ENVIRONMENTAL ASSESSMENT
FOR
AKA GEOTHERMAL LEASE

DRAFT June 2026

Summary: Environmental Assessment of the Southern Ute Tribal Council's decision to approve or disapprove a geothermal lease between the Southern Ute Indian Tribe and Aka Power, LLC for 1,600 acres of subsurface Tribal trust minerals located in Sections 9, 10, and 11, Township 32 North, Range 11 West, New Mexico Principal Meridian within the exterior boundaries of the Southern Ute Indian Reservation in La Plata County, Colorado.

Prepared For:
Southern Ute Indian Tribe
Department of Energy,
Ignacio, CO

Prepared By:
Southern Ute Indian Tribe
Growth Fund
Safety and Environmental
Compliance Management Group,
Durango, CO

Prepared on Behalf of:
Aka Power, LLC,
Durango, CO

Contents

1. Introduction **1**

1.1 Background 1
1.2 Purpose and Need for the Action 2
1.3 Decision to be Made 2
1.4 Conformance with Statutes, Regulations, and Plans 2

2. Description of Alternatives, including Proposed Action **3**

2.1 Alternative A – Proposed Action 3
2.2 Alternative B – No Action 4
2.3 Alternatives Considered, but Eliminated from Further Analysis 4

3. Affected Environment and Environmental Consequences **5**

3.1 Scoping and Identification of Issues 5
3.2 Effects Analysis 5
3.3 Land Resources 7
3.4 Water Resources 8
3.5 Air 10
3.6 Living Resources 11
3.7 Cultural Resources 15
3.8 Socioeconomic Conditions 16
3.9 Resource Use 17
3.10 Other Values 19

4. Mitigation and Monitoring **21**

5. Consultation, Coordination, and Document Preparation **23**

6. References **24**

Appendix A. Project Maps

Acronyms

AQD	Southern Ute Air Quality Division
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CFR	Code of Federal Regulations
CR	County Road
DOE	Southern Ute Department of Energy
DWRM	Southern Ute Division of Wildlife Resources Management
EA	Environmental Assessment
ESA	Endangered Species Act
EPA	Environmental Protection Agency
GDP	Geothermal Drilling Permit
IPaC	Information for Planning and Consultation website
MSL	Mean Feet Above Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMPM	New Mexico Principal Meridian
NRMP	Southern Ute Indian Tribe Natural Resources Management Plan: Planning Period 2012-2032
ppb	parts per billion
Reservation	Southern Ute Indian Reservation
SUIT	Southern Ute Indian Tribe
SWPPP	Stormwater Pollution Prevention Plan
TDS	Total Dissolved Solids
TERO	Tribal Employment Rights Ordinance
TERP	Tribal Environmental Review Policy
THPO	Tribal Historic Preservation Office
UIC	Underground Injection Control
USC	United States Code
USDI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service

1. Introduction

This Environmental Assessment (EA) has been prepared pursuant to the Southern Ute Indian Tribe's Tribal Environmental Review Policy (TERP) Code, Title 31 of the Southern Ute Indian Tribal Code, to disclose and analyze the environmental effects of a proposed geothermal minerals lease for the approval or disapproval of the lease by the Southern Ute Tribal Council (the proposed action). The surface and mineral estate are owned by the Southern Ute Indian Tribe (the lessors). The lease would allow Aka Geothermal, LLC (Aka), the lessee, to explore and develop the geothermal resource within a 1,600-acre area located on Tribal trust lands within the Southern Ute Indian Reservation (the Reservation).

1.1 Background

A geothermal lease is created for the use of the Earth's heat resource. Geothermal resources are underground reservoirs of hot water or steam created by heat from the earth. Geothermal steam and hot water can reach the surface of the earth in the form of hot springs, geysers, mud pots, or steam vents or may be confined at depth with no surface expression at all. These resources can be accessed by wells and the heat energy can be used for generating electricity or other direct uses, such as heating homes, water, greenhouses, aquaculture operations, or agricultural drying.

Exploration and development of geothermal resources involves four phases: leasing, exploration, development/utilization, and decommissioning/reclamation. The first phase is to issue a lease. A geothermal lease confers on the lessee a right to explore and develop the geothermal resource contained in the lease. The next two phases, exploration, and development, often require new surface disturbance and further project evaluation, including resource analysis and impact assessment. Phase four, decommissioning and final reclamation, involves removing facilities and returning the site to its original or equivalent use. Additional site-specific environmental analysis would be required for each proposed exploration, development, or utilization operation or plan.

This EA looks at the potential effects from geothermal leasing to determine whether these impacts by the lessee could be significant and provides the rationale for any stipulations or special resource conditions applied to the lease. In considering whether the effects of a proposed action are significant, the potentially affected environment and the degree of the effects of the action are analyzed. The degree of effects is influenced by short- and long-term effects, beneficial and adverse effects, effects on public health and safety, and effects that would violate laws protecting the environment. After the Southern Ute Indian Tribe, through the Southern Ute Department of Energy (DOE), approves the analysis in this EA, it will either:

1. Issue a "Finding of No Significant Impact" and can proceed with approving the lease, or
2. Require an Environmental Impact Statement if the project has significant effects.

1.2 Purpose and Need for the Action

The purpose of the proposed action is to allow Aka to explore for and develop geothermal mineral resources underlying approximately 1,600 acres of Tribal trust land. The need for the proposed action is for the Tribe to respond to Aka's interest in leasing geothermal resources.

1.3 Decision to be Made

The Southern Ute Tribal Council's decision is whether to approve or disapprove the Minerals Agreement for Geothermal Resources on Tribal trust land.

1.4 Conformance with Statutes, Regulations, and Plans

Geothermal leasing on Tribal lands is regulated under 25 CFR Part 211 and 25 CFR Part 225. The Secretary of the Interior is responsible for administering the leasing and development of oil, gas, and other mineral resources where the mineral estate is held in trust by the federal government for the benefit of federally recognized Indian tribes.

The authority to grant and administer a mineral lease was delegated by the Secretary of the Interior to the Southern Ute Indian Tribe under a Tribal Energy Resource Agreement signed on May 11, 2026. Before a lease can be approved by the Tribal Council, TERP Code, Title 31 of the Southern Ute Indian Code, shall be demonstrated. As an energy related business lease, the Tribe's Department of Energy is the designated lead agency for the environmental compliance review [SUITC 31-3-101(5)].

As required under the Tribe's TERP Code, this EA has been prepared consistent with the requirements under the National Environmental Policy Act (NEPA), as amended. The U.S. Department of Interior's (USDI's) NEPA regulations (43 CFR 46); requirements in Departmental Manual 516, Chapter 10 (USDI 2020); and the Bureau of Indian Affair's (BIA's) NEPA Guidebook (BIA 2012) were used to guide the preparation of this document.

