Environmental Assessment

and

Finding of No Significant Impact

for the

Trinidad Lake State Park Fuels Management Project

Las Animas County, Colorado

Prepared by

AMEC Environment & Infrastructure, Inc.
In cooperation with
Colorado Parks and Wildlife
and the
United States Army Corps of Engineers

August 2013

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Finding of No Significant Impact
Trinidad Lake State Park Fuels Management Project
Las Animas County, Colorado

The U.S. Army Corps of Engineers (USACE), Albuquerque District, in coordination with and at the request of the Colorado Division of Parks and Wildlife (CPW), proposes to approve a fuels management project to reduce wildfire risk at Trinidad Lake, Las Animas County, Colorado. CPW, as lessee and operator of Trinidad Lake State Park, would fund and carry out the proposed project. USACE, as the federal landowner, is responsible for ensuring compliance with all applicable laws and regulations, including the National Environmental Policy Act (NEPA). The purpose of the proposed project is to increase wildfire safety for nearby camping, picnic, and hiking areas and to improve forest health. Fuel reduction treatments would occur in fall 2013 through early spring 2014 and subsequent years during the fall through early spring. Work would be completed no later than spring 2018.

CPW proposes to reduce fuel loads within a 78-acre piñon-juniper woodland adjacent to the Carpios Ridge Recreation Area using mechanical mastication and hand thinning treatments. The proposed treatment area contains dense piñon-juniper woodlands, intermixed with scrub oak, cottonwoods, and ponderosa pine. Treatment would create small openings between healthy patches of vegetation that would combine with existing natural and manmade openings to create fuel breaks and reduce fuel continuity. Dead, dying, diseased, or otherwise unhealthy patches of vegetation would be targeted for removal except for existing, stable snags that can be used as wildlife habitat. All ponderosa pine and cottonwood trees would be retained. Oak brush, ladder fuels, and those fuels occurring within the drip line of ponderosa pine would be removed. A fuel break to facilitate fire suppression activities would be created by removing shrubs and trees within 25 feet of either side of a power line which runs through the area. Approximately 50 percent of existing vegetation would be removed from the treated area.

If the proposed fuel reduction treatment were not implemented (No Action Alternative), no fuel breaks would be constructed and all vegetation would be left intact. The No Action Alternative would continue a high risk for catastrophic wildfire occurrence and would not improve wildfire suppression capabilities, forest health, or wildlife habitat.

Other alternatives considered included: utilizing conventional, ground-based logging equipment to harvest trees designated for removal; performing the work by hand with chainsaws and lop-and-scatter or piling the slash; or altering the treatment prescription

to reduce the amount of overall vegetation removed. These alternatives were determined to be infeasible or unable to meet project objectives and were not analyzed further.

The project is necessary for protection of park visitors, staff, firefighters, and nearby communities. With this project's defensible space and fuels reduction in place, the park would have key locations where firefighters can implement suppression efforts in the event of an approaching wildfire. Thinning, mastication of downed woody debris and slash, and strategic fuels removal within these blocks would lower the risk of catastrophic wildfire, increase defensibility, minimize forest insect and disease losses, and enhance overall stand health and vigor.

The USACE has determined that the proposed project would have no effect on any threatened or endangered species or designated or proposed critical habitat receiving protection under the Endangered Species Act [16 U.S.C. 1531 *et seq*.].

All proposed work would take place outside waters of the United States, including wetlands. A small wetland/riparian area within the project area would be avoided by temporarily fencing a 100-foot buffer around it with orange construction fencing. Therefore, Section 404(b)(1) analysis under the Clean Water Act [33 U.S.C. 1251 *et seq*.] is not required.

This proposed action is in compliance with the National Historic Preservation Act of 1966, as amended [16 U.S.C. 470 et seq]. Cultural resource surveys identified three sites within the project area that are eligible for listing on the National Register of Historic Places. Best management practices (BMPs) that would be followed to avoid adverse effects include:

- Erecting orange construction fence around these sites and a 20-meter buffer to ensure avoidance by heavy machinery.
- Only hand thinning would be used within these sites when necessary, and resultant slash would be scattered around the sites to avoid placing large fuel loads in one spot and to also help prevent erosion.
- CPW staff will periodically visit the site to ensure the BMPs are being followed.

Provided that these BMPs are followed, the USACE determined that the project would result in no adverse effects to historic properties. The Colorado State Historic Preservation Officer (COSHPO) concurred with this determination on March 15, 2013. Should previously unknown artifacts, features, or historic properties be discovered during implementation, work would be stopped in the immediate vicinity of the find, a determination of significance made, and a mitigation plan formulated in coordination with the COSHPO and with Native American groups that may have concerns in the project area.

Best management practices to protect the environment that would be implemented as part of this project include the following:

- The contractor would be required to have emission control devices on all equipment.
- Soil erosion or damage would be minimized by avoiding mastication equipment use in sensitive areas and avoiding operation during periods of significant precipitation.
- No mechanical equipment would be allowed to travel in a wetland or riparian area or within a 100-foot buffer of such areas.
- Fueling of equipment would occur within designated areas and at least 100 feet from surface water.
- All fuels and lubricants would be stored according to state regulations in approved staging areas outside of the flood pool of Trinidad Lake and the 100-year floodplain of the Purgatoire River.
- Mastication equipment would be inspected daily and monitored during operation to prevent leaking fuels or lubricants from entering soil or surface water. No leaking equipment would be used on the project site.
- A spill containment system and clean-up materials would be provided on site.
- All mastication equipment would be cleaned with a high-pressure water jet before entering and upon leaving the project area to prevent introduction or spread of invasive species.
- CPW staff would establish a baseline of invasive plant species in the project site prior to activity. Construction fences would be used to demarcate areas that equipment should not enter. Equipment would avoid traveling within areas of known invasive species infestation. If it will be necessary to drive or walk through infested areas, equipment and personal gear would be cleaned before moving to another site.
- Vegetation thinning treatments would take place outside the migratory bird breeding season.
- Surveys for raptor nests would be completed prior to treatment. If a raptor nest is found, CPW would coordinate with the U.S. Fish and Wildlife Service to establish an appropriate buffer zone and activity limitations while the nest is in use.
- Following treatment, any areas where the soil was inadvertently disturbed would be revegetated with appropriate native grass and forb species.
- Weeds would be controlled during the construction period within the project area and as a component of maintenance and management of the park thereafter.

- To reduce noise impacts from the project, work within 100 meters (328 feet) of the campground would only occur during the non-busy months of December to January, Monday through Friday from 7:00 am to 5:00 pm. No machinery would be warmed up before 7:00 a.m.

Implementation of the proposed project would result in minor, temporary adverse effects on air quality, soils, vegetation, invasive species, wildlife, noise, infrastructure, and recreation. There would be long-term beneficial effects to public safety, soils, wildlife, and vegetation. The following elements were analyzed, but would not be significantly affected by the proposed action: climate, geology, special status species, water quality, cultural resources, and Indian Trust Assets.

This action is in compliance with the Endangered Species Act, the Clean Water Act, the Clean Air Act, and the National Historic Preservation Act. The proposed action has been fully coordinated with federal, state, and tribal agencies with jurisdiction over the ecological, cultural, and hydrologic resources of the proposed project area.

In consideration of the analysis presented in this Environmental Assessment, the proposed action is found to have no significant impacts on the human environment. Therefore, an Environmental Impact Statement will not be prepared for this federal action.

14 Aug 13
Date

Antoinette R. Gant
Lieutenant Colonel, U.S. Army
Commander, Albuquerque District

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Executive Summary

This Environmental Assessment addresses impacts to resources associated with Colorado Parks and Wildlife's proposal to perform fuels reduction treatment to a 78-acre piñon-juniper woodland in Trinidad Lake State Park near Trinidad, Colorado. The park is managed by Colorado Parks and Wildlife and the land is owned by the US Army Corps of Engineers. The Preferred Alternative fuels reduction project would result in the creation of small openings in dense woodland areas, a reduction in woodland encroachment into meadows, and removal of excess fuel loads. Standing and downed woody materials would be masticated on site and hand thinning will be used when equipment is unable to reach target trees. Fuels reduction treatments would occur in fall 2013 through early spring 2014 and subsequent years during the fall and spring. Work would be completed no later than 2018.

In addition to the Preferred Alternative, a No Action Alternative was evaluated. The No Action Alternative would leave the site as is, without any fuels reduction treatment. Several other alternatives were considered, but not carried forth as they would impose more detrimental impacts to resources than the Preferred and No Action alternatives and would not meet the purpose and need of project goals. A summary of potential effects of both alternatives considered are summarized in Table 5**.**

1.0 Purpose and Need for the Action

1.1 Introduction

Trinidad Lake State Park (LSP) is located approximately four miles southwest of Trinidad, Colorado in the foothills of the Sangre de Cristo Mountains and comprises 2,860 acres of water and land (Figure 1). The park provides a place to fish, sail, water ski, and boat on Trinidad Lake, and provides hiking, biking, hunting, and camping opportunities. Over 200,000 people visit the park annually, making the recreational opportunities for the public an important part of the park's services. The US Army Corps of Engineers (USACE) owns the property and Colorado Parks and Wildlife (CPW) manages the land and water-based recreation.

Natural resources within the park include native plants, diverse plant communities, a variety of wildlife species, a network of streams and a lake, and rare geological features. Plant communities within the park boundary provide habitat for wildlife and include riparian areas that stabilize streambanks, remove pollutants, prevent erosion and sedimentation, and assist with nutrient transport. Important wildlife includes bat species, numerous bird species, and some state species of concern. Trinidad Lake is a large asset to the park in that it provides recreational opportunities for visitors and habitat for many fishes, amphibians, birds, and other wildlife (CPW 2001).

CPW proposes to perform a fuels reduction treatment within a 78-acre Colorado piñon pine (*Pinus edulis*), one-seeded juniper (*Juniperus monosperma*), and Rocky mountain juniper (*Juniperus scopulorum)* woodland that would be achieved through mastication and hand thinning (Figure 2). The intent of the project is to improve forest health and increase wildfire safety measures for nearby camping, picnic, and hiking areas. The purpose of this Environmental Assessment (EA) is to assess the potential environmental consequences of 1) Implementing the fuels reduction project [the Preferred Alternative], and 2) Not implementing the fuels reduction [the No Action Alternative]. This EA has been prepared pursuant to the National Environmental Policy Act of 1969, as amended (NEPA, 42 United States Code [USC] §4321); Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508); and Engineer Regulation 200-2-2, U.S. Army Corps of Engineers' Procedures for Implementing NEPA.

