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Environmental Statement STAR LAKE • BISTI REGIONAL COAL

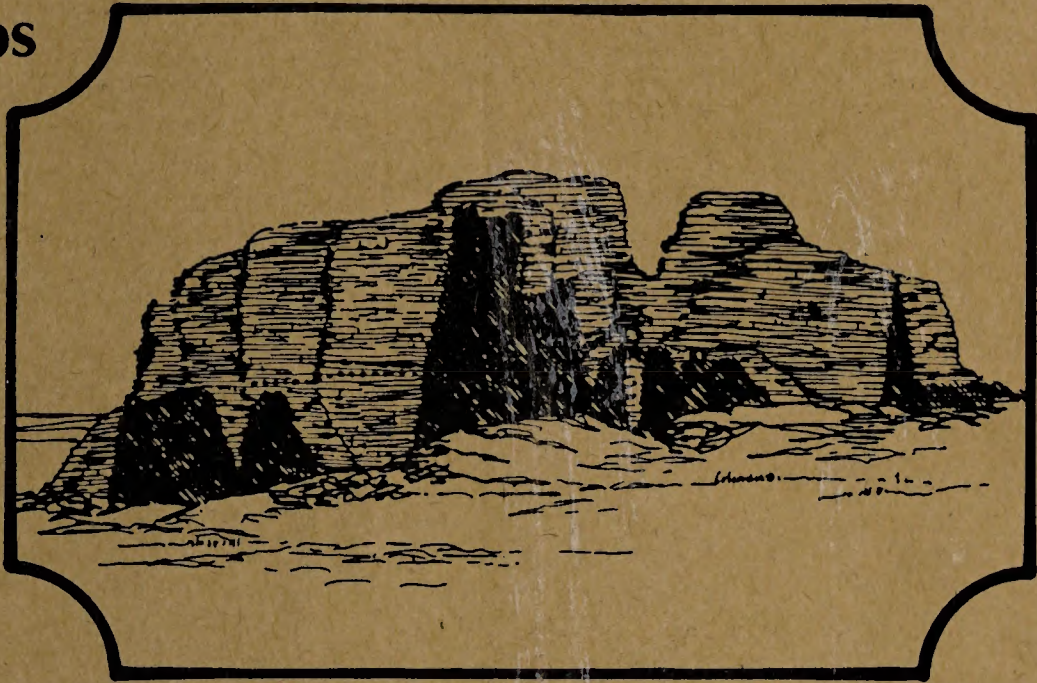
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Appendix A • Maps

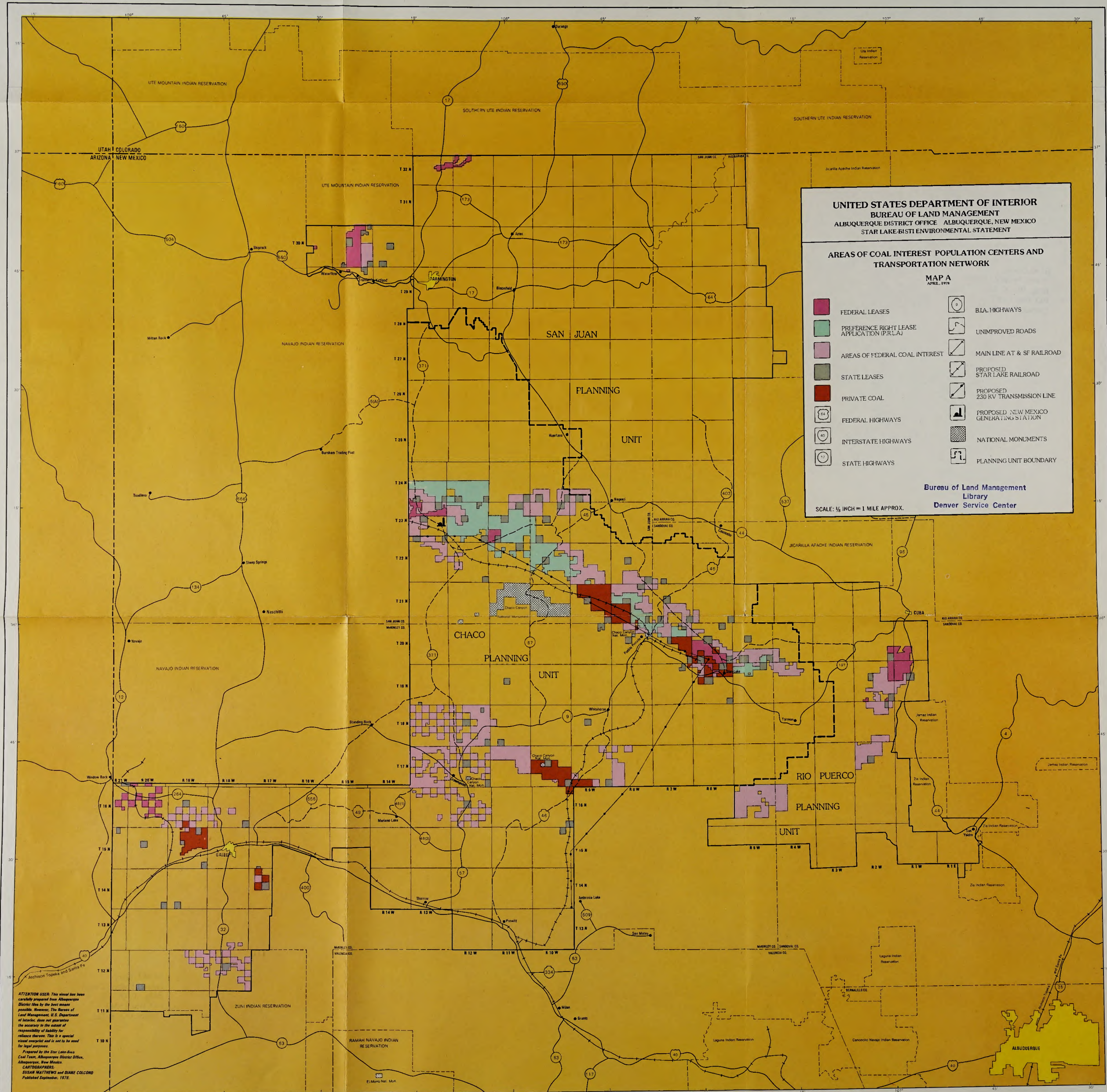
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 ALBUQUERQUE DISTRICT OFFICE ALBUQUERQUE, NEW MEXICO
 STAR LAKE-BISTI ENVIRONMENTAL STATEMENT