The proposed project would be consistent with the Southern Ute Indian Tribe's Natural Resources Management Plan: Planning Period 2012 to 2032 (NRMP) and the plan's goal to "provide integrated management of renewable and non-renewable resources in an environmentally, culturally, and socially responsible manner to benefit current and future generations of the Southern Ute Tribal membership" (SUIT 2012).

2. Description of Alternatives, including Proposed Action

2.1 Alternative A – Proposed Action

The proposed action is the Tribe's approval of the Aka Geothermal Minerals Agreement between the Southern Ute Indian Tribe (SUIT) and Aka. The surface and subsurface ownership of the proposed project area is entirely Tribal trust. The boundary of the Aka Geothermal Minerals Agreement is shown in the figures in Appendix A. The contract acreage comprises:

Township 32 North, Range 11 West, NMPM
Section 9: All
Section 10: All
Section 11: W/2
Containing 1,600 acres, more or less, in La Plata County, Colorado, all depths

Approval of the minerals agreement would grant Aka the right to explore, drill, develop, produce, and sell minerals from the contract acreage for a primary term of ten years and so long thereafter as geothermal resources are produced in commercial quantities.

The minerals agreement addresses all of the matters typically considered in granting mineral leasing agreements, including the contract acreage, the term of agreement, payments to the Tribe, allocating the costs and interests in wells, operational matters, reclamation responsibility, indemnification, bonds and insurance, tribal liens, dispute resolution, and general provisions. The Aka Geothermal Minerals Agreement includes all mineral formations, to all depths, and is not limited to a targeted formation. There are no surface restrictions associated with this minerals agreement, such as areas classified as "No Surface Occupancy" or "Controlled Surface Use" stipulations or terms; however, the location of equipment or facilities in furtherance of the minerals agreement requires the concurrence of the Tribe as to location. The rights granted under the minerals agreement include the non-exclusive right to use Tribal surface within the contract acreage and ensure that the Tribe will grant Aka rights-of-way or access to the contract acreage for future reasonable geothermal development.

The use of geothermal energy for electricity generation typically involves heating a geothermal fluid (water or brine) to create steam that can turn a turbine and drive a generator. Geothermal wells developed for electricity generation are typically drilled into deep sedimentary aquifers that have a high enthalpy for steam production. A well bottom-hole temperature of about 175° C (350° F) or higher is necessary for efficient electricity generation. Enhanced geothermal systems involve creating fractures at the bottom of a geothermal well that allow a water production well and injection well to communicate. This effectively creates a loop for the water, allows the water to be reused, and maintains the pressure in the reservoir (CGS 2026).

Geothermal power plants can be dry steam, flash steam, or binary cycle. Dry steam systems use steam directly from the geothermal reservoir to power turbines. The steam is then cooled, condensed, and returned to the original reservoir through a reinjection well. Flash steam systems

use a flash tank or separator to extract steam for powering a turbine. Condensed water from the separator and cooler is injected back into the reservoir through the injection well (Fervo 2025). The water cooling system may use cold water for evaporative cooling or forced air. The evaporative cooling systems of conventional power plants can be seen discharging white clouds of steam to the air (CGS 2026).

A binary cycle geothermal system is composed of two fluid cycles. A primary cycle pumps geothermal fluid to the surface, through a heat exchanger, and returns it to its original reservoir through a reinjection well. A secondary cycle runs a separate closed loop with a pressurized working fluid that gets heated or vaporized to drive a turbine, cooled, and then pumped back through the heat exchanger. The working fluid in the secondary cycle uses a fluid with a lower boiling point than water to increase efficiency (Fervo 2025).

Subsequent development of the lease area defined in the minerals agreement could include the drilling of water production wells; drilling associated water injection wells; the installation of pumps, heat exchangers, turbines, and cooling equipment; and the installation of electricity transmission infrastructure. Future development plans are subject to further Tribal review and approvals. Any proposed geothermal wells will require an approved Geothermal Drilling Permit (GDP) from the Bureau of Land Management (BLM). The drilling of an injection well would require a Class V Underground Injection Control (UIC) permit from the Environmental Protection Agency (EPA).

2.2 Alternative B – No Action

Under the "no action" alternative, the Tribe would not approve the Aka Geothermal Minerals Agreement, and the contract area would not be leased for geothermal mineral development. This alternative would not fulfill the need of the Tribe to provide responsible energy development for the benefit of Tribal members. The no action alternative does however, provide a baseline reference, enabling decision makers to compare the magnitude of environmental effects of the alternatives.

2.3 Alternatives Considered, but Eliminated from Further Analysis

The minerals agreement boundary was chosen because this area would facilitate the use of a previously reclaimed well site with existing access. The location is also conveniently close to potential transmission lines for future produced energy. No other alternatives were considered or necessary to resolve resource conflicts.

3. Affected Environment and Environmental Consequences

Chapter 3 addresses the affected environment and environmental consequences of the proposed project. This chapter's purpose is to convey how each of the alternatives described in Chapter 2 may affect the natural and human environment.

3.1 Scoping and Identification of Issues

Scoping is an initial means by which the lead agency identifies potential issues related to a proposed action. Internal scoping was initiated when an interdisciplinary team of resource specialists from the Tribe were asked to comment on the draft version of this EA. All comments were addressed before the finalization of the EA.

The decision documents for this EA will be posted in Southern Ute DOE office, located in Ignacio, Colorado, for 30 days. Any public comments received during this time will be considered.

3.2 Effects Analysis

An EA must analyze and describe the affected area and degree of effects of the proposed action and alternatives on the quality of the human environment. Effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable. Effects can be direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable. Environmental effects can be ecological, aesthetic, historic, cultural, economic, social, or health effects. For purposes of this EA, short-term effects occur during or after the activity or action and may continue for up to 5 years. Long-term effects occur beyond the first 5 years.

The issuance of a geothermal lease is strictly an administrative action. There would be no direct effects from issuing a lease because leasing does not directly authorize ground disturbing activities. However, once a parcel is leased, the lessee has the right to explore for and develop geothermal resources, subject to standard lease terms and special stipulations pertaining to the conduct of operations. Additional site-specific project environmental analysis would address direct effects of any future exploration, development, or production.

Table 1 shows the components of the human environment that were considered for indirect environmental effects as a result of the proposed minerals agreement. The components that have the potential to be affected by the proposed action are discussed further in this EA. Table 1 indicates if a component is considered further or why the component was eliminated from further discussion.

Table 1. Components of the human environment that may be indirectly affected by the proposed action.