1.2 Purpose and Need of the Proposed Action

The Preferred Alternative (Proposed Action) is proposed because fire intensity and prevalence is predicted to increase dramatically in the Southwestern United States as a result of climate change, continued grazing of finer fuels, and past fire suppression (USFS 2012). All of these factors influence the forest ecosystem in the project area at Trinidad LSP. Climate change-induced drought and temperature increases lead to more intense, widespread, and abundant wildfires. Fuels reduction has been suggested at the local scale in an effort to reduce the risk of wildfires (USFS 2012).

The project at Trinidad LSP would involve the mastication of dense woodland near a campground and hiking trails. The areas treated would be along ridgelines and would

follow existing natural and man-made contours. The purpose and goals of the project include:

- Aid and improve future suppression efforts against wildfire
- Improve evacuation routes for park visitors and staff in case of a fire
- Decrease fuels, improve forest health
- Reduce conifer encroachment to meadows
- Reduce fuel continuity and ladder fuels
- Increase understory habitat and forage (grasses and forage) for wildlife.

The proposed treatment area contains primarily piñon-juniper woodlands, intermixed with scrub oak, cottonwoods (*Populus sp.*), and ponderosa pine (*Pinus ponderosa*) that are very densely concentrated. Plots of trees 20 feet long, 10 feet wide, and 15 feet tall with 20-70 trees spaced 5-15 feet apart were identified as areas requiring thinning. Gambel oak (*Quercus gambelii)* fills space between mature pine and juniper trees, contributing to the existing fuel source. Target fuels for reduction would only include piñon pine, junipers, and scrub oak. Fuels reduction would result in the creation of small openings in dense woodland areas, a reduction in woodland encroachment into meadows, and removal of excess fuel loads. Standing and downed woody materials would be masticated on site and hand trimming would be used when equipment is unable to reach target trees.

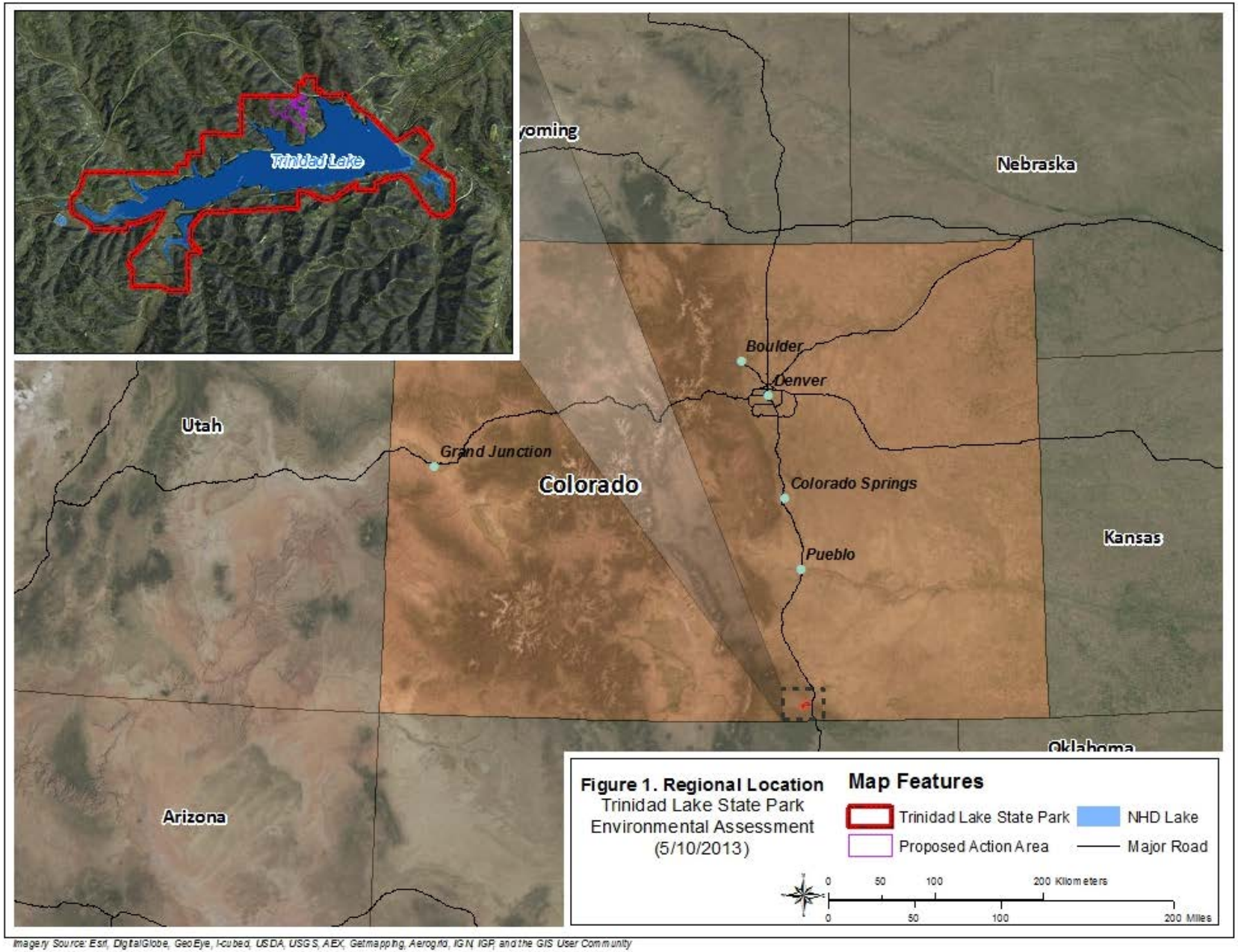
The project is needed for additional protection of park visitors, staff, firefighters, and nearby communities. With this project's defensible space and fuels reduction in place, the park would have key locations where firefighters can implement suppression efforts in the event of an approaching wildfire. For example, thinning and slash treatments would provide a break in the continuity of fuels and tree crowns modifying fire behavior to the extent that firefighters have a relatively safe place to make a stand. At a minimum, the Preferred Alternative would provide more time for campground and Visitors Center evacuation if a wildfire is approaching. Trinidad LSP experiences strong southwesterly winds in the spring, and regional westerly winds are also common. These known weather events pose a dangerous threat of approaching wildfire to the western edge of the park. Thinning, mastication of downed woody debris and slash, and strategic fuels removal within these blocks would lower the risk of catastrophic wildfire, increase defensibility, minimize forest insect and diseases losses, and enhance overall stand health and vigor.

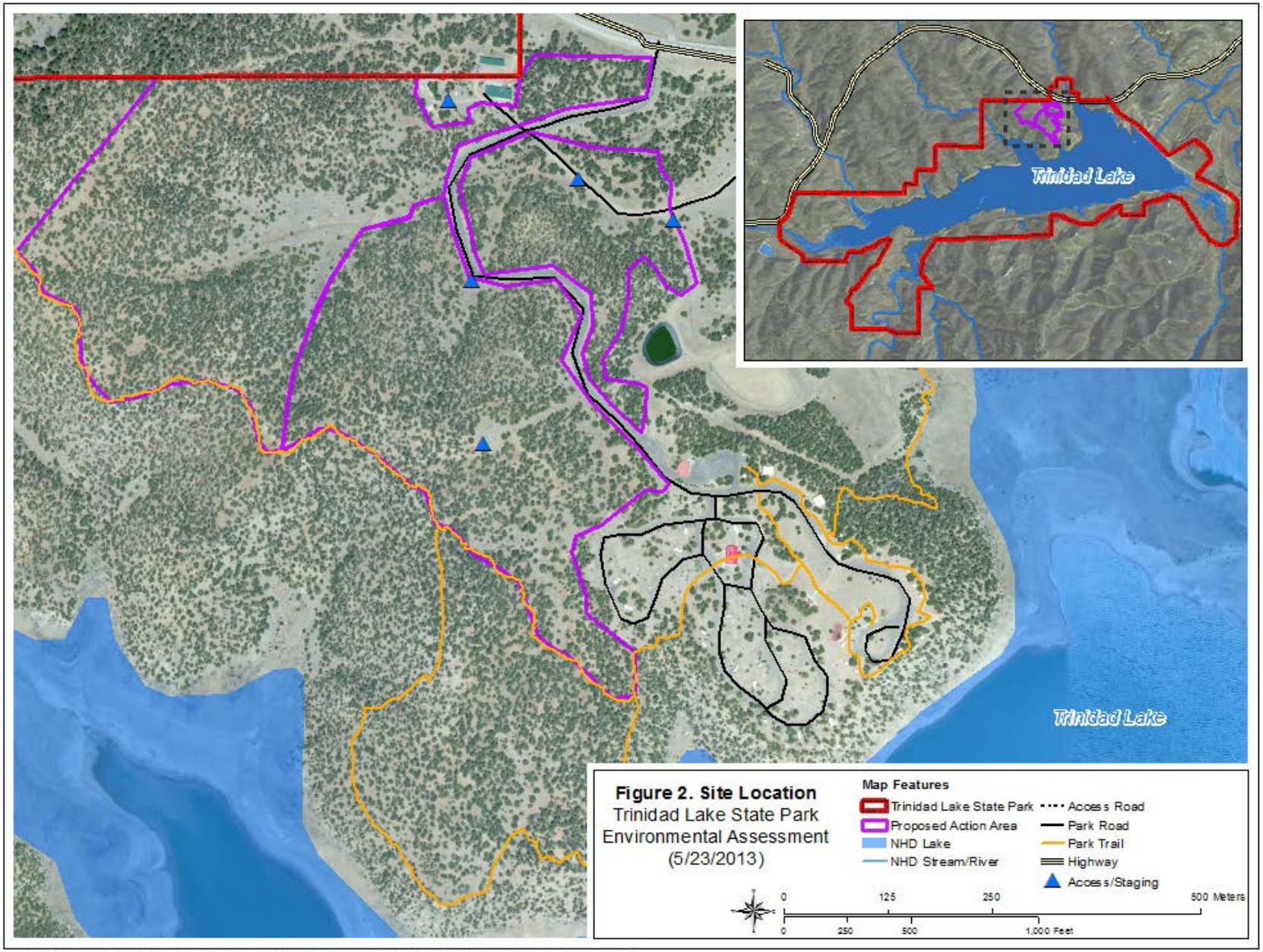
1.3 Regulatory Compliance

The EA was prepared for the CPW in collaboration with USACE, Albuquerque District. The EA has been prepared in compliance with all applicable federal laws, including:

- National Historic Preservation Act (16 U.S.C. 470 *et seq.*)
- Archaeological Resources Protection act (16 U.S.C. 470 *aa et seq.)*
- Clean Water Act (33 U.S.C. 1251 *et seq.*)
- Clean Air Act (42 U.S.C. 7401 *et seq.*)
- Endangered Species Act (16 U.S.C. 1531 *et seq.*)
- Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*
- Executive Order 11988, *Floodplain Management*
- National Environmental Policy Act (42 U.S.C. 4321 *et seq.*)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500 *et seq.*)
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.)*
- Executive Order 11593, *Protection and Enhancement of the Cultural Environment*
- Executive Order 11990, *Protection of Wetlands*
- U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR Part 230; ER 200-2-2)
- Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*)
- Executive Order 13112, *Invasive Species*
- Federal Noxious Weed Act (7 U.S.C. 2814)
- Energy Independence and Security Act of 2007, P.L. 110-140, Section 438, 121 Stat. 1492, 1620 (2007)
- Migratory Bird Treaty Act, 16 U.S.C. 703, *et seq.*
- Fish and Wildlife Coordination Act, 48 Stat. 401; 16 U.S.C. 661 et seq.
- Executive Order 13524, *Federal Leadership in Environmental, Energy and Economic Performance*

This EA also complies with all state laws that govern natural and cultural resources found in the project area.


