

**United States Department of the Interior  
Bureau of Land Management**

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**Environmental Assessment  
DOI-BLM-UT- G010-2013-0018-EA**

**November 2015**

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**Gate Canyon Road Improvement Project  
UTU-81573**

***Location:*** Duchesne County, Utah  
T 11 S, R 15 E, Sections 4, 8, 9, 17, and 33

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# Gate Canyon Road Improvement Project UTU-81573

DOI-BLM-UT-G010-2031-0018-EA

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## Chapter 1. Purpose and Need for the Proposed Action

### Introduction

The Bureau of Land Management (BLM) proposes to respond to Duchesne County's Title V right-of-way application for a road construction project from the summit of Gate Canyon to the intersection of the Nine Mile Canyon Road. The proposed construction includes realignment, widening, and paving of the Gate Canyon section of the Wells Draw Road. This is the fourth and final phase of construction of the Wells Draw Road. The proposed project is located in T 11 S, R 15 E, Sections 4, 8, 9, 17, and 33 on BLM-administered land, and Sections 20, 28, 29, and 32 on School and Institutional Trust Lands Administration (SITLA) land (see Map 1 in Appendix A). If approved, Duchesne County would start construction in May of 2017. The project would be completed by August of 2017, or could be split into two phases and completed in August of 2018.

### Purpose and Need for the Proposed Action

BLM's need is to respond to a right-of-way application from Duchesne County to amend grant UTU-81573 to reconstruct a roadway on the final section of Wells Draw Road. The need for the project is established by BLM's responsibility under the Federal Land Policy and Management Act (FLPMA), to respond to Duchesne County's application to amend an existing right-of-way, and to consider approval of the application in a manner that avoids or reduces impacts on sensitive resource values associated with the project area and prevent unnecessary or undue degradation of the public lands.

As stated under 43 Code of Federal Regulations (CFR) 2801.2, "it is the BLM's objective to grant rights-of-ways to any qualified individual, business, or government entity and to direct and control the use of rights-of-way on public lands."

The BLM would decide whether or not to grant the right-of-way, and if so, under what terms and conditions.

### Conformance with BLM Land Use Plans

The proposed action is in conformance with the Vernal Field Office Resource Management Plan (RMP), approved in 2008.

As stated in the plan (pg. 86), the BLM's primary management objectives for the lands and realty programs are to:

- Process applications, permits, operating plans, mineral exchanges, leases, and other use authorizations for public lands in accordance with policy and guidance; and
- Manage public lands to support goals and objectives of other resources programs, respond to public requests for land use authorizations, and acquire administrative and public access where necessary.

Specific lands and realty management decisions pertinent to this proposal include:

- LAR-15: All applications to pave routes will be evaluated in site-specific NEPA analysis to determine the need for fencing.
- LAR 41: These approved transportation/utility corridors are the preferred location for future major linear ROWs which meet the following criteria: Paved routes or routes consisting of more than two lanes.
- LAR 42: Major linear ROWs meeting the above thresholds that are proposed outside of the preferred, designated corridors may require a plan amendment.

A review of the proposed action and alternatives against the above-stated decisions has determined that the proposed action and alternatives would be in conformance with the approved RMP. No plan amendments are required or proposed.

## Relationships to Statutes, Regulations, and Other Plans

This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and in compliance with all applicable regulations and laws passed subsequently, including the President’s Council on Environmental Quality (CEQ) regulations, and the U.S. Department of Interior requirements and guidelines listed in the BLM Manual Handbook H-1790-1.

The right-of-way grant would be processed pursuant to Title V of the FLPMA of 1976, as amended {43 U.S.C 1761} and would be subject to the terms and conditions set forth in 43 CFR 2800. The Title V right-of-way would also be consistent with the Rangeland Health Standards and Guidelines (43 CFR 4100, subsection 4180) and Native American Trust Resource policies.

The alternatives are consistent with the Duchesne County General Plan (as amended), which indicates the county’s objective to “ensure that public lands are managed for multiple use and sustained yield... and to protect the safety and health of the public” (pg. 13-14). Implementation of the paving project would allow for multiple uses, and increase public safety within Duchesne County.

Road construction, operation, maintenance, and termination activities would be in compliance with the terms and conditions of the existing right-of-way grant (UTU-81573), the American Association of State Highway and Transportation (AASHTO) safety standards, and would meet criteria for the Manual on Uniform Traffic Control Devices (MUTCD) for signs.

A general listing of agencies that could be involved in the implementation of the proposed action, and their respective regulatory authority, is provided below in Table 1-1.

**Table 1-1. Permits, Approval, and Authorizing Actions Required for the Proposed Action**

Issuing Agency/Permit Name or Authorizing Action	Nature of Permit/Approval	Regulatory Authority (If appropriate)
<b>Advisory Council on Historic Preservation (ACHP)</b>		
Cultural Resource Compliance	Protects cultural & historic resources; coordinated with Utah State Historic Preservation Officer (SHPO)	National Historic Preservation Act, Section 106

Issuing Agency/Permit Name or Authorizing Action	Nature of Permit/Approval	Regulatory Authority (If appropriate)
<b>Bureau of Land Management</b>		
Antiquities, cultural & historic resource permits	Inventory, excavate or remove cultural & historic resources from Federal lands	National Historic Preservation Act, Section 106; Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470mm); 43 CFR 3, 7
Pesticide Use Permit	Inventory, treat Federal lands for noxious weeds	Federal Noxious Weed Act of 1974, as amended (U.S.C. 2801-2814)
ROW Grants & Temporary Use Permits	Authorizes land uses on Federal lands	FLPMA (43 U.S.C. 1761-1771), 43 CFR 2800
Section 7 consultation	Initiation Section 7 consultation with the US Fish & Wildlife Service, as appropriate	Endangered Species Act of 1973, as amended (169 U.S.C., et seq. Section 7)
<b>State of Utah</b>		
School and Institutional Trust Lands Administration (SITLA)	Easement for roadway and parking area; temporary easement for staging area	Utah Administrative Code R850-40
Division of Water Rights	Issuance of Joint 404 stream alteration permit with U.S. Army Corps of Engineers	Federal Water Pollution Control Act, as amended and renamed Clean Water Act of 1977 (33 U.S.C. 1251 et seq. 401)
Division of Water Quality	Section 401 water quality certification	Clean Water Act of 1977 Section 401 (33 U.S.C. Section 1341) and Utah Water Quality Act UAC 19-5-101-124
State Historic Preservation Office (SHPO)	Consult on Section 106 compliance; approves cultural resource clearances; provides protection of cultural resources	National Historic Preservation Act, Section 106
<b>Duchesne County</b>		
Department of Road & Bridges	County road use and modification of permit/agreement; noxious weed act enforcement; solid waste disposal permits	County Ordinance
<b>U.S. Army Corps of Engineers</b>		
Section 404 permit	Authorizes impacts to waters of the U.S.	Federal Water Pollution Control Act, as amended and renamed Clean Water Act of 1977 (33 U.S.C. 1251 et seq. 401)

## Chapter 2. Description of Alternatives

### Introduction

This EA focuses on two action alternatives (the proposed action and alternative action) and the no action alternative.

### Proposed Action (Alternative A)

Duchesne County currently holds the right-of-way for the Wells Draw Road (see Map 1 in Appendix A). The proposed action is to amend the right-of-way to allow the Gate Canyon section of the Wells Draw Road (County Road #32) to be realigned or reconstructed and paved to improve traffic safety. The existing dirt road has poor drainage conditions, resulting in a build-up of loose sediment on the roadway that creates fugitive dust. Drainage improvements and paving would prevent water from accumulating on the roadway surface, eliminate fugitive dust, and increase driver safety. The proposed realignment would eliminate substandard curves from the roadway geometry, further increasing driver safety.

Approximately 5.2 miles of roadway would be constructed from the summit of Gate Canyon to the intersection of Nine Mile Canyon Road; 2.68 miles on BLM-administered land, and 2.52 miles on SITLA land (see Appendix A). Portions of the existing road that are outside the amended right-of-way would be reclaimed by excavating the roadway to natural contours, scarifying the graded surface, and seeding. Changes to road length are shown in Table 2-1.

**Table 2-1. Right-of-Way Mileage of the Proposed Action (Alternative A)**

Jurisdiction	Miles		
	Existing road	Existing road to be reclaimed	Proposed road
<b>BLM</b>	2.79	0.54	2.68
<b>SITLA</b>	3.30	1.48	2.52
<b>Total</b>	6.09	2.02	5.20

The county also proposes to develop unpaved parking for two potential future interpretive trail areas in the canyon, with access to the historic wagon road. These parking areas are identified on Map 2. One site is located near the north end of the project area, on BLM-administered land. The existing roadway would provide parking adjacent to the new roadway. The historic wagon road would only be accessible to foot traffic; no construction would occur beyond the proposed roadway right-of-way. The second site is located near the middle of the canyon, on SITLA land. A large level area would provide graveled parking and foot access to several cultural sites, including another portion of the wagon road.

Approximately 12.8 acres of the existing 15.9 acres of right-of-way on BLM-administered land would be included in reconstruction and improvement; 2.8 acres would be completely reclaimed. A portion of the existing roadway (an area of approximately 0.4 acre) would be retained in its current unpaved condition, and would provide parking for access to the historic wagon road. An additional 14.7 acres would be new right-of-way, for a total of 27.9 acres authorized in the amended right-of-way on BLM-administered land.

Acres of disturbance based on this design are shown in Table 2-2.

**Table 2-2. Right-of-Way Acreage for the Proposed Action (Alternative A)**

Jurisdiction	Acres					
	Existing ROW <sup>1</sup>	Existing ROW to be reclaimed	Existing ROW in proposed ROW	New ROW in proposed ROW	Unpaved parking	Total proposed ROW <sup>2</sup>
<b>BLM</b>	15.9	2.8	12.8	14.7	0.4	27.9
<b>SITLA</b>	18.8	8.6	10.1	26.2	1.0	37.3
<b>Total</b>	34.7	11.4	22.9	40.9	1.4	65.2
<sup>1</sup> Existing ROW is 47 feet wide on BLM						
<sup>2</sup> New right-of-way width (averages 100 feet, varies from 80 to 350 feet)						

The finished roadway pavement would be 30 feet wide, with 12-foot lanes and 3-foot shoulders. The required right-of-way widths needed range from 80 to 350 feet (at the widest point on SITLA land). The different widths are required due to the varying terrain. Some sections of the roadway are located in relatively flat regions and the required widths would be narrower; however, much of the roadway is located in a canyon, which requires larger cuts and fills and therefore a wider right-of-way, in order to meet the required safety standards. Significant effort has been made to minimize the required right-of-way widths. The proposed right-of-way widths reflect the area needed to reconstruct the roadway while conforming to current AASHTO design standards. Additional right-of-way width has been requested in areas where large-scale drainage improvements are anticipated or where surface ditching to convey runoff water to new culvert crossings would be required. Access to connecting roads (i.e., Wrinkles Road and Rye Patch Road) would be maintained.

A minimum 13-foot-wide safety clear zone would be provided as per AASHTO's Roadside Design Guide. The side slope of the roadway within the required clear zone would be at least 4:1 (H:V), with a 6:1 side slope preferred. Horizontal and vertical curves would meet the appropriate safety guidelines; the maximum grade would be less than 9 percent. Blasting would likely be required in some large cut areas (on SITLA land); a paleontological monitor would be present on-site to inspect the rock exposed by the blasting.

The majority of the roadway would be constructed with a design speed and posted speed of 40 mph. There may be portions of the roadway where speed would be reduced due to alignment concerns, limited sight distance, reduced clear zone, or other roadway design factors. The speed limit is currently unposted, except at sharp curves, which are posted at 10 mph. Traffic on this road is expected to include relatively high volumes of heavy truck traffic (700 to 1,000 vehicles per day, with about 50 percent being heavy trucks) for several years as resource fields are developed. The road would provide year-round, all-weather access to the region.

Pipe and box culverts would be installed along the route that are designed to properly handle a storm event with a return period greater than 100 years without overtopping the roadway or developing a static head in the culvert. Low water crossings may also be constructed in suitable locations.

A temporary use construction staging area is located adjacent to the proposed parking area on SITLA land, and is shown on Map 2 in Appendix A.

Additional specific design and cross section details are included in the Plan of Development (POD; Appendix B).

Construction is anticipated to begin in May of 2017 and be completed by August 2017, with the total project duration running approximately 4 months. The project may be split into two phases, with the

BLM and SITLA portions completed in different years; the project would then be completed in August of 2018.

A reclamation plan would be implemented in accordance with the Green River District Guidelines, and is included as Attachment B to the POD (Appendix B). The plan addresses measures to control noxious weeds, reduce erosion, preserve topsoil, increase desired vegetation, and stabilize the soils within the new corridor. The plan details practices to reclaim abandoned sections of the right-of-way. Monitoring and reporting procedures are also outlined.

Mexican spotted owl (*Strix occidentalis lucida*) surveys would be completed in 2016, and other raptor surveys would be completed prior to project activities in 2017, and 2018 if necessary. Depending on the results of surveys, timing restrictions and buffers may be implemented to avoid disturbance to nesting Mexican spotted owls or other raptors. Construction activities would be deferred from March 1 to August 31 for activities within one-half (0.5) mile of nesting Mexican spotted owls (RMP page A-13), except when non-breeding is confirmed or inferred that year per the accepted survey protocol (USFWS 2012). Other species-specific buffers and timing restrictions would also follow direction in Appendix A of the approved RMP. If active raptor nests were located during pre-construction surveys in the spring, construction would be delayed accordingly, but would likely be completed by October or November of the construction year.

A cultural sensitivity training would be required for all project employees working on-site. A PowerPoint presentation of this training is included as Attachment E of the POD. This training has been used on other projects within the Area of Potential Effect (APE) designated in the West Tavaputs Plateau Programmatic Agreement (BLM 2010a). A paleontological monitor would also be present during blasting to inspect the rock for fossils.

After construction, Duchesne County would maintain the roadway on a regular basis, according to their standard operating procedures and the right-of-way conditions. The County intends to maintain and operate this facility in perpetuity; termination is not proposed or anticipated at this time. If termination were proposed at a future date, restoration would be coordinated with the BLM at that time.

## Alternative B

Alternative B would follow the alignment of the existing road (see Map 3 in Appendix A). Approximately 6.08 miles of roadway would be reconstructed from the summit of Gate Canyon to the intersection of Nine Mile Canyon Road; 2.79 miles on BLM-administered land, and 3.29 on SITLA. Acreages of disturbance based on these distances are shown in Table 2-3.

**Table 2-3. Right-of-Way Acreage for Alternative B**

Jurisdiction	Acres		
	Existing ROW <sup>1</sup>	Additional Proposed ROW <sup>2</sup>	Total ROW
BLM	15.7	15.3	31.0
SITLA	17.6	23.6	41.2
<b>Total</b>	33.3	38.9	72.2

<sup>1</sup> Disturbance within the existing 47 foot right-of-way (ROW)  
<sup>2</sup> New disturbance beyond the 47 foot ROW (average 100 feet, varies from 80 to 230 feet)

Alternative B would be constructed in the same manner as the proposed alternative, with the exception that the entire existing roadway on BLM-administered lands would be included in the amendment to the right-of-way and additional width would be authorized for widening (rather than

realigning) the road. The roadway would be constructed and posted with a design speed of less than 40 miles per hour. Drainage improvements would be constructed where necessary to properly convey flows. No areas would be designated for parking, and no roadway segments would be reclaimed. No blasting would be required on SITLA land. Substandard curves would remain in the roadway geometry. Construction would begin in May of 2017 and be complete by November 2017.

Traffic under this alternative alignment is anticipated to be the same as the proposed alignment, and would include relatively high volumes of heavy truck traffic (700 to 1,000 vehicles per day, with about 50 percent being heavy trucks) for several years as resource fields are developed. The road would also provide year-round, all-weather access to the region.

The reclamation plan from the proposed action would be applied, to control noxious weeds, reduce erosion, and stabilize the soils adjacent to the roadway. Raptor surveys and applicable timing restrictions would be implemented. Cultural sensitivity training would be required for all on-site personnel, but a paleontological monitor would not be required.

Duchesne County would maintain the roadway according to their standard operating procedures and right-of-way conditions.

## **No Action**

The no action alternative would be to deny the right-of-way application as proposed. Duchesne County would not be allowed to construct the new section of road across BLM-administered land; they would continue to maintain and operate this portion of the Wells Draw Road under the current right-of-way grant. The roadway would not be paved or constructed with a 40 mph design speed, and would not be posted at 40 mph. Construction on SITLA-administered land could still be completed with approval, but potential increases in road safety and industrial traffic efficiency and revenues would not be fully realized. If approved, construction on SITLA land would proceed in the same manner as the proposed action, and would be completed in the summer and fall of 2017.

## **Alternatives Considered but Not Analyzed in Detail**

Two additional alternative alignments were considered, but eliminated from further consideration. One alternative, Pete's Canyon to the west of Gate Canyon, was eliminated due to topographic constraints in the narrow, steep canyon.

Trail Canyon west of Pete's Canyon was also considered. Initial studies determined that the potential risk of impacts to cultural resources was high for constructing a road to Trail Canyon. Private property right-of-way acquisition into Nine Mile Canyon was anticipated to be problematic. The roadway would also have been considerably longer and more expensive, and would have resulted in a new roadway corridor on the landscape.

No feasible alternative alignments were identified east of Gate Canyon due to the topography of the canyon.

## **Chapter 3. Affected Environment**

### **Introduction**

The affected environment was considered and analyzed by an interdisciplinary team as documented in Appendix C - Interdisciplinary Team Checklist. The checklist indicates which resources of concern are either not present in the project area or would not be impacted to a degree that requires detailed analysis. Resources which could be impacted to a level requiring further analysis are described here in chapter 3, and impacts on these resources are analyzed in chapter 4 below.

### **General Description**

In general, the project area is within the Book Cliff-Roan Plateau physiographic subdivision of the Colorado Plateau. More specifically, the project area is located in Gate Canyon between Nine Mile Canyon on the south and Wells Draw on the north (see Map 1 in Appendix A). The area is comprised of canyons, tablelands, steep drainages and washes, and narrow ridges and benches. Numerous seasonal drainages dissect the surrounding area and exposed sandstone rock outcrops are prevalent.

The elevation of the project area ranges from 5,880 feet to 7,300 feet above sea level.

The road is the northern portion of the Nine Mile Canyon National Backcountry Byway. This road connects the Duchesne-Roosevelt area to the north with the Price-Wellington area to the southwest. It is not the primary link between Duchesne and Carbon Counties, but is an important route for recreation, energy development, and public land access.

Portions of the project area have been previously impacted by intensive earth-moving activities, recurring flood events, energy development traffic, livestock grazing, and years of use as a corridor between Carbon County and the Uinta Basin.

The interdisciplinary team review indicated that the following resources could potentially be impacted by this proposed project, and require further analysis:

### **Resources Brought Forward For Analysis**

#### ***Air Quality***

The Uinta Basin is designated as unclassified by the Environmental Protection Agency (EPA) under the Clean Air Act. This classification indicates that adequate air monitoring is not available to determine compliance status for each national ambient air quality standard (NAAQS). NAAQS are standards that have been set for the purpose of protecting human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include particulate matter less than 10 microns in diameter (PM<sub>10</sub>) and less than 2.5 microns in diameter (PM<sub>2.5</sub>). Fugitive dust contributes to PM<sub>10</sub> and PM<sub>2.5</sub> from vehicle traffic on unpaved roads and wind erosion in areas of soil disturbance.

Monitoring data was retrieved from the EPA's AirData site (<http://www.epa.gov/airquality/airdata/>, accessed 6-22-2015). PM<sub>10</sub> monitoring that was conducted in Duchesne County by a monitor in Roosevelt (49-013-0002) from January through August 2012 did not record any exceedances of the 24-hour standard for PM<sub>10</sub>. Monitoring for PM<sub>2.5</sub> at the same site from January 2012 through December 2014 recorded three isolated exceedance events.

The Wells Draw Road, including the Gate Canyon section, is primarily used by resource development and maintenance vehicles entering and leaving the oil and natural gas fields, land access by private

landowners, and the general public recreating in the area. Traffic measured during the height of the oil boom included a relatively high volume of industry traffic, ranging from approximately 700 to 1,000 vehicles per day, with about 25 percent being heavy trucks. Although this volume has decreased with the recent slowdown, it is probable that this volume will be seen again as resource development resumes in the area. Fugitive dust levels can be exacerbated by the lack of drainage capacity of the remaining dirt sections of the Wells Draw Road (Gate Canyon) which leaves some loose sediment on and adjacent to the road. Fugitive dust is the most prominent air pollutant related to this project, and is intermittent depending on winds and dust-causing activities.

Hazardous air pollutants (HAPs) are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane). There are no applicable federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health.

### ***Cultural***

There are 47 historic sites within the project area; 43 of these sites are considered eligible to the National Register of Historic Places (NRHP). These sites are associated with the Price to Myton freight road, and are mostly axle-grease inscriptions. The road itself is considered historic, but is not eligible to the NRHP. Two segments of the historic wagon road occur on BLM-administered land, and are considered eligible to the NRHP. Seven additional sites are located on BLM-administered land; five axle-grease inscriptions and a stock driveway sign are considered eligible to the NRHP, while a trash scatter is considered not eligible. Another 35 axle-grease inscription sites are located on SITLA land, as well as a trash scatter associated with the wagon road, a stone wall, and a segment of the historic wagon road. Cultural resources are the relevant and important value for the Nine Mile Canyon Area of Critical Environmental Concern (ACEC), which overlaps a portion of the project area.

### ***Invasive Plants/Noxious Weeds (EO 13112)***

Russian knapweed (*Acroptilon repens*) and saltcedar (*Tamarix ramosissima*) were observed in the proposed project area in May and June of 2012.

### ***Soils***

Soils in the area are typical of a High Desert Ecosystem. They are slow to develop and prone to erosional processes.

### ***Vegetation***

The project area is characterized as desert badlands, and is vegetated with drought-tolerant plants. Rabbitbrush (*Ericameria nauseosa*) and sagebrush (*Artemisia* spp.) dominate the wash bottoms while pinyon pine (*Pinus edulis*), juniper (*Juniperus osteosperma*), and mountain shrubs dominate the uplands.

### ***Paleontology***

The project area occurs predominantly within the Green River Formation. The GASCO EIS (BLM 2012a) indicates that Gate Canyon is predominantly in paleontological condition classification 1, which classifies the area as “known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils” (H-8370-1; revised 1998), and potential fossil yield classification (PFYC) class 5, which is described as “highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that

are at risk of human-caused adverse impacts or natural degradation” (USFS 1996). No fossils were observed on the surface or in outcrops, but important fossils could be exposed by blasting.