Components of the Human Environment[1]	May be affected	Rationale
Land Resources		
Topography (landforms, drainage, gradients)	Yes	See Section 3.3 below
Soils (types, characteristics)	Yes	See Section 3.3 below
Geologic Setting, Mineral and Paleontological Resources	Yes	See Section 3.3 below
Water Resources		
Surface Water (quality, quantity, use, rights)	Yes	See Section 3.4 below
Groundwater (quality, quantity, use, rights)	Yes	See Section 3.4 below
Air		
Air quality/achievement, visibility	Yes	See Section 3.5 below
Living Resources		
Vegetation (terrestrial, riparian, threatened/endangered)	Yes	See Section 3.6 below
Wildlife (terrestrial, aquatic, threatened/endangered)	Yes	See Section 3.6 below
Cultural Resources		
Historic and Archeological Resources	Yes	See Section 3.7 below
Cultural, Sacred and Traditional Cultural Properties	Yes	See Section 3.7 below
Socioeconomic Conditions		
Employment and Income	Yes	See Section 3.8 below
Demographic Trends	No	The lease area is located in a remote, undeveloped area. The development of geothermal minerals is not expected to change demographic trends or lifestyle or cultural values on the Reservation.
Lifestyle and Cultural Values (rural, urban)	No	
Community Infrastructure (public services, utilities)	Yes	See Section 3.8 below
Resource Use		
Hunting, Fishing, Gathering	Yes	See Section 3.9 below
Timber Harvesting	No	While the lease area does contain pinyon-juniper woodlands that could be used by Tribal members for firewood gathering, the harvesting of timber does not occur in the area.
Agriculture (livestock, crops, prime and unique farmland)	Yes	See Section 3.9 below
Mineral Extraction	Yes	See Section 3.9 below

Recreation	No	Although Tribal members may use the project area for recreational purposes, there are no known recreational uses in the area. Subsequent development of geothermal resources is not expected to affect recreational uses in the area.
Transportation Networks	Yes	See Section 3.9 below
Other Values		
Noise and Light	Yes	See Section 3.10 below
Visual	Yes	See Section 3.10 below
Public Health and Safety	No	The lease area is located in a remote, undeveloped area. Any subsequent development will be assessed for potential public health or safety concerns and mitigation measures would be implemented at that time.

[1] This list was modified from the principal components of the human environment that must be considered in BIA NEPA documents (BIA 2012).

3.3 Land Resources

3.3.1 Affected Environment

Topography

The topography in the vicinity of the lease area contains mild rolling terrain between short mesa tops and erosional valleys. The lease area encompasses 1,600 acres with elevations ranging from approximately 6,145 mean feet above sea level (MSL) to 6,435 MSL (LPC 2026). The southeast end of Pinkerton Mesa extends into the northwest corner of the lease area.

Soils

See Figure 3 in Appendix A for a map of the soils in the area being leased. The soils are primarily composed of a variety of loams. Approximately 99% of the mapped soils have a slight off-road erosion hazard (erosion from overland water flow across exposed soils) and approximately 1% have a moderate off-road erosion hazard. The road/trail erosion hazard (erosion from channeled water flow) in the lease area is approximately 20% slight, 70% moderate, and 10% severe (NRCS 2026).

Geologic Setting, Mineral and Paleontological Resources

The geology in the lease area is primarily made up of the Nacimiento Formation, composed of shale, mudstone, and conglomeratic sandstone. The northwest corner of Section 9 contains terrace gravel from the Holocene and Pleistocene (Condon 1990). The Nacimiento Formation can contain early Paleocene vertebrate fossils and petrified wood (Fassett et al. 2010).

3.3.2 Reasonably Foreseeable Indirect Effects

Topography

The subsequent development of geothermal resources after the minerals have been leased will require the construction of level well pads for drilling and development activities. These pads will change the existing topography in the lease area. Due to the lack of steep terrain that would require greater amounts of cut and fill, the indirect effects on topography from subsequent development are not expected to be significant. In addition, future geothermal development facilities will be sited in a manner to minimize the amount of cut and fill as much as possible.

Soils

While there may be indirect effects on soils from subsequent development, these are not expected to be significant since each development proposal under the lease will receive a site-specific analysis and mitigation measures. A Construction Stormwater Discharge General Permit from the EPA will be required for any project that will disturb more than 1 acre of soils. Part of the permit requires the development of a site-specific stormwater pollution prevention plan (SWPPP) that identifies best management practices (BMPs) for erosion control. As part of the SWPPP, disturbed areas that are not needed for long-term operations will be revegetated as soon as practicable.

Geologic Setting, Mineral and Paleontological Resources

Future development project areas would be assessed for the presence of mineral or paleontological resources during the site-specific environmental analysis and cultural resources survey. If identified, those resources would be avoided or impacts mitigated. As a result, no significant effects to mineral or paleontological resources are anticipated.

3.4 Water Resources

3.4.1 Affected Environment

Surface Water

The lease is located in an area with little surface water or precipitation. The average annual precipitation for the lease area is 14.86 inches (NCEI 2021). The intermittent drainage, McDermott Arroyo, runs from east to west across the lease area with a few connecting intermittent drainages (see Figure 2 in Appendix A). McDermott Arroyo eventually flows into the La Plata River approximately 11 miles southwest of the lease area as the crow flies.

Groundwater

Usable groundwater occurs in the vicinity of the lease area in the fairly shallow sandstones from the Tertiary Age. Rainfall and snowmelt are the principal sources of natural recharge to these aquifers. These sources generally supply only small volumes of water to the aquifers because annual precipitation is minimal, and runoff, evaporation, and transpiration divert much of the

water before it can percolate to sufficient depth to recharge an aquifer. A water well for livestock use was constructed along the eastern boundary of the lease area by the Southern Ute Range Division. This fresh water well was drilled to 200 feet and had a static water level at 39 feet when tested in 2004 (CDSS 2026). Water from deeper aquifers tends to have greater total dissolved solids (TDS) and is non-usable (USDI 2002).

Seven water wells have been permitted and constructed within the lease area. All seven are coalbed methane wells producing from the Fruitland Formation and produce water as a byproduct of natural gas production (LPC 2026). These wells produce water from depths ranging from 2,417 to 2,820 feet deep (ECMC 2026). Water produced from the Fruitland Formation tends to be characterized by sodium-bicarbonate with high TDS concentrations (USDI 2002).

Geothermal wells developed for electricity generation are typically drilled into deep sedimentary aquifers with bottom hole temperatures in excess of 175°C (350°F). In the San Juan Basin, temperatures above 121° C (250° F) have been recorded in oil and gas wells between 7,000-9,000 feet deep (CGS 2026). The quality of the water found in deep geothermal wells often has high TDS and a higher mineral content or hardness.

3.4.2 Reasonably Foreseeable Indirect Effects

Surface Water

The development of well pads and geothermal facilities will require construction activities and soil disturbance. The exposed soils would allow stormwater to carry sediment to the intermittent drainages in the lease area. In addition, any fluids spilled on the ground surface or materials or equipment exposed to precipitation have the potential to contribute contaminants to stormwater that could carry those contaminants downstream to an intermittent drainage.