Trinidad Lake
yoming
Nebraska
Boulder
Denver
Utah
Grand Junction
Colorado
Colorado Springs
Kansas
Pueblo
Oklahoma
Arizona
Figure 1. Regional Location
Trinidad Lake State Park
Environmental Assessment
(5/10/2013)
Map Features
Trinidad Lake State Park
NHD Lake
Proposed Action Area
Major Road
0 50 100 200 Kilometers
0 50 100 200 Miles
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community



Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

2.0 Description of the Proposed Action and Alternatives

2.1 Preferred Alternative (Proposed Action)

To minimize wildfire risk at Trinidad LSP, CPW proposes to reduce fuel loads on approximately 78 acres of piñon-juniper woodland via mechanical mastication and hand thinning. Treatment is aimed at creating defensible space around park structures and campgrounds, increasing wildfire suppression opportunities, and improving overall forest health and structure.

Large wildland fires have occurred near Trinidad LSP within the past fifteen years. In 2002, the weather was particularly dry across the west, and southern Colorado and New Mexico experienced numerous large-scale wildland fires (Hayman, Trinidad Complex, Ponil Complex). The Spring fire (2002; 32,896 acres), part of the Trinidad Complex fire, was Colorado's fourth largest fire and burned approximately 16 miles southwest of Trinidad LSP. The Track fire (2011; 27,792 acres) occurred approximately 11 miles southeast of Trinidad LSP and burned the entirety of Lake Dorothey State Wildlife Area. Existing fuel types and dry summer conditions facilitate fire throughout lower elevation areas of the Southern Rockies. Lightning strikes are common and many fires are naturally ignited in this region. Dominant vegetative types near Trinidad LSP include lower montane ponderosa pine forest, Piñon-juniper woodland, and Gambel oak mixed-montane shrubland. Fire regimes of Colorado Front Range ponderosa pine forests are variable, with quicker fire return intervals characteristic of savanna/woodland areas opposed to denser and higher elevation mixed conifer montane forest (Kaufmann et al. 2006). Fire return intervals in piñon-juniper communities can be much longer (hundreds of years), and are dependent upon numerous factors including canopy fuel continuity, vertical fuel arrangements, and the presence/absence of surface fuels (Floyd et al. 2004; Huffman et al. 2008). Gambel oak and shrub dominated vegetative communities may also have short fire return intervals and fire behavior can be severe (Jester et al. 2012).

Three units have been identified for treatment (Figure 2). The units are primarily comprised of piñon pine and juniper, but other tree species such as ponderosa pine and cottonwood are scattered within the units. Oak brush is also a major understory component. The average basal area was determined to be 60 square feet per acre (ft^2/ac) of piñon pine, juniper, and ponderosa pine. Treatment would create small openings between healthy patches of vegetation. Openings would be approximately 1.5 to 2 times the height of remaining stems. Existing natural and manmade openings would be utilized to create fuel breaks and reduce fuel continuity. Oak brush would be targeted for removal. Ponderosa pine and cottonwood would be targeted for retention. These two species are not priority fuels for reduction because they do not create the dense woodlands targeted, cottonwood primarily exists in riparian areas where activity would not take place, and they both create habitat that would be valuable to preserve. Ladder fuels, which are any fuels that bridge the gap between ground fuels and fuels at

greater heights, and piñon pine, juniper, and other woody plants occurring within the drip line of retained trees would be removed. A fuel break to facilitate fire suppression activities would be created by removing shrubs and trees within 25 feet of either side of a power line which runs through the units. Approximately 50% of existing vegetation would be removed within each unit.

Dead, dying, diseased, or otherwise unhealthy patches of vegetation would be targeted for removal except for existing, stable snags that can be used as habitat by wildlife, with approximately five snags per acre of various sizes. Maintenance of wildlife snags provide habitat for raptors and other tree bound animals. Live trees with broken tops, dead tops, or mechanical damage are likely candidates to become wildlife trees. Criteria for selecting wildlife snags are as follows:

- Trees that already have signs of woodpecker, raptors, or other cavity-dweller activity (nests, holes, cavities, etc).
- Trees with dead or broken tops which are likely to develop heartrot.
- All wildlife snags would be at least 6 inches diameter at breast height (DBH) and have their bark intact.
- Snags can range anywhere from 5 - 10 per acre, but the size is more important in deciding if a tree would stay or go.
- One large snag per acre greater than 20 inch DBH for use by large woodpeckers and owls.
- Four medium sized snags per acre between 10 and 20 inch DBH for use by smaller raptors, kestrels and also squirrels.
- Two smaller snags per acre between 6 and 10inch DBH for smaller birds such as chickadees and nuthatches.

All material designated for removal would be felled and masticated on site. Operations would be completed with a hydro-ax or similar equipment and would include hand thinning with chainsaws in sensitive areas. Mastication chip depth would not exceed 4 inches and lop-and-scatter depth would not exceed 8 inches. Mastication materials would create a fuel source in the short term, but would decompose much more quickly than other thinning by-products. Chips would therefore remain a fire hazard for a much shorter time period than by-products from other methods. Access to the units would be via existing roads. No major temporary road construction is anticipated.

Fuels reduction treatments would occur after October 1, 2013 through April 1, 2014 and subsequent years during the fall and spring. Work would be completed no later than 2018. Work would occur during the weekdays throughout the timeline, with some weekends being utilized during months that do not have as many park visitors. Contractors will work no earlier than 7:00 a.m. and finish work for the day by 5:00 p.m.

Damage to soils would be minimized by dispersing use in sensitive areas and avoiding operating during periods of significant precipitation. No mechanical equipment would be allowed to travel in a wetland or riparian area. Best management practices (BMPs) would be followed to reduce alteration of local hydrology or vegetation in such areas. BMPs include completely avoiding the wetland and a 100 foot buffer around the wetland site. Special care would be taken when operating around existing structures or in view of roads or trails.

Post-mastication treatments may include noxious weed control, monitoring and/or reseeding of the 78-acre project site if deemed necessary.

2.2 No Action Alternative

Under the No Action Alternative, no fuel reduction treatments would be implemented to accomplish project objectives. No fuel breaks would be constructed and all vegetation would be left as is. The No Action Alternative would result in a continued high risk for catastrophic wildfire occurrence and would not improve wildfire suppression capabilities.

2.3 Alternatives Considered but not Carried Forward

Three alternatives were considered but determined to be impractical and/or incapable of achieving the primary project objectives, and thus were not analyzed further in this document.

- One alternative would be to apply a similar treatment prescription but utilize conventional, ground-based logging equipment to harvest trees designated for removal. This alternative would result in the need for temporary road construction, skid trails, and landing area construction, which would increase soil and noise impacts. Surface fuel loading would increase in the long term due to the addition of slash resulting from limb removal from boles. Larger boles would not be able to be removed from the project site because the majority of species targeted for removal are impractical harvest species because there is no market demand for their use. Boles would therefore have to be disposed of, and it is uncertain of where the excess could be taken.
- Another alternative considered would be to apply a similar treatment prescription but utilize handwork with chainsaws and lop-and-scatter or pile remaining slash. This alternative would reduce impacts to soil but would significantly increase surface fuel loadings and would have little impact on fuel continuity. Fuel loadings would increase because of the size of the slash; tree boles leftover can provide up to 1000 hours of fuel. These fuels would also take more time to naturally degrade and would remain a fuel source for a much longer timeline. Additionally, piling is not a desirable treatment due to the impracticality to burn piles within the area in a timely manner.

- A third alternative considered would be to alter the treatment prescription to reduce the amount of overall vegetation removed. Openings created would only improve natural and manmade openings and would not create any additional openings in extensive patches of vegetation. Material would be felled and masticated onsite. This would minimally reduce overall soil and disturbance impacts but it would also compromise the ability to meet project objectives. Fuels would be decreased to a far lesser extent, fuel continuity would not be significantly reduced, and no large fuel breaks would be created.

3.0 Existing Environment and Foreseeable Effects of Alternatives

This section discusses the physical, natural, cultural, and human environment at Trinidad LSP near Trinidad, Colorado. Per 40 CFR Part 1501.7 (a)(3), the CEQ recommends that agencies identify and eliminate from detailed study any issues which are not affected or which have been covered in another environmental review, narrowing the discussion to a brief presentation of why they would not have a effect on the human environment or providing a reference to their coverage elsewhere. Resource areas considered but excluded from further analysis in Section 3.0 of this EA include: geology, land use, socioeconomics, and environmental justice. No impacts are anticipated to occur to these resources as a result of the Preferred Alternative or No Action Alternative.

3.*1 The Physical Environment*

3.1.1 Air Quality

The US Environmental Protection Agency (USEPA) regulates air quality in the US, unless authority is delegated to the state. In Colorado, the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division regulates air quality standards.

The USEPA characterizes ambient air quality by whether it attains, or meets, the primary and secondary National Ambient Air Quality Standards (NAAQS). The Clean Air Act Amendments of 1990 (CAAA) requires USEPA to set NAAQS for pollutants considered harmful to public health and the environment. NAAQS are provided for seven criteria pollutants: carbon monoxide (CO); lead (Pb); nitrogen dioxide (NO_2); ozone (O_3); particulate matter with an aerodynamic size less than or equal to 10 micrometers (PM10); particulate matter with an aerodynamic size less than or equal to 2.5 micrometers (PM2.5); and sulfur dioxide (SO_2). These pollutants are considered to be detrimental to public health and the environment.