### ***Socio-Economics***

Oil and gas development is extensive in the regional area. Revenues generated by energy development include mineral lease royalties, severance tax, sales tax, and increased personal income of residents. To a lesser extent, recreation also contributes to the socio-economics of the area. Traffic has included a relatively high volume of industry traffic, ranging from 700 to 1,000 vehicles per day, with about 25 percent being heavy trucks during the recent energy boom. Speed limits are not currently posted except at sharp curves, where the posted limit is 10 mph. Substandard curves and fugitive dust result in limited sight distance, which increases the safety hazard for those travelling the roadway.

### ***Surface Water Quality and Waters of the U.S.***

The drainage in Gate Canyon is ephemeral. Water in this channel parallels and crosses the road numerous times, and at times flows down sections of the road, then drains to the south into Nine Mile Creek. Nine Mile Creek, a perennial stream, is located approximately 0.7 miles to the south of the end of the Gate Canyon project. This creek eventually drains into the Green River, approximately 20 miles to the east. The project area is contained within the Gate Canyon-Ninemile Creek 6<sup>th</sup> field Hydrologic Unit Code (HUC; 140600050401).

### ***Wildlife: Migratory Birds (including Raptors)***

A list of migratory birds that may potentially occur within the project area was developed from the Utah Partners in Flight (PIF; Parrish et al. 2002) and the Utah State Sensitive Species List (UDWR 2011). Migratory bird species considered for this project are: Mexican spotted owl (*Strix occidentalis lucida*), ferruginous hawk (*Buteo regalis*), short-eared owl (*Asio flammeus*), Lewis’s woodpecker (*Melanerpes lewis*), prairie falcon (*Falco mexicanus*), black-chinned hummingbird (*Archilochus alexandri*), broad-tailed hummingbird (*Selasphorus platycercus*), Brewer’s sparrow (*Spizella breweri*), Cassin’s finch (*Carpodacus cassinii*), Cassin’s kingbird (*Tyrannus vociferans*), gray flycatcher (*Empidonax wrightii*), gray vireo (*Vireo vicinior*), green-tailed towhee (*Pipilo chlorurus*), juniper titmouse (*Baeolophus ridgwayi*), mountain bluebird (*Sialia currucoides*), pinyon jay (*Gymnorhinus cyanocephalus*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), Virginia’s warbler (*Oreothlypis virginiae*), and white-throated swift (*Aeronautes saxatalis*).

One inactive red-tailed hawk (*Buteo jamaicensis*) nest was located within 150 meters of the existing road in 2012 (Jones 2012), but has not been relocated in subsequent years.

### ***Wildlife: Threatened, Endangered, Proposed, or Candidate***

The proposed project area is located within one-half mile of fair and good Mexican spotted owl habitat units. These units are based on modelling, and were ground-truthed, assessed, and categorized for probability of representing suitable nesting habitat (SWCA Environmental Consultants 2005). Approximately 1.1 miles of the existing roadway are within one-half mile of a fair habitat unit, and 0.7 miles of the existing roadway are within one-half mile of a good habitat unit. The project area was surveyed by the BLM in 2006 and 2007, with no observations of owl activity. Surveys were also completed according to U.S. Fish and Wildlife Service protocol (USFWS 2012) in 2014 and 2015; no responses were detected (Jones 2015). A map displaying the project in relation to habitat and survey points is included as Map 4 in Appendix A. Less than a one-tenth of a mile (0.06 mile) of BLM-administered roadway is within one-half mile of these habitat units.

## Chapter 4. Environmental Impacts

### Direct and Indirect Impacts

#### **Proposed Action**

The proposed action would result in the disturbance of 27.9 acres of BLM-administered land (see Table 2-2). On BLM-administered land, about 12.8 acres of the existing right-of-way would be disturbed for reconstruction; 14.7 additional acres would be disturbed as a result of realignment or widening of the road. An area of 0.4 acre would remain unpaved to provide parking near the historic wagon trail. The remaining 2.8 acres of existing right-of-way would be reclaimed. Disturbance to the 14.7 acres of new right-of-way would consist of clearing vegetation and excavation or fill of the surface prior to paving.

Approximately 37.3 acres of SITLA land would be disturbed in the amended right-of-way; another 8.6 acres would be fully reclaimed. Disturbance would include blasting, in addition to clearing vegetation and excavation or fill.

The majority of the roadway would be constructed with a design speed and posted speed of 40 mph. Industrial traffic may increase during the winter months, as a paved roadway would remain open year-round. Industrial traffic during dry times of the year would likely not noticeably increase when considering the already high levels of industrial traffic that use the road. Recreational use in the canyon may increase due to having designated parking areas available near cultural sites. Overall safety would be improved for all traffic in the canyon.

#### ***Air Quality***

The proposed action is considered to be a minor air pollution source under the Clean Air Act and is not controlled by regulatory agencies. Emissions include NO<sub>x</sub>, SO<sub>2</sub>, and CO from earth-moving equipment and vehicle traffic. Small amounts of HAPs are emitted by construction equipment. These emissions are estimated to be minor. Water would be used to suppress fugitive dust during construction. Air quality would likely decrease in the immediate area during construction.

During road use, NO<sub>x</sub>, CO, VOC, and HAP emissions would originate from vehicles on the road. All emissions would be dispersed or diluted to the extent that any local ozone impacts from the proposed action would be indistinguishable from background conditions. Fugitive dust emissions would be virtually eliminated by paving the roadway. Implementation of the proposed project would result in a net increase in long-term air quality by reducing PM<sub>10</sub> and PM<sub>2.5</sub> emissions from fugitive dust.

#### ***Cultural***

Ground-disturbing activities such as road construction, and secondary surface activities such as vehicular traffic, can directly and irreversibly damage or destroy sensitive cultural resources. Of the seven eligible sites on BLM-administered land, three sites occur within 10 feet of the proposed construction disturbance. One of these sites, a segment of the historic wagon road, intersects with the existing dirt road. The majority of this segment is located away from the main roadway. Proposed parking where the wagon road intersects the paved roadway would provide opportunity for visitors to “contextually experience what the road was like over 100 years ago” (Patterson 2015).

Two inscription sites and the stock driveway sign are in close proximity to the proposed construction, and could inadvertently be damaged during construction. Construction near these sites could also result in alteration of setting and integrity. The other three eligible inscription sites are over 50 feet

from the proposed disturbance, and would not be directly affected by construction activities; they would likely retain setting and integrity.

On SITLA land, eight inscription sites are within 10 feet of the proposed roadway, and could be inadvertently damaged during construction. An additional ten inscription sites would not be directly damaged by construction, but setting and integrity could be altered. The remaining 17 inscription sites, trash scatter, and stone wall would not be impacted by construction, and would likely retain setting and integrity. Two segments of the historic wagon road also intersect the roadway on SITLA land; these segments would be partially impacted where the roadway intersects the historic road. A parking area near the middle of the canyon would provide safe access to several sites, including a section of the historic wagon road, several inscription panels, and the stone wall.

Traffic can impact cultural resources directly through surface disturbance or indirectly through increased dust, emission particulates, or other chemicals. The proposed road improvements would greatly reduce impacts to rock art and historic inscriptions from dust.

Indirect impacts could include damage or destruction of cultural resources as a result of increased visitation of otherwise remote areas. Visitation may increase as a result of improved public access to these areas by paving of the road surface. Potential adverse impacts to rock art panels from traffic-related vibration are possible, but likely low based on analysis in the West Tavaputs Plateau EIS (BLM 2010a). In consultation with the BLM Vernal Field Office, SITLA, Duchesne County, and the Utah State Historic Preservation Officer (SHPO), it was determined that it would be necessary to mitigate the adverse effects to the historic properties that would result from the proposed undertaking. Based on this consultation, Jody Patterson (Montgomery Archaeological Consultants, Inc.) prepared a mitigation plan that consists of high resolution photographic documentation of the directly impacted panels, historical research to identify those people who left their signatures in the canyon, and potentially one or two interpretative trails.

The results of the investigations would be submitted in a technical report format to the federal, state, and local government agencies. A copy of the report would also be submitted to the BLM Price Field Office so the information may be used in interpretative planning related to the West Tavaputs Plateau Programmatic Agreement (BLM 2010a). Copies of the report would also be sent to any individuals interviewed during the course of the project. Field notes, photographs, and samples of the axle grease would be curated at the USU-CEU Prehistoric Museum.

This alternative would support the West Tavaputs Plateau Programmatic Agreement (BLM 2010a) by meeting the objectives of the Dust Suppression Plan for Gate Canyon. It is not expected that these impacts will result in changes to the relevant and important values of the Nine Mile Canyon ACEC, which are primarily related to the nationally significant Fremont, Ute, and Archaic rock art and structures found in the Nine Mile Canyon and its tributaries (Appendix G of the RMP).

### ***Invasive Plants/Noxious Weeds (EO 13112)***

Reconstruction of the roadway would remove vegetation and disturb the underlying soils on up to 14.7 acres of BLM-administered land and 26.2 acres of SITLA land. This disturbance would increase the potential for weed invasion and establishment; paved roadway networks may act as dispersal corridors by providing embankments where weeds can establish and persist (Meunier and Lavoie 2012). However, implementation of the reclamation plan would control or prevent the spread of noxious weeds that could otherwise occur as a result of project activities.

### ***Soils***

Approximately 27.9 acres of BLM-administered land would be disturbed by implementation of the proposed action; another 37.3 acres would be disturbed on SITLA land. Direct impacts to soil would include exposure due to vegetation removal, mixing of soil horizons, loss of topsoil productivity, soil

compaction, and increased susceptibility to erosion. The magnitude of impacts would be reduced when considering the current impacts of the existing dirt road. Paving would also stabilize the underlying soils and prevent erosion. Impacts to soil resources on the reclaimed 2.8 acres would be short-term (during construction and up to 5 years after), and would diminish as reclamation was achieved.

Paving the road could lead to increased runoff to adjacent drainages. Runoff could include pollutants typically associated with paving activities, and contain constituents that could partition to the fragile Aridisols soils and prevent ecosystem function.

Implementation of the reclamation plan would reduce soil erosion, control runoff, and prevent pollution. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared prior to construction, and would describe measures to minimize erosion and prevent soils from leaving the site during construction activities. The measures outlined in these plans would stabilize disturbed areas during construction.

### ***Vegetation***

Up to 14.7 acres of vegetation, mainly rabbitbrush and sagebrush, would be removed from BLM-administered land as a result of the proposed action. Up to 26.2 acres of sparse vegetation would be removed from SITLA land. Construction would also affect the stormwater runoff and water availability to the adjacent vegetation. Vegetation in the area is currently impacted by settling of fugitive dust, which adversely affects plant growth. Paving the road would reduce the fugitive dust settling on vegetation.

Loss of vegetation would be permanent in the amended right-of-way; however, approximately 2.8 acres of existing roadway on BLM-administered land and 8.6 acres on SITLA land would be reclaimed and reseeded as outlined in the reclamation plan (Attachment B of Appendix B).

### ***Paleontology***

Subsurface fossils could be damaged or destroyed by construction activities. The extent of the potential for this damage is not known, but is estimated to be high based on paleontological condition classification and potential fossil yield classification (PFYC). Important fossils could be exposed by blasting on SITLA land; where blasting would be required for excavation, a paleontological monitor would inspect the rock that was exposed and determine whether paleontological resources were being impacted, and would record or collect specimens that were exposed.

### ***Socio-Economics***

Implementation of the proposed action would increase access to the area and potentially increase economic efficiency of oil and gas development in the area. The proposed construction would eliminate substandard curves from the roadway geometry, improve drainage conditions, and provide sufficient roadway width for two lanes of passing traffic. The proposed roadway would be built to AASHTO engineering and construction standards. Designated parking areas near cultural sites would allow recreational users to safely pull off the main roadway. Elimination of fugitive dust from the roadway surface would result in increased driver visibility. The proposed action would increase safety for those travelling through and recreating in the canyon.

Access would be maintained during construction, although delays (up to 15 minutes) may be necessary to ensure safe travel during blasting activities.

The majority of the roadway would be constructed with a design speed and posted speed of 40 mph. There may be portions of the roadway where speed would be reduced due to alignment concerns, limited sight distance, reduced clear zone, or other roadway design factors. Industrial traffic may increase during the winter months, as a paved roadway would remain open year-round. Traffic is

anticipated to return to relatively high volumes of heavy truck traffic when resource development increases.

Although travel access and efficiency may be impacted during construction, economic efficiency and safety would be expected to increase in the long-term.

### ***Surface Water Quality and Waters of the U.S.***

Implementation of the proposed action would impact surface water flows and potentially increase pollution from traffic or equipment during construction. Approximately 27.5 acres of BLM-administered land (12.8 acres existing right-of-way, 14.7 acres new right-of-way) would be disturbed and made impervious by implementation of the proposed action. An additional 36.3 acres would be disturbed and made impervious on SITLA land.

Paving of the roadway surface could result in increased runoff to adjacent waters. Runoff could include pollutants typically associated with paving activities. However, paving would also reduce the potential impacts of fugitive dust on surface water quality by reducing erosion and sediment yield to adjacent waters.

Project design includes drainage infrastructure that would improve surface water flow management and reduce existing erosion problems. Implementation of the SWPPP and Spill Prevention and Response Plan would reduce sedimentation and the risk of pollution to surface waters during construction. Potential adverse impacts to water resources would be short-term (during construction), and project implementation would improve water resources in the long-term.

### ***Wildlife: Migratory Birds (including Raptors)***

Direct impacts to migratory birds could occur with the removal of up to 14.7 acres of vegetation on BLM-administered land and 26.2 acres on SITLA land that may provide suitable habitat for foraging or nesting. Habitat effectiveness in the area is likely decreased due to the existing road and associated disturbance. Impacts to breeding or nesting birds could occur, but is unlikely due to the scarcity of suitable vegetation in the proposed disturbance area. Potential impacts to nesting raptors would be minimized by implementing timing restrictions within RMP-designated buffer distances from active nests. Raptor nesting surveys would be completed prior to project disturbance that would occur between March and September. Disturbance to foraging birds due to noise or the presence of equipment and personnel could occur, but is unlikely as most birds would likely be habituated to some level of disturbance from the existing road. Potential disturbance from construction would be short-term, and foraging birds would likely avoid areas where project activities were occurring.

Implementation of the proposed action would not adversely affect migratory birds.

### ***Wildlife: Threatened, Endangered, Proposed, or Candidate***

Approximately 126.7 acres of a fair habitat unit and 21.6 acres of a good habitat unit are within one-half mile of the project area. Conversely, about 0.8 mile of roadway are within one-half mile of the fair habitat unit, and 0.5 mile within one-half mile of the good habitat unit. Potentially suitable habitat would not be directly impacted, but noise from construction activities, including blasting, could disturb owls if they were within one-half mile of the project area. As traffic levels during owl breeding season would not be anticipated to exceed current levels, associated noise from traffic would not exceed existing noise levels either.

Although the project area may contain potentially suitable Mexican spotted owl habitat, no owls were detected during protocol (USFWS 2012) surveys in 2006, 2007, 2014, or 2015. Surveys would be completed in 2016, and appropriate timing and buffer stipulations would be applied if necessary. Due to the proximity of potentially suitable habitat units, implementation of the proposed action may affect, but would not likely adversely affect the Mexican spotted owl.

## **Alternative B**

The alternative action follows the alignment of the existing road, and would result in the disturbance of 31.0 acres on BLM-administered land (see Table 2-3). About 15.7 acres of the existing right-of-way would be disturbed for reconstruction; 15.3 additional acres would be disturbed as a result of widening and paving of the roadway. Disturbance to the new 15.3 acres would consist of clearing vegetation and excavation or fill of the surface prior to paving. In addition, 23.6 acres would be disturbed beyond the existing 17.6 acre right-of-way on SITLA land. Paving would reduce fugitive dust and allow traffic year-round, but substandard curves would remain in the roadway geometry and would continue to present a safety hazard for the travelling public. Industrial traffic may increase during the winter months, but would likely not noticeably increase during dry times of the year when considering the already high levels of industrial traffic that use the existing road.

### ***Air Quality***

Impacts from implementation of the alternative action would be similar to those disclosed for the proposed action. The alternative would also be considered a minor air pollution sources. Air quality would decrease temporarily (during construction), but paving of the roadway would virtually eliminate fugitive dust emissions in the long-term.

### ***Cultural***

Potential direct and indirect effects of Alternative B would be similar to those of the proposed action on BLM-administered land; however, one inscription site would likely be destroyed due to roadway widening (rather than avoided due to realignment under the proposed action). Construction near the sites could result in alteration of setting and integrity. Designated parking would not be provided near the historic wagon trail.

On SITLA land, 12 sites would be directly impacted by roadway widening. Due to the narrowness of the canyon and requirements to meet safety standards, avoidance of these sites would not be possible. Another seven sites are within 10 feet of the proposed disturbance; these sites could inadvertently be damaged during construction, and setting and integrity would likely be altered. The remaining 16 inscription sites, stone wall, and trash scatter would not be directly impacted by construction, and would likely retain setting and integrity. The historic wagon road segments would be partially impacted where the roadway intersects the historic road.

The mitigation plan would also be applied to this alternative. This alternative would also support the West Tavaputs Plateau Programmatic Agreement (BLM 2010a) by meeting the objectives of the Dust Suppression Plan for Gate Canyon. It is not expected that these impacts will result in changes to the relevant and important values of the Nine Mile Canyon ACEC, which are primarily related to the nationally significant Fremont, Ute, and Archaic rock art and structures found in the Nine Mile Canyon and its tributaries (Appendix G of the RMP).

### ***Invasive Plants/Noxious Weeds (EO 13112)***

Impacts from implementation of the alternative action would be similar to those with the proposed action. Widening of the roadway would disturb an additional 15.3 acres on BLM-administered land, and 23.6 acres on SITLA land. Larger roadway embankments would provide additional area for weeds to establish. Implementation of the reclamation plan would control or prevent the spread of noxious weeds that could otherwise occur as a result of project activities. Implementation of this alternative would not adversely affect the control of invasive plants or noxious weeds.

### ***Soils***

Approximately 31.0 acres would be disturbed by the alternative action on BLM-administered land, and 41.2 acres on SITLA land. Impacts would be similar to those with the proposed action. Paving of the widened roadway would prevent erosion from the existing roadway, but could lead to increased runoff to adjacent drainages. A SWPPP would be prepared and implemented to minimize erosion, sedimentation, and pollution during construction. Implementation of the alternative action would not adversely affect soil resources within the project area.

### ***Vegetation***

Up to 15.3 acres of vegetation, mainly rabbitbrush and sagebrush, would be removed from BLM-administered land as a result of the alternative action; 23.6 acres would be cleared on SITLA land. This loss of vegetation would be permanent in the amended right-of-way, as the surface would be paved. Construction could affect the stormwater runoff and water availability to the adjacent vegetation. Vegetation in the area is currently impacted by settling of fugitive dust, which adversely affects plant growth. Paving the roadway would reduce the fugitive dust settling on vegetation. When considering the benefits of reduced fugitive dust, the alternative action would not adversely affect vegetation in the project area.

### ***Paleontology***

Blasting is not a part of this action; project disturbance would only occur on the surface of and adjacent to the existing roadway. No impacts would occur to paleontological resources under this alternative.

### ***Socio-Economics***

Similar to the proposed action, implementation of the alternative action would increase access to the area and potentially increase economic efficiency of oil and gas development in the area.

Construction would improve drainage conditions, provide sufficient roadway width for two lanes of passing traffic, and eliminate fugitive dust from the roadway surface. Some AASHTO roadway standards would be met, but substandard curves would remain. Recreational parking would occur where possible, off the roadway shoulder.

The roadway would be constructed and posted with a design speed of less than 40 miles per hour. This alternative action would increase safety for those travelling through and recreating in the canyon, but to a lesser extent than the proposed action. Access would be maintained during construction, although delays may be necessary.

Industrial traffic could also increase during the winter months under this alternative, as a paved roadway would remain open year-round. Traffic is anticipated to return to relatively high volumes of heavy truck traffic when resource development increases..

Access and efficiency would be impacted during construction; economic efficiency and safety would be expected to increase in the long-term, but to a lesser extent than under the proposed action because substandard curves would remain.

### ***Surface Water Quality and Waters of the U.S.***

Impacts from implementation of the alternative action would be similar to those from the proposed action. Approximately 31.0 acres would be disturbed on BLM-administered land, and 41.2 on SITLA land. Project design includes drainage infrastructure that would improve surface water flow management and reduce existing erosion problems. Implementation of a SWPPP and Spill Prevention and Response Plan would reduce sedimentation and the risk of pollution during

construction. Potential adverse impacts to water resources would be short-term (during construction), and project implementation would improve water resources in the long-term.

***Wildlife: Migratory Birds (including Raptors)***

Effects of the alternative action would be similar to those associated with the proposed action. Direct impacts to migratory birds could occur with the removal of up to 15.3 acres of vegetation on BLM-administered land and 23.6 acres on SITLA land that may provide suitable habitat for foraging or nesting. Habitat effectiveness in the area is likely decreased due to the existing road and associated disturbance. Impacts to breeding or nesting birds could occur, but is unlikely due to the scarcity of suitable vegetation in the proposed disturbance area. Potential impacts to nesting raptors would be minimized by implementing timing restrictions within RMP-designated buffer distances from active nests. Raptor nesting surveys would be completed prior to project disturbance that would occur between March and September. Disturbance to foraging birds due to noise or the presence of equipment and personnel could occur, but is unlikely as most birds would likely be habituated to some level of disturbance from the existing road. Potential disturbance from construction would be short-term, and birds would likely avoid areas where project activities were occurring.

Implementation of the alternative action would not adversely affect migratory birds.

***Wildlife: Threatened, Endangered, Proposed, or Candidate***

Approximately 129.1 acres of a fair habitat unit and 33.4 acres of a good habitat unit are within one-half mile of the project area. Potentially suitable habitat would not be directly impacted, but noise from construction activities could disturb owls if they were within one-half mile of the project. As traffic levels during owl breeding season would not be anticipated to exceed current levels, associated noise from traffic would not exceed existing noise levels.

Although the project area may contain potentially suitable Mexican spotted owl habitat, no owls were detected during protocol (USFWS 2012) surveys in 2006, 2007, 2014, or 2015. Due to the proximity of potentially suitable habitat units, implementation of the proposed action may affect, but would not likely adversely affect the Mexican spotted owl.

**No Action**

The no action alternative would be to deny the application as proposed. This alternative would not meet the need for the proposed action, and the drainage issues on the BLM-administered portion of roadway would remain unresolved. There would be no change in the existing condition of the roadway on BLM-administered lands; fugitive dust would likely continue at current levels. Construction of the proposed roadway could still occur on SITLA lands.

***Air Quality***

The existing road would remain in its current condition on BLM-administered land; construction impacts would be similar to those described for the proposed action because construction could still take place on SITLA lands (37.3 acres). Air quality would decrease temporarily on adjacent BLM-administered land due to construction on SITLA land. Fugitive dust would be virtually eliminated from the SITLA portion of the roadway. Dust emissions would continue to originate from the unpaved 2.79 miles of roadway on BLM-administered land, and dust mitigation measures would still be required on the unpaved portion. Reduction of fugitive dust and a resulting increase in air quality would not be fully realized under the no action alternative.