A SWPPP will be prepared for any project that will disturb more than 1 acre as part of the EPA Construction Stormwater General Permit. Due to the size of the drilling rig required to drill a deep conventional well, it is anticipated that most facilities would be more than 1 acre. Under the SWPPP, secondary containment will be required for any petroleum products, chemicals, or hazardous wastes stored at a facility. The SWPPP will also require BMPs to control sediment from erosion. In addition, any geothermal power facility will need to obtain an Industrial Stormwater Discharge Permit from the EPA unless all industrial activities and materials are completely sheltered from rain, snow, and runoff. EPA discharge permits establish discharge limits and conditions to protect the water quality of receiving waters. Any indirect effects on the intermittent drainages in the lease area from subsequent development are not expected to be significant as a result of required permits and the associated site-specific mitigation measures.

Groundwater

Geothermal wells drilled in the lease area are likely to be drilled to depths greater than 9,000 feet. These wells will produce water from and inject water into these great depths, far below any

usable groundwater aquifers. Any geothermal well bores and injection wells will be cased and cemented through any usable aquifers to protect the water quality in these areas. The water quality of the water pumped from the geothermal well will likely have high TDS and mineral content and won't be valuable for other uses. The water or brine will be reinjected into the original reservoir to help maintain the reservoir pressure.

A significant amount of water will be required for well drilling and completion activities, injection well testing, and facility operations. The total amounts will vary based on well depths and facility designs. Water will need to be transported to the lease area by truck, surface layflat pipeline, or the installation of a new pipeline. The source of water and type of transport will need to be identified and appropriately permitted at the time of each project proposal.

Reasonably foreseeable indirect effects to groundwater as a result of the proposed minerals agreement are not expected to be significant. Potential effects to freshwater aquifers will be mitigated though well design and construction. While geothermal development will require additional water use, the amount and source of this water is unknown at this stage. The effects associated with project water use will be assessed during site-specific environmental analyses conducted for subsequent proposals.

3.5 Air

3.5.1 Affected Environment

Overall, air quality within the Reservation meets all federal air quality standards, as measured by the Tribe's Environmental Programs Department Air Quality Division (AQD). The AQD measures four criteria pollutants through three monitoring stations around the Reservation. These criteria pollutants include ozone (O_3), nitrogen dioxide (NO_2), fine particulate matter (PM 2.5), and particulate matter (PM 10). Monitoring of the other two criteria pollutants, carbon monoxide (CO) and sulfur dioxide (SO2), was discontinued in 2024 and 2023, respectively. AQD determined that past levels for these pollutants have been far below the EPA's National Ambient Air Quality Standards (NAAQS) and are not likely to increase due to any identified anthropogenic emissions sources. Ozone is the only pollutant close to reaching the NAAQS threshold. Ozone design values (fourth highest maximum averaged over a three-year period) were calculated for the three monitoring stations using 2024 data. The values were 67 parts per billion (ppb), 67 ppb, and 55 ppb. EPA's NAAQS threshold for ozone is 70 ppb. An unidentified instrument issue was suspected at the monitoring station with an ozone design value of 55 ppb. The values at the other two monitoring stations have shown a slow but steady increase since 2021 (SUIT 2025). According to the Colorado Department of Public Health and Environment Air Quality Control Commission, increased development in southwest Colorado, including power plants, oil and gas wells, and population growth, are contributing to air quality concern. An overall haze can sometimes be seen in the skies, which impacts visibility (CDPHE 2025).

The Tribe's AQD has been delegated authority to administer several programs and standards under the Clean Air Act within the exterior boundaries of the Reservation. These include the Title V operating permitting program, Minor New Source Review permitting program, new source performance standards, and maximum achievable control technology standards. The EPA Region 8 retains the authority of the Major New Source Review permitting program.

3.5.2 Reasonably Foreseeable Indirect Effects

Any future exploration or development of the lease area could result in emissions of criteria pollutants or hazardous air pollutants that could cause an incremental increase in overall emissions of pollutants in the region. Geothermal power plants running on natural or flashed steam could have a small component of pollution, especially if the resource is associated with young volcanic activity. Volcanic gases, such as carbon dioxide (CO_2), sulfur dioxide, and hydrogen sulfide (H_2S), may be brought to the surface with the geothermal fluid and released to the atmosphere. With binary power plants, the geothermal fluid is passed through a heat exchanger and reinjected with no exposure to the atmosphere and no pollution (CGS 2026). In general, any geothermal power plants constructed as a result of this action would be expected to generate electricity with very low overall air emissions. Geothermal electricity would potentially displace fossil-fuel-based generation and reduce future air emissions.

Future exploration or development activity would include soil disturbances from constructing well pads, access roads, pipelines, power lines, and drilling. Any disturbance is expected to cause increases in fugitive dust and particulate matter in the project area and immediate vicinity. Particulate matter, mainly dust, may become airborne when drill rigs and other vehicles travel on dirt roads. Air quality may also be affected by exhaust emissions from engines used for drilling, transportation, construction, and other uses. Potential engine emissions include the criteria pollutants carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter, as well as carbon dioxide, nitric oxide (NO), and hydrocarbons. These emissions can also contribute to the formation of ozone. Effects on air quality from soil disturbance and engine emissions would be short-term in association with individual project proposals and would be considered in the site-specific analysis for each proposal. All proposed activities would be subject to applicable Tribal and Federal air quality laws and regulations. Indirect effects on air quality as a result of the proposed minerals agreement would not be significant.

3.6 Living Resources

3.6.1 Affected Environment

Vegetation

Figure 4 in Appendix A shows the land cover in the lease area. The area is primarily Colorado Plateau Pinyon-Juniper Woodland with interspersed Colorado Plateau Mixed Bedrock Canyon and Tableland. Inter-Mountain Basins Big Sagebrush Shrubland dominates the drainage valleys

and the top of Pinkerton Mesa. Inter-Mountain Basins Semi-Desert Shrub Steppe is the main land cover type in the east side of the lease area (Lowry et al. 2005).

The lease area has not been identified as potential habitat for any threatened or endangered plant species by the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website (USFWS 2026).

Culturally important plants are species that are reported by Tribal members to have been historically or currently used for food, medicine, crafts, or tribal ceremonies. The culturally important plant piñon pine (*Pinus edulis*) does occur within the lease area. Other culturally important plants may also be present.

Wildlife

The lease area is located in the La Plata Management Unit, Unit 1, of the SUIT NRMP (SUIT 2012). The lease area contains a variety of wildlife habitat types, including pinyon-juniper woodlands, sagebrush shrublands, and shrub steppe. There is a general lack of available water for wildlife in the lease area. The general quality of the habitat for wildlife use is marginal due to the presence of extensive oil and gas development in the form of well pads and access roads. Mule deer (*Odocoileus hemionus*) and elk (*Cervus canadensis nelsoni*) use the area year-round. There is also potential nesting habitat for a variety of migratory bird species and raptors, including golden eagles (*Aquila chrysaetos*), within the lease area. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (16 USC 703-712) and golden eagles are protected under the 1940 Bald and Golden Eagle Protection Act (16 USC 668-668d).