Areas are designated as "attainment", "nonattainment", "maintenance", or "unclassified" with respect to the NAAQS. Air quality monitoring is generally conducted in areas of high population density and near major sources of air pollutant emissions. Rural areas are typically not considered in such monitoring. Regions that

are in compliance with all NAAQS are designated as attainment areas. Areas for which no monitoring data are available are designated as unclassified, and are by default considered to be in attainment of NAAQS. In areas where applicable NAAQS are not being met, a nonattainment status is designated. Air Quality in Las Animas County is in "attainment" for all NAAQS criteria pollutants (CDPHE, 2013).

The Preferred Alternative is expected to produce some air pollutants because of the vehicles used to transport workers and equipment and operation of the equipment itself. Vehicles of workers would only be used to transport staff to parking lots within the park or equipment to staging areas and then would be turned off. Impacts to air quality would be short-term only (i.e., during project implementation) and would be minimal. Additionally, reducing fuel loads by thinning in the project site would decrease the likelihood of catastrophic wildfires, which can have major negative impacts to air quality. This alternative would therefore have a net positive effect.

The No Action Alternative would not alter current air emissions and would therefore not have any impacts on Trinidad LSP's air quality. This alternative could however lead to more catastrophic wildfires that would produce hazardous gases and have a long-term negative impact on air quality in the area.

3.1.2 Soils

Soils are unconsolidated materials overlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil structure, elasticity, strength, shrink-swell potential, and erodibility determine the ground's ability to support man-made conservation practices, structures and facilities. Soils are typically described in terms of complex type, slope, physical characteristics and relative compatibility or constraining properties with regard to types of land use and/or construction activities.

The two soil types that dominate the project area are Lorencito-Sarcillo-Trujillo complex (LST) and Lorencito-Rombo-Sarcillo complex (LRT) (Figure 3). These two complexes are generally unfit for agriculture, but support a variety of natural vegetation such as Gambel oak and Rocky Mountain juniper (Table 1; NRCS 2009).

The Preferred Alternative would have minor short-term negative impacts to soils in the project area, but BMPs would be implemented to offset disturbances. Machinery used to masticate trees is heavy and have tires capable of producing top soil disturbance. The extent of disturbance to soils and geology is highly dependent on the operator of the machine and weather conditions. Staff would be trained to tread lightly while in the project area, especially when off of roads or trails. CPW recommends that a skidsteer or a Fecon Bull-hog head with smaller tracked or rubber tires be used to prevent soil compaction and disturbance. The contractor would not operate during or after significant rainfall, which would reduce soil disturbance. Additionally, this alternative could have positive long-term impacts on soils in the area. Reducing woody

vegetation would likely increase the density of grasses and other understory plant communities. The succession of these species season after season and the addition of nutrients to the soil would create more productive soils over time, increasing plant diversity and ground cover in the project area, thus reducing erosion potential. Mastication debris can also help soils by stabilizing them before understory vegetation grows in forest gaps created.

The No Action Alternative would not cause any soil disturbance through the introduction of machinery. However, due to the increased risk of catastrophic wildfires, there is a higher risk of erosion following one of those events. There also would be no potential for the improvement of soils in the area. Therefore, the No-Action Alternative would have no short-term effect on soils, but would have a potentially major adverse long-term effect if there is a wildfire in the area.

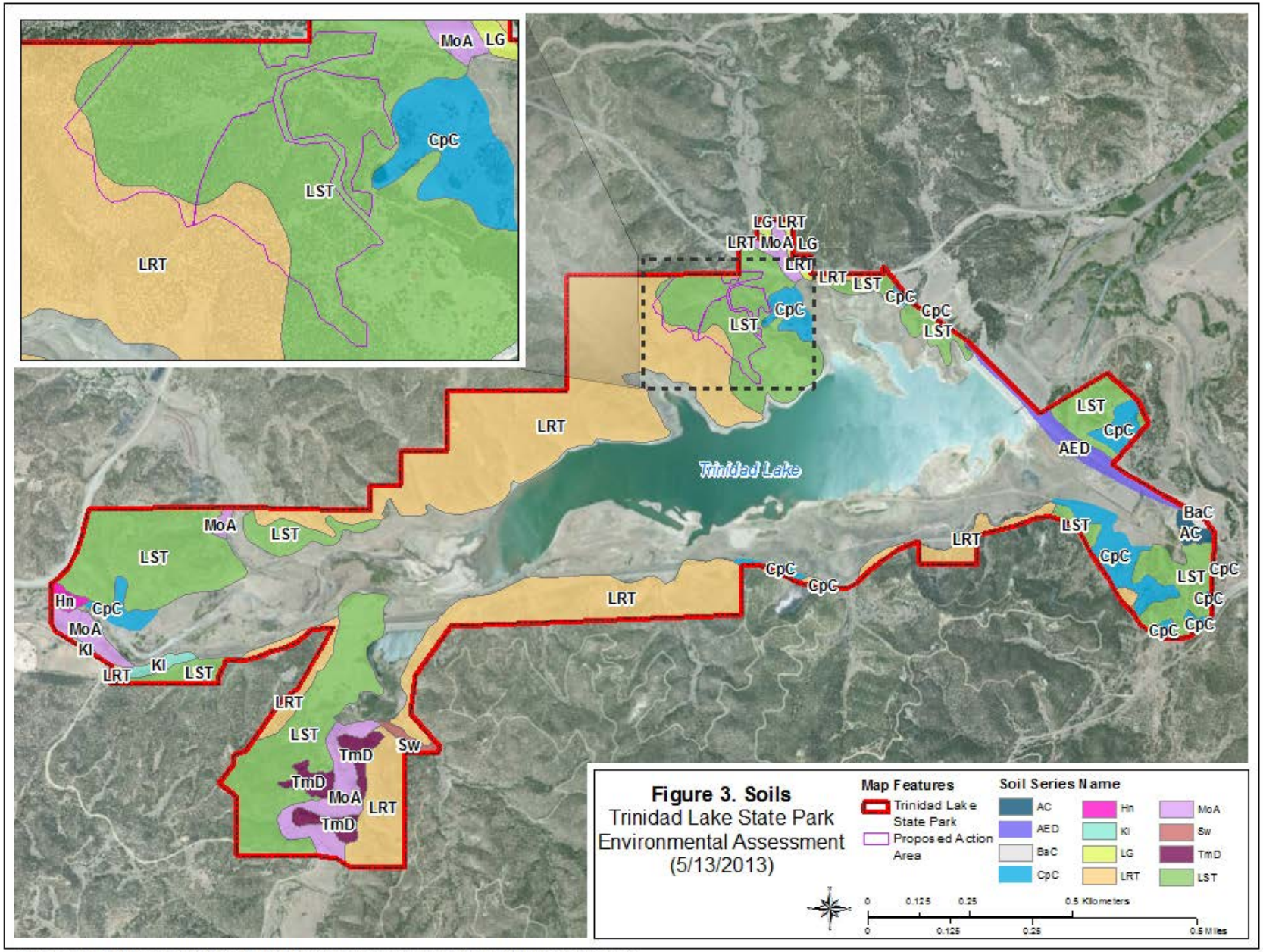
3.1.3 Geology

Trinidad LSP is located on the eastern edge of an extensive subsiding valley known as the Raton Basin. Millions of years ago a shallow tropic sea covered much of the inner continental US, which is responsible for much of the coal in the western US today. The Rocky Mountains formed afterwards, and runoff from the mountains began to carve and shape sedimentary rock units which are now buttes and cliffs at Trinidad LSP. The four exposed rock units at the park are Pierre Shale, Trinidad Sandstone, Vermejo Formation, and the Raton Formation (CPW 2001).

The Preferred Alternative and No Action Alternative are expected to have no impacts to geology in Trinidad LSP. Both actions would not interfere with the current geology in the park. The Preferred Alternative would avoid geologic features because machinery would be difficult and dangerous to operate on geologic structures.

Table 1. Soil Composition of the Project Area within Trinidad Lake State Park.

Map Unit Name	Site Cover (acres)	Description					
		Slope (%)	Hydric Soil	Prime Farmland	Drainage	Native Vegetation	Management Concerns
Lorencito-Sarcillo-Trujillo complex (LST)	69.2	3-25	N	N	Well drained	Rocky Mountain juniper, two needle piñon, western wheatgrass, little bluestem, needle and thread, sideoats grama, blue grama, Gambel oak, Indian ricegrass, true mountain mahogany, American vetch	Erosion, high surface runoff
Lorencito-Rombo-Sarcillo complex (LRT)	8.4	25-65	N	N	Well drained	Rocky Mountain juniper, two needle piñon, western wheatgrass, little bluestem, needle and thread, sideoats grama, blue grama, Gambel oak, Indian ricegrass, true mountain mahogany, American vetch, mountain muhly, Griffith wheatgrass, skunkbush sumac, purple prairieclover	Erosion, high surface runoff
NRCS Las Animas County Soil Survey 2009							


MoA
LG
CpC
LST
LRT
LG LRT
LRT MoA LG
LRT
LRT
LST
CpC
CpC
LST
CpC
LST
LST
CpC
AED
Trinidad Lake
LRT
BaC
AC
LST
CpC
LRT
CpC
CpC
LST
CpC
CpC
CpC
MoA
LST
LST
Hn
CpC
MoA
KI
LRT
KI
LST
LRT
LST
TmD
Sw
TmD
MoA
LRT
TmD
Figure 3. Soils
Trinidad Lake State Park
Environmental Assessment
(5/13/2013)
Map Features
Trinidad Lake State Park
Proposed Action Area
Soil Series Name
AC
AED
BaC
CpC
Hn
KI
LG
LRT
MoA
Sw
TmD
LST
0 0.125 0.25 0.5 Kilometers
0 0.125 0.25 0.5 Miles
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

3.1.4 Climate and Climate Change

Climate in Las Animas County is relatively dry and mild, with the average temperature in winter being 35.1° F and in summer 70° F. The average annual precipitation is about 16.1 inches, with 64% of all precipitation falling in the months of May through September. Thunderstorms occur on about 47 days a year, with most of them in July (NRCS 2006). Trinidad LSP experiences a strong southwestern wind flow in the spring and regional westerly winds are also common.

Climate change involves any significant alteration of climate, including temperature, wind patterns, or precipitation. Currently, climate change is primarily human-induced through excessive amounts of greenhouse gases being emitted by industrial activities, deforestation, and urbanization. It may also be induced by natural processes however, and has been noted throughout earth's history (USEPA 2013).