### ***Cultural***

Although the road would remain in its current condition on BLM-administered land, construction impacts would be similar to those described for the proposed action because construction could still take place on SITLA lands (2.52 miles and 26.2 previously undisturbed acres). Potential construction-related impacts to four eligible sites would be avoided on BLM-administered lands, and setting and integrity would not be further altered; however, the five inscription sites would still be subject to impacts from dust on the unpaved road. Designated parking would not be provided along the BLM-administered roadway. Direct and indirect effects of traffic and visitation would be expected to continue at existing levels. Additional dust suppression actions would be required to meet the objectives of the Dust Suppression Plan for the West Tavaputs Plateau Programmatic Agreement (BLM 2010a) in Gate Canyon.

On SITLA land, impacts are anticipated to be the same as for the proposed action. Eight inscription sites could be inadvertently damaged, the setting and integrity of ten inscription sites could be altered, and seventeen inscription sites, a trash scatter, and stone wall would not be impacted by construction and would likely retain setting and integrity. Two segments of the historic wagon road also intersect the roadway on SITLA land; these segments would be partially impacted where the roadway intersects the historic road. A parking area near the middle of the canyon would provide safe access to several sites, including a section of the historic wagon road, several inscription panels, and the stone wall. It is not expected that these impacts will result in changes to the relevant and important values of the Nine Mile Canyon ACEC, which are primarily related to the nationally significant Fremont, Ute, and Archaic rock art and structures found in the Nine Mile Canyon and its tributaries (Appendix G of the RMP).

### ***Invasive Plants/Noxious Weeds (EO 13112)***

Construction disturbance would not occur on BLM-administered land, but could still occur on 26.2 acres of SITLA land. Implementation of the reclamation plan would control or prevent the spread of noxious weeds across both landownerships. The existing road would remain in its current condition on BLM-administered land. Duchesne County would still be responsible for weed control on the BLM-administered portion as part of the existing right-of-way grant.

### ***Soils***

Construction disturbance of soils would not occur on BLM-administered lands, but could still occur on 26.2 acres of SITLA lands. The existing road would remain in its current condition on BLM-administered land; erosion of the roadway on BLM-administered lands would likely continue at current levels. Implementation of the no action alternative could lead to continued adverse impacts to soil resources along the BLM-administered portion of roadway.

### ***Vegetation***

Vegetation would not be removed from 14.7 acres of BLM-administered land, but could still be removed from 26.2 acres of SITLA land. The existing road would remain in its current condition on BLM-administered land; reclamation efforts would not occur on BLM-administered land. Vegetation along the BLM-administered portion of roadway would continue to be impacted by settling dust from the unpaved road; therefore, implementation of the no action alternative could lead to continued adverse impacts to vegetation along the BLM-administered portion of roadway.

### ***Paleontology***

No impacts would occur to potential paleontological resources on BLM-administered lands; impacts could still occur due to blasting during construction on SITLA lands. Important fossils could be exposed by blasting on SITLA land; where blasting would be required for excavation, a

paleontological monitor would inspect the rock that was exposed and determine whether paleontological resources were being impacted, and would record or collect specimens that were exposed.

### ***Socio-Economics***

Under the no action alternative, the roadway would not be reconstructed or realigned on BLM-administered land. Potential increases in access and economic efficiency would not be fully realized with the no action alternative, although construction on SITLA land could still occur. If construction were to occur on the SITLA portion, access for large trucks would still be limited during wet weather with the unpaved section of roadway on BLM-administered land. One substandard curve would remain in the roadway geometry. Fugitive dust would continue to limit visibility, and existing drainage issues would persist across BLM-administered land. Ongoing maintenance of the unpaved section would be required.

The roadway on SITLA land would be constructed with a design speed and posted speed of 40 mph. Speed would be reduced on portions of the roadway due to alignment concerns, limited sight distance, reduced clear zone, or other roadway design factors. Traffic is anticipated to return to relatively high volumes of heavy truck traffic when resource development increases.

Potential benefits to economic efficiency and safety would not be fully realized in the long-term.

### ***Surface Water Quality and Waters of the U.S.***

Construction impacts would not occur on BLM-administered lands, but could still take place on SITLA lands (36.3 acres). The existing road would remain in its current condition on BLM-administered land; long-term impacts from poor drainage and erosion of the existing dirt roadway would continue to occur on BLM-administered lands. Drainage infrastructure on BLM-administered lands would not be constructed. Potential long-term improvements to water resources due to erosion control and improved drainage patterns would not be fully realized.

### ***Wildlife: Migratory Birds (including Raptors)***

Construction impacts to 14.7 acres of potential habitat on BLM-administered land would not occur, but could still occur on 26.2 acres of SITLA land. Impacts would be similar to those described for the proposed action. Raptor nesting surveys would be completed prior to project disturbance that would occur between March and September, and timing restrictions within RMP-designated buffer distances from active nests would still be applied. Disturbance to foraging birds due to noise or the presence of equipment and personnel could occur, but is unlikely as most birds would likely be habituated to some level of disturbance from the existing road. Potential disturbance from construction would be short-term, and foraging birds would likely avoid areas where project activities were occurring. Implementation of the no action alternative would not adversely affect migratory birds.

### ***Wildlife: Threatened, Endangered, Proposed, or Candidate***

Although the roadway would remain in its existing condition on BLM-administered lands, construction impacts would be similar to those described for the proposed action because construction could still take place on SITLA lands. Only 160 feet (0.42 acre) of BLM-administered roadway is within one-half mile of suitable Mexican spotted owl habitat units; this small segment of roadway would remain in its existing condition, and the new roadway would be constructed on adjacent SITLA land. Approximately 126.7 acres of a fair habitat unit and 21.6 acres of a good habitat unit would still be within one-half mile of the project area on SITLA land. Potentially suitable habitat would not be directly impacted, but noise from construction activities, including blasting, could disturb owls if they were within one-half mile of the project area.

Although the project area may contain potentially suitable Mexican spotted owl habitat, no owls were detected during protocol (USFWS 2012) surveys in 2006, 2007, 2014, or 2015. Due to the proximity of potentially suitable habitat units, implementation of the proposed action may affect, but would not likely adversely affect the Mexican spotted owl.

## **Cumulative Impacts Analysis**

### **Introduction**

Based on the anticipated permanent assignment of a Title V right-of-way grant for the proposed road, the timeframe for the cumulative effects is permanent.

The purpose of the cumulative effects section is to describe the interaction among the effects of the proposed action and these various past, present, and reasonably foreseeable actions. This interaction may be:

- Additive: the effects of the actions add together to make up the cumulative effect.
- Countervailing: the effects of some actions balance or mitigate the effects of other actions.
- Synergistic: the effects of the actions together is greater than the sum of their individual effects.

### **Past, Present, and Reasonably Foreseeable Actions**

There are active grazing allotments in this area.

Previous actions include the paving of Wells Draw Road north of this phase, and the paving of Nine Mile Canyon Road south of this phase.

The following three major oil and gas projects could cumulatively affect resources in the project area.

Under the West Tavaputs Plateau Plan, Bill Barrett Corporation and other operators propose to develop approximately 626 natural gas wells from approximately 120 well pads within the 137,930-acre project area (BLM 2010b), which is just south of Gate Canyon. Anticipated short-term surface disturbance associated with the project is approximately 1,603 acres, which includes 40.9 miles of new roads, 8.8 miles of road reroutes, and 20.4 miles of improved existing roads. Trucks servicing the area may use the roadway through Gate Canyon. Although Gate Canyon is not within the West Tavaputs Plateau Plan project area, the Area of Potential Effect (APE) in the Programmatic Agreement includes this portion of Gate Canyon (Appendix T of BLM 2010a).

The Monument Butte Oil and Gas Development Project (BLM 2013) is located in the Myton Bench area in Duchesne and Uintah Counties, north of Gate Canyon, and contains 119,603 acres. The proposed action includes development of up to 5,750 oil and gas wells, with approximately 243 miles of 100-foot right-of-way for roads and pipelines. Short-term disturbance would total 16,129 acres.

The GASCO Energy Inc. Uinta Basin Natural Gas Development Project (BLM 2012b) encompasses 206,826 acres, and contains Gate Canyon. The selected alternative allows for up to 1,298 wells with associated roads and pipelines. Estimated total surface disturbance is 3,604 acres.

## Cumulative Impacts

### *Air Quality*

The cumulative impact area for air quality is the Uinta Basin, plus all regional Class I areas and other environmentally sensitive areas (e.g., national parks and monuments, wilderness areas, etc.) near the Uinta Basin. The Air Resource Management Strategy (ARMS) Modeling Project is a cumulative assessment of potential future air quality impacts associated with predicted oil and gas activity in the Uinta Basin (BLM 2011). Consequently, past, present, and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. The ARMS is incorporated by reference and summarized below.

The ARMS Modeling Project predicted the following impacts to air quality and air quality related values for the 2010 typical year and four 2021 future year scenarios: 2021 on-the-books (OTB); 2021 Scenario 1 (NO<sub>x</sub> controls); 2021 Scenario 2 (VOC controls); and 2021 Scenario 3 (NO<sub>x</sub> and VOC controls).

### Ozone

- The highest modeled ozone occurs in the Uinta Basin study area regardless of model scenario, and all scenarios predict exceedences of the ozone NAAQS and state AAQS in the Uinta Basin.
- In the Uinta Basin, the ozone concentrations are highest during the winter period. In Class I and Class II areas outside the Uinta Basin study area, ozone concentrations are highest during the summer period.
- During non-winter months in the Uinta Basin the model predicts that ozone may exceed the NAAQS and state AAQS (Ambient Air Quality Standards); however, model-adjusted results from the MATS tool (which accounts for model performance biases) indicate that non-winter ozone concentrations are below the NAAQS and state AAQS for all monitors and areas analyzed. Also, the 2021 scenarios have minimal effect on model-predicted ozone concentrations during non-winter months.
- 2021 Scenario 2 tends to have the lowest 8-hour ozone concentration relative to all other 2021 scenarios (4th highest daily maximum is 3 ppb lower compared to the 2021 OTB Scenario). When comparing Scenario 2 to the OTB Scenario, a potential reduction in ozone concentrations occurs in the vicinity of the Ouray site (where the concentrations are already largest). There is no predicted ozone disbenefit associated with Scenario 2 mitigation measures (i.e., there is no area with predicted ozone increases relative to the OTB Scenario). This supports the assessment that peak ozone impacts are in VOC-limited areas.
- 2021 Scenarios 1 and 3 are predicted to have higher ozone impacts than either the 2010 Typical year and the 2021 OTB Scenario. Both scenarios predict a relatively large increase in ozone concentrations within the vicinity of Ouray indicating potential ozone disbenefits associated with NO<sub>x</sub> control mitigation measures.

### NO<sub>2</sub>, CO, SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>

- There are seven monitoring stations within the 4-km domain with daily PM<sub>2.5</sub> concentrations that exceed the NAAQS and state AAQS in the baseline emissions inventory.
- All modeled NO<sub>2</sub>, CO, SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> values are well below the NAAQS and state AAQS in the Uinta Basin.

- The model-predicted PM<sub>2.5</sub> and PM<sub>10</sub> concentrations may underestimate future impacts due to a negative model bias throughout the year in the 4-km domain with the largest bias occurring in summer (AECOM and STI 2014).
- Results from the MATS tool (which accounts for model performance biases) indicate that PM<sub>2.5</sub> concentrations may exceed the NAAQS and state AAQS for select monitors and assessment areas in the 2010 Typical year. All 2021 scenarios predict that only one of these monitoring stations would continue to exceed the NAAQS and state AAQS.
- No monitoring stations within the 4-km domain exceed the annual PM<sub>2.5</sub> NAAQS and state AAQS during the 2010 typical or 2021 Scenarios.
- Two unmonitored areas within the Uinta Basin exceed the annual PM<sub>2.5</sub> NAAQS and state AAQS during the 2010 typical year, and impacts in these areas tend to increase under 2021 Scenarios 1 and 2. Under 2021 Scenario 3, the annual PM<sub>2.5</sub> impacts decrease in the Uinta Basin due to combustion control measures.
- The 2021 scenarios generally have lower NO<sub>2</sub>, CO, SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> concentrations than the 2010 Typical Year scenario, except for within the Uinta Basin.
- Under the 2021 scenarios, all assessment areas are within the PSD (Prevention of Significant Deterioration) increments for annual NO<sub>2</sub>, 3-hour SO<sub>2</sub>, annual SO<sub>2</sub>, and annual PM<sub>10</sub>.
- Under the 2021 scenarios, most assessment areas exceed the 24-hour PM<sub>2.5</sub> PSD increment.

#### Visibility

- Visibility conditions in Class I and sensitive Class II areas generally show improvement in the 2021 Scenarios relative to the 2010 Typical Year.
- There also are no substantial differences in the 20th percentile best and worst visibility days between the 2021 Scenarios.

#### Deposition and Acid Neutralizing Capacity

- Results generally show a decrease in deposition for the 2021 Scenarios relative to the 2010 Typical Year.
- The differences in estimated deposition between the 2021 Scenarios are generally very small.
- Acid Neutralizing Capacity change at all seven sensitive lakes exceeds the 10 percent limit of acceptable change for all model scenarios.

It is anticipated that the impact to ambient air quality and air quality related values associated with any of the alternatives would be indistinguishable from and dwarfed by the model and emission inventory scope and margin of error.

#### ***Cultural***

Impacts to cultural resources from construction activities are not additive across a landscape; however, sites located outside of and adjacent to the project area remain vulnerable to indirect impacts from fugitive dust. The cumulative impact area for cultural resources includes the Gate Canyon drainage from rim to rim, as fugitive dust could drift within the confines of narrow canyon. On the south, the area is bounded by the mouth of Gate Canyon; at this point, the roadway has been paved beyond a sharp curve, and prevailing winds typically blow up the canyon. Dust is less likely to drift into Nine Mile Canyon. On the north, the area is bounded by the watershed boundary. A map displaying the cumulative impact area boundaries is included as Map 5 in Appendix A. Dust that reaches beyond this boundary will likely be quickly dispersed by the prevailing southwesterly winds.

The total area is estimated at 2,545 acres, and includes a portion of the Area of Potential Effect (APE) developed in the West Tavaputs Plateau Programmatic Agreement (BLM 2010a).

Cultural resources in the cumulative impact area have been impacted by traffic (recreation, grazing, resource development) and surface disturbance. Impacts include damage to or destruction of cultural resource sites. Impacts from traffic have been minimized in recent years by paving some of the adjacent dirt roads, which reduces impacts from dust and dust suppression chemicals. Under the proposed and alternative actions, indirect effects from dust and dust suppression efforts would be virtually eliminated. These impacts would be additive when considering the previous paving of adjacent roadways, for a cumulative benefit to cultural resources by elimination of fugitive dust.

Cumulative benefits would not be fully realized with the no action alternative, as dust from the unpaved section of roadway on BLM-administered land could continue to adversely affect inscriptions and rock art within the canyon. It is not expected that these impacts will result in cumulative changes to the relevant and important values of the Nine Mile Canyon ACEC, which are primarily related to the nationally significant Fremont, Ute, and Archaic rock art and structures found in the Nine Mile Canyon and its tributaries (Appendix G of the RMP).

### ***Invasive Plants/Noxious Weeds (EO 13112)***

The cumulative impact area for invasive plants and noxious weeds includes the four watersheds with connecting roadways to the proposed project area: Upper Wells Draw (140600050103), Upper Big Wash (140600050203), Prickly Pear Canyon-Ninemile Creek (140600050405), and Gate Canyon-Ninemile Creek (140600050404) (see Map 6 in Appendix A). The inclusion of these watersheds captures similar surface disturbance from motorized vehicles, grazing livestock, and other surface disturbing activities that could provide transport for noxious weeds and invasive plants into or from the area. The cumulative impact area includes 87 miles of unpaved roads and 27 miles of paved roads within the 94,457-acre area.

Noxious weeds and invasive plants may spread or establish in disturbed areas and along existing roads. Implementation of the proposed and alternative action would eliminate approximately 6 miles of unpaved road, and create 5 or 6 miles of paved road, respectively. The action alternatives would reduce unpaved roads in the cumulative impact area by about 7 percent. The no action alternative could result in a loss of 3.3 miles of unpaved road and creation of 2.5 miles of paved road on SITLA land; this alternative would reduce unpaved roads in the area by about 4 percent. The conversion from unpaved to paved road would likely increase the potential for noxious weeds to spread and establish within the cumulative impact area.

Weed control measures applied by the counties for paving of the previous Wells Draw Road phases and Nine Mile Canyon Road have likely reduced the potential for spread of noxious weed and invasive species within the project area. Implementation of the weed control measures in the reclamation plan and continued weed control by the counties under all three alternatives would further minimize the introduction or spread of noxious weeds and invasive plant species to or from the project area.

### ***Soils***

The cumulative impact area for soils is the 27,884-acre 6<sup>th</sup> field HUC (Gate Canyon-Ninemile Creek; 140600050401) that contains the project area (see Map 7 in Appendix A). Cumulative effects are unlikely to spread beyond the topographical boundaries of the watershed. The majority of impacts to soils in the area are due to surface disturbing activities. Disturbance from implementation of any of the alternatives could add cumulatively to soil impacts, such as erosion, within the larger area; however, implementation of the design features would decrease the magnitude of potential effects during construction.

Under the proposed and alternative actions, permanent stabilization of the roadway and implementation of the reclamation plan would reduce erosion, control runoff, and prevent pollution. These impacts would be additive when considering the previous paving of adjacent roadways, for a cumulative benefit to soil resources in the watershed.

Cumulative benefits would not be fully realized with the no action alternative, as soil from the unpaved section of roadway on BLM-administered land would continue to be subject to erosion due to vehicular disturbance, wind, and runoff.

### ***Vegetation***

The cumulative impact area for vegetation is also the 6<sup>th</sup> field HUC, as described for soils. The majority of impacts to vegetation in the area are due to surface disturbing activities and grazing, including the creation of fugitive dust. Under the proposed and alternative actions, adverse effects from fugitive dust would be virtually eliminated. These impacts would be additive when considering the previous paving of adjacent roadways, for a cumulative benefit to vegetation within the watershed. Additional impacts include vegetation loss or damage from surface disturbing activities.

Cumulative benefits would not be fully realized with the no action alternative, as dust from the unpaved section of roadway on BLM-administered land could continue to adversely affect vegetation within the canyon.

### ***Paleontology***

The cumulative impact area for paleontological resources is the project area, because potential impacts to paleontological resources are site-specific and are not considered additive across the landscape. Impacts to paleontological resources from the proposed alternative and no action alternative would be mitigated by having a paleontological monitor inspect the exposed rock and record or collect specimens that were exposed. No other cumulative activities or effects are expected. No cumulative impacts would occur under the alternative action, as no blasting would occur and impacts would not be anticipated.

### ***Socio-Economics***

The cumulative impact area includes Duchesne and Carbon Counties, as the roadway is an important connecting route between the counties for recreation and energy development. Implementation of each of the alternatives would add cumulatively to economic benefits of other actions in the area, but in different ways. Paving of the roadway under the proposed and alternative actions would have a synergistic effect when considering the paving of the connected roadways (Nine Mile Canyon Road and previous phases of Wells Draw Road). Paving of the last connecting section makes the entire roadway between Carbon County and Duchesne County a more efficient option for industrial and recreational travelers. The synergistic benefit would not be realized under the no action alternative, as a portion of the roadway would remain unpaved, and may be unpassable during wet weather.

Cumulative improvements in safety would be additive when considering the previous paving projects on connecting roadways. The proposed actions would result in the greatest safety increase, as substandard curves, drainage problems, and fugitive dust would be reduced or eliminated, making the journey between Carbon and Duchesne Counties an overall safer experience. The alternative action would also increase overall safety, but to a lesser degree than the proposed action because substandard curves would remain in the roadway geometry. Implementation of the no action alternative would eliminate most substandard curves, but drainage and dust problems would persist across the BLM-administered portion.

When considering the energy development and recreational opportunities in the area, all alternatives would add cumulatively to increased economic efficiency and revenues associated with recreation and transport of oil and gas from the surrounding area.

### ***Surface Water Quality and Waters of the U.S.***

The cumulative impact area for water resources is the 27,884-acre 6th field HUC (Gate Canyon-Ninemile Creek; 140600050401) that contains the project area, the same area as for soils. Cumulative effects are unlikely to spread beyond the topographical boundaries of the watershed. The majority of impacts to water resources in the area are due to surface disturbance, sedimentation, and potential spills. Disturbance from implementation of any of the alternatives could add cumulatively to impacts within the watershed; however, implementation of the design features would decrease the magnitude of potential effects during construction.

Under the proposed action, less than a quarter of a percent (0.23 %) of the watershed would be disturbed. Just over a quarter of a percent (0.26 %) of the entire watershed would be disturbed under the alternative action. Under the proposed and alternative actions, permanent stabilization of the roadway and implementation of the reclamation plan would reduce erosion, control runoff, and prevent pollution. These impacts would be additive when considering the previous paving of adjacent roadways, for a cumulative benefit to water resources in the watershed.

Only 0.13 % of the watershed would be disturbed by construction under the no action alternative. Cumulative benefits would not be fully realized with the no action alternative, as soil from the unpaved section of roadway on BLM-administered land would continue to be subject to erosion and could lead to increased sedimentation and reduced water quality within the watershed.

### ***Wildlife: Migratory Birds (including Raptors)***

The cumulative impact area for migratory birds is a 1-mile buffer around the project area (see Map 8 in Appendix A). This distance was selected based on the spatial buffers in the RMP for the raptor species most likely to occur in the area (0.5 mile; red-tailed hawk, golden eagle). The distance was doubled to account for potential impacts from the other side of the buffer, for a total diameter of 1 mile. This encompasses an area of 8,676 acres around the project area.

Roads within the area were buffered to one-half mile; 7,105 acres (81.9 percent) of the total cumulative impact area are within one-half mile of open roads. Birds nesting in these areas could be disturbed by vehicles or other human activities. However, most of these roadways are dirt roads, and are not used by industrial traffic. Disturbance associated with these roads is likely from infrequent recreational use, and most birds nesting in the area would likely be habituated to the low level of disturbance. The remaining 1,570.8 acres (18.1 percent) are unlikely to be within the range of disturbance for most species. Birds who avoided nesting within the immediate area of the project disturbance associated with any of the alternatives would have abundant available habitat within the remaining cumulative impact area. Migratory birds are unlikely to be cumulatively affected by the project due to abundant habitat and habituation to disturbance throughout the area.

### ***Wildlife: Threatened, Endangered, Proposed, or Candidate***

The cumulative impact area for Mexican spotted owl consists of the fair and good habitat units that are contiguous with those units that are identified in chapter 3, and a half-mile buffer beyond (see Map 9 in Appendix A). The half-mile buffer is based on the survey area described in the Recovery Plan (USFWS 2012). The cumulative impact area includes 150 acres of a fair habitat unit, 1,357 acres of good habitat units, and 2,912 acres surrounding the habitat units; the total cumulative impact area is 4,419 acres. Landownership includes private, SITLA, and BLM-administered land (see Table 4-1).