According to the USFWS IPaC website, there are eight species with a threatened, endangered, proposed threatened, proposed endangered, or experimental population status that could be present within the lease area based on species range (USFWS 2026). These species and their associated habitats are listed in Table 2 below. Table 2 also considers the presence of potential habitat for the species in the lease area and no potential habitat was identified. Regardless, a biological assessment will be completed at the site-specific development stage to consider the potential for these species to occur in a project area or be impacted by proposed development. If a listed species is identified as occurring or having the potential to occur in a project area, the Southern Ute Division of Wildlife Resources Management (DWRM) and the USFWS will be consulted.

Table 2. Threatened, endangered, and proposed species that may occur in the lease area.

Species Name	Conservation Status	Habitat Requirements	Potential Habitat in Lease Area
MAMMALS			
Gray Wolf (*Canis lupus*)	Experimental Population, Non-Essential[1]	Formerly occurring in most of the conterminous U.S. and Mexico. Dispersing wolves have been documented in Colorado, and the State began reintroducing gray wolves in 2023, however no wolves have been released within the Southern Ute Indian Reservation.	Based on the best available data, no wolves are known to be present within the Southern Ute Indian Reservation (CPW 2026 and DWRM communication).
BIRDS			
Mexican Spotted Owl (*Strix occidentalis lucida*)	Threatened	Frequently associated with mature mixed-conifer, pine-oak, and riparian forests. Also found in canyon habitat (USFWS 2004).	There are no mature, complex forests or canyon habitat in the lease area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	Require moist microclimatic and vegetative conditions. Breed in dense, tall, riparian vegetation patches that are typically greater than 30 feet wide and near surface water or saturated soil (NPS 2016).	No riparian habitat occurs within the lease area.
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Wooded habitat with dense cover and water nearby. In the West, nests are often placed in willows along streams and rivers with nearby cottonwoods for foraging. (USFWS 2024b) Require relatively large (> 50 acres), contiguous patches of multilayered riparian habitat for nesting (NPS 2015).	No cottonwood or riparian habitat occurs within the lease area.
FISH			
Colorado Pikeminnow (*Ptychocheilus lucius*)	Endangered	Large rivers with strong currents, deep pools, eddies, and quiet backwaters. Designated critical habitat for this species is located in the San Juan River near Farmington, New Mexico (USFWS 1994).	No fish habitat occurs within the lease area.
Razorback Sucker (*Xyrauchen texanus*)	Endangered	Swift currents, eddies, and backwaters in the San Juan, Colorado, Green, and Yampa Rivers. Designated critical habitat for this species is located in the San Juan River in New Mexico (USFWS 1994).	No fish habitat occurs within the lease area.

Species Name	Conservation Status	Habitat Requirements	Potential Habitat in Lease Area
INSECTS			
Monarch Butterfly (*Danaus plexippus*)	Proposed Threatened	Found throughout eastern and western North America in the spring and summer, laying their eggs on obligate milkweed host plants (primarily *Asclepias* spp.). This species is typically found in riparian areas where milkweed species are often found in arid regions of the western U.S (USFWS 2020).	No riparian habitat occurs within the lease area.
Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*)	Proposed Endangered	Suckley's cuckoo bumble bees require diverse native floral resources (pollen and nectar) for nutrition. It is an obligate social parasite and they are entirely dependent on social bumble bee hosts to collect pollen to rear their young (USFWS 2024a).	This species is considered to be extirpated from Colorado by the USFWS (pers. comm. T. Ireland, 2025).

[1]For purposes of ESA section 7 consultation, experimental populations are treated as if they are proposed for listing (USFWS 1998).

3.6.2 Reasonably Foreseeable Indirect Effects

Vegetation

There could be effects to vegetation from future projects in the lease area. Removal or crushing of vegetation would increase the amount of exposed soils, thus increasing the potential for wind and water erosion. Vegetation disturbance would also increase the potential for invasion by noxious weed species. The additional human traffic and equipment in the area during construction and operational activities could increase the potential for the introduction of noxious weed species to the lease area as well. The amount of vegetation disturbed by future development would vary depending on the specific facilities being proposed and could range from 1 to 5 acres for a geothermal or injection well. Energy generation facilities would require multiple wells and equipment and would disturb a larger footprint.

The lease area already contains extensive oil and gas development consisting of well pads and access roads. The siting of new facilities within the lease area would be able to use existing access roads and, potentially, previously disturbed areas. This would help to reduce the amount of new disturbance required. At the development stage, each project would receive a site-specific environmental analysis and appropriate mitigation measures to minimize effects would be identified. These would include the implementation of BMPs to control erosion, the reclamation of areas not needed for long-term operations, and the control of noxious weed species in

accordance with DOE policies. As a result, indirect effects to vegetation in the lease area are expected to be localized and minor.

Wildlife

Effects to wildlife as a result of future geothermal development could include disturbance and habitat avoidance due to an increased human presence and noise associated with traffic and equipment during construction and operation activities. An increase in traffic to the lease area could also raise the potential for traffic and wildlife collisions. The vegetation removal and soil disturbance associated with site development could be a cause of mortality for smaller mammals, birds, and other wildlife. Increased development could also promote habitat fragmentation and reduce effective habitat size for species like deer and elk.

As discussed above, the amount of vegetation disturbed by future development would vary depending on the specific facilities being proposed. The siting of new facilities within the lease area will use existing access roads and previously disturbed areas as much as possible to minimize habitat loss, fragmentation, and wildlife mortality impacts. Any development that occurs between April 1st and August 31st will require pre-construction migratory bird surveys to ensure that migratory bird nests will not be disturbed. In addition, if active raptor nests are found on Tribal lands at any time of year, DWRM staff will be consulted for appropriate conservation measures.

Due to the marginal quality of wildlife habitat in the lease area, the existing oil and gas development in the area, and the implementation of mitigation measures, indirect effects to wildlife as a result of the proposed minerals agreement are not expected to be significant.

3.7 Cultural Resources

3.7.1 Affected Environment

Historic and Archeological Resources

The Reservation has a relatively high density of prehistoric archeological sites and artifacts. In addition, many areas within the Reservation have historically been used for traditional cultural purposes and are important for the preservation of Tribal culture and customs (SUIT 2012). An inventory report of known cultural resources and historic properties was completed for the area of potential effect, or lease area. Pursuant to Article 6 of the Tribe's TERP Code, a joint clearance letter was prepared by the Tribe's Department of Natural Resources and Cultural Preservation Department/Tribal Historic Preservation Office (THPO) [(1) accepting the report's findings and recommendations without modification, (2) accepting the report's findings and recommendations with modifications]. The letter is provided in Appendix B.

Cultural, Sacred and Traditional Cultural Properties

Ute Indian Tribes have historically considered hot springs to be sacred places used for spiritual purification and physical healing (RMPBS 2025). Those hot springs were created by geothermal

heat from the Earth's crust. The geothermal heat that would be used to generate electricity under the proposed mineral agreement is also from the Earth's crust, but the heated groundwater in the lease area hasn't found a path to the Earth's surface. There are no known hot springs within the lease area. The geothermal heat has not been traditionally used by the Tribe in the lease area or vicinity, although several known hot springs are located in the southwest portion of Colorado.