AREAS OF COAL INTEREST POPULATION CENTERS AND
 TRANSPORTATION NETWORK

MAP A
 APRIL, 1978

- | | | | |
|--|---|--|--|
| | FEDERAL LEASES | | B.I.A. HIGHWAYS |
| | PREFERENCE RIGHT LEASE APPLICATION (P.R.L.A.) | | UNIMPROVED ROADS |
| | AREAS OF FEDERAL COAL INTEREST | | MAIN LINE AT & SF RAILROAD |
| | STATE LEASES | | PROPOSED STAR LAKE RAILROAD |
| | PRIVATE COAL | | PROPOSED 230 KV TRANSMISSION LINE |
| | FEDERAL HIGHWAYS | | PROPOSED NEW MEXICO GENERATING STATION |
| | INTERSTATE HIGHWAYS | | NATIONAL MONUMENTS |
| | STATE HIGHWAYS | | PLANNING UNIT BOUNDARY |

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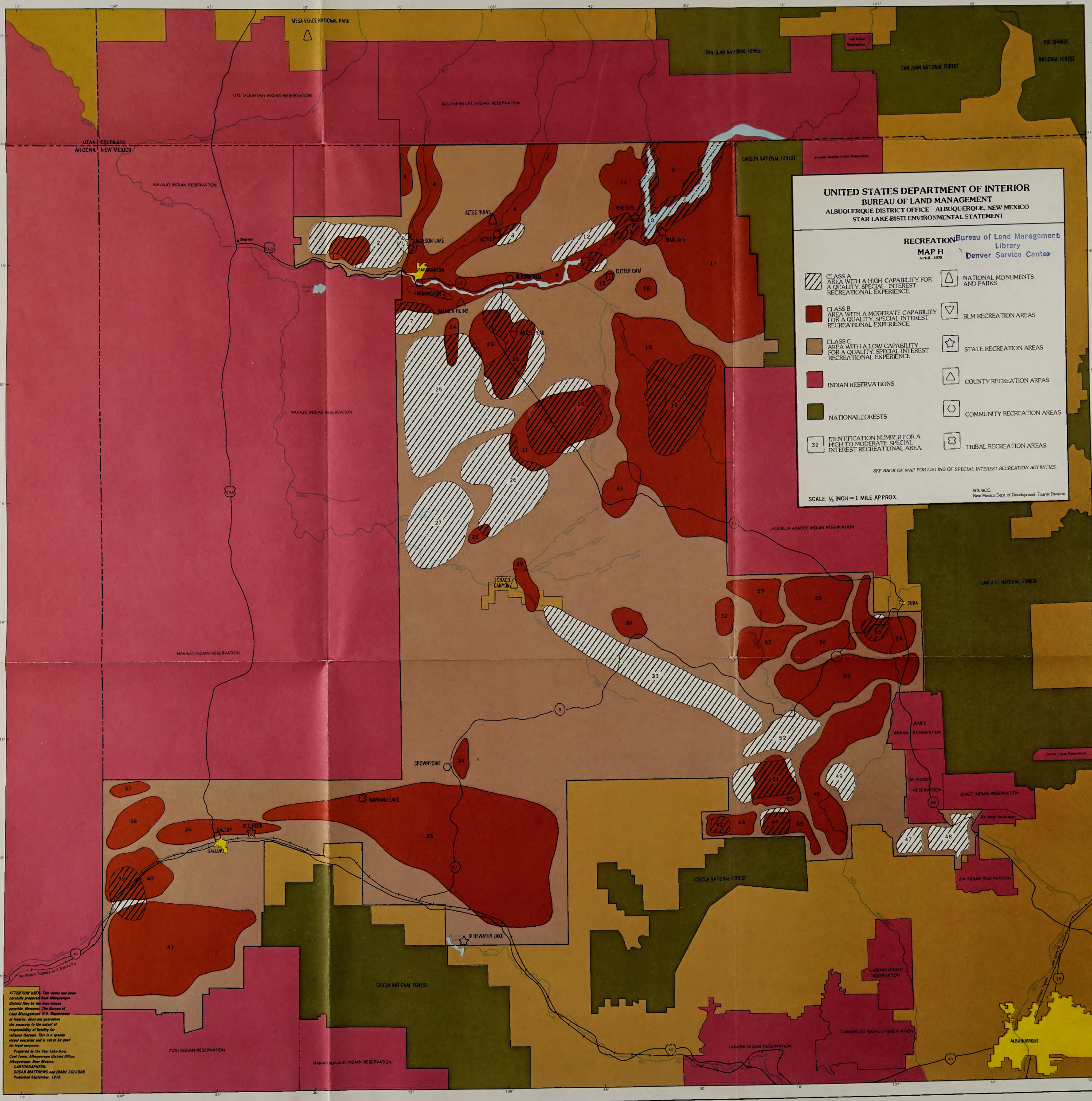
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STAR LAKE-BISTI ENVIRONMENTAL STATEMENT**

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MAP H
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	CLASS A AREA WITH A HIGH CAPABILITY FOR A QUALITY, SPECIAL INTEREST RECREATIONAL EXPERIENCE.		NATIONAL MONUMENTS AND PARKS
	CLASS B AREA WITH A MODERATE CAPABILITY FOR A QUALITY, SPECIAL INTEREST RECREATIONAL EXPERIENCE.		BLM RECREATION AREAS
	CLASS C AREA WITH A LOW CAPABILITY FOR A QUALITY, SPECIAL INTEREST RECREATIONAL EXPERIENCE.		STATE RECREATION AREAS
	INDIAN RESERVATIONS		COUNTY RECREATION AREAS
	NATIONAL FORESTS		COMMUNITY RECREATION AREAS
	IDENTIFICATION NUMBER FOR A HIGH TO MODERATE SPECIAL INTEREST RECREATIONAL AREA.		TRIBAL RECREATION AREAS

SEE BACK OF MAP FOR LISTING OF SPECIAL INTEREST RECREATION ACTIVITIES.