**Table 4-1. Landownership within Mexican Spotted Owl Cumulative Impact Area**

<b>Landownership Acreage within Mexican Spotted Owl Cumulative Impact Area (acres)</b>			
<b>BLM</b>	<b>Private</b>	<b>SITLA</b>	<b>Total</b>
2,523	900	996	4,419

Direct impacts to these habitat units are limited, but noise from traffic and oil and gas operations could disturb owls that may use these areas. There are about 3.3 miles of existing roadway within the surrounding 2,912 acres. These roadways are within one-half mile of the suitable habitat units, and could be a source of disturbance from noise due to traffic or associated industrial or recreational activities. The entire 150-acre fair habitat unit is within one-half mile of roadways and could be impacted by traffic noise; however, only 430 acres (32 percent) of the good habitat units are within the disturbance buffer. The remaining 927 acres (68 percent) of good habitat units are beyond one-half mile from roadways and the associated noise and disturbance, and could provide suitable areas for owls to roost or nest without disturbance (see Table 4-2).

**Table 4-2. Acreage of Mexican Spotted Owl Suitable Habitat Units Relative to ½-mile Road Disturbance Buffer**

<b>Mexican Spotted Owl Suitable Habitat Unit Impacts (acres)</b>			
	<b>Fair</b>	<b>Good</b>	<b>Total</b>
Habitat units within ½ mile of roadways	150	430	580
Habitat units more than ½ mile from roadways	0	927	927
Total:	150	1,357	1,507

Future energy development, particularly on adjacent private or SITLA land, could reduce the amount of suitable habitat available; however, no proposed development is known of at this time. Cumulative impacts to Mexican spotted owl are not anticipated with implementation of any alternative, as timing stipulations would be applied if owls were known to inhabit the area. If owls were present in the area and had not been detected during surveys, they would likely be habituated to some level of disturbance from traffic and energy development. If owls were to avoid project disturbance, sufficient available habitat occurs in the contiguous good habitat units within the cumulative impact area to provide for alternative roosting or nesting sites.

## **Chapter 5. Consultation and Coordination**

### **Persons, Agencies, and Organizations Consulted**

Notice of the proposed action and EA were posted on the Utah BLM Environmental Notification Bulletin Board (ENBB) on October 18, 2012. A public comment period was requested on April 24, 2015.

### **Summary of Public Participation**

Reserved for responses to any substantive public comments.

### **List of Preparers**

#### **BLM**

BLM staff members who determined the affected resources for this document are listed in Appendix C - Interdisciplinary Team Checklist.

#### **Non-BLM**

##### ***Jones and DeMille Engineering***

- Brian Barton, PE: Project management
- Jenna Jorgensen, Environmental Coordinator: Project coordination and document preparation

##### ***Montgomery Archaeological Consultants***

- Jody J. Patterson, Archaeologist: Cultural inventory and mitigation planning
- Jacki A. Montgomery, Archaeologist: Cultural inventory

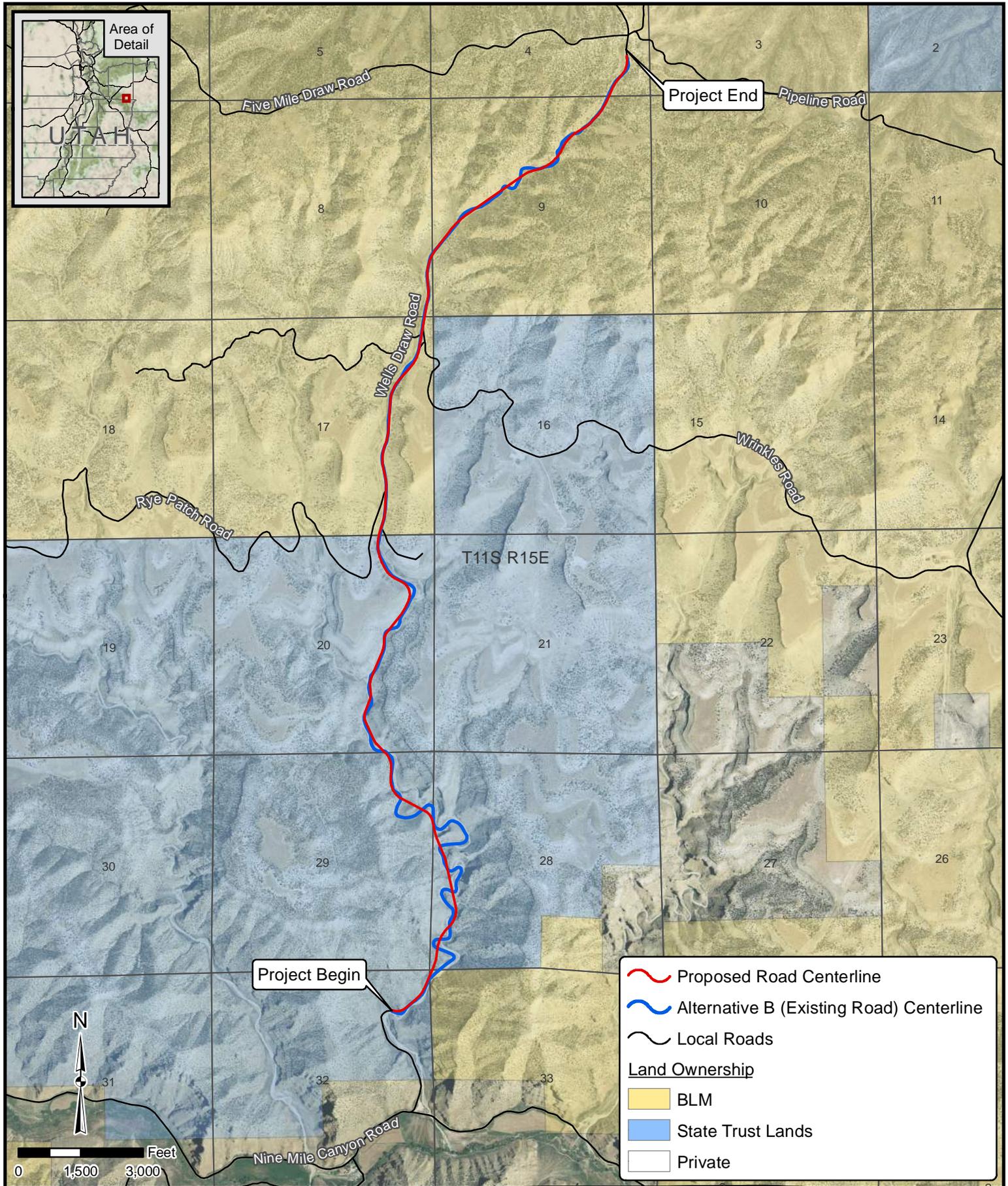
##### ***Two R Ranch***

- Derris Jones, Wildlife Biologist: Wildlife surveys

## Chapter 6. References

- AECOM and Sonoma Technology, Inc. (STI). 2014. Utah Air Resource Management Strategy Modeling Project: Air Quality Model Performance Evaluation. Prepared for Utah Bureau of Land Management. February 2014.
- BLM. 1998. General Procedural Guidance for Paleontological Resource Management. BLM Manual H-8270-1. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management.
- BLM. 2010a. Final Environmental Impact Statement for the West Tavaputs Plateau Natural Gas Full Field Development Plan Project. July 2010.
- BLM. 2010b. West Tavaputs Plateau Natural Gas Full Field Development Plan Record of Decision. July 2010.
- BLM. 2011. Air Resource Management Strategy (ARMS). July 2011.
- BLM. 2012a. Final Environmental Impact Statement for the GASCO Energy Inc. Uinta Basin Natural Gas Development Project. March 2012.
- BLM. 2012b. Record of Decision for the GASCO Energy Inc. Uinta Basin Natural Gas Development Project. June 2012.
- BLM. 2013. Draft Environmental Impact Statement for Newfield Exploration Corporation Monument Butte Oil and Gas Development Project in Uintah and Duchesne Counties, Utah (UT-G010-2009-0217). December 2013.
- Jones, D. R. 2012. Helicopter Raptor Nest Survey Gate Canyon.
- Jones, D. R. 2015. Mexican Spotted Owl Survey Gate Canyon Road Improvement Project. April 28, 2105.
- Meunier, G. and C. Lavoie. 2012. Roads as Corridors for Invasive Plant Species: New Evidence from Smooth Bedstraw (*Galium mollugo*). *Invasive Plant Science and Management* 5:92-100.
- Parrish, J. R., F. P. Howe, and R. E. Norvell. 2002. Utah Partners in Flight Avian Conservation Strategy Version 2.0. Utah Partners in Flight Program, Utah Division of Wildlife Resources, 1594 West North Temple, Salt Lake City, UT 84116, UDWR Publication Number 02-27. i–xiv + 302 pp.
- Patterson, J. J. 2014. Research Design for the Mitigation Adverse Effects to Certain Cultural Resources in Gate Canyon, Duchesne County Utah. MOAC Report No. 13-087. July 14, 2014.
- SWCA Environmental Consultants. 2005. Assessment of Potential Mexican Spotted Owl Nesting Habitat on BLM-administered lands in Northeastern Utah. Report on file at the Bureau of Land Management, Vernal Field Office, Vernal, Utah. 52 pp.
- UDWR. 2011. Utah Sensitive Species List. State of Utah Department of Natural Resources, Division of Wildlife Resources. March 29, 2011.
- U.S. Forest Service (USFS). 1996. Potential Fossil Yield Classification (PFYC). Developed by the Paleontology Center of Excellence and the U.S. Forest Service Region 2 Paleo Initiative.
- USFWS. 2012. Final Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision. U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA. 413 pp.

## **Appendix A. Project Maps**



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 - infrastructure professionals -  
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**Duchesne County SSD #2**

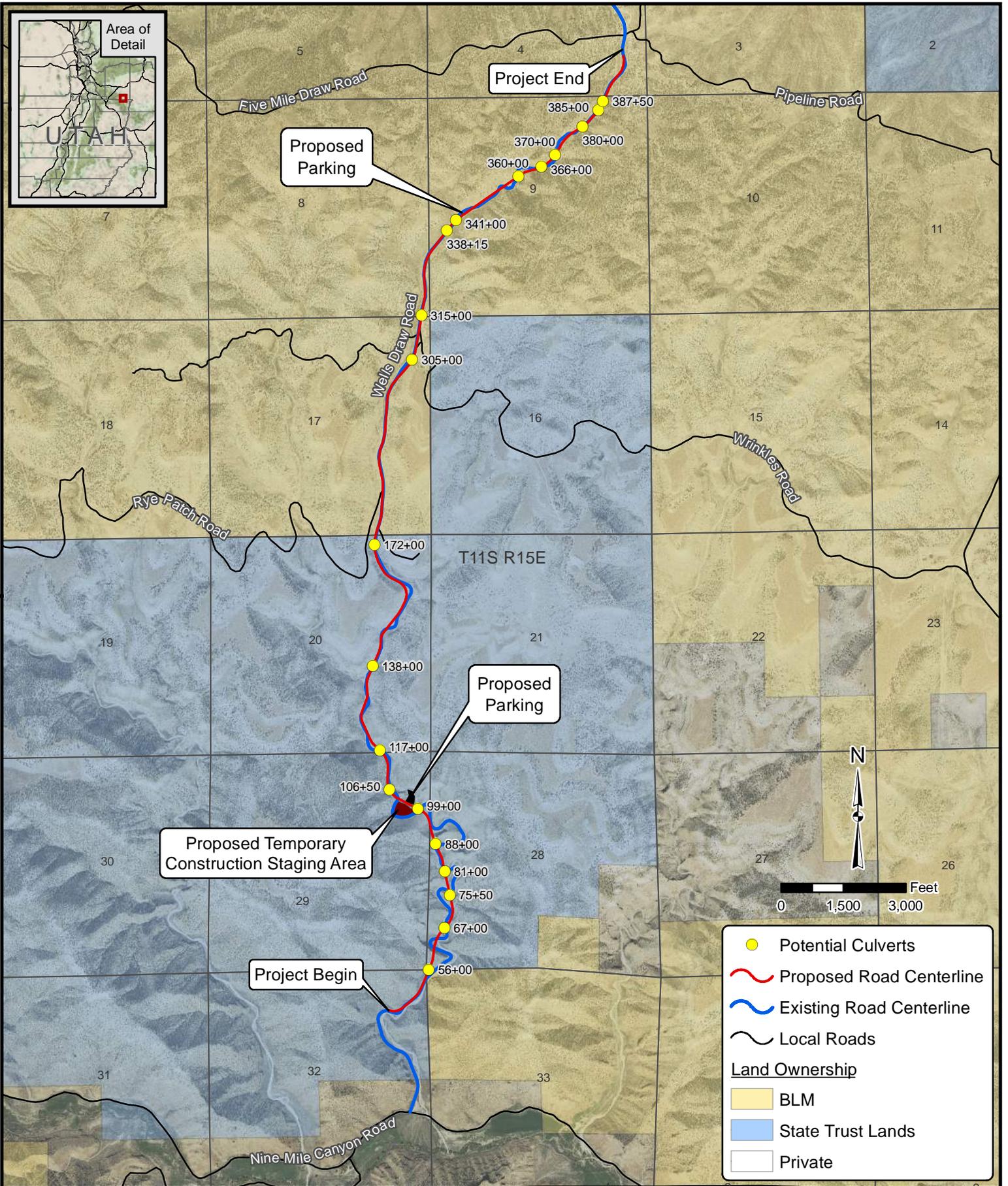
**Wells Draw Road (Gate Canyon) Project Overview**

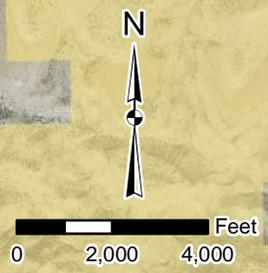
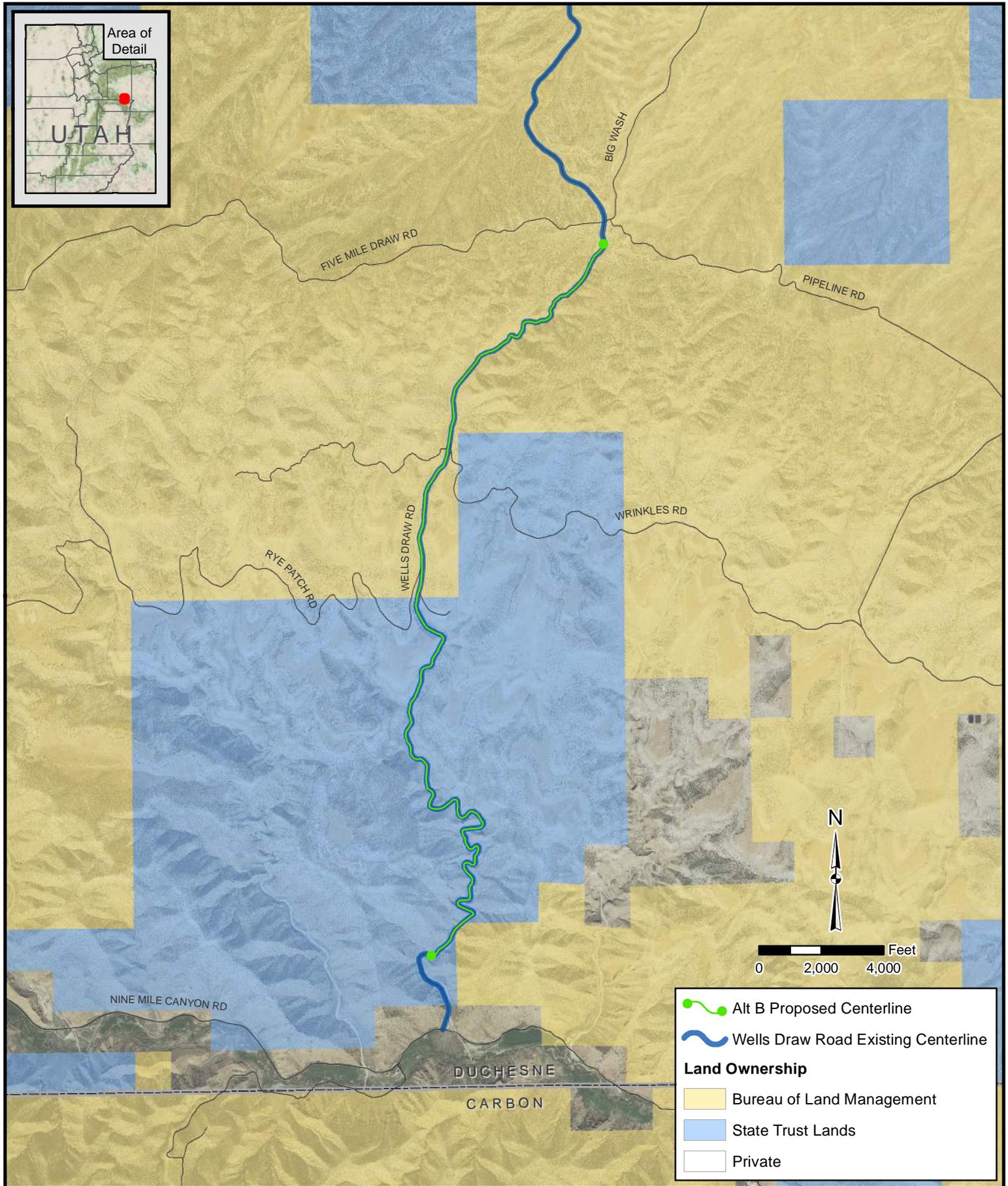
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DUCHESE COUNTY

SCALE: 1" = 3,000'

**1**

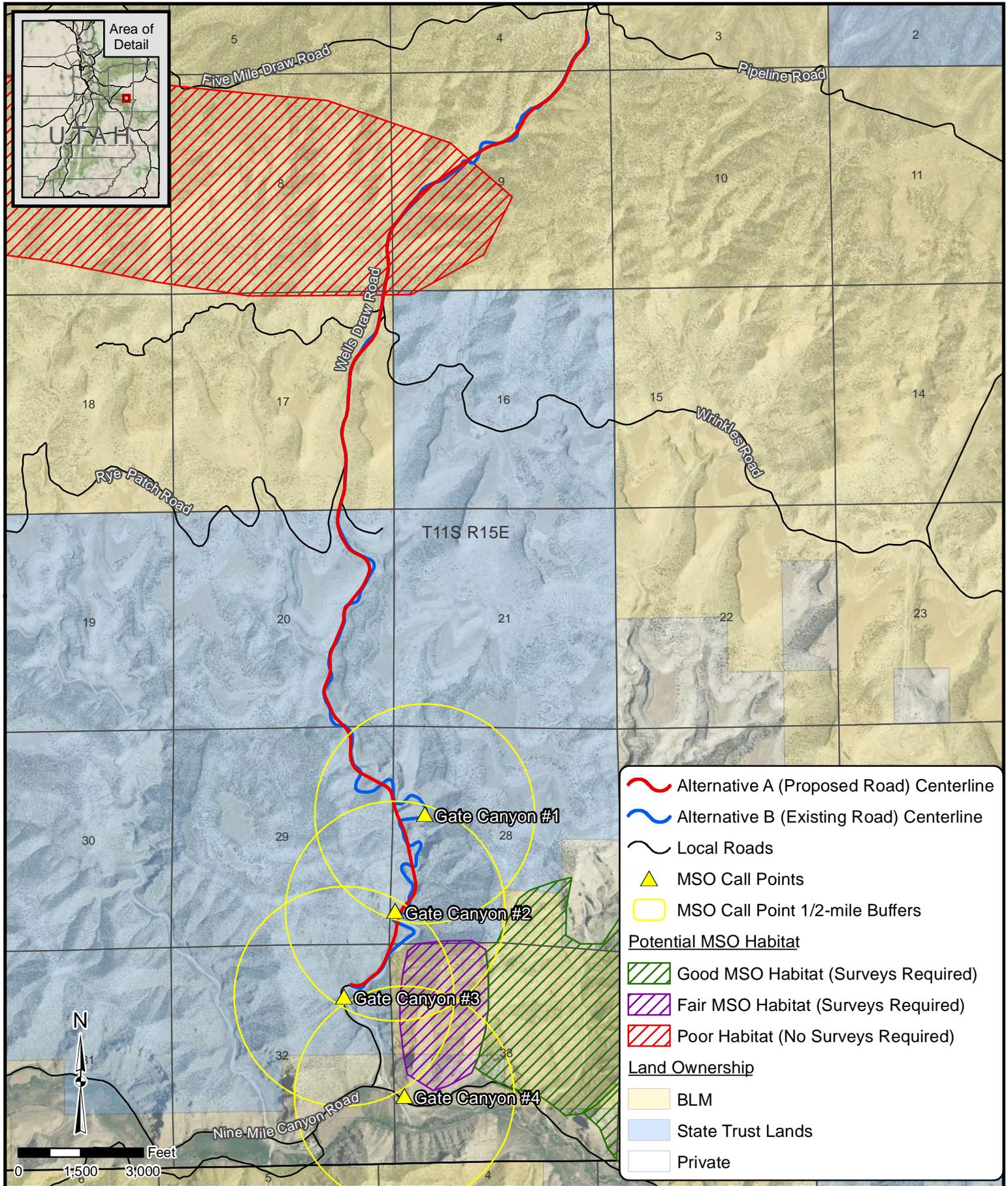




—●— Alt B Proposed Centerline  
— Wells Draw Road Existing Centerline  
**Land Ownership**  
 Bureau of Land Management  
 State Trust Lands  
 Private

