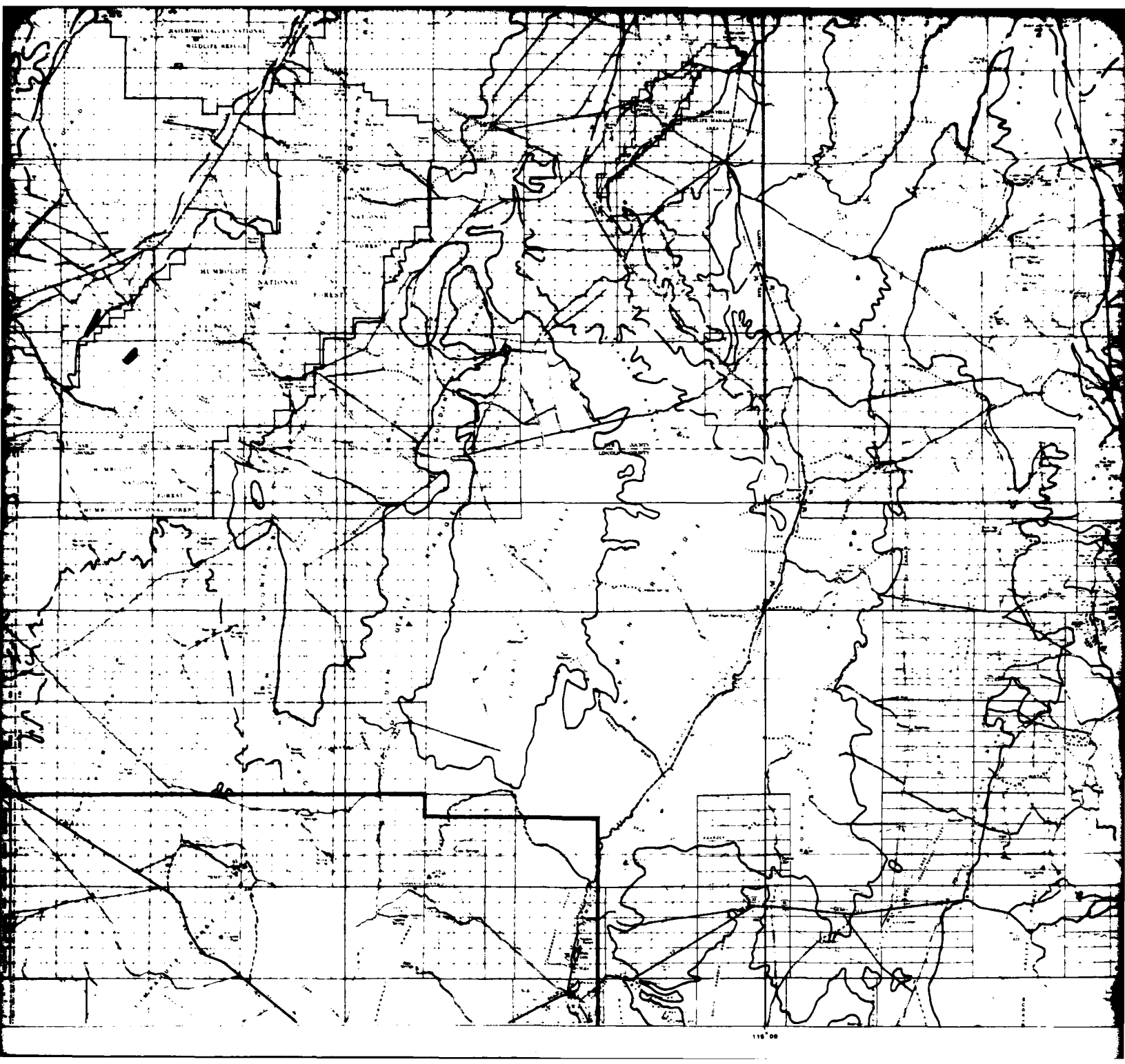
EXPLANATION

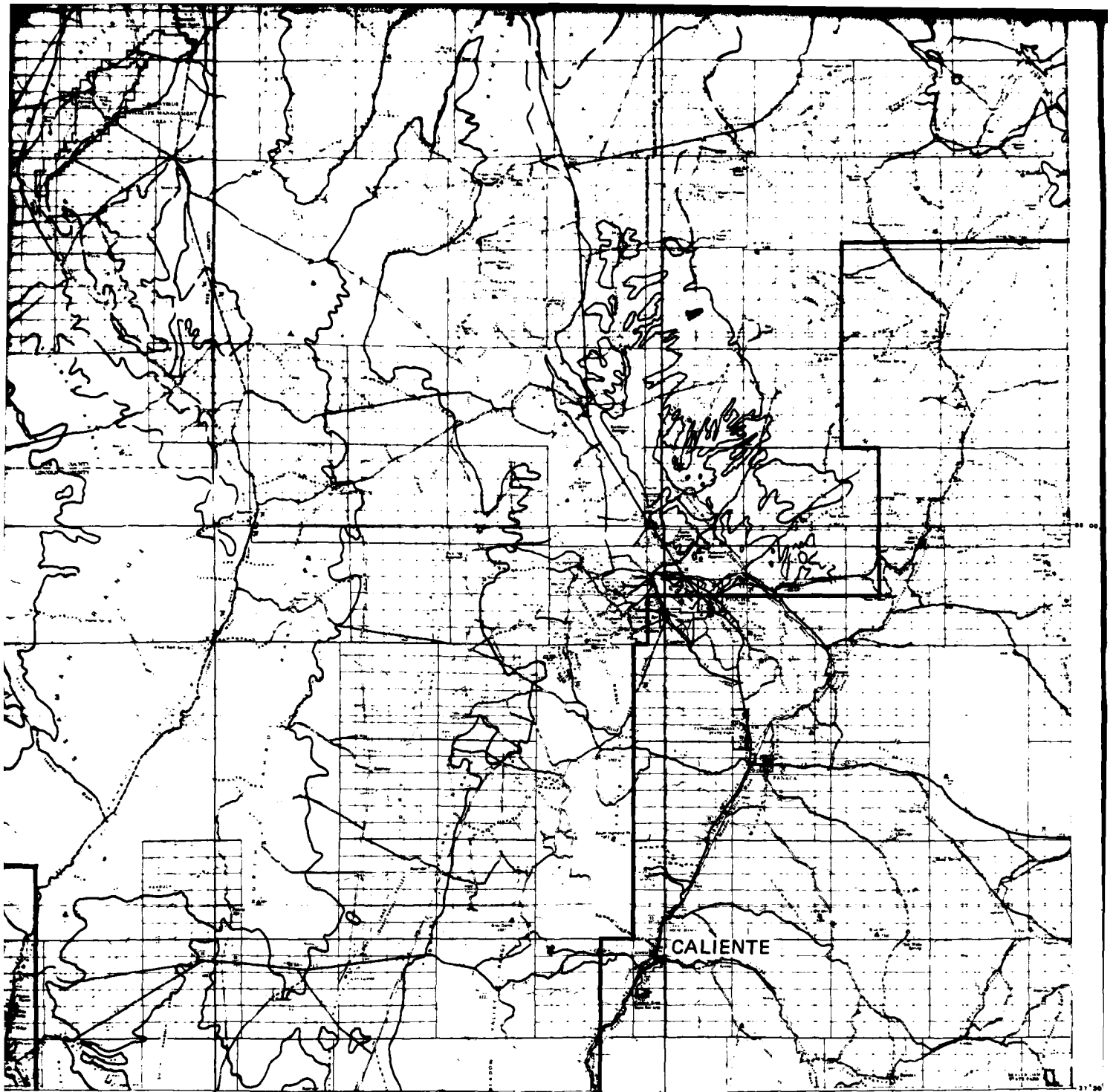
- SPRING
- WATER WELL-TANK-SMALL RESERVOIR
- DAM
- STATE BOUNDARY
- COUNTY BOUNDARY
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- INTERSTATE SYSTEM ROUTE NUMBER
- U.S. HIGHWAY NUMBER
- STATE HIGHWAY NUMBER

- DIVIDED HIGHWAY
- DIVIDED HIGHWAY - FULL CONTROL OF ACCESS
- DIVIDED HIGHWAY - PARTIAL CONTROL OF ACCESS
- PAVED ROAD
- BITUMINOUS SURFACE ROAD
- GRAVEL ROAD - GRADED AND DRAINED
- GRAVEL ROAD - NOT GRADED AND DRAINED
- SOIL SURFACED ROAD
- GRADED AND DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD

(MODIFIED FROM COUNTY ROAD MAPS OF NEVADA)



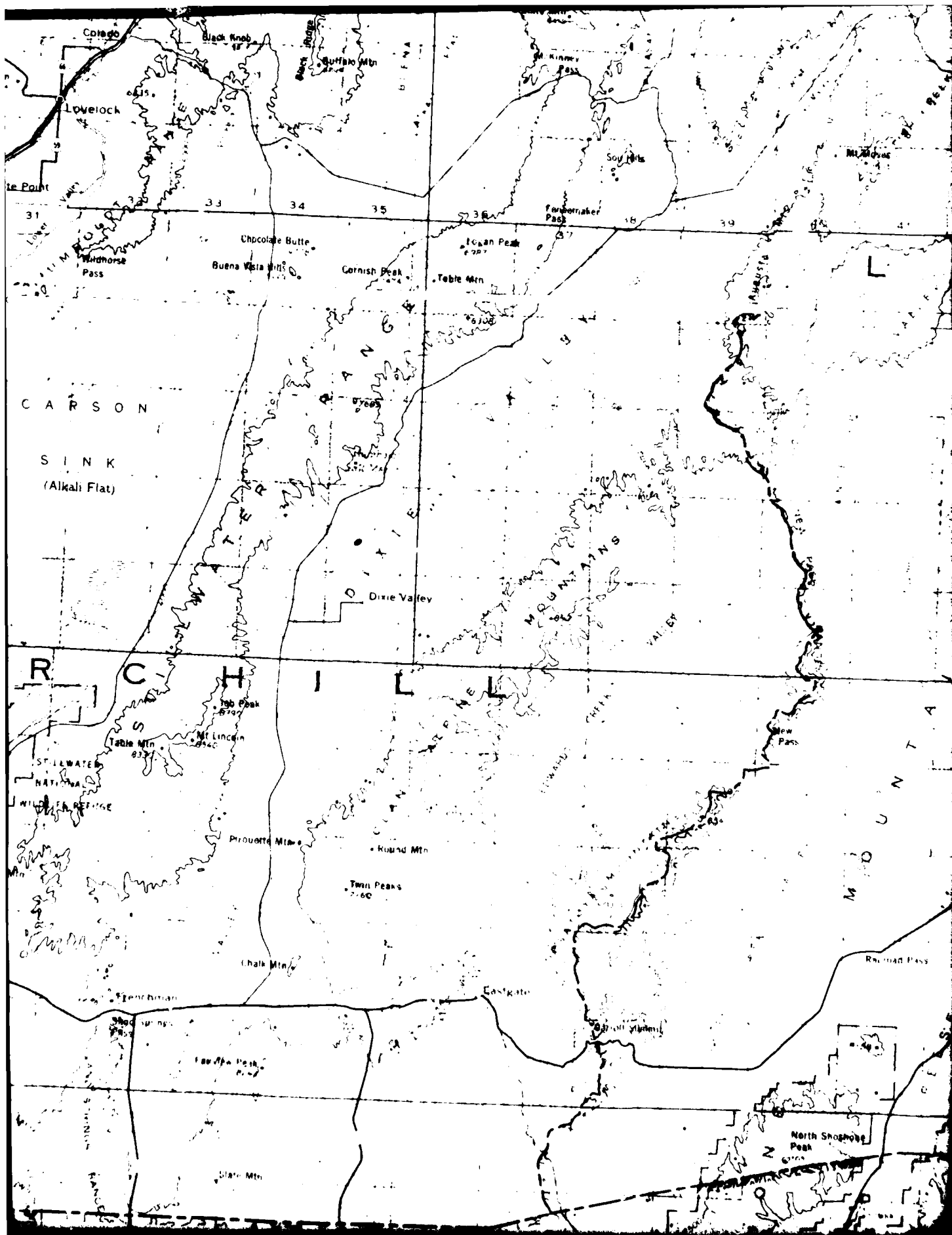


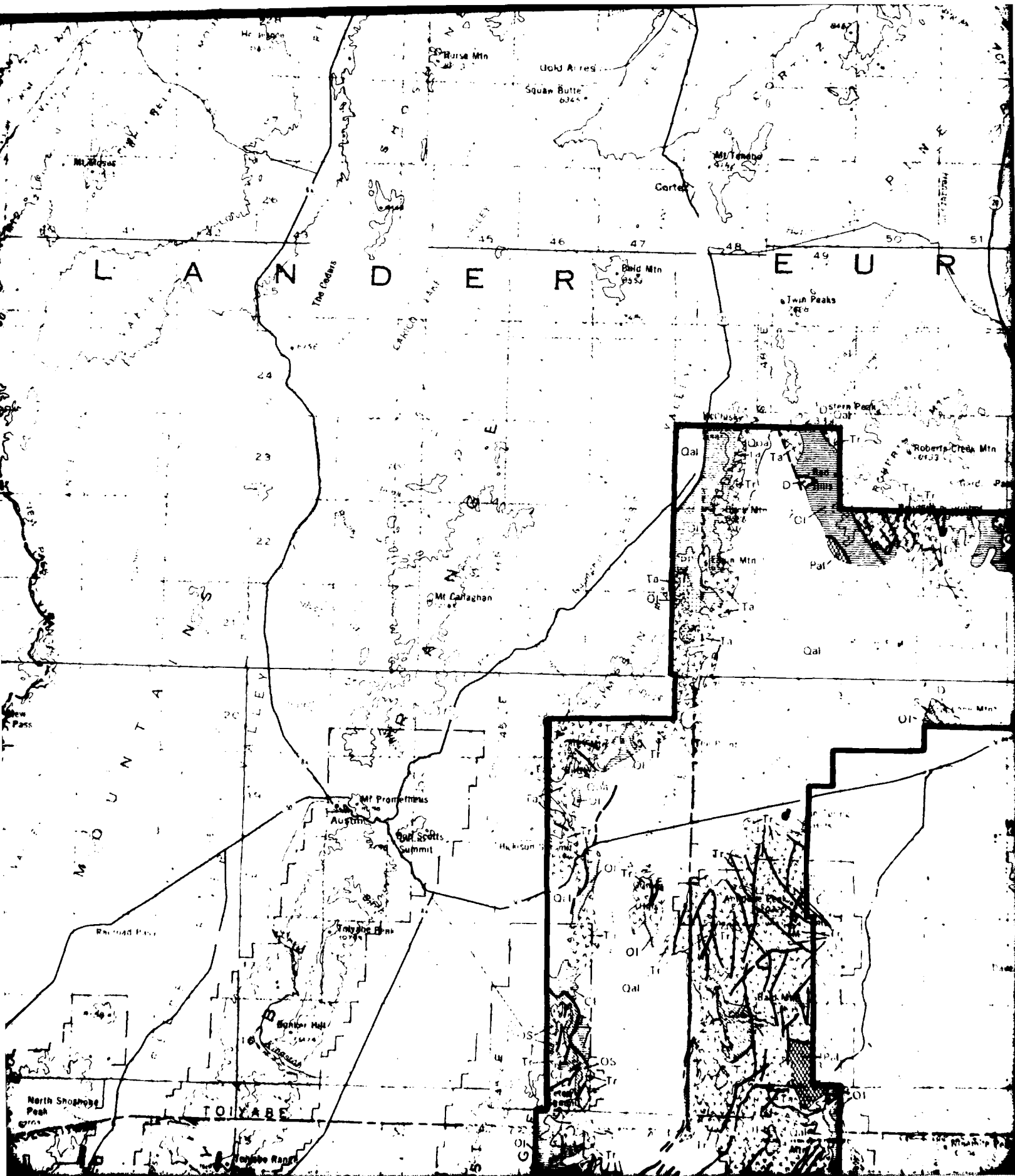


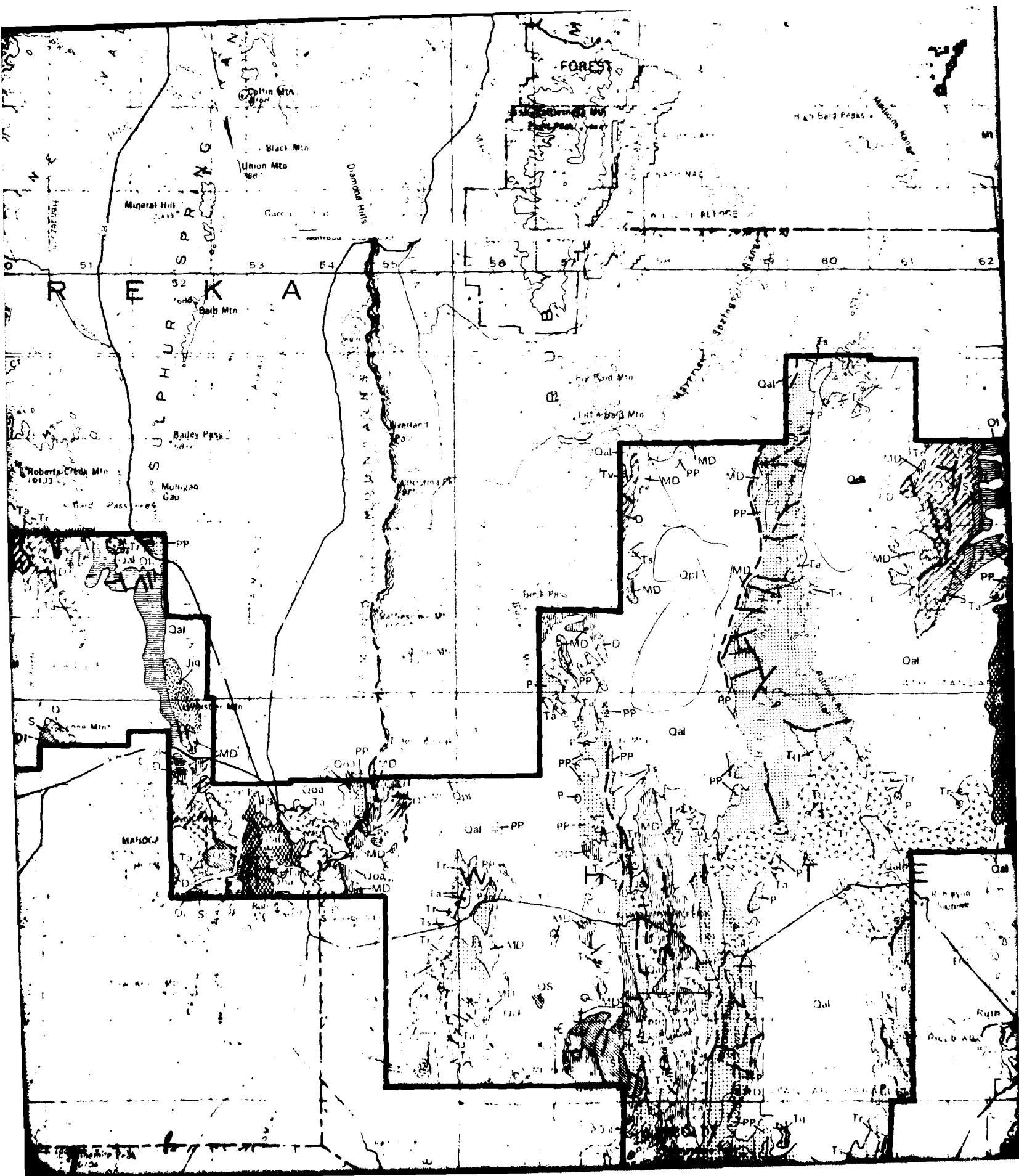
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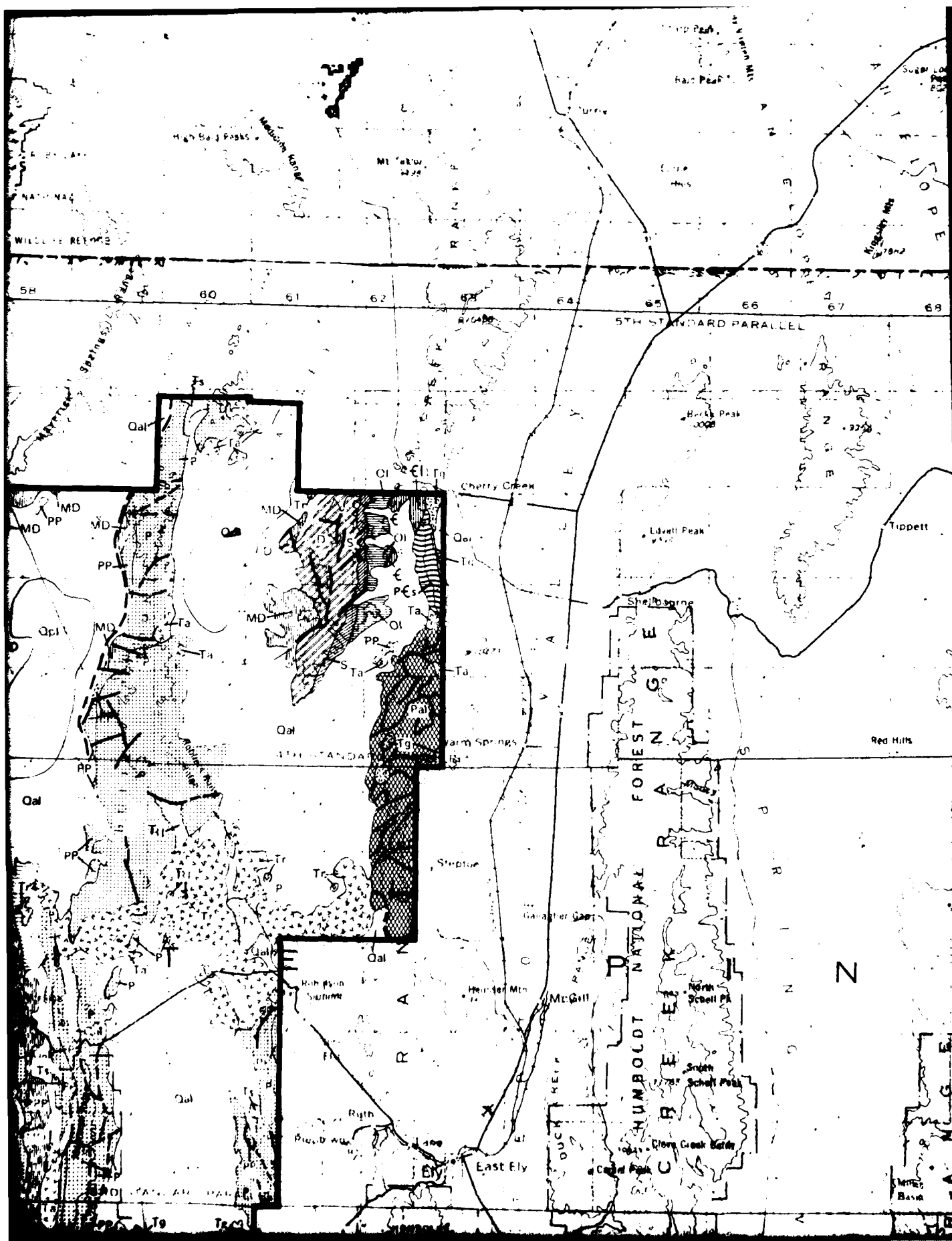
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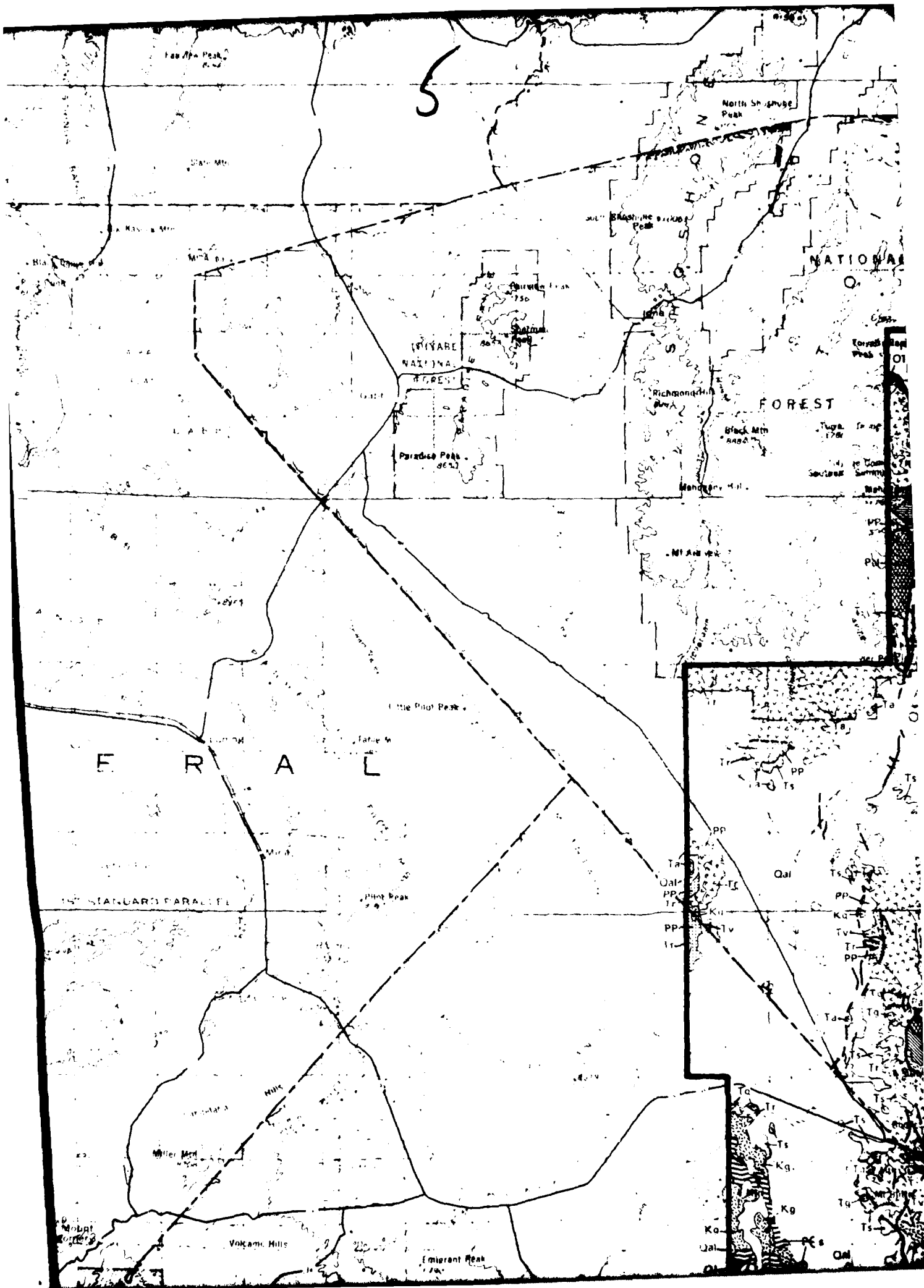
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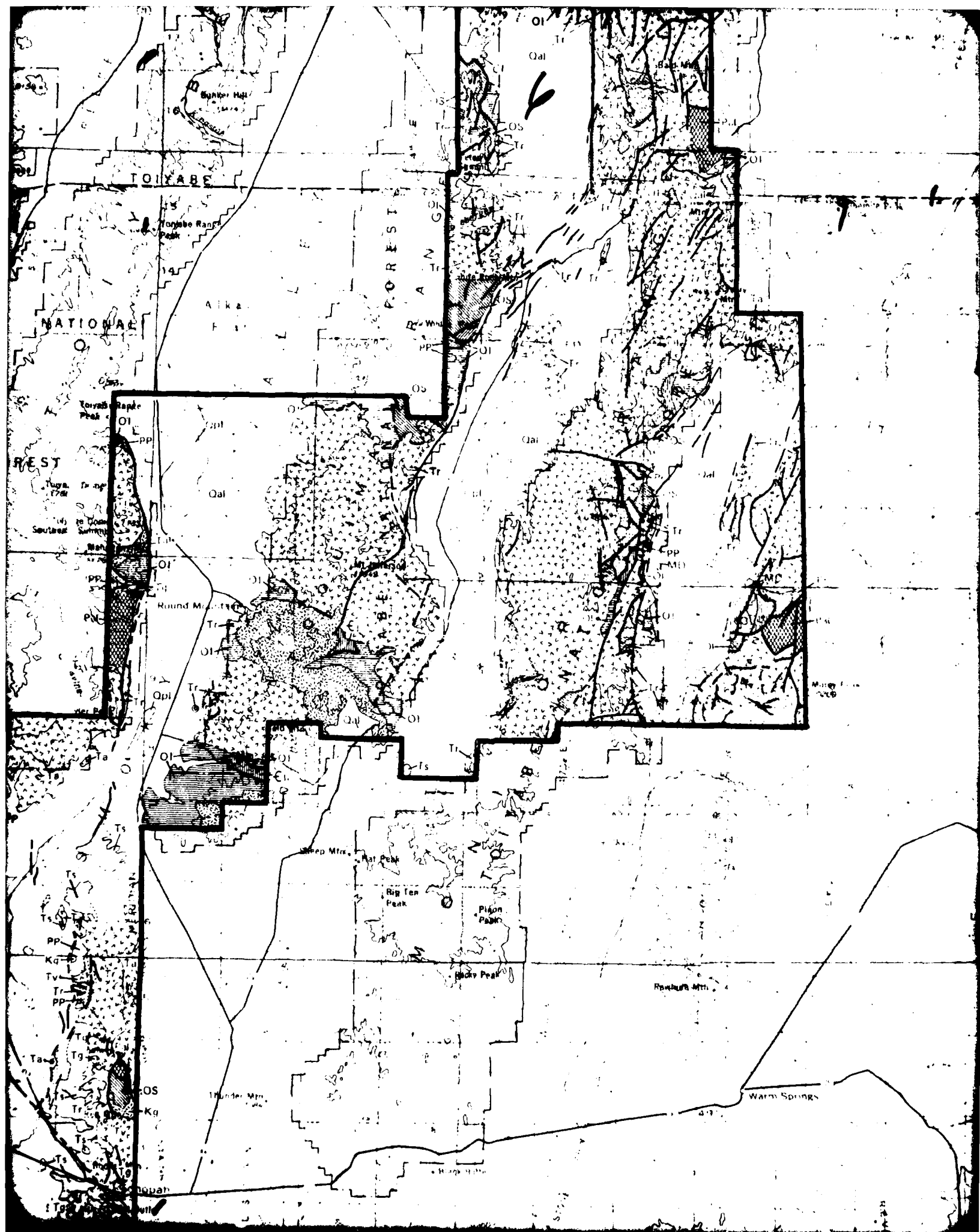


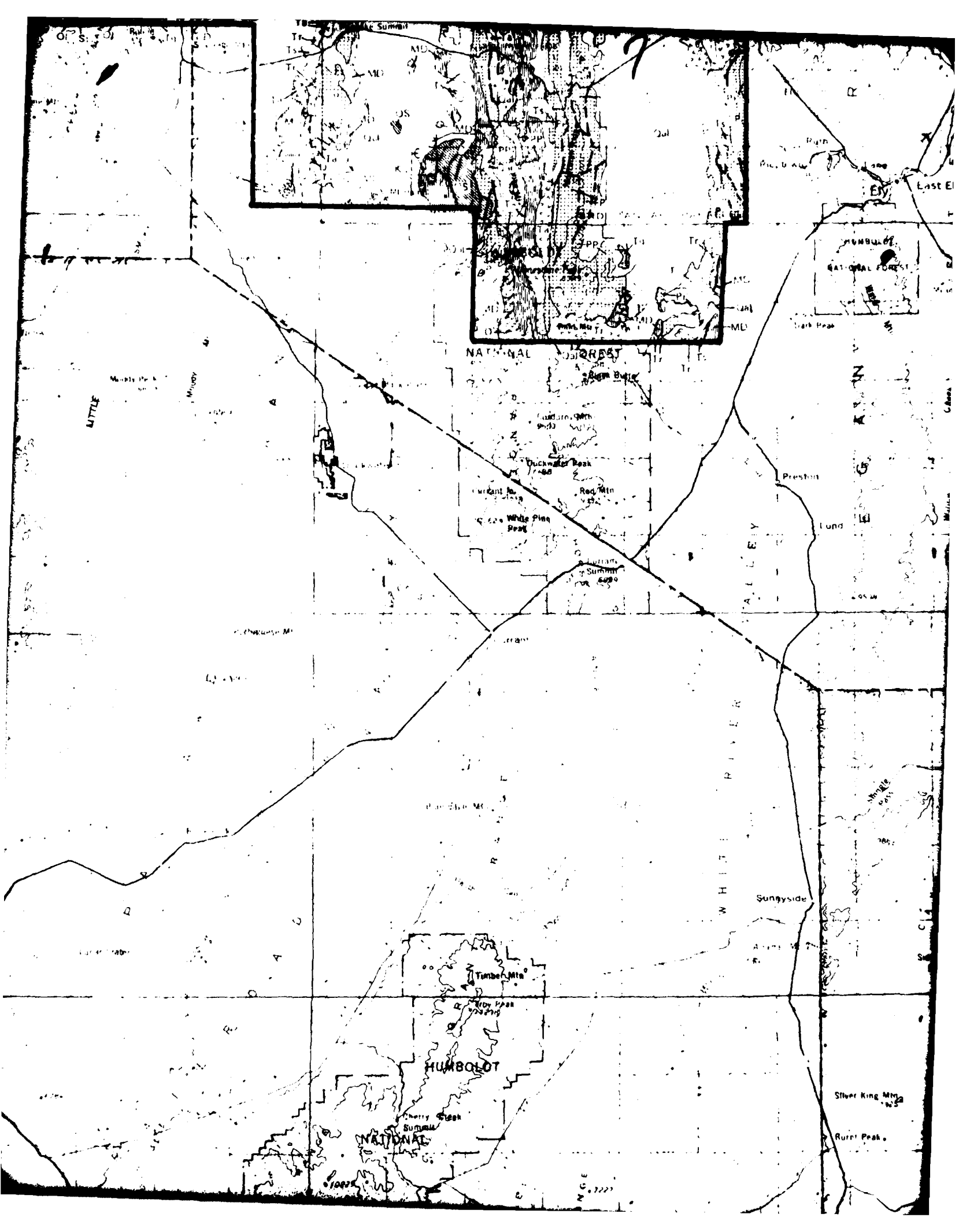


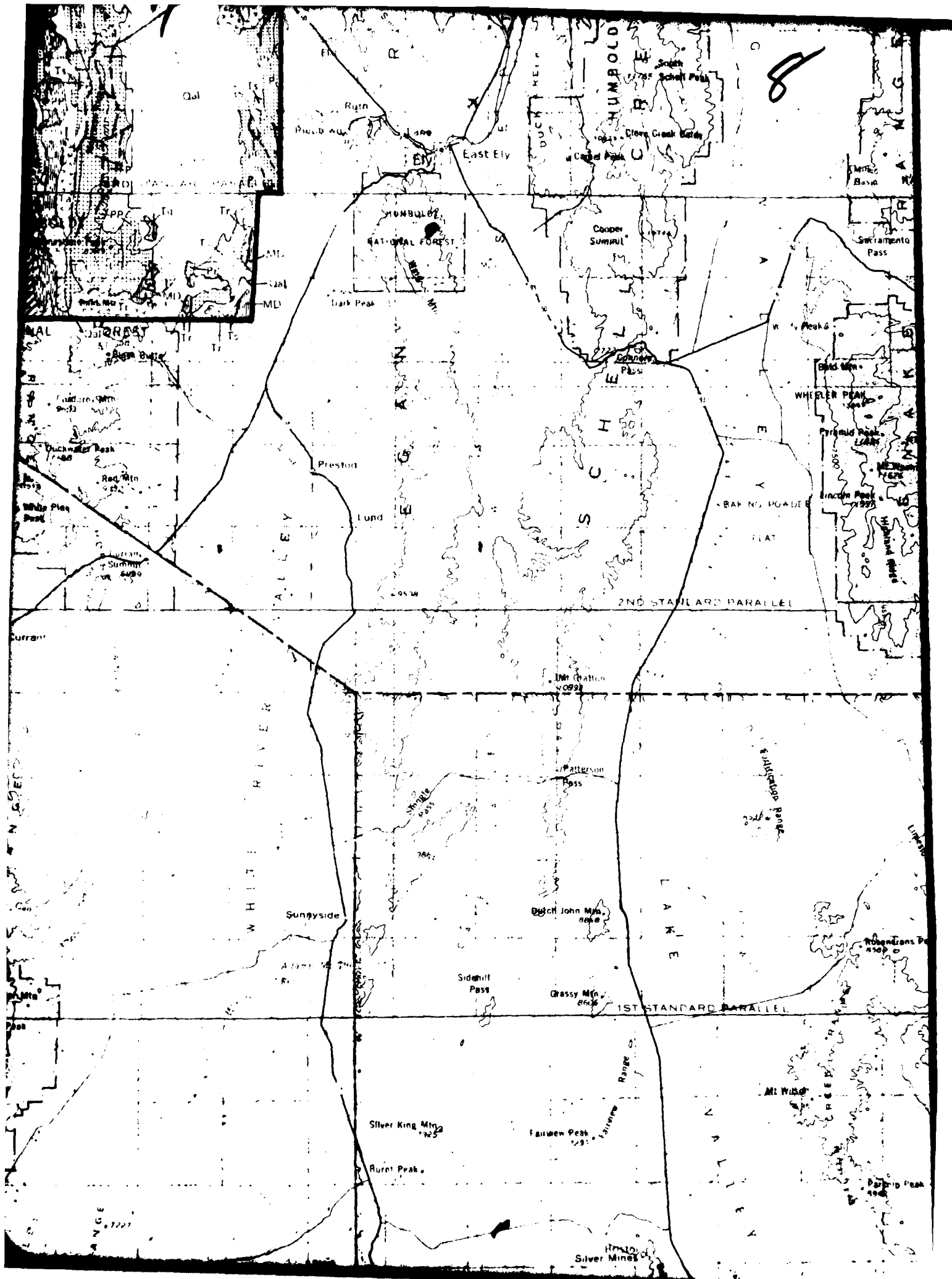


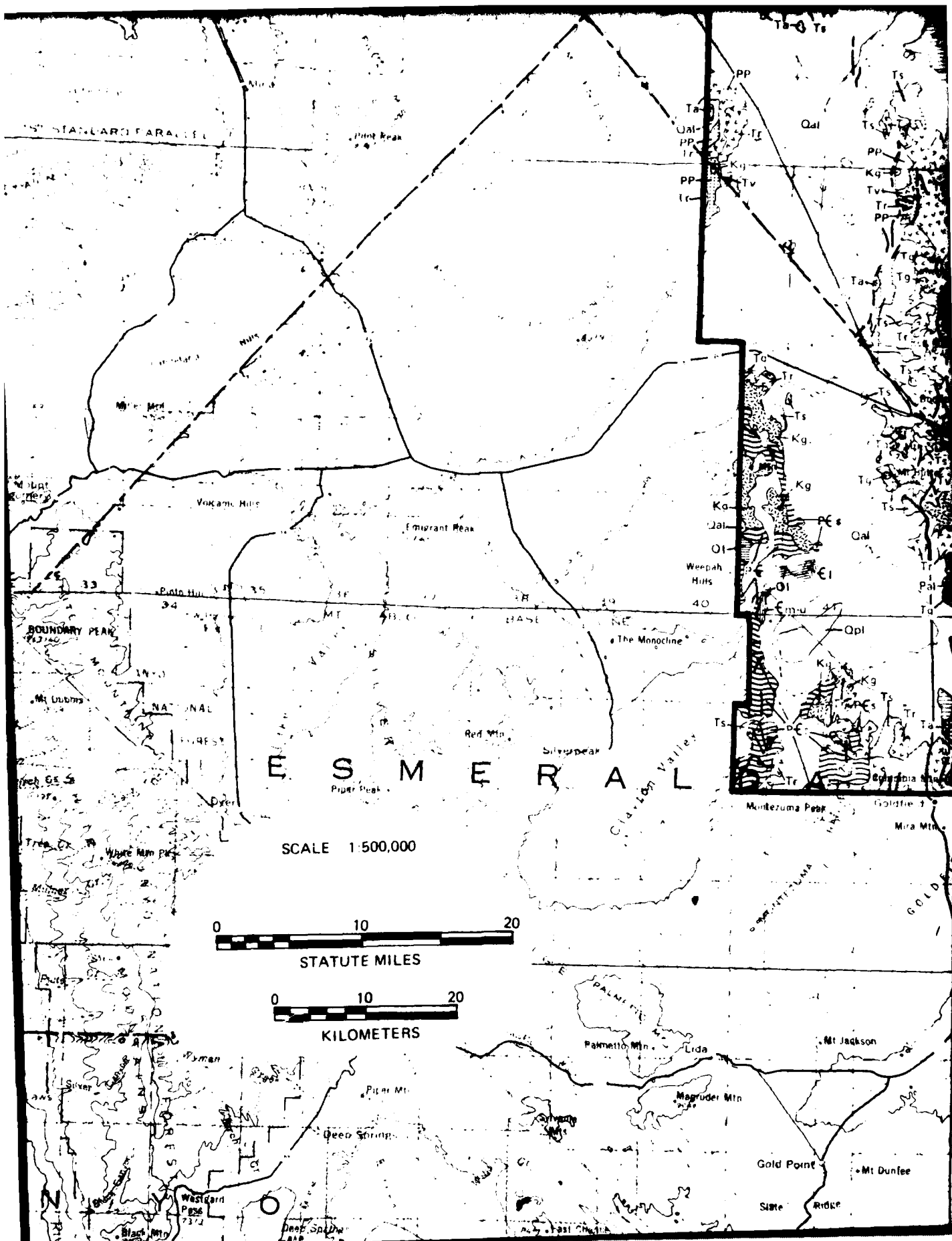


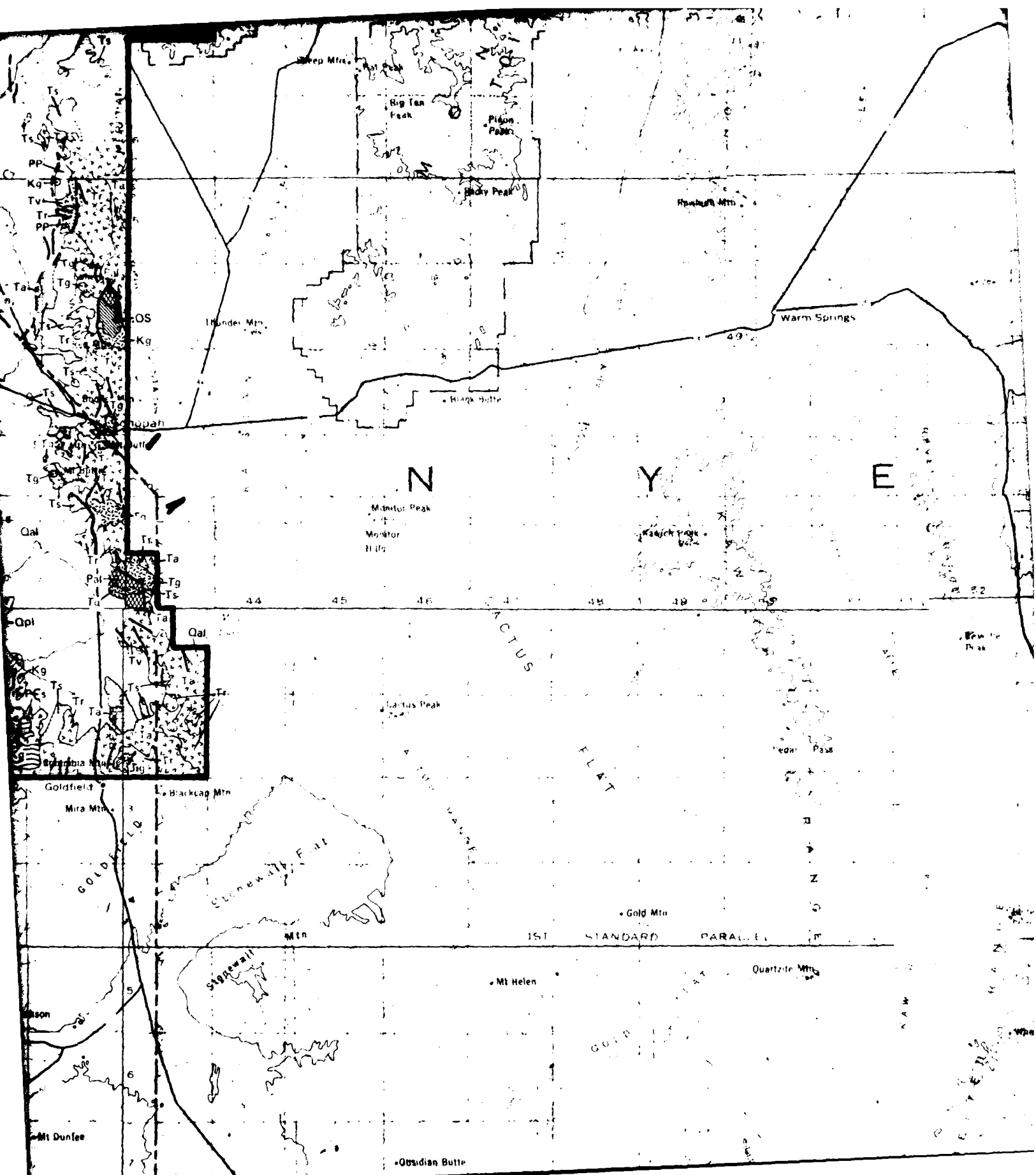


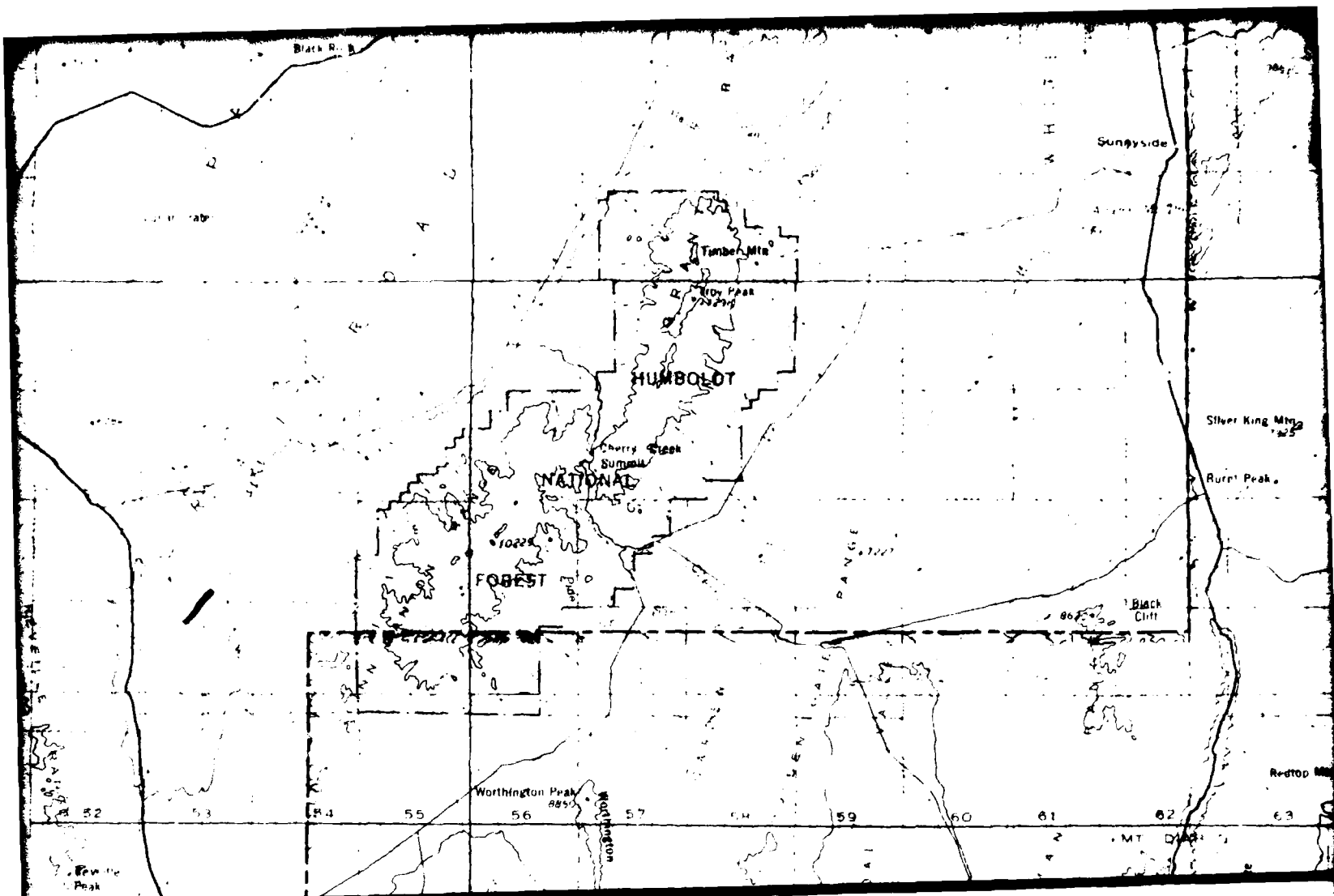












NOTES:

1. Geology Compiled From Stewart and Carlson, 1978
2. Reference chart 2 for explanation

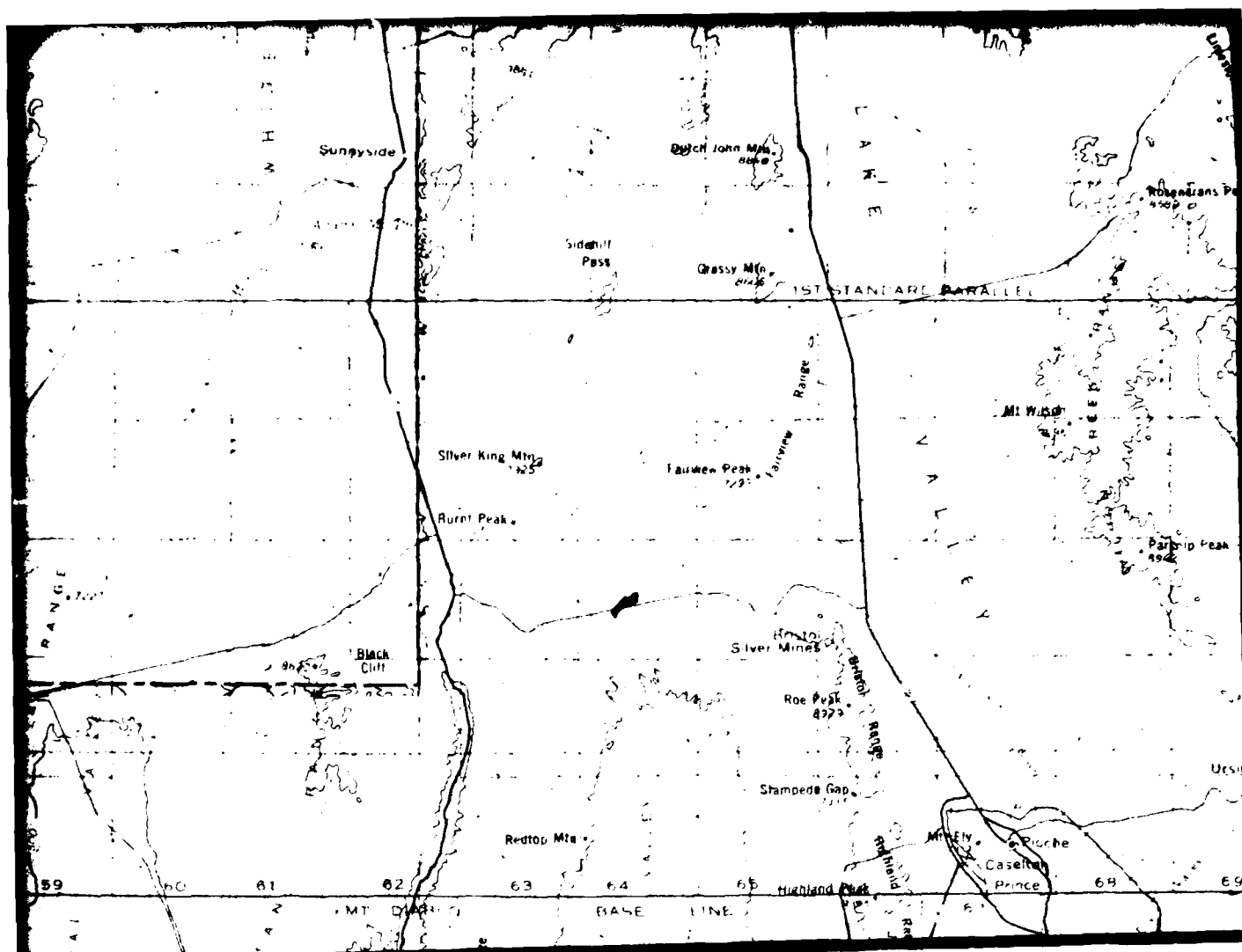


MX
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(Dep)

EA
The Earth Tech

GEN
M
RE

30 APR 81



MX ADDITIONAL VALLEY MINERAL RESOURCES
SURVEY STUDY AREA BOUNDARY SEPT 26, 1980
(Deployment Area lines as of June 20, 1980)

1978



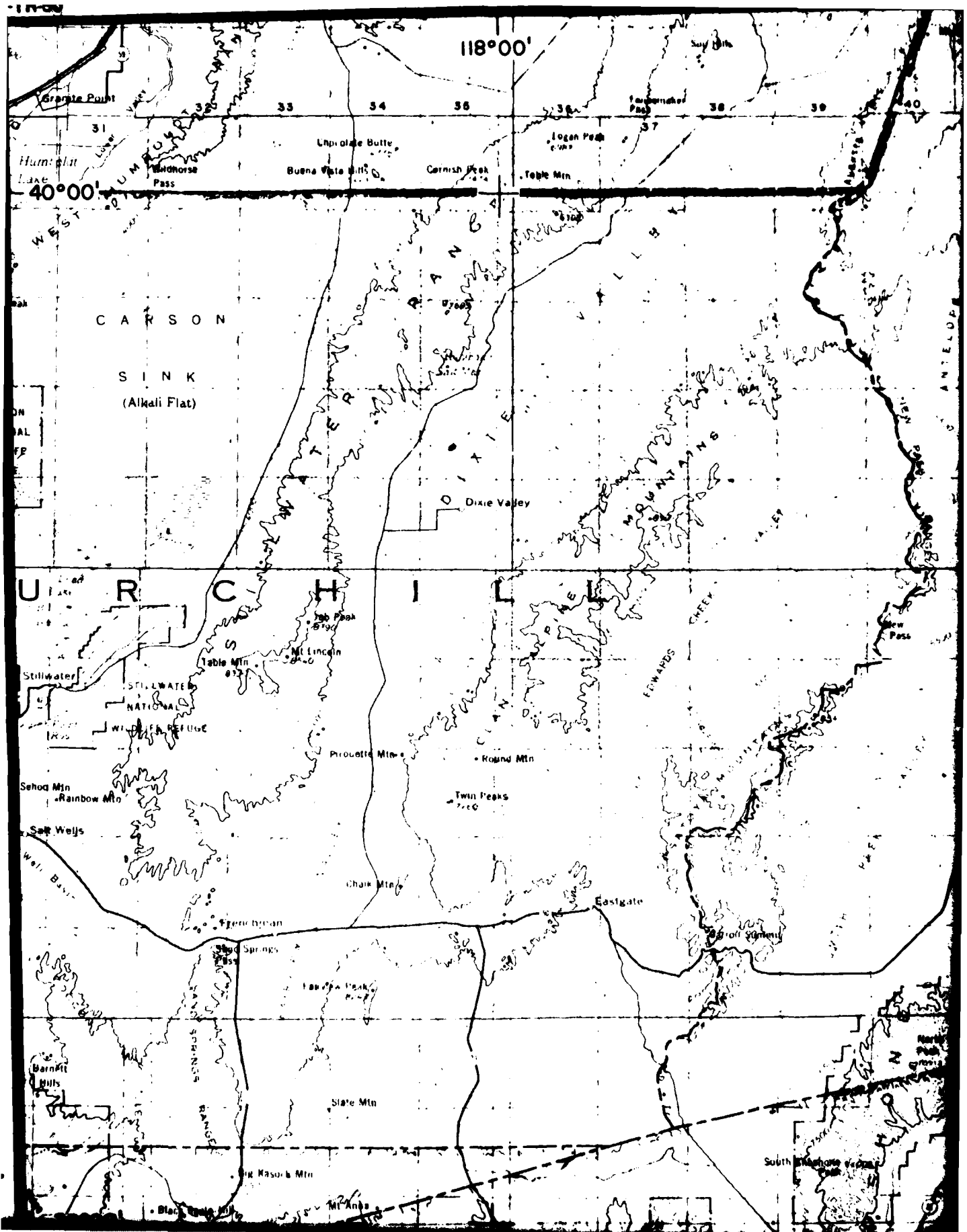
The Earth Technology Corporation

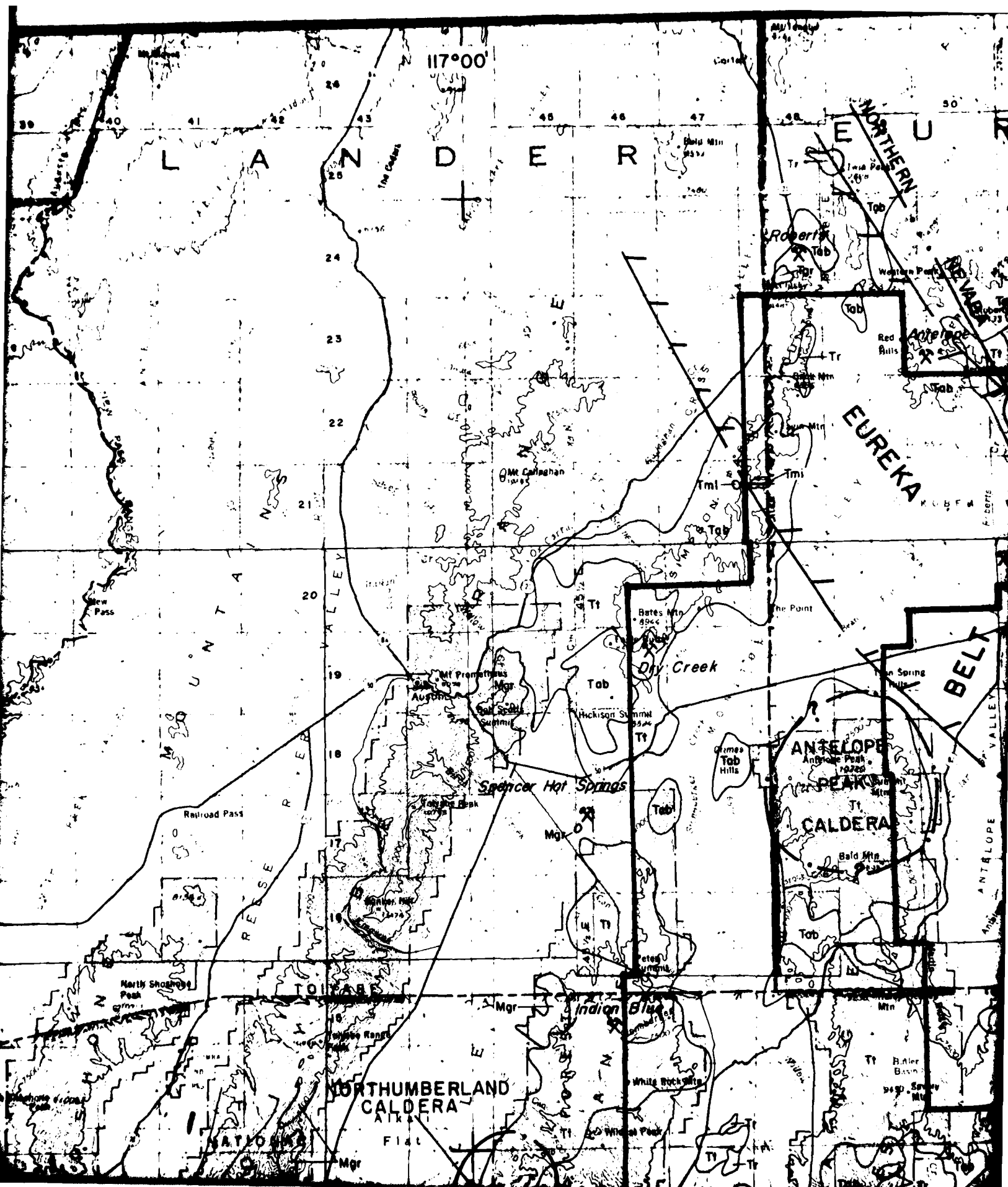
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRC-MX

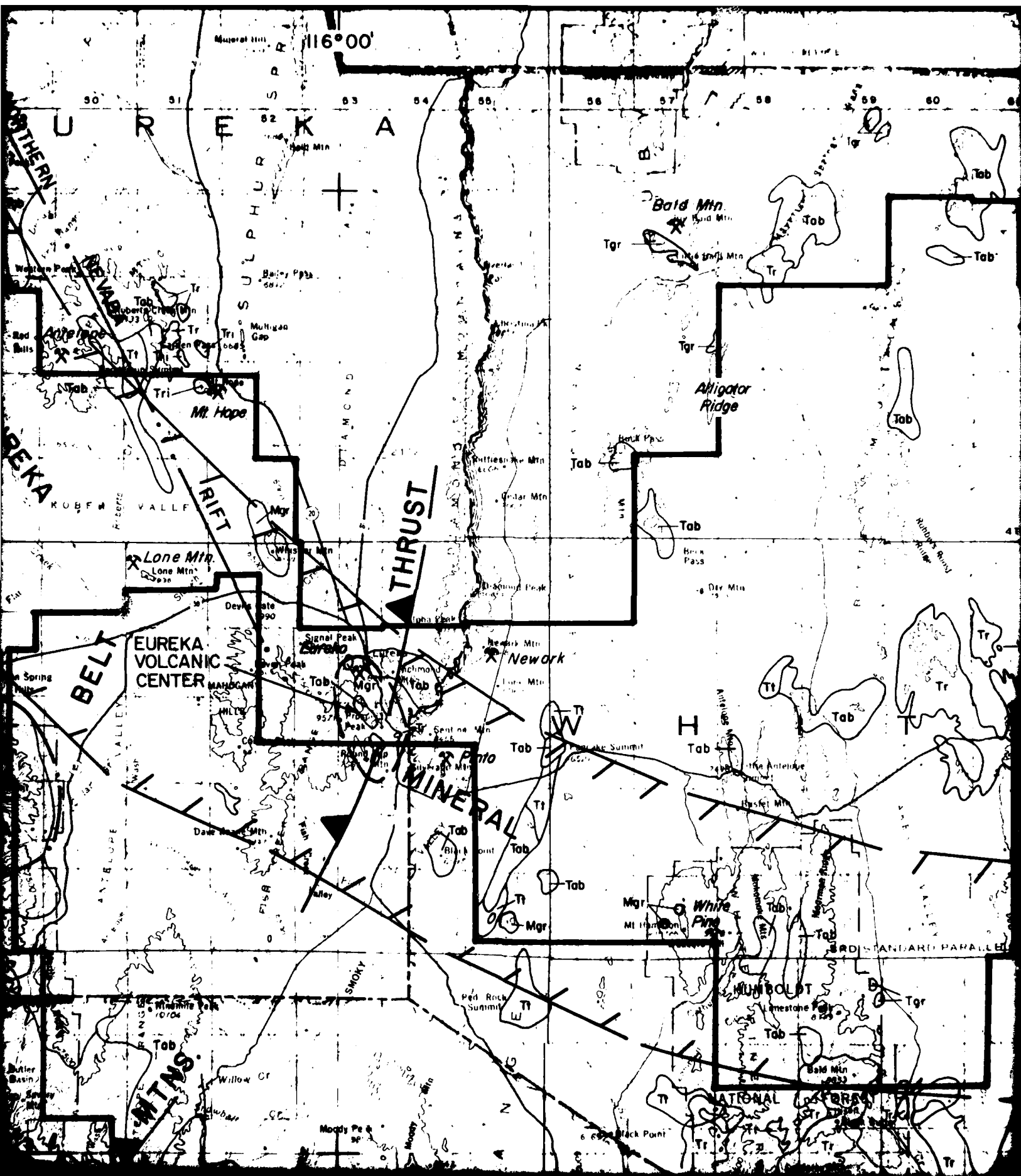
GENERALIZED GEOLOGIC MAP OF THE MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY STUDY AREA

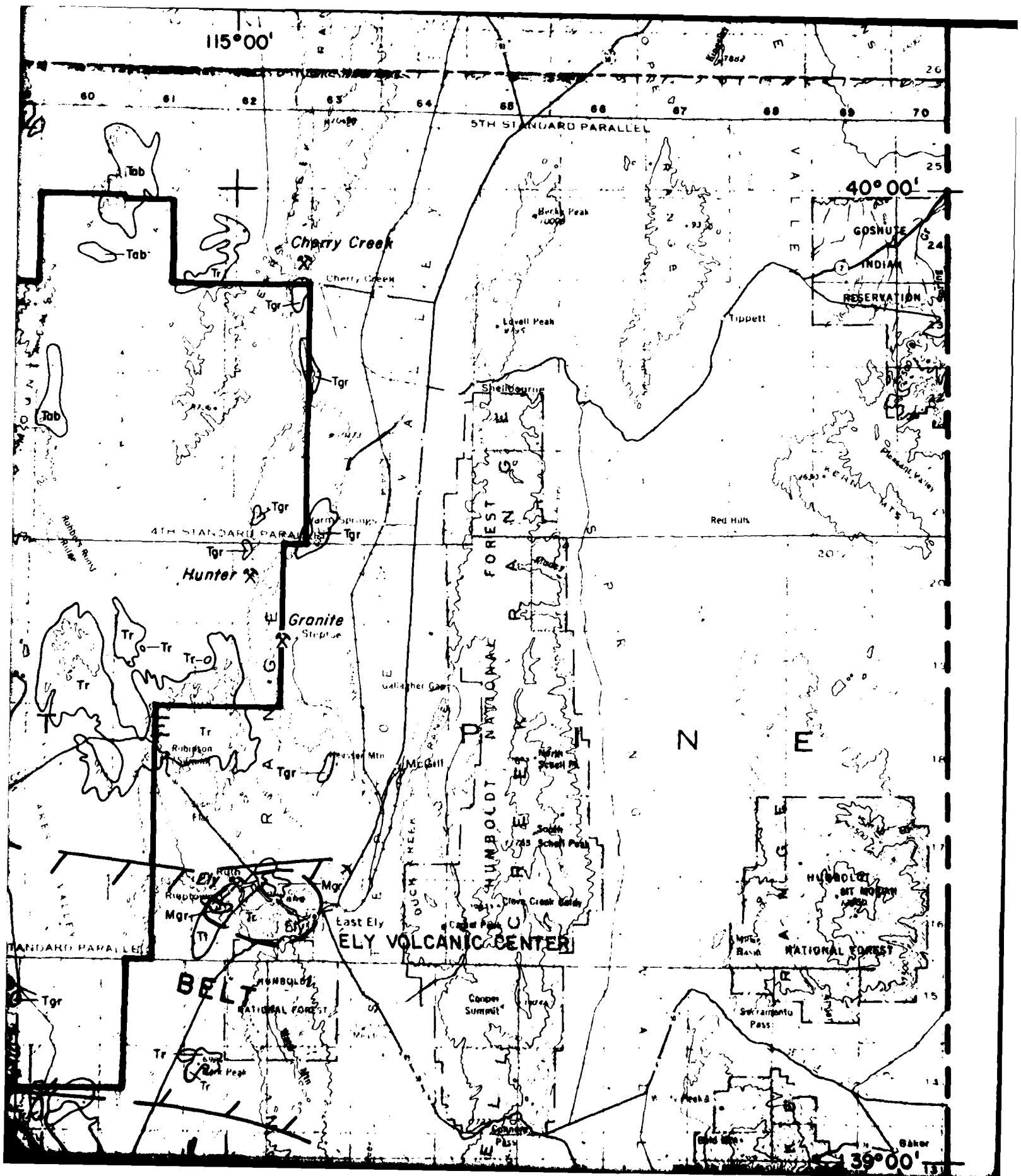
30 APR 81

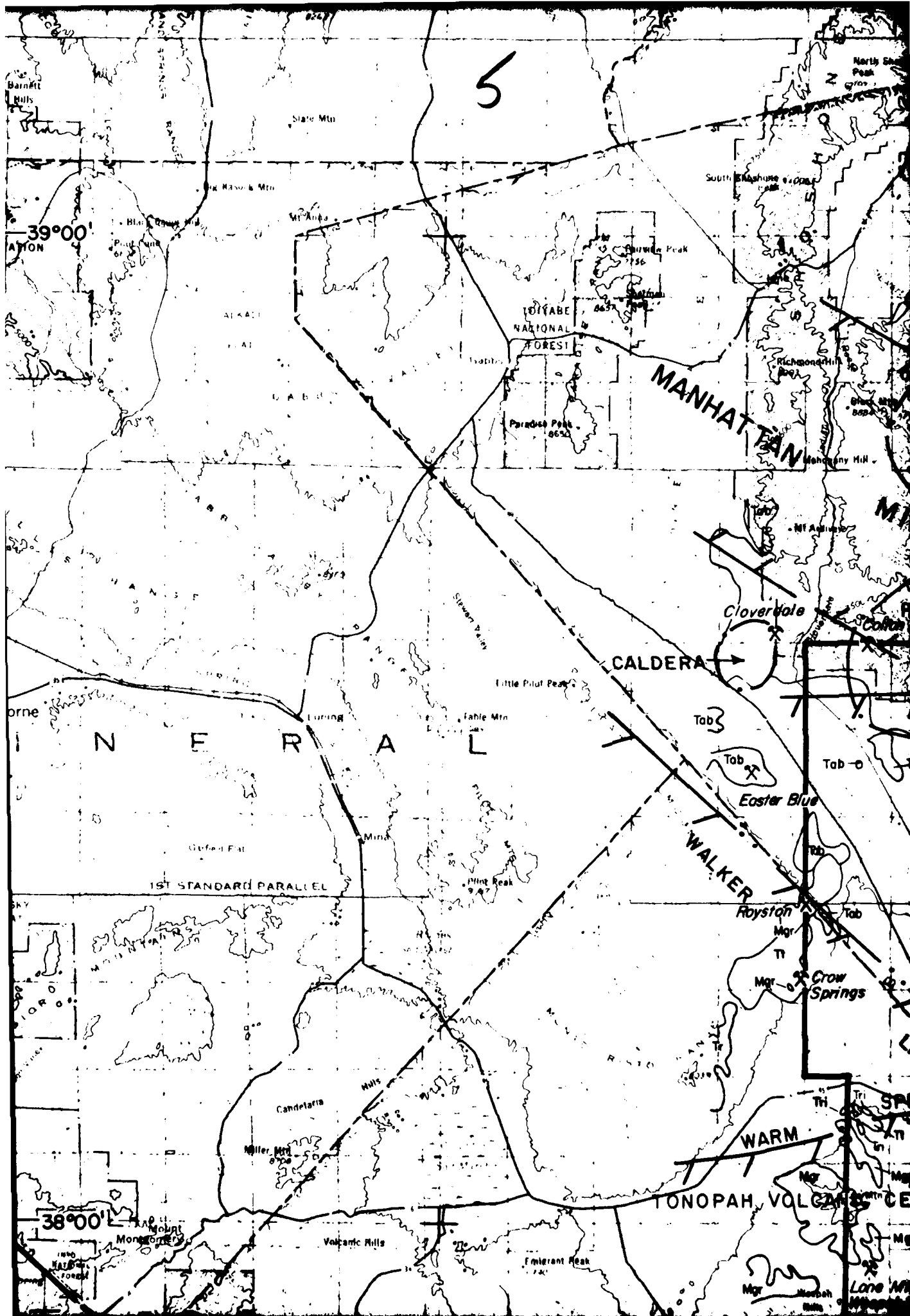
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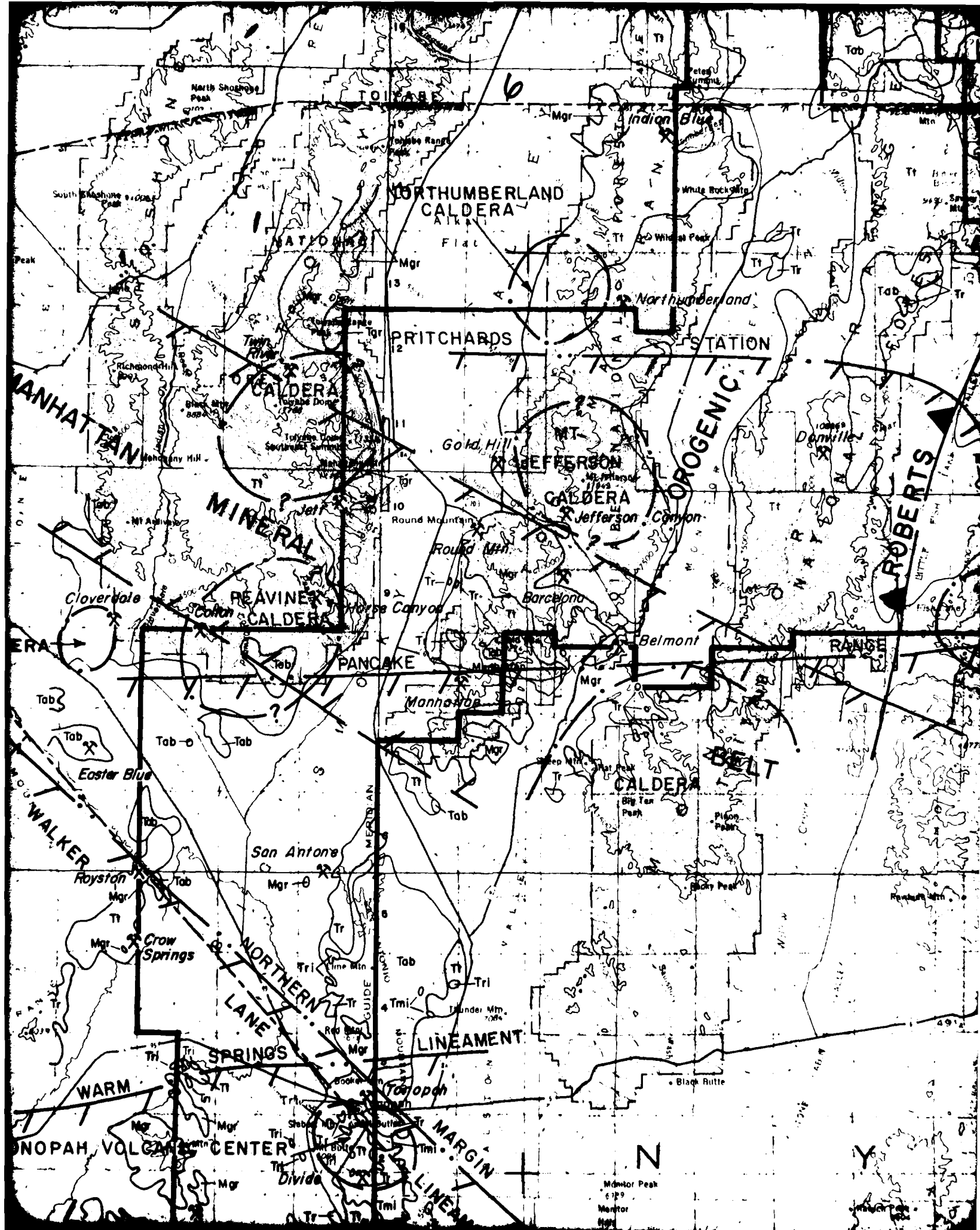


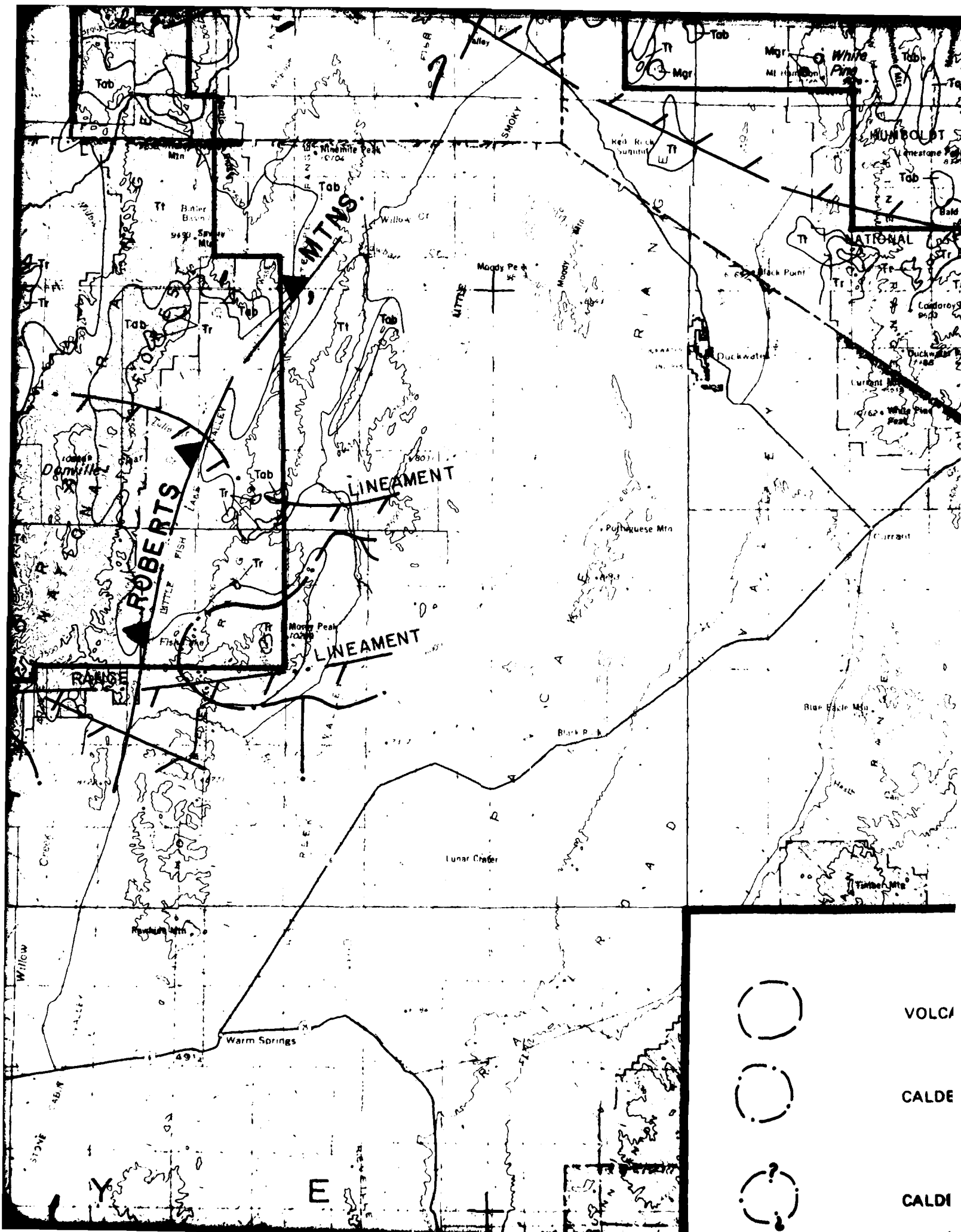


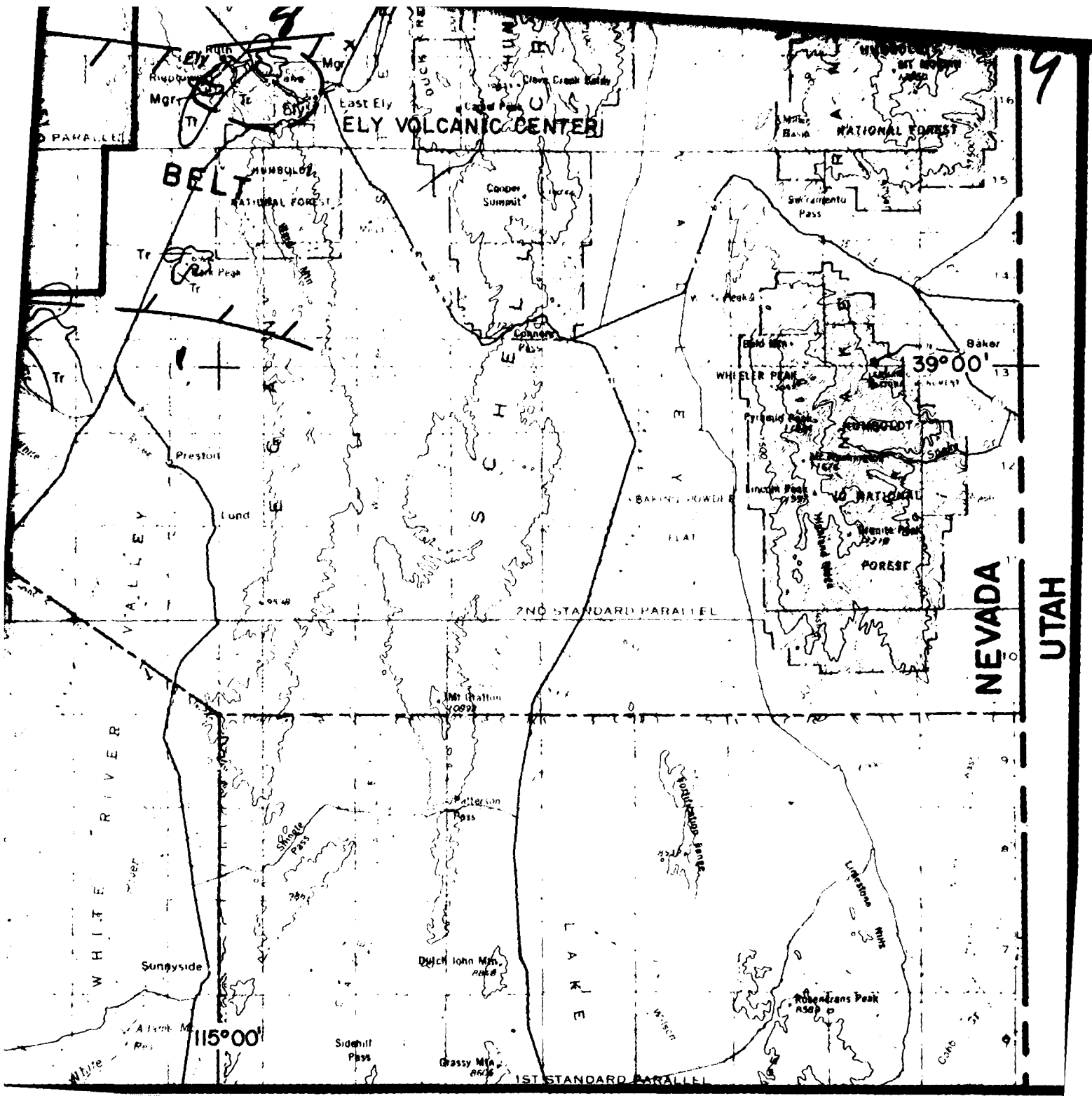












9

NEVADA
UTAH

ELY VOLCANIC CENTER

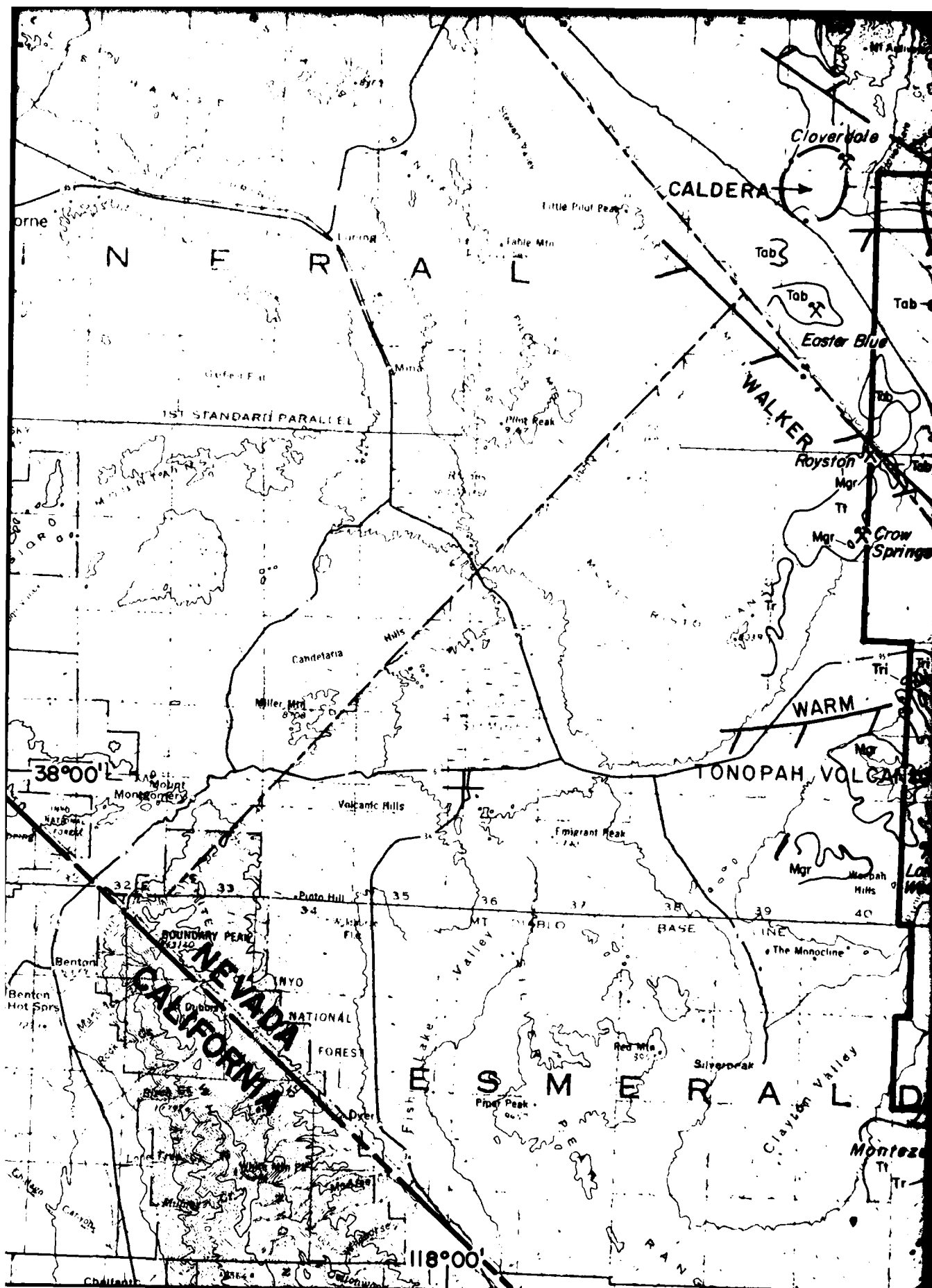
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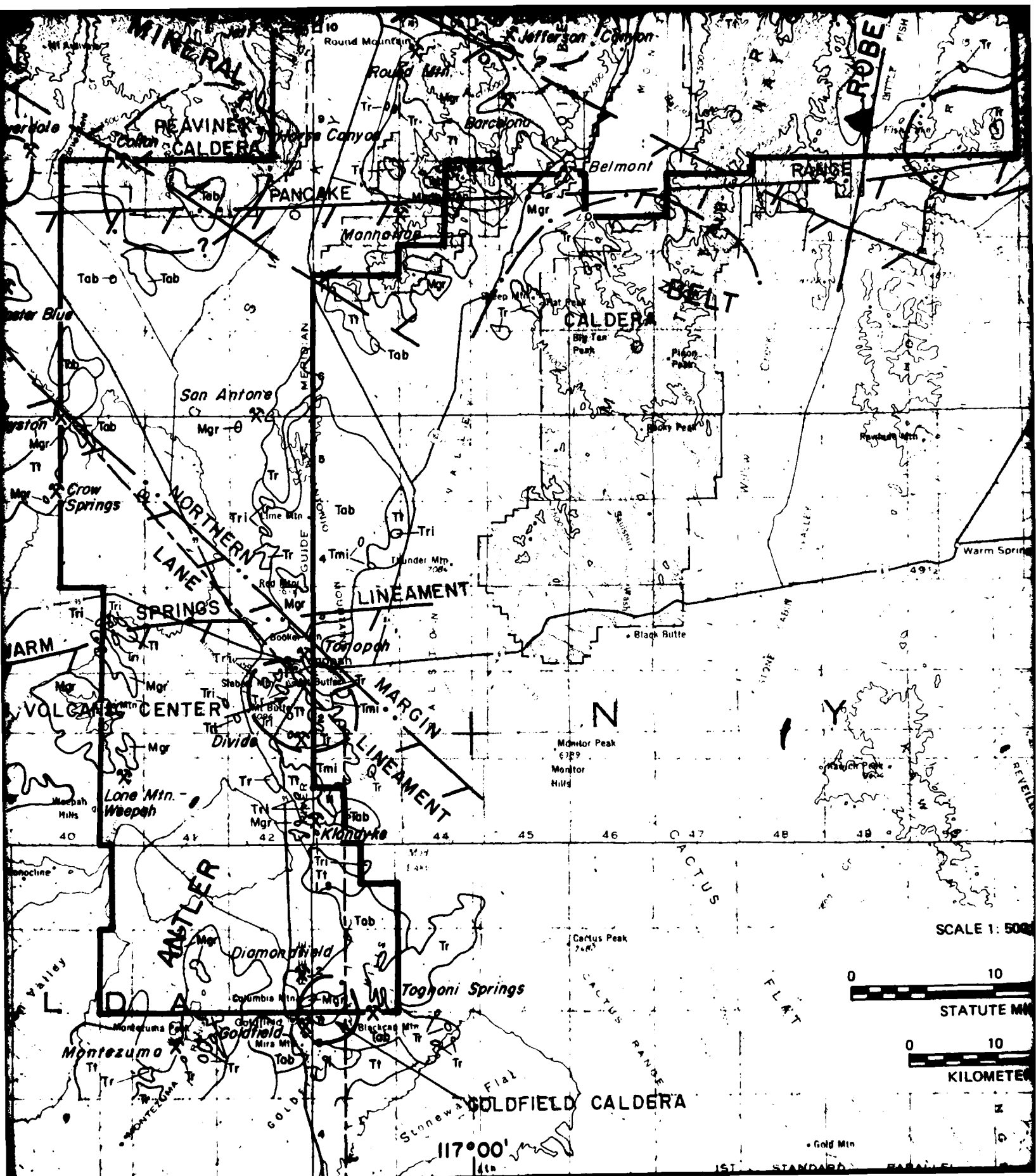
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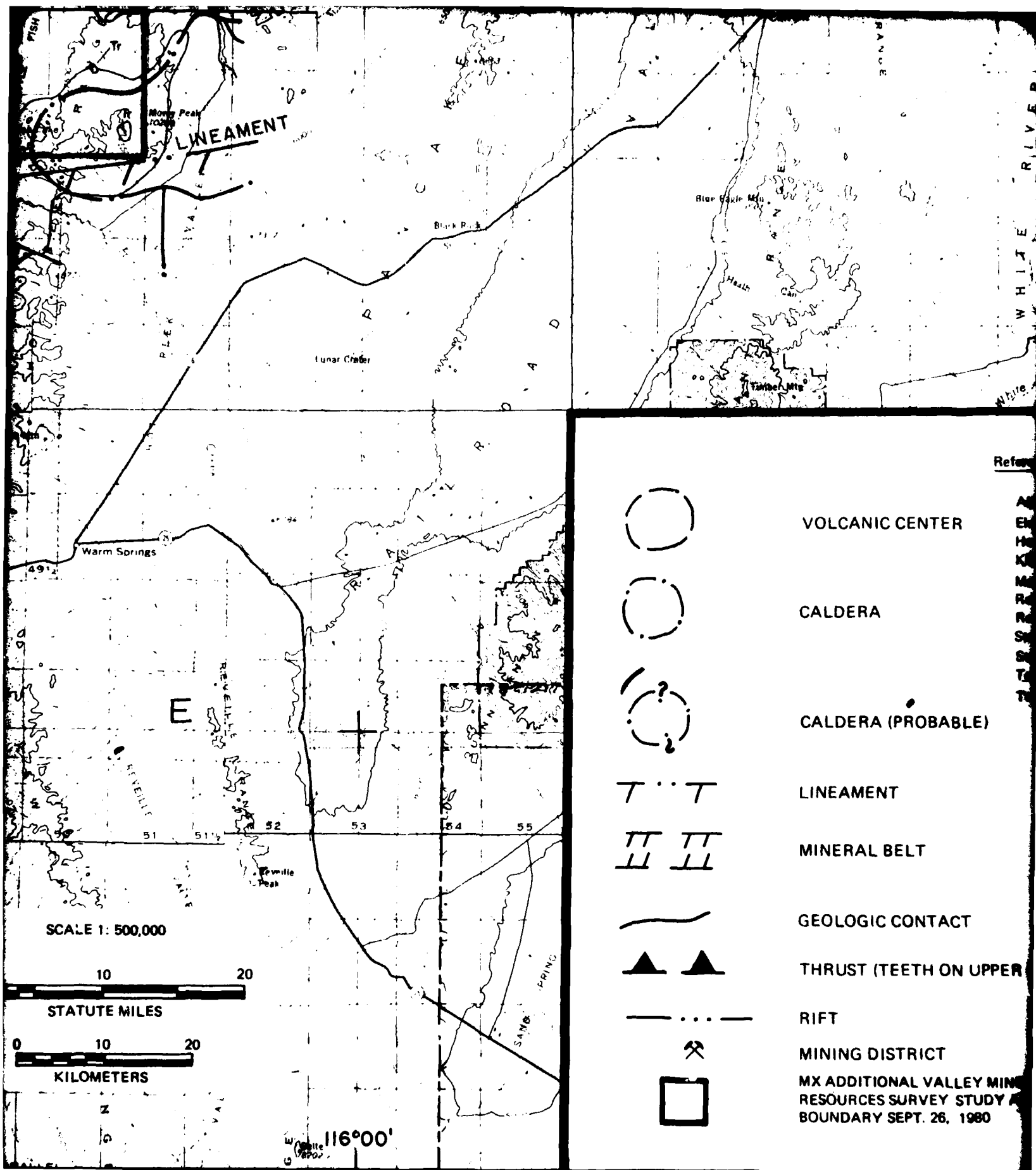
115°00'