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SOURCE:
New Mexico Dept. of Development-Tourist Division

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Area No.	Recreation Activities	Area No.	Recreation Activities
1.	Off-road vehicle Sightseeing, geological	31.	Sightseeing, geological Sightseeing, scenery Hunting, big game
2.	Off-road vehicle Sightseeing, historical	32.	Collecting, vegetation
3.	Primitive Sightseeing, scenery	33.	Sightseeing, other Sightseeing, scenery Sightseeing, archaeological Hunting, big game Primitive, back country
4.	Off-road vehicle Sightseeing, scenery Hunting, water fowl	34.	Sightseeing, other
5.	Sightseeing, geological	35.	Sightseeing, scenery Sightseeing, geological Sightseeing, other Hunting, small game
6.	Sightseeing, scenery Fishing, lake	36.	Sightseeing, geological Sightseeing, archaeological
7.	Off-road vehicle	37.	Sightseeing, scenery
8.	Sightseeing, historical	38.	Sightseeing, other cultural
9.	Sightseeing, scenery	39.	Sightseeing, geological
10.	Sightseeing, scenery Fishing, lake Water, sailboating Water, swimming Water, float boating Water, power boating	40.	Sightseeing, scenery Sightseeing, archaeological
11.	Primitive Sightseeing, scenery	41.	Sightseeing, scenery Hunting, big game
12.	Off-road vehicle	42.	Sightseeing, scenery Primitive
13.	Hunting, water fowl Fishing, stream	43.	Sightseeing, geological Hunting, big game
14.	Hunting, water fowl	44.	Sightseeing, scenery Primitive
15.	Fishing, lake	45.	Sightseeing, geological Hunting, big game
16.	Sightseeing, historical	46.	Off-road vehicle Sightseeing, scenery
17.	Off-road vehicle Sightseeing, historical Hunting, big game	47.	Off-road vehicle
18.	Off-road vehicle Sightseeing, historical Hunting, big game	48.	Sightseeing, geological Sightseeing, scenery Primitive
19.	Off-road vehicle Sightseeing, historical	49.	Sightseeing, geological
20.	Off-road vehicle	50.	Sightseeing, scenery
21.	Sightseeing, historical	51.	Off-road vehicle
22.	Off-road vehicle Sightseeing, historical Sightseeing, geological	52.	Off-road vehicle
23.	Sightseeing, geological Sightseeing, other cultural	53.	Off-road vehicle Sightseeing, scenery Sightseeing, geological Primitive
24.	Sightseeing, archaeological	54.	Sightseeing, geological Primitive
25.	Off-road vehicle Sightseeing, other cultural	55.	Sightseeing, scenery
26.	Off-road vehicle	56.	Off-road vehicle Sightseeing, scenery
27.	Sightseeing, geological Collecting, vegetation	57.	Off-road vehicle
28.	Sightseeing, geological	58.	Sightseeing, scenery
29.	Sightseeing, other	59.	Off-road vehicle
30.	Sightseeing, historical Sightseeing, scenery		

Source: Bureau of Land Management
Unit Resource Analysis

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







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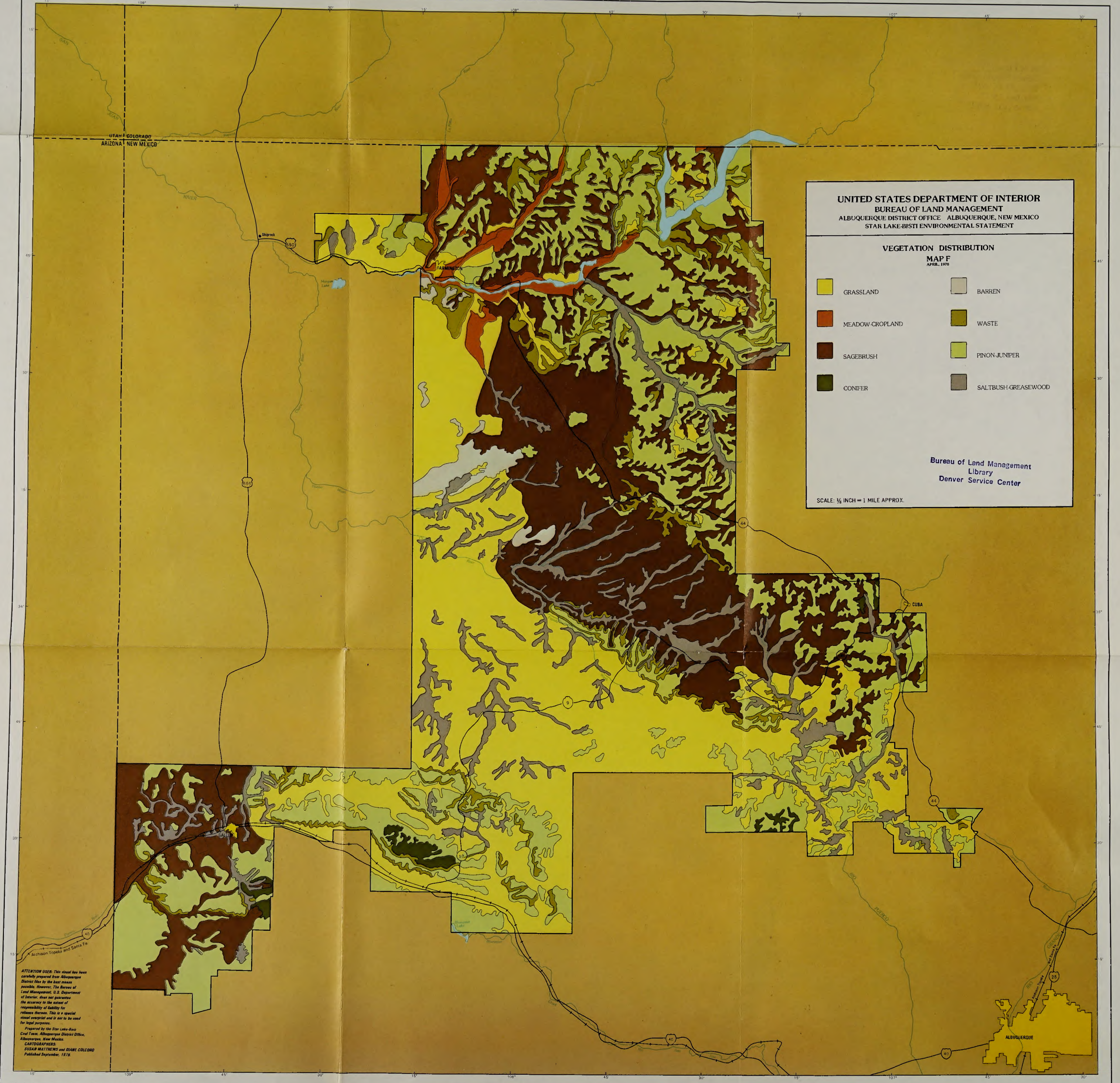
MAP F
APRIL, 1978