Climate change is expected to alter current forest structure, function, and health. Higher concentrations of carbon dioxide in the atmosphere, nitrogen deposition, precipitation events being more extreme, drought becoming more common, and increases in temperature all would impact forest health in the long term. The most evident changes that have been seen recently are those that alter forest regimes, such as fire, insects, and disease (USFS 2012). Wildfires are expected to increase because of climate change, and increased intensity and occurrence of such events is already apparent.

The Preferred Alternative has been proposed primarily to combat the increased wildfire risk associated with climate change and therefore provide a long-term beneficial effect. The project aims to reduce fuel loads and create safe fuel-breaks for firefighters and others in the park campgrounds in the event of a fire. The outlined actions would assist with creating a more defensible park by giving firefighters space to station while combating any fires. Reducing the probability of fire in the park would also protect neighboring private land owners. The Colorado Wildfire Risk Assessment Tool indicates the project area is at risk for "moderate fire intensity", which can produce flames up to eight feet tall, and trained firefighters would find potential fires difficult to suppress (CSFS 2013).

The Preferred Alternative would emit carbon dioxide from the use of machinery, but is unlikely to contribute a significant volume of greenhouse gases that it will alter climate. The burning of by-product wood chips in the event of a wildfire would also emit carbon dioxide into the atmosphere, but much less than what a dense woodland would emit if burned. Therefore, the Preferred Alternative would have no effect on climate.

The No Action Alternative would maintain the increased risk of catastrophic wildfires due to the existing fuel loads. This risk would increase with climate change impacts to temperature, drought, and insects/disease therefore making such events more likely. With the increased likelihood of catastrophic wildfires, this alternative is more likely to

contribute carbon dioxide into the atmosphere from the burning of large woodland landscapes. Although this would contribute large volumes of greenhouse gases, it is unlikely that it would impact the climate.

3.1.5 Hydrology, Water Quality, Wetlands, and Floodplains

Constructed in 1977, Trinidad Lake serves as flood control for the city of Trinidad, located three miles downstream. The reservoir was built in 1977 by the USACE for flood control, irrigation storage, and sedimentation control, and was authorized by the Flood Control Act of 1958. CPW has managed the reservoir since 1980 through a lease agreement with the USACE. Release of irrigation water is coordinated with the Purgatoire River Water Conservancy District and the State Engineer's office. The reservoir capacity is calculated to be 185,000 acre-feet at an elevation of 6,285 feet above mean sea level (CPW 2001).

The reservoir is used to store irrigation water from October 15 through April 15, and during this time, little or no water is released from the reservoir. From April 15, throughout the summer and fall, until October 15, water is released steadily to satisfy downstream irrigation rights along the Purgatoire River. The period of heaviest drawdown is from May through August with a fluctuation range of 10-25 vertical feet (CPW 2001).

Fishing, boating, and waterskiing are the primary activities at the park, and there is no designated swimming area. Both cold- and warm-water fish species are stocked by the CPW, attracting many anglers throughout the year.

The Purgatoire River, supported by run-off from melting snow in the Culebra Mountains during April, May, and June, is the main source for Trinidad Lake. The watershed for this river lies in the Arkansas River Basin and covers about 671 square miles upstream from the dam site. There are eight major tributaries that feed into the Purgatoire River above the dam. The left bank tributaries are Wet, Sarcillo, Burro, and Reilly Creek. The largest right bank tributaries are the South Fork, Lorencito, and Long's Canyon. The mouths of Reilly and Long's enter directly into Trinidad Lake along with several unnamed drainages. Long's Canyon is located in the southwest part of the park and is the largest drainage area above the dam, draining a total of 109 square miles.

The Purgatoire River above Trinidad is a perennial stream. Summer thunderstorms in July and August produce floods with high peaks and relatively small volumes. The average annual water-year run-off of the Purgatoire River into Trinidad Lake has been calculated at 61,400 acre-feet. Of this amount, about 75 percent occurs from April through August. The average inlet flow is 84.8 cubic feet per second.

Water quality in the reservoir is fair to good in most areas, and has always measured at a level of acceptable or better during routine monitoring performed by the USACE. (USACE unpublished water quality data). The trophic state of the reservoir appears to

be primarily oligotrophic, but with mesotrophic periods as well. High levels of turbidity are apparent, but levels of algae appear normal. There are no known point sources of pollution that discharge directly into the reservoir within Trinidad LSP. Therefore, nutrient loading is likely due to point and non-point sources outside the park. The watershed has suffered greatly from erosion problems due to poorly maintained rangeland north of the park. This erosion has resulted in excessive sedimentation and water quality problems (CPW, 2001).

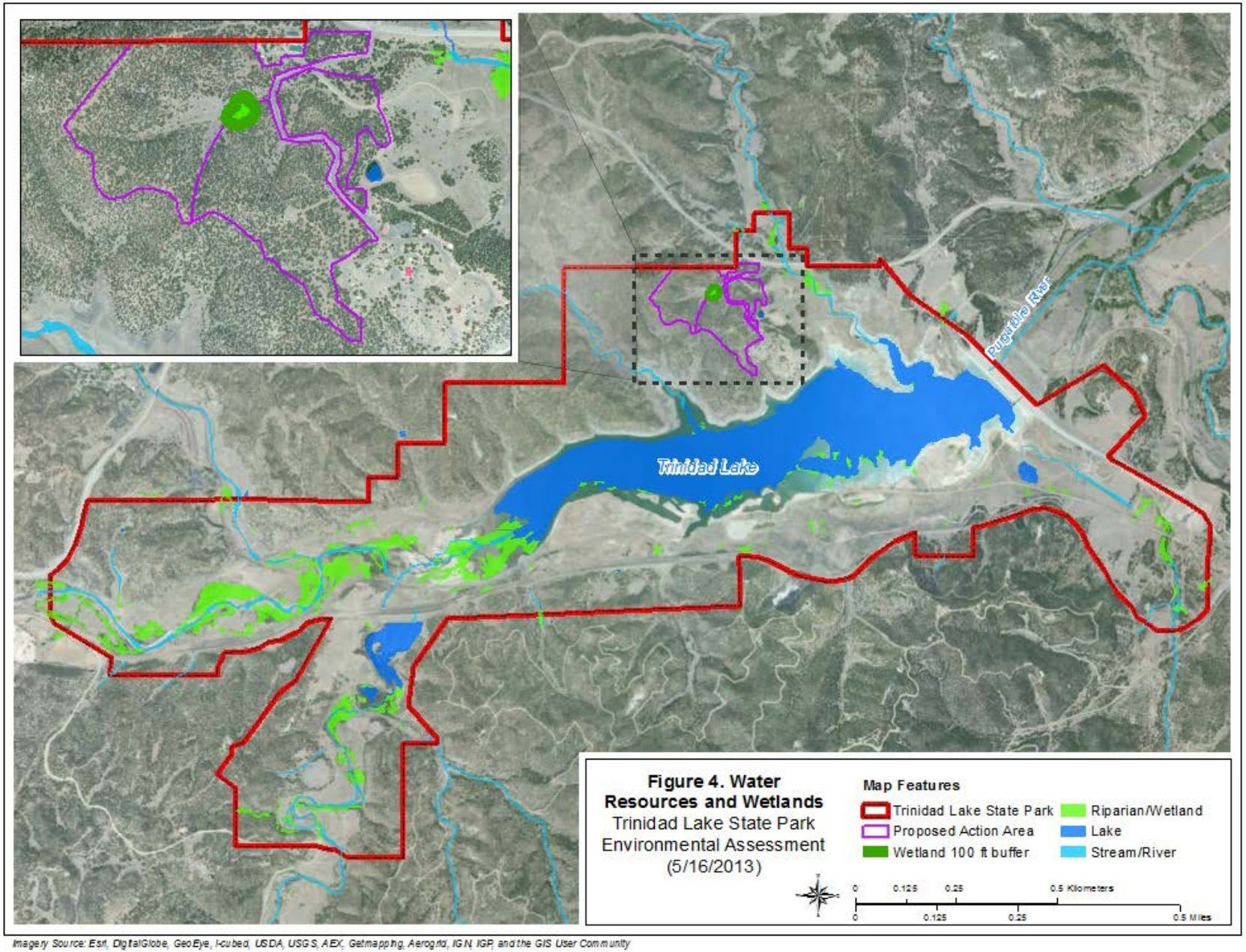
Floodplains are regulated by the Federal Emergency Management Agency (FEMA) with standards outlined in 44 CFR Part 60.3. Currently, no Digital Flood Insurance Rate Maps (DFIRM) data exists for Las Animas County, Colorado and there are no identified flood hazard areas. Current information about streams in the project areas indicates there are no substantial floodplains in the project area.

Both federal and state laws and regulations protect waters of the state, which includes wetlands. The Clean Water Act (CWA) is the primary law protecting waters of the US. Section 404 of the CWA (33 USC 1344) prevents the discharge of dredged or fill material into waters of the US without a permit from the USACE. Generally, whenever a Section 404 permit is required, a Section 401 Water Quality Certification (WQC) issued by the State of Colorado is also required. EO 11990 (Protection of Wetlands) requires federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and to conserve and enhance the beneficial values of wetlands.

The Preferred Alternative would not impact water resources in the area because the project will adhere to BMPs that prevent any effects. Trinidad Lake is approximately 500 feet from the southern-most point of the project area (Figure 4). Project equipment would not be staged or transported near the lake. There is a small wetland within the project site and near a proposed equipment staging area. The wetland and land within a 100 foot buffer in the project zone would be demarcated in accordance with the US Forest Service's recommendations for the "Water Influence Zone". This area would be protected by orange construction fencing to ensure no intrusion. Invasive plant species were found in this wetland, making it important that contractors avoid this area to prevent further spread of these plants.

Water quality could be impacted from sedimentation due to soil disturbance in the project area; however, no streams, rivers, or lakes exist in the project area. BMPs to reduce soil erosion resulting in lake sedimentation are mentioned in Section 3.1.2 Soils, and would be followed to prevent the aforementioned impacts from occurring. The Preferred Alternative would reduce the likelihood of fire in the area; this would have positive downstream impacts to water resources in the park. The probability of sedimentation and erosion occurring in the aftermath of a fire would be dramatically decreased with planned preventive measures outlined in the project plan.

The No Action Alternative would have no impact on the park water resources, unless a fire occurs in the park. Due to the increased risk of catastrophic wildfires from not thinning the project site, there is a higher risk of a short- and long-term negative effect of erosion and sedimentation of water resources within the park under the No Action Alternative.