3.7.2 Reasonably Foreseeable Indirect Effects

Historic and Archeological Resources

Any subsequent ground disturbing activities will require a site-specific analysis and cultural survey in compliance with the Tribe's Non-Disturbing Cultural Resource Inventory and Monitoring Permit Policy. Any historic or archaeological sites will be avoided in accordance with this policy. In addition, the minerals agreement includes a clause for cultural resource protection requiring that if any historic properties, archaeological resources, human remains, or other cultural items are discovered during construction, all activities would cease and the DOE would be notified immediately. Lease and site-specific development activities are subject to all applicable Tribal and/or federal regulations, including the Tribe's Non-Disturbing Cultural Resource Inventory and Monitoring Permit Policy, the Southern Ute Indian Tribe Policy for the Protection of Burial Sites, Human Remains and Funerary Objects, the Archaeological Resources Protection Act, and Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act (NHPA). As a result of stipulations in the minerals agreement, the findings of the cultural inventory report, Tribal policies, and mitigation measures, no effects to cultural resources are anticipated at the leasing stage of development. Effects to cultural resources would be analyzed in more detail at the site-specific stage of development, and effects may be avoided by the application of additional appropriate mitigation measures at that time.

Cultural, Sacred and Traditional Cultural Properties

No significant effects to cultural, sacred, or traditional cultural properties would arise as a result of granting the geothermal lease under the proposed action. Impacts to cultural, sacred, and traditional cultural properties may be avoided at the site-specific stage of development.

3.8 Socioeconomic Conditions

3.8.1 Affected Environment

Employment and Income

The Southern Ute Indian Tribe is a major contributor to the local economy and is the largest employer in La Plata County. The Tribe's Permanent Fund runs the core governmental operations of the Tribe, while the Growth Fund operates and manages the Tribe's businesses and business investments. In this role, the Growth Fund oversees a significant portfolio of companies and investments in energy, real estate, construction, and private equity. The Tribe also owns and

operates the Sky Ute Casino Resort in Ignacio. Tribal businesses generate millions of dollars each year for La Plata County, in direct and indirect economic activity (SUIT 2026a).

The Tribal Employment Rights Ordinance (TERO) is a Tribally adopted law that aims to promote the employment of Indians on or near the Reservation, to provide a preference in contracting for businesses owned by Indians, and to prevent discrimination against Indians in the employment practices of employers conducting business within the jurisdiction of the Tribe, in a manner consistent with federal law. The TERO extends to all businesses, including those owned by non-Indians, in certain commercial dealings, contracts, leases or other arrangements or activities affecting the Tribe (SUIT 2026b).

Community Infrastructure

There are not any public utilities within the lease area or vicinity, but there are two major electric transmission lines that run north to south through the lease area, a 115kV and a 345kV line (Xcel 2021). These lines run between Hesperus, Colorado and New Mexico.

3.8.2 Reasonably Foreseeable Indirect Effects

Employment and Income

Indirect effects from future geothermal development in the area could include positive changes in employment; increased salaries and wages paid to workers at geothermal facilities; stimulating the local economy through the purchase of equipment, supplies, and services from local area vendors; and lease, royalty and production payments influencing the fiscal health of the Tribe and local governments. Overall, these effects positively benefit local communities, the Tribe, and Tribal members.

Community Infrastructure

The proposed minerals agreement could have a positive indirect effect on the existing transmission lines by facilitating the development of a new potential source of clean energy for the energy providers that own the transmission lines. The decision to accept energy from a geothermal facility developed in the lease area in the future would involve a confidential negotiation between Aka and the owners of the transmission lines.

3.9 Resource Use

3.9.1 Affected Environment

Hunting, Fishing, Gathering

While big game species like mule deer and elk do use the lease area and vicinity, it is not a great area for hunting due to the existing oil and gas development in the area. No fish habitat exists in the lease area that would provide opportunities for fishing. The lease area could be used by Tribal members for gathering items such as firewood, piñon nuts, sagebrush, or other plants that grow in the lease area. The existing oil and gas lease roads would facilitate these activities.

Agriculture

The lease area is within the Southern Ute Range Division Picnic Flats Range Unit. The Picnic Flats range unit contains 20,562 acres and is managed for livestock and wildlife (SUIT 2012). A water well for livestock and a corral are located just east of the eastern lease area boundary.

The only prime farmland soils in the lease area are located on Pinkerton Mesa in the northwest corner. Approximately 30% of the lease area contains soils classified as prime farmland when irrigated. Because irrigation is scarce, there is limited crop production in the range unit and none in the lease area (SUIT 2012).

Mineral Extraction

The lease area does contain active oil and gas development. A total of 16 active wells are within the lease unit. These wells are shown on Figure 2 in Appendix A. Fifteen of those wells are currently producing coalbed methane. One well is shut-in and is not currently producing. Five plugged and abandoned wells are in the lease area. One of the plugged and abandoned wells was previously used as an injection well and was plugged in 2016 (ECMC 2026). No surface mining operations occur within the lease area.

Transportation Networks

There are multiple oil and gas access roads within the lease area. The lease area can be accessed from multiple routes, but the main road in the vicinity of the lease area is county road (CR) 138. CR 138 runs from CR 136, approximately 7 direct miles north, to the New Mexico state line in the south. It eventually connects with U.S. Highway 550 near Cedar Hill, New Mexico, approximately 9 miles southeast of the lease area.

3.9.2 Reasonably Foreseeable Indirect Effects

Hunting, Fishing, Gathering

The general lease area could be used by Tribal members for hunting or gathering activities. Indirect effects to wildlife and vegetation are discussed in Section 3.6.2 above and are not expected to be significant. If a subsequent development project requires the removal of trees within the lease area, a forest product/firewood permit would be required from the Southern Ute Forestry Division for the removal of all viable firewood on Tribal trust land. In addition, all ponderosa pine, juniper, Gambel oak, and piñon pine greater than 4 inches in diameter would be hauled to the Forestry fuels yard for Tribal member use.

Agriculture

The lease area is located within an active range unit. Future development of the geothermal minerals agreement would occur in an area with open grazing. Facilities may need to be fenced or protected to keep livestock from damaging equipment and to protect livestock from harm. A site-specific analysis would be conducted at the project development stage and appropriate

mitigation measures would be identified at that time. No significant effects to agricultural resources are anticipated.

Mineral Extraction

The purpose of the proposed minerals agreement is to facilitate the extraction of geothermal resources from the Tribal mineral estate. This will require drilling new wells in the lease area for water production or injection. Any new wells will require a GDP permit from the BLM and any new injection wells will require a UIC permit from the EPA. Part of the review process for these permits is to assess the downhole geology of new proposed wells and any potential impacts to surrounding development. As a result of the additional scrutiny given to new wells at the permitting stage, no significant indirect effects to mineral extraction resources are anticipated as a result of the proposed minerals agreement.