- | | |
|---|--|
|  GRASSLAND |  BARREN |
|  MEADOW-CROPLAND |  WASTE |
|  SAGEBRUSH |  PINON-JUNIPER |
|  CONIFER |  SALTBU-SH-GREASEWOOD |

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
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STAR LAKE-BISTI ENVIRONMENTAL STATEMENT

VISUAL RESOURCE MANAGEMENT CLASSES
AND INVENTORIED ROADLESS AREAS

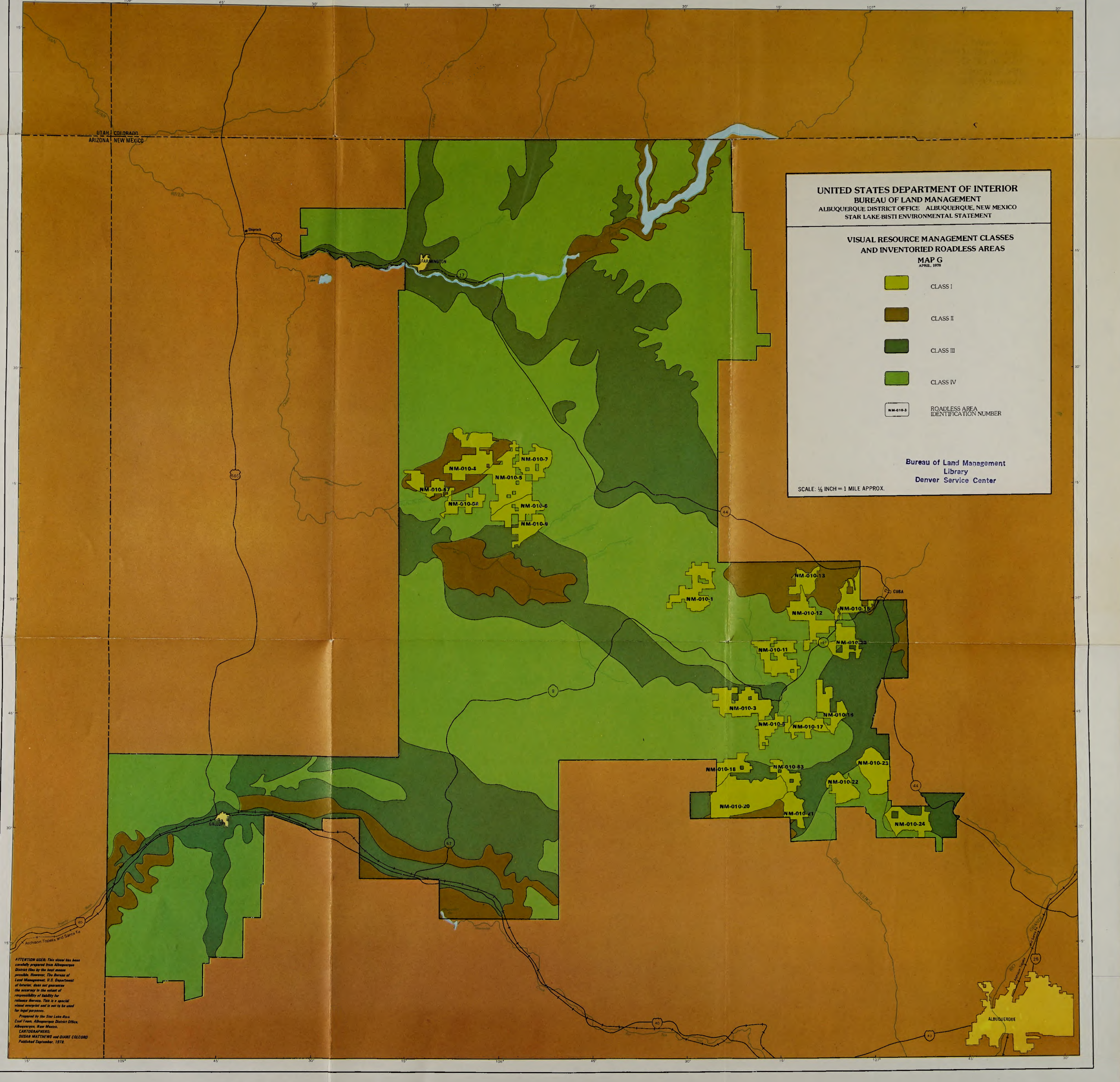
MAP G
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-  CLASS I
-  CLASS II
-  CLASS III
-  CLASS IV
-  ROADLESS AREA IDENTIFICATION NUMBER