1ST STANDARD PARALLEL

2ND STANDARD PARALLEL







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Albers and Stewart, 1972
 Ekren and Others, 1976
 Hose and Others, 1976
 Kleinhampl, 1980
 Mardirosoian, 1974
 Roberts and Others, 1967
 Rowan and Wetlaufer, 1979
 Stewart and Carlson, 1978
 Stewart and Others, 1977
 Terrascan Group, LTD., 1978
 Terrascan Group, INC., 1979

CORRELATION OF IGNEOUS ROCKS GENERAL

AGE	GENERALIZED GEOLOGY MAP DRAWING	ECONOMIC GEOLOGY MAPS DRAWING	GENERALIZED LITHOLOGY
T E R T I A R Y	Qb, Ta, Tb	Tab	Andesitic and Basaltic Flows and Breccias
	Tv	Tv	Undifferentiated Volcanics
	Tr	Trt	Rhyolitic and Acidic Flows and Tuffs
	Tr	Tt	Welded and Non-Welded Silicic Ash Flow Tuffs
	Tr	Tr	Rhyolitic Flows, Ash Flow Tuffs, and Shallow Intrusive Rocks
	Tg	Tri	Rhyolitic Intrusives
	Tg	Tmi	Mafic to Intermediate Intrusives
	Tg	Tgr	Granitic Intrusives (Includes Granite, Quartz Monzonite, Granodiorite, Quartz Latite, Diorite)
MESO-ZOIC	Kg, Jig	Mgr	Mesozoic and Laramide Intrusives (Includes Granite through Diorite)

ACT

ON UPPER PLATE)

ALLEY MINERAL
 STUDY AREA
 1980

1 25 OCT 1979
 2 27 FEB 1980
 3 20 JUN 1980
 4 _____
 5 _____
 6 _____
 7 _____

Erttec

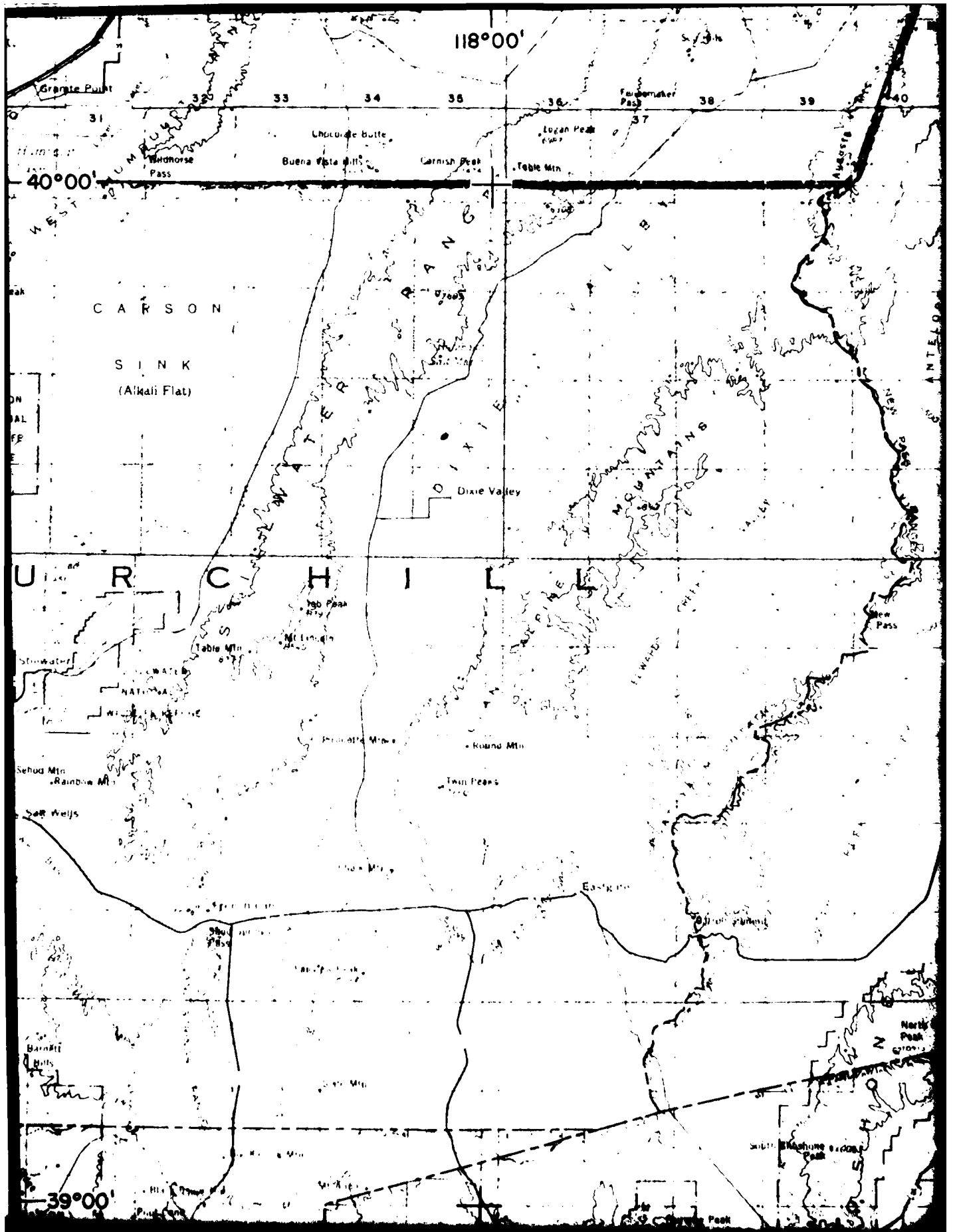
The Earth Technology Corporation

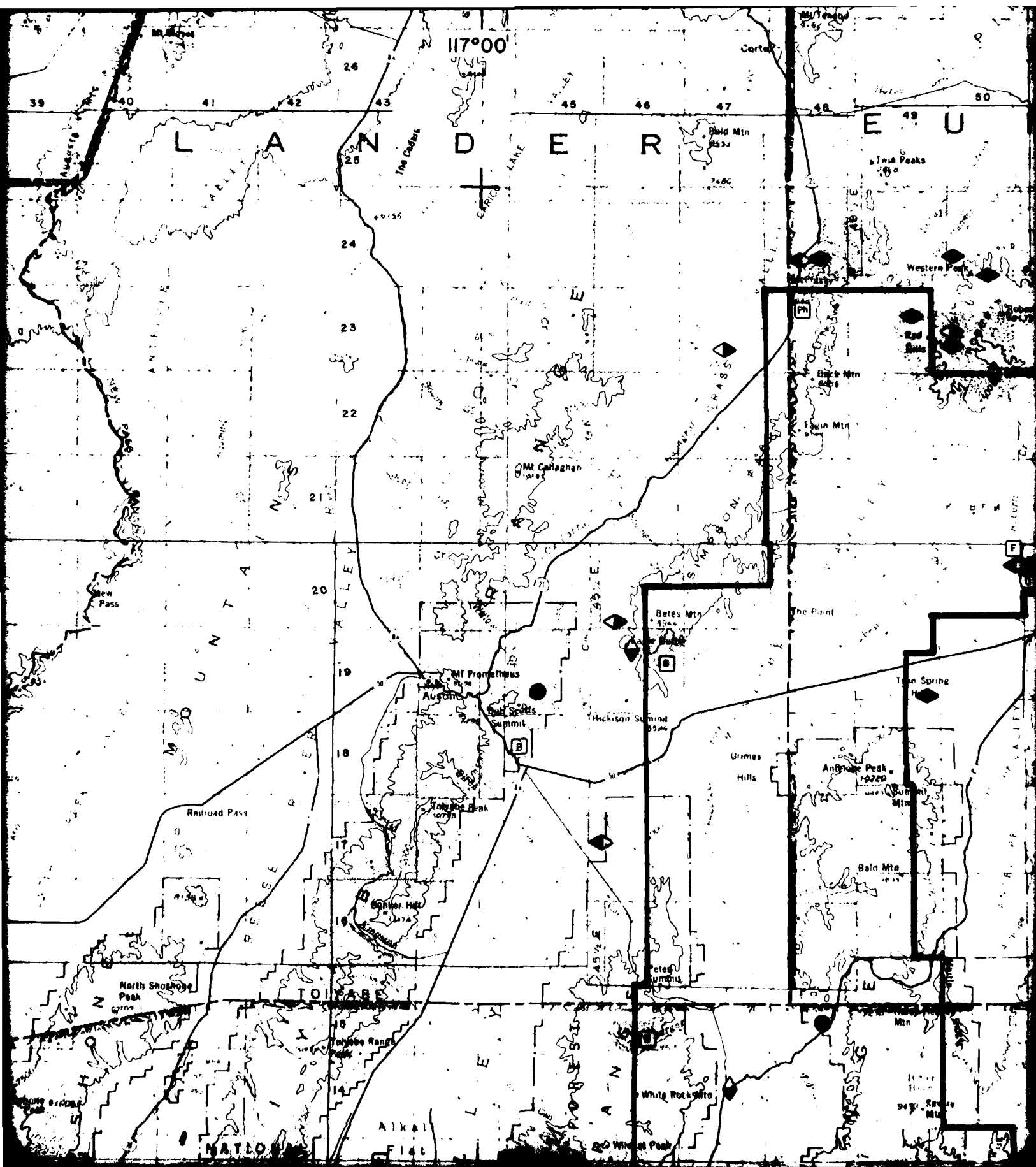
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 DEPARTMENT OF THE AIR FORCE
 BMO/AFRCE-MX

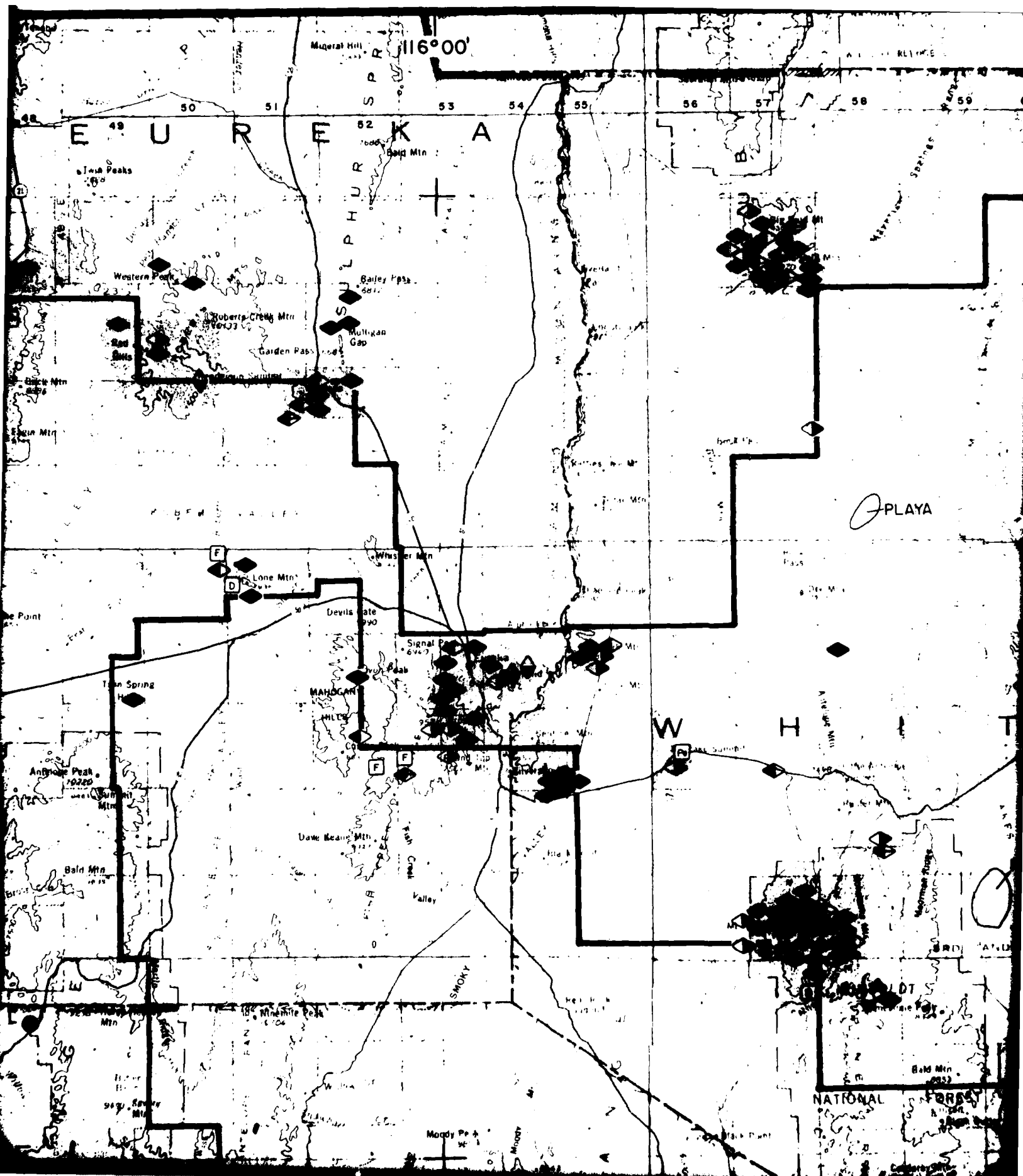
GENERALIZED IGNEOUS GEOLOGY ,
 STRUCTURE , AND MINING DISTRICTS

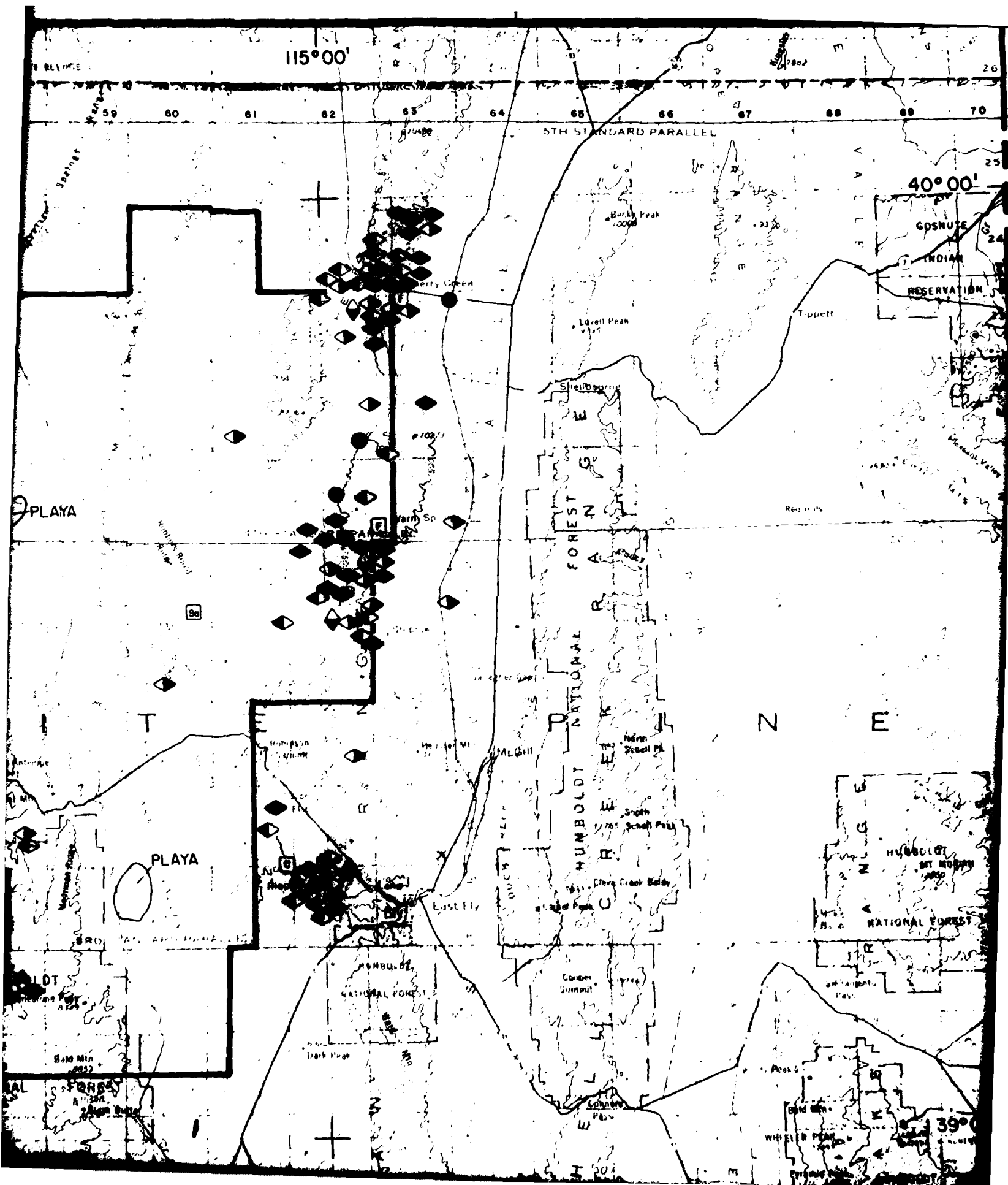
30 APR 81

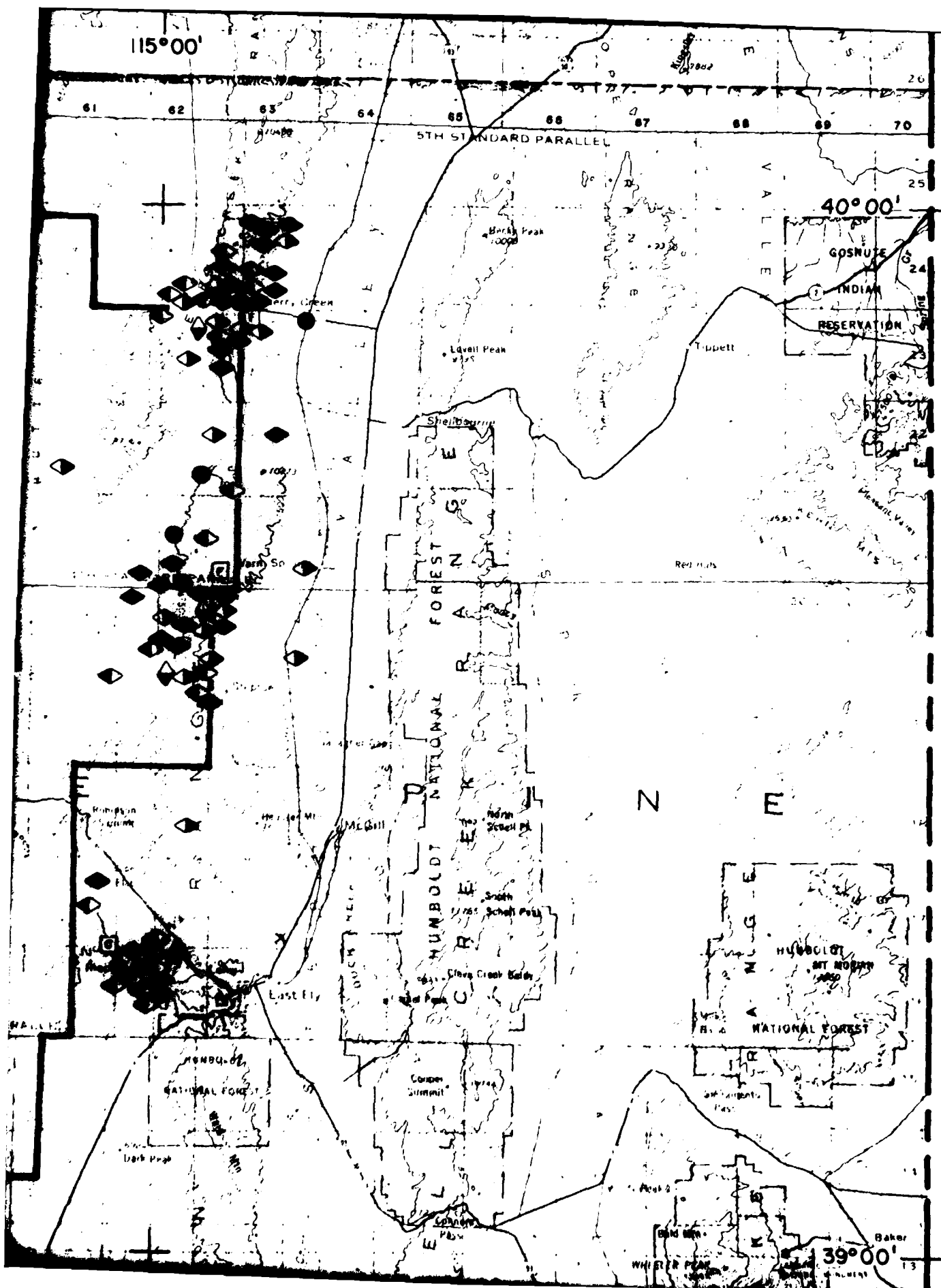
DRAWING 5

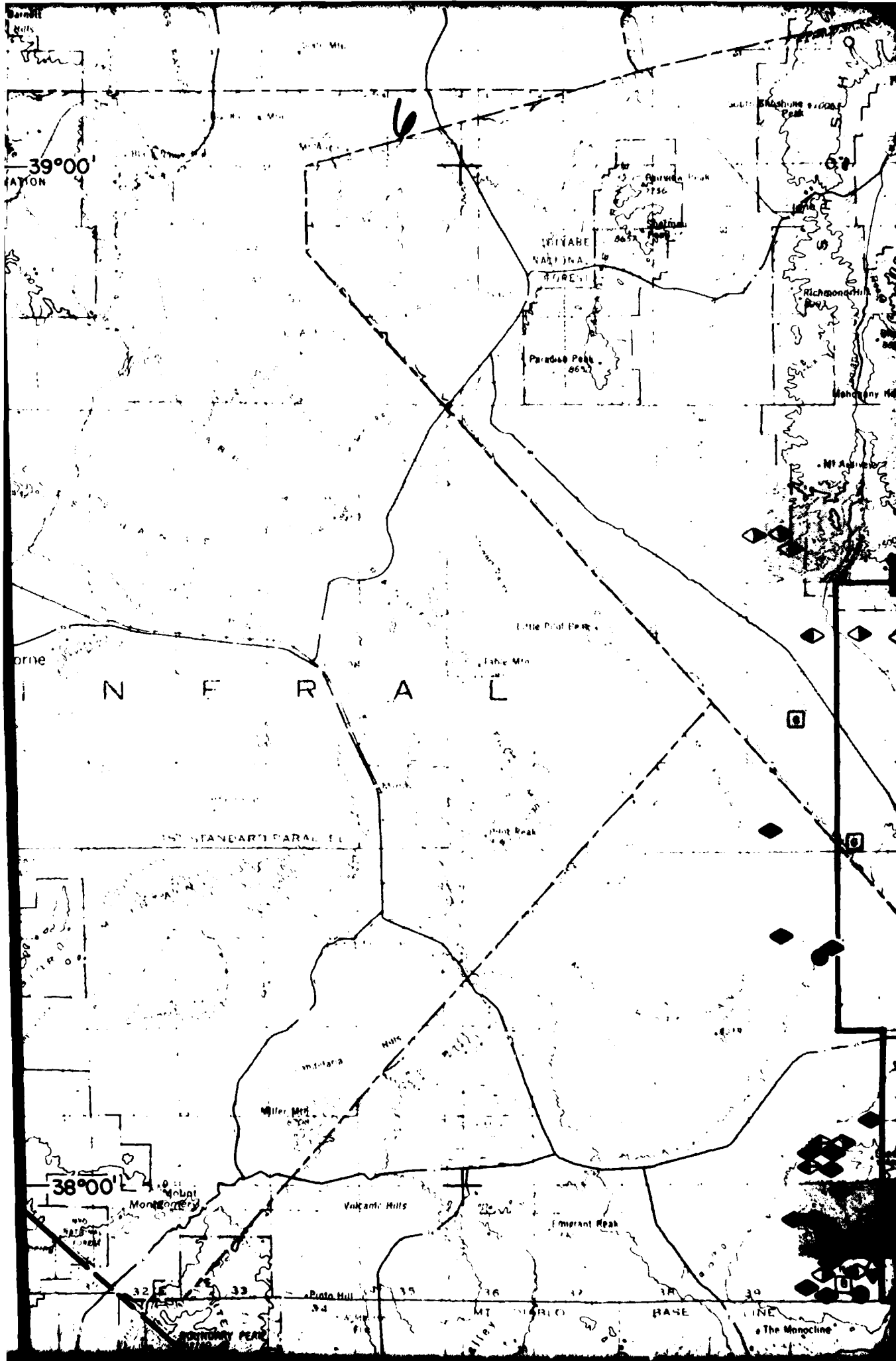


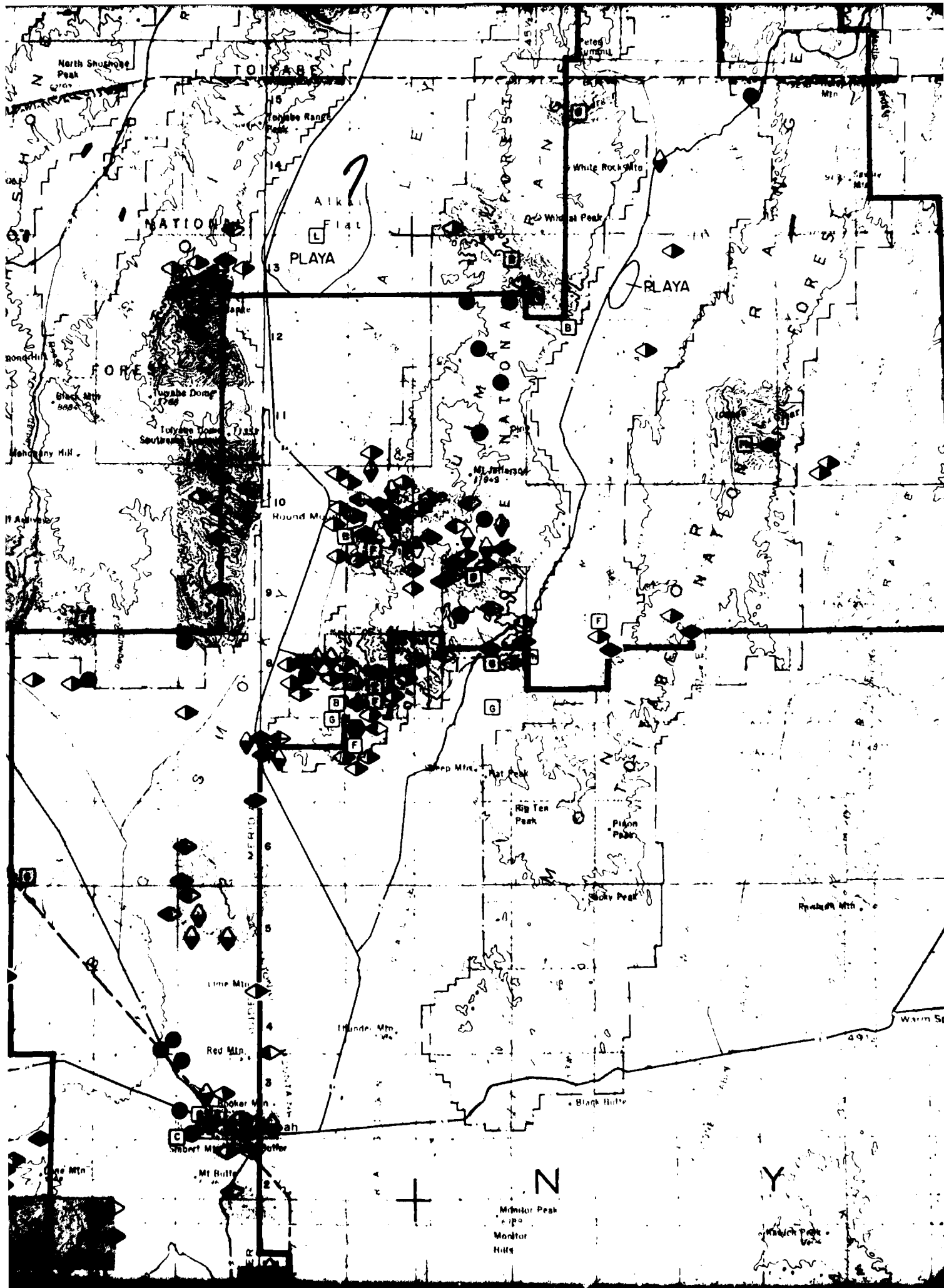


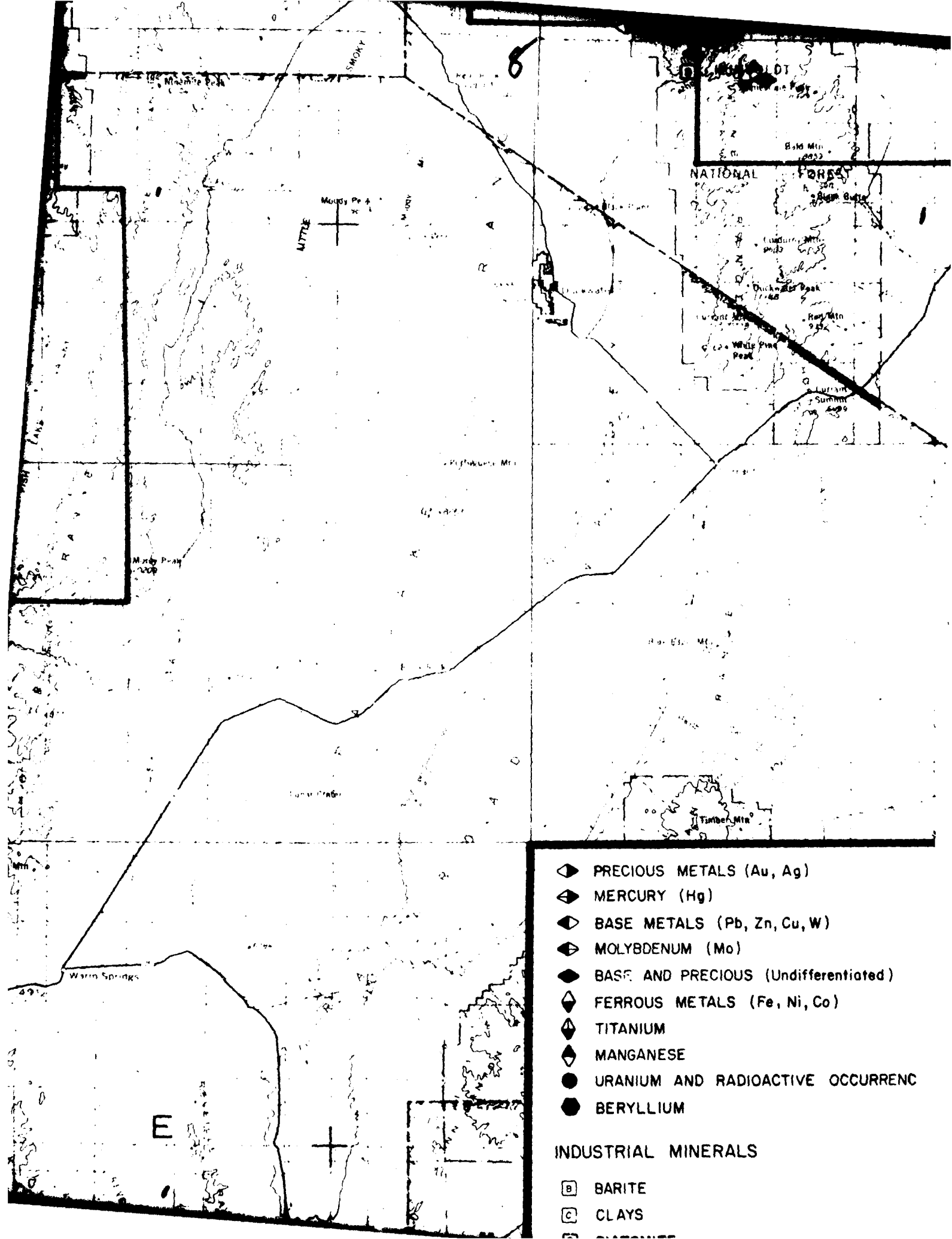












- ◀ PRECIOUS METALS (Au, Ag)
- ◀ MERCURY (Hg)
- ◀ BASE METALS (Pb, Zn, Cu, W)
- ◀ MOLYBDENUM (Mo)
- ◆ BASE AND PRECIOUS (Undifferentiated)
- ◆ FERROUS METALS (Fe, Ni, Co)
- ◆ TITANIUM
- ◆ MANGANESE
- URANIUM AND RADIOACTIVE OCCURRENC
- BERYLLIUM

INDUSTRIAL MINERALS

- BARITE
- CLAYS

AD-A113 145

ERTEC WESTERN INC LONG BEACH CA

F/8 8/7

MINERAL RESOURCES SURVEY, SEVEN ADDITIONAL VALLEYS, NEVADA/UTAH--ETC(U)

JUN 81

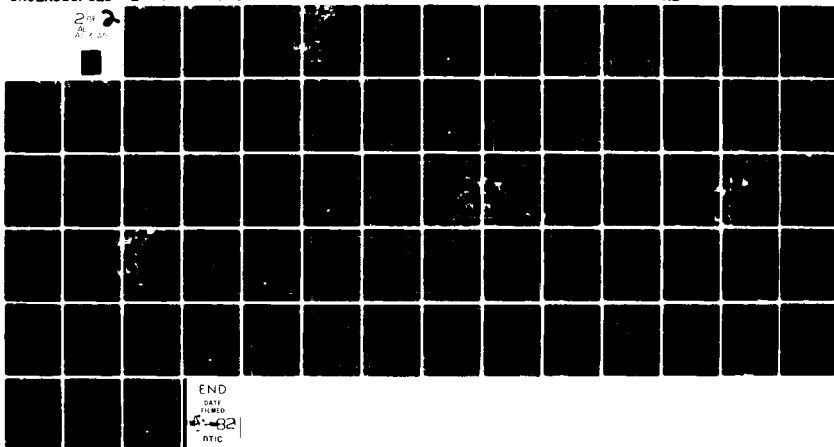
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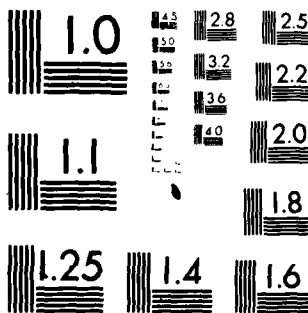
E-TR-50-VOL-3

NL

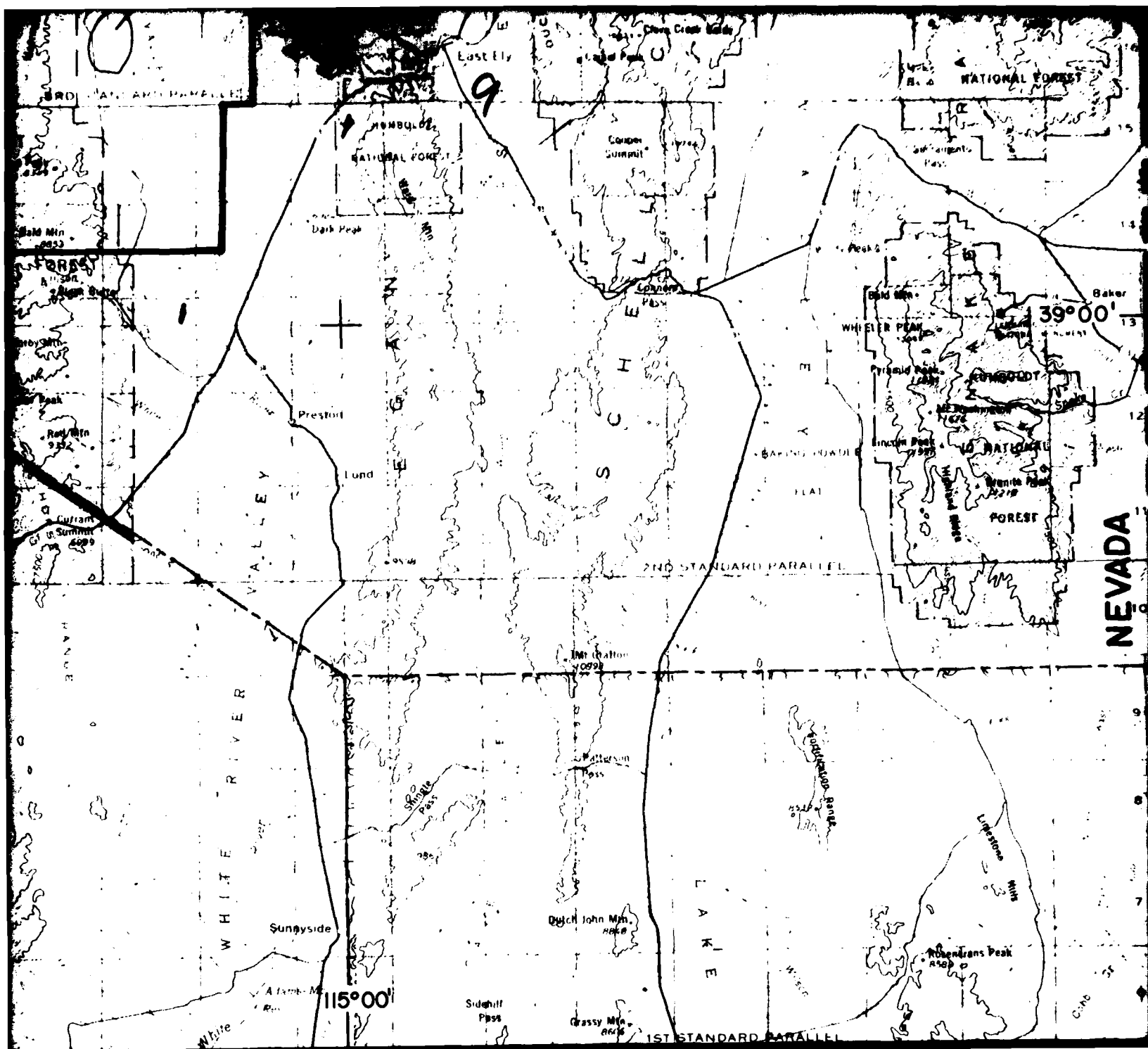
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IN. X 3 1/2

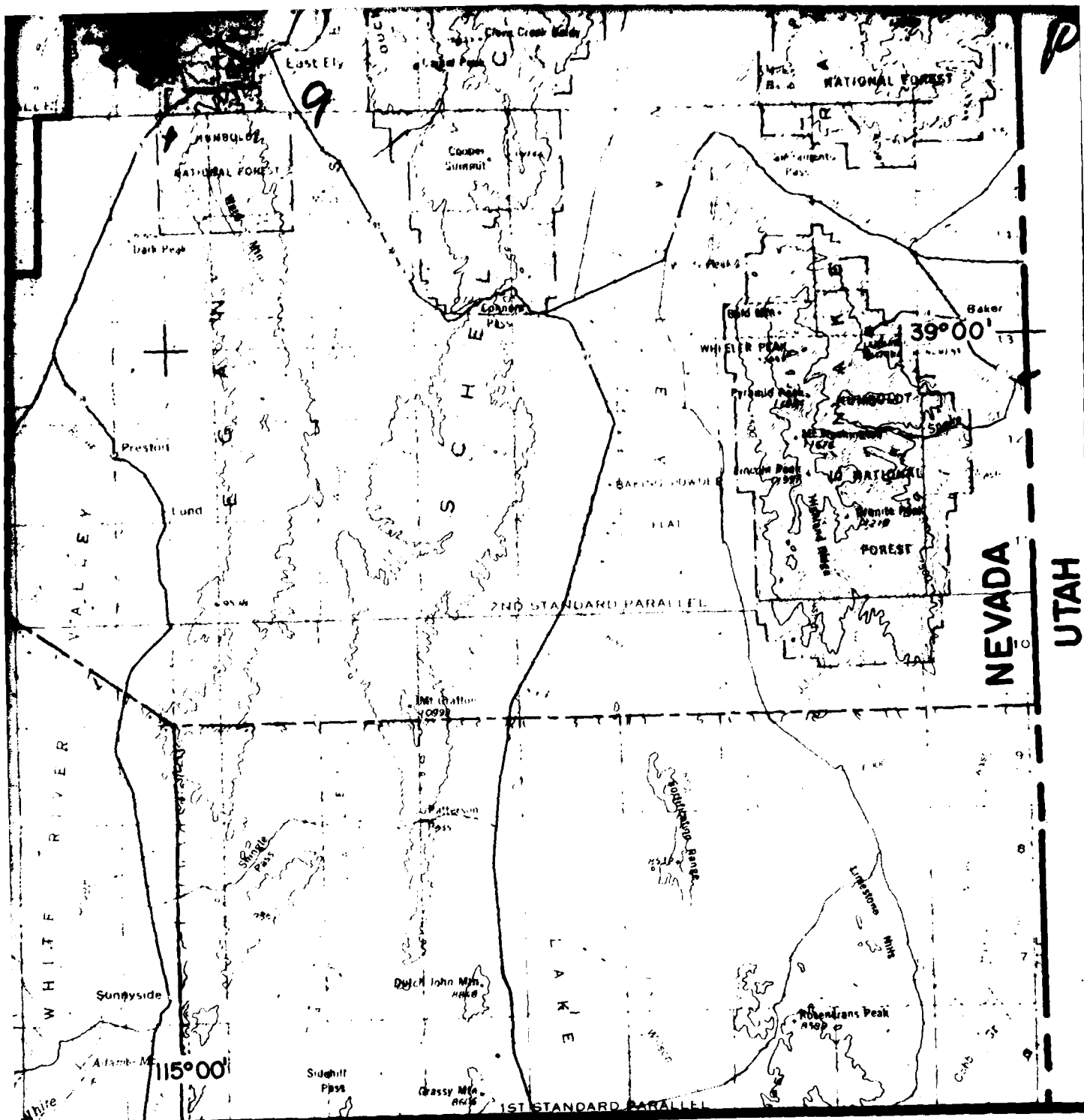


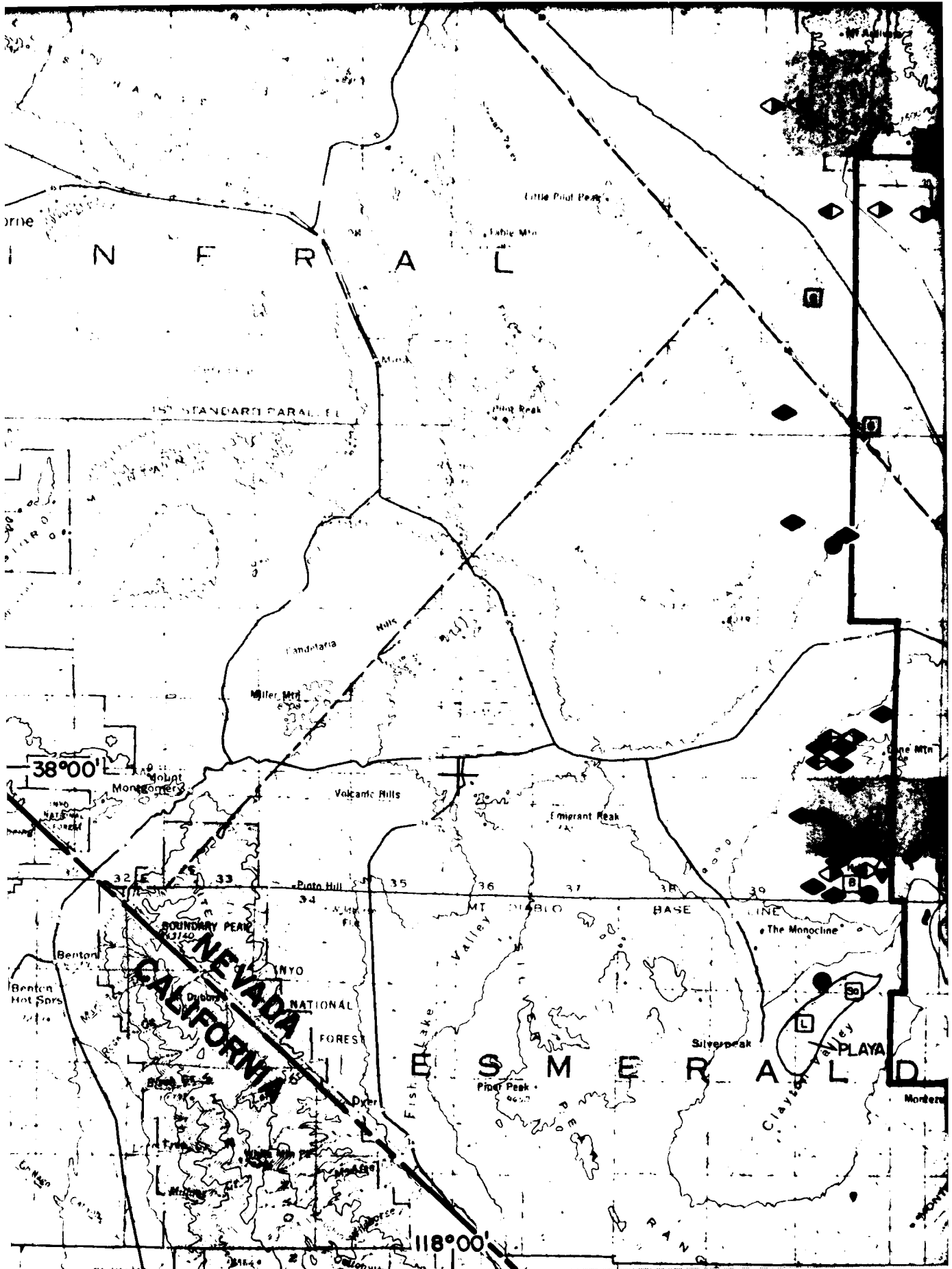
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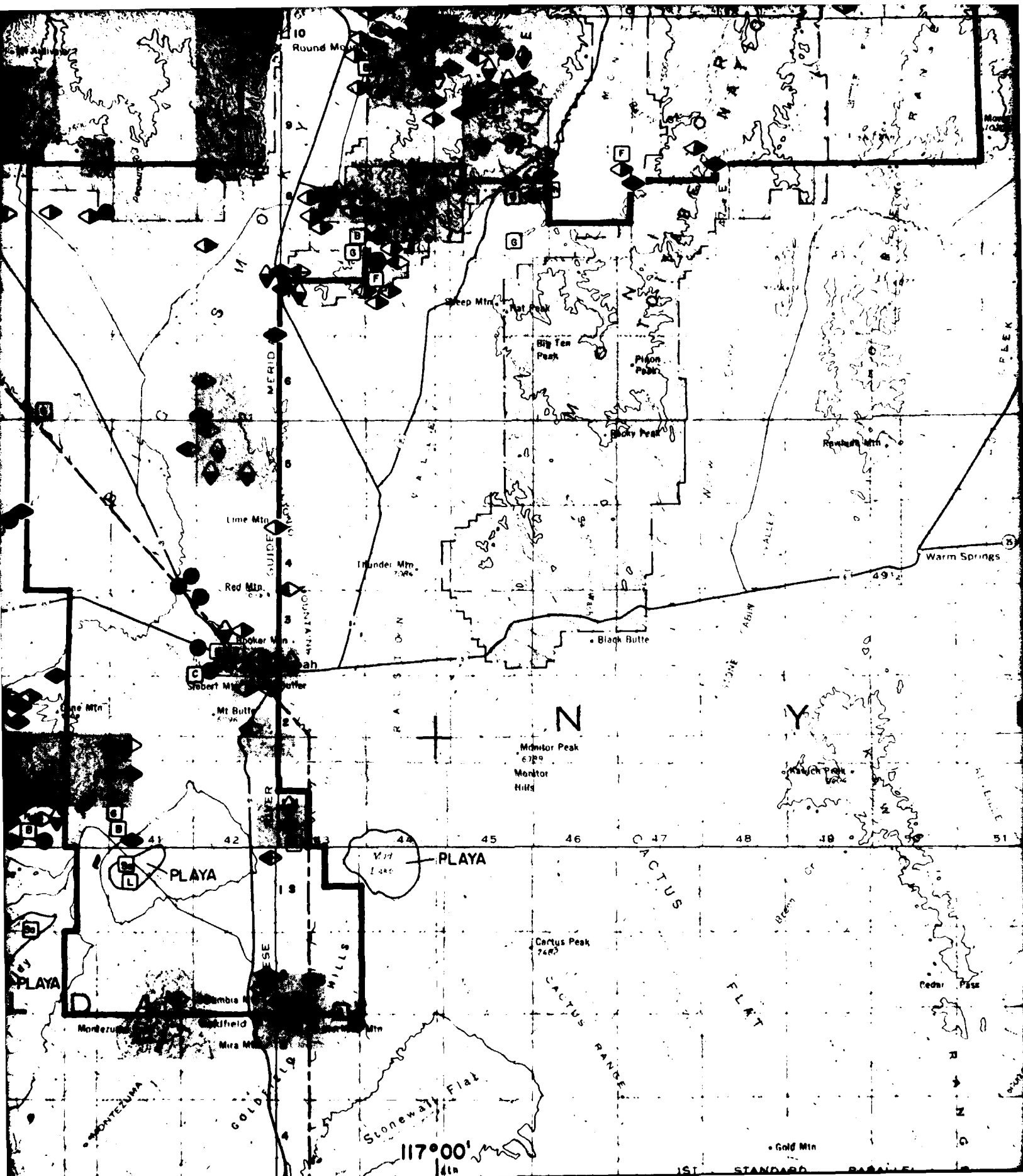