Transportation Networks

Future geothermal resource development would necessitate an increase in traffic within the lease area and vicinity. The level of traffic would depend on the number of wells drilled and scale of any facilities developed. For example, if a geothermal well is productive, then the facility could be expanded with turbines and transmission infrastructure for energy generation. The additional equipment and operations would require additional staff and maintenance.

A significant increase in traffic could be expected in the short-term during drilling and completion activities. Large trucks would be used for hauling water, sand, and equipment to the site. After that, more consistent smaller truck traffic associated with maintenance and operations would be expected in the long-term.

Increased traffic on area roads may increase the risk of traffic accidents and increase the rate of road degradation, the frequency of maintenance, and the cost of maintenance. Nearby residents on local roads may experience large trucks and wide loads at increased rates. Traffic impacts to specific access routes will be assessed during site-specific environmental analyses conducted for subsequent development proposals and mitigation measures identified. No significant indirect effects to transportation networks are anticipated as a result of the proposed minerals agreement.

3.10 Other Values

3.10.1 Affected Environment

Noise and Light

The lease area is mostly quiet and dark due to its remote location. Noise sources are primarily from oil and gas traffic activities and wildlife. There is a lack of artificial lighting in the lease area and there are not any residential areas or highways visible from the lease area.

Visual

The general view in the lease area is undisturbed, rolling terrain with dispersed oil and gas well pads and access roads. The lease area is not located within a prominent viewshed or visible from any residential areas or highways.

3.10.2 Reasonably Foreseeable Indirect Effects

Noise and Light

Future exploration or development of the lease area could result in an increase in light pollution and noise. During drilling and construction activities, a short-term increase in noise would be expected. Nighttime drilling operations, if they occur, would also require artificial lighting.

In the long-term, if drilled geothermal wells are productive and electric generation facilities are developed, the presence of large turbines and/or cooling fans could be a constant source of noise. Electricity generation facilities would also need to be lit at night for security purposes.

Site-specific environmental analyses would be conducted for subsequent development proposals and mitigation measure would be identified. Potential mitigation measures could include the use of shielded light sources, downward facing lights, and sound barriers. As a result, no significant indirect effects from noise and light are anticipated from the proposed minerals agreement.

Visual

Potential indirect effects to visual resources that could occur in the lease area include visual contrasts due to roads, well pads, drill rigs, temporary and long-term facilities, transmission lines, and impacts of nighttime lighting to dark skies. If evaporative cooling is used to cool water in electricity generation facilities, then cooling towers and clouds of white steam could be expected in the visual landscape. Visual effects would be assessed during site-specific environmental analyses conducted for subsequent development proposals and mitigation measures identified. Potential mitigation to visual effects could include painting equipment with colors that blend with the surrounding landscape and siting facilities to minimize visual effects. Due to the location of the lease area and the implementation of mitigation measures, indirect impacts to visual resources as a result of the proposed minerals agreement are not expected to be significant.

4. Mitigation and Monitoring

The environmental protection measures identified in the analysis of effects above are listed here. These measures were considered when determining the potential for indirect effects associated with the proposed minerals agreement. These environmental protection measures will be incorporated as conditions of approval for any subsequent development approved under the minerals agreement.

Appropriate and prudent site-specific environmental protection measures would also be identified for future exploration and development activities based on a project-specific environmental analysis and special stipulations from the DOE, the Tribe's Department of Natural Resources, the Tribe's Environmental Programs Department, the BLM, and/or the EPA.

- Locate facilities in a manner to minimize the amount of cut and fill as much as possible.
- A Construction Stormwater Discharge General Permit from the EPA and a site-specific SWPPP will be required for any project that will disturb more than 1 acre of soils.
- Disturbed areas that are not needed for long-term operations will be revegetated as soon as practicable.
- Secondary containment will be required for any petroleum products, chemicals, or hazardous wastes stored at a facility.
- Geothermal power facilities will need to obtain an EPA Industrial Stormwater Discharge Permit unless all industrial activities and materials are completely sheltered from rain, snow, and runoff.
- Any geothermal well bores and injection wells will be cased and cemented through any usable aquifers to protect the water quality in those areas.
- All proposed activities would be subject to applicable Tribal and Federal air quality laws and regulations.
- The siting of new facilities within the lease area will use existing access roads and previously disturbed areas as much as possible.
- Noxious weed species will be controlled in accordance with Southern Ute DOE policies.
- A biological assessment will be completed for site-specific project proposals to consider the potential for threatened and endangered species to occur in a project area or be impacted by proposed development.
- Any development that occurs between April 1st and August 31st will require pre-construction migratory bird surveys to ensure that migratory bird nests will not be disturbed.
- If active raptor nests are found on Tribal lands at any time of year, DWRM staff will be consulted for appropriate conservation measures.
- Any historic or archaeological sites will be avoided in accordance with the Tribe's Non-Disturbing Cultural Resource Inventory and Monitoring Permit Policy.
- All development activity would be confined to areas surveyed for cultural resources.

- If any human remains or cultural resources were discovered during construction, all activities would be stopped and the DOE would be notified immediately.
- Project proponents would be required to notify contractors working on projects that they are subject to prosecution for disturbing archaeological sites or picking up artifacts.
- A forest product/firewood permit would be required from the Southern Ute Forestry Division for the removal of all viable firewood on Tribal trust land. All ponderosa pine, juniper, Gambel oak, and piñon pine greater than 4 inches in diameter will be hauled to the Forestry fuels yard.

5. Consultation, Coordination, and Document Preparation

Table 3 lists the agencies, organizations, and individuals consulted while preparing this EA document. Table 4 below lists all persons who contributed to the development of this EA.

Table 3. List of All Persons, Agencies, and Organizations Consulted

Name & Organization	Purpose & Authorities for Consultation or Coordination
Southern Ute Resource Specialists: • Wildlife Division • Range Division • Forestry Division • Agricultural Division • Water Resources Division • Lands Division • Environmental Programs Department	Reviewed and commented on the draft EA.
DOE	Reviewed and commented on the EA and provided guidance on DOE specific EA requirements.
Aran Johnson, SUIT Division of Wildlife Resources Management	Reviewed and commented on the EA, collected all comments from Southern Ute Resource Specialists
SUIT Cultural Preservation Department/THPO	NHPA Section 106 compliance

Table 4. List of Contributors

Name	Title	Area of Expertise/Discipline
Brenna Kampf	Senior Environmental Compliance Specialist, SECMG, Southern Ute Growth Fund	NEPA, Environmental Biology
Amanda Kuenzi	Senior Environmental Compliance Specialist, SECMG, Southern Ute Growth Fund	NEPA, Environmental Biology
Ember Michel	Environmental Health and Safety Regulatory Compliance Manager, SECMG, Southern Ute Growth Fund	NEPA

6. References

BIA. 2012, August. Indian Affairs National Environmental Policy Act (NEPA) Guidebook: 59 IAM 3-H. Division of Environmental and Cultural Resources Management. Reston, VA.

