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REV. NUMBER	REVISION DESCRIPTION	DATE APPROVED

SECTION 13 TOPOGRAPHY

13.1 Premining Topography

The topography of the No Name Permit (NNP) area is defined by generally rolling terrain with areas of steep escarpments, badlands, sand dunes, and incised drainages and arroyos. The elevation within the permit area ranges between 5,300 and 5,600 ft. The area is bordered to the west by escarpments that are part of the ancient channel walls of the Chaco River. Along the western edge of the permit area, some terrain drains into the Chaco River. There are two major arroyos that traverse the permit area, Pinabete Arroyo and No Name Arroyo. The pre-mine watersheds that intersect the permit area are presented in Section 18 Water Resources. The permit area is divided into two operational areas, Areas 4 South and 5.

Area 4 South is defined to the north by the northern NNP permit boundary line and to the south by No Name Arroyo. The western edge of Area 4 South is generally defined by two bluffs west of the NNP permit boundary, which reach a height of approximately 80 ft above the surrounding terrain. Area 4 South is divided into western and eastern portions by the Pinabete Arroyo. This arroyo has headwaters of about 49.5 sq mi off lease to the east. It enters Area 4 South at the southeast corner and exits at the northwest corner. Most of the terrain within Area 4 South drains to Pinabete Arroyo. Some of the terrain along the eastern edge drains east into a tributary of Cottonwood Arroyo.

Area 5 is generally defined to the north by No Name Arroyo, and the southern NNP permit boundary line to the south. No Name Arroyo traverses the northeastern portion of Area 5. Most of Area 5 drains in a north-northeast direction into No Name Arroyo. No Name Arroyo has approximately 2.4 sq mi of headwaters east of the permit boundary. The western edge of Area 5 drains to the Chaco River, while the southern portion of Area 5 drains into Brimhall Wash. Further discussions on the pre-mine watersheds are provided in Section 18 Water Resources.

Maps of the premining topography within and adjacent to the permit boundary are included as Exhibit 13.1-1. A summary of premining slopes is provided in Table 13.1-1. Nearly 62.8% of are within the 0-3% slope class. The premining slope classes, identified in Table 13.1-1, for Areas 4 South and 5 are presented on Exhibit 13-2.

13.2 Premining Topography Information Collection and Analysis

Topographic data was collected through aerial flight conducted in March 2008. The data was used to develop a digital terrain model (DTM) of the surface. From the DTM, contours were generated at 10-ft intervals.