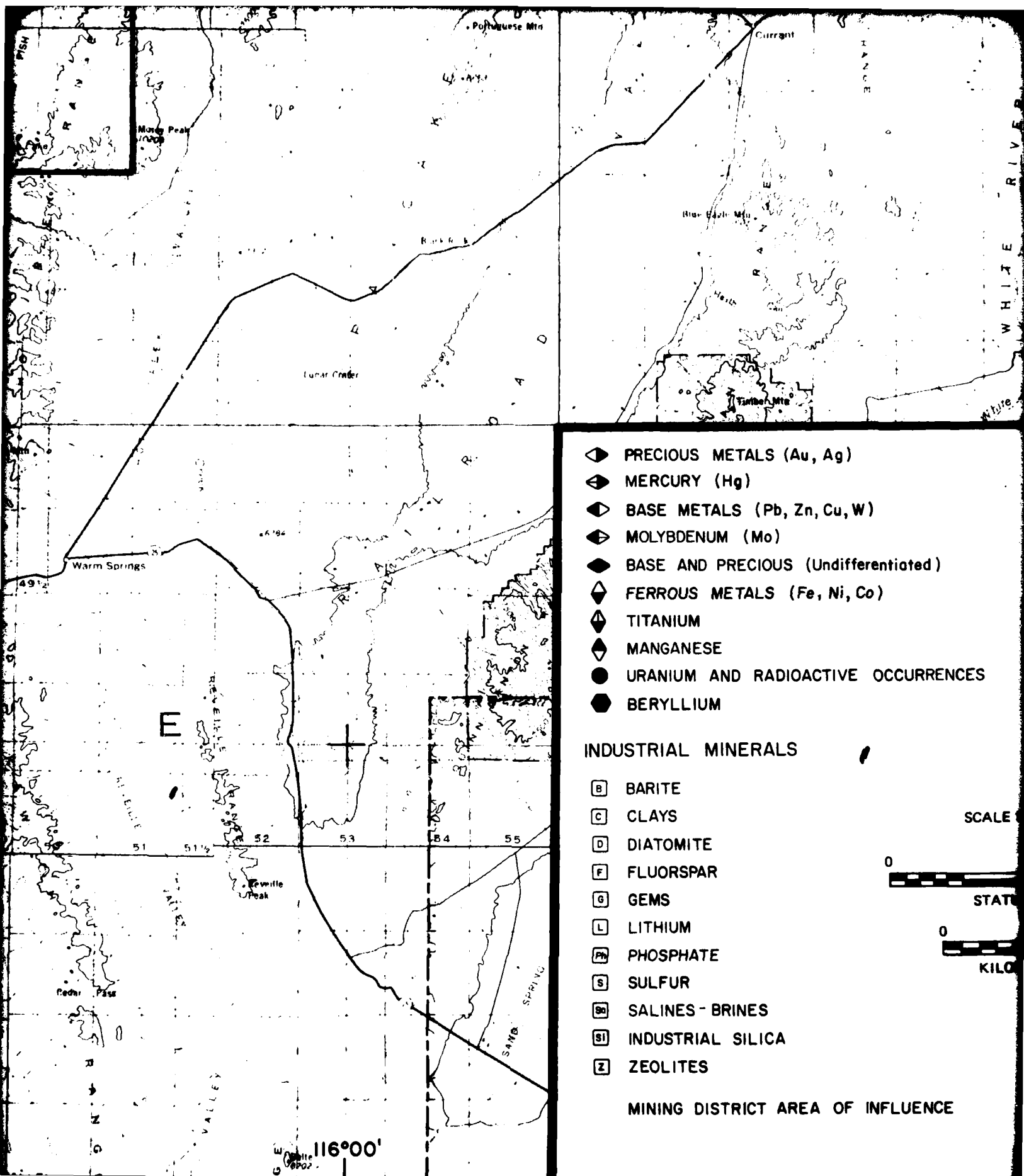
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A











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- | | |
|-----------------------------|---------------------------|
| Albers and Stewart, 1972 | Lawrence and Wilson, 1962 |
| Beal, 1962 | LeVeque and Others, 1979 |
| Bohannon and Meir, 1976 | Papke, 1979 |
| Cannon and Others, 1975 | Papke, 1976 |
| Cohenour, 1980b | Papke, 1973 |
| Garside, 1973 | Papke, 1972 |
| Horton, 1962 | Rogers and Others, 1970 |
| Horton and Others, 1962 | Roberts and Others, 1967 |
| Hose and Others, 1962 | Schilling, 1962a |
| Kleinhampl, 1980 | Schilling, 1962b |
| Larson and Others, 1977 a&b | Stewart and Others, 1977 |
| Lawrence, 1962 | Tingley, 1980c |
| | USGS and Others, 1964a |

SCALE 1: 500,000

10

20

STATUTE MILES

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KILOMETERS



MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY
STUDY AREA BOUNDARY, SEPT. 26, 1980

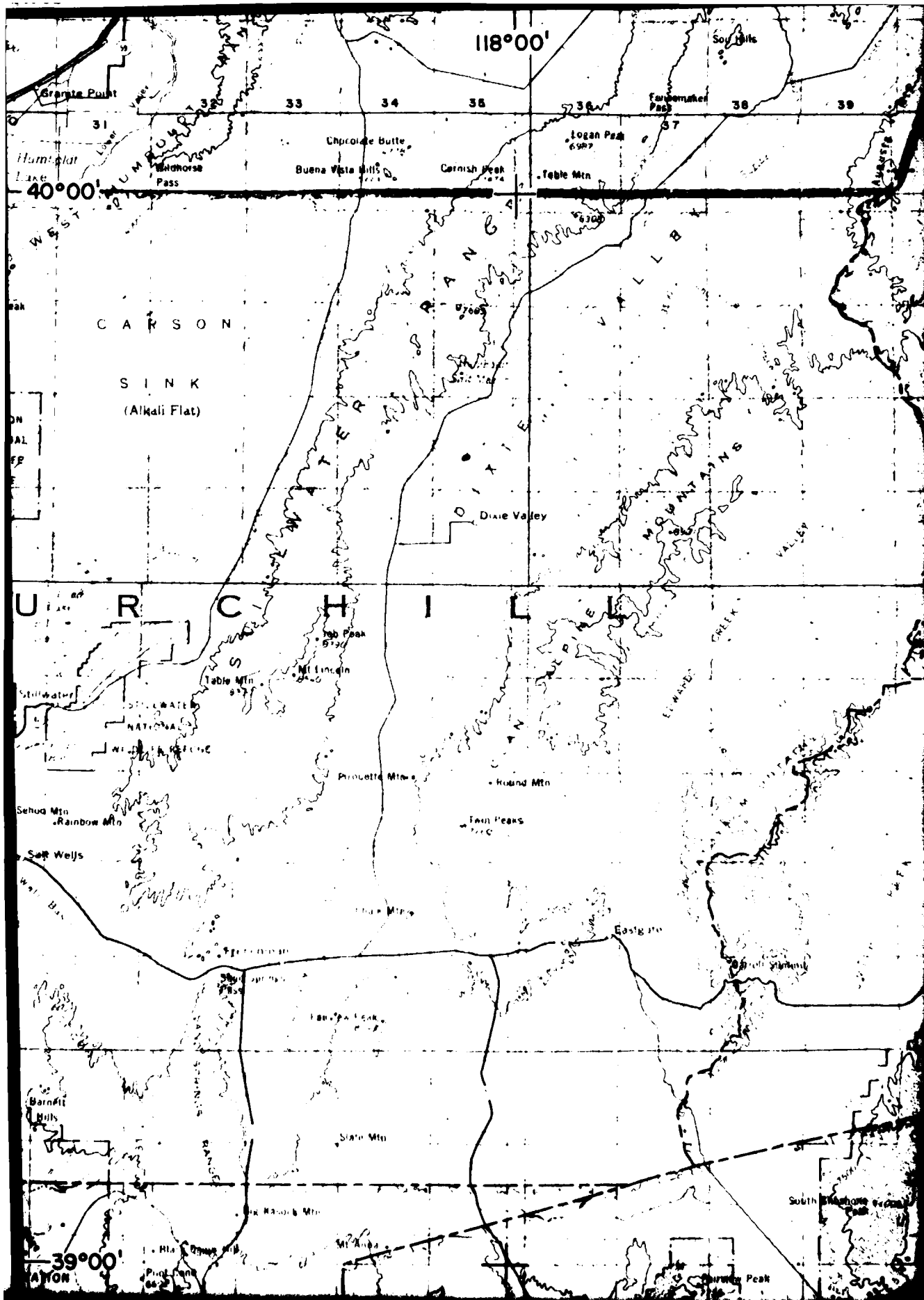
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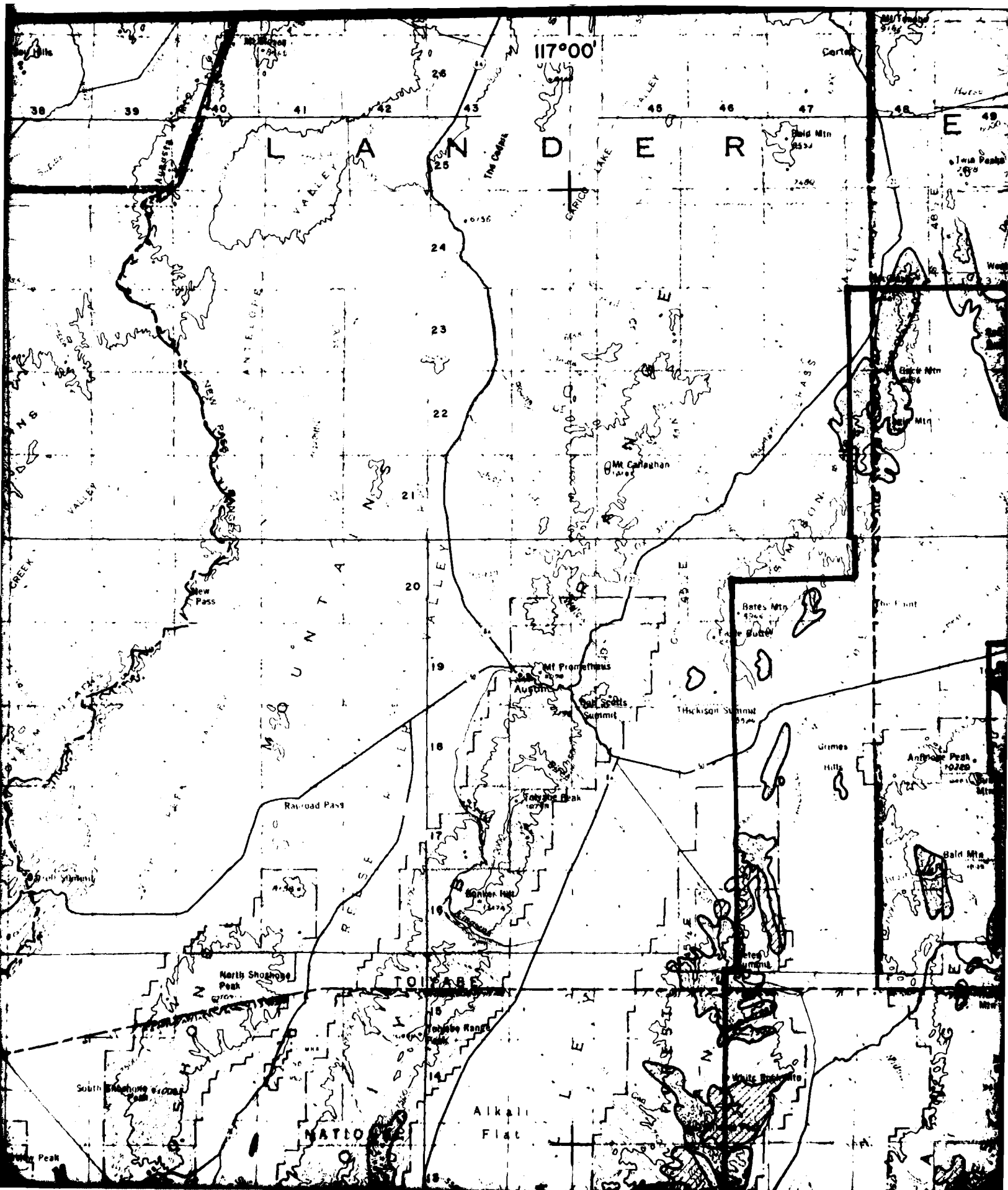
The Earth Technology Corporation

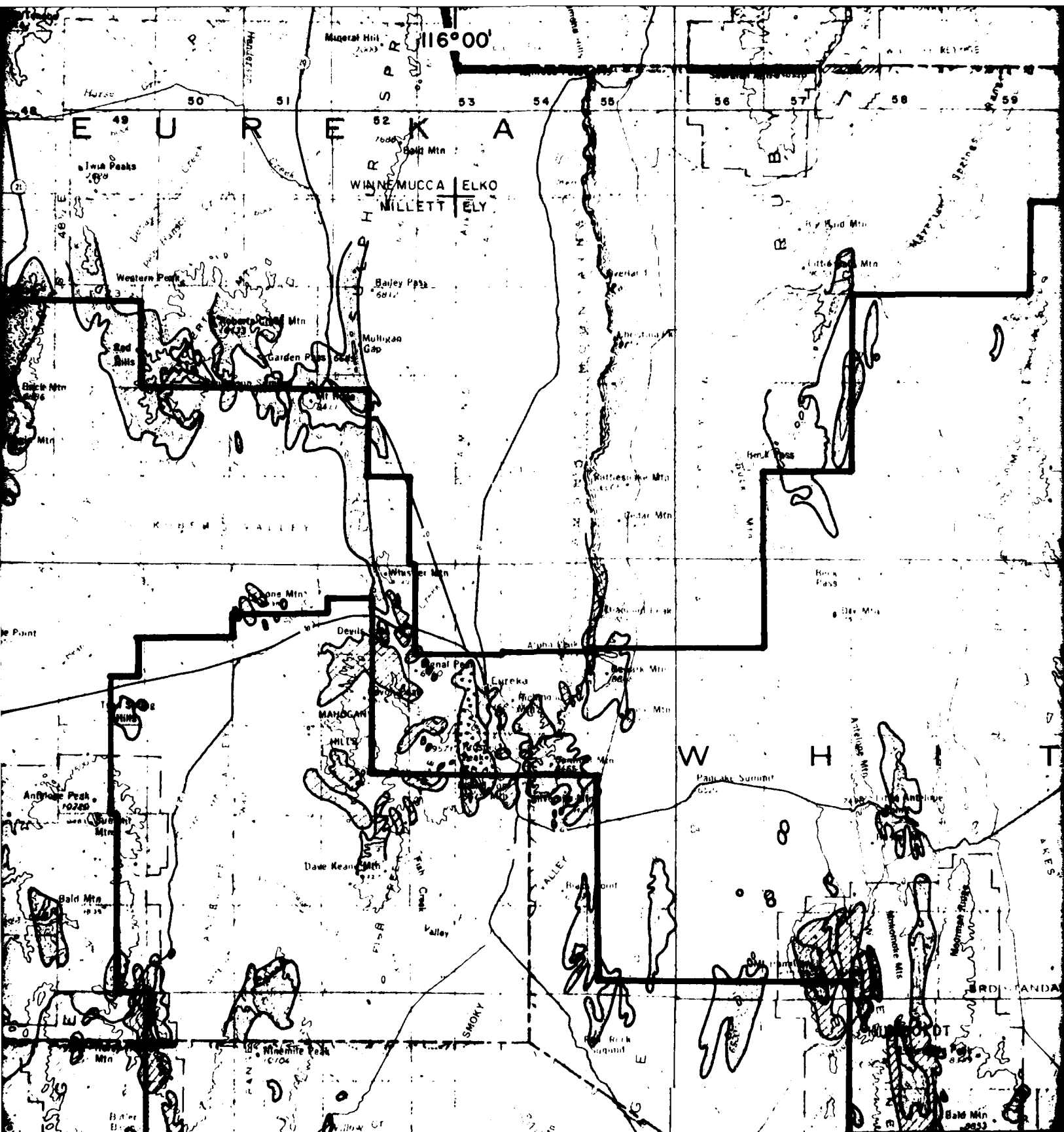
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

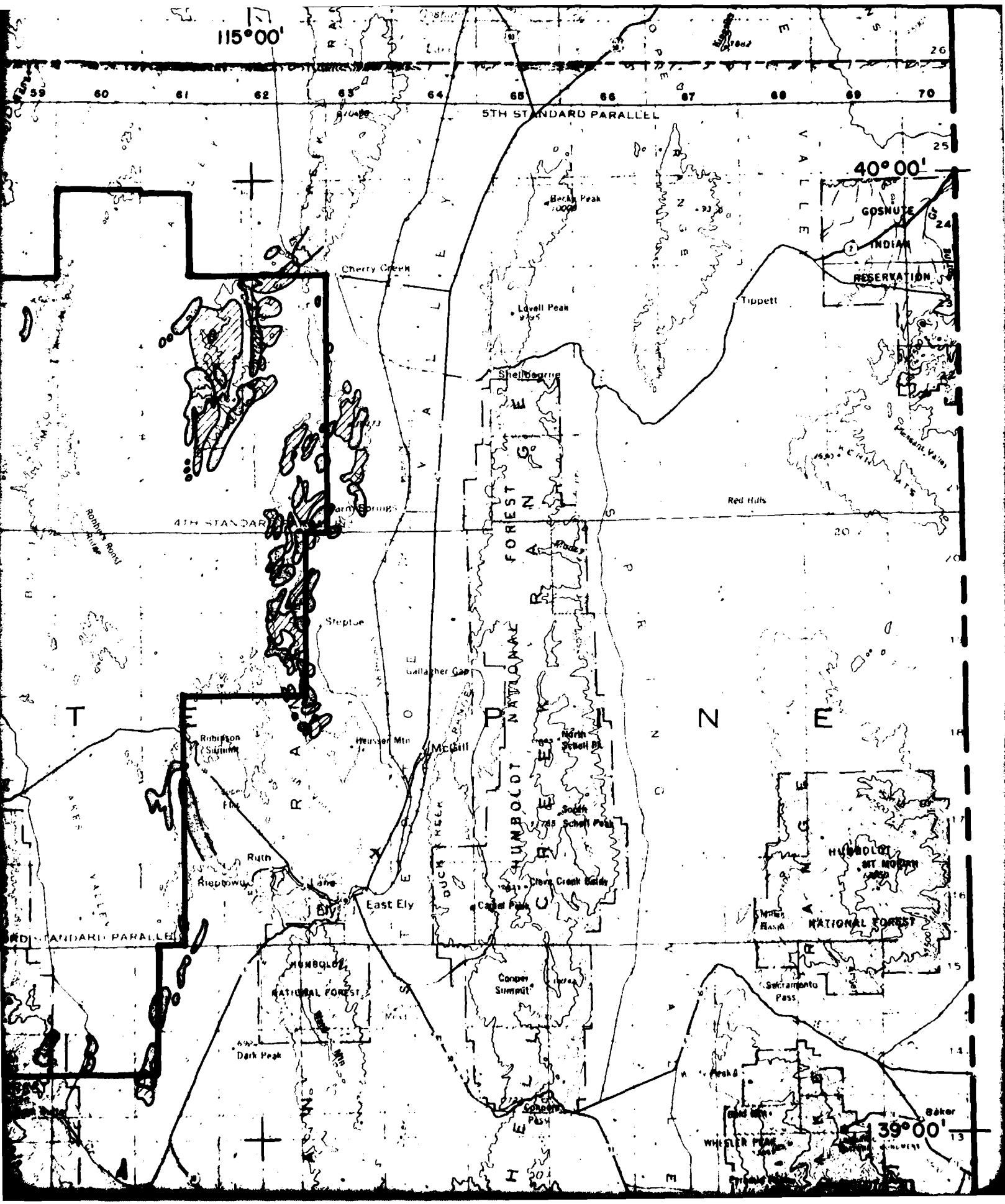
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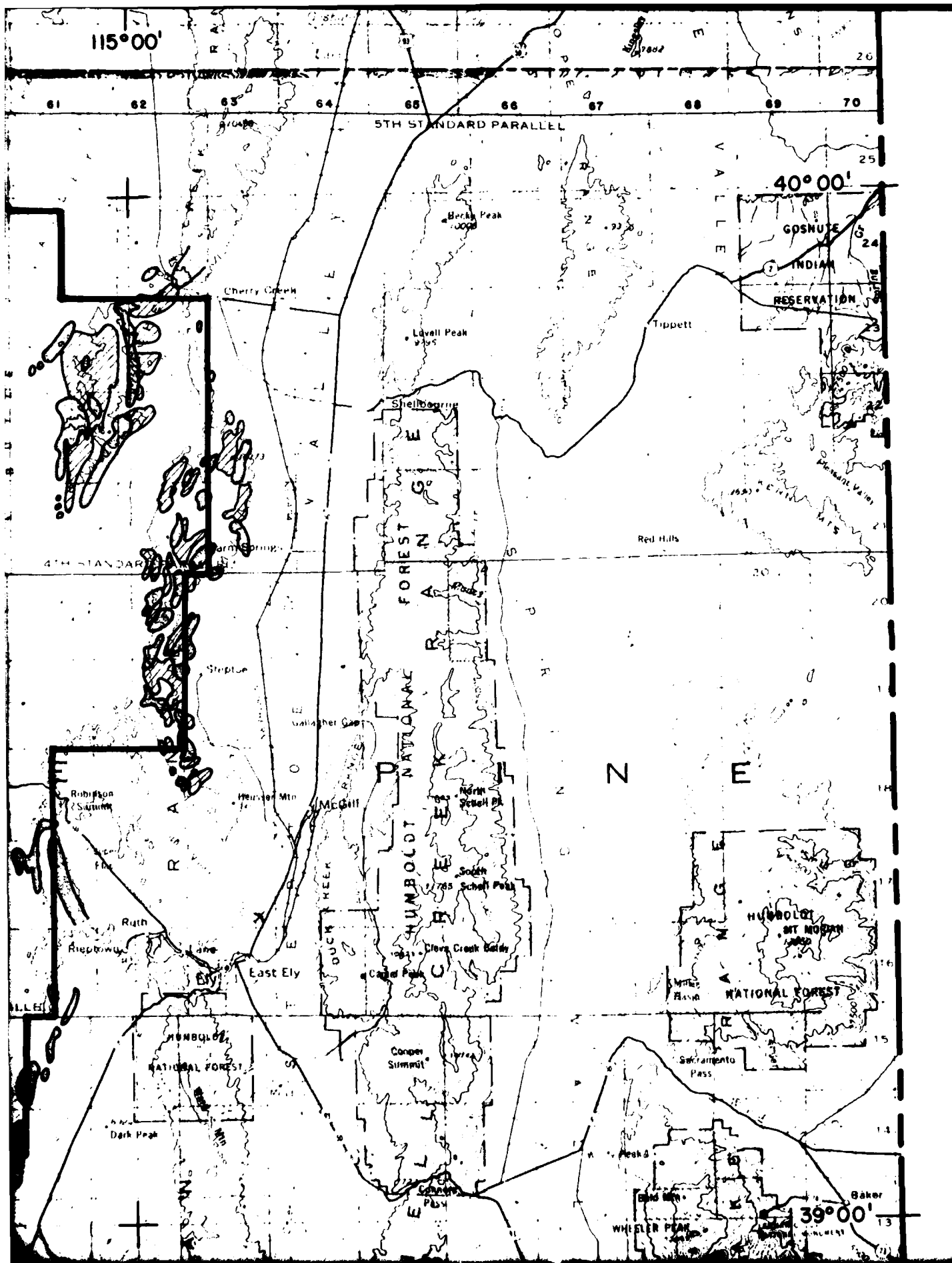
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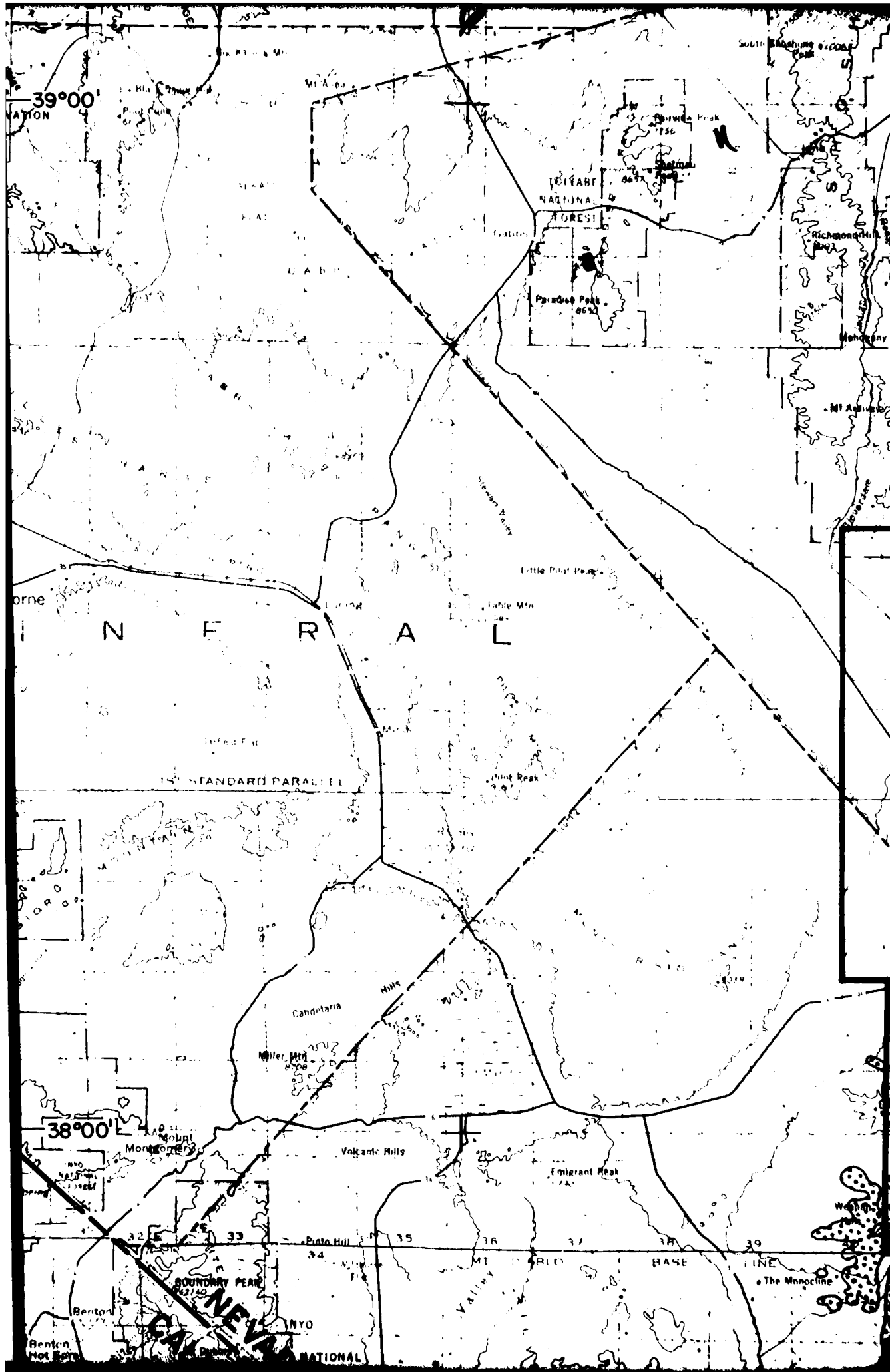


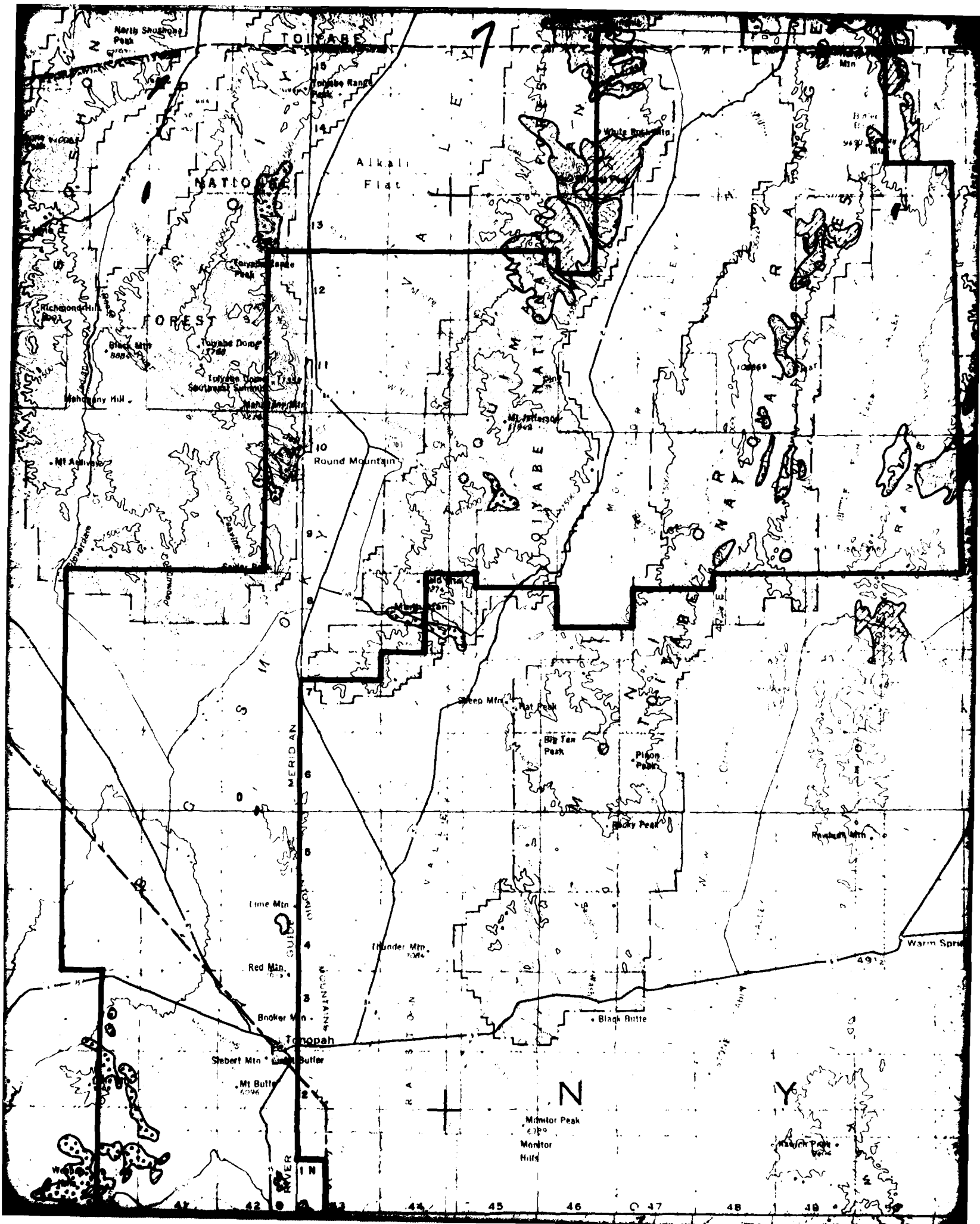


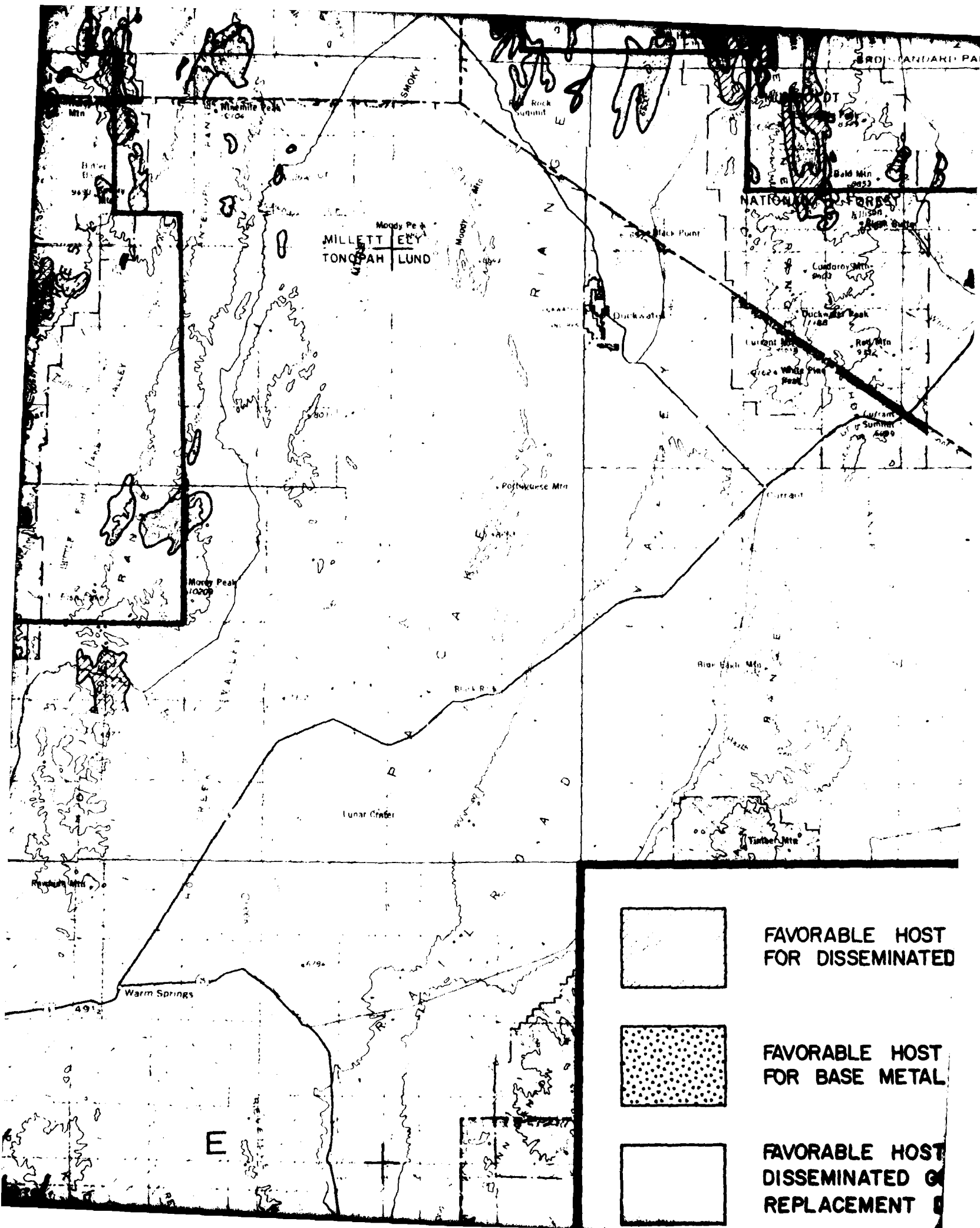




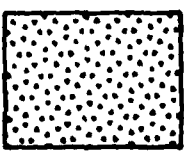




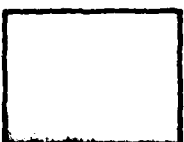




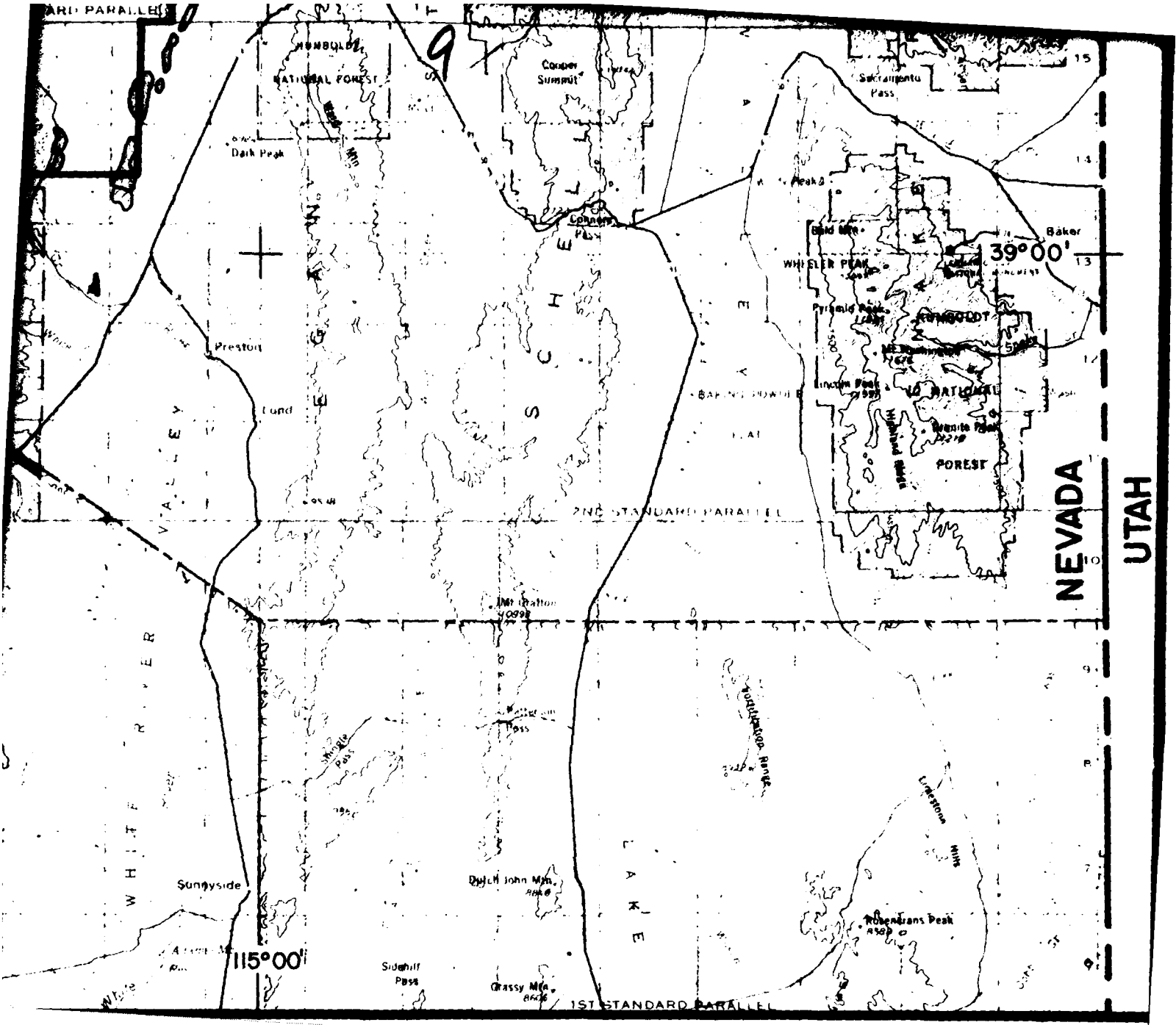
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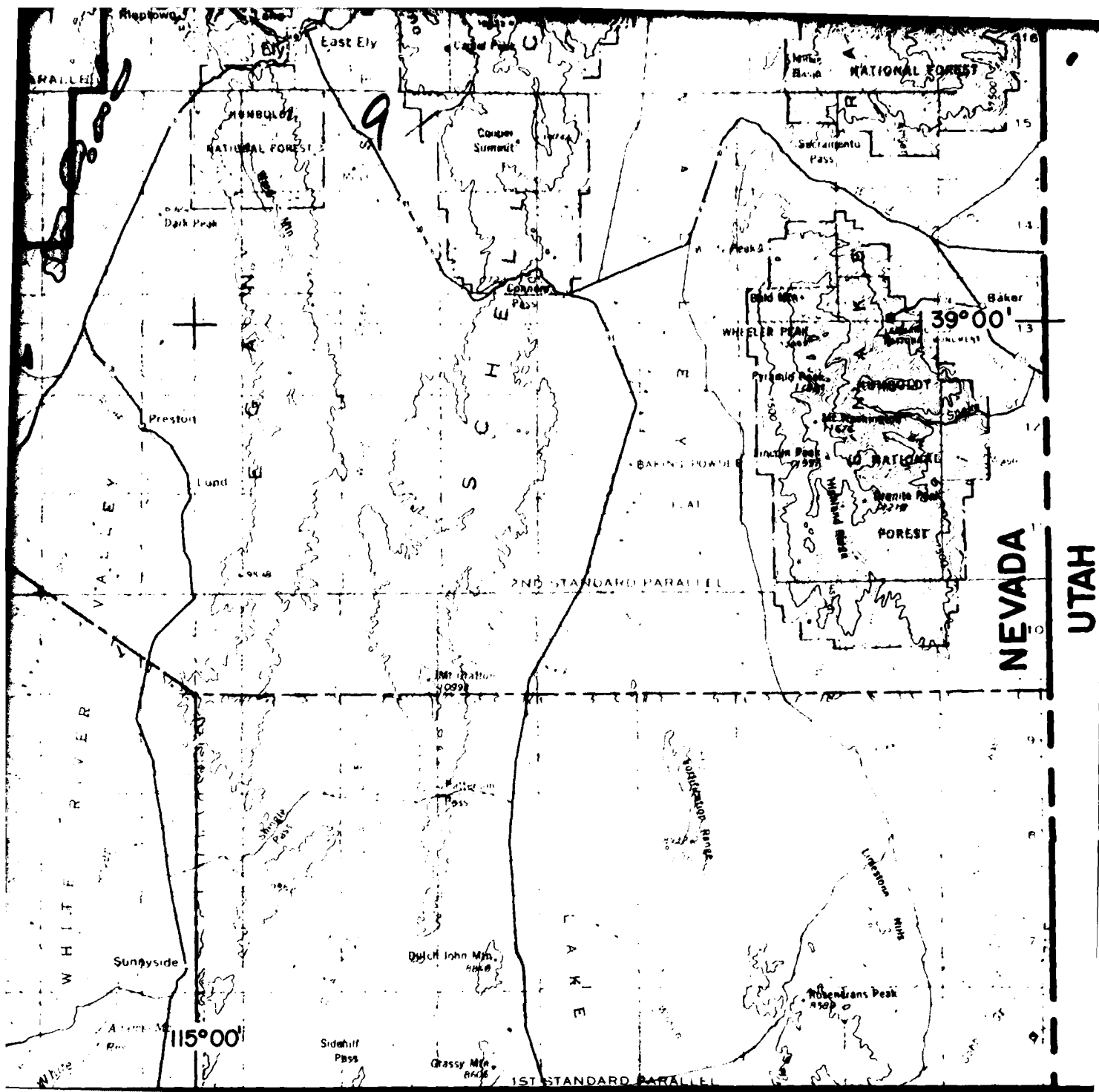