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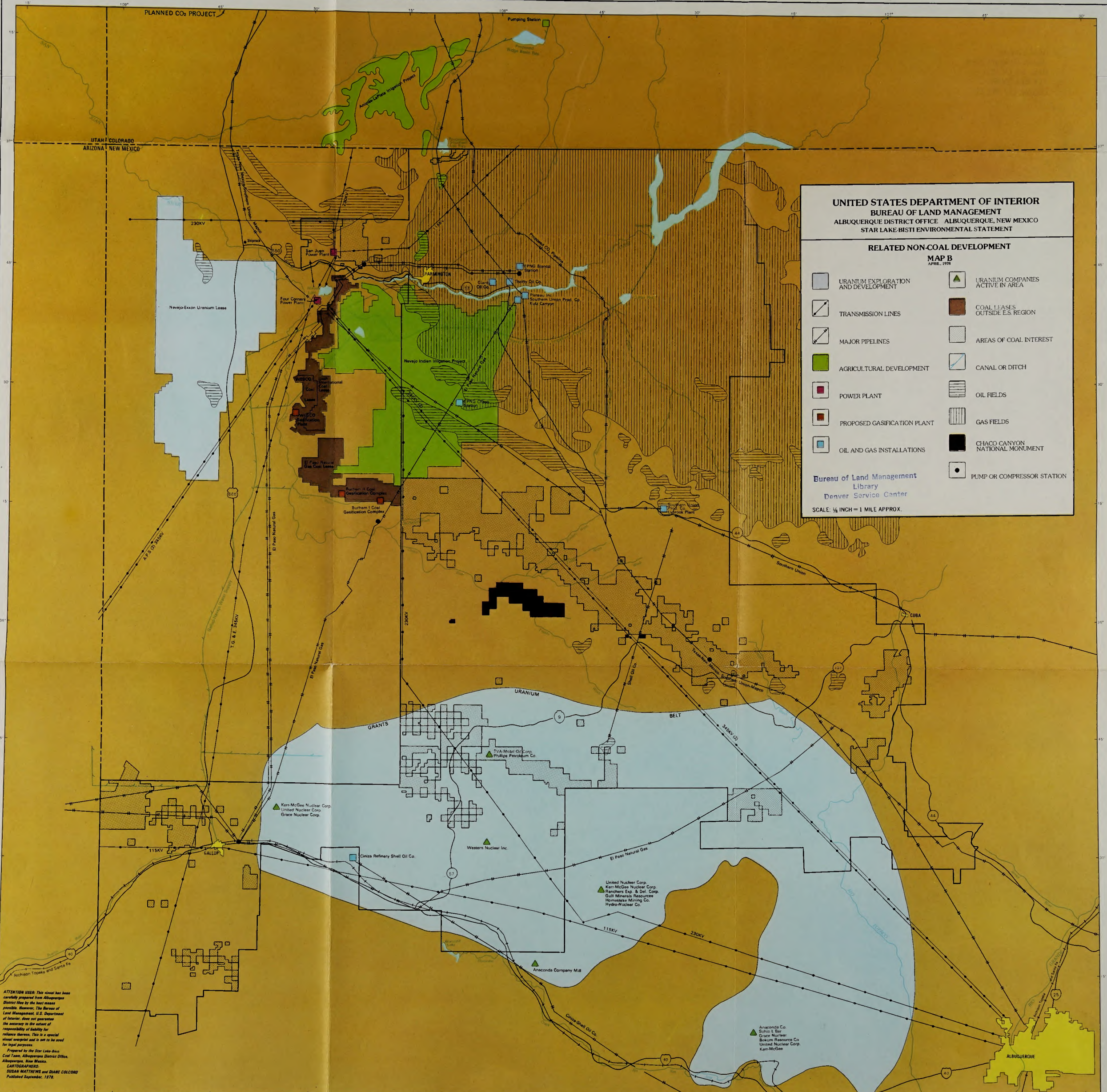
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RELATED NON-COAL DEVELOPMENT

MAP B
APRIL, 1978

-  URANIUM EXPLORATION AND DEVELOPMENT
-  TRANSMISSION LINES
-  MAJOR PIPELINES
-  AGRICULTURAL DEVELOPMENT
-  POWER PLANT
-  PROPOSED GASIFICATION PLANT
-  OIL AND GAS INSTALLATIONS
-  URANIUM COMPANIES ACTIVE IN AREA
-  COAL LEASES OUTSIDE E.S. REGION
-  AREAS OF COAL INTEREST
-  CANAL OR DITCH
-  OIL FIELDS
-  GAS FIELDS
-  CHACO CANYON NATIONAL MONUMENT
-  PUMP OR COMPRESSOR STATION

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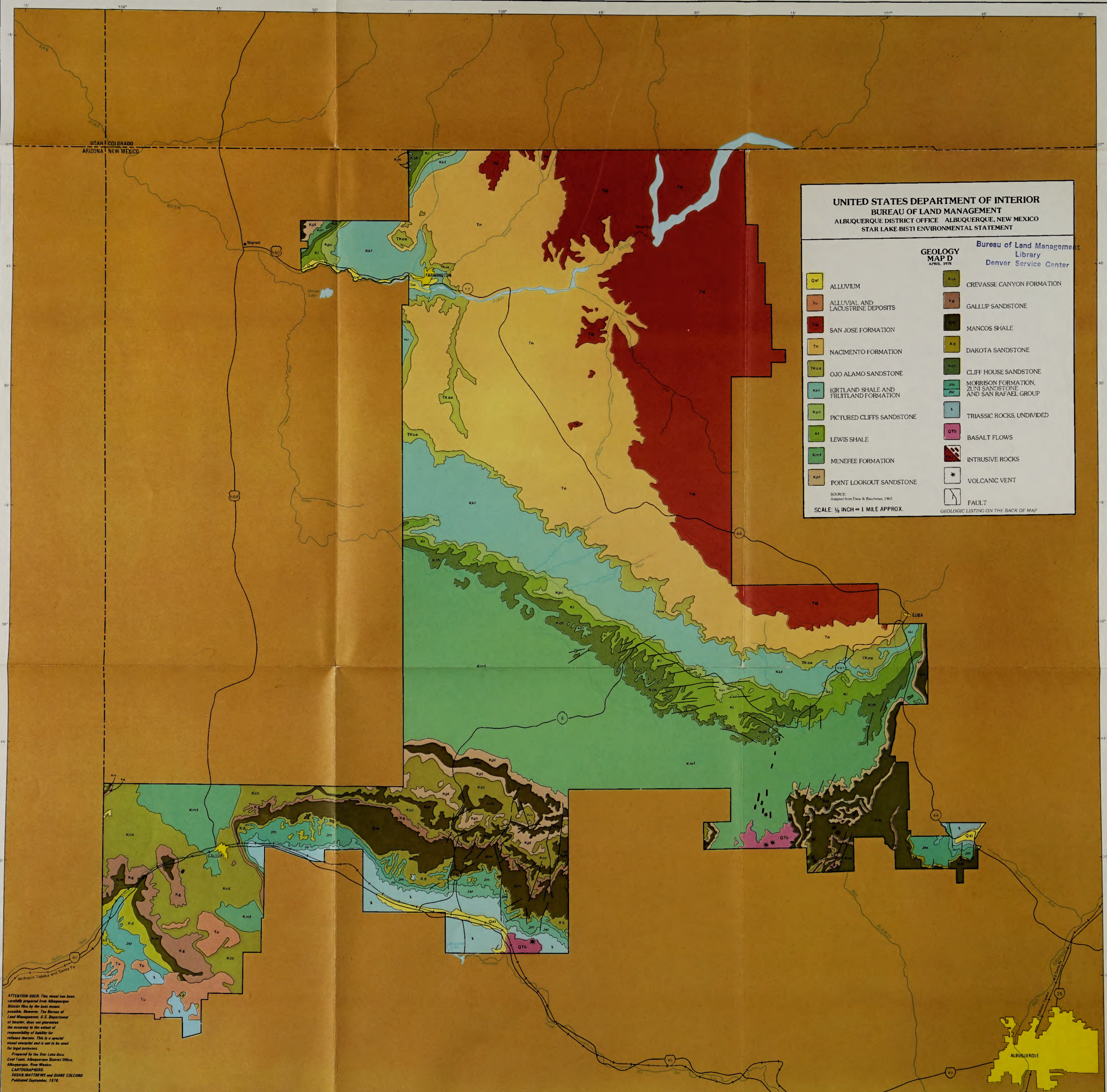
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ARIZONA | NEW MEXICO