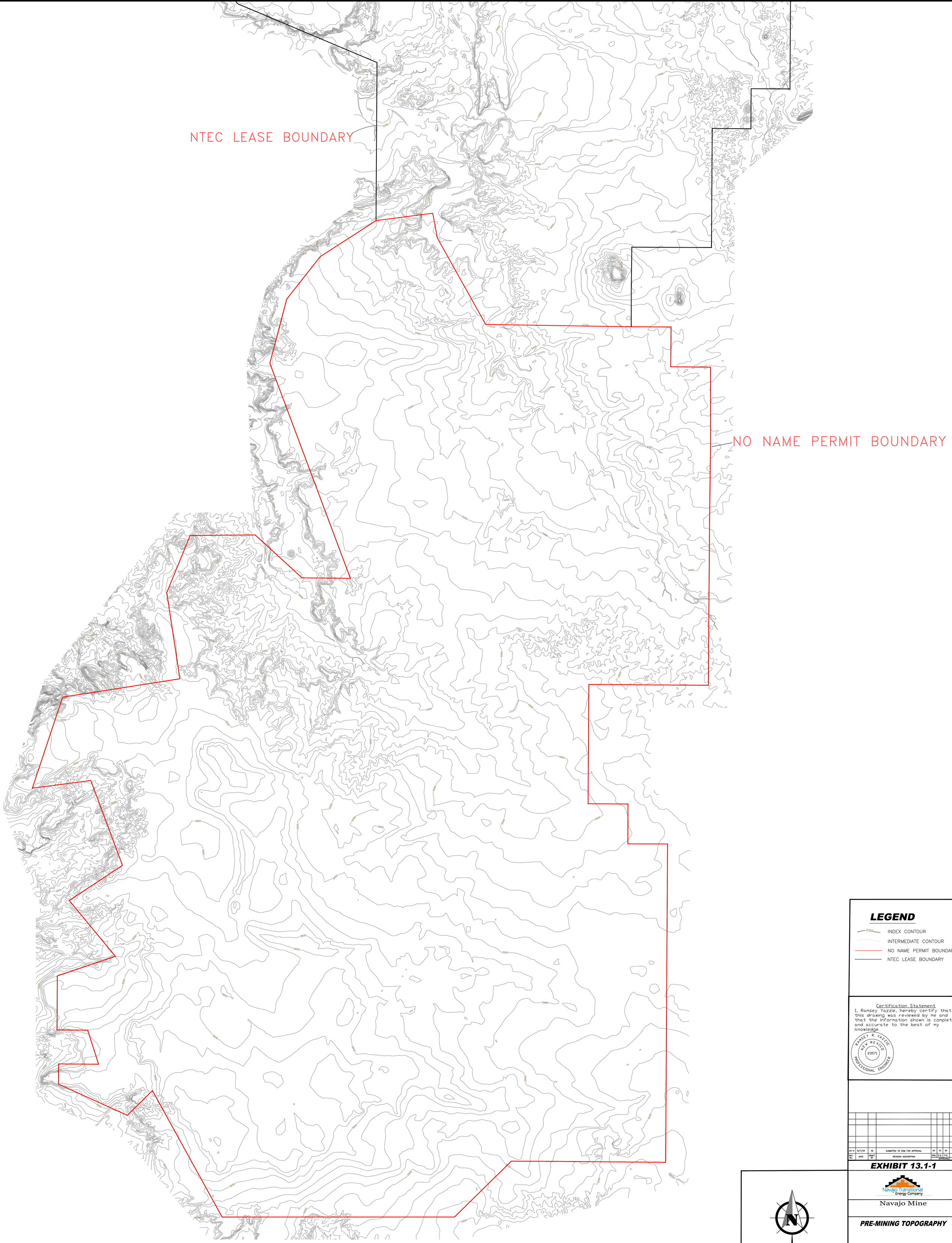
The slope analysis was performed using the 3D Analyst extension for ArcGIS. A triangular irregular network (TIN) surface was created using the DTM information developed by Aero-Graphics, Inc. TINs are

a commonly accepted method to present three-dimensional surfaces using vector and planar digital geographic data. A TIN surface is constructed by triangulating a set of vertices, or points, within an area. These connected vertices form a network of contiguous, nonoverlapping triangular facets. Slope classes, in 3º increments, were assigned to every facet. The TIN surface was then converted to a two-dimensional geographical information system (GIS) polygon shape file, with each polygon maintaining its specified slope class. The area of each polygon feature was calculated and summarized by slope classes. The percentage of the total permit area was then calculated from the summarized slope class areas.

Table 13.1-1 Premining Topography Slope Analysis for No Name Permit Area

Slope increment	No Name Permit Area	
	Acres	Percent (%)
0 – 3%	7837.3	68.0
>3 – 6%	2378.9	20.6
>6 – 9%	619.8	5.4
>9 – 12%	234.6	2.0
>12 – 15%	120.0	1.0
>15 – 18%	73.9	0.6
>18 – 21%	54.6	0.5
>21%	206.6	1.8
Total*	11525.6	99.9

*Total percent may not equal 100 due to rounding



LEGEND

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NO NAME PERMIT BOUNDARY
- NTEC LEASE BOUNDARY

Certification Statement

I, Ramsey Yazzie, hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

RAMSEY R. YAZZIE NEW MEXICO 23571 PROFESSIONAL ENGINEER

REV. No.	DATE	DRAFT. BY	REVISION DESCRIPTION	ENG.	E.Q.	P.E. APPROVALS
25-A	8/7/25	AE	SUBMITTED TO OSM FOR APPROVAL.	RY	TH	RY