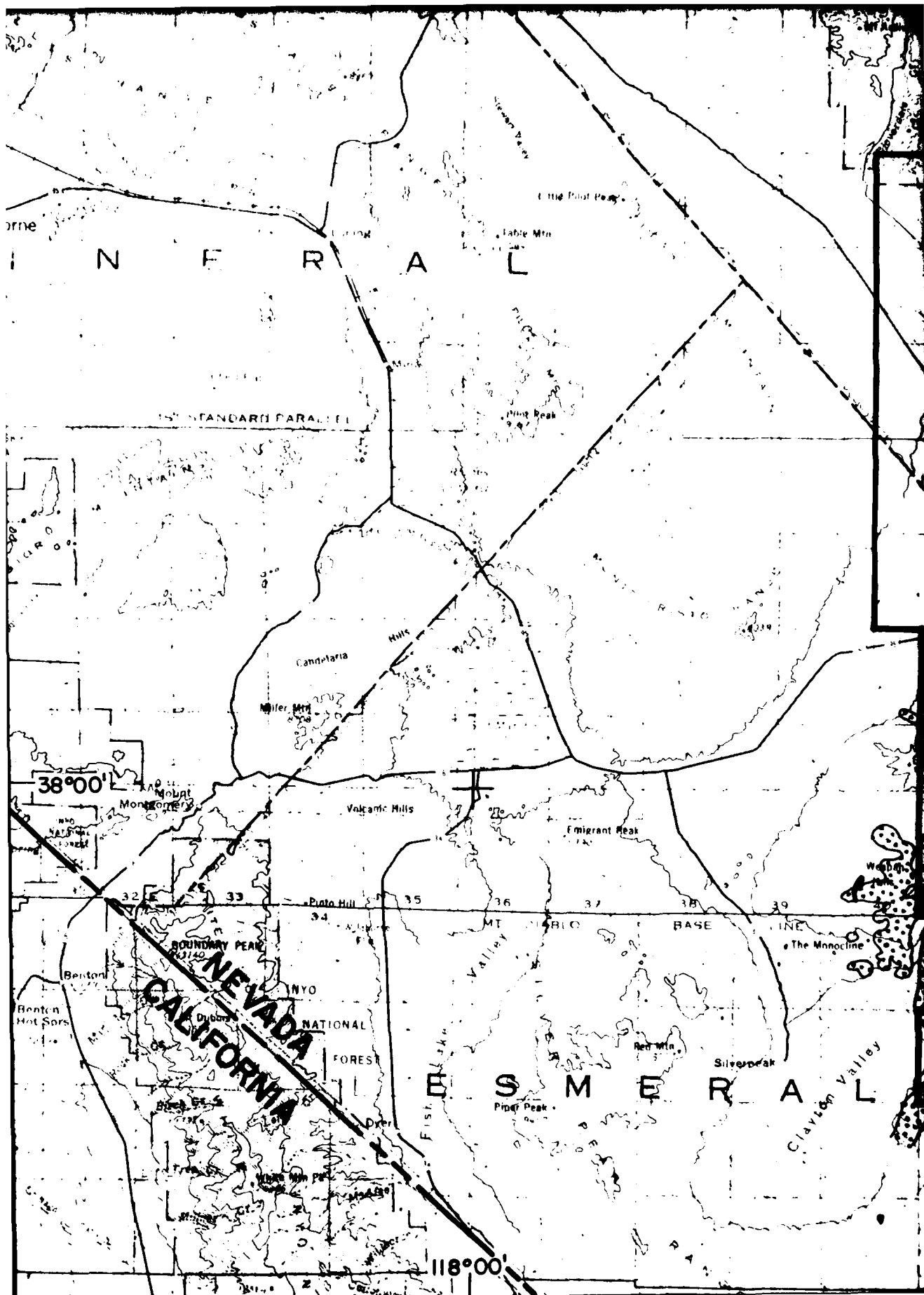
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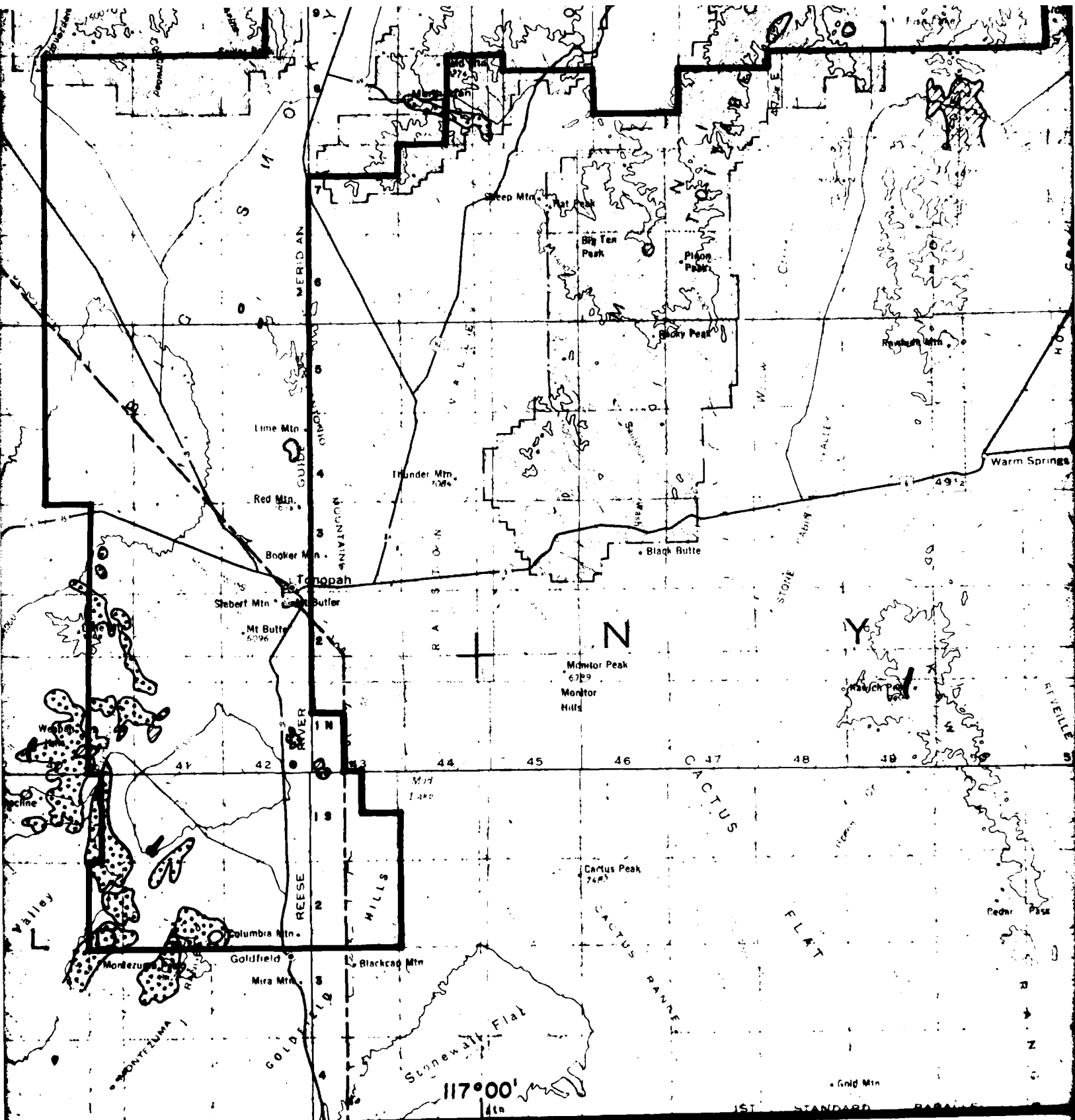


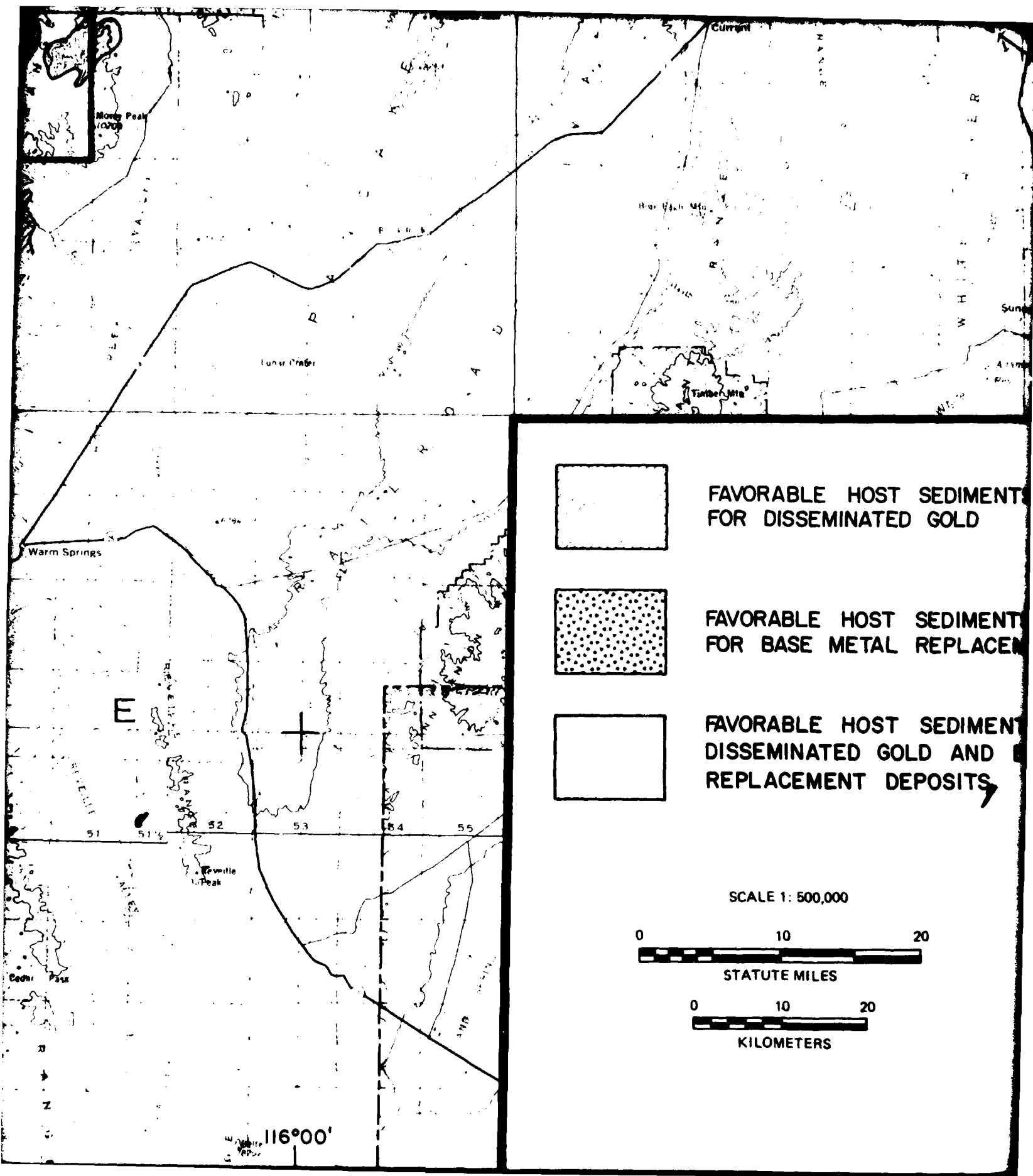
FAVORABLE HOST
DISSEMINATED &
REPLACEMENT











HOST SEDIMENTS
MINATED GOLD

HOST SEDIMENTS
METAL REPLACEMENT DEPOSITS

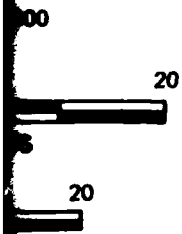
HOST SEDIMENTS FOR
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ENT DEPOSITS

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Amselco Minerals, Inc., 1981
Hose and Others, 1976
Kleinhampl, 1980
Nev. Bu. Mines and Geol., 1980
Nolan and Hunt, 1967
Roberts and Others, 1976
Rogers and Others, 1970
Stewart and Carlson, 1978



MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY
STUDY AREA BOUNDARY SEPT. 26, 1980



- 1 25 OCT 1979
- 2 27 FEB 1980
- 3 20 JUN 1980
- 4 _____
- 5 _____
- 6 _____
- 7 _____

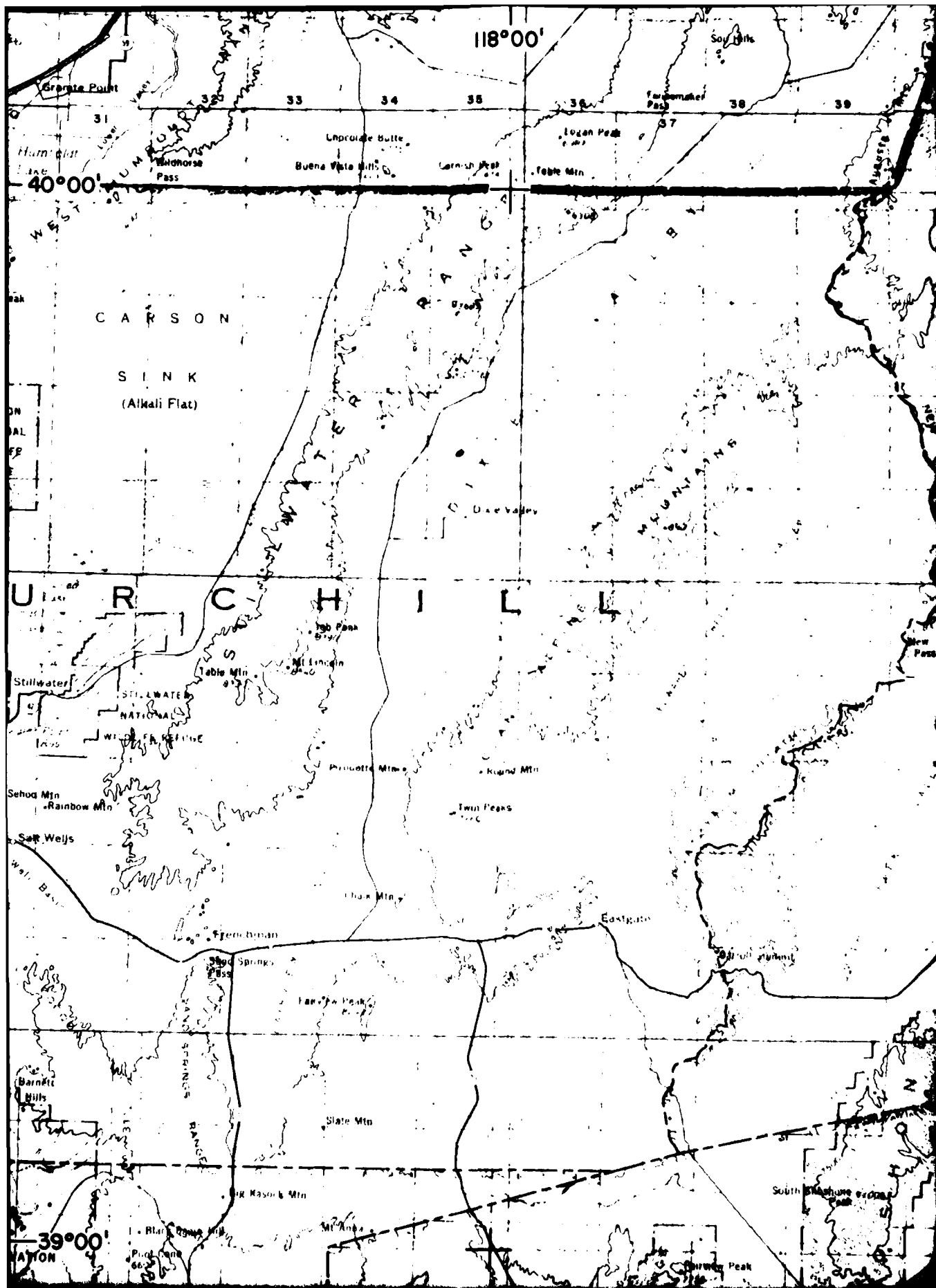


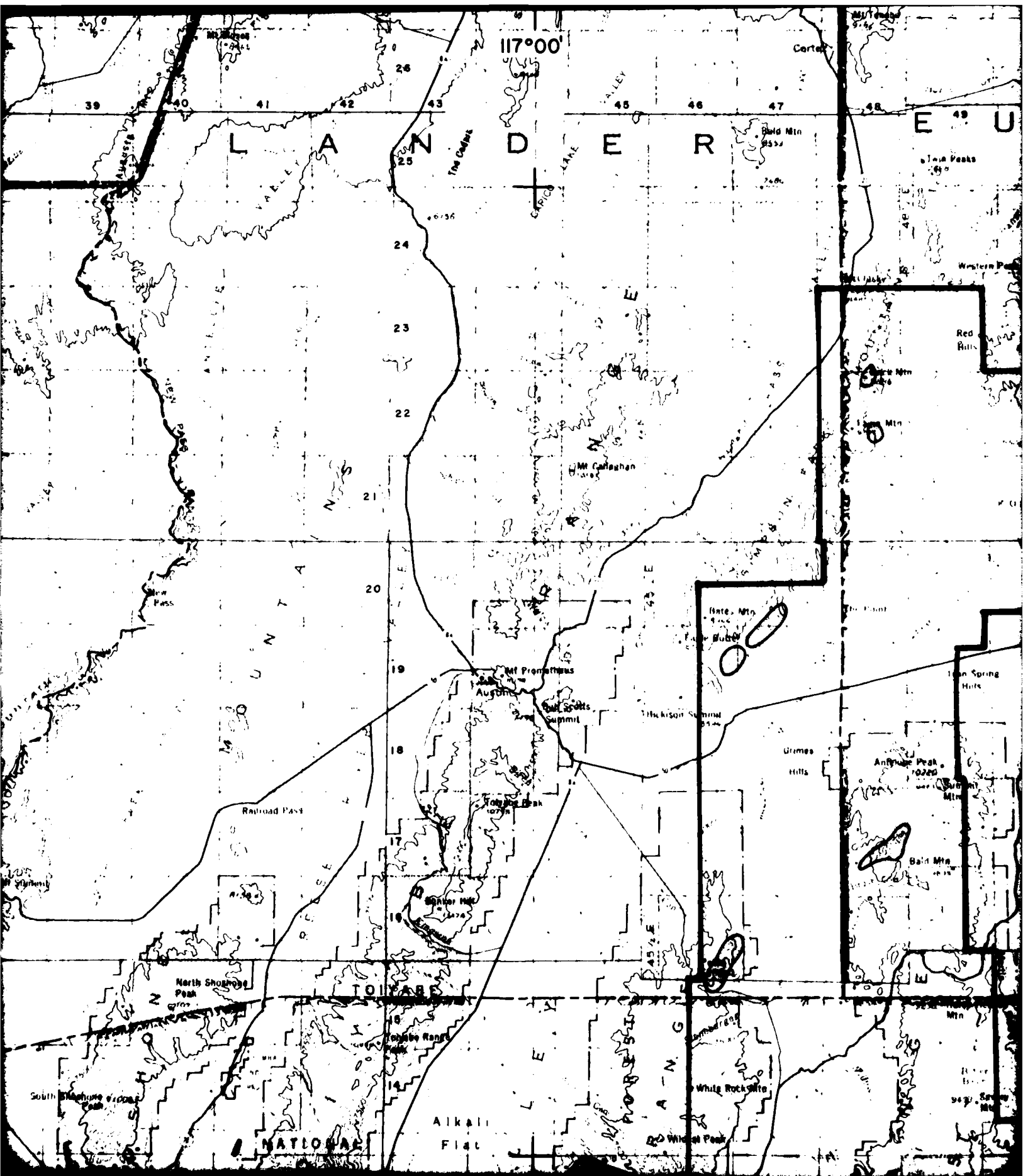
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

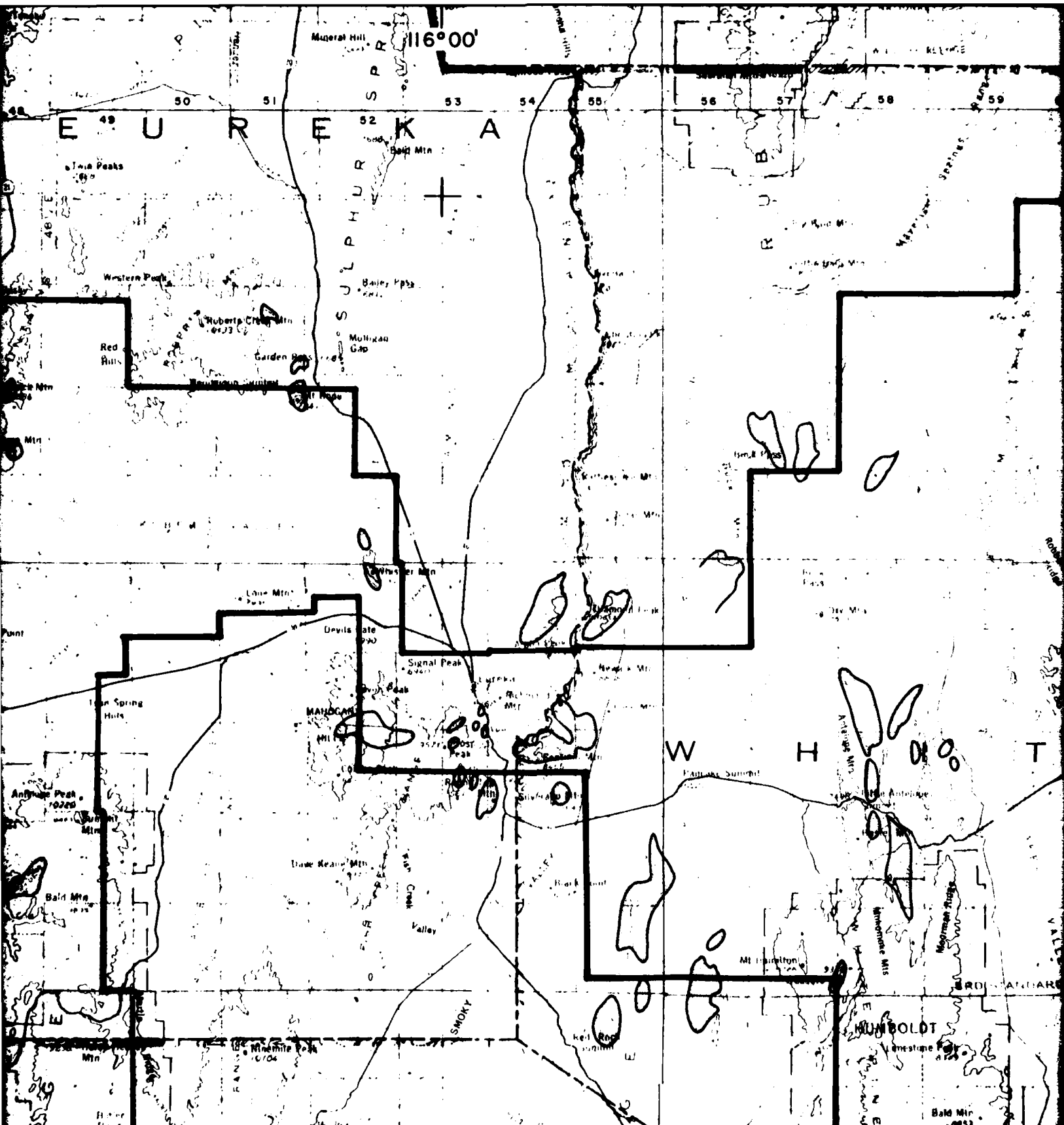
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MAP FOR DISSEMINATED GOLD AND BASE
METAL REPLACEMENT DEPOSITS**

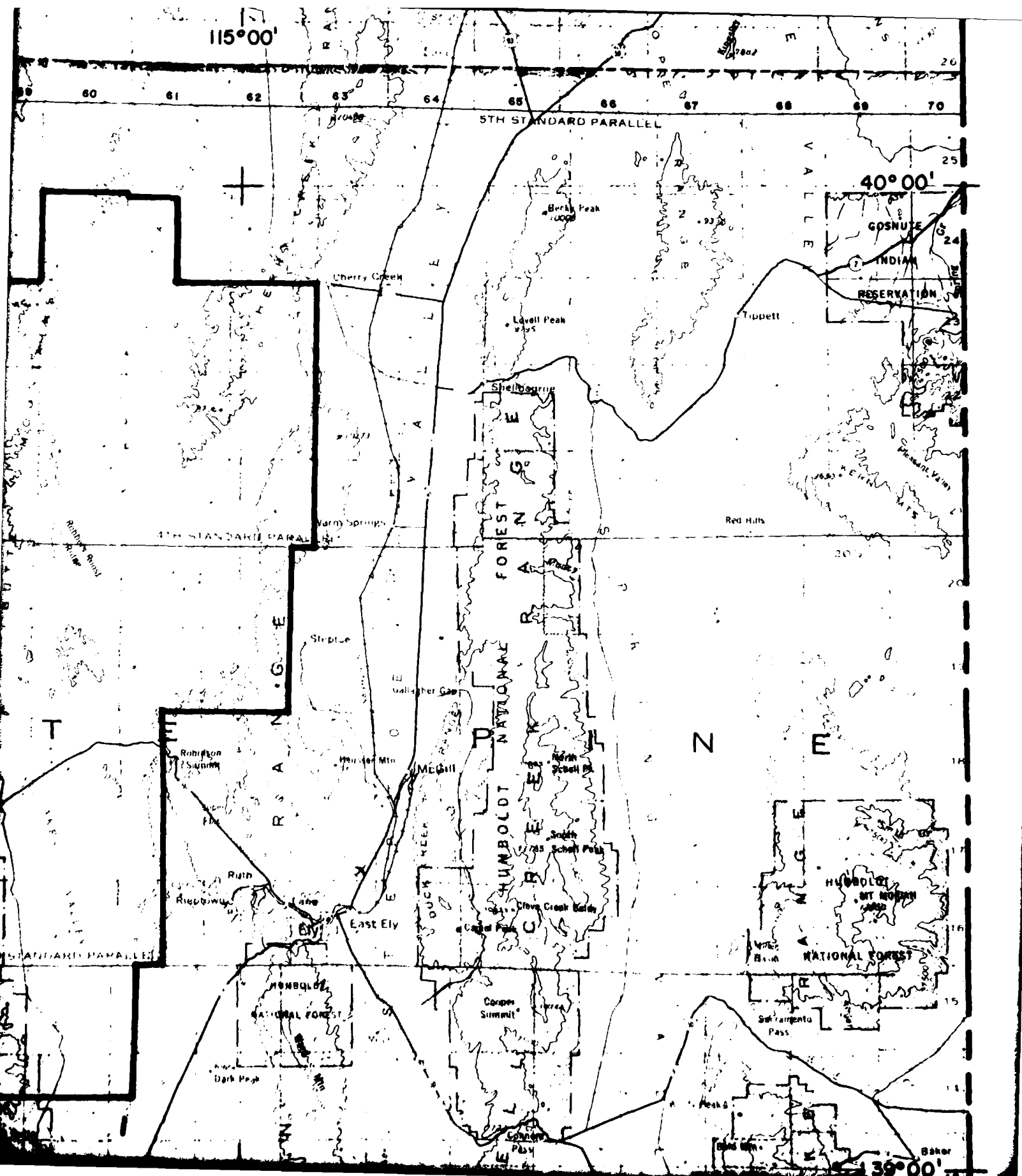
30 APR 81

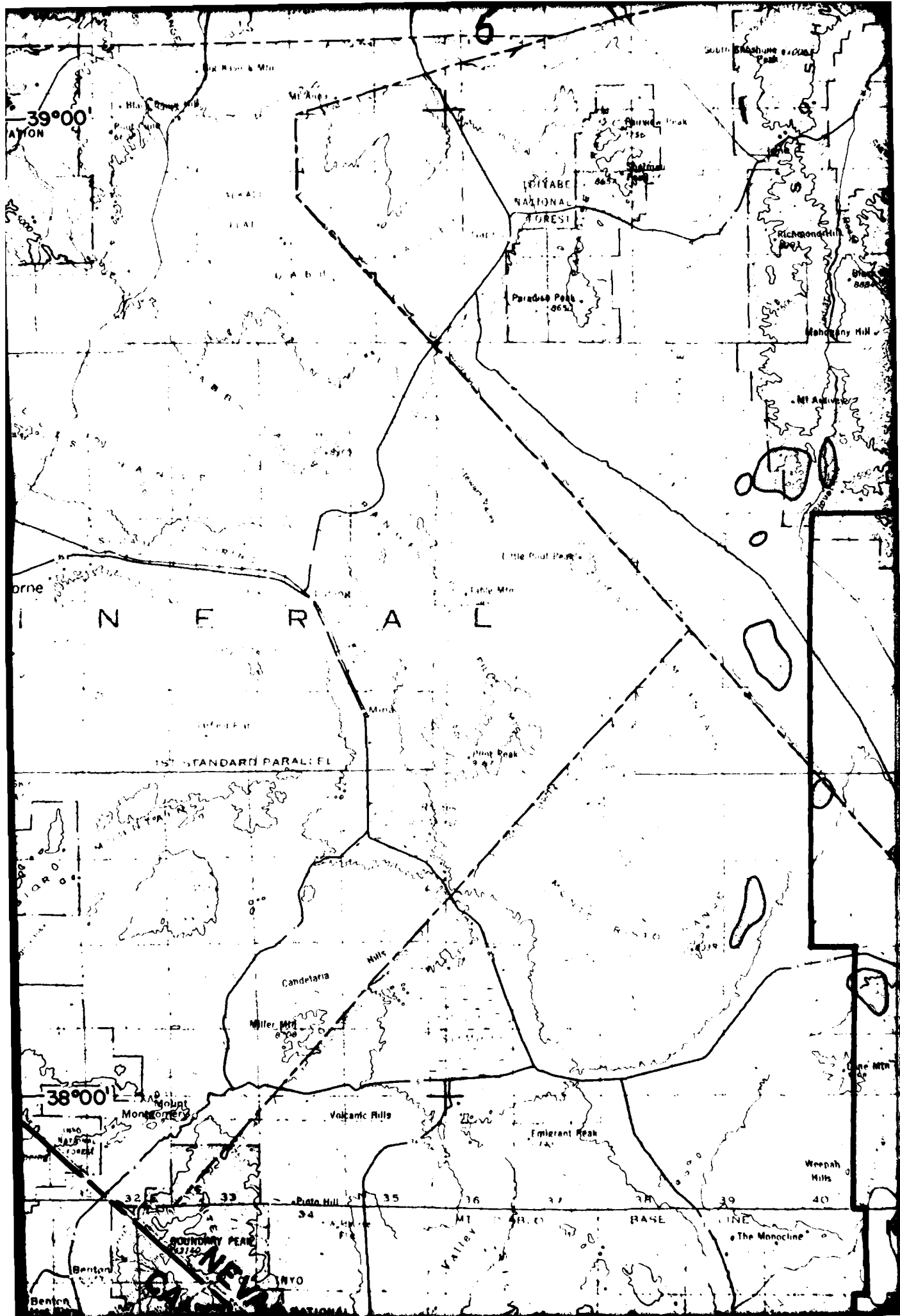
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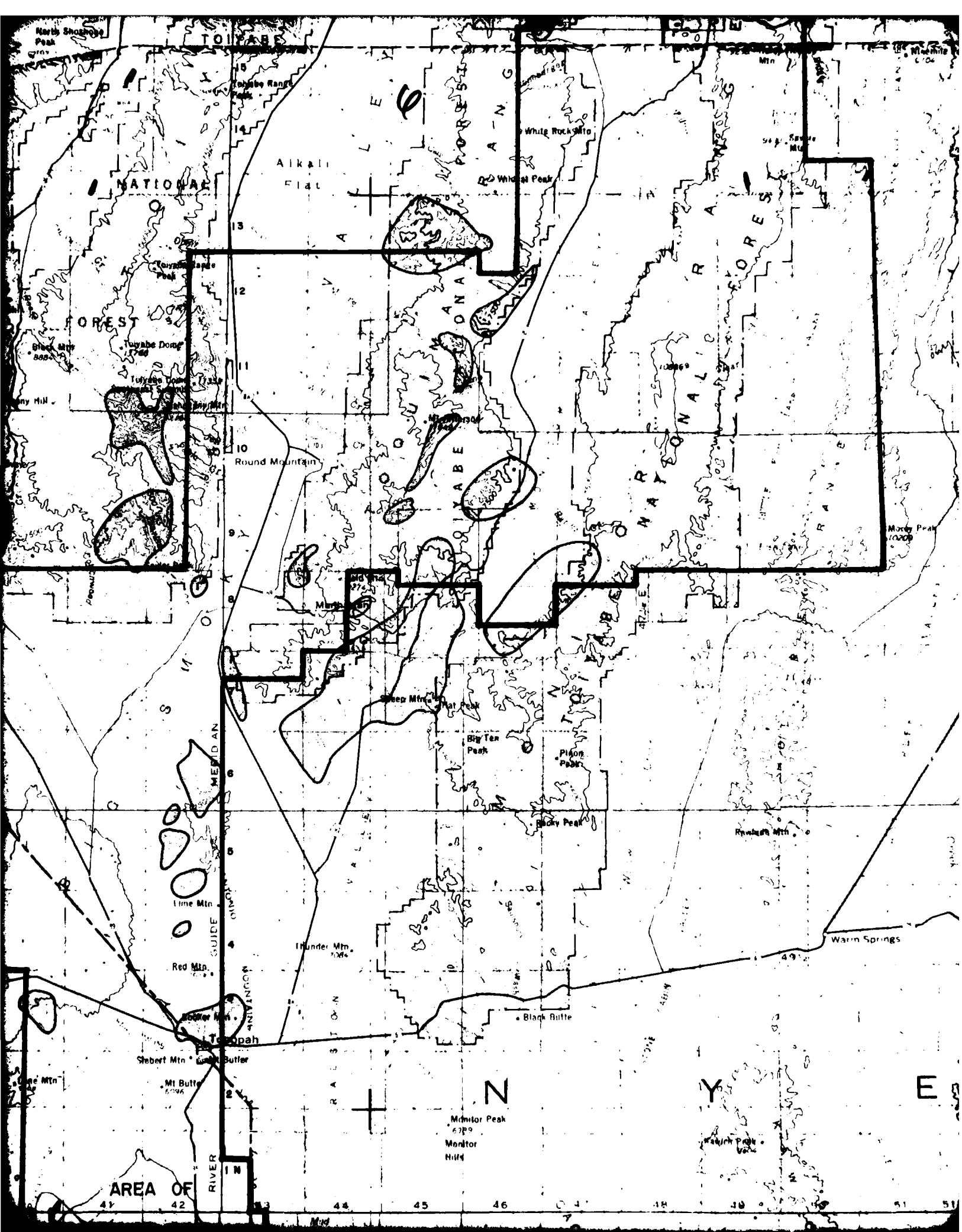


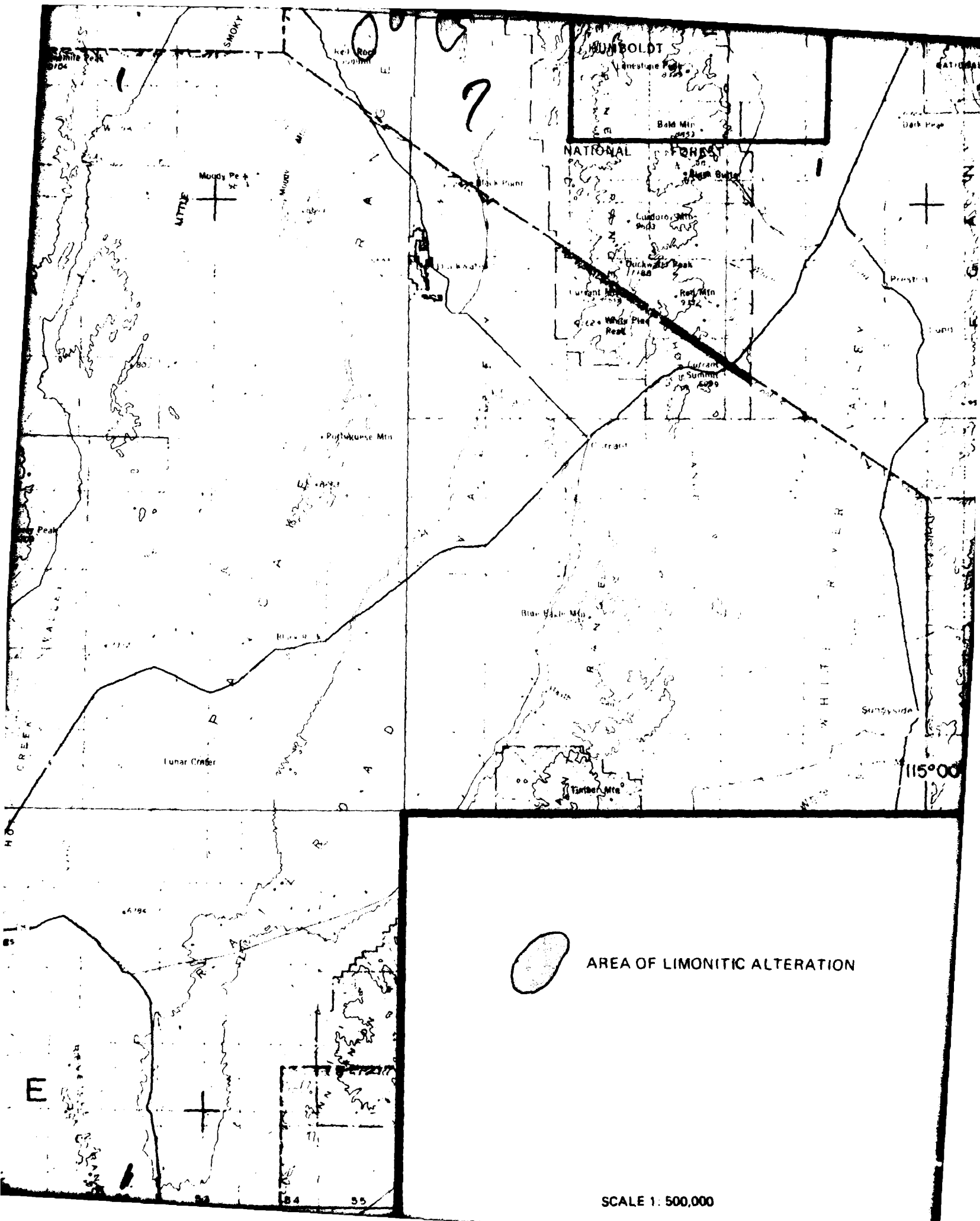


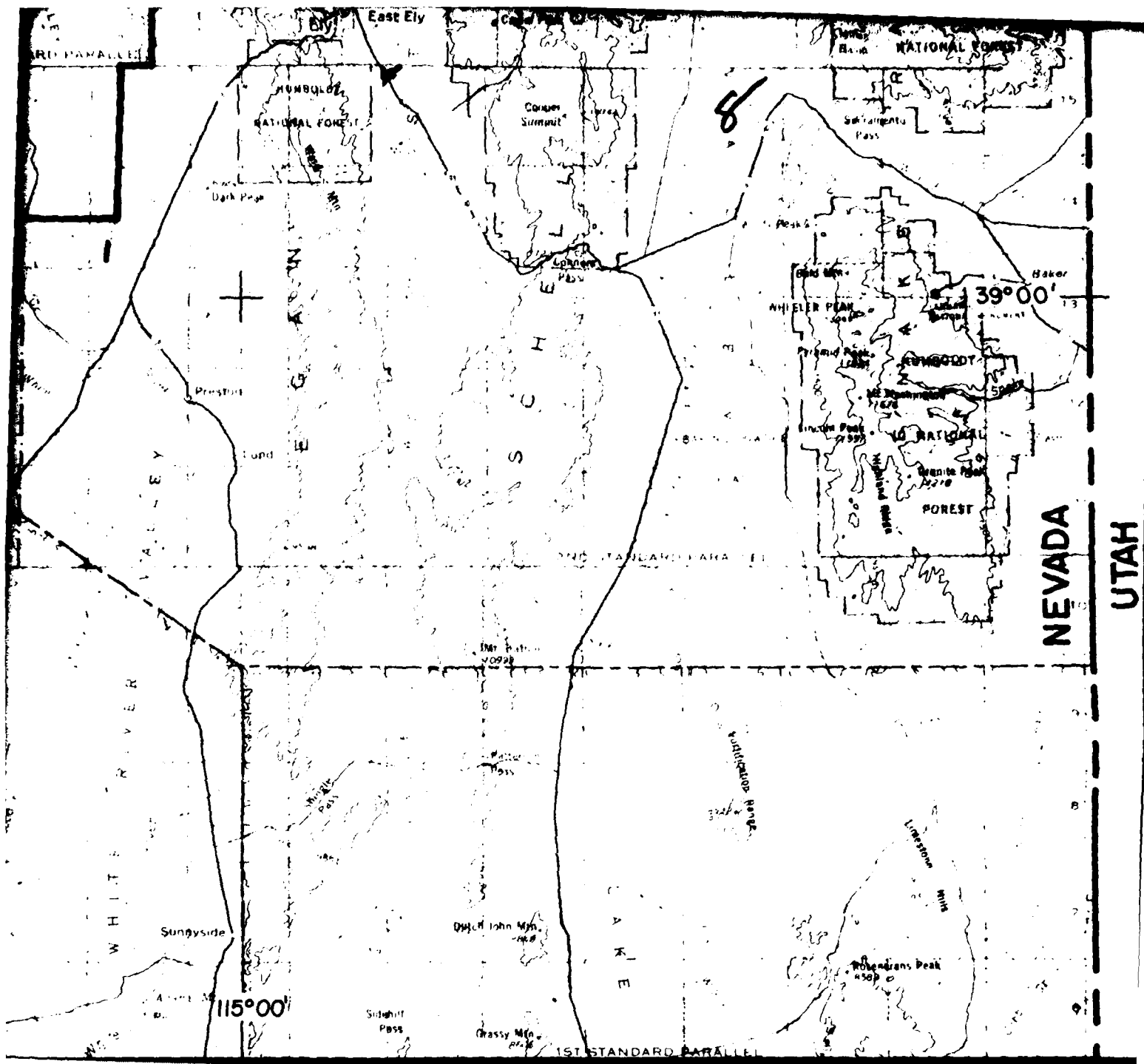


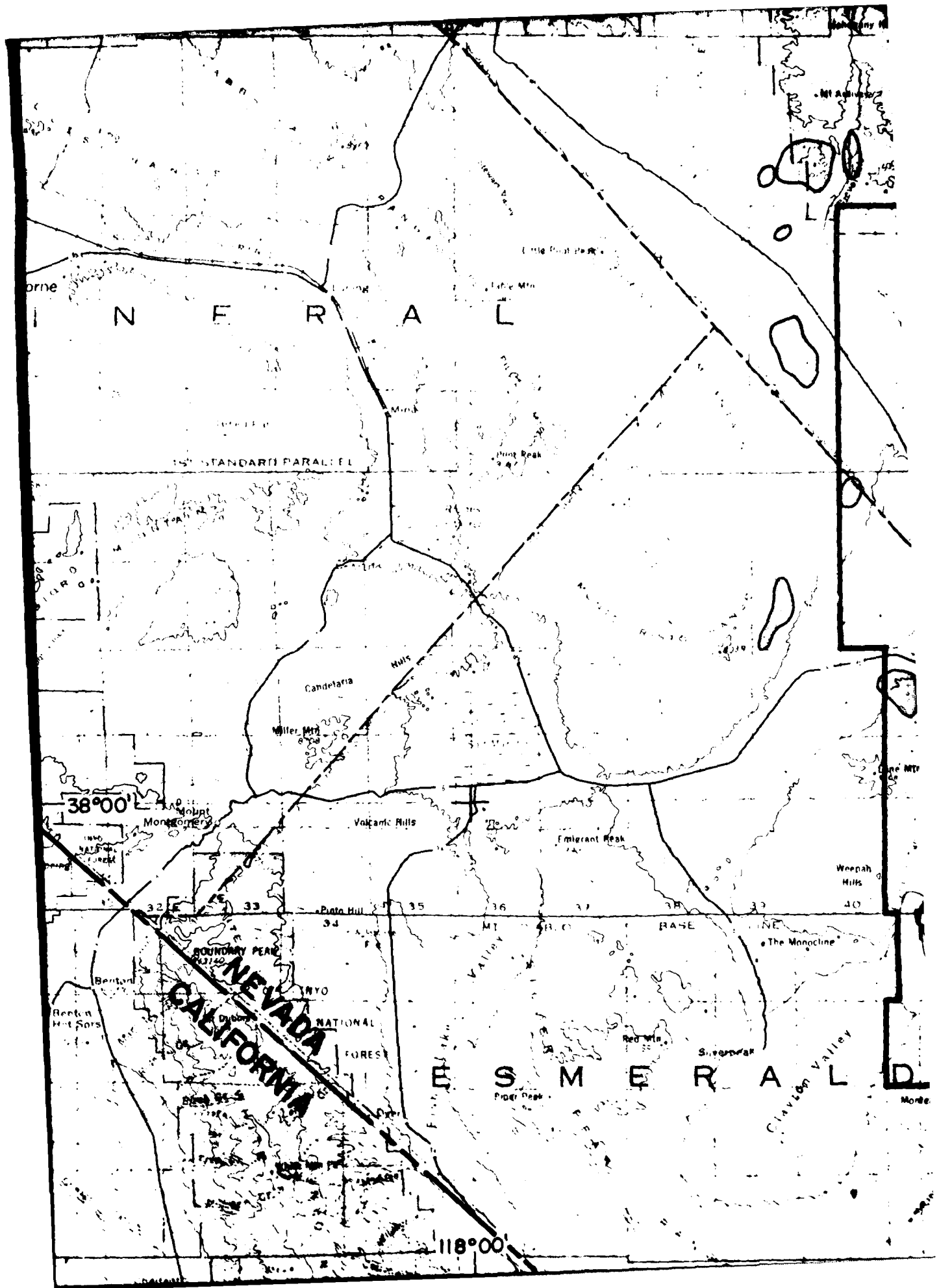


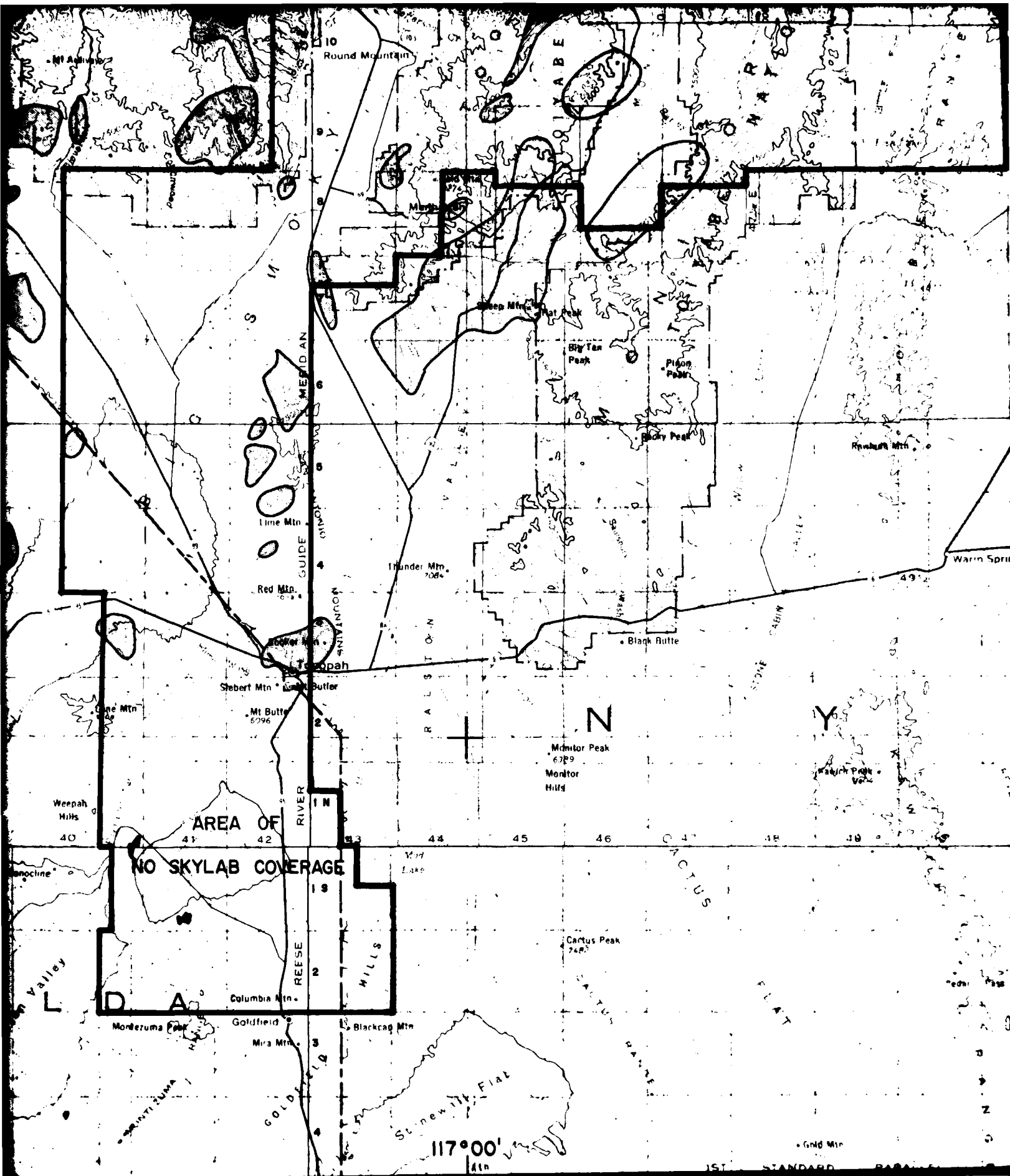


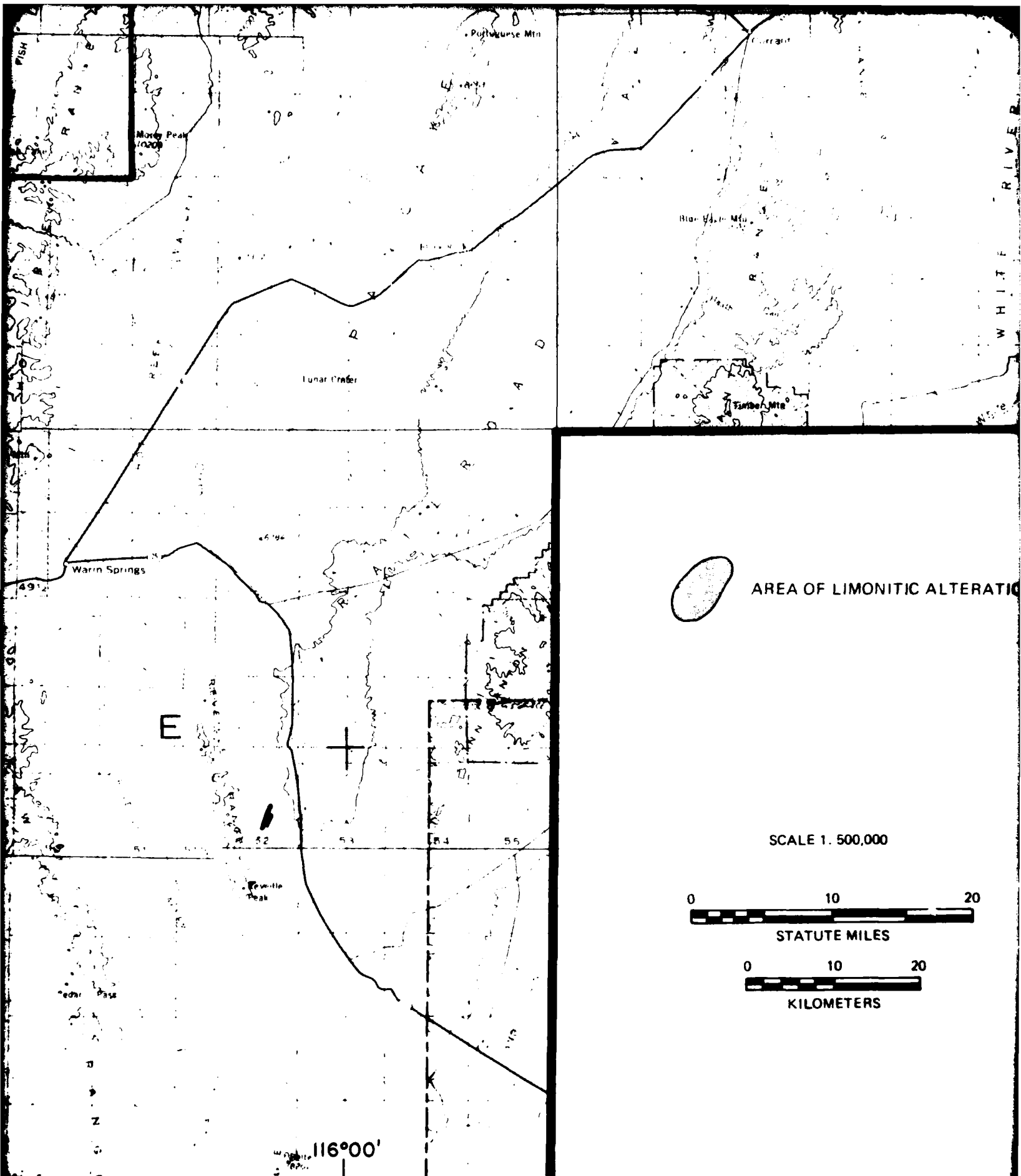












LIMONITIC ALTERATION

INTERPRETED
FROM SKYLAB
PHOTOGRAPHS:
190A-04-008 TO 011
190A-40-195 TO 197
190B-88-008 TO 011



MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY
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Ertec