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<b>Duchesne County SSD #2</b>		DUCHEсне COUNTY
<i>Wells Draw Road (Gate Canyon) Alt B Overview</i>		SCALE: 1" = 4,000'
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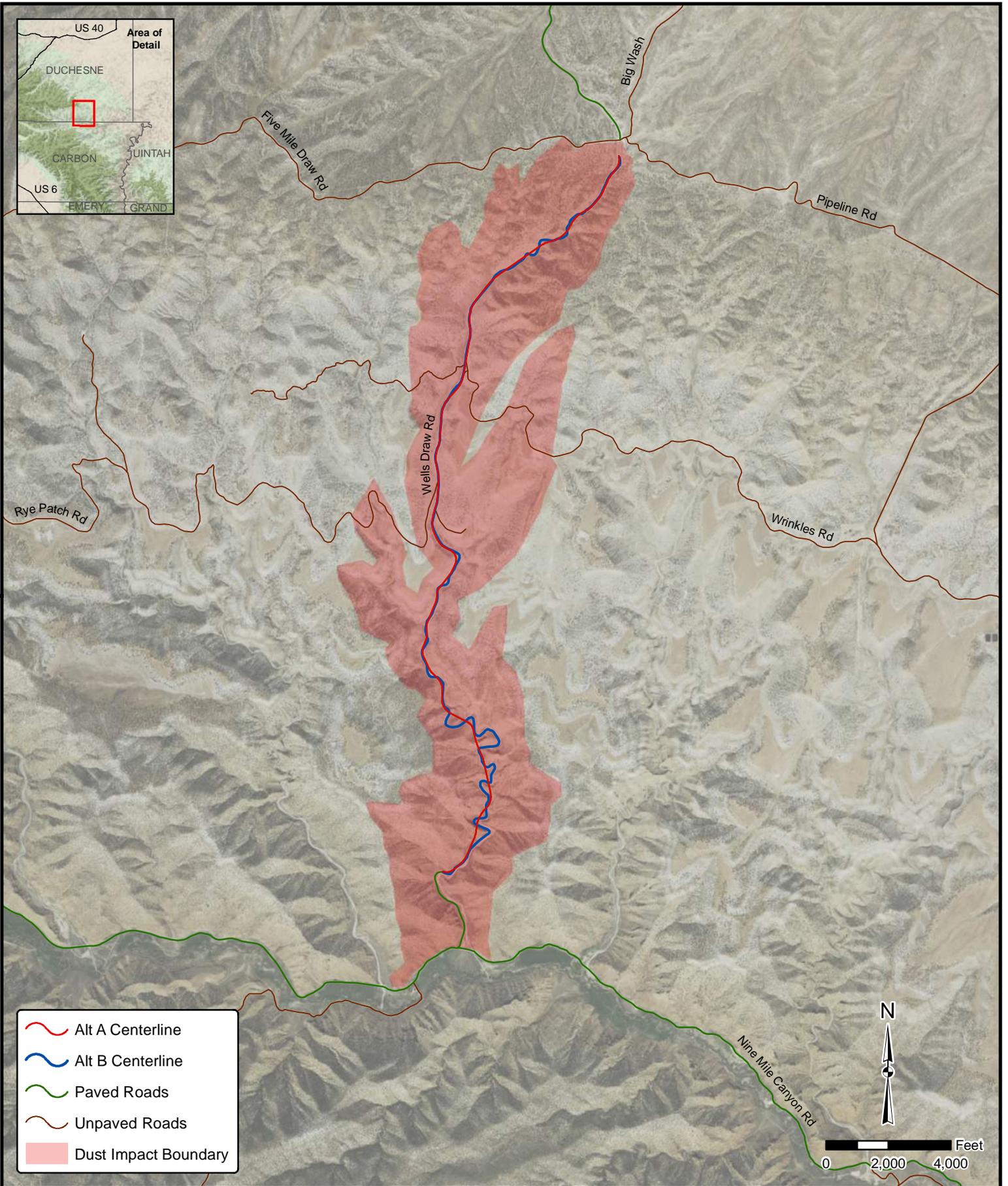


Alternative A (Proposed Road) Centerline  
 Alternative B (Existing Road) Centerline  
 Local Roads  
 MSO Call Points  
 MSO Call Point 1/2-mile Buffers  
**Potential MSO Habitat**  
 Good MSO Habitat (Surveys Required)  
 Fair MSO Habitat (Surveys Required)  
 Poor Habitat (No Surveys Required)  
**Land Ownership**  
 BLM  
 State Trust Lands  
 Private

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**Duchesne County SSD #2**  
**Wells Draw Road (Gate Canyon)**  
**Mexican Spotted Owl Call Locations**  
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Project Number: 1109-137    Drawn by: JWW 05-15    Last Edit: 05/20/2015

DUCHESNE COUNTY  
 SCALE: 1" = 3,000'  
**4**



-  Alt A Centerline
-  Alt B Centerline
-  Paved Roads
-  Unpaved Roads
-  Dust Impact Boundary

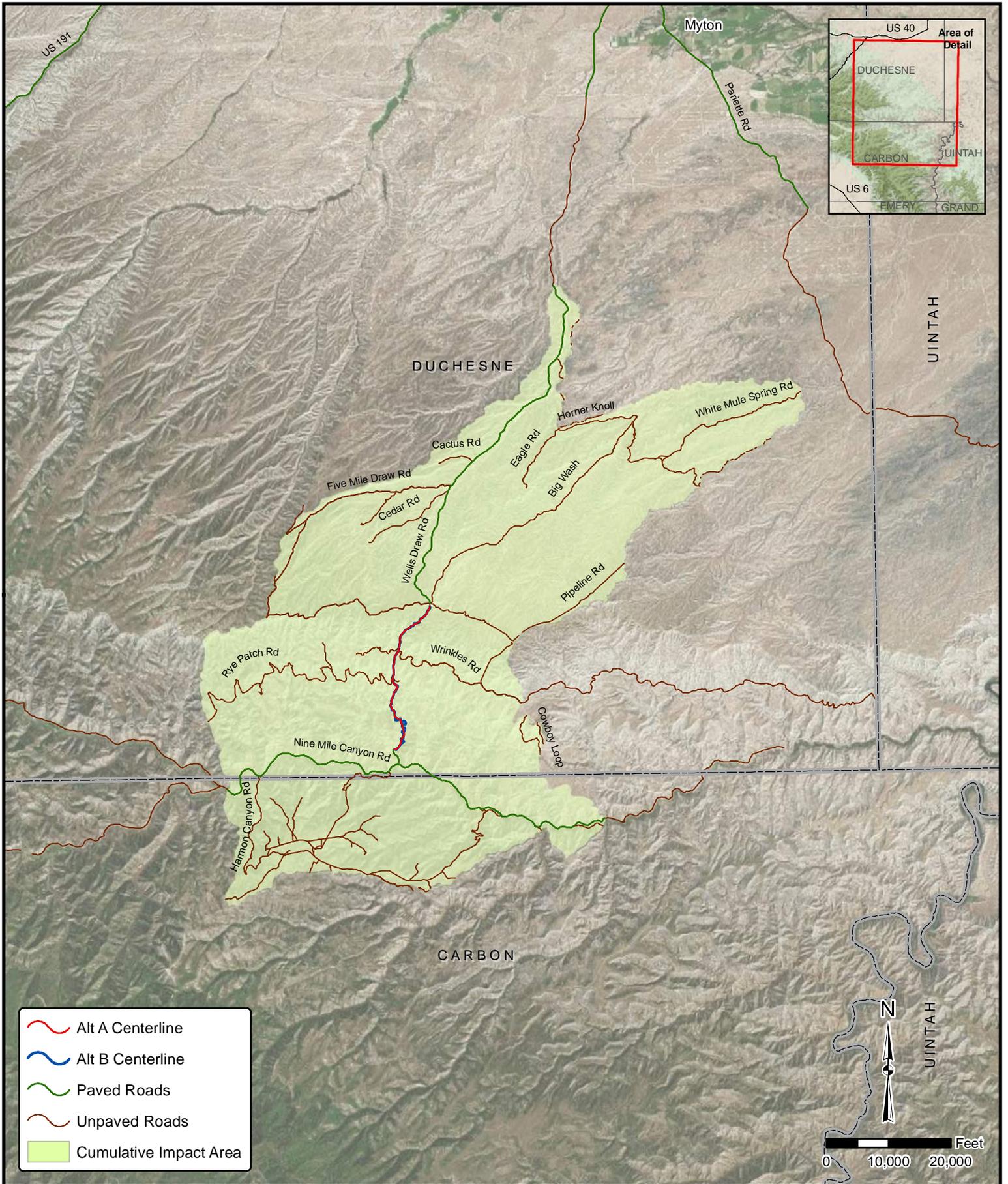


<b>Duchesne County SSD #2</b>	
<b>Wells Draw Road (Gate Canyon) Cumulative Impact Area: Dust</b>	
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Last Edit: 09/28/2015	

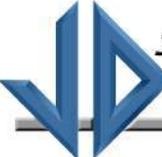
DUCHESNE COUNTY

SCALE: 1" = 4,000'

5

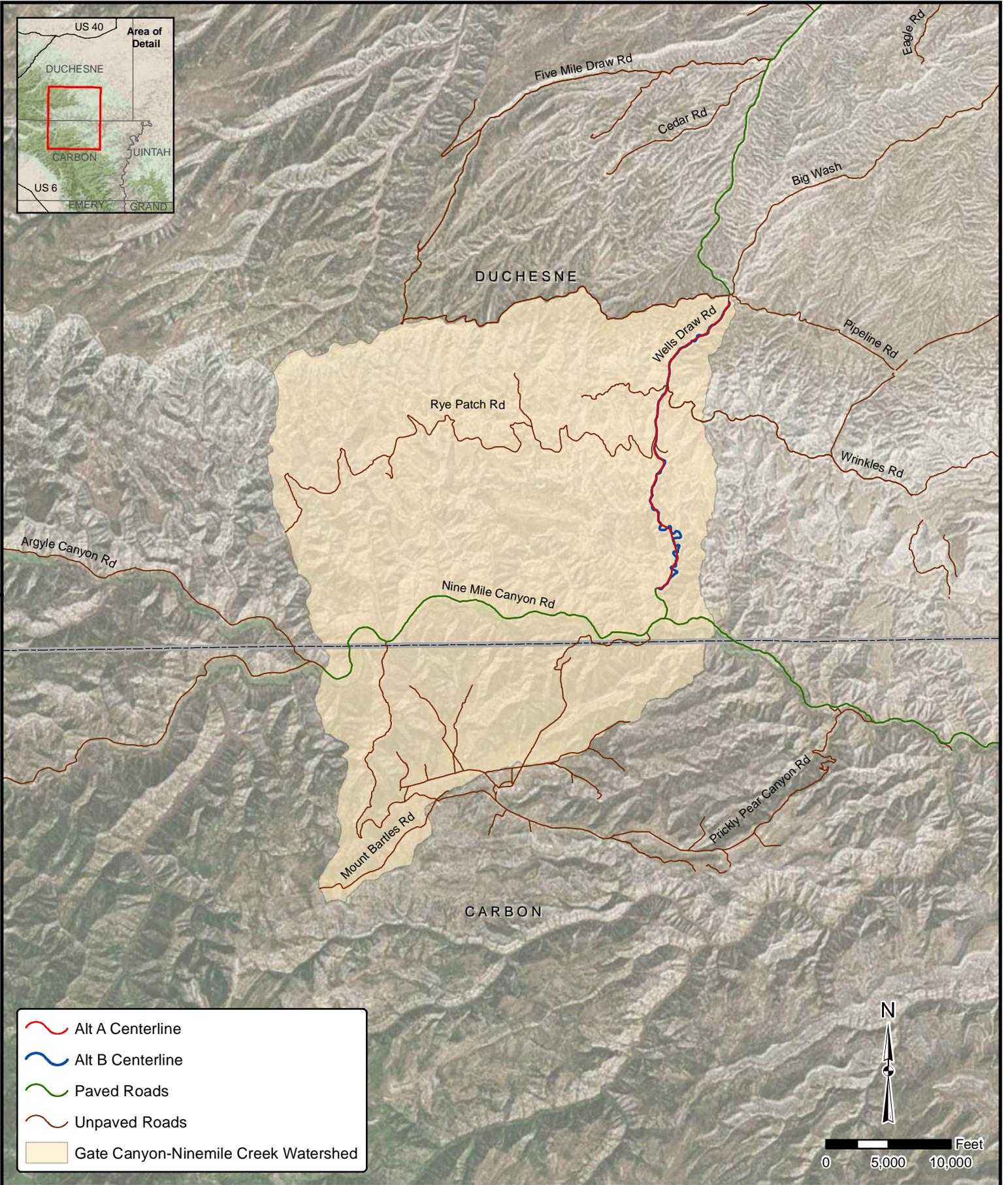


-  Alt A Centerline
-  Alt B Centerline
-  Paved Roads
-  Unpaved Roads
-  Cumulative Impact Area

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<b>Duchesne County SSD #2</b>	
<b>Wells Draw Road (Gate Canyon) Cumulative Impact Area: Noxious Weeds</b>	
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Project Number: 1109-137	Drawn by: JWW 09-15
Last Edit: 09/28/2015	

DUCHESE COUNTY
SCALE: 1" = 20,000'
<b>6</b>



- Alt A Centerline
- Alt B Centerline
- Paved Roads
- Unpaved Roads
- Gate Canyon-Ninemile Creek Watershed

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**Duchesne County SSD #2**

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**Wells Draw Road (Gate Canyon)  
Cumulative Impact Area: Earth Resources**

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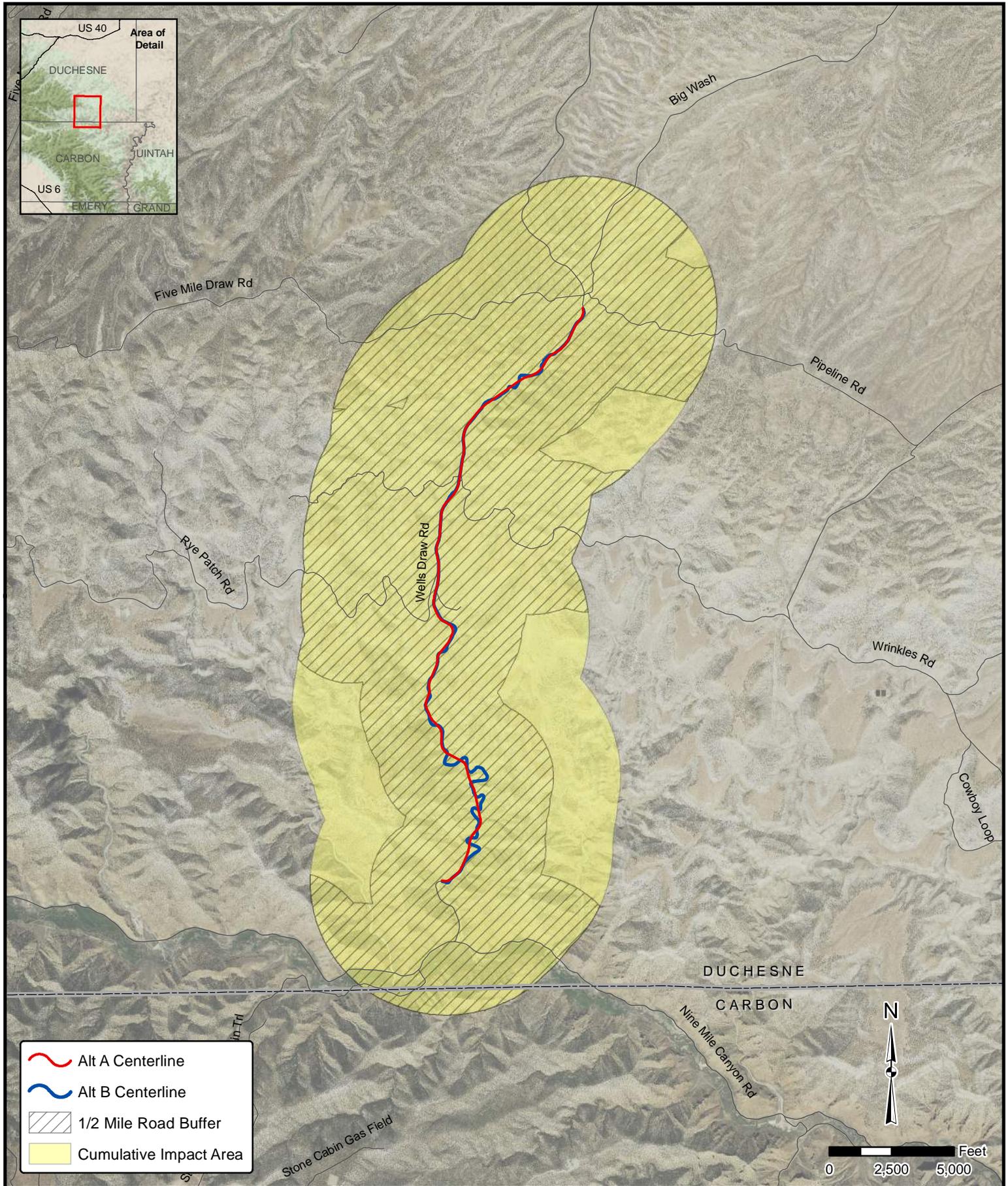
DUCHESNE COUNTY

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SCALE: 1" = 10,000'

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**7**



	Alt A Centerline
	Alt B Centerline
	1/2 Mile Road Buffer
	Cumulative Impact Area

**GIS**

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**Duchesne County SSD #2**

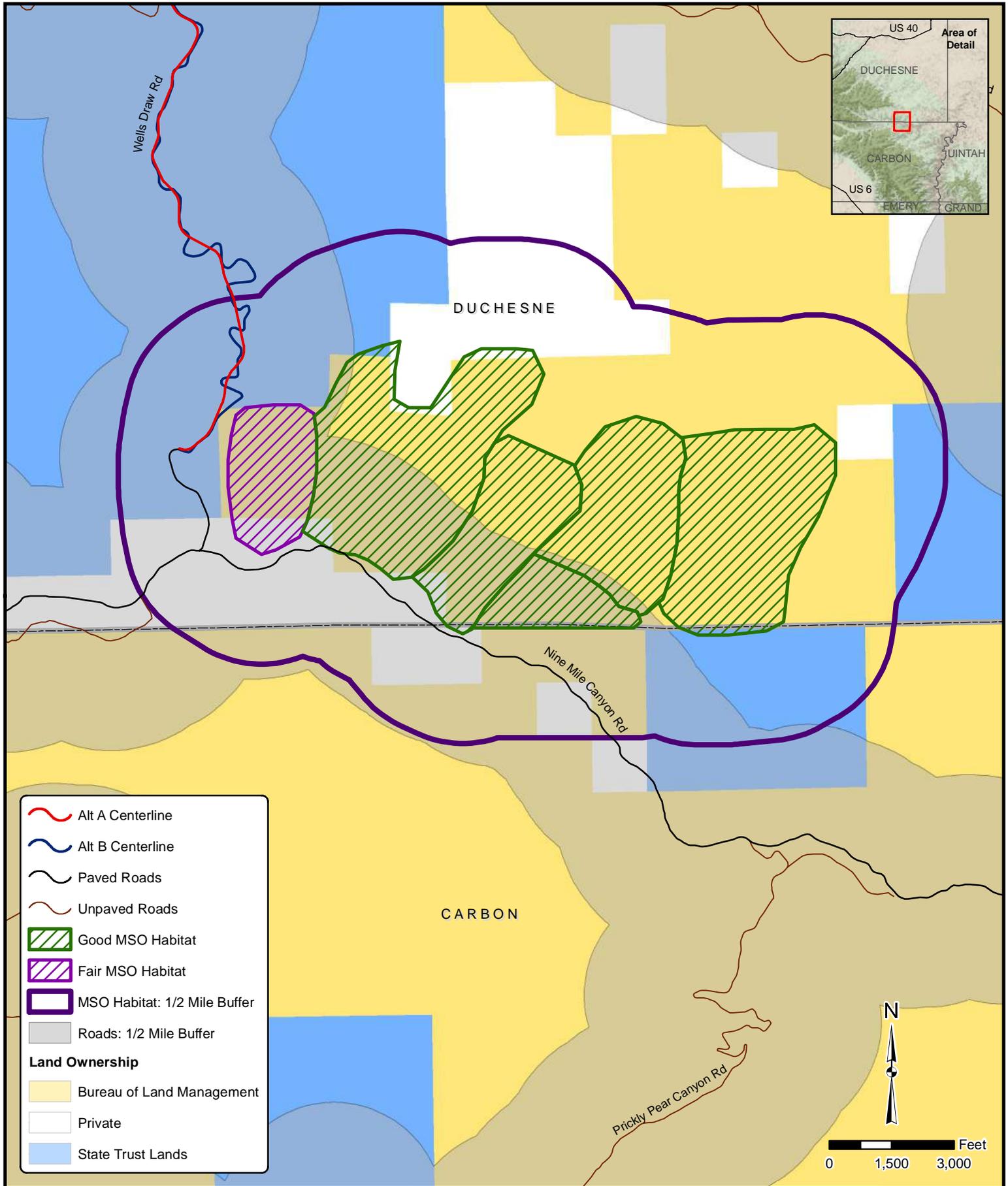
**Wells Draw Road (Gate Canyon)**  
**Cumulative Impact Area: Migratory Birds**

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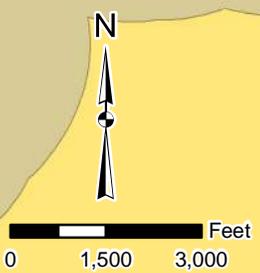
DUCHESNE COUNTY

SCALE: 1" = 5,000'

**8**



- Alt A Centerline
  - Alt B Centerline
  - Paved Roads
  - Unpaved Roads
  - Good MSO Habitat
  - Fair MSO Habitat
  - MSO Habitat: 1/2 Mile Buffer
  - Roads: 1/2 Mile Buffer
- Land Ownership**
- Bureau of Land Management
  - Private
  - State Trust Lands



<b>Duchesne County SSD #2</b>	
<i>Wells Draw Road (Gate Canyon) Cumulative Impact Area: Mexican Spotted Owl</i>	
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Project Number: 1109-137	Drawn by: JWW 09-15
Last Edit: 09/28/2015	

DUCHEсне COUNTY
SCALE: 1" = 3,000'
<b>9</b>

## **Appendix B. Plan of Development**

# Gate Canyon POD

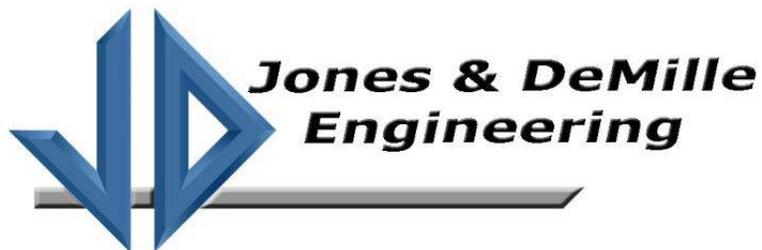
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10-26-2015

Prepared for:

Duchesne County Special Service District #2

Prepared by:



1-800-748-5275  
Project # 1109-137

# 1. Purpose and Need

## a. What will be built?

Duchesne County proposes that the Gate Canyon portion of the Wells Draw Road (County Road #32) be realigned and reconstructed. Approximately 5.2 miles of new roadway would be constructed from the summit of Gate Canyon to the pavement near the intersection of the Nine Mile Canyon Road (see Attachment A - Overview Map). Approximately 0.6 mile of roadway at the mouth of the canyon was previously paved as part of the Nine Mile Canyon paving project.

The County also proposes to develop parking for two potential future interpretive trail areas in the canyon, with access to the historic wagon road. One site is located near the north end of the project area, on BLM-administered land. The existing roadway would provide parking adjacent to the new roadway. The historic wagon road would only be accessible to foot traffic; no construction would occur beyond the proposed roadway right-of-way. The second site is located near the middle of the canyon, on SITLA land. A large level area would provide parking and foot access to several cultural sites, including another portion of the wagon road. The locations of the parking areas are shown on the overview map in Attachment A.