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GEOLOGY
MAP D
APRIL 1978

- | | | | |
|------|--|-----|---|
| Qal | ALLUVIUM | Kcc | CREVASSE CANYON FORMATION |
| Tu | ALLUVIAL AND LACUSTRINE DEPOSITS | Kb | GALLUP SANDSTONE |
| Tm | SAN JOSE FORMATION | Kms | MANCOS SHALE |
| Tn | NACIMENTO FORMATION | Kd | DAKOTA SANDSTONE |
| TKoa | OJO ALAMO SANDSTONE | Kch | CLIFF HOUSE SANDSTONE |
| Kkf | KIRTLAND SHALE AND FRUITLAND FORMATION | Jm | MORRISON FORMATION, ZUNI SANDSTONE AND SAN RAFAEL GROUP |
| Kpc | PICTURED CLIFFS SANDSTONE | T | TRIASSIC ROCKS, UNDIVIDED |
| Kl | LEWIS SHALE | QTb | BASALT FLOWS |
| Kmf | MENELEE FORMATION | Ir | INTRUSIVE ROCKS |
| Kpl | POINT LOOKOUT SANDSTONE | * | VOLCANIC VENT |
| | | - | FAULT |
- SOURCE:
Adapted from Dine & Beauchamp, 1965
- SCALE: 1/8 INCH = 1 MILE APPROX.
- GEOLOGIC LISTING ON THE BACK OF MAP