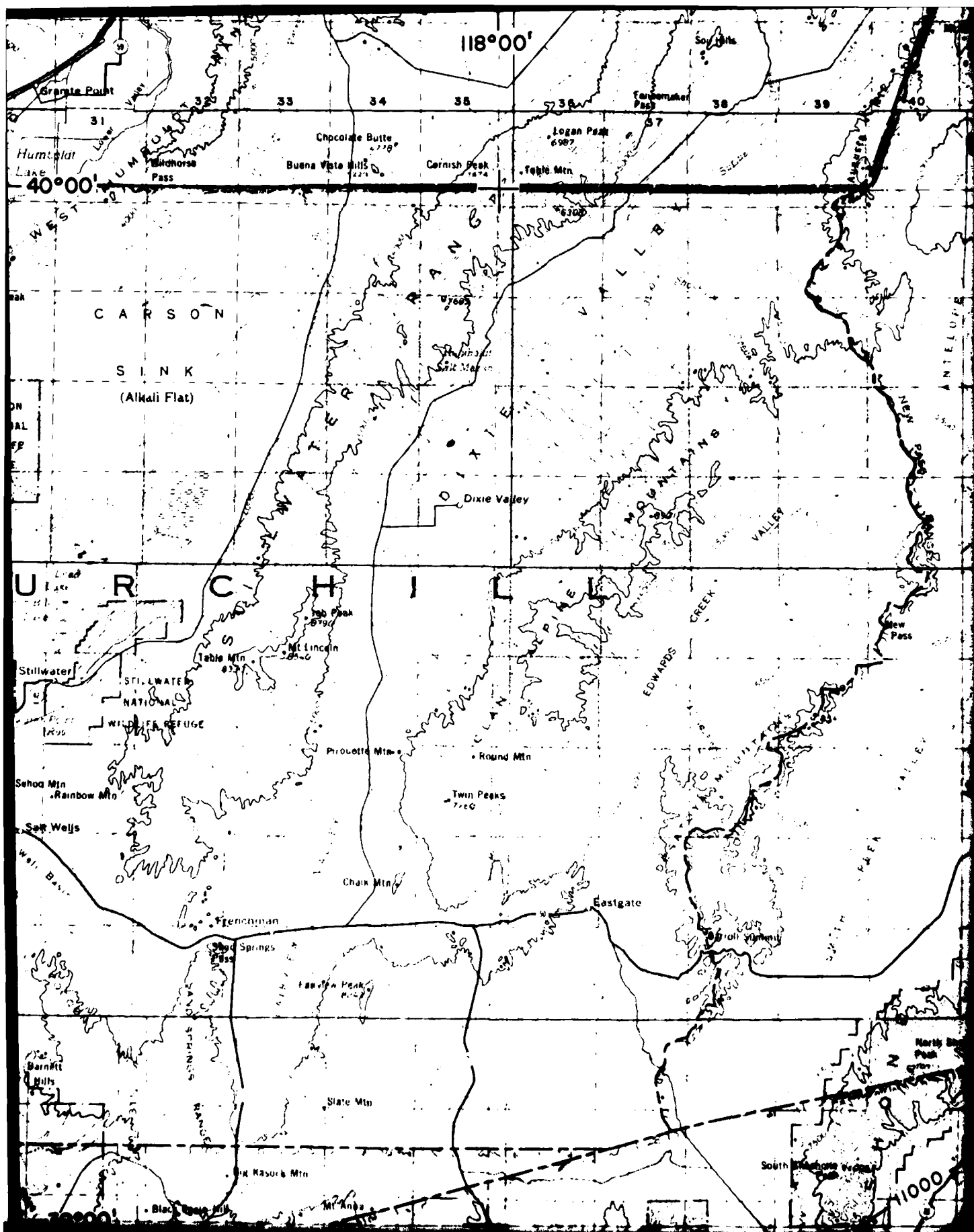
The Earth Technology Corporation

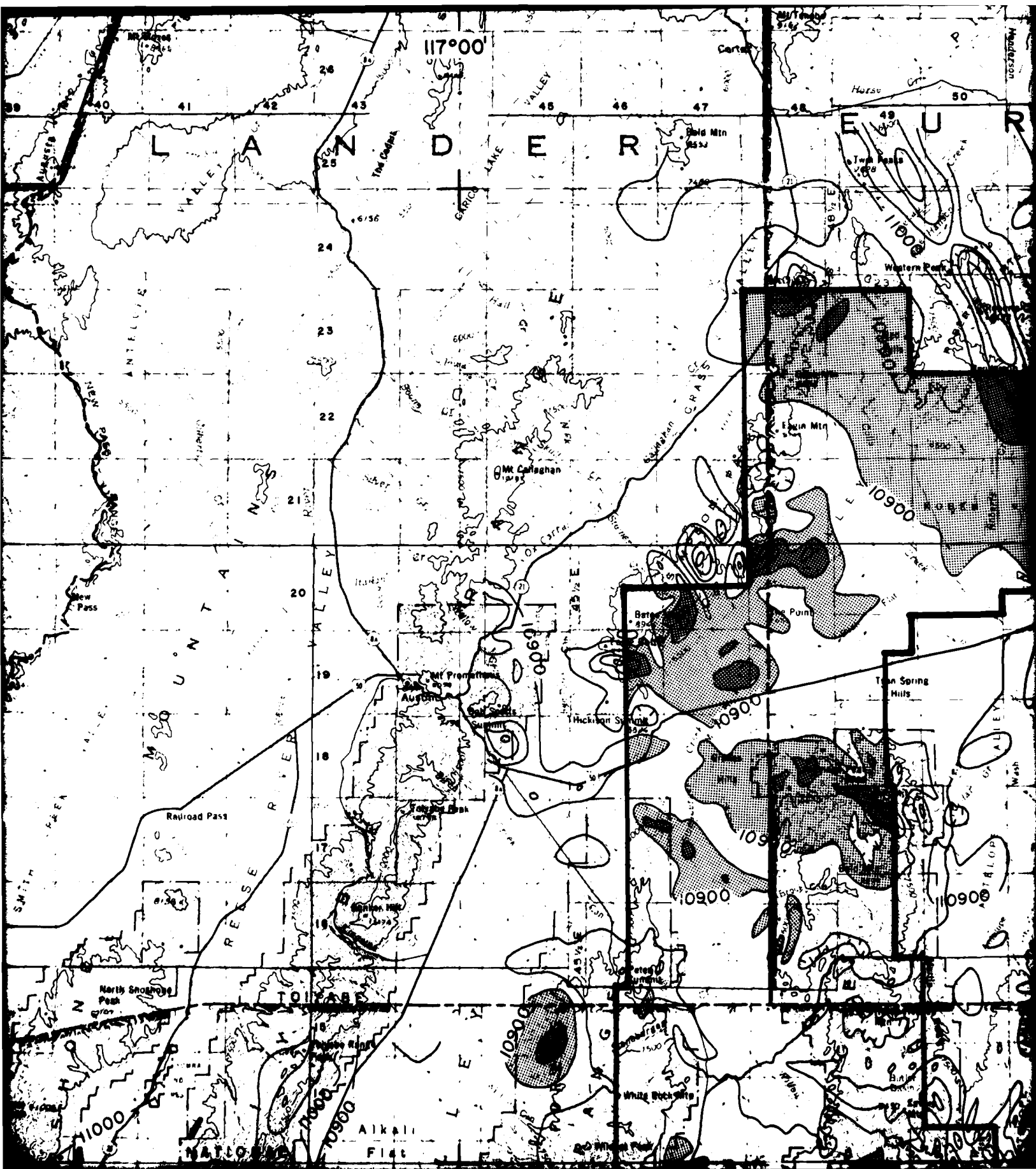
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

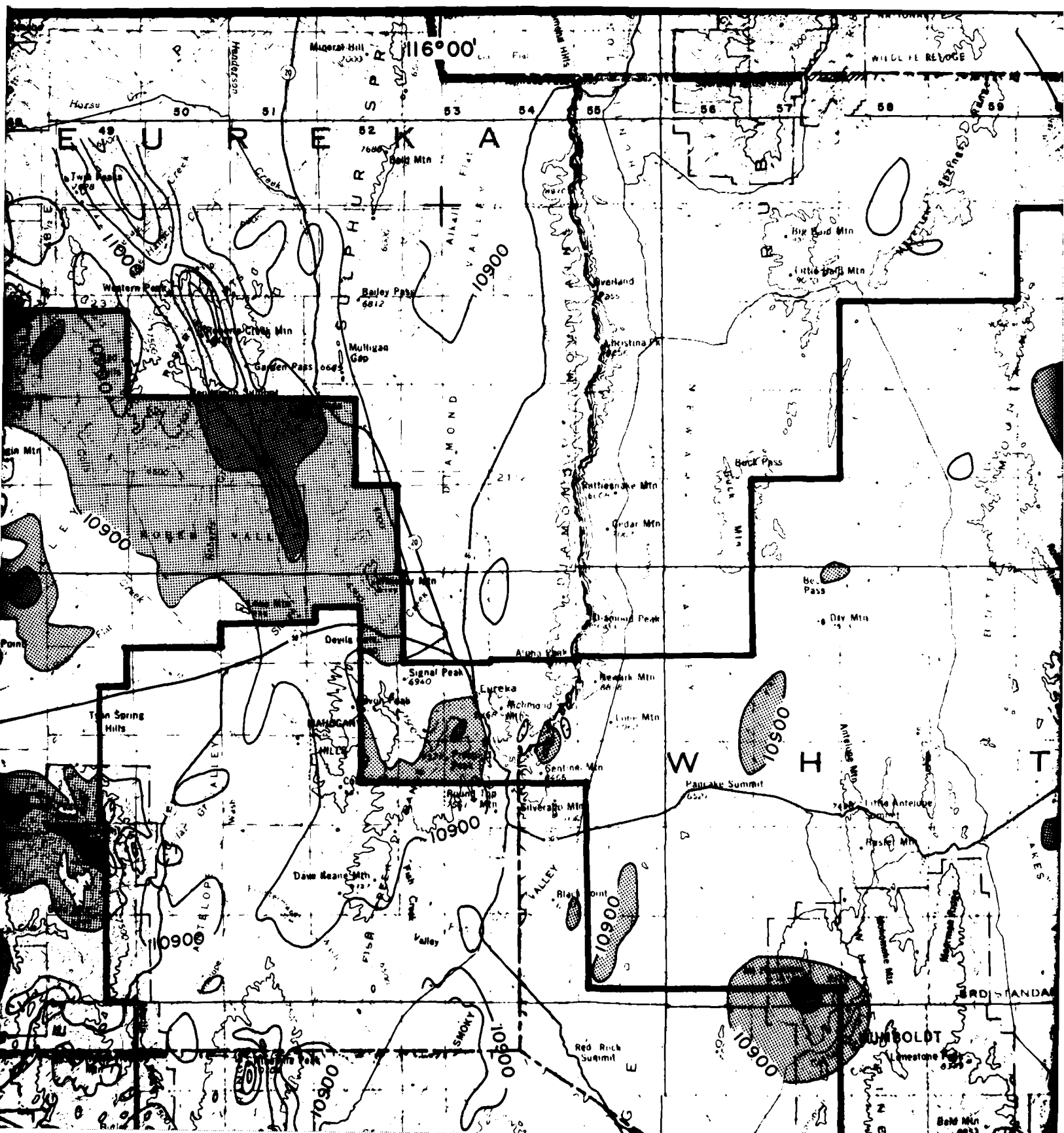
LIMONITIC ALTERATION MAP

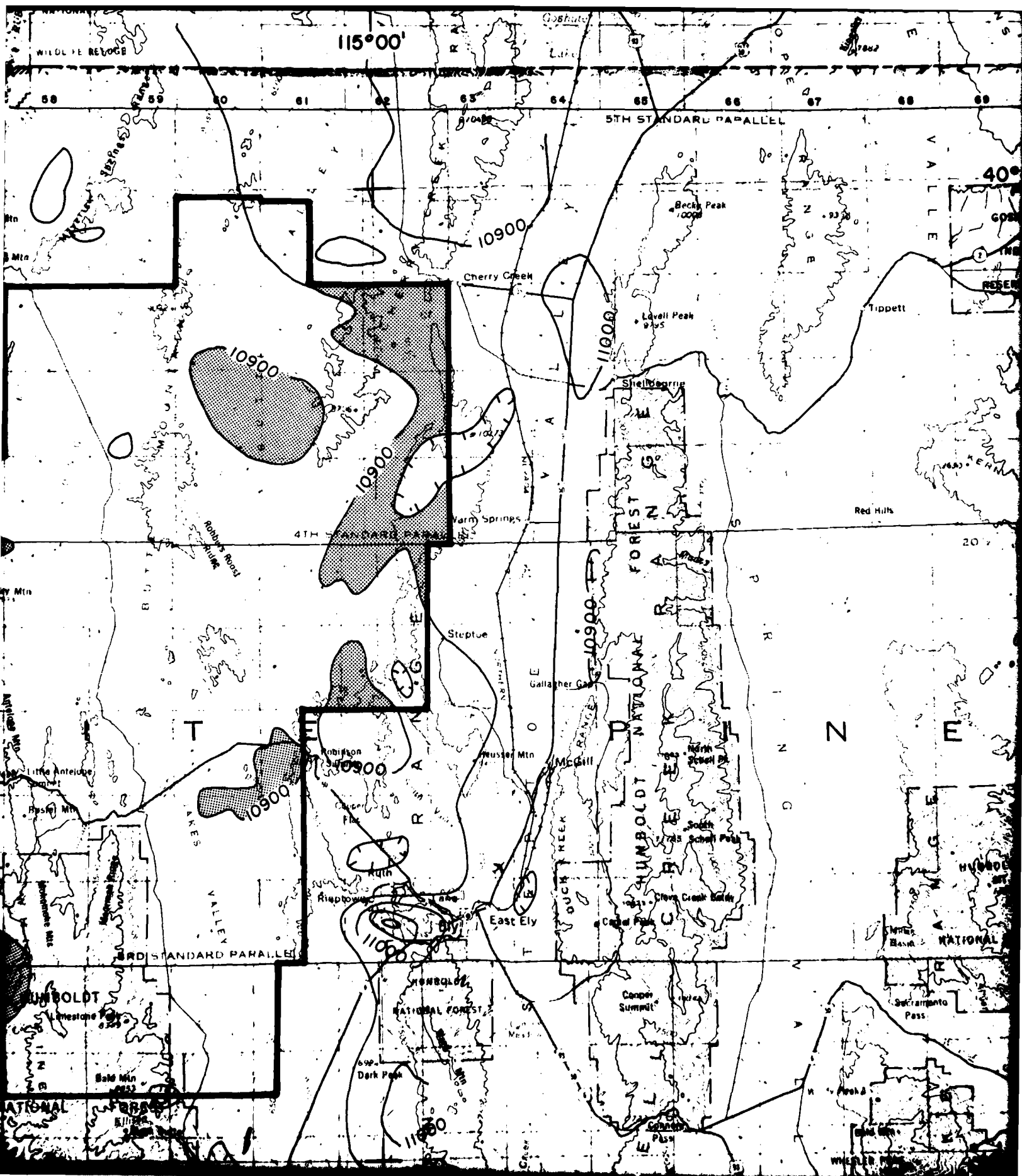
30 APR 81

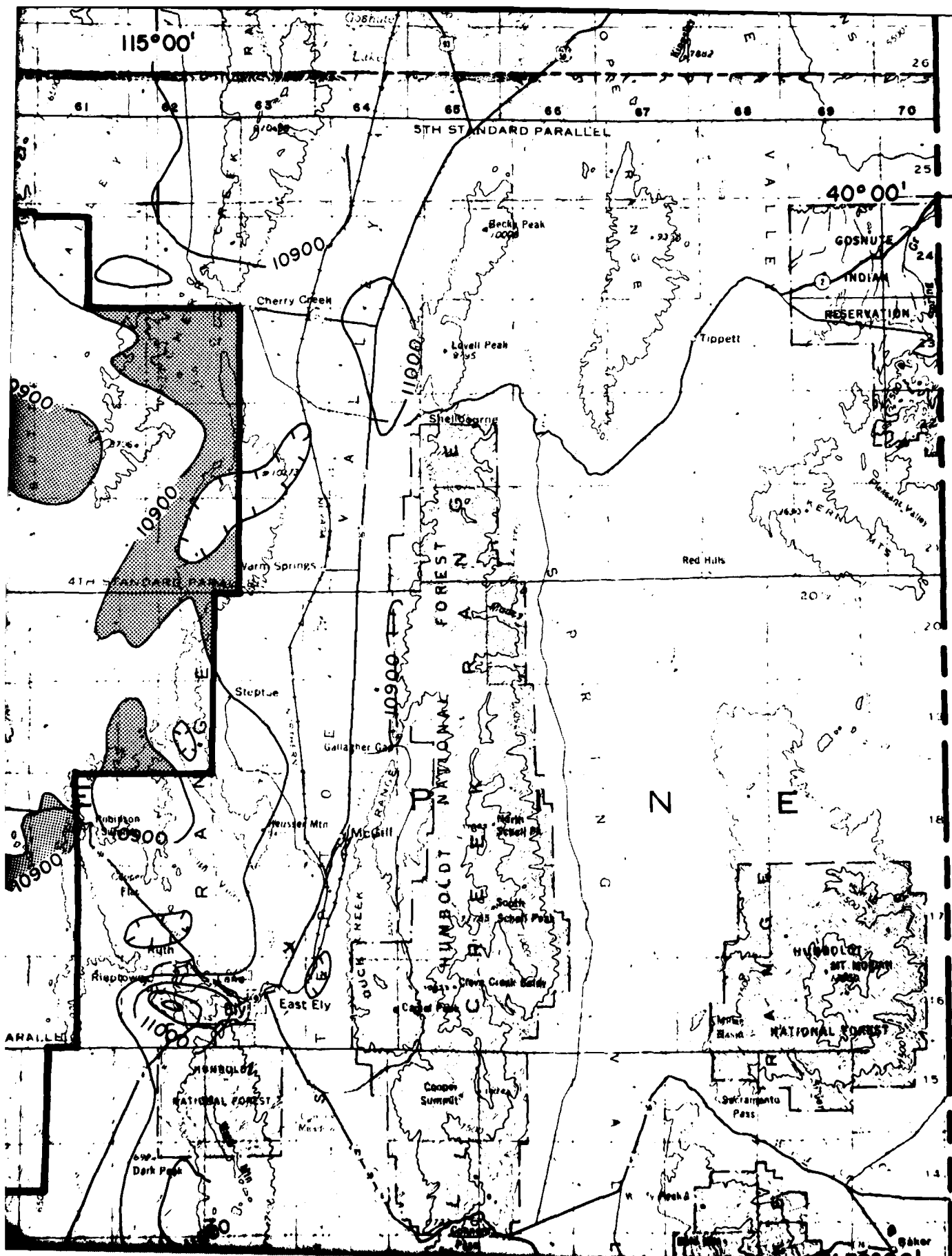
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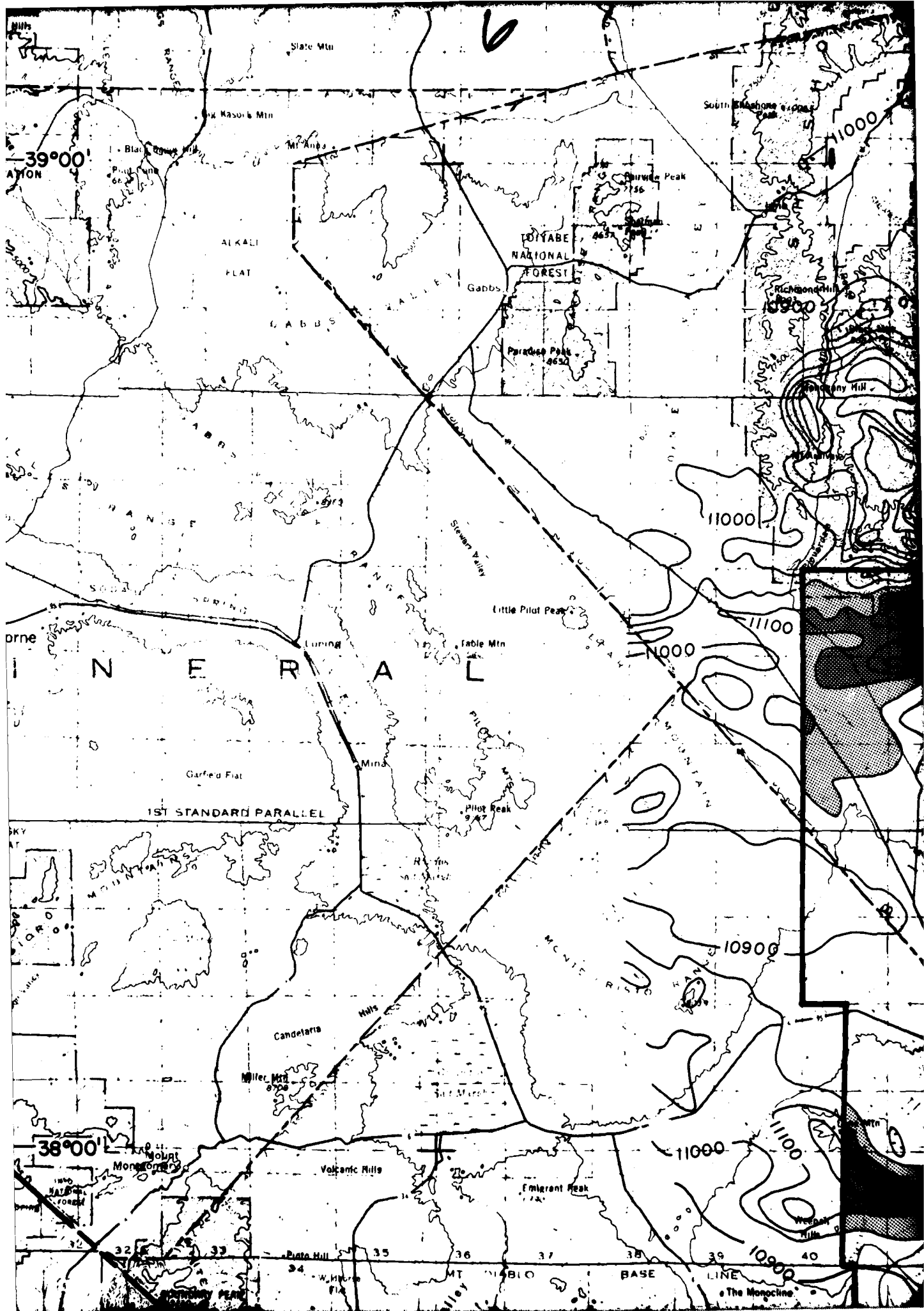


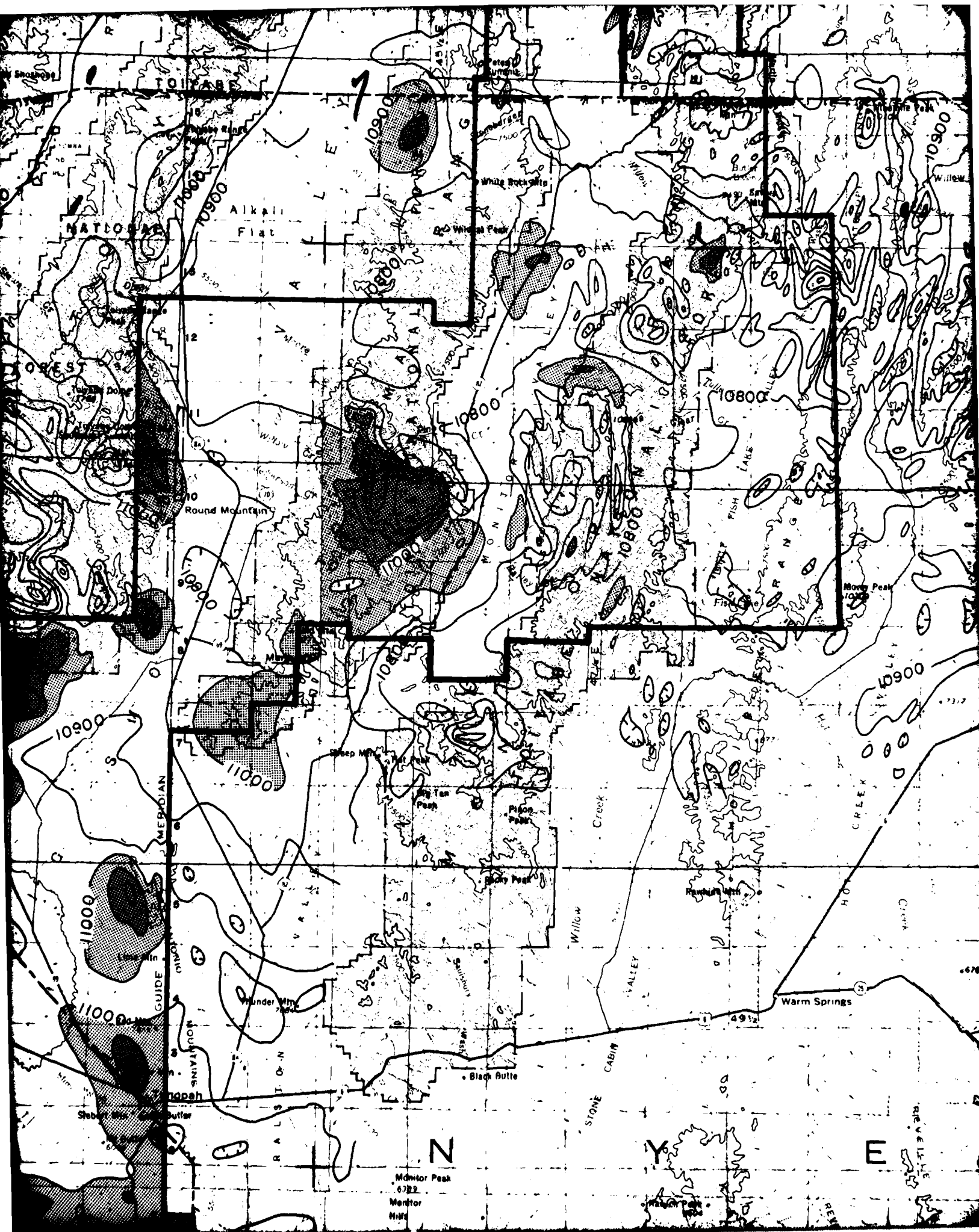


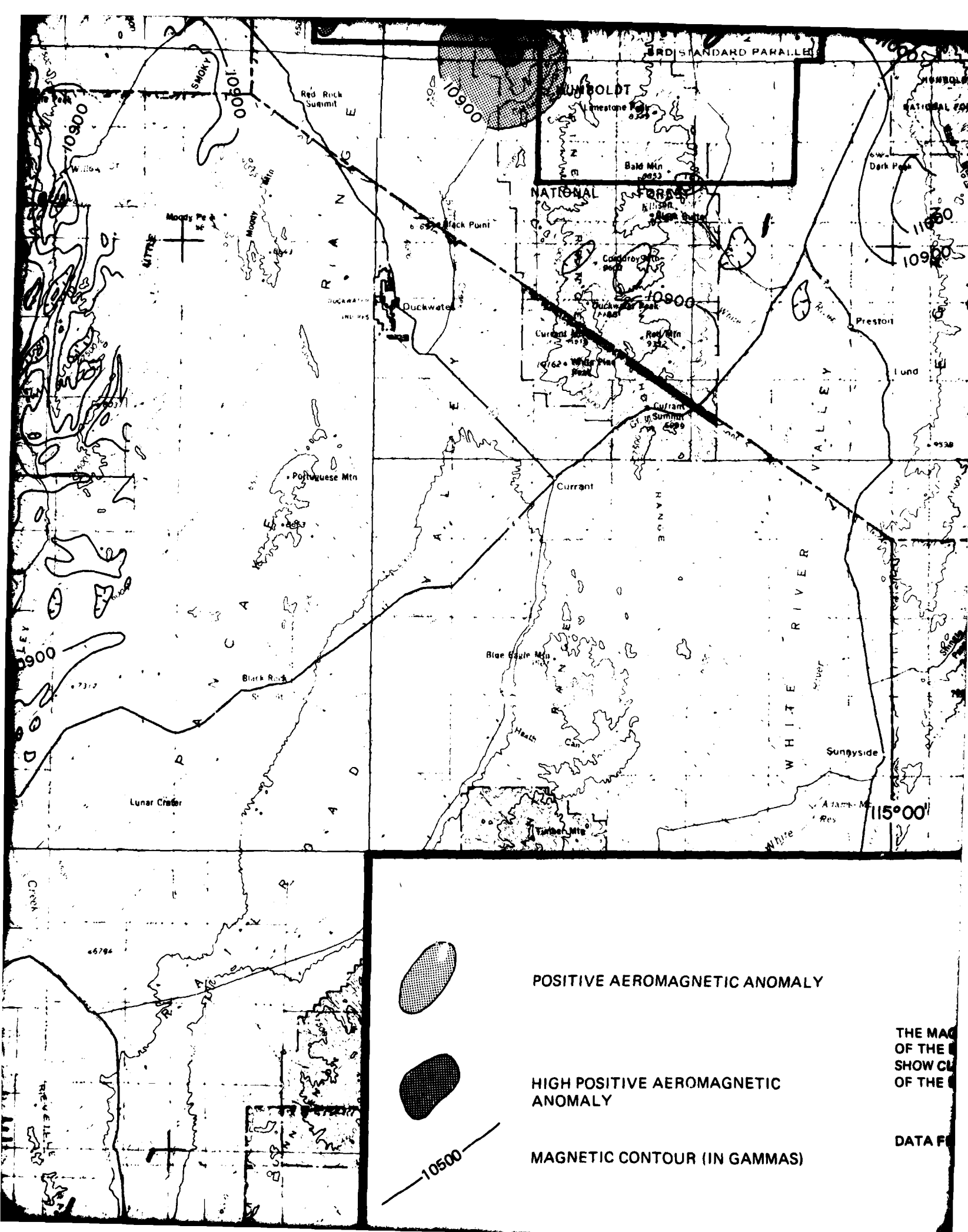




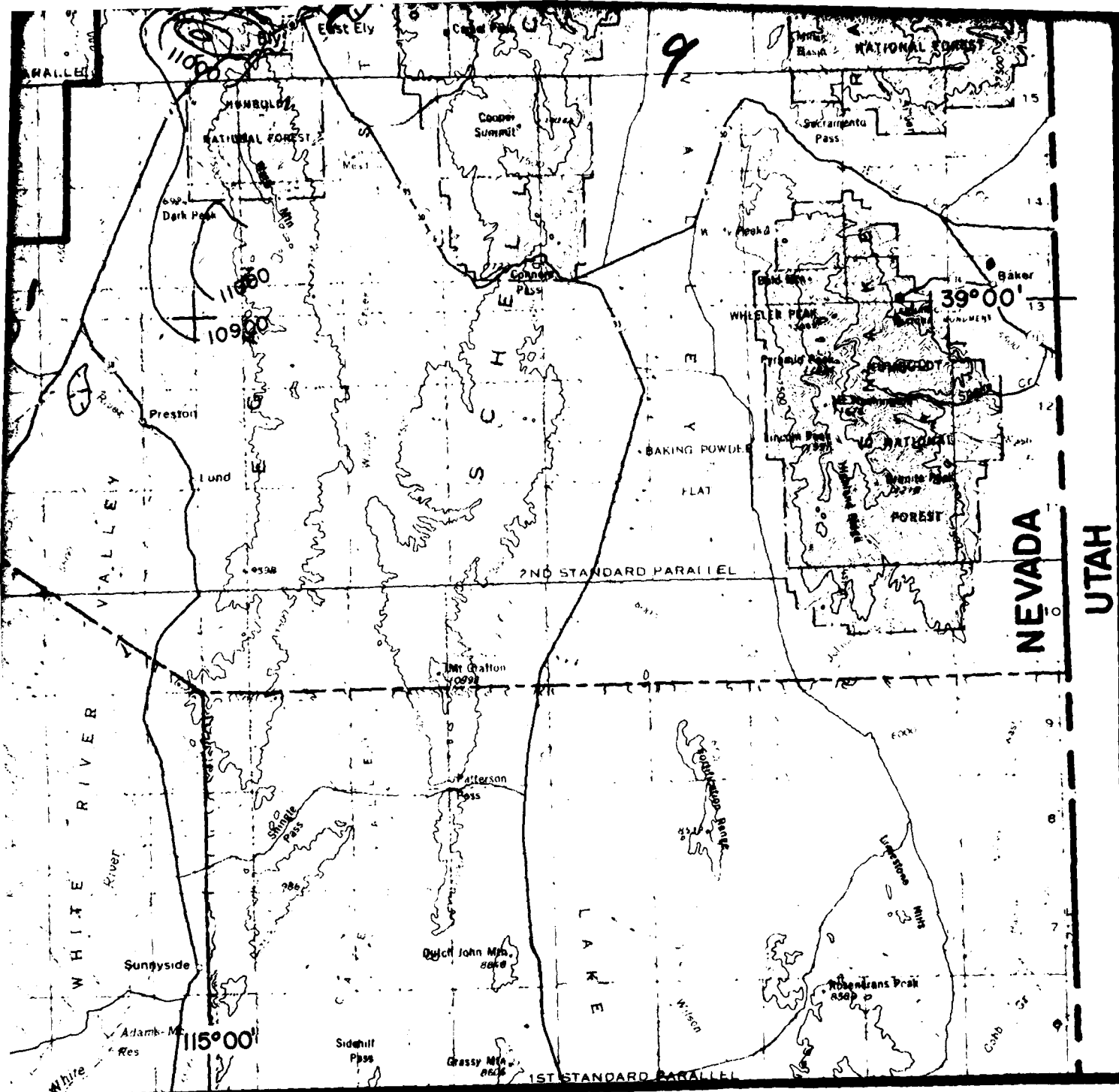


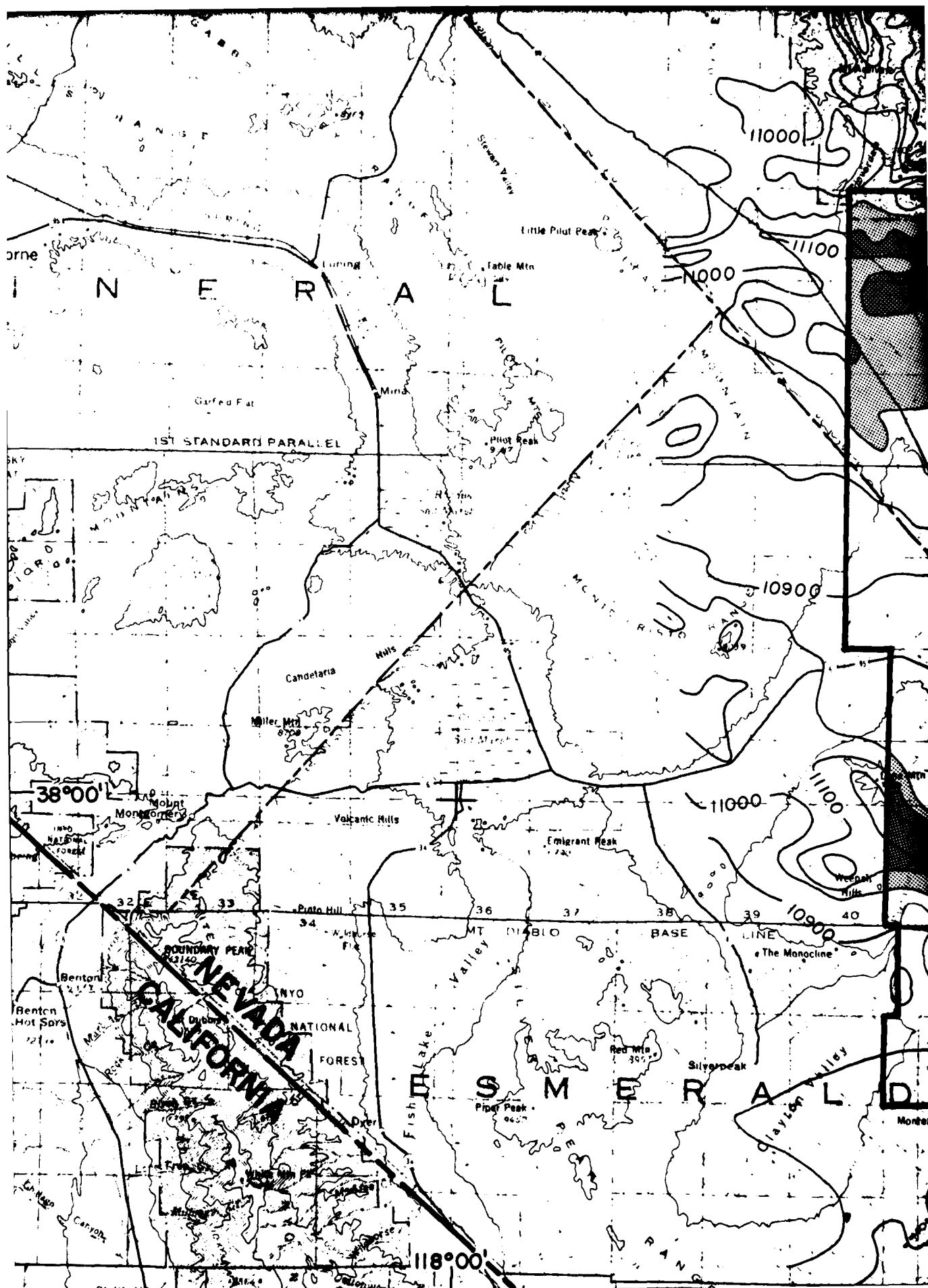


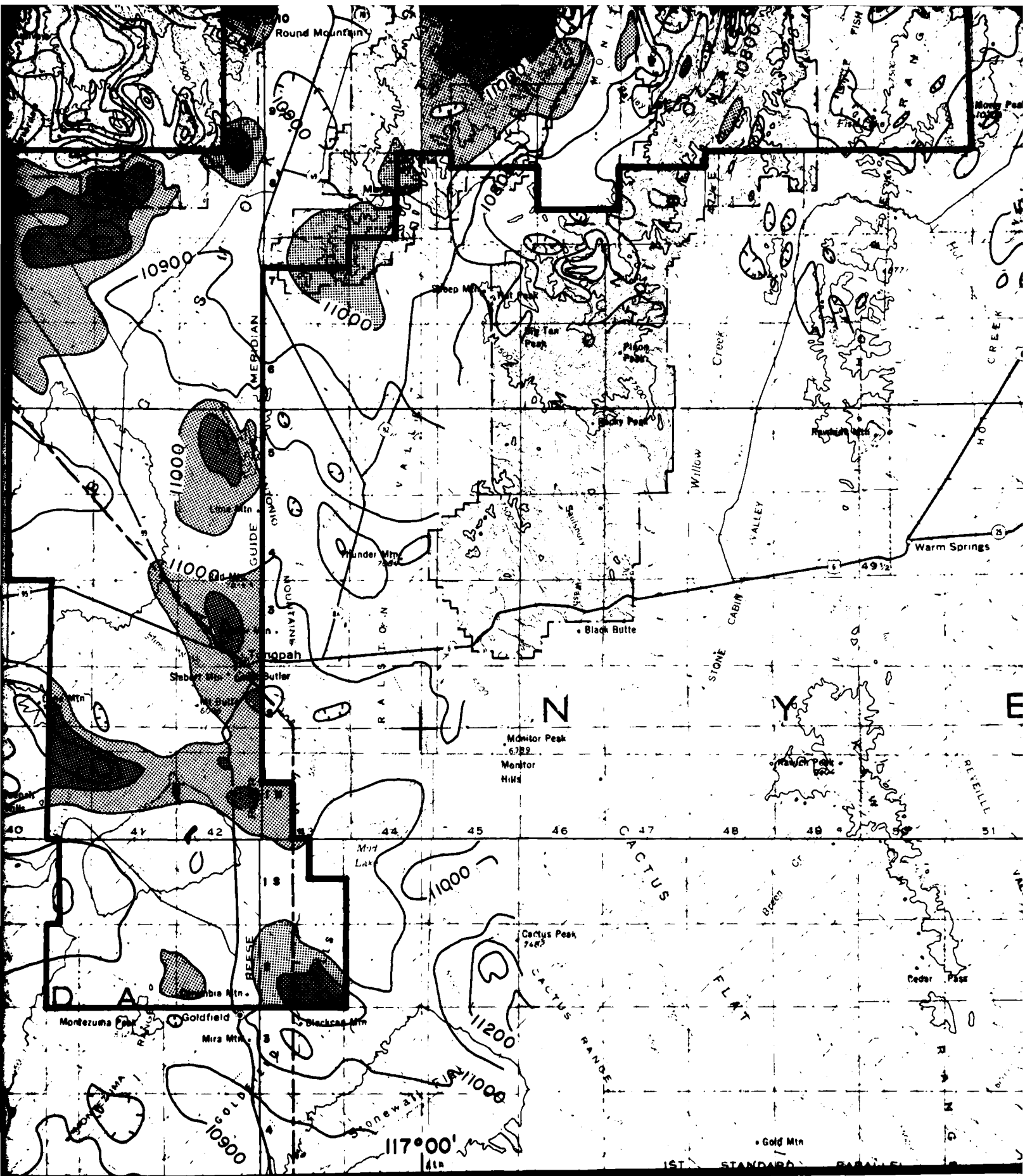


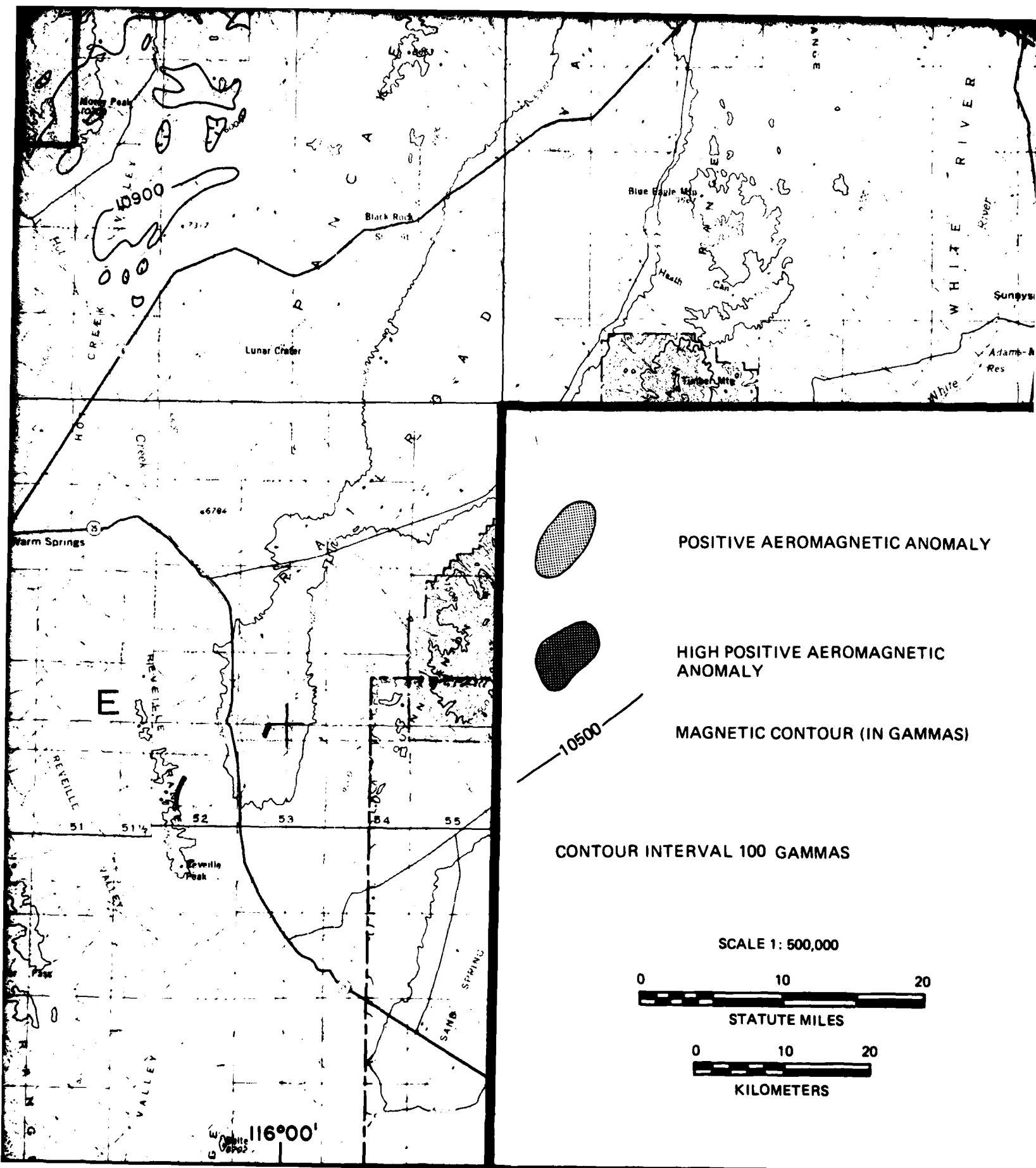


9









ANOMALY

METIC

AMMAS)

THE MAGNETIC CONTOURS SHOW TOTAL INTENSITY DUE TO THE MAGNETIC FIELD OF THE EARTH IN GAMMAS RELATIVE TO AN ARBITRARY DATUM. HACHURED CONTOURS SHOW CLOSED AREAS OF LOWER MAGNETIC INTENSITY. THE MAIN MAGNETIC FIELD OF THE EARTH, FROM FABIANO AND PEDDIE (1969) HAS BEEN REMOVED.