EXHIBIT 13.1-1

Navajo Transitional Energy Company

Navajo Mine

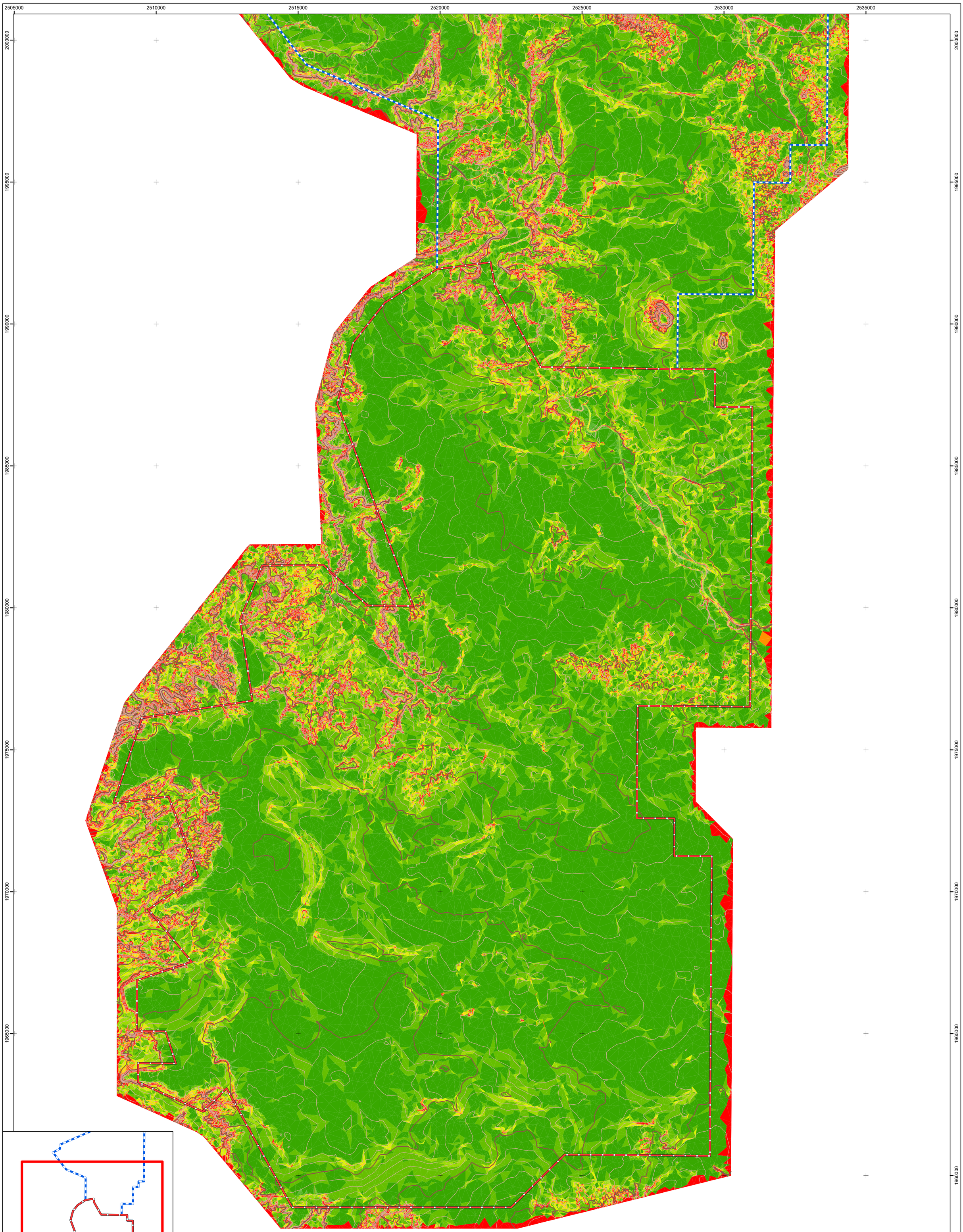
PRE-MINING TOPOGRAPHY

PLAN VIEW

SHEET 1 OF 1

Prepared By: RY	Drawn By: RY	Scale: 1" = 1200'
Approved By: TH	Plot Date: 9/11/25	

Drawing: Exh 13.1-1.dwg



Coordinate System:
NAD 1927 StatePlane New Mexico West FIPS 3003 Feet
Datum: North American 1927
Units US Feet

N

0 500 1,000 2,000 3,000 Feet
1:18,000

Legend

Index Contours
Intermediate Contours
No Name Permit Boundary
NTEC Lease Boundary
0-3%

Premine Slopes (%)

3-6%
6-9%
9-12%
12-15%
15-18%
18-21%
> 21%

REV. No.	DATE	DRAFT BY	REVISION DESCRIPTION	ENG.	EQD.	PE.
				APPROVALS		

Exhibit 13.1-2 (Sheet 1 of 1)

Navajo Transitional Energy Company

No Name Permit Area

Premining Slope Classes

PREPARED BY: TH	DRAWN BY: TH	PAPER SIZE: ARCH D
APPROVED BY: JJ	DATE: 7/16/25	