Trinidad Lake
Purgatoire River
Figure 4. Water Resources and Wetlands
Trinidad Lake State Park
Environmental Assessment
(5/16/2013)
Map Features
Trinidad Lake State Park
Proposed Action Area
Wetland 100 ft buffer
Riparian/Wetland
Lake
Stream/River
0 0.125 0.25 0.5 Kilometers
0 0.125 0.25 0.5 Miles
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

3.2 The Biological Environment

3.2.1 Vegetation Communities

Four primary native plant communities occur within Trinidad LSP: woodlands, riparian/wetlands, shrublands, and grasslands. See Figure 5 and Table 2 for park and site vegetation communities.

The juniper woodland community occupies rocky outcrops and slopes and covers almost 1000 acres, or 31% of the park, making it the most common native vegetation type at Trinidad LSP. Piñon pine, one-seed juniper, and Rocky Mountain juniper dominate the overstory of this community, while shrubland species such as Gambel oak, mountain mahogany (*Cercocarpus montanus*), and serviceberry (*Amelanchier sp.*) dominate the understory. The herbaceous grassland understory includes blue grama (*Bouteloua gracilis*), side oats grama (*Bouteloua curtipendula*), and needle-and-thread grass (*Stipa comata*). The densest woodlands tend to occur on north and west facing slopes, usually associated with wet draws and their slopes, while more open woodlands grow on dry slopes and ridges (CPW 2001, Galatowitsch 1988). This type of landscape dominates the project area.

Mixed grass and shortgrass prairie occupy 178 and 169 acres of the park, respectively, and together comprise 11% of the vegetative cover. The mixed grass prairie occurs in mesic areas such as valley bottoms, upland swales and run off areas. Dominant species include western wheatgrass (*Pascopyrum smithii*), needle-and-thread grass and Indian ricegrass (*Oryzopsis hymenoides*). The shortgrass prairie occurs in dry or cleared areas and is dominated by blue grama, galleta (*Pleuraphis rigida*), and side oats grama.

Saline bottomland shrubland, consisting of mostly rabbitbrush (*Chrysothamnus nauseosus)* and four-wing saltbush (*Atriplex canescens*) in the overstory and alkali sacaton (*Sporobolus airoides)* in the understory, grows in areas disturbed in the past by ground work and earthmoving activities. This community covers 163 acres, or approximately 5% of the park.

Riparian shrublands occur in areas that naturally are frequently flooded (Galatowitsch 1988). They are dominated by sandbar willow (*Salix exigua)* and typically grow adjacent to cottonwood forests along rivers, streams and canals. At Trinidad LSP, about 78 acres (3% of total vegetation) consist of riparian shrubland.

Combined, the following communities make up 2% of the vegetation at Trinidad LSP: floating and submerged wetlands, cottonwood riparian forest, ponderosa pine woodland, wet meadow, foothill shrublands, and marsh (CPW 2001).

Floating and submerged wetlands are dominated by rooted aquatic plants on submersed soils at water depths greater than 0.5 m (Galatowitsch 1988). This community type covers 30 acres at the park, but the species present have not been inventoried. Cottonwood riparian forest (approximately 26 acres) grows along river

and streambanks, on first terraces and in the bottoms of moist draws. Other deciduous tree species such as Chinese elm (*Ulmus parvifolia)* and boxelder (*Acer negundo*) are included in this community. The ponderosa pine woodland community grows in moist upland drainage bottoms and on northern exposures. This community covers 17 acres at the park and is dominated by ponderosa pine, with dense piñon pine and Rocky Mountain juniper in the understory. Wet meadows consist mainly of grasses, sedges, and rushes occurring on saturated soils within swales, intermittent drainages or broad ravines. Foothill shrublands grow on moist slopes and on gravelly soils. Common species in this community include mountain mahogany, serviceberry, and Gambel oak. This community type represents less than 4 acres at the park. Finally, marsh covers a mere 0.2 acres at Trinidad LSP. This community consists of cattails, sedges, bulrushes, and rushes in areas with permanent standing water (CPW 2001, Galatowitsch 1988).

The remaining 48% of the area at Trinidad LSP has not been classified because of the absence of vegetative cover or because exotic species dominate the area. These areas cannot be classified according to the system of Galatowitsch (1988).

Table 2. Summary of Vegetation Communities in Trinidad Lake State Park.

Vegetation Community	Park Acreage	Dominant Vegetation
Woodlands		
Juniper	1000	Piñon pine, one-seed juniper, and Rocky Mountain juniper, Gambel oak, mountain mahogany, serviceberry, blue grama, sideoats grama, and needle-and-thread grass
Ponderosa Pine	17	Ponderosa pine, piñon pine, and Rocky Mountain juniper
Grasslands		
Mixed Grass and Short Grass Prairie	347	Western wheatgrass, needle-and-thread grass, Indian ricegrass, blue grama, galleta, and sideoats grama
Shrublands		
Saline Bottomland Shrubland	163	Rabbitbrush, four-wing saltbush, and alkali sacaton
Riparian Shrubland	78	Sandbar willow

Foothill Shrubland	<4	Mountain mahogany, serviceberry, and Gambel oak
Wetlands / Riparian		
Floating and Submerged Wetlands	30	Species not inventoried; rooted aquatic plants
Cottonwood Riparian Forests	26	Cottonwood, boxelder, and Chinese Elm
Marsh	0.2	Cattails, sedges, bullrushes, and rushes.
Wet Meadows	Unknown	Species not inventoried: Grasses, sedges, rushes in saturated soils.

Overgrowth of woody vegetation is a result of continuous fire suppression in this area (Figures 6 and 7). The Preferred Alternative would result in numerous benefits to the vegetative communities in the project area:

- Fire stress: The reduction of vegetation fuel loads would lower the possibility of a more intense and catastrophic fire. Such fires are known to result in higher counts of dead trees, a more even-aged tree stand, and subsequently higher susceptibility to disease and insect infestation.

- Wildlife Habitat: Removing unnecessary trees would create gaps in forest cover, which increases sunlight, and increases diversity of microclimates (from mastication materials). As a result, understory vegetation would be more apt to grow and would provide additional forage for wildlife.

- Forest Succession: Piñon-juniper woodlands in southwest Colorado typically have infrequent (200-400 years) stand replacing fires. This stand replacing scenario is not desired within the project boundaries due to the present use of the resource. Decreasing ladder fuels and breaking up the continuity of fuels would allow the area to become more defendable, delaying the succession of the area to a severe catastrophic fire prone habitat structure.

- Forest Condition: Forest health is presently good within the area; however the overall density is high, which makes the forest susceptible to insect and disease outbreaks, and catastrophic wildfires. Treatment would reduce density and reduce infestations and catastrophic wildfires. Reducing density of trees would also reduce woody encroachment into meadows.

- Insect and Disease: No major insect and disease issues were found within the project area. However, with large areas of stressed/weakened trees, the possibility of outbreaks is possible. The treatments proposed would reduce density and risk of outbreaks. Dead, diseased, or dying trees would be

targeted for removal except for existing snags that provide habitat for wildlife. See Section 2.1 for more details about snag maintenance.

The use of machinery and presence of people in the 78-acre project area could negatively impact vegetation being trampled. The wetland and land within a 100 foot buffer within the project site would be avoided and would be sectioned off with an orange construction fence.

The No Action Alternative would have detrimental short- and long-term impacts to the forest community. Due to the increased risk of catastrophic wildfires from the lack of thinning in the project area, there is a higher risk of insect and disease outbreaks, which can result in even-aged tree stands, and wildlife and human dangers. Additionally, forest health within the project site would remain deteriorated with low understory growth and an overabundance of woody strata.

3.2.2 Invasive Species and Noxious Weeds

Invasive species present within the park include many noxious weeds and a few bird species. On a site visit, biologists noted mullein (*Verbascum thapsus)*, diffuse knapweed (*Centaurea diffusa)*, and flixweed (*Descurainia sophia)* near the project site.

Exotic grasses such as cheatgrass (*Bromus tectorum;* synonym *Anisantha tectorum)* and smooth brome (*Bromus inermis;* synonym *Bromopsis inermis*) are known from Longs Canyon. Crested wheatgrass (*Agropyron cristatum)* dominates some upland areas south of the reservoir where coal mine tailings were reclaimed. Mullein (*Verbascum thapsus*) is nearly ubiquitous, growing in upland areas as well as the drawdown zone. Field bindweed (*Convolvulus arvensis)* is also common throughout the drawdown zone. Small amounts of scotch thistle (*Onopordoum acanthium)* grow just outside the park boundary near Reilly Canyon, on the west park boundary near Longs Canyon, and along the trail between Carpios Ridge and Reilly Canyon. In wetland areas, Canada thistle (*Cirsium arvense*) is found in Long's Canyon and many other drainages near the reservoir. Kochia (*Bassia scoparia;* synonym *Bassia sieversiana*) co-dominates the floodplain of Long's Canyon. The 1995 wetland report indicates the presence of yellow toadflax (*Linaria vulgaris)*, a serious noxious weed, but its exact location is unknown. Salt-cedar (*Tamarix ramosissima)*, a noxious woody species that grows along lake and stream shores, is found in a few places along the shoreline (CPW 2001). Trinidad LSP staff is in the process of completing an inventory of invasive species locations throughout the park. Data already collected is presented in Table 3 and Figure 8.

The Preferred Alternative has potential to have negative impacts to native vegetation and introduce noxious weeds to the project area. The following invasive species were documented in the wetland within the project area: mullein, diffuse knapweed, and flixweed. A potential staging area for equipment is near this wetland and CPW has developed BMPs for contractors to avoid spreading seeds. They include:

- Vehicles and equipment used off road by contractors would be washed before use on site.
- Equipment would not be driven through areas already infested. Construction tape and fences would be used to demarcate areas that equipment should stay out of. If it is necessary to drive or walk through an infested area, equipment and personal gear would be cleaned before moving to another site.
- Reseeding with native grass mixtures would be completed by the contractor in areas where work has exposed bare soil and in areas deemed necessary by the Park Resource Staff. All seeding would be done in accordance with specifications provided by the Park Manager in coordination with the State Parks Resource Stewardship Staff. All seed mixes, straw, hay materials used in revegetation must meet Colorado Weed-Free specifications.

In addition to the BMPs listed above, CPW staff would establish a baseline of invasive species in the project site prior to activity, allowing for better future management of the site and ensuring proper use of appropriate BMPs during the project. Because of the preventive BMPs that would be used by contractors, the Preferred Alternative is expected to have no impact to the project site with regards to invasive and noxious species.

The No Action Alternative would not pose a risk with equipment or humans increasing spread of invasive species. However, neglecting to thin in the area would increase the probability of an intense fire and subsequently pose long-term negative effects. In the case of a catastrophic, intense fire, some invasive species are likely to proliferate over native species. Research shows that mature piñon-juniper pine forests were exceptionally susceptible to invasion following fire (Floyd *et al.* 2006). It has been found that high severity burns have a greater dominance of invasive species than low severity burns. Additionally, some invasive species thrive with fire more than they would without, if seeds are already present in the soil (Fornwalt *et al.* 2010).