DATA FROM: ZIETZ AND OTHERS 1976
ZIETZ AND OTHERS 1978



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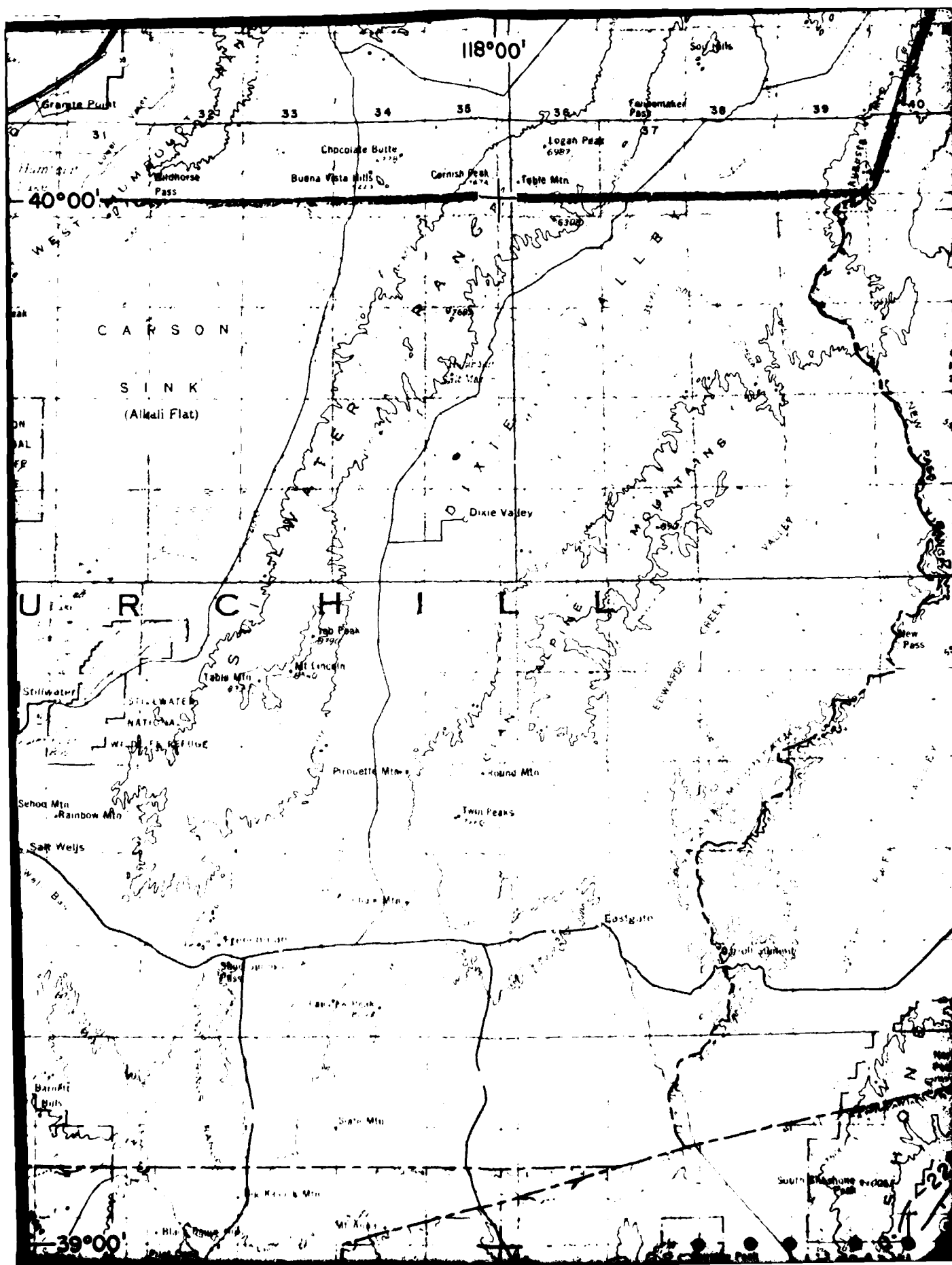
The Earth Technology Corporation

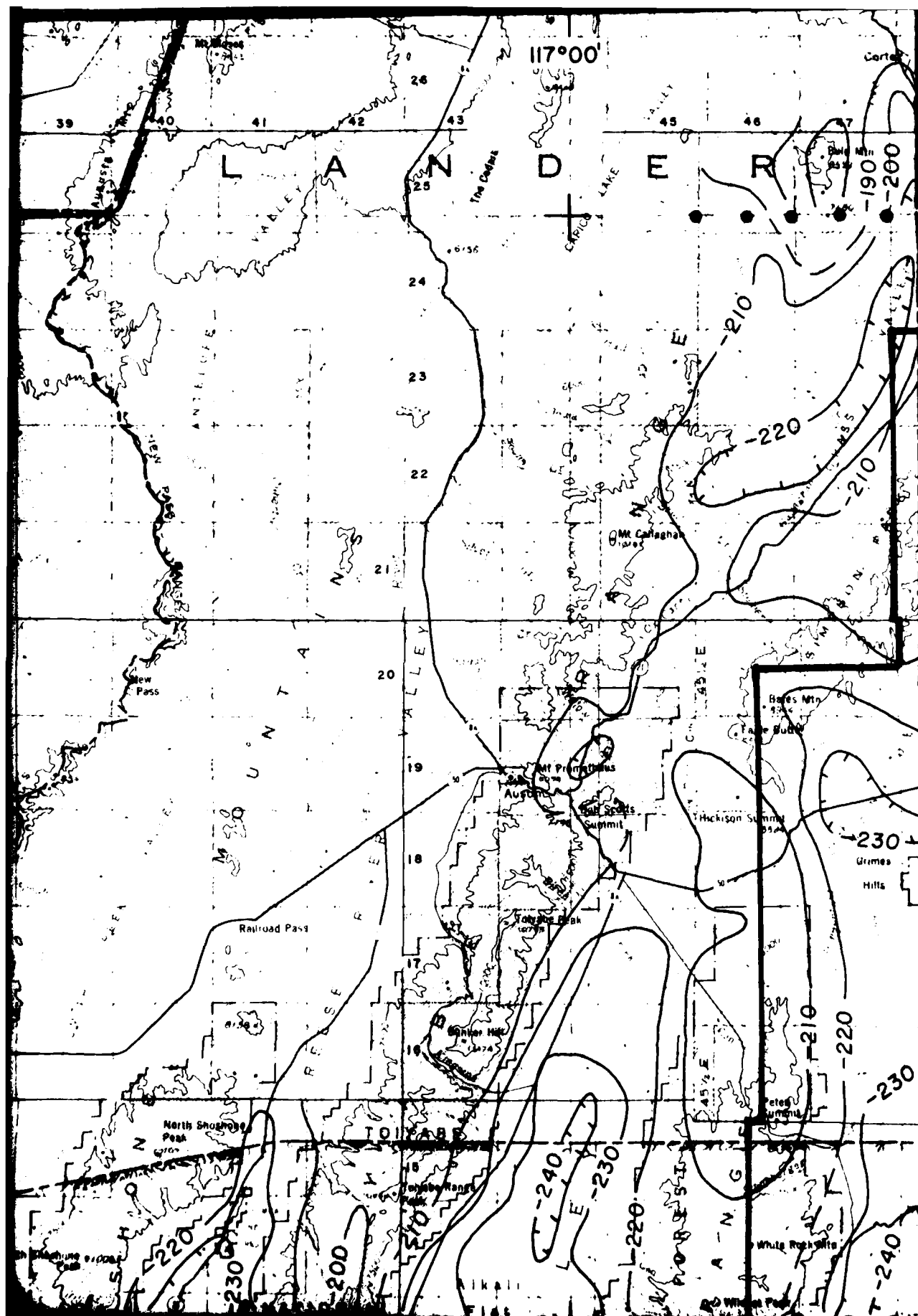
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

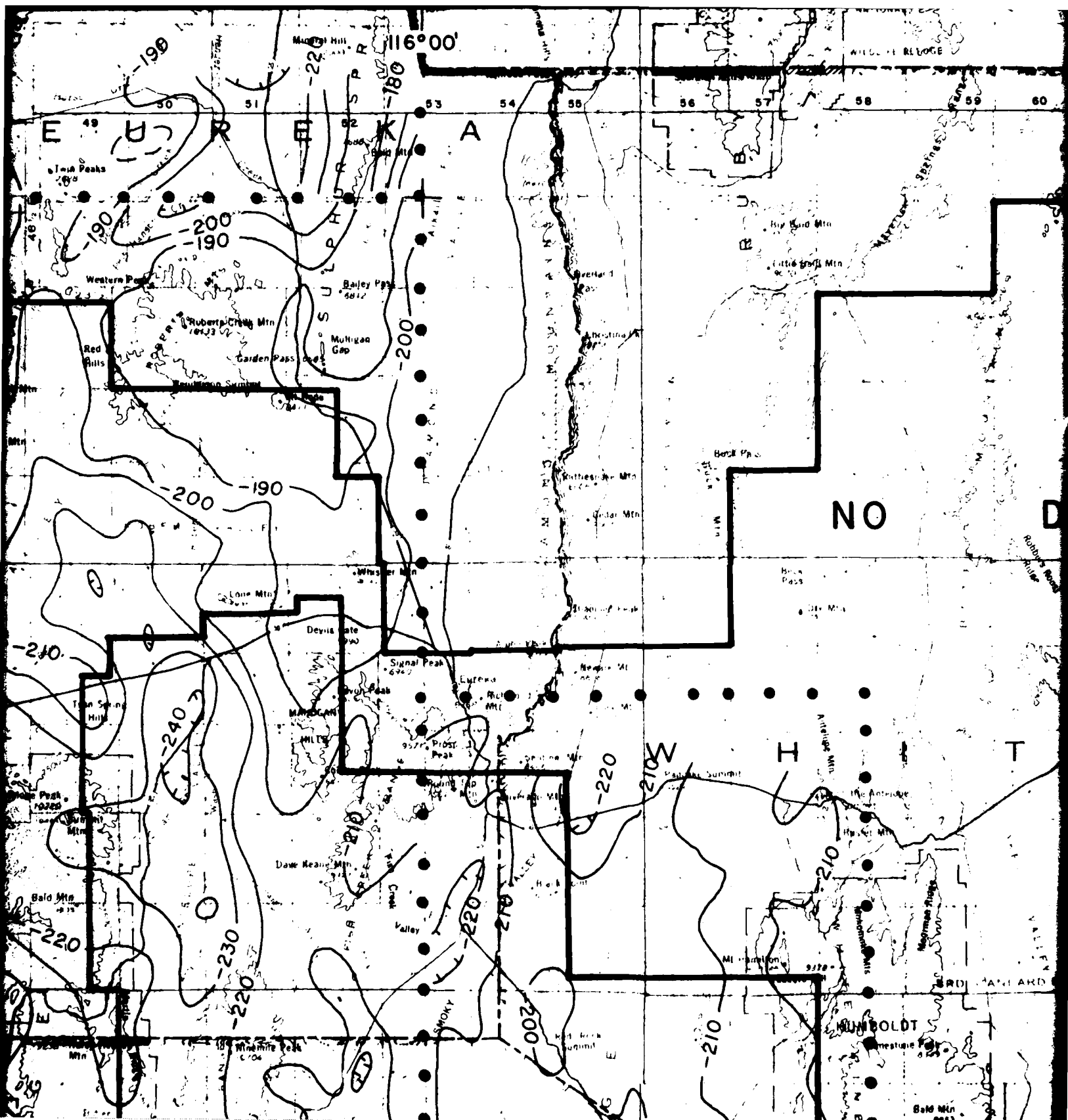
REGIONAL AEROMAGNETIC MAP

30 APR 81

DRAWING 9







115°00'

5TH STANDARD PARALLEL

40°00'

DATA

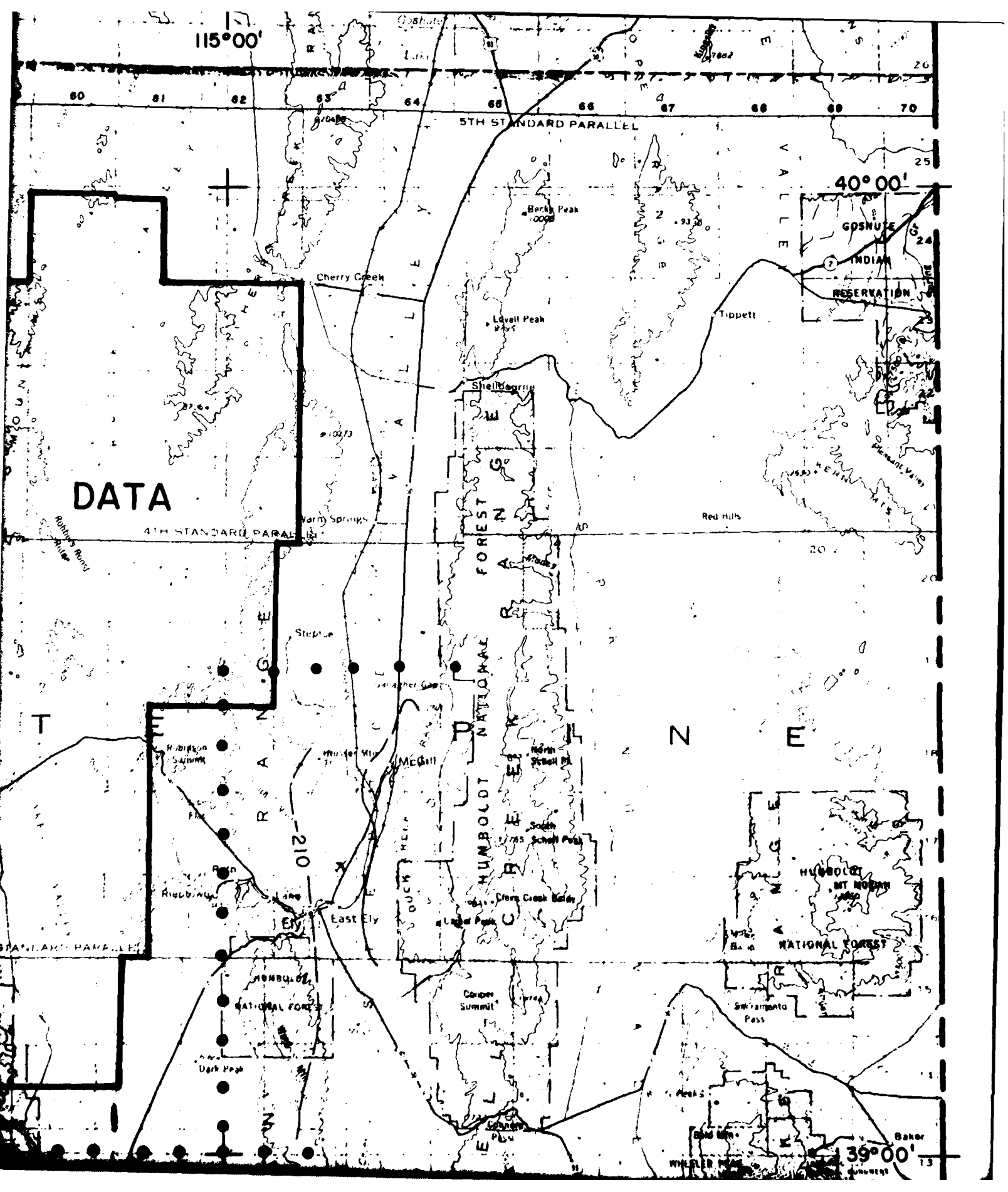
4TH STANDARD PARALLEL

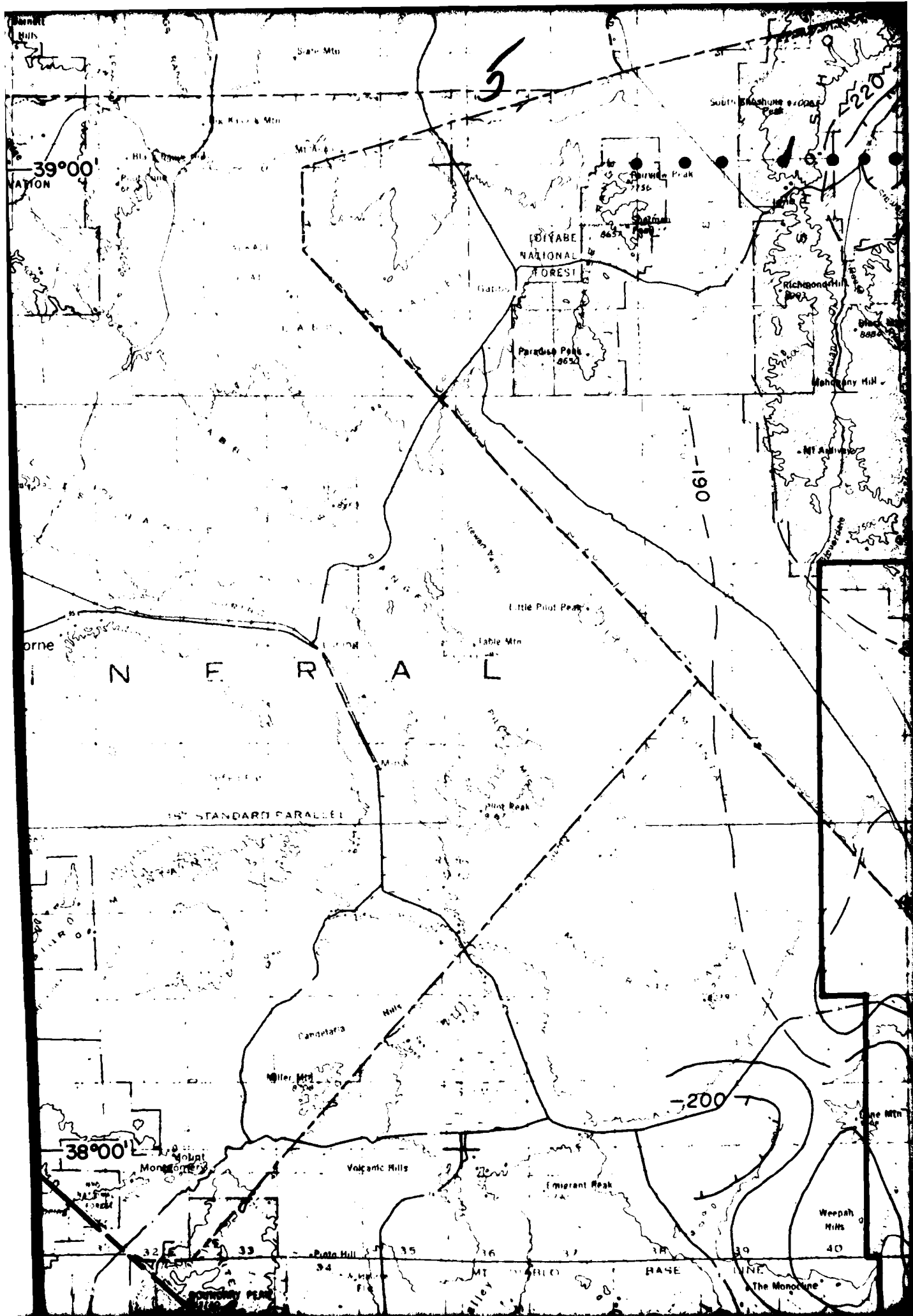
HUMBOLDT NATIONAL FOREST

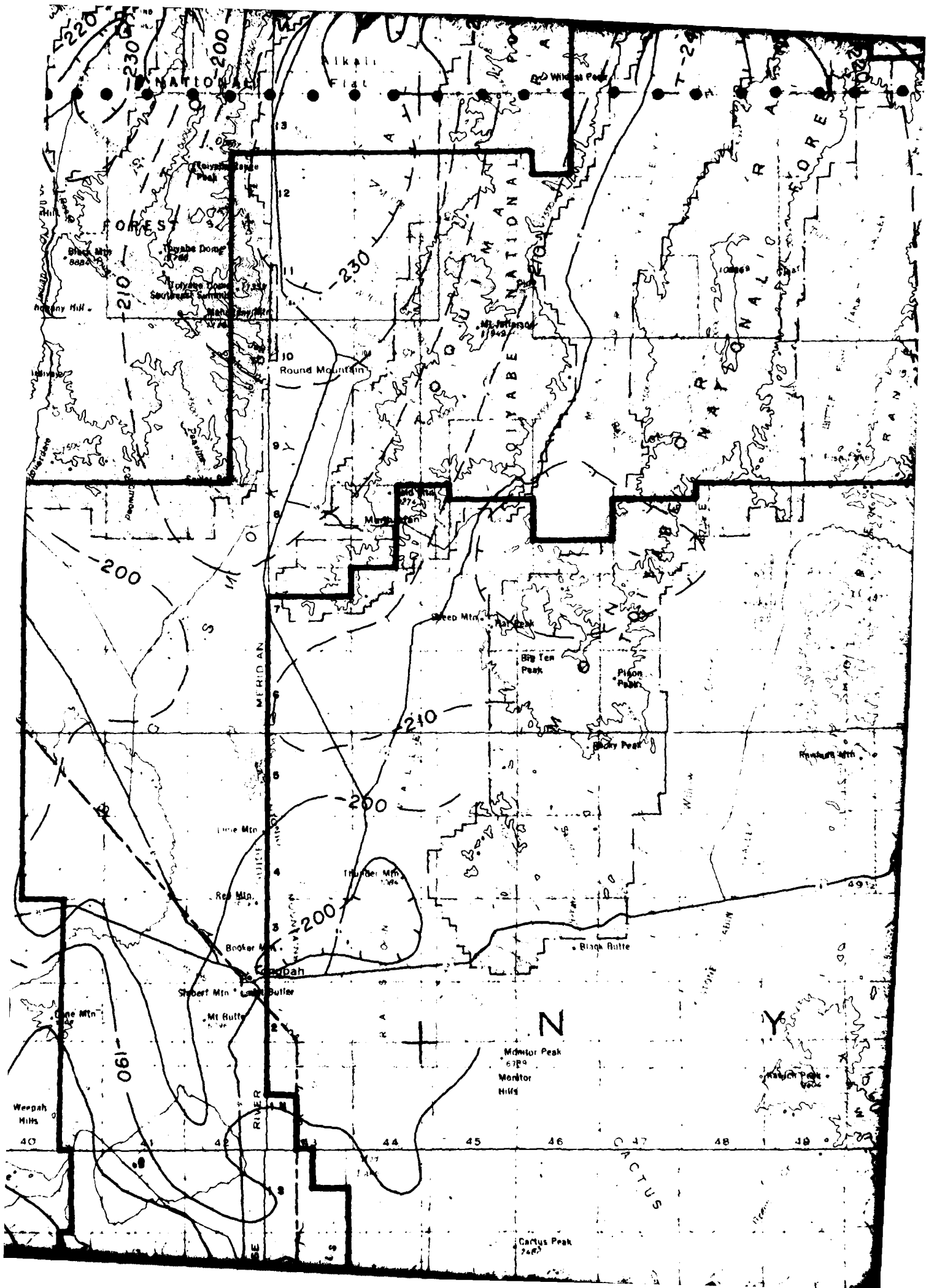
HUMBOLDT NATIONAL FOREST

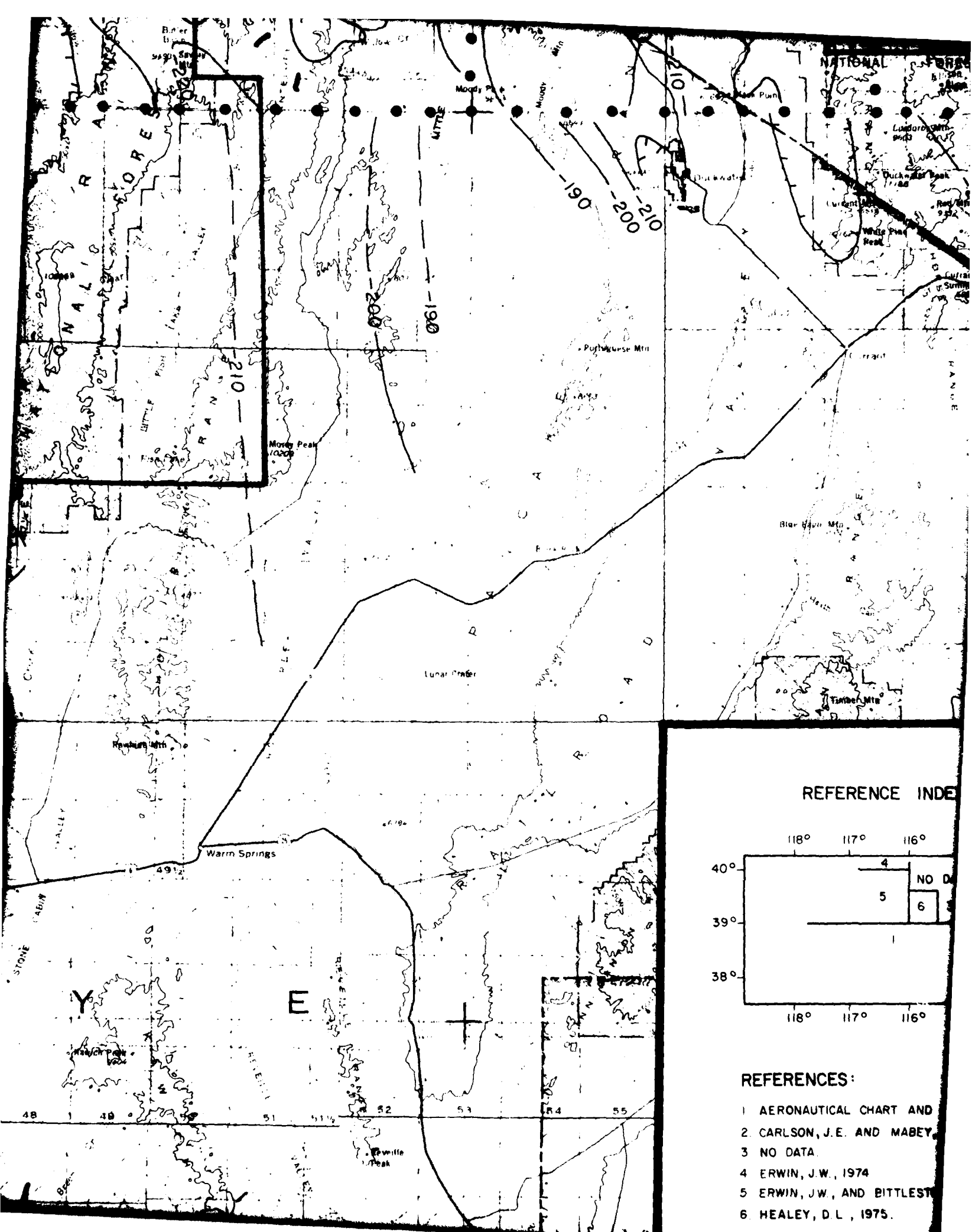
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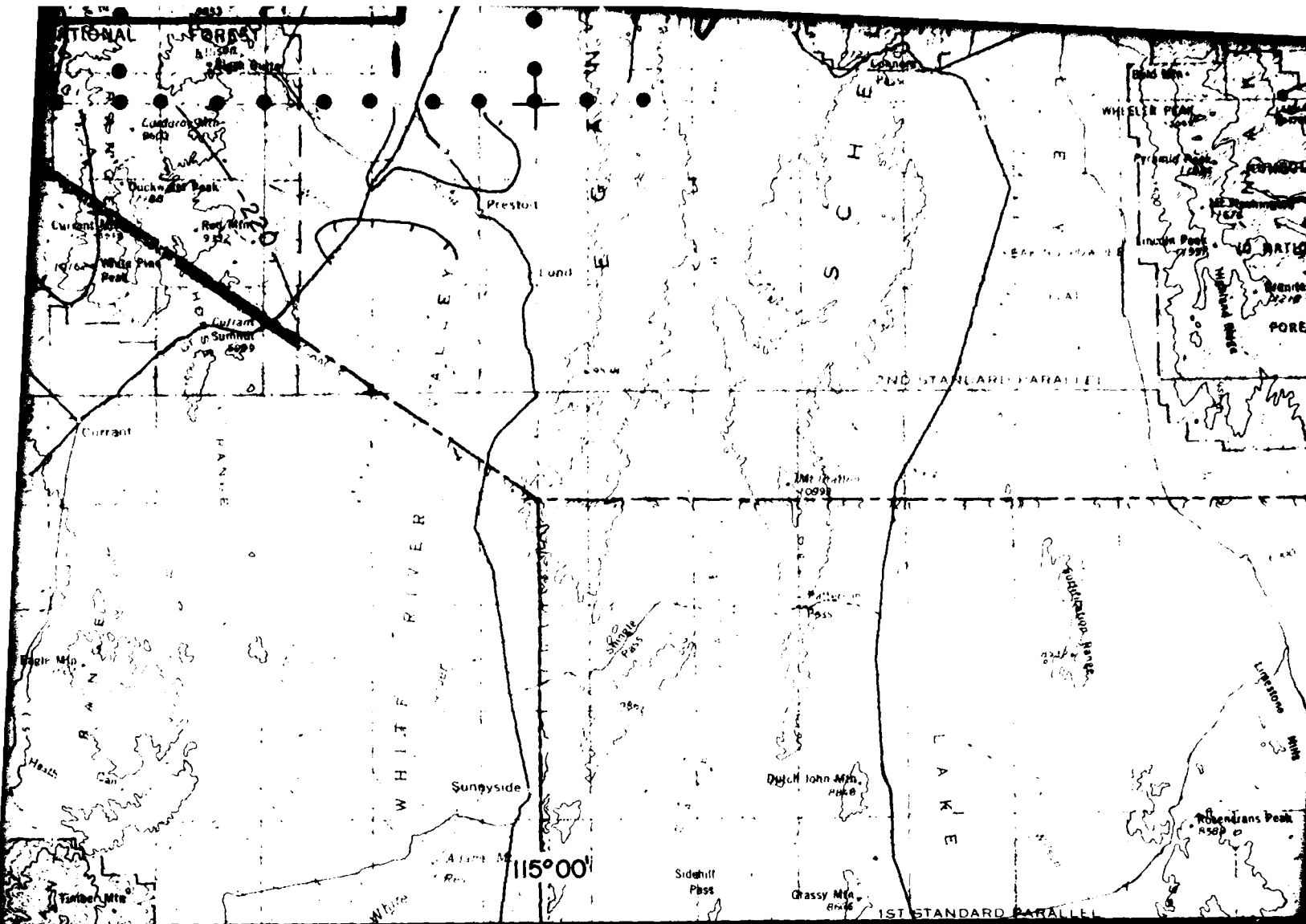
39°00'



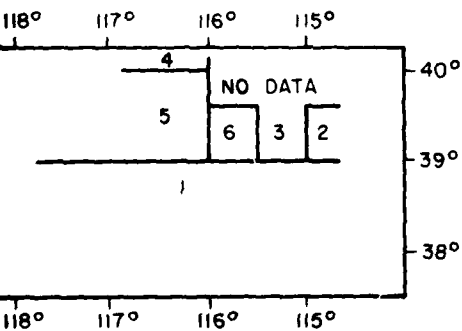








REFERENCE INDEX



GRAVITY CONTOURS (IN MILLIGALS)

CONTOUR INTERVAL 100 MILLIGALS

HACHURED CONTOURS INDICATE AREAS OF LOW GRAVITY CLOSURE
DASHED CONTOURS INDICATE DATA ARE INCOMPLETE

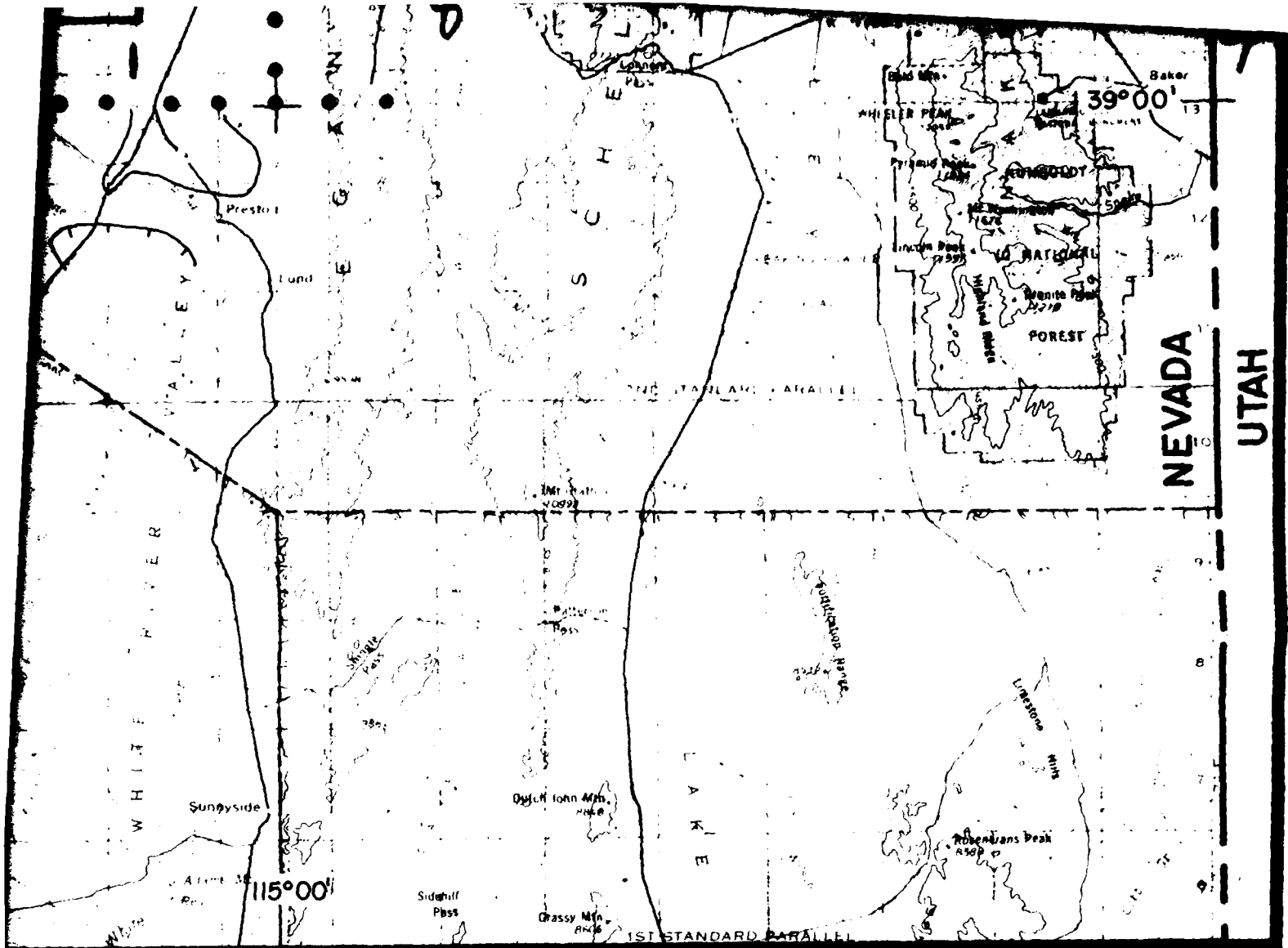
REFERENCES:

NAUTICAL CHART AND INFORMATION CENTER, USAF, 1968
 OLSON, J.E. AND MABEY, D.R., 1963
 DATA
 WIN, J.W., 1974
 WIN, J.W., AND BITTLESTON, E.W., 1977
 MABEY, D.L., 1975.



MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY
 STUDY AREA BOUNDARY SEPT. 26, 1980

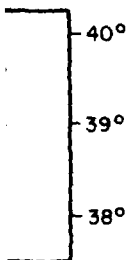
MX SITING



GRAVITY CONTOURS (IN MILLIGALS)

CONTOUR INTERVAL 100 MILLIGALS

HACHURED CONTOURS INDICATE AREAS OF LOW GRAVITY CLOSURE
DASHED CONTOURS INDICATE DATA ARE INCOMPLETE



ATION CENTER, USAF, 1968

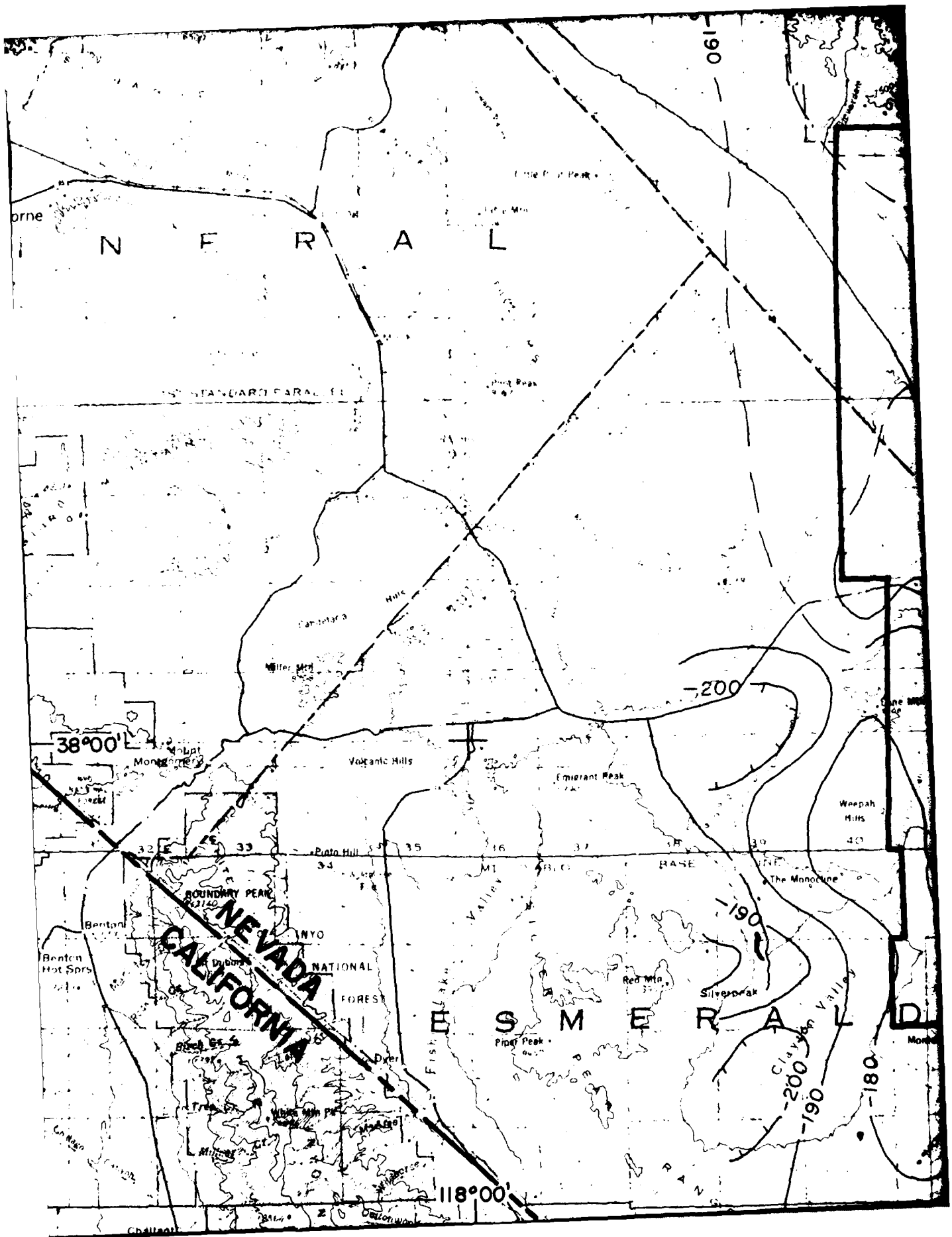
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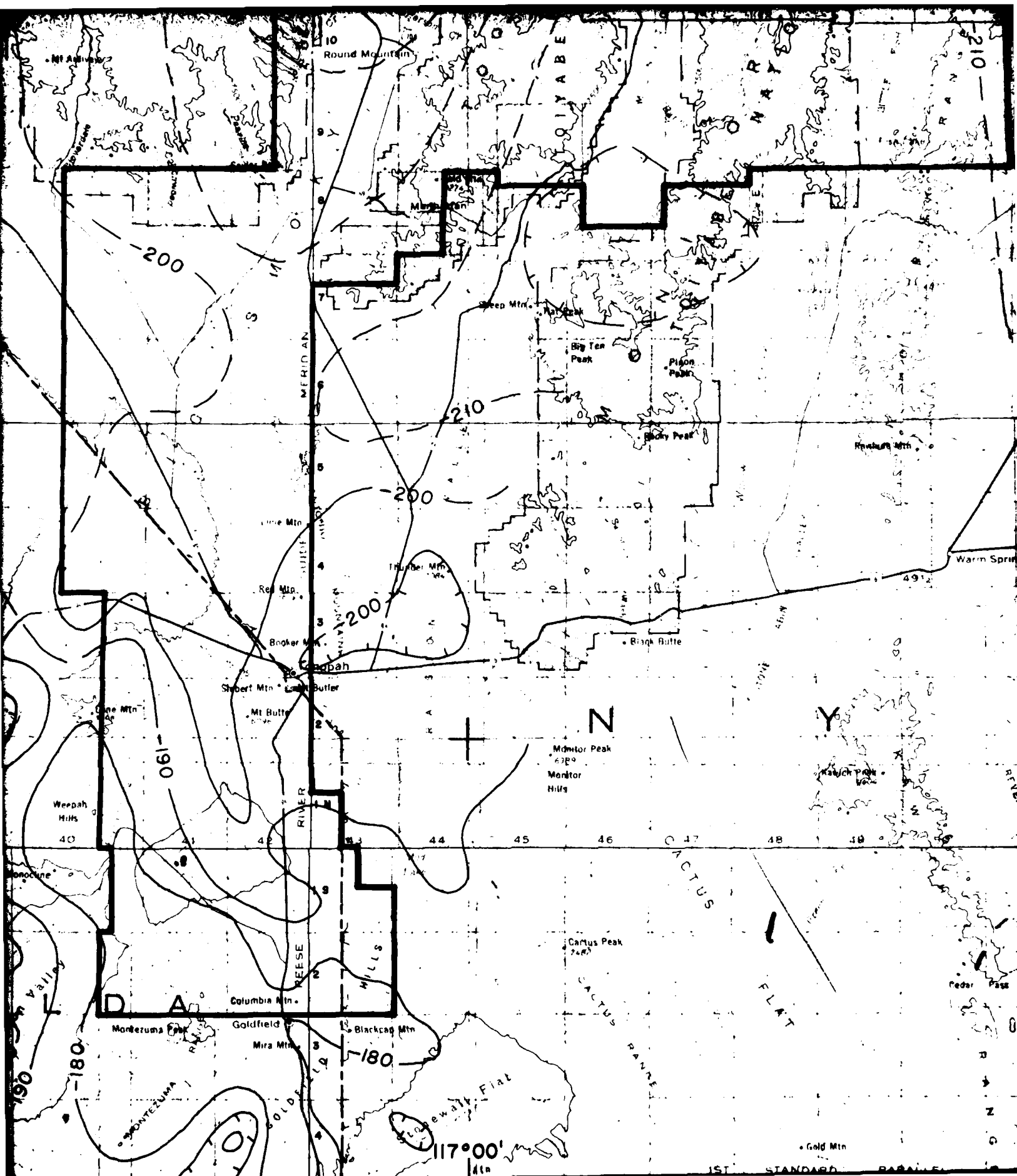


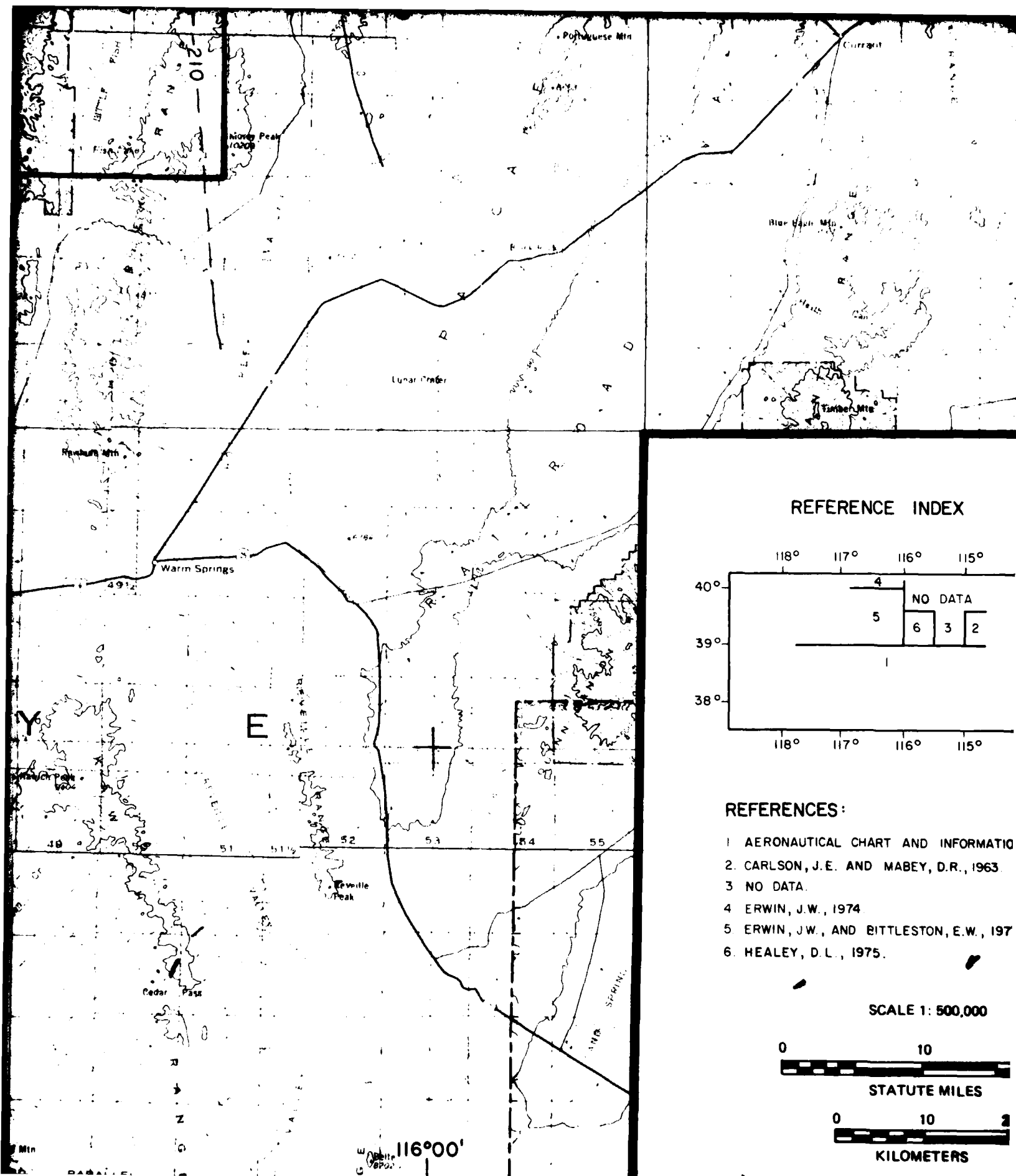
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STUDY AREA BOUNDARY SEPT. 26, 1980