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SUMMARY OF STRATIGRAPHIC UNITS IN THE ES REGION

System	Series	Group	Stratigraphic Unit	Thickness (feet)	Lithology	Water-bearing Characteristics	Dissolved Solids (mg/L)	Fossils	Remarks
Quaternary			Alluvial (Al)	0-200	Unconsolidated deposits of silt, clay, sand and gravel.	Generally yields sufficient water for stock and domestic use. Locally, larger yields are available.	200-9,200	Rare mammal fossils in association with cultural sites.	Greatest water yields occur along the San Juan River.
			Volcanic rocks, undivided (Vn)	0-3,000	Rhyolite, basalt	In places, basalt yields sufficient water for domestic use and stock wells and springs.			Local deposits around edges of San Juan basin.
Tertiary & Quaternary			San Jose Formation (Sj)	0-3,000	Interbedded variegated shale, clay and conglomeratic sandstone.	Generally yields sufficient water for stock and domestic use. Locally, yields as much as 10 gal/min.	300-2,800	Rare mammal and plant fragments with very rare nonmarine invertebrate fossils.	Fossils from the stratigraphic section composed of the Fruitland Formation, Kirtland Shale, Ojo Alamo Sandstone, Saciniento Formation, and San Jose Formation form the basis of a major continental reference section which unites the western United States, Canada, Europe, and Mongolia. The Saciniento Formation and related deposits form the basis of the type section of the early Tertiary land mammal ages of North America. Within the San Jose Formation are many localities which are critical for correlation with type deposits in Wyoming.
			Saciniento Formation (Sn)	0-1,000	Lenticular sandstones and silt to sandy clay.	Sandstones yield sufficient water for stock and domestic use. Locally, yields greater than 200 gal/min can be obtained.	600-14,000	Rare mammal and plant fragments with very rare nonmarine invertebrate fossils.	
			Ojo Alamo Sandstone (So)	0-400	Overlapping massive sandstone beds interbedded with shale. May contain conglomerate at base.	Generally yields sufficient water for stock and domestic use. Locally, yields as much as 170 gal/min. $S = 2 \times 10^{-3}$ to 6.7×10^{-3} . Sp. Cap. = 0.2 to 1.0. T = 37 to 125.	250-4,900	Very rare mammal fossils with rare plant fossils; in some areas fossil logs are present and may be locally abundant.	Type geologic section is located near areas where strip mining would have greatest impact on fossils.
Tertiary	Paleocene		Kirtland Shale (Ks)	0-1,500	Mostly shale, with some interbedded siltstone and lenses of sandstone.	Generally not water bearing. Locally, small yields can be obtained from sandstone lenses.	700-4,140	Very rare mammal fossils with rare dinosaur and other reptile fossils. Plant and rare non-marine invertebrate fossils are known.	Farmington Sandstone Member in north part of basin is best water-bearing unit. Strip mining would affect fossils in this formation more than in any other.
			Fruitland Formation (Kf)	0-500	Interbedded shale, siltstone, carbonaceous shale, coal and sandstone.	Generally not water bearing. In places, coal beds and associated sandstones yield small quantities of water.		Dinosaur fossils isolated bones and partially articulated skeletons, primitive mammal fossils, and marine fossils.	Strip mining would have a serious direct impact on fossils in this formation.
			Pictured Cliffs Sandstone (Kpc)	0-400	Fine-grained sandstone.	Yields small amounts of poor quality water. Sp. Cap. = 0.02 to 0.07.	310-37,800	Locally abundant trace fossils, moderately abundant marine invertebrate fossils and shark teeth.	
			Lewis Shale (Ls)	0-2,400	Marine shale with some interbedded sandstone and sandy limestone.	Generally not water bearing.		Moderately common marine invertebrate fossils and fish and shark teeth.	
			Cliff House Sandstone (Kch)	100-1,000	Marine sandstone with some interbedded shale.	Yields small amount of fair quality water. Sp. Cap. = 0.05 to 0.12.	1,130-4,100	Moderately common marine invertebrate fossils and locally abundant trace fossils.	
			Monksee Formation (Kmf)	800-2,000	Sandstone, claystone, and mudstone with interbedded coal.	Sandstone beds yield sufficient water for stock and domestic use. Sp. Cap. = 0.03 to 1.38.	200-2,400	Rare marine invertebrate fossils with locally abundant trace fossils. Fossil plants are associated with coal deposits.	
			Point Lookout Sandstone (Kpl)	0-350	Massive, fine- to medium-grained sandstone.	Yields sufficient water for stock and domestic use. Sp. Cap. = 0.07 to 1.12.	150-7,000	Rare marine invertebrate fossils with locally common trace fossils.	
			Crevasse Canyon Formation (Kcc)	500-1,000	Interbedded siltstone, clay, sandstone, coal, and carbonaceous shale.	Sandstones yield sufficient water for stock and domestic use. Sp. Cap. = 0.03 to 0.64.	240-4,470	Plant fossils common in association with coal; rare lower vertebrate and marine invertebrate fossils.	Strip mining would have high impact on the paleontological resources.
			Gallup Sandstone (Kga)	0-500	Fine- to coarse-grained sandstone interbedded with some siltstone and mudstone and minor amounts of coal.	Yields small to large amounts of water. Major source of water for the city of Gallup. $S = 3 \times 10^{-3}$. Sp. Cap. = 0.03 to 4.7. T = 120-270.	300-4,400	Rare to locally abundant plant and marine invertebrate fossils.	Proposed source of water for some of the coal-mining operations.
			Mancos Shale (Mn)	0-2,000	Dark-gray marine shale with some thin beds of sandstone.	Generally not water bearing.		Marine invertebrate fossils are common to rare, but may be locally abundant. Great fossil diversity in certain horizons.	
Cretaceous	Upper and Lower(?)		Dakota Sandstone (Dk)	0-250	Massive, fine- to coarse-grained sandstone with some interbedded shale and siltstone.	Yields sufficient water for stock and domestic use. Water is of poor quality in many places. Sp. Cap. = 0.05 to 0.2.	290-59,200	Rare marine invertebrate fossils, but may be locally abundant.	In much of basin, the Dakota is considered part of same aquifer as the Westwater Canyon Member of the Morrison Formation.
			Morrison Formation (Mn)	100-800	Variegated sandy shale, mudstone, and siltstone interbedded with fine- to coarse-grained sandstone.	Sandstone yields small to moderate amounts of water. Associated with the Dakota Sandstone forms one of the major aquifers of the basin. $S = 3.0 \times 10^{-3}$ to 1.0×10^{-1} . Sp. Cap. = 0.27 to 1.6. T = 36 to 510.	170-5,600	Rare dinosaur, plant and non-marine invertebrate fossils.	Proposed source for most of the water for coal-mining operations. Very significant dinosaur deposits outside and bordering the ES Region.
Jurassic	Upper	San Rafael	Bluff Sandstone (Cav Springs) (Jbr)	100-400	Fine- to medium-grained sandstone with some interbedded siltstone.	Yields sufficient water for stock and domestic use.	260-2,760	Absent to very rare marine invertebrate fossils.	
			Summerville Formation (Jsr)	50-225	Reddish-brown sandstone and sandy siltstone.	Generally not water bearing.		Marine invertebrate fossils have been reported outside the ES Region.	
			Todilto Limestone (Jtr)	0-100	Gray thin-bedded limestone and reddish-brown sandy shale. In places contains gypsum.	Generally not water bearing.		Very rare freshwater fish and ostracod fossils have been reported outside the ES Region.	Gypsum is believed one cause of the poor quality of water in the Entrada Sandstone.
			Entrada Sandstone (Jsr)	50-350	Reddish-brown, fine-grained sandstone and siltstone.	Generally yields small amounts of water. In places may yield moderate amounts. Sp. Cap. = 0.02 to 3.5.	450-15,000	Marine invertebrate fossils have been reported outside the ES Region.	In much of the basin, water is of poor quality.
Triassic	Upper		Chinle Formation (T)	1,400-1,600	Reddish-brown to purplish siltstone and mudstone with interbedded silty sandstone.	Sandstones yield sufficient water for stock and domestic use. Sp. Cap. = 0.03 to 1.1.	340-2,460	Rare plant and very rare fish and dinosaur fossils. Tracks of small dinosaurs are also found.	Several important vertebrate and invertebrate fossil localities adjacent to the ES Region.
			Moenkopi Formation (T)	0-100	Reddish-brown sandy shale and siltstone.	Generally not water bearing.		Tracks and very rare fossils of small dinosaurs and other reptiles are found.	
Permian	Gadalupe		San Andres Limestone	0-150	Thick-bedded to massive light gray limestone, sandy limestone and limy sandstone; cavernous in places.	Generally yields sufficient water for stock and domestic use. Where cavernous, may yield sufficient water for irrigation, industrial, and municipal use. $S = 1.1 \times 10^{-3}$ to 4.2×10^{-4} . Sp. Cap. = 10 to 1,100. T = 56,000 to 375,000.	270-2,300	Rare to very rare marine invertebrate fossils are known from south-central New Mexico but none are known from the ES Region.	Generally forms a hydrologic unit with Glorieta Sandstone.
			Glorieta Sandstone	100-300	Thick-bedded to massive, light gray, fine- to medium-grained sandstone.	Generally yields sufficient water for stock and domestic use.	290-1,160	None known in the ES Region.	











Source: E.H. Salts and S.W. West, 1967; R.M. Brinhall, 1973; M.S. Cooley et al., 1969; J.B. Cooper and E.C. John, 1968; J.E. Fassett and J.S. Hinds, 1971; E.W. Jordan, 1961; L.G. Hilpert, 1969; W.F. Loma et al., 1964; J.W. Mercer and J.B. Cooper, 1970; and J.W. Shonaker and W.J. Stone, 1976. Geologic map from Dane, C.W. and Beaman, G.O., 1977. Geologic Map of New Mexico, U.S. Geological Survey.

Notes: gal/min - gallons per minute.
S - storage coefficient (dimensionless).
Sp. Cap. - specific capacity (gallons per minute per foot of drawdown).
T - transmissivity (feet squared per day).