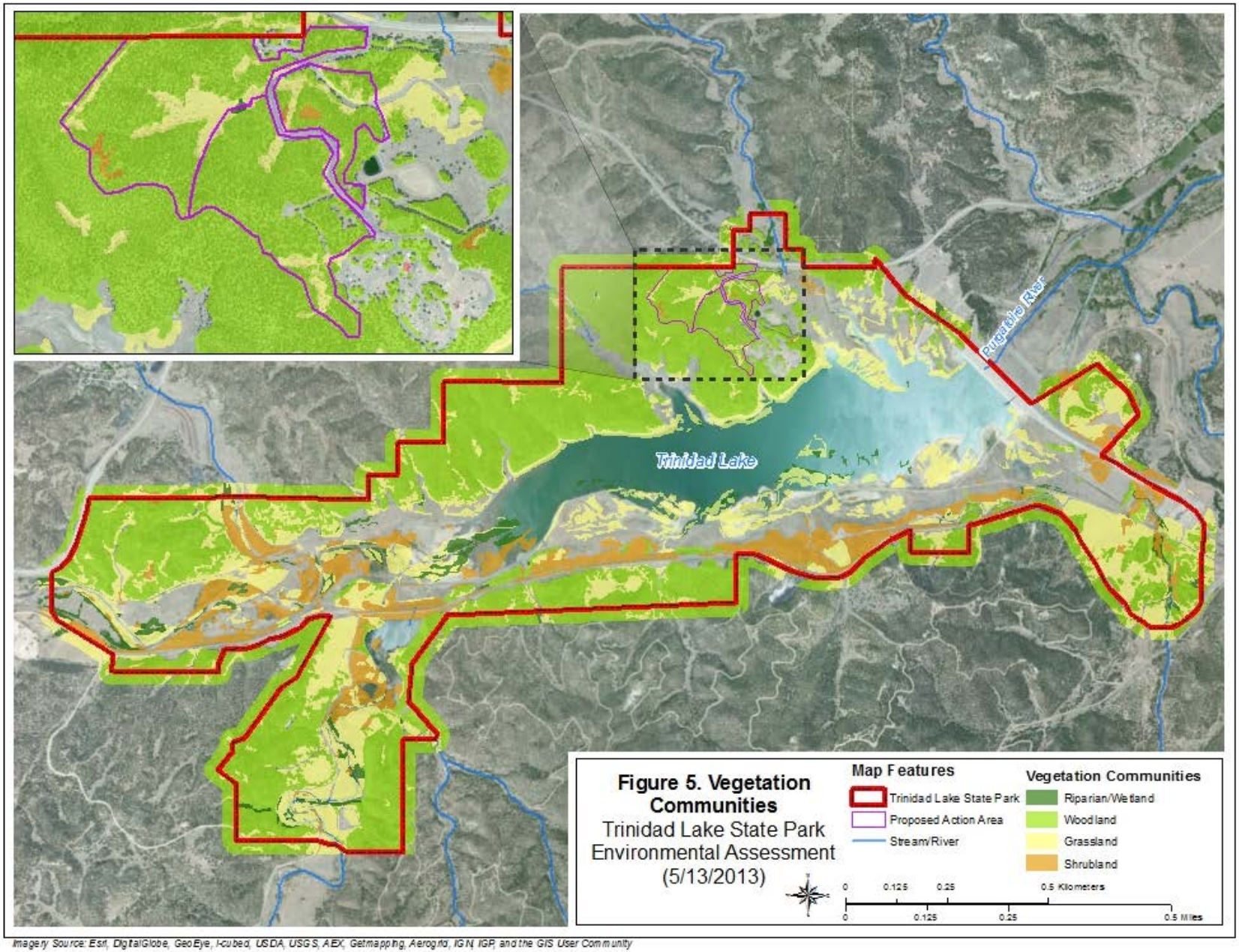
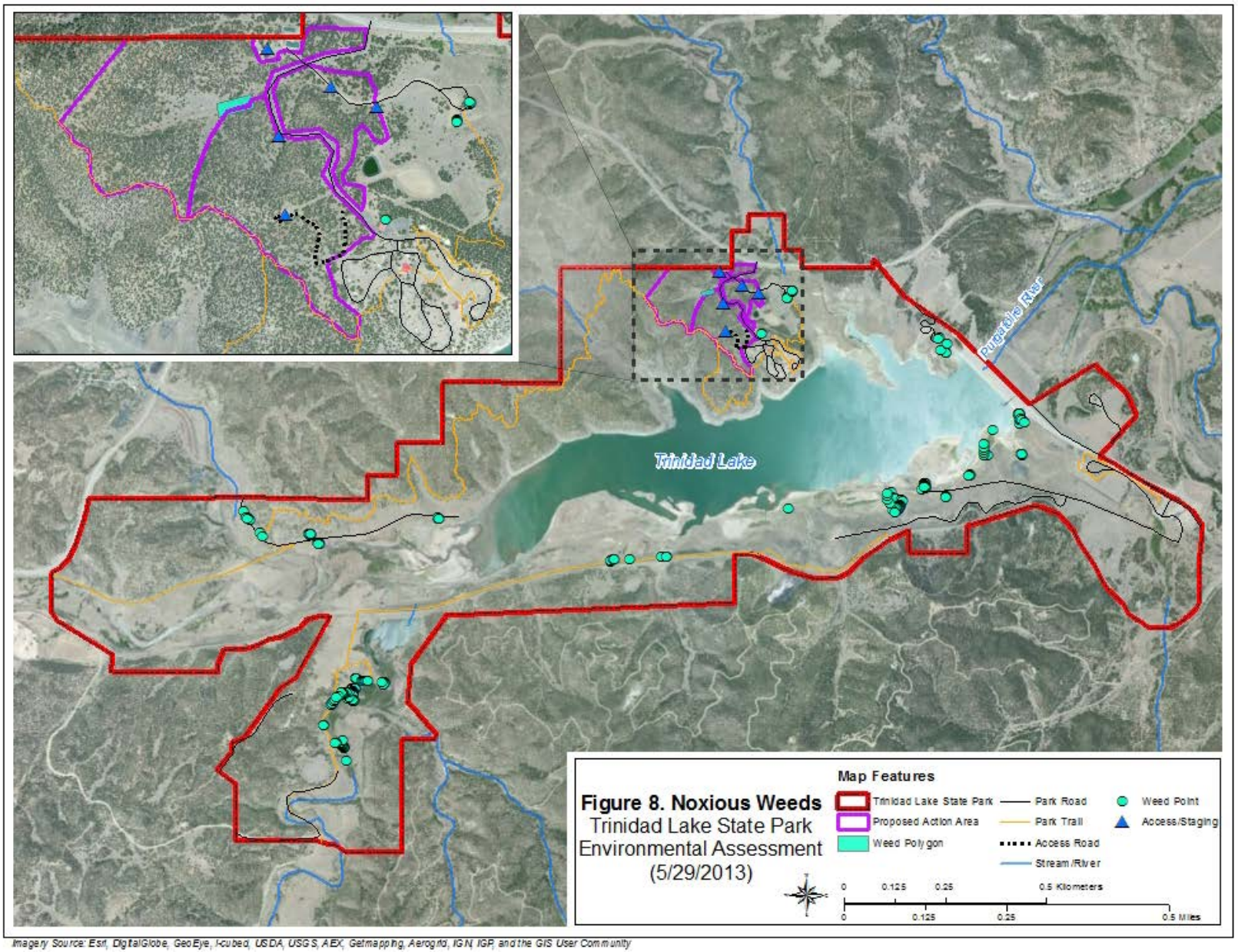

Trinidad Lake
Purgatoire River
Figure 5. Vegetation Communities
Trinidad Lake State Park
Environmental Assessment
(5/13/2013)
Map Features
Trinidad Lake State Park
Proposed Action Area
Stream/River
Vegetation Communities
Riparian/Wetland
Woodland
Grassland
Shrubland
0 0.125 0.25 0.5 Kilometers
0 0.125 0.25 0.5 Miles
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

Figure 6. Dense scrub-oak and ponderosa pine at the project site.

Figure 7. Dense piñon-juniper at the project site.

Table 3. Trinidad Lake State Park Documented Invasive Species.

Common Name	Scientific Name
Barnyard grass	*Echinochloa crus-galli*
Bull thistle	*Cirsium vulgare*†
Burdock	*Arctium minus*†
Canada thistle	*Cirsium arvense*†
Cheatgrass	*Bromus tectorum;* synonym *Anisantha tectorum*
Chinese elm	*Ulmus pumila*
Crested wheatgrass	*Agropyron cristatum*
Curly dock	*Rumex crispus*
Diffuse knapweed	*Centaurea diffusa**†
Field bindweed	*Convolvulus arvensis*†
Flixweed	*Descurainia sophia*
Horehound	*Marrubium vulgare*
Houndstongue	*Cynoglossum officinale*
Jim Hill mustard	*Sisymbrium altissimum*
Kentucky bluegrass	*Poa pratensis*
Kochia	*Bassia scoparia;* synonym *Bassia sieversiana*
Mullein	*Verbascum thapsus*†
Musk thistle	*Carduus nutans**
New Mexico locust	*Robinia neomexicana*
Orchardgrass	*Dactylis glomerata*
Puncturevine	*Tribulus terrestris*†
Quackgrass	*Elytrigia repens*
Redtop	*Agrostis gigantea*
Russian olive	*Eleagnus angustifolia*†
Russian thistle	*Salsola tragus;* synonym *Salsola iberica*
Salt-cedar	*Tamarix ramosissima*†
Scotch thistle	*Onopordoum acanthium**†
Smooth brome	*Bromus inermis;* synonym *Bromopsis inermis*
Storksbill	*Erodium cicutarium*
Timothy	*Phleum pratense*
Wild oat	*Avena fatua*
White sweetclover	*Melilotus alba*
Yellow sweetclover	*Melilotus officinalis*
Dalmatian toadflax	*Linaria dalmatica*
Yellow toadflax	*Linaria vulgaris**†
* Las Animas county priority weed species. † Colorado noxious weed species.	