1977

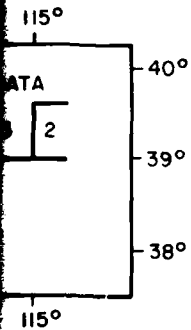
MX SITING INVESTIGATION







DX



GRAVITY CONTOURS (IN MILLIGALS)

CONTOUR INTERVAL 100 MILLIGALS

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DASHED CONTOURS INDICATE DATA ARE INCOMPLETE

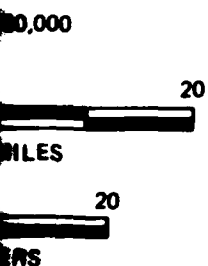
INFORMATION CENTER, USAF, 1968

R., 1963

E.W., 1977



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STUDY AREA BOUNDARY SEPT. 26, 1980



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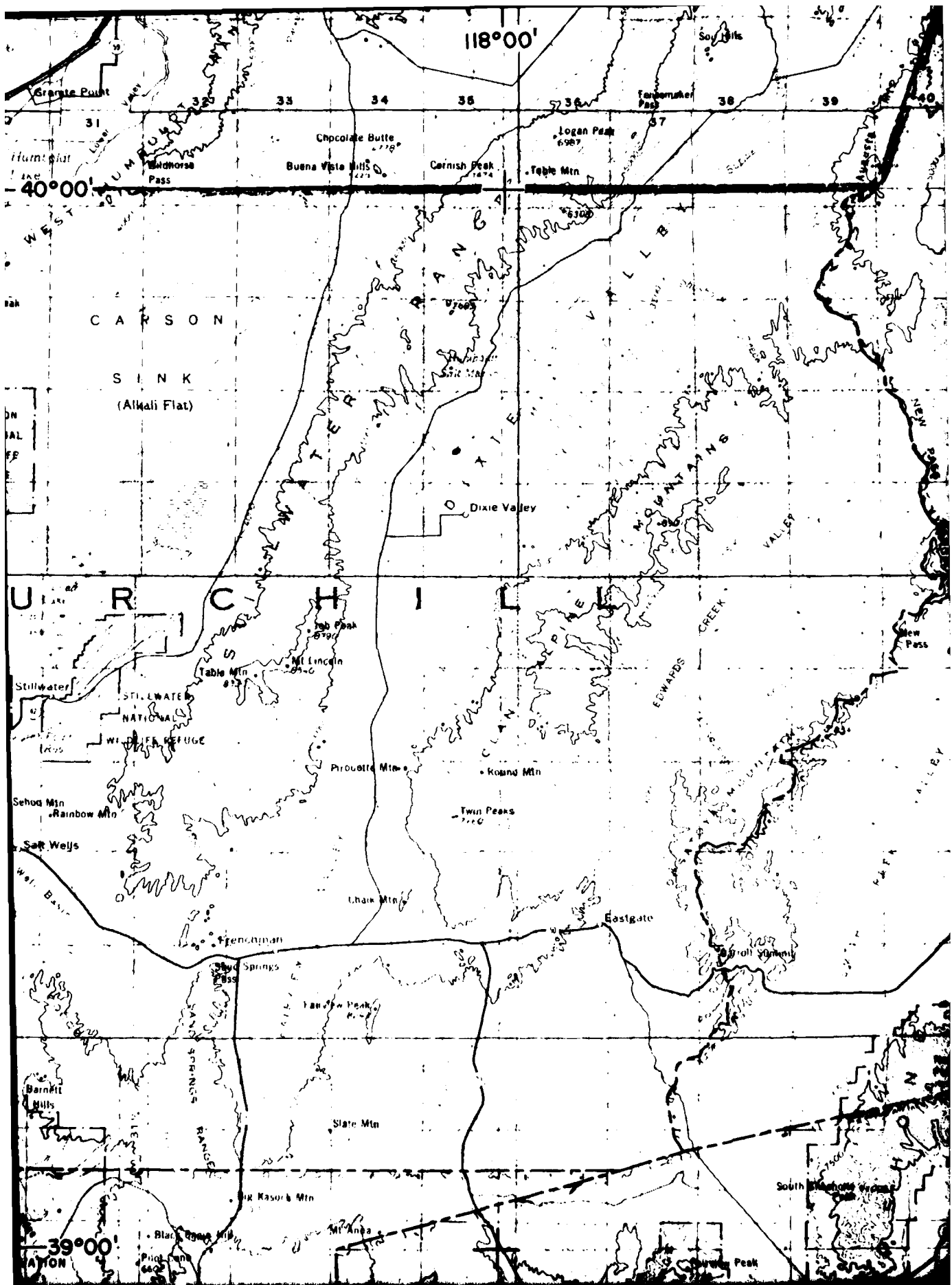


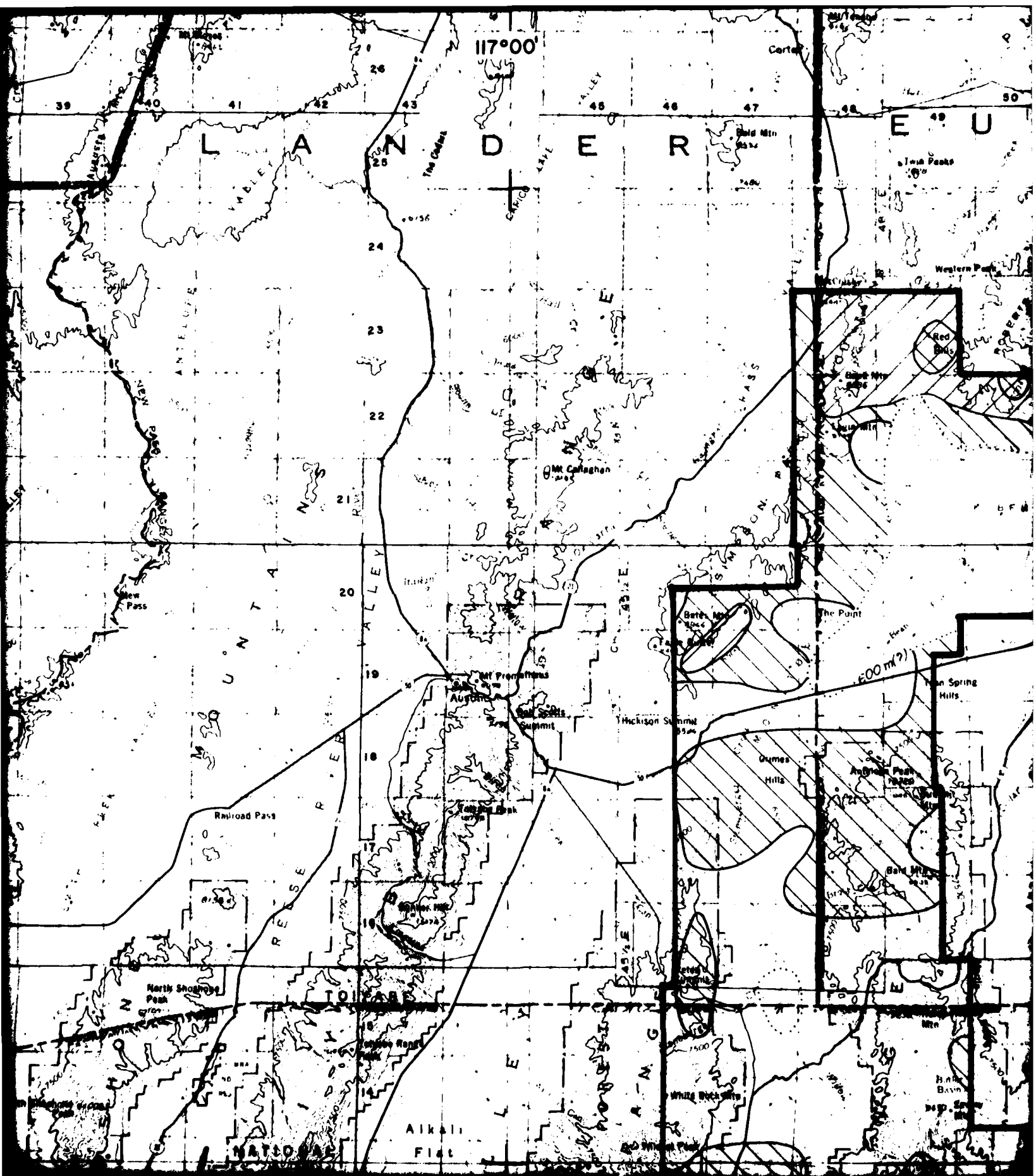
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

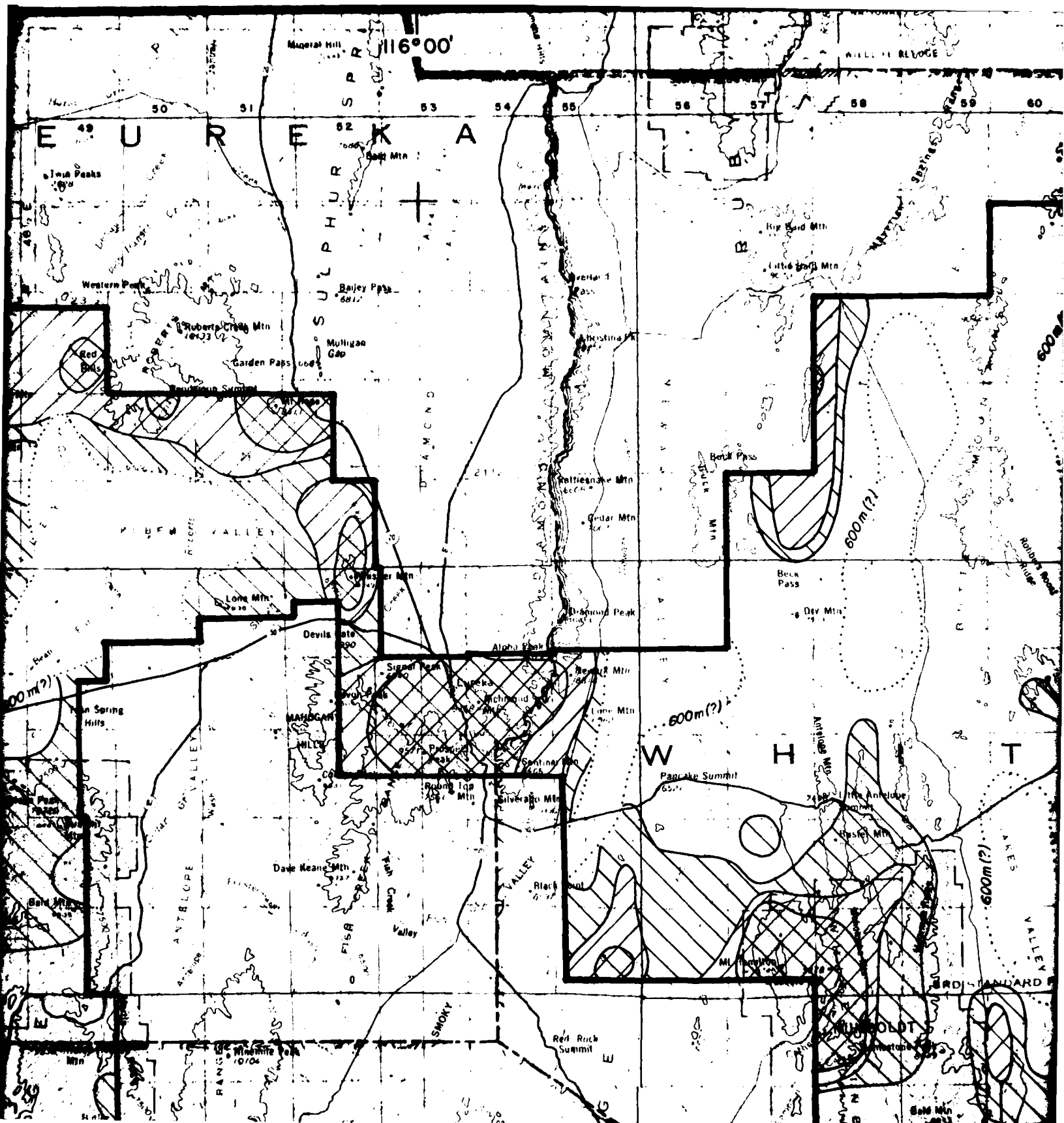
REGIONAL GRAVITY MAP

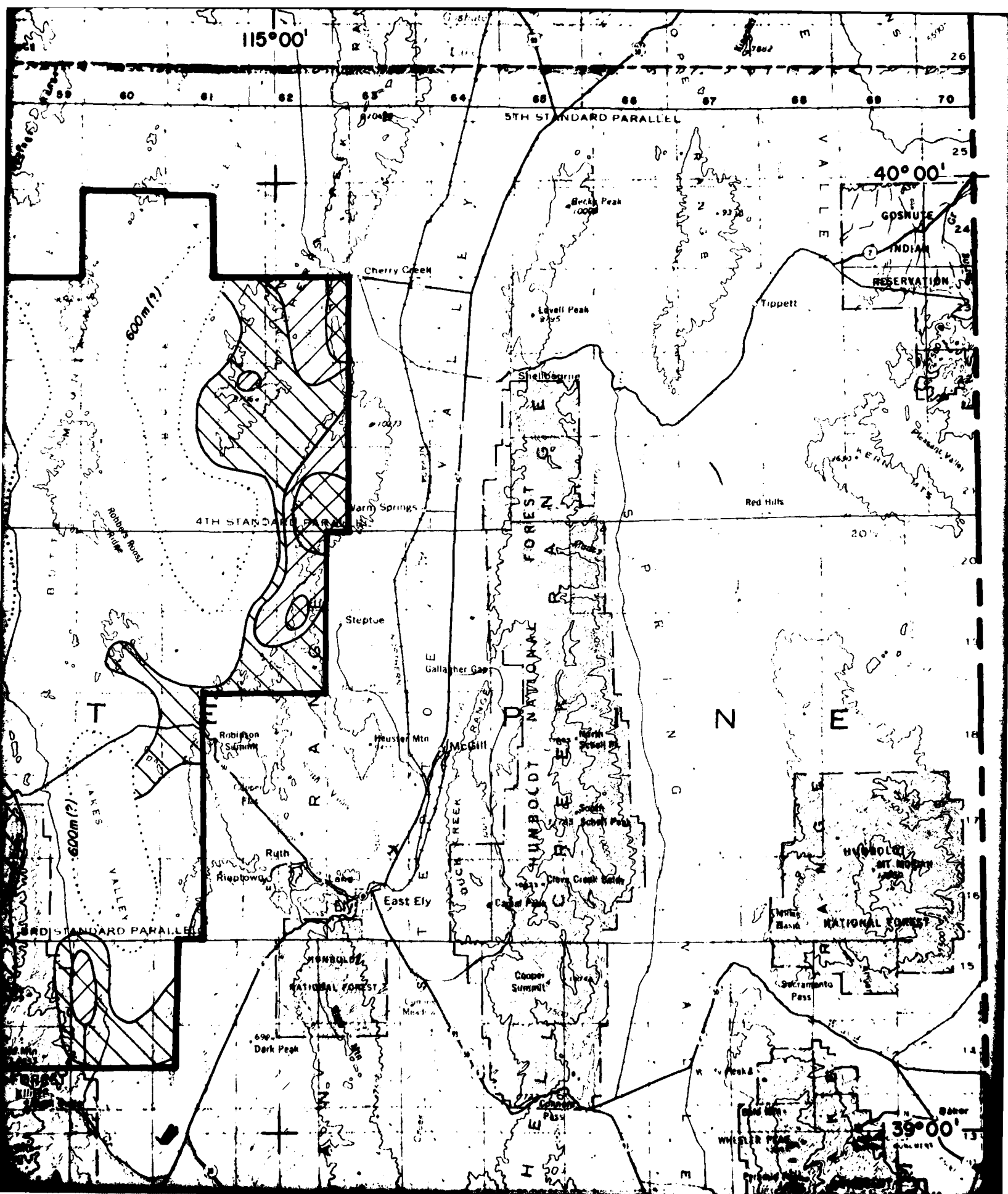
30 APR 81

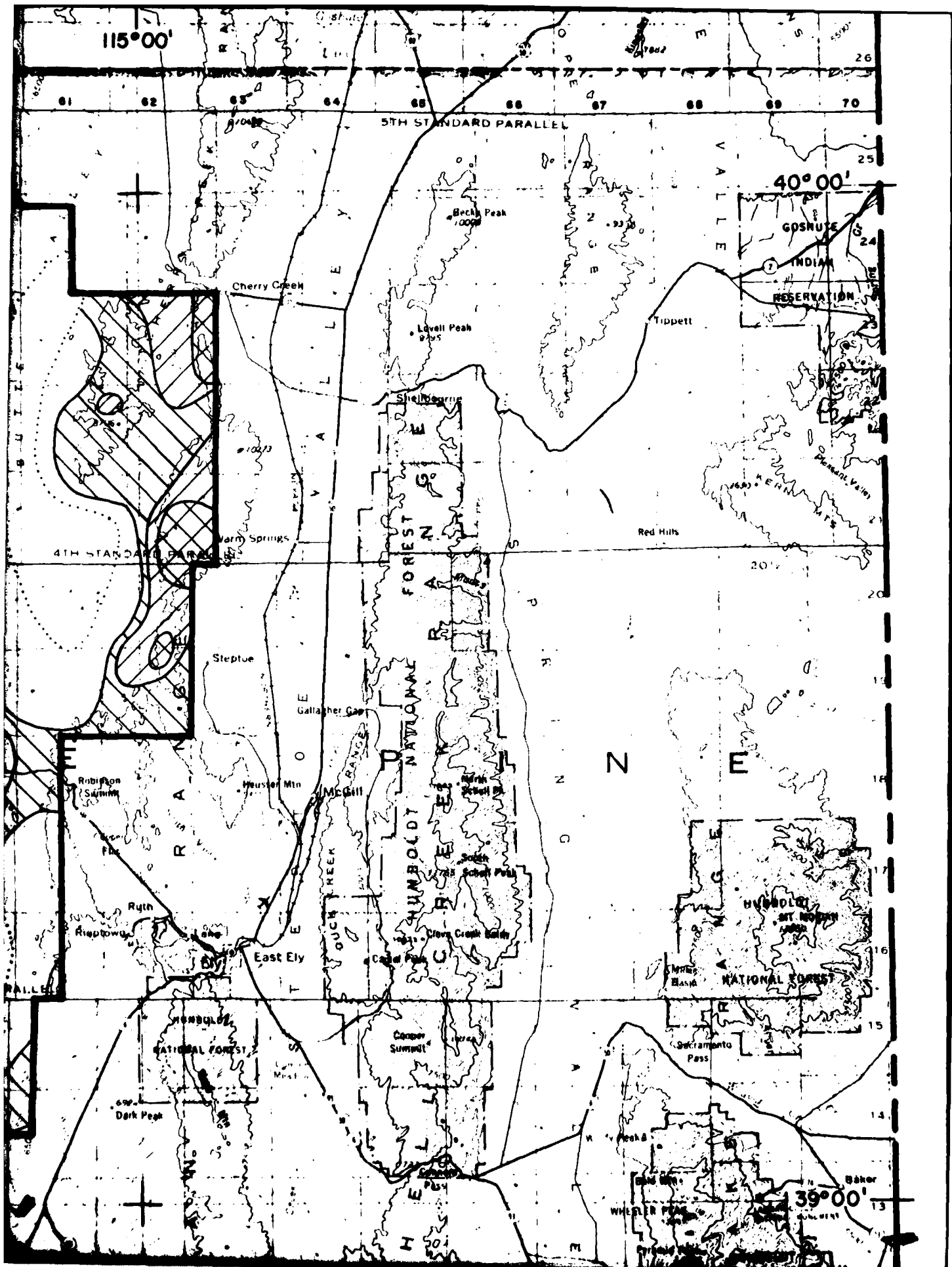
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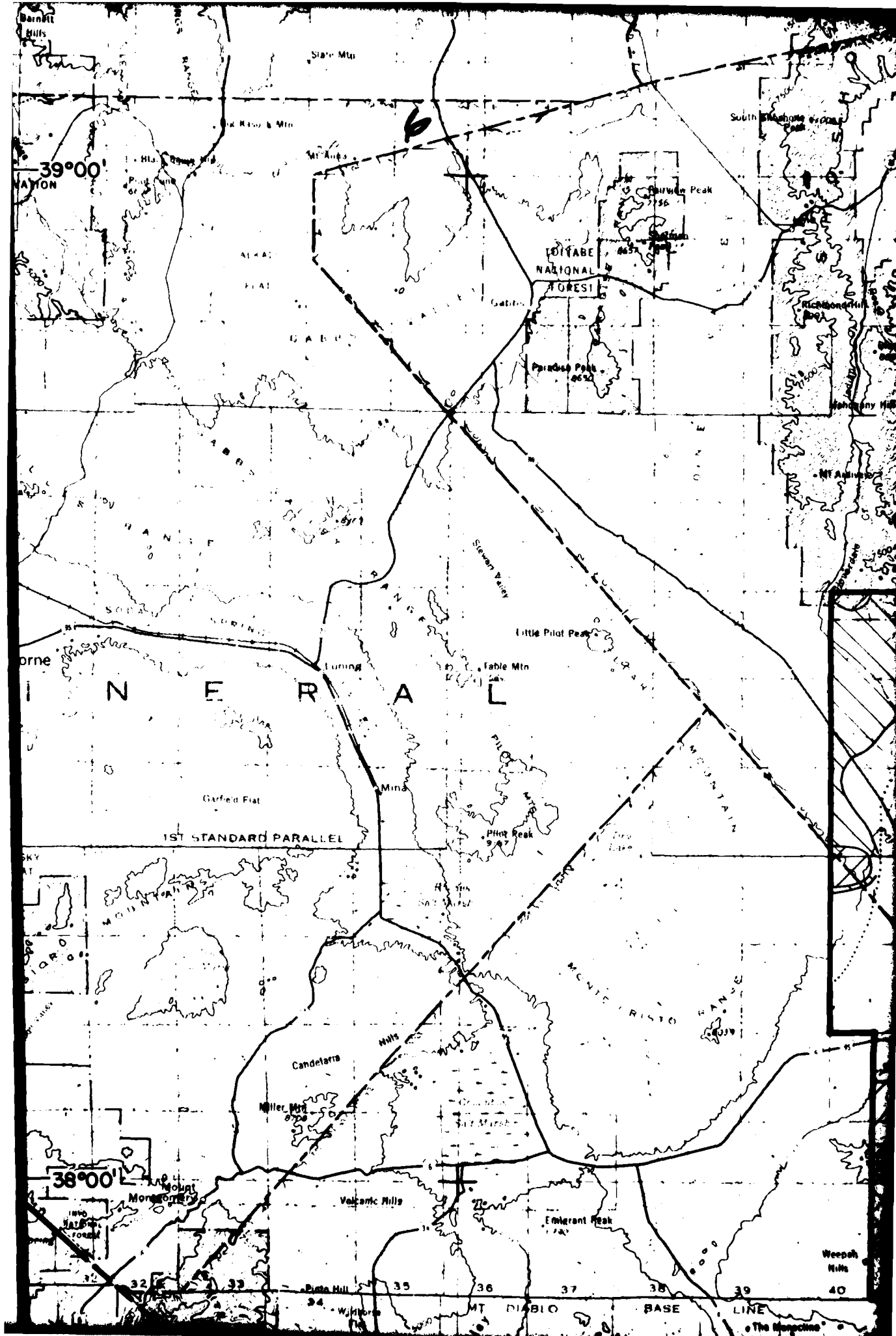


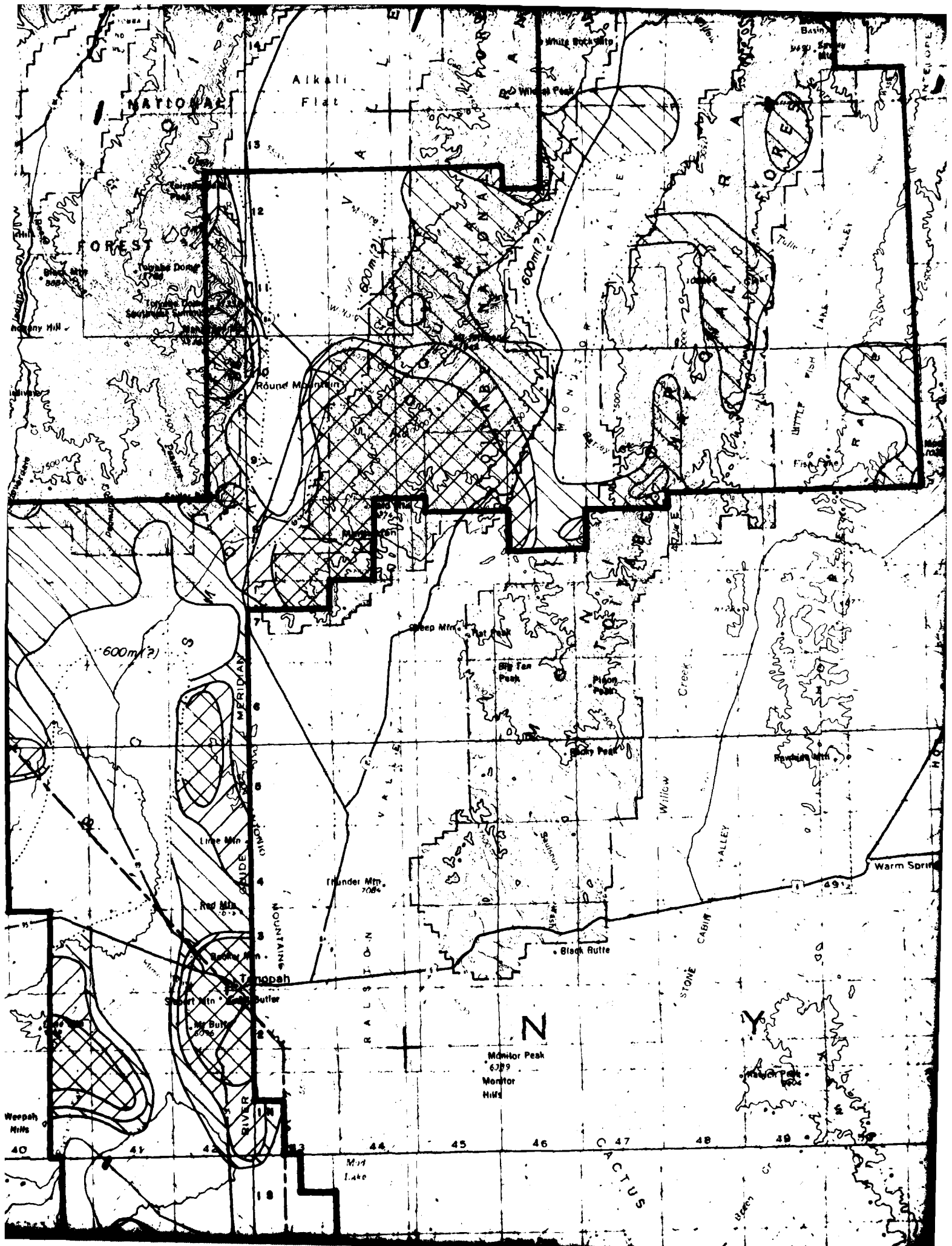


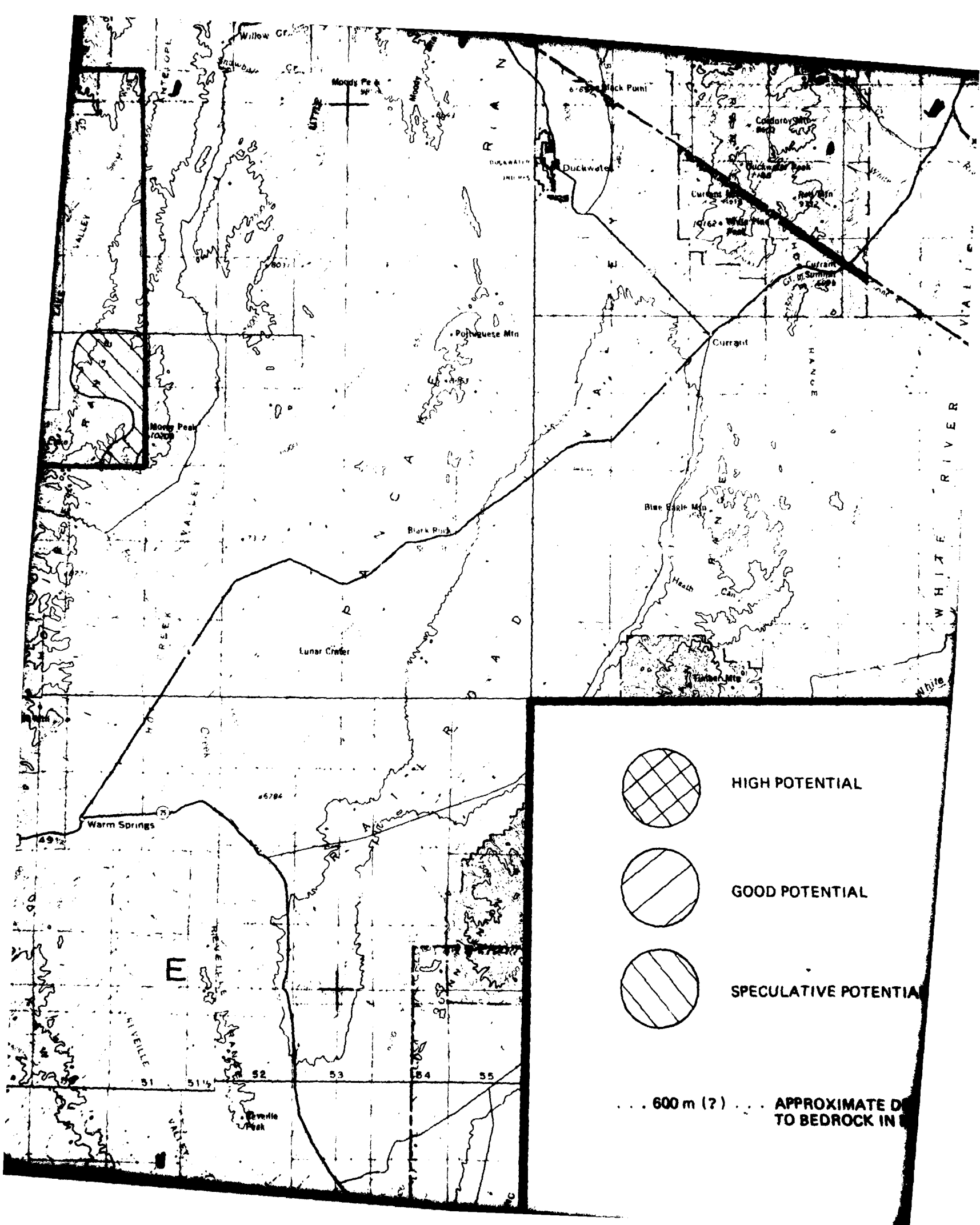


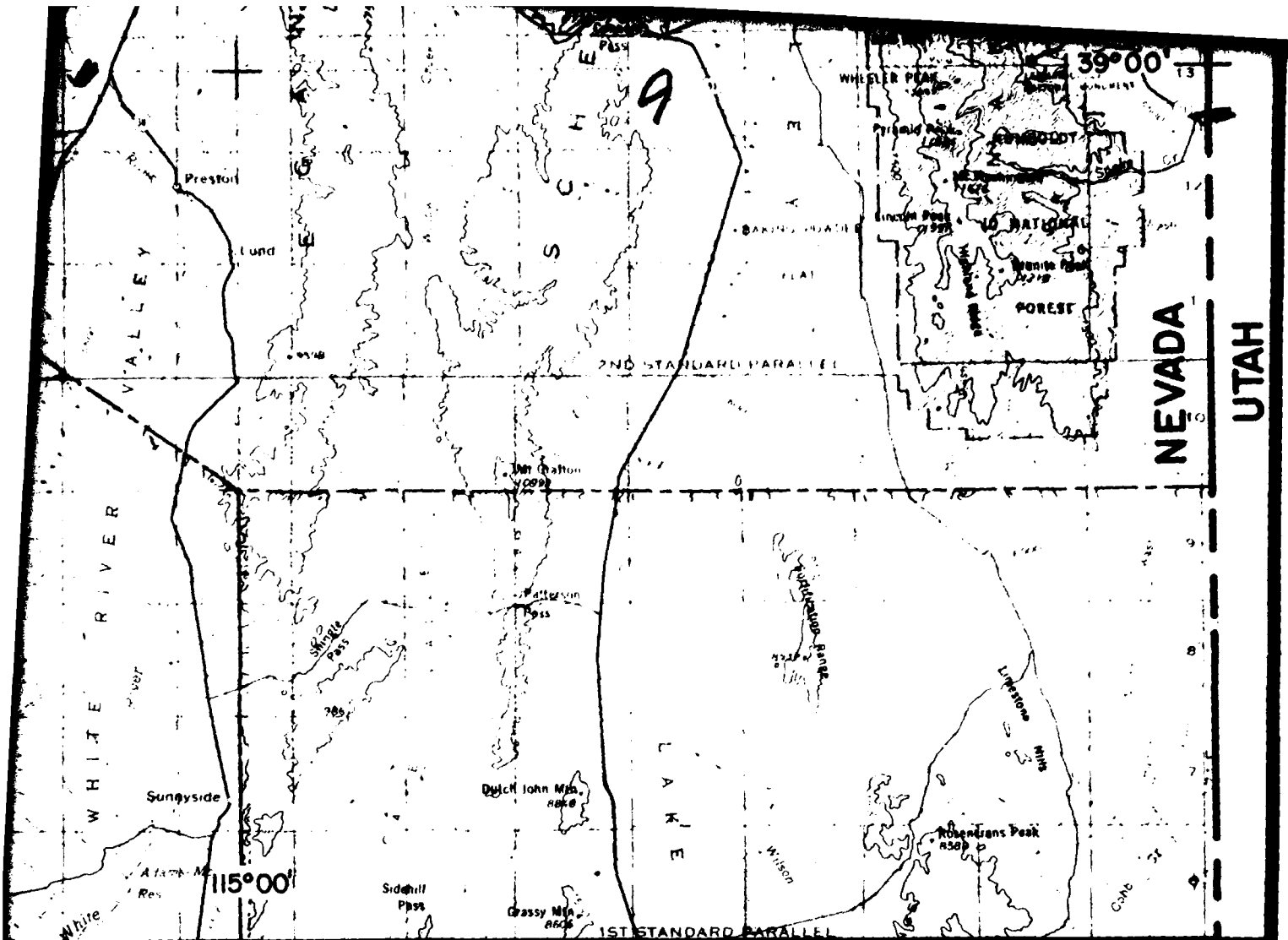












SCALE 1: 500,000

0 10 20



STATUTE MILES

0 10 20



KILOMETERS

ENTIAL

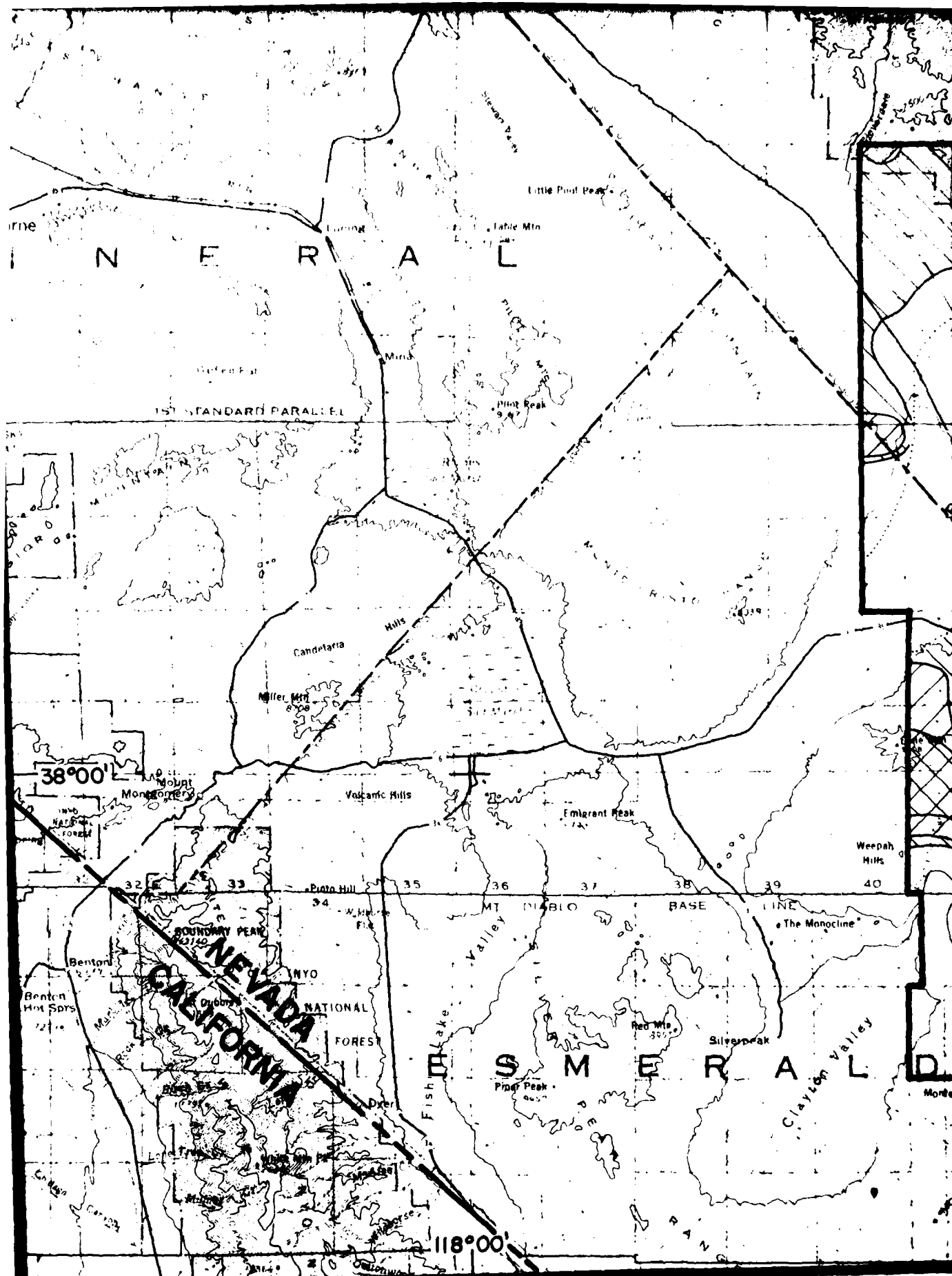
DEPTH
IN METERS

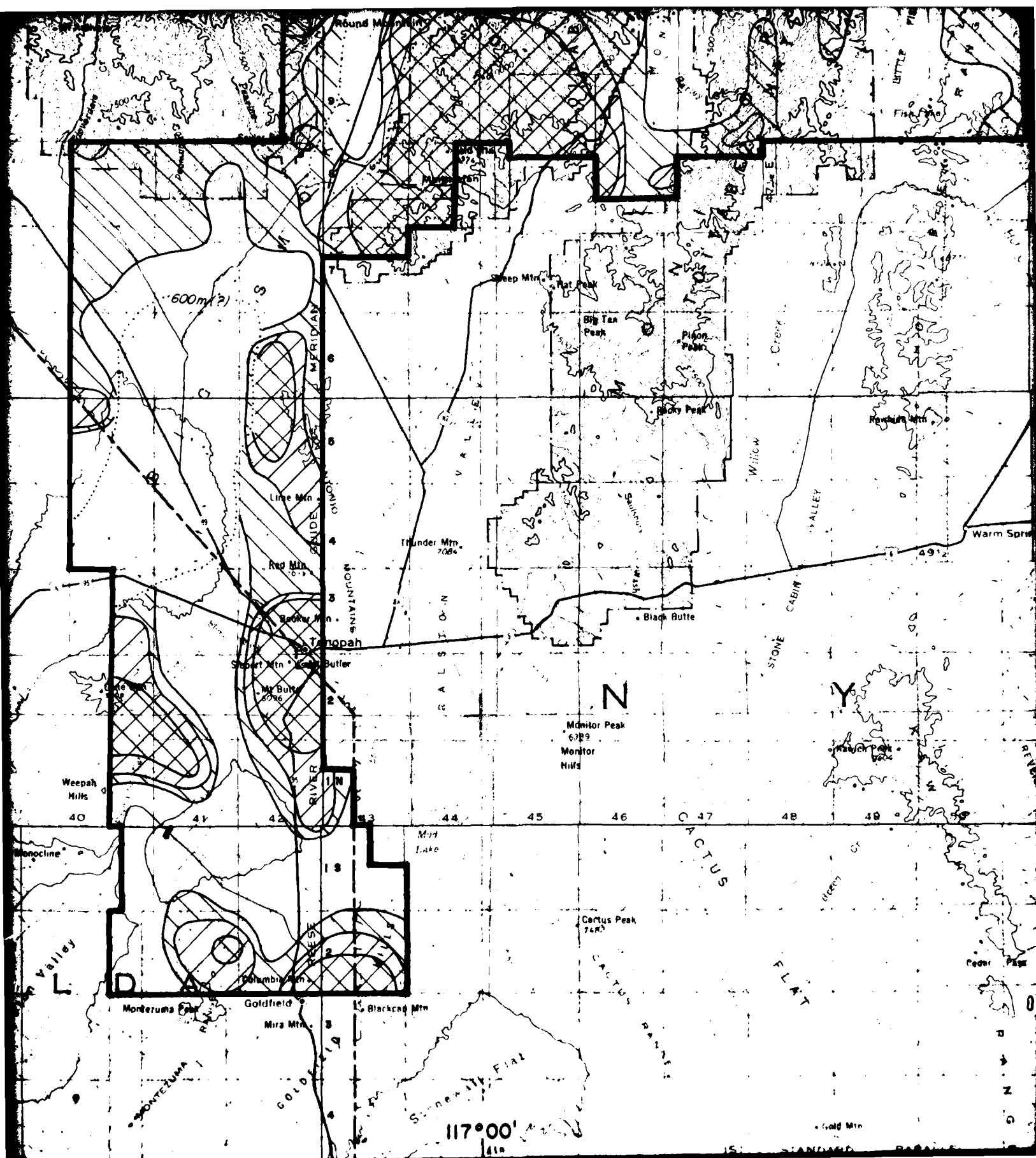


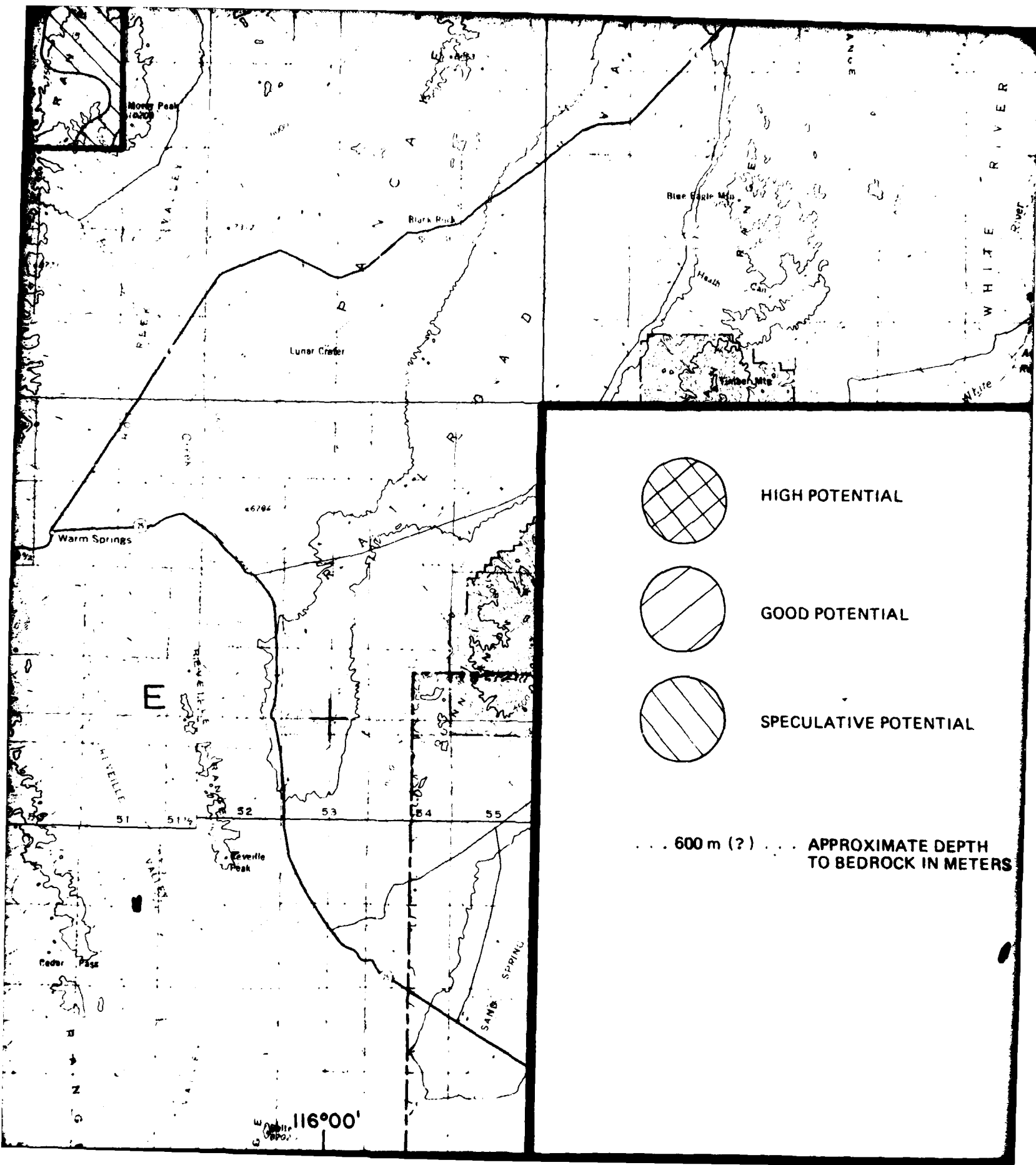
MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY
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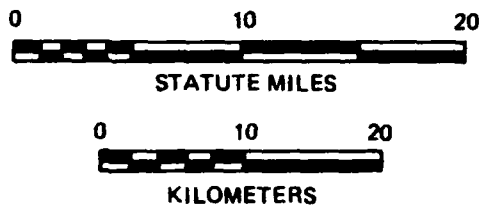
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DEPARTMENT OF THE AIR FORCE







SCALE 1: 500,000



POTENTIAL

ATE DEPTH
K IN METERS



MX ADDITIONAL VALLEY MINERAL RESOURCES SURVEY
STUDY AREA BOUNDARY SEPT. 28, 1980

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PRECIOUS METALS POTENTIAL MAP

30 APR 81

DRAWING 11