Colorado's Decision Support Systems (CDSS). 2026. Well Permits. Colorado Water Conservation Board and Colorado Division of Water Resources. https://dwr.state.co.us/Tools/WellPermits. Accessed June 2026.

Colorado Department of Public Health and Environment (CDPHE). 2025. Air Quality Control Commission Annual Report to the Public, 2024-2025. Colorado Air Quality Control Commission, Department of Public Health and Environment. https://drive.google.com/file/d/11132qA5X0UzSv__CRHT9047shB-ivUY2/view.

Colorado Geological Society (CGS). 2026. Geothermal webpage. Colorado Geological Society, Golden, Colorado. https://coloradogeologicalsurvey.org/energy/e-geothermal/. Accessed June 2026.

Colorado Parks and Wildlife (CPW). 2024. Colorado Parks and Wildlife – Wildlife Species Map Application. Available at https://cpw.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=b3e1f4c17e98481c85f9683b02e91250.

CPW. 2026. Wolves in Colorado. Colorado Parks and Wildlife website. https://cpw.state.co.us/wolf-sightings. Accessed June 2026.

Condon, S.M. 1990. Geologic and structure contour map of the Southern Ute Indian Reservation and adjacent areas, southwest Colorado and northwest New Mexico: U.S. Geological Survey IMAP 1958.

Energy and Carbon Management Commission (ECMC). 2026. ECMC GIS Online. Colorado Energy and Carbon Management Commission, Department of Natural Resources. https://cogccmap.state.co.us/cogcc_gis_online/. Accessed June 2026.

Fassett, J.E., M.T. Heizler, and W.C. McIntosh. 2010. Geologic implications of an $40AR/^{39}Ar$ single-crystal sanidine age for an altered volcanic ash bed in the Paleocene Nacimiento Formation in the southern San Juan Basin. New Mexico Geological Society Guidebook, 61st Field Conference, Four Corners Country Guidebook, 2010, pp. 147-156.

Fervo Energy (Fervo). 2025, March 31. Geothermal Mythbusting: Water Use and Impacts. Fervo Energy. https://fervoenergy.com/geothermal-mythbusting-water-use-and-impacts/

La Plata County (LPC). 2026. La Plata County Maps. La Plata County GIS Department. https://gis.lpcgov.org/lpcmap/. Accessed June 2026.

Lowry, J.H., Jr., R.D. Ramsey, K. Boykin, D. Bradford, P. Comer, S. Falzarano, W. Kepner, J. Kirby, L. Langs, J. Prior-Magee, G. Manis, L. O'Brien, T. Sajwaj, K.A. Thomas, W. Rieth, S. Schrader, D. Schrupp, K. Schulz, B. Thompson, C. Velasquez, C. Wallace, E. Waller and B. Wolk. 2005. Southwest Regional Gap Analysis Project: Final Report on Land Cover Mapping Methods. RS/GIS Laboratory, Utah State University, Logan, Utah. Available at https://swregap.org/data/landcover/.

National Centers for Environmental Information (NCEI). 2021. Hesperus 14.1 SSW, CO Annual/Seasonal Precipitation, 1991-2020. U.S. Climate Normals Quick Access Tool, National Centers for Environmental Information, National Oceanic and Atmospheric Administration. https://www.ncei.noaa.gov/products/land-based-station/us-climate-normals.

National Park Service (NPS). 2015, February. Western Yellow-billed Cuckoo. National Park Service website. https://www.nps.gov/articles/western-yellow-billed-cuckoo.htm

NPS. 2016, October. Southwestern Willow Flycatcher. National Park Service website. https://www.nps.gov/articles/southwestern-willow-flycatcher.htm.

Natural Resources Conservation Service (NRCS). 2026. Web Soil Survey. U.S. Department of Agriculture, Natural Resources Conservation Service. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed June 2026.

Rocky Mountain Public Broadcasting Station (RMPBS). 2025, October. Sacred Hot Springs, Colorado Experience. Historic documentary. Available at www.youtube.com/@rockymtnpbs.

SUIT. 2012. Natural Resources Management Plan: Planning Period 2012 to 2032. Department of Natural Resources. Ignacio, Colorado.

SUIT. 2025. Southern Ute Indian Tribe Air Quality Division Annual Network Review, Calendar Year 2025. Southern Ute Indian Tribe, Environmental Programs Department, Air Quality Division. https://www.southernute-nsn.gov/wp-content/uploads/sites/15/2025/09/2025-SUIT-Annual-Network-Review.pdf.

SUIT. 2026a. Southern Ute Indian Tribe Business website. https://www.southernute-nsn.gov/business/. Accessed June 2026.

SUIT. 2026b. Living in La Plata County website. Southern Ute Indian Tribe, Natural Resources Department, Lands Division. https://www.southernute-nsn.gov/natural-resources/lands/assignments/living-in-la-plata-county/. Accessed June 2026.

USDI. 2002. Final Environmental Impact Statement for Oil and Gas Development on the Southern Ute Indian Reservation. Bureau of Land Management, San Juan Public Lands Center, Durango, Colorado; Bureau of Indian Affairs, Southwest Regional Office, Albuquerque, New Mexico; and the Southern Ute Indian Tribe.

USDI. 2020. Managing the NEPA Process - Bureau of Indian Affairs. Departmental Manual Series 31, Part 516, Chapter 10. Effective 7/28/20.

USFWS. 1994. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish, Humpback Chub, and Bonytail Chub. Federal Register Vol. 59, No. 54. March 21, 1994.

USFWS. 1998, March. Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. U.S. Fish and Wildlife Service and National Marine Fisheries Service.

USFWS. 2004. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl. Federal Register Vol. 69, No. 168. August 31, 2004.

USFWS. 2020, September. Monarch Butterfly (*Danaus plexippus*) Species Status Assessment Report, Version 2.1. U.S. Fish and Wildlife Service, U.S. Department of the Interior. 96 pp + appendices.

USFWS. 2024a, August. Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) Species Status Assessment, Version 1.0. Alaska Region U.S. Fish and Wildlife Service, U.S. Department of the Interior. 131 pp.

USFWS. 2024b. Yellow-billed Cuckoo (*Coccyzus americanus*). ECOSphere Environmental Conservation Online System. U.S. Fish and Wildlife Service, U.S. Department of the Interior. https://ecos.fws.gov/ecp/species/3911. Accessed April 2024.

USFWS. 2026. Information for Planning and Consultation website. U.S. Fish and Wildlife Service, U.S. Department of the Interior. https://ipac.ecosphere.fws.gov/?state=eaUpVuAGlEm63axNgm5qrYUmaqQcEj. Accessed June 2026.

Xcel Energy (Xcel). 2021, March. Our Energy Future: Destination 2030, 2021 Electric Resource Plan and Clean Energy Plan. Volume 2, technical appendix. Xcel energy, Public Service Company of Colorado. Colorado Public Utilities Commission docket number 21A-0141E.

Appendix A. Project Maps