## b. What will it be used for?

The road is primarily used by resource development and maintenance vehicles accessing the oil and natural gas fields, and the recreating public. Development of the road will improve all-weather access, improve drainage infrastructure, and virtually eliminate fugitive dust emissions. The roadway will be constructed to conform to current American Association of State Highway and Transportation (AASHTO) design guidelines, thereby dramatically improving safety along the corridor.

## c. What is the size?

Approximately 5.2 miles of roadway will be reconstructed or realigned from the summit of Gate Canyon to the intersection of Nine Mile Canyon Road; 2.68 miles on BLM-administered land, and 2.52 miles on SITLA land. Portions of the existing road that are outside the amended right-of-way will be reclaimed by excavating the roadway to natural contours, scarifying the graded surface, and seeding. Reclamation details are described in Attachment B - Reclamation Plan.

Table 1. ROW mileage

Jurisdiction	Miles		
	Existing ROW	Existing ROW to be reclaimed	Proposed ROW
BLM	2.79	0.54	2.68
SITLA	3.30	1.48	2.52
<b>Total</b>	6.09	2.02	5.20

**d. Does the proposal involve new construction, reconstruction, or improvement of an existing road?**

The roadway is currently a dirt surface with poor drainage, which contributes to a build-up of loose sediment on the road, creating unsafe driving conditions. The road also follows the canyon bottom, resulting in substandard curves.

Approximately 12.8 acres of the existing 15.9 acres of right-of-way on BLM-administered land will be included in reconstruction and improvement; 2.8 acres will be completely reclaimed. A portion of the existing roadway (an area of approximately 0.4 acre) will be retained in its current unpaved condition, and will provide graveled parking for access to the historic wagon road. An additional 14.7 acres will be new right-of-way, for a total of 27.9 acres authorized in the amended right-of-way on BLM-administered land. See the overview map in Attachment A.

Acres of disturbance for each landownership is shown in the following table:

**Table 2. Construction disturbance for the proposed action**

Jurisdiction	Acres					
	Existing ROW <sup>1</sup>	Existing ROW to be reclaimed	Existing ROW in proposed ROW	New ROW in proposed ROW	Unpaved Parking	Total proposed ROW
<b>BLM</b>	15.9	2.8	12.8	14.7	0.4	27.9
<b>SITLA</b>	18.8	8.6	10.1	26.2	1.0	37.3
<b>Total</b>	34.7	11.4	22.9	40.9	1.4	65.2

<sup>1</sup> Existing ROW is 47 feet wide

**e. Is the use temporary or permanent?**

Permanent

**f. Is this ancillary to an existing right-of-way?**

This section of road is part of an existing Title V right-of-way (UTU-81573).

**g. Type and volume of traffic that is anticipated**

Traffic on this road is expected to include relatively high volumes of heavy truck traffic (700 to 1,000 vehicles per day, with about 50 percent being heavy trucks) for several years as natural gas resource fields are developed.

**h. Season of use**

The roadway will provide year-round, all-weather access to the region.

**i. Origination and destination of the road**

The corridor provides a critical connecting link between Duchesne and Carbon Counties. The road will begin at the south end of the paved section of Wells Draw Road, and will terminate at the paved section that connects to Nine Mile Canyon Road.

**j. Alternative routes or locations, if not within a designated corridor**

An alternative was considered to reconstruct and improve only the existing road; this alternative would not improve the substandard curves of the existing roadway geometry, and would directly impact a greater number of cultural sites.

Pete’s Canyon to the west was evaluated as an alternate route; however, this alternative was eliminated due to topographic constraints in the narrow, steep canyon.

Trail Canyon west of Pete’s Canyon was also considered. Initial studies determined that the potential risk of impacts to cultural resources was high for constructing a road to Trail Canyon. Private property right-of-way acquisition into Nine Mile Canyon was anticipated to be problematic. The roadway would also have been considerably longer and more expensive, and would have resulted in a new roadway corridor on the landscape.

No feasible alternative alignments were identified east of Gate Canyon due to the topography of the canyon.

## **2. Right-of-Way Location**

**a. Legal Description:**

T 11 S, R 15 E, Sections 4, 8, 9, 17, and 33 (Sections 20, 28, 29, and 32 on SITLA).

**b. Maps**

An overview map is attached in Attachment A.

**c. Cross Sections, Plans, and Profiles**

Plan and Profile Sheets are included as Attachment C. Typical roadway sections are included.

## **3. Facility Design Factors**

**a. Minimum and maximum engineering standards**

**1) Construction standards of the road**

The required right-of-way will average about 100 feet for the entire route, but varies between 80 and 350 feet (at the widest point). Different right-of-way widths are required due to the varying terrain. Some sections of the roadway are located in relatively flat regions and the required widths are narrower; however, much of the roadway is located in a canyon, which requires larger cuts and fills, and therefore a wider right-of-way, in order to meet the required safety standards. Significant effort has been made to minimize the required right-of-way widths. The requested right-of-way widths reflect the needed area to reconstruct the roadway while conforming to current AASHTO design standards. Some additional right-of-way width has been requested in areas where large-scale drainage improvements are anticipated or where surface ditching to convey runoff water to new culvert crossings will be required.

Access to connecting roads in the area (i.e., Wrinkles Road and Rye Patch Road) will be maintained.

The side slope of the roadway within the required clear zone will be at least 4:1 (H:V), with a 6:1 side slope preferred. The majority of the roadway would be designed with a design speed of 40 mph. There may be portions of the roadway where speed will be reduced due to alignment concerns, limited sight distance, reduced clear zone, or other roadway design factors; these areas would be posted with advisory plaques for the reduced speed limit. Horizontal and vertical curves will meet the appropriate safety guidelines. A minimum 13-foot-wide safety clear zone will be provided as per AASHTO's Roadside Design Guide.

**2) Maximum grade and pitch of the road**

The maximum grade will be less than 9 percent.

**3) Requirements and location of drainage ditches, culverts, bridges, and low-water crossings**

Pipe and box culverts will be installed that are designed to properly handle a storm event with a return period of 100 years without overtopping the roadway. Final design and material selection for culverts, box culverts, low-water crossings, and arch pipe crossings is pending; however, the preliminary sizes and locations are included in table below and in the plan and profile sheets (Attachment C).

**Table 3. Preliminary culvert locations and details**

Station	Type	Diameter or Size (depth x width)	Length (feet)
56+00	Pipe Culvert	48 inch – 3 Barrel	100
67+00	Box Culvert	12 feet x 13 feet	220
75+50	Box Culvert	12 feet x 13 feet	160
81+00	Box Culvert	12 feet x 13 feet	170
88+00	Box Culvert	12 feet x 13 feet	200
99+00	Pipe Culvert	54 inches	125
106+50	Pipe Culvert	60 inches	90
117+00	Box Culvert	12 feet x 12 feet	120
138+00	Box Culvert	10 feet x 12.5 feet	150
172+00	Box Culvert	7.5 feet x 15 feet	125
305+00	Pipe Culvert	48 inch – 2 Barrel	80
315+00	Pipe Culvert	54 inch – 2 Barrel	100
338+15	Pipe Culvert	54 inches	90
341+00	Box Culvert	7.5 feet x 7.5 feet	100
360+00	Pipe Culvert	96 inches	160
366+00	Pipe Culvert	84 inches	160
370+00	Pipe Culvert	72 inches	100
380+00	Pipe Culvert	36 inches	85
385+00	Pipe Culvert	36 inches	75
387+50	Pipe Culvert	36 inches	75

**4) Surfacing material**

The roadway section will consist of bituminous surface course (Hot Mix Asphalt) and a granular base and sub-base (Untreated Base Course and Granular Borrow).

**5) Length and width of road**

Approximately 2.68 miles of roadway (27.5 acres) will be constructed on BLM-administered land. The finished roadway pavement will be 30 feet wide, with 12-foot lanes and 3-foot shoulders.

**6) Cut and fill diagrams**

The attached Plan and Profile sheets (Attachment C) illustrate cut and fill extents of roadway construction based on the typical section and roadway profile.

**b. Detailed engineering plans and specifications for major structures**

**1) Major culverts, retaining walls**

Major culverts are shown in the plan and profile sheets, with preliminary sizes for the 100-year storm event. It is anticipated that rock riprap will be utilized for bank protection and armoring. No retaining walls are anticipated at this time, and main channel culverts will include concrete headwalls and wing walls. Metal culvert end sections will be utilized for smaller cross-drainage culverts.

**c. Temporary use areas needed**

A temporary use construction staging area is located near station 100+00 (see Attachment A). This is on SITLA land.

**4. Additional Components**

**a. Existing components on and off public land**

Approximately 2.52 miles (36.3 acres) of roadway will be constructed on SITLA lands.; 8.6 acres will be reclaimed. 1.0 acre will be developed for unpaved parking at the potential future interpretive trail site on SITLA land.

**b. Possible future components on and off public land**

No future components are anticipated at this time; this project will connect existing paved roads.

**c. Is there a need for sand and gravel supplies from public land?**

Earthwork and rock for the project will be generated from roadway excavation and used on-site. Any additional material needed will be imported from an approved pit source.

**d. Location of equipment storage areas**

Equipment will be stored within the existing and proposed right-of-way. An additional area has been identified as a temporary use area located near station 100+00 (see Attachment A) on SITLA land.

## 5. Government Agencies Involved

### a. Section 404 permits

Joint stream alteration permits will be required at some of the drainage crossings. Applications for those permits will be prepared and submitted separately; approval will be obtained prior to construction within the stream channel.

### b. Other permits and easements

An easement for construction across SITLA land will be acquired before project activities occur on SITLA lands.

Concurrence of compliance with Section 106 of the National Historic Preservation Act (NHPA) from the Advisory Council on Historic Preservation (ACHP), coordinated through the Utah State Historic Preservation Office (SHPO), will be required prior to project implementation.

Consultation with the U.S. Fish and Wildlife Service may be required for potential impacts to Mexican spotted owl (*Strix occidentalis lucida*) habitat. Surveys were completed in suitable habitat in 2014 and 2015. No detections were recorded during surveys in either year. Surveys will also be completed in 2016 to cover potential construction in 2018.

## 6. Construction of Facilities

### a. Brief description of construction

Construction of the roadway will be performed by a contractor; the project has not been awarded yet. Specifics of the roadway construction process are not available; however, construction of the roadway will likely follow typical roadway reconstruction practices. Flagging or staking will occur first. Roadway excavation and subgrade preparation will be done with scrapers and graders. Blasting will be required for the larger cuts at the south end of the canyon. Importing base materials will be done with rear dump trucks or belly dump trucks. Compaction will be performed by rollers of sufficient size to achieve the required densities. Paving operations will be performed by a self-propelled paver with a screed unit. Blasting will likely occur in the large rock cut areas, with pre-splitting operations defining the areas being excavated and removed for roadway construction. A Blasting Plan is attached as Attachment D.

### b. Access to and along right-of-way during construction

The previously paved sections of Wells Draw Road and Nine Mile Canyon Road will provide access to the right-of-way, and the existing dirt road will provide access at points along the proposed right-of-way. The construction contractors will be responsible for preparing a traffic management plan, to allow for continued safe traffic flows during construction, particularly during blasting.

### c. Safety requirements

Signs will be placed on connecting routes during construction to warn drivers that may be traveling in the area. Signing will follow the Manual on Uniform Traffic Control Devices

(MUTCD) and UDOT traffic control standards. A traffic management plan will be prepared by the contractor prior to construction. The plan will ensure that traffic is able to travel through the canyon in a safe manner, though some delays would be expected.

**d. Industrial wastes and toxic substances**

Hazardous material will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste, including trash, litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be removed to a disposal facility authorized to accept such materials. Specific measures will be detailed in a Stormwater Pollution Prevention Plan (SWPPP) prepared for the project, which includes a Spill Prevention and Control Plan.

**e. Seasonal restrictions on various activities**

Seasonal restrictions may apply based on the results of raptor nesting surveys. If construction will occur between March and September, raptor surveys will be completed to identify active nests in or near the project area. Species-specific buffers and timing restrictions for nesting raptors would follow direction from Appendix A in the approved RMP. If the construction right-of-way overlaps a recommended spatial buffer but does not directly impact the nest, the construction contractor will minimize activities within the buffer area while having a qualified biologist monitor the active nests to determine if construction activities are affecting the nesting raptors. If construction activities are adversely affecting nesting raptors, the contractor will suspend all construction activities until the nest is no longer occupied.

Mexican spotted owl surveys will also be completed in 2016. Depending on the results of surveys, timing restrictions may be implemented to avoid disturbance to Mexican spotted owls. Construction activities would be deferred from March 1 to August 31 for activities within one-half (0.5) mile of nesting Mexican spotted owls (RMP page A-13), except when non-breeding is confirmed or inferred that year per the accepted survey protocol (USFWS 2012).

Paving activities also have weather and temperature restrictions. Paving requires temperatures of 50 degrees Fahrenheit or higher with dry weather and base conditions. These conditions typically occur from May through October.

## **7. Resource Values and Environmental Concerns**

**a. Address at level commensurate with anticipated impacts**

It is not anticipated that this project will conflict with resources or public health and safety; the purpose of the project is to increase public safety while minimizing impacts to resources. Impacts to resources will be analyzed in the EA prepared for the project.

Overall, it is anticipated that the project will have a positive effect on the environment and recreational use in the region. All-weather access will be improved, dust emissions will be eliminated, visibility will be improved, and safety along the roadway will be increased. Impacts

are anticipated to be similar to those for the other phases as documented in the Wells Draw Road Improvement Project EA (DOI-BLM-UT-G010-2011-0106-EA).

**1) Location with regard to existing corridors**

On BLM-administered land, the proposed right-of-way almost entirely overlaps the existing right-of-way.

**b. Anticipated conflicts with resources or public health and safety**

**1) Air**

Air quality will be impacted temporarily during construction due to heavy equipment operation and generated dust. Paving of the roadway will virtually eliminate fugitive dust emissions.

**2) Noise**

Noise will increase temporarily, during construction, due to heavy equipment operation and blasting. Noise from traffic is not anticipated to increase over the existing levels due to implementation of the project.

**3) Geologic hazards**

Geologic hazards are not anticipated in the project area.

**4) Mineral and energy resources**

Adverse effects to mineral and energy resources are not anticipated, but beneficial effects may be realized with paving of the roadway, resulting in more efficient and safer transportation for oil and gas development in the surrounding area.

**5) Paleontological resources**

Paleontological resources occur in the Green River formation, and may be impacted by blasting and cutting through the canyon. A paleontological monitor would be present during blasting to inspect the rock for fossils.

**6) Soils**

Soils in the area are highly erosive. Paving will minimize erosion from the roadway surface. A SWPPP will be prepared prior to construction that will detail specific erosion and sediment control measures for the project.

**7) Water**

Water for compaction, roadway surfacing, and dust suppression will be obtained from a municipal source or a source perfected prior to 1988. The SWPPP will include measures to prevent pollution of stormwater runoff from the project area. Paving the roadway and installation of pipe and box culverts will reduce erosion overall, and increase water quality in the long-term.

## **8) Vegetation**

Vegetation is limited in the project area. Rabbitbrush and sagebrush are the predominant species that will be removed within the canyon bottom. Reclamation efforts will include seeding with native species.

## **9) Wildlife**

Bats and migratory birds may occur within the project area. Roosting habitat for bats may be impacted by blasting and cutting through canyon walls. Nesting birds, particularly raptors with cliff nests, may be disturbed by project activities. Surveys will be completed prior to construction if activities will occur during bird breeding season.

## **10) Threatened and endangered species**

Mexican spotted owl habitat units occur within one-half mile of the project area. Surveys were completed in 2014 and 2015, with no detections made. No other listed species are anticipated to occur in the area.

## **11) Cultural resources**

Cultural sites associated with the Price to Myton freight road are abundant within Gate Canyon. Most of these sites are axle grease inscriptions. The proposed project will largely avoid impacts to these sites; however, a few would be destroyed. Paving of the roadway would reduce impacts from dust. Proposed mitigation includes high resolution photographic documentation of the directly impacted panels, historical research to identify those people who left their signatures in the canyon, and the potential development of one or two interpretive trails that highlight the importance of Gate Canyon in the early settlement and economic development of Duchesne County and the Uinta Basin.

A cultural sensitivity training will also be required for all project employees working on-site. A PowerPoint presentation of this training is included as Attachment E. This training has been used on other projects within the West Tavaputs Plateau Programmatic Agreement.

## **12) Visual resources**

Large cuts through the canyon will be necessary to improve roadway geometry; these cuts will impact the visual setting of the road. However, the large cuts occur on SITLA land, and will not be visible from BLM-administered land. SITLA does not have visual resource standards; the project will be consistent with BLM visual standards on BLM-administered lands.

## **13) BLM projects**

The West Tavaputs Plateau plan, the GASCO Field Development project, and the Monument Butte Oil and Gas Development project surround the proposed project.

## **14) Recreation activities**

Recreation in Gate Canyon is mainly associated with the cultural resources. Recreational visitors may be temporarily impacted during construction. The project is anticipated to

benefit recreation by reducing dust in the canyon and providing a safer roadway. Designated parking at designated locations will provide for increased recreational viewing of cultural sites in the canyon.

### **15) Wilderness**

Wilderness does not occur within or near the project area.

## **8. Stabilization and Rehabilitation**

A Reclamation Plan has been developed in accordance with the Green River District Guidelines, and is attached as Attachment B. The plan addresses measures to control noxious weeds, reduce erosion, preserve topsoil, and increase desired vegetation.

### **a. Soil replacement and stabilization**

There is little topsoil to be disturbed by the project, due to overlap with the existing roadway and cuts through steep canyon rock faces; however, existing topsoil will be salvaged and replaced as described in the Reclamation Plan (see Attachment B).

### **b. Disposal of vegetation removed during construction**

Vegetation that will be removed during construction consists mainly of sparse rabbitbrush, sagebrush, pinyon pine, and juniper. Cleared vegetation will be disposed of off-site, unless directed otherwise by the BLM.

### **c. Seeding specifications**

Areas identified for reclamation would be seeded with the seed mix provided at the end of the Reclamation Plan (Attachment B).

### **d. Fertilizer**

None anticipated.

### **e. Limiting access to right-of-way**

The right-of-way will be used for public traffic; access will not be limited.

## **9. Operation and Maintenance**

### **a. Minimum maintenance and maintenance schedule**

After construction, Duchesne County will maintain the roadway on a regular basis according to its standard operating procedures. These efforts will ensure that the roadway corridor will be a perpetual facility that will provide access to the region for decades to come.

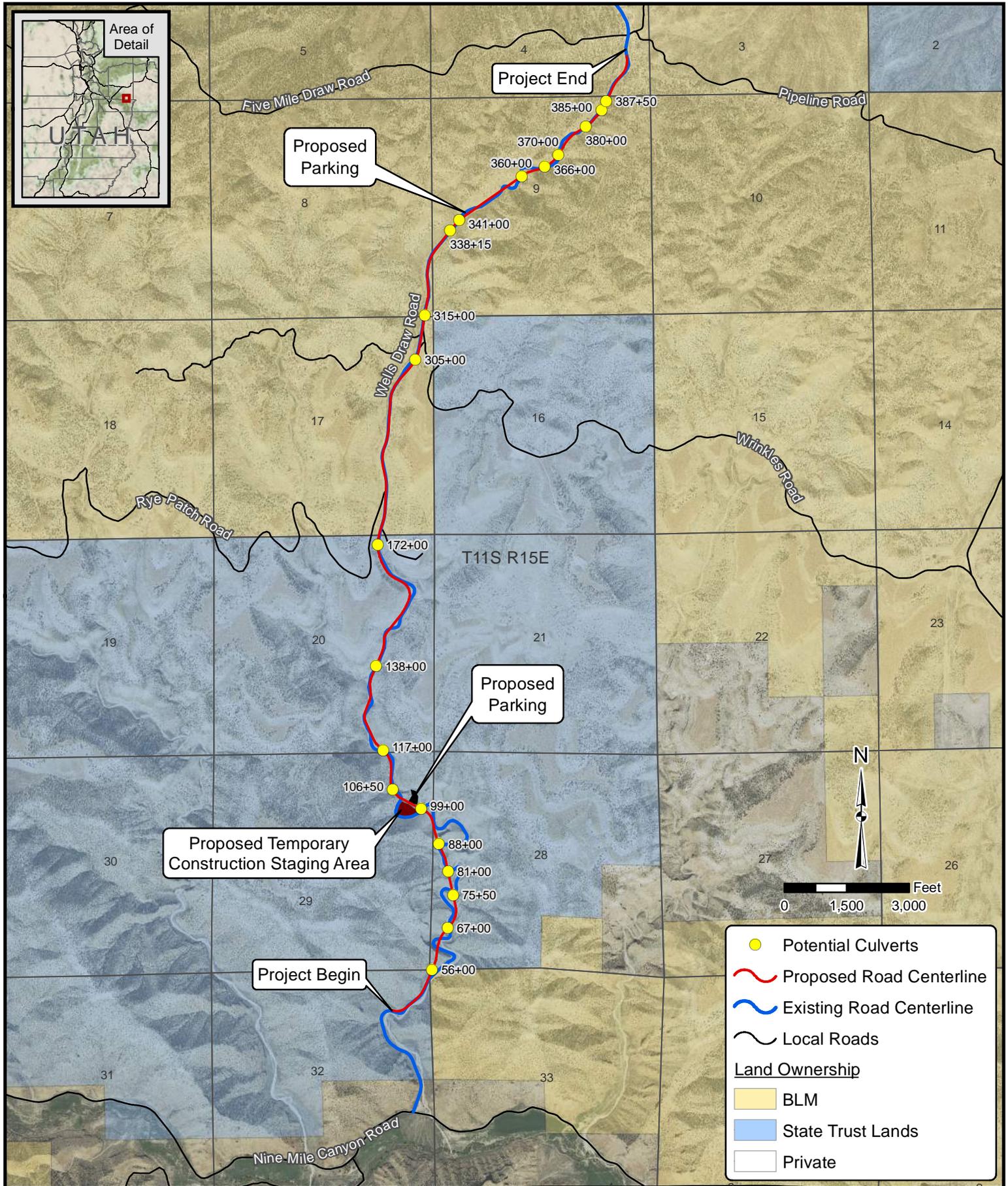
### **b. Placement of control, warning, and directional traffic signs**

Signs will be placed throughout the project as necessary, based on the MUTCD and AASHTO standards. Final design will include specific signage, painting, and markings.

## **10. Termination and Restoration**

The County intends to maintain and operate this facility in perpetuity; obliteration is not proposed or anticipated at this time. If termination were proposed at a future date, restoration would be coordinated with the BLM at that time.

**Attachment A. Overview Map**



## **Attachment B. Reclamation Plan**

This reclamation plan was developed in accordance with the Green River District Reclamation Guidelines and outlines measures that will be implemented to reclaim areas disturbed by the road reconstruction project. The plan also includes measures to manage noxious weeds.