UTAH | COLORADO
ARIZONA | NEW MEXICO

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
ALBUQUERQUE DISTRICT OFFICE ALBUQUERQUE, NEW MEXICO
STAR LAKE-BISTI ENVIRONMENTAL STATEMENT

GENERAL SOILS DISTRIBUTION
MAP E
APRIL, 1978

-  SOILS OF VALLEY BOTTOMS, FLOODPLAINS AND TERRACES HAVING IRRIGATION POTENTIAL.
-  GENTLY SLOPING TO UNDULATING MESAS, UPLAND SLOPES AND ALLUVIAL FANS HAVING IRRIGATION POTENTIAL.
-  GENTLY TO STRONGLY SLOPING AND UNDULATING UPLAND HILLSIDES, VALLEY SIDESLOPES, FLOODPLAINS AND ALLUVIAL FANS.
-  VALLEY SIDESLOPES, ALLUVIAL FANS AND HILLSIDES THAT ARE GENTLY TO STRONGLY SLOPING ON SHALE BEDROCK OR ALLUVIUM.
-  GENTLY SLOPING AND UNDULATING PLAINS AND ALLUVIAL FANS ON SANDSTONE BEDROCK.
-  COBBLY, STONY SOILS ON GENTLY TO STRONGLY SLOPING BASALT-CAPPED MESAS AND IN LAVA FLOWS.
-  GENTLY SLOPING TO STEEP AND ROLLING UPLANDS WITH INTERMINGLED MESA BREAKS, ESCARPMENTS AND BENCHES.
-  MODERATELY SLOPING TO STEEP ROUGH BROKEN LAND, RIDGES AND CANYON SIDES WITH SOILS THAT ARE USUALLY COBBLY AND STONY.
-  MODERATELY SLOPING TO STEEP CANYON SIDES AND ROUGH BROKEN LAND WITH NARROW VALLEY FLOORS AND ROCKLAND.
-  GENTLY SLOPING TO VERY STEEP SIDE SLOPES ON NEARLY BARREN SANDSTONE AND SHALE EXPOSURES.

SCALE: 1/8 INCH = 1 MILE APPROX.
SOIL MAPPING UNIT NUMBERS ARE KEYED ON THE BACK OF MAP

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Prepared by the Star Lake-Bisti Coal Team, Albuquerque District Office, Albuquerque, New Mexico.
CARTOGRAPHERS:
SUSAN MATTHEWS and DIANE COLCORD
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SOILS OF VALLEY BOTTOMS, FLOOD PLAINS AND TERRACES THAT HAVE POTENTIAL FOR IRRIGATION:

1. LOHMILLER - NAVAJO
17. LDHMILLER - SAN MATEO
18. MORIARTY - PREWITT
20. VERMEJO - GALISTEO
27. WERLOW - FRUITLAND - BILLINGS

GENTLY SLOPING TO UNDULATING MESAS, UPLAND SLOPES AND ALLUVIAL FANS HAVING POTENTIAL FOR IRRIGATION:

3. PENISTAJA - SHEPPARD - ROCKLAND
14. DEL RID - SILVER
16. PENISTAJA - SHEPPARD - PALMA
28. DDAK - SHIPROCK
29. SHIPROCK - SHEPPARD

GENTLY TO STRONGLY SLOPING AND UNDULATING UPLAND HILLSIDES, VALLEY SIDE SLOPES, FLOOD PLAINS AND ALLUVIAL FANS:

4. PERSAYO - BILLINGS - BADLAND
10. PERSAYO - CAMBORTHIDS
11. PERSAYO - BILLINGS
13. CHIPETA - SHEPPARD - SHIPROCK
15. PENISTAJA - LOHMILLER - TRAVESSILLA
23. THURLDNI - SAVIA - CONCHD
26. PERSAYO - FARB
30. HILLY GRAVELLY LAND
33. PERSAYO - LOHMILLER
55. BILLINGS - BADLAND

VALLEY SIDE SLOPES, ALLUVIAL FANS AND HILLSIDES THAT ARE GENTLY TO STRONGLY SLOPING ON SHALE BEDROCK OR ALLUVIUM:

5. LAS LUCAS - LITTLE - PERSAYO

GENTLY SLOPING AND UNDULATING PLAINS AND ALLUVIAL FANS ON SANDSTONE BEDROCK:

32. CAMBORTHIDS - FARB

COBBLY, STONY SOILS ON GENTLY TO STRONGLY SLOPING BASALT - CAPPED MESAS AND IN LAVA FLOWS:

- B. BASALT ROCKLAND - CABEZON - THUNDERBIRD
22. PRIETA - THUNDERBIRD

GENTLY SLOPING TO STEEP AND ROLLING UPLANDS WITH INTERMINGLED MESA BREAKS, ESCARPMENTS AND BENCHES:

2. SHEPPARD - ROUGH BROKEN LAND
7. TRAVESSILLA - PERSAYO - ROCKLAND
19. HAGERMAN - TRAVESSILLA

MODERATELY SLOPING TO STEEP ROUGH BROKEN LAND, RIDGES AND CANYON SIDES, WITH SOILS THAT ARE USUALLY COBBLY AND STONY:

24. ARGIBDROLLS
25. ARGIBDROLLS - ROCKLAND

MODERATELY SLOPING TO STEEP CANYON SIDES AND ROUGH BROKEN LAND WITH NARROW VALLEY FLOORS AND ROCKLAND:

6. TRAVESSILLA - ROCKLAND
9. ROCKLAND
12. ROCKLAND - BILLINGS
21. ROCKLAND - BOND
34. ROCKLAND - TRAVESSILLA

GENTLY SLOPING TO VERY STEEP SIDE SLOPES ON NEARLY BARREN SANDSTONE AND SHALE EXPOSURES:

31. BADLAND - ROCKLAND





**TOPOGRAPHY OF STAR LAKE-BISTI
ENVIRONMENTAL STATEMENT REGION
MAP C**

LEGEND

POPULATED PLACES	ROADS	RAILROADS	BOUNDARIES	LAND GRANT BOUNDARY
Over 500,000	Primary, all-weather, hard surface	Single track, double or multiple	State	Land grant boundary
100,000 to 500,000	Secondary, all-weather, hard surface	Standard gauge	County	
25,000 to 100,000	Both-day, all-weather, hard or improved surface	Narrow gauge	Township or range	
5,000 to 25,000	Fair or dry-weather, unimproved surface	Interchange	Indian reservation	
1,000 to 5,000	Trail	Route markers: Interstate, U.S. State	Navajo Indian Reservation	
Less than 1,000	Grand Coulee	Landmark: School, Church, Other, etc.	Zuni Indian Reservation	
		Spot elevation in feet		
		Spot elevation in feet		
		Marsh or swamp		
		Seaplane anchorage		
		Wide-brimmed		
		Power line		

SCALE 1:250,000
0 5 10 15 20 25 30 STATUTE MILES
0 5 10 15 20 25 30 KILOMETERS

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS
TRANSVERSE MERCATOR PROJECTION
15 INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 12

FROM U.S. GEOLOGICAL SURVEY 2 DEGREE MAP SERIES
MAPS TITLED SHROOK, AZTEC, GALLUP AND ALBUQUERQUE

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