Reclamation will be completed on all disturbed lands within the project area not physically covered by the final paved road, except for an approximately 13-foot-wide safety clearance strip located adjacent to both sides of the proposed roadway that would remain devoid of vegetation.

Reclamation and best management practices would be implemented during and after construction activities to minimize impacts on the environment to the greatest extent practicable. Reclamation methodologies to be implemented during and after construction are described in the following sections. In addition, monitoring would be implemented to ensure that reclamation techniques are successful.

### ***Construction***

#### Noxious weeds

- A pre-disturbance noxious weed inventory will be conducted to determine the presence of noxious weeds prior to beginning the project, and to determine whether treatment is needed prior to disturbance. If noxious weeds are found a report would be prepared to include the following:
  1. location (GPS if possible);
  2. species;
  3. canopy cover or number of plants; and
  4. size of infestation (square feet or acres).
- All vehicles and equipment would be cleaned either through power-washing, or other approved method, if the vehicles or equipment were previously operated outside the Uinta Basin, to prevent weed seed introduction.
- All vehicles, OHVs, and equipment would be power-washed after driving through a noxious weed infestation (Utah Noxious Weed Act). Travel through weed-infested areas would be avoided or minimized.
- Certified noxious weed-free seed and mulch would be used (Utah Seed Law). Sand, gravel, borrow, and fill material would be from noxious weed-free sources to prevent the introduction and spread of weeds.
- Staging areas would be located in weed-free sites.
- The project area and stockpiled material would be maintained in a weed-free condition to prevent weed seed production. These include, but are not limited to, facility sites, cut and fill slopes, topsoil reserves, roadsides, and borrow areas along roads.
- All new noxious weed infestations on BLM-administered lands would be reported to the BLM weed coordinator. New infestations would be controlled when found, and before seed set if possible. Some populations may require more than one treatment per year.

- All herbicide treatments would be applied by a Utah licensed pesticide applicator. If licensed in another state, a reciprocal license may be obtained through the Utah Department of Agriculture website.
- A Pesticide Use Proposal must be approved prior to chemical application on BLM-administered lands. Only BLM-approved pesticides and adjuvants would be used.
- All pesticide applications would be recorded on Pesticide Application Record (PAR) forms within 24 hours of application. All PAR forms would be returned to the BLM weed coordinator by December 1<sup>st</sup> of each year, along with an annual pesticide report.
- Pesticides may be applied through:
  1. backpack spot sprayer (preferred)
  2. wick application (preferred)
  3. low or high boom sprayers mounted on truck or ATV
  4. aerial
  5. other label recommended method

All pesticide applications must strictly follow label instructions.
- Standard stipulations for pesticide application are as follows:
  1. Spraying or application of pesticides would not be done when wind speeds exceed 10 miles per hour or if heavy rainfall or other adverse weather conditions exist.
  2. No pesticide application would occur within the following distances of open water, such as springs, wetlands, streams, ponds or lakes, unless otherwise specified on the pesticide label:
    - 100 feet aerial application
    - 25 feet boom truck application
    - 10 feet backpack sprayer application
  3. Herbicide applications within 1,500 feet of special status plants or populations would be coordinated with the BLM weed coordinator. Additional measures may be incorporated into application plans for control around special status plants or populations.
  4. All commercial and private applicators of pesticides would be currently licensed or hold a reciprocal license with the State of Utah. (Utah Pesticide Control Act)
  5. Empty containers would be disposed of in accordance with label instructions.
  6. Equipment would NOT be washed out or cleaned near streams, open water, or drainages that can carry water.
  7. Pesticides would only be transported when properly secured and with containers properly sealed and labeled.
- Invasive plants to be controlled include:
  1. All federally listed noxious weeds
  2. All state-listed noxious weeds
  3. All county-listed noxious weeds within the entire state of Utah.

4. Other invasive plants deemed important for control by BLM, due to high risk of invasion and impact to adjacent undisturbed vegetation areas.

#### Surface Disturbance

A Stormwater Pollution Prevention Plan (SWPPP) will be developed prior to construction, and will include necessary erosion controls to prevent sediment transport from the project area. A Spill Prevention and Control Plan will also be developed as part of the SWPPP, to reduce the risk of pollution.

#### Water Courses

Drainages would be reconstructed to have similar hydraulic characteristics found in properly functioning drainages. Details on culverts are provided in section 3.a.3). of the POD.

#### Topsoil and Surface Preparations

- Topsoil will be segregated from the subsoil (without mixing them), stockpiled separately from other soil materials, and maintained for future use in rehabilitating the site.
- After road construction is complete, salvaged topsoil will be re-distributed evenly over disturbed surfaces.
- Topsoil piles stored beyond one growing season will be stabilized and seeded to prevent erosion. Topsoil storage areas will be identified with appropriate signage.
- All waste material will be segregated from subsoil and topsoil, and disposed of in an authorized disposal facility in accordance with local, state, and federal requirements.

#### ***Post-Construction***

##### Visuals

- Ensure the overall location, landform, scale, shape, color, and orientation of major landscape features blends into the adjacent area and meets the needs of the planned post disturbance land use.

##### Noxious weeds

- All disturbance areas would be monitored for noxious weeds annually, for a minimum of three growing seasons following completion of project or until desirable vegetation is established. If found, weeds would be treated as described above.

#### Topsoil and Final Surface Preparations

- Salvaged topsoil would be redistributed evenly and to pre-disturbance depths.
- Reduce soil/subsoil compaction to the anticipated root depth of the desired plant species.
  - Compaction relief typically should be designed for 18-24 inches in depth.
  - Compaction relief should be designed to create a crosshatch pattern, and distance between furrows should not be greater than 2 feet.
- Re-spread the topsoil according to the following standards.
  - If the topsoil to be re-spread is greater than 6 inches in depth, then topsoil should be applied before compaction relief is implemented.

- If the topsoil to be re-spread is less than 6 inches, then topsoil should be applied after compaction relief is implemented.
- If large clumps or clods occur, disking may be necessary.

#### Reclamation of existing roadway

The portions of the existing roadway that are outside of the amended right-of-way will be reclaimed. Where necessary, the roadway will be excavated to natural contours. The surface will be scarified and reseeded according to the following specifications.

#### Revegetation

- Drill seeding
  - i. Drill Seeding is the preferred method of seed application unless site conditions preclude the use of drill seeding equipment.
    - Drill seeds at the minimum rate of 45 Pure Live Seeds (PLS) per linear foot. Seeds should be drilled to a depth of 0.25 to 0.5 inch.
    - Some plant seeds should not be drilled. If those species are used, the application method should fit the seed type requirements.
    - Areas in excess of 40% slope or that are excessively rocky will be broadcast seeded at 80-90 PLS and covered to a maximum of 0.25 inch by harrowing, drag bar, or roller.
  - ii. Seeding efforts should be conducted between August 15 and prior to winter freezing of the soil.
- Seed mix
  - A seed mix provided by the BLM will be used. A suggested seed mix is provided at the end of this plan.

#### Monitoring and Reporting

- Vegetative monitoring protocol would be developed by the County and approved by the BLM reclamation specialist prior to implementation of reclamation techniques. The monitoring methodology would be designed to monitor basal vegetative cover. Monitoring criteria include the following:
  1. Qualitative monitoring data should be collected after the 2nd growing season following reclamation actions.
  2. Quantitative data should be collected after the 3rd and 5th growing seasons, and the year that the applicant determines that reclamation meets the long-term objective of 75% basal cover as compared to the reference site. General view photographs of the reclaimed areas should be submitted with the quantitative data. Photographs should be taken at the same photo point each time, and as close to the same time of year as previous photos were taken to reduce differences in plant growth characteristics.
  3. If after three growing seasons there is less than 30% of the basal cover based on comparison to the reference site, then the Authorized Officer may require additional reclamation efforts.
  4. All seed utilized will be tested prior to application to ensure the BLM and State of Utah that specifications for PLS, purity, and noxious weeds have been met.

5. As determined by the Authorized Officer, temporary fencing may be required to exclude livestock/big game grazing until seeded species have become established.
  6. As determined by the Authorized Officer, mulching may be required.
    - If utilized, mulch should be applied within 24 hours following completion of seeding. Mulching should consist of crimping certified weed-free straw or certified weed-free native grass hay into the soil.
    - Hydro-mulching may be used in areas where crimping is impracticable, in areas of interim reclamation that were hydro-seeded, and in areas of temporary seeding regardless of seeding method.
- The process of monitoring, evaluating, documenting, and implementing reclamation measures would be repeated until reclamation goals are achieved, as determined by the appropriate Authorized Officer.
  - Revegetated areas would be inspected annually and monitored to document location and extent of areas with successful revegetation, and areas needing further reclamation (for a minimum of 3 years after construction completion). An annual reclamation report would be submitted to the Authorized Officer by March 31 of each year.
  - Prior to any surface disturbance, vegetative monitoring locations and undisturbed reference sites would be identified by the County and approved by the BLM reclamation specialist.
    1. Reference sites will be permanently marked and the location recorded by GPS in North American Datum 1983.
    2. A photograph consisting of a general view of the marked reference site should be submitted with the reference site data.
    3. All linear rights-of-way will have one monitoring transect per each NRCS ecological site that the right-of-way passes through for greater than 0.75 mile.
  - Each applicant will submit all reclamation efforts annually to the Green River District Data management System (GRDMS) by March 1st. Reclamation efforts will include:
    1. Document compliance with all aspects of the reclamation goals, objectives, and actions and describe the reclamation accomplished.
    2. Document the results of the noxious weed inventory (see 6.i.1); and
    3. Recommend revised reclamation strategies, if necessary.
  - Implement revised reclamation strategies as needed.
  - Repeat the process of monitoring, evaluating, documenting/reporting, and implementing, until reclamation goals are achieved, as determined by the Authorized Officer.

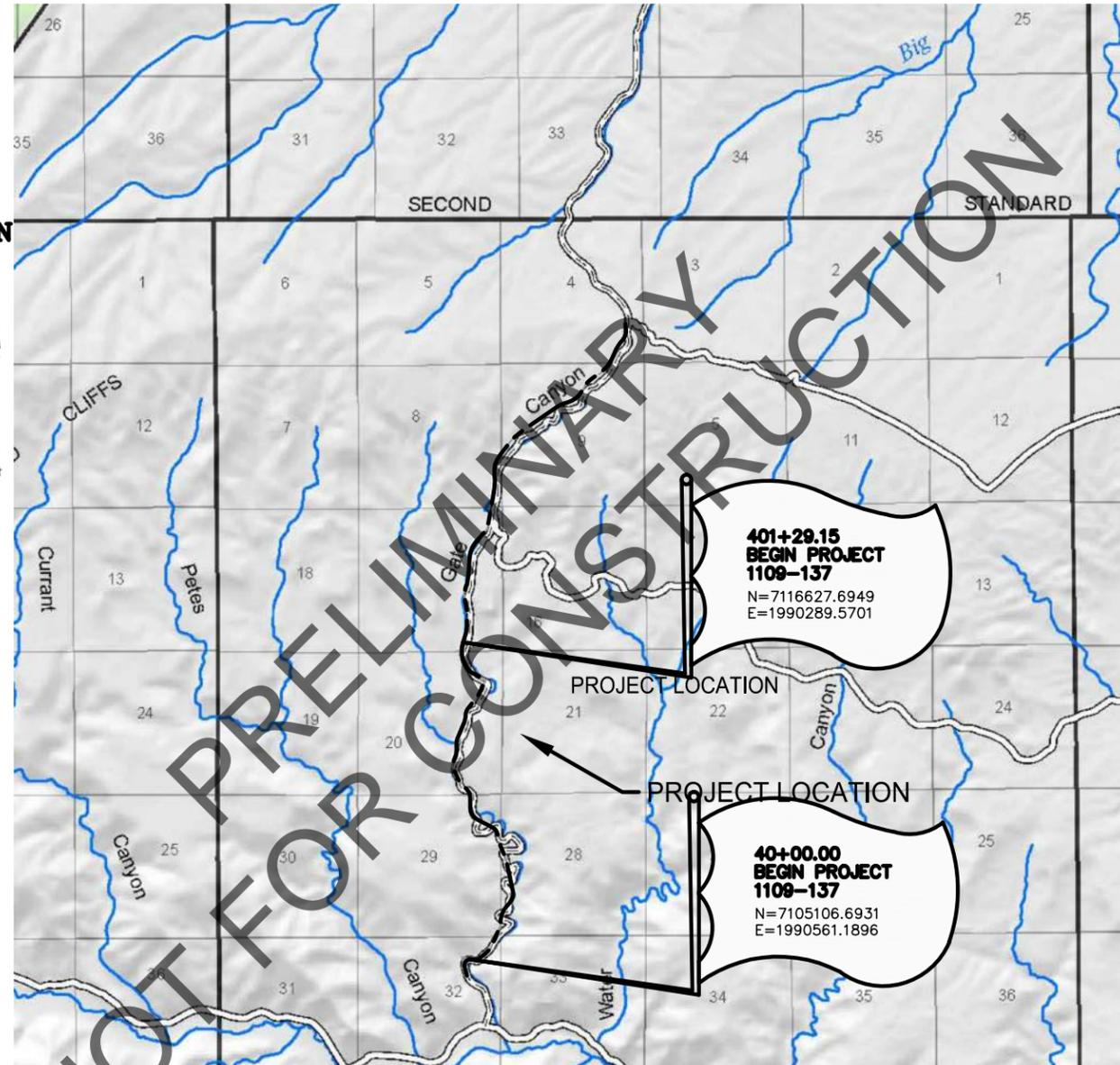
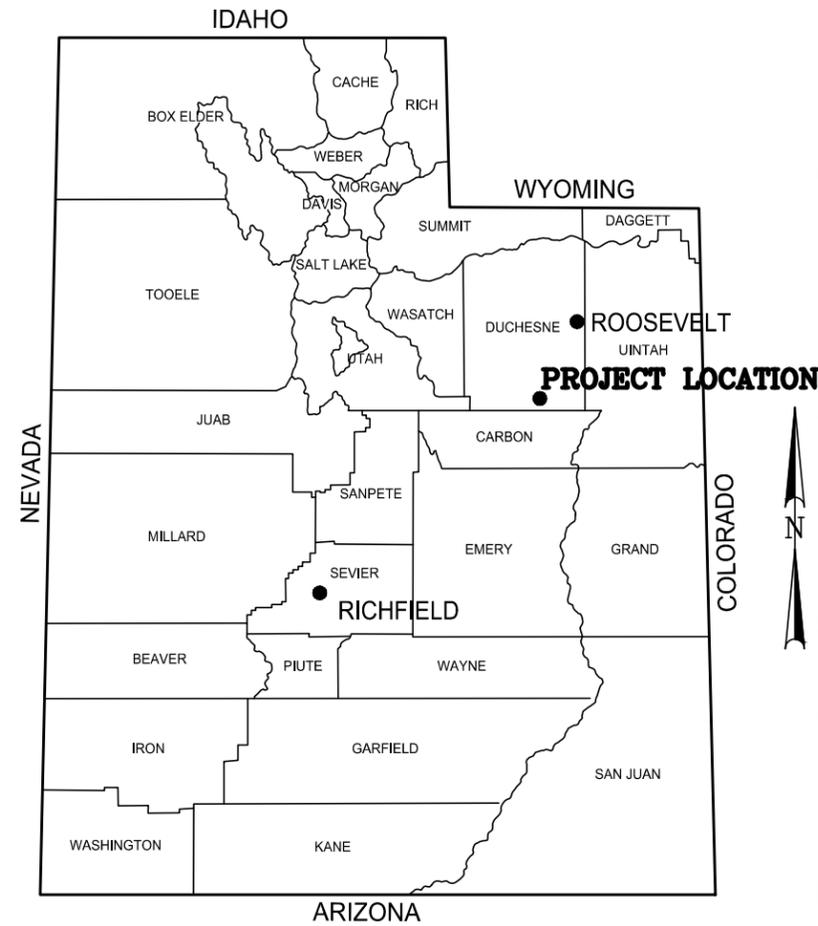
**Suggested seed mix (from previous phase of paving Wells Draw Road)**

<b>Grasses - 9.5 lbs of seed (PLS)</b>		
<b>Common Name</b>	<b>Scientific Name</b>	<b>Rate/Acre (lbs PLS)</b>
Alkali Sacaton	<i>Sporobolus airoides</i>	0.25
Bottlebrush Squirreltail	<i>Elymus elymoides</i>	0.50
Intermediate Wheatgrass	<i>Thinopyrum intermedium</i>	2.00
James' Galleta	<i>Pleuraphis jamesii</i>	0.50
Sand Dropseed	<i>Sporobolus cryptandrus</i>	0.25
Siberian Wheatgrass	<i>Agropyron fragile</i>	2.00
Thickspike Wheatgrass	<i>Elymus lanceolatus</i>	2.00
Western Wheatgrass	<i>Pascopyrum smithii</i>	2.00
<b>Forbs - 4 lbs of seed (PLS)</b>		
Blue Flax	<i>Linum lewisii</i>	4 lbs in aggregate (include all species)
Bluestem Beardtongue	<i>Penstemon cyanocaulis</i>	
Common Yarrow	<i>Achillea millefolium</i>	
Pale Evening Primrose	<i>Oenothera pallida</i>	
Palmer's Penstemon	<i>Penstemon palmeri</i>	
Rocky Mountain Beeplant	<i>Cleome serrulata</i>	
Rocky Mountain Penstemon	<i>Penstemon strictus</i>	
Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	
Silvery Lupine	<i>Lupinus argenteus</i>	
Sulfur-Flower Buckwheat	<i>Eriogonum umbellatum</i>	
Tansyaster	<i>Machaeranthera tanacetifolia</i>	
Tufted Evening Primrose	<i>Oenothera caespitosa</i>	
Utah Sweetvetch	<i>Hedysarum boreale</i>	
<b>Shrubs - 2.5 lbs of seed (PLS)</b>		
Big Basin Sagebrush	<i>Artemisia tridentata ssp. Tridentata</i>	0.50
Forage Kochia	<i>Kochia prostrata</i>	1.00
Fourwing Saltbush	<i>Atriplex canescens</i>	0.50
Winterfat	<i>Krascheninnikovia lanata</i>	0.50
<b>Total Rate/Acre (lbs PLS)</b>		<b>16.00</b>

**Attachment C. Plan and Profile Sheets**

# DUCHESNE COUNTY SPECIAL SERVICE DISTRICT #2 GATE CANYON DUCHESNE COUNTY, UTAH 2014

PROJECT NO.	SHEET NO.
1109-137	1



VICINITY MAP

## APPROVAL

RECOMMENDED FOR APPROVAL:	
_____	_____
ENGINEER	DATE
APPROVED:	
_____	_____
CLIENT	DATE



**Jones & DeMille Engineering, Inc.**

CIVIL ENGINEERING - SURVEYING - TESTING  
GIS - ENVIRONMENTAL

- infrastructure professionals -

1.800.748.5275 www.jonesanddemille.com

## **Attachment D. Blasting Plan**

### **Blasting Techniques for Control of Fly Rock, Air Blast, and Vibration**

#### Blast Hole Geometry and Sub-drill Design:

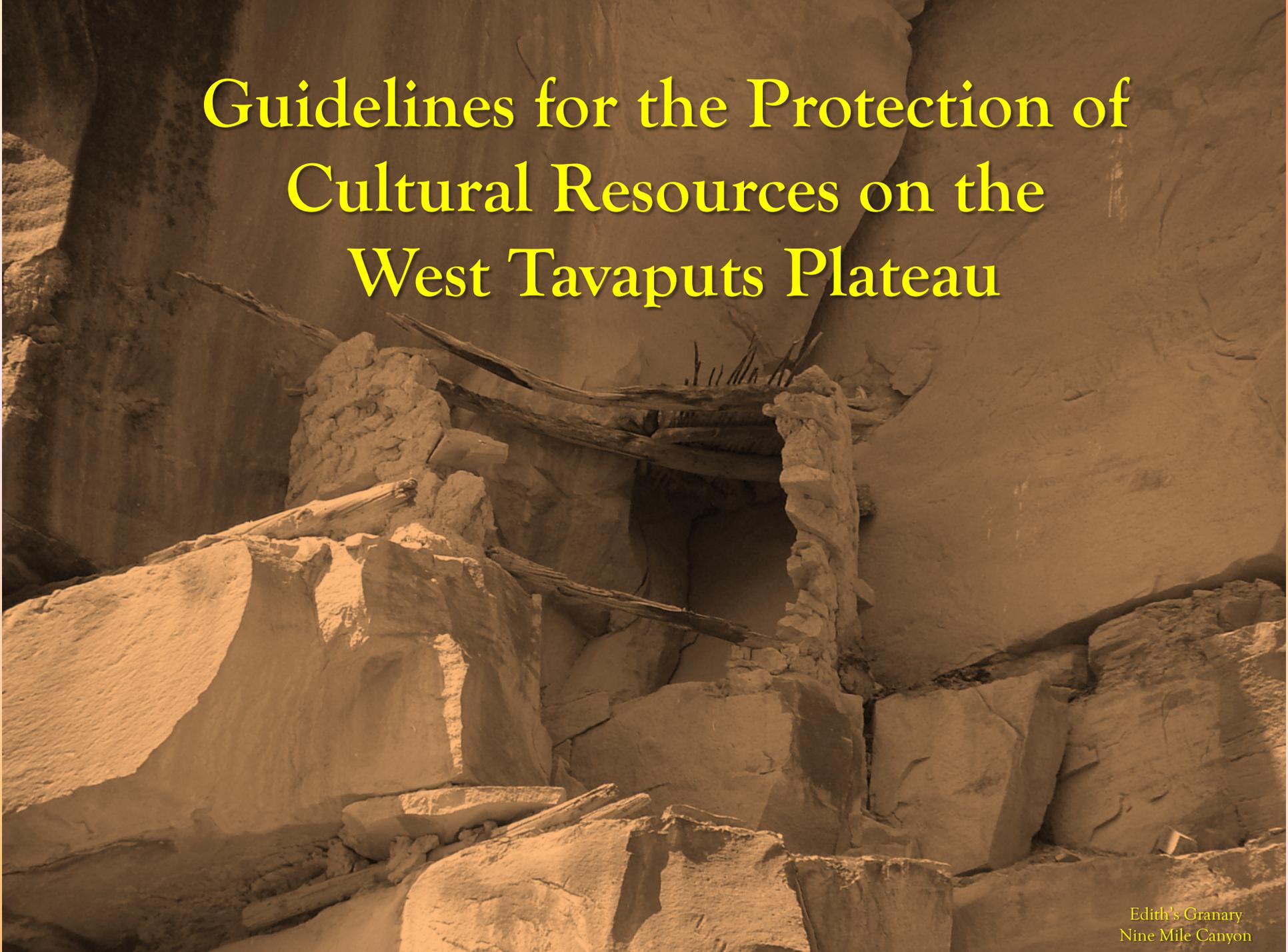
In relationship to geological conditions, rock fragmentation goals, excavation limits, vibration modeling, and air blast overpressure limitations, a blast hole pattern is planned and verified throughout the duration of the project. The blast hole pattern consists of placing single-blast holes into a geometric relationship with one another and (ideally) an open face of relief. The spacing and burden between blast holes is calculated in their relationship to nominal blast hole firing sequence and the bench height (depth of cut). A carefully calculated and implemented quantity of stemming, sub-drilling, firing sequence, and explosive product performance results in the proper confinement of energy in a safe, reliable, productive, and calculable manner. Over-confinement causing undue vibration and poor fragmentation is avoided. Under-confinement of explosive energy that results in poor fragmentation, catastrophic displacement (fly rock), and poor grade control will also be avoided by proper implementation of the following criteria.

1. **Blast Hole Size and Depths:** Blast hole size shall be determined by depth of cut, proximity to final grades and elevations, rock type and stiffness, and vibration calculations. The blast hole depths shall be limited to the depth of cut plus the sub-drilling depth (discussed below) within 12 feet of the finished slope. Pre-split holes that delineate the rock cut slope may be drilled and blasted to design depth in one pass in order to maintain the neat line excavation as indicated on the construction drawings.
2. **Stemming** (the inert materials at the top of the blast hole that confines the energy): If required, stemming depth is calculated from the charge diameter, rock density, rock competency, and amount of over-burden at the borehole. The typical depth or ratio is  $0.7 \times$  relative burden. The depth of stemming is frequently variable throughout a single blast predicated upon the stated criteria.
3. **Sub-Drilling:** Sub-drilling is that portion of the blast hole that extends below finished grade to insure the breakage will be achieved at grade line. Considerations for sub-drill depths are subject to rock type, geological anomalies, blast hole diameter, and pattern. The base ratio of sub-drilling is  $0.3 \times$  the blast hole burden or more.
4. **Blasting Agents:** Subject to environmental conditions, several blasting agents shall be considered for and/or be integrated into each blast. The common blasting agents are ammonium nitrate fuel mixture, fuel phased ammonium nitrate, and ammonium nitrate based cartridges with a wide range of additives and sensitizers. Design and implementation considerations are water resistance, sensitivity, velocity of detonation, density, and relative weight or bulk strength. Blasting agents and high explosives shall be packaged in commercial cartridges.
5. **Vibration, Noise, and Overpressure:** Blast hole pattern, nominal charge firing time sequence, stemming, and rate of detonation sequence across the face of the blast will be evaluated to avoid

excessive noise propagation. Atmospheric conditions of temperature, inversion, and wind direction and speed will be observed to avoid sound focusing and propagation.

6. Monitoring: Seismographs shall be installed per specifications at the nearest structures of concern. Procedures to monitor blast-induced vibrations and air overpressures at adjacent foundation areas, existing or previously completed structures, and other existing facilities, shall comply with the standards. No above ground man-made structures are anticipated in areas of rock excavation and blasting at this time.
7. Notifications to Adjacent Property Owners, Roadway Users, and Utility and Energy Development Companies: Prior to any blasting, all adjacent landowners, utility and energy development companies, and major roadway users (as itemized in the specifications) shall be notified by mail, with construction signage and road closures as necessary to provide advance notification and public safety.
8. Blast Mats: If the cut depth is insufficient for controlling blasts, blast mats may be used. Geotextile fabric of sufficient weight and durability to protect the detonators can be used to cover all blasts. An approximate average of 6 inches of sand or appropriate fines may be placed over the geotextile fabric that will be overlaid by a heavy-duty blast mat constructed of recycled rubber tires. The matting typically has at least 3 feet of overlap and extend at least 3 feet beyond the nearest blast hole. Before blasts are covered, all loose soils above the blast and located within 10 feet of the blast are wetted by the contractor with water to suppress airborne dust. Sand or soils placed over weed-barrier fabric are wetted before placing blast mats.
9. Summary: All of the elements of blast design and implementation as presented help to achieve the construction and safety goals of a blasting project. Within each blast, there may be subtle or substantial variations in the drilling and explosive loading subject to the area geological conditions, or vibration and over-pressure results. A qualified blasting contractor will provide a blasting plan to maintain acceptable noise levels, line and grade control, suppress the potential for catastrophic displacement, avoid damage to rock outside the grading limits, and produce effective rock fragmentation in a safe and productive manner. The blast plan will be submitted to, reviewed, and endorsed by the engineer.

**Attachment E. Cultural Sensitivity Training PowerPoint**



# Guidelines for the Protection of Cultural Resources on the West Tavaputs Plateau

# What Are Cultural Resources?

1. Sites, structures, landscapes, and objects of some importance to a culture or community for scientific, traditional, religious, or other reasons.
2. Cultural Resources consist of all structures, objects, and artifacts that are over 50 years old.

On the West Tavaputs Plateau, common cultural resources include

1. Rock art sites
2. Prehistoric and historic habitations (prehistoric villages, cabins, historic homesteads, foundations, etc.)
3. Granaries and cists
4. Prehistoric and historic artifact scatters
5. Rock shelters
6. Landscape features (fences, trails, agricultural/ranching modifications, etc.)
7. Traditional cultural properties.

# What Are Cultural Resources?

## Artifacts

(Arrowheads, Beads, Pottery, Cans, etc)



## Sites

(Artifact Scatters, Rock Shelters, Habitations, Homesteads, Rock Art)



## Cultural Resources

## Features

(Cists, Granaries, Hearths, Fences, etc.)



Cultural Landscapes,  
Traditional Cultural  
Properties



# Legal Protection of Cultural Resources

- Cultural Resources are protected by state and federal laws including
  - Archaeological Resources Protection Act (1979)
  - Native American Grave Protection and Repatriation Act (1990)
  - National Historic Preservation Act (1966, as Amended)
  - Utah Code 9-8-404
- In addition, there are numerous other laws that apply to cultural resources, such as
  - Theft of Government Property (18 USC 641)
  - Destruction of Government Property (18USC 1361)
  - Conspiracy (18 USC 371)
  - Interstate Transport of Stolen Goods (18 USC 2314)

# Criminal and Civil Penalties Under ARPA

- Archaeological or commercial value, plus cost of restoration and repair
- If the sum of value and cost is under \$500 and a first offense...not more than 1 year and \$100,000 fine
- If the sum exceeds \$500 and a first offense...2 years and \$250,000 fine
- A second offense is 5-year felony and \$250,000 fine, regardless of value/costs
- Forfeiture of materials, equipment, and vehicles

# Protection and Preservation of Cultural Resources

- **STAY** in designated work areas and on approved roads.
- **DO NOT** disturb or collect artifacts, bone, or fossils
- If a cultural resource or artifacts are identified during construction, stop work, and contact your supervisor. **DO NOT** continue work in the area until directed to do so by your supervisor (refer to the Unanticipated Discovery Plan for guidance).
- **STAY OUT** of restricted areas.

# Site Etiquette and Behavior

When working in proximity to archaeological sites or other cultural resources

- Avoid entering a site whenever possible. Most sites in Nine Mile Canyon are best observed from a short distance (e.g., granaries, rock art).
- Avoid smoking on archaeological sites.
- Pack out trash.
- Refrain from touching rock art. Chalking, latex molds, and tracing all damage rock art. Take only pictures.
- Do not add names, etchings, bullet marks, or otherwise vandalize the rock art panels or cliff walls.
- If present, stay on existing trails.
- Do not climb cliff walls to access rock art or other archaeological sites.
- Do not climb, sit on, walk on, or dismantle standing walls. Stay off rubble mounds and dense concentrations of artifacts.
- Do not collect, pile, move, or tamper with artifacts.
- Report vandalism to the BLM.

## Appendix C. Interdisciplinary Team Checklist

Determination of Staff: (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for significant impact analyzed in detail in the EA

Determination	Resource	Rationale for Determination	Signature	Date
PI NI	Air Quality & Greenhouse Gas Emissions	<p>Air Quality: There would likely be positive impacts to air quality primarily in terms of fugitive dust reduction.</p> <p>Greenhouse Gas Emissions: No standards have been set by EPA or other regulatory agencies for greenhouse gases. In addition, the assessment of greenhouse gas emissions and climate change is still in its earliest stages of formulation. Global scientific models are inconsistent, and regional or local scientific models are lacking so that it is not technically feasible to determine the net impacts to climate due to greenhouse gas emissions. It is anticipated that greenhouse gas emissions associated with this action and its alternative(s) would be negligible.</p>	Stephanie Howard	12/5/14
NP	BLM Natural Areas	No BLM Natural Area as per GIS/RMP review.	William Civish	1/26/15
PI	Cultural: Archaeological Resources	A Class I inventory and a 100% cultural resource inventory (U-13-MQ-0221b,s) were conducted on the expanded Gate Canyon roadway. Additionally, a comprehensive mitigation plan was agreed upon by Jones and DeMille Engineering, Duchesne County, the School and Institutional Trust Lands Administration, and the Vernal Field Office. A report titled Research Design for the Mitigation of Adverse Effects to Certain Cultural Resources in Gate Canyon, Duchesne County, Utah was submitted to the State Historic Preservation Office (SHPO) on March 13, 2015. Once the mitigation plan has been approved by the SHPO, the project can go forward.	Kathie Davies	4/7/15
NP	Cultural: Native American Religious Concerns	Consultation letters were sent on the Gasco EIS on 2-9-2011. The Gate Canyon road is completely enclosed within the polygon for the Gasco EIS. We received one response within the 30-day period to that request for	Kathie Davies	4/7/15

Determination	Resource	Rationale for Determination	Signature	Date
		information. The Pueblo of the Laguna Tribe said that there would be “no effect” for their Tribe. We received a “no effect” response from the Hopi Tribe on 5/31/2011. No other responses were received.		
NI	Designated Areas: Areas of Critical Environmental Concern	A portion of the proposed project is in the <i>Nine Mile Canyon ACEC</i> with the relevant an important value being that of cultural resources and is addressed in the cultural section of this checklist. The proposed project for road improvement will enhance vehicle access to the cultural values of the area.	William Civish	1/26/12
NP	Designated Areas: Wild and Scenic Rivers	There are no Wild and Scenic Rivers within this project area as per RMP/GIS review.	Margo Roberts	6/18/14
NP	Designated Areas: Wilderness Study Areas	The proposed project area is not within an identified Wilderness, WSA unit per the RMP/GIS review.	William Civish	1/26/12
NI	Environmental Justice	No minority or economically disadvantaged communities or populations would be disproportionately adversely affected by the proposed action or alternatives.	Stephanie Howard	12/5/14
NI	Farmlands (Prime or Unique)	No prime or unique farmlands, as identified by the NRCS, based on soil survey data for the county are located in the project area; therefore, this resource will not be carried forward for analysis.	Stephanie Howard	12/5/14
NI	Fuels/Fire Management	The proposed disturbances along the road may increase the chance of invasive species; primarily <i>Bromus tectorum</i> . <i>Bromus tectorum</i> can raise the frequency and rate of spreads of wildfires in the area. The GRD reclamation standards should minimize the potential for additional invasive species.	Blaine Tarbell	8/16/12
NI	Geology / Mineral Resources/Energy Production	Geology and Mineral Resources will not be adversely impacted by the road reconstruction and paving. Energy production will benefit from the improved roads.	Elizabeth Gamber	12/17/14
PI	Invasive Plants/Noxious Weeds (EO 13112), Soils, and Vegetation	Invasive Plants/Noxious Weeds: During the pre-disturbance weed survey, the noxious weeds Russian knapweed and saltcedar were identified. A weed management plan that is in conformance with the VFO Surface Disturbing Weed Policy needs to be submitted.  Soils: Soils in the area are typical of a High Desert Ecosystems. They are slow to	Invasive Plants/ Noxious Weeds: Christine Cimiluca  Soils:	IP/NW: 6/27/14  7/12/12

Determination	Resource	Rationale for Determination	Signature	Date
		<p>develop and prone to erosional processes. This project may affect the soil resource through increased soil erosion, and sediment movement into and through the Nine Mile Creek system. Hard surfacing the road could lead to increased runoff to adjacent creeks and/or drainages (WTP, FEIS; 2010). Runoff could include pollutants typically associated with paving activities, and contain constituents that could partition to the fragile Aridisols soils and prevent ecosystem function. A site specific reclamation plan should be implemented to help reduce soil erosion, and control runoff. Other techniques may be utilized to prevent soils from leaving the site during construction activities, like using silt fence or other kinds of retention systems to keep soils onsite.</p> <p>Veg: Hard surfacing the road could affect the surface runoff and water availability to the adjacent vegetation, as well as reduce the dust settling on vegetation which can affect plant growth.</p> <p>Hard surfacing the road would reduce dust which has been affecting plant growth. Loss of native vegetation due to any alignment reroutes.</p>	<p>Steve Strong</p> <p>Updated: James Hereford II</p> <p>Veg: Christine Cimiluca</p>	<p>6/26/14</p> <p>7/30/12</p>
NI	Lands / Access	<p>Pipelines paralleling and crossing the road will have to be taken into account. Duchesne County would need to coordinate with the existing ROW holders during the implementation of the proposed action.</p> <p>BLM notified all potentially affected ROW holders of this proposal via letter mailed on 02/03/2012; and provided Duchesne County a list of affected ROW holders. No responses were received.</p> <p>Duchesne County will coordinate with all ROW holders if any possible reroutes are anticipated, and the BLM will be notified of the reroutes. Revised maps will be submitted to the BLM with the proposed reroute, and include the length and width identified on the maps. If reroutes are outside of the proposed analyzed area, those areas will be analyzed and all documentation (clearances, permits, maps, reports, etc.) will be included in this EA so approval of the reroutes can be authorized.</p>	Margo Roberts	6/18/14

Determination	Resource	Rationale for Determination	Signature	Date
NI	Lands with Wilderness Characteristics (LWC)	The proposed project area is not within a Land with Wilderness Characteristics unit per the RMP/GIS review. Gate Canyon road is a boundary for the Currant Canyon Lands with Wilderness Characteristics area. The proposed action would straighten that boundary; the other alternatives would allow the boundary to remain the same. Overall, no net gain or loss would occur to that unit as a result of this proposal or its alternatives.	William Civish	1/26/12
NI	Livestock Grazing & Rangeland Health Standards	<p>Phase IV of the Wells Draw road realignment and improvement would be located within the Five Mile and Water Canyon #2 grazing allotments. Surface disturbance and forage removal caused by the project, including lost Animal Unit Months (AUMs), are not expected to be large since most of the route of the existing road is along steep rock topography.</p> <p>Most of the Phase IV road improvement and realignment would be within steep rock topography and would not be expected to alter vegetation quality or quantity. The project area is within the Five Mile and Water Canyon #2 grazing allotments which were surveyed during the summer of 2008 and were meeting standards.</p>	Craig Newman	6/20/14
PI	Paleontology	No fossils were found on the surface or in outcrops; however, if areas need to be blasted out to straighten the road, a paleo monitor would need to be present to inspect the rock that was exposed by the blasting. Important fossils could be exposed by the blasting.	Elizabeth Gamber	12/17/14
NI	Plants: BLM Sensitive	<p>The following UT BLM sensitive plant species are present or are expected within the same or an adjacent subwatershed as the proposed project: Graham's catseye (<i>Cryptantha grahamii</i>), Goodrich's blazingstar (<i>Mentzelia goodrichii</i>), Uinta greenthread (<i>Thelesperma caespitosum</i>), and <i>Yucca sterilis</i>.</p> <p>On BLM managed surface, no populations of Graham's catseye were identified within 150 feet of the proposed project.</p> <p>No highly suitable habitat for Goodrich's blazingstar nor populations of the species were identified along the proposed project.</p> <p>No highly suitable habitat for Uinta greenthread is present in the vicinity of the</p>	Christine Cimiluca	6/27/14

Determination	Resource	Rationale for Determination	Signature	Date
		<p>proposed project.</p> <p>No populations of <i>Yucca sterilis</i> were identified within the project area. Given the clonal nature of the species, the potential for future establishment is negligible.</p>		
NI	Plants: Threatened, Endangered, Proposed, or Candidate	<p>The following Federally listed, proposed, or candidate plant species are present or are expected within the same or an adjacent subwatershed as the proposed project: Graham's penstemon (<i>Penstemon grahamii</i>), shrubby reed-mustard (<i>Schoenocrambe suffrutescens</i>), and Uinta Basin hookless cactus.</p> <p>Suitable habitat for proposed threatened species Graham's beardtongue is located within 5.7 miles of the Project Area and several individuals of the species have been identified within 4.2 miles. Habitat for this species consists of gravelly clay soils on semi-barren knolls of white calcareous shale (Green River Formation) in the pinon-juniper woodland zone at high elevations and at low elevations in sparse desert shrubland. Specifically, this species occurs on exposed raw shale knolls and slopes derived from Parachute Creek and Evacuation Creek, both part of the Green River Formation. No suitable habitat for Graham's penstemon or populations of the species were identified within 300 feet of the proposed project.</p> <p>No highly suitable habitat for shrubby reed-mustard or populations of the species were identified within 300 feet of the proposed project. The nearest individuals identified were located approximately 4.2 miles from the Project Area.</p> <p>The proposed project is located outside of the 2013 potential habitat polygon for Uinta Basin hookless cactus (nearest distance to polygon from road alignment is approximately 0.3 mile).</p>	Christine Cimiluca	6/27/14
NI	Plants: Wetland/Riparian	<p>There are no riparian or wetland areas within the proposed Project Area as per BLM GIS review. The nearest mapped riparian area is Currant Canyon, within 0.4 mile of the Project Area. Operator has agreed to reduce impacts down gradient by controlling erosion onsite and reducing long-term impacts through reclamation and monitoring. With these operator-committed measures in effect, wetlands/riparian areas are not expected to be impacted as a result of the Proposed</p>	Christine Cimiluca	6/27/14

Determination	Resource	Rationale for Determination	Signature	Date
		Action.		
NI	Recreation	<p>A portion of the proposed project is in the <i>Nine Mile Canyon</i> Special Recreation Management Area (SRMA). The SRMA has management goals and objectives of maintaining the natural character of the canyon, protecting the scientific value of the cultural resources while allowing for their enjoyment, providing quality interpretation to increase the appreciation and protection of cultural resources, and to reduce conflicts between visitors, private land owners, and energy development in the canyon. Refer to the cultural section for a discussion of impacts to these resources.</p> <p>The proposed project is also in a State Scenic Backway/BLM Backcountry Byway established to protect and preserve the prehistoric and historic values. Uses of the byway include providing a variety of heritage recreational opportunities related to paleontological, cultural, and historic values found along the byway.</p> <p>The Recreation Opportunity Spectrum setting for that area is Roaded Natural, which is managed to provide a natural appearing environment with moderate evidence of humans. Motor vehicle use is permitted and facilities for this use are provided.</p> <p>Based upon the above statements, implementation of the project will have minimal impact on recreation within the SRMA.</p>	William Civish	1/26/12
PI	Socio-Economics	The road pavement project would improve access in the area and potentially increase economic efficiency and human health and safety.	Stephanie Howard	12/5/14
NI	Visual Resources	The Project falls within the VRM Class category. Class III objectives state, "The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities Visual Resources may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape." The	William Civish	1/26/12

Determination	Resource	Rationale for Determination	Signature	Date
		existing form lines, textures and colors will be slightly modified; however, the project will meet class III objectives. Notable changes will be relative to cut and fill required for paving, and final surface color contrast from current native surfaces colors.		
NI	Wastes (hazardous or solid)	<p><i>Hazardous Waste:</i> No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the project. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold Wastes (hazardous or planning quantities, will be used, produced, stored, solid) transported, or disposed of in association with the project.</p> <p><i>Solid Wastes:</i> Trash would be confined in a covered container and hauled to an approved landfill. Burning of waste or oil would not be done. Human waste would be contained and be disposed of at an approved sewage treatment facility.</p>	Margo Roberts	6/18/14
NI	Water: Floodplains	The Phase IV of the Wells Draw road realignment and upgrade is not associated with a HUD inventoried floodplains. However it is located within a non-HUD floodplain of Gate Canyon and 5 miles up gradient of the Nine Mile Creek Floodplain. The proposed project would have improved water management associated with the roadway by implementing an approved storm water control plan and would not be expected to need consideration as required by Executive Order #11988 for floodplain management.	James Hereford II	6/24/14
NI	Water: Hydrologic Conditions (stormwater)	The proposed project is within an area that is typical of a High Desert Ecosystem. The area falls within the Lower Green, Sheep Wash, and Lower Nine Mile Creek Hydrologic Unit Boundaries. It involves many dry ephemeral washes and sediments that are both prone to low to moderate to high erosion associated with storm events that would alter surface water flow patterns due to widening, pavement, and culvert installation. Much of this proposed action may be positive for surface water flow, but not all. Analysis should identify existing surface flow issues and change of surface flow after development. The proponent must	James Hereford II	6/24/14

<b>Determination</b>	<b>Resource</b>	<b>Rationale for Determination</b>	<b>Signature</b>	<b>Date</b>
		address stormwater discharge as required under Section 402 of the Clean Water Act.		
PI	Water: Surface Water Quality	The proposed road realignment and improvement would be within the Gate Canyon drainage. Work and final road surfacing would have impacts to surface water flow and potential chemical impacts from traffic or equipment during the road improvement project. However surface water flow management should be improved with the upgrade and design of the new road surface. Analysis should show increased acres of disturbance from the existing road way and quantify water flow changes within the water shed of the fourth phase.	James Hereford II	6/24/14
NI	Water: Groundwater Quality	Groundwater is likely at a depth of more than 500 feet below ground surface and would not be affected by this project.	Elizabeth Gamber	12/17/14
PI	Water: Waters of the U.S.	The ephemeral channel that runs along and across the project area is considered a jurisdictional water of the U.S. Consultation and permitting with the U.S. Army Corps of Engineers will be necessary to assure compliance with Section 404 of the Clean Water Act.	James Hereford II	6/24/14
NP	Wild Horses	There are no designated Wild Horse Herd Areas or Herd Management Areas in the project area.	Dusty Carpenter	6/24/14
NI	Wildlife: Non-USFWS Designated	In review of district files and site visits, the BLM does not identify the project area as being within crucial habitat for big game species.	Brandon McDonald	12/3/14
PI	Wildlife: Migratory Birds (including raptors)	The proposed project area is located within migratory bird and raptor nesting/foraging habitat.	Brandon McDonald	12/3/14
PI	Wildlife: Threatened, Endangered, Proposed or Candidate	The proposed project is located within ½ mile of MSO habitat. MSO surveys are required in accordance to USFWS 2012 protocol.  Phase 4 of the proposed project is not located within greater sage-grouse occupied habitat.	Brandon McDonald	12/3/14
NP	Woodland/ Forestry	Proposed project should not impact forest and woodlands per review of project proposal and BLM GIS.	David Palmer	2/16/12

**Final Review:**

<b>Reviewer Title</b>	<b>Signature</b>	<b>Date</b>	<b>Comments</b>
NEPA / Environmental Coordinator			
Authorized Officer			