Trinidad Lake
Purgatoire River
Map Features
Trinidad Lake State Park
Proposed Action Area
Weed Polygon
Park Road
Park Trail
Access Road
Stream/River
Weed Point
Access/Staging
0 0.125 0.25 0.5 Kilometers
0 0.125 0.25 0.5 Miles
Figure 8. Noxious Weeds
Trinidad Lake State Park
Environmental Assessment
(5/29/2013)
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

3.2.3 Fish and Wildlife

Wildlife species at Trinidad LSP are those that commonly occupy piñon-juniper woodlands and sagebrush shrublands in the transition zone between the Great Plains and the Rocky Mountains. Large mammals in the park include mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus),* bobcat (*Lynx rufus*), and coyote (*Canis latrans*). Black bear (*Ursus americanus*), Rocky Mountain elk (*Cervus Canadensis*), and mountain lion (*Puma concolor)* typically occur in higher country outside the park, but are occasionally seen there. Other common mammals are North American beaver (*Castor canadensis*), gray fox (*Urocyon cinereoargenteus*), piñon mouse (*Peromyscus truei*), Mexican woodrat (*Neotoma mexicana*), desert cottontail (*Sylvilagus audubonii*), and Botta's pocket gopher (*Thomomys bottae*). During the site visit, a coyote den was found near the wetland within the project area, and several scat piles strewn with juniper berries were seen throughout the site (Figure 9).

When the Colorado Natural Heritage Program (CNHP) completed a zoological inventory of Trinidad LSP in 1998, they identified two species of bat: the hoary bat (*Lasiurus cinereus*) and the little brown bat (*Myotis lucifugus*). However, the piñon-juniper woodlands, rock outcrops, and abandoned mine shafts in the park most likely provide habitat for other bat species. At least seven species of bat are known from the area, including two that are considered rare in the state, which is discussed in Section 3.2.4 Threatened, Endangered, and Rare Species.

Reptiles present in the park include: prairie rattlesnake (*Crotalus viridis*), bullsnake (*Pituophis catenifer*), red-lipped plateau lizard (*Sceloporus undulatus erythrocheilus*), prairie racerunner (*Cnemidophorus sexlineatus viridus*), and collared lizard (*Crotaphytus collaris*) are among the most commonly seen. Rock outcroppings in piñon-juniper woodlands on the north and southwestern sides of the park provide good habitat for sunning reptiles, and may also be used as winter dens (CPW 2001). Grassland areas may provide habitat for the Texas horned lizard (*Phrynosoma cornutum*).

Amphibians in the park include Woodhouse's toad (*Bufo woodhousii*), Plains spadefoot (*Spea bombifrons*), tiger salamander (*Ambystoma tigrinum*), and New Mexico spadefoot (*Spea multiplicata*), which is a state species of special concern.

Trinidad LSP supports diverse populations of both resident and migratory birds. Most migratory birds do not nest or breed at the park, but instead use it during migration as a resting point. Several common species of waterfowl, shorebirds, and gulls occur in the park, as well as great blue heron (*Ardea herodias*), black-crowned night heron (*Nycticorax nycticorax)*, Forster's tern (*Sterna forsteri*), and Clark's grebe (*Aechmophorus clarkii)*. Forests and shrublands support common raven (*Corvus corax)*, piñon jays (*Gymnorhinus cyanocephalus)*, cliff swallows (*Petrochelidon sp.)*, and mountain bluebirds (*Sialia currucoides*). Raptors observed in the park include osprey (*Pandion haliaetus)*, bald eagle (*Haliaeetus leucocephalus)*, golden eagle (*Aquila chrysaetos)*, northern harrier (*Circus*

cyaneus), prairie falcon (*Falco mexicanus)*, red-tailed hawk (*Buteo jamaicensis)*, sharp-shinned hawk (*Accipiter striatus)*, Cooper's hawk (*Accipiter cooperii)*, Swainson's hawk (*Buteo swainsoni)*, and ferruginous hawk (*Buteo regalis)*. Resident and migratory songbirds depend on riparian forest and shrubland along the Purgatoire River and in Long's and Reilly Canyons for food, shelter, and nest sites (CPW 2001). Many migratory birds, including American crow (*Corvus brachyrhynchos)*, common raven, American goldfinch (*Spinus tristis)*, and scrub jay (*Aphelocoma californica)* were noted during the site visit. Turkey vultures (*Cathartes aura)* were also seen from the project site area, but were closer to the lake foraging for food. No raptor nests were noted in the project area; power lines in the project area were investigated and were also found to be void of any raptor nests. Bald eagles have been seen near the project area, and are discussed in Section 3.2.4 Threatened, Endangered, and Rare Species.

Trinidad Lake is stocked with several species of game fish. Largemouth bass (*Micropterus salmoides)*, smallmouth bass (*Micropterus dolomieu)*, spotted bass (*Micropterus punctulatus)*, walleye (*Sander vitreus)*, saugeye (*Sander Canadensis)*, yellow perch (*Perca flavescens)*, channel catfish (*Ictalurus punctatus)*, wipers (*Morone sp.)*, crappie (*Pomoxis sp.)*, and bluegill (*Lepomis macrochirus)* are all stocked.

The Preferred Alternative is likely to have some disturbance to wildlife residing in the area. Avoidance of the wetland and a 100 ft. buffer area is required, which includes the coyote den. Coyote, mountain lion, elk, mule deer, and white-tailed deer all use the project area during winter and may be disturbed during project implementation, but are likely to continue to use the space for foraging despite human presence. The range for black bears overlaps with the project site, but they are unlikely to be active in the area until spring.

Loss of trees would reduce cover and forage for migratory bird species; however, activity would occur October 1st through April 1st, which is outside when most migratory birds nest. Some raptor species nest as early as December, and if a nest is found, work would cease immediately and CPW recommended seasonal restrictions and buffers would be followed accordingly. Park staff would monitor for raptor nests in the project area. If a raptor nest is found, compliance with the Migratory Bird Treaty Act (MBTA) would require establishing new activity black-out dates with regard to the species present or buffered area with limited activity while the nest is in use.

The Preferred Alternative would benefit ungulates, birds, and other wildlife over time, by creating gaps in tree canopies that would promote understory vegetation which provides important wildlife habitat, including food sources. It would also reduce the likelihood of catastrophic fire incidents that would damage nests and induce stress on individual animals.

The No Action Alternative would have long-term adverse impacts to wildlife. Due to the increased risk of catastrophic wildfires from the lack of thinning in the project area,

there would be a higher risk of wildfire danger to wildlife and nests, and would not produce the long term benefit of creating new understory forage and cover for wildlife.

3.2.4 Threatened, Endangered, and Rare Species

There is no documented occurrence of federal candidates, threatened, or endangered species in the park or any critical habitat for listed species. Mexican spotted owl (*Strix occidentalis lucida*), Arkansas darter *(Etheostoma cragini*), Black-footed ferret (*Mustela nigripes)*, Canada lynx (*Lynx canadensis*), Gunnison's prairie dog (*Cynomys gunnisoni)*, New Mexico meadow jumping mouse (*Zapus hudsonius luteus)*, and North American wolverine (*Gulo gulo luscus*) are all federal candidates or listed species under the Endangered Species Act (ESA) that are likely to occur in Las Animas County, Colorado (USFWS 2013b). After informal consultation with the USFWS, it was recommended to investigate the Arkansas darter and the New Mexico meadow jumping mouse further for potential impacts to their habitats. The other five species are expected to incur no effects from the project (Table 4).

The Arkansas darter is state threatened and a candidate for federal designation under the ESA. They are not suspected to populate streams in Trinidad LSP. Fountain and Big Sandy Creek watersheds to the north are the closest occupied watersheds to the park (USFWS 2012). The Arkansas darter typically inhabit clear, shallow streams with sandy or silty bottoms and low temperatures (USFWS 2013c). The Arkansas darter is not known to occur near the park and no habitat exists for the species on the project site. Therefore, there would be no long-or short-term direct or indirect effects to the Arkansas darter.

The New Mexico meadow jumping mouse (*Zapus hudsonius luteus)* is a state critically imperiled species and a candidate for federal listing. The rodent is expected to occur in Las Animas County, but has not been found in the park. New Mexico meadow jumping mice live and nest in very specific habitats, which include moist, streamside, dense riparian/wetland vegetation for cover. They typically nest in dry soils and hibernate about 9 months out of the year (USFWS 2013a). The wetland/riparian area on the project site was investigated as potential habitat for the New Mexico meadow jumping mouse. This area lacks perennial stream flow and is therefore unsuitable for jumping mouse. As a precaution, BMPs that prohibit equipment or workers to traverse the wetland or a 100 foot buffer of the area, which will be demarcated with orange construction tape, will be followed strictly to avoid any negative impacts to the species. Therefore, the Preferred Alternative would have no short-or long-term effect on New Mexico jumping mouse.

A number of rare and state listed wildlife species occur in the park and its surrounding region. GIS data exists for Botta's pocket gopher, green toad (*Bufo viridis*), Townsend's big-eared bat, and Texas horned lizard which are all CNHP sensitive species with habitat overlapping with the project site (Figure 10). See Table 3 below for a complete

list of rare wildlife species found in the park and impacts to the habitat associated with the project.

Burrowing owls are state threatened and have been observed within the park in the past. They utilize vacant prairie dog burrows primarily for nesting and raising their young. They are usually found in grasslands near prairie dog towns, and eat reptiles, insects, rodents, and small birds (CPW 2012a). No prairie dog towns occur within the project site; therefore suitable habitat for the species does not occur where activity will take place. Burrowing owls migrate south in October and do not return until late April or early May. The species is likely to be absent from Colorado for almost the entirety of the project length. It is therefore concluded that the Preferred Alternative would have no short-or long-term effect on burrowing owls.

No rare plant species are known to exist in Trinidad LSP. However, a number of unusual and possibly rare community associations were documented in August 2001. These rare communities include:

- Two-needle piñon/Scribner's needlegrass: *Pinus edulis, Stipa scribneri* (G3/S1, tracked by CNHP).
- Foothills piñon-juniper woodland: *Juniperus monosperma, Pinus edulis, Cercocarpus montanus, Schizachyrium* (GU/SU, tracked by CNHP).
- Foothills piñon-juniper woodland: *Juniperus monosperma, Bouteloua curtipendula* (G5/S3S4, tracked by CNHP).
- Foothills piñon-juniper woodland: *Pinus edulis, Quercus gambelii* (G5/S5, tracked by CNHP).
- Scarp woodland: *Juniperus scopulorum, Schizachyrium scoparium* (G3/S2S3, tracked by CNHP).
- Scarp woodland: *Juniperus scopulorum, Cercocarpus montanus, Rhus trilobata* (GU/SU, tracked by CNHP)

Piñon-juniper and Gambel oak/piñon-juniper woodlands exist within in the project site and would be improved by the Preferred Alternative. The other rare or unusual plant community associations mentioned above do not occur within the project area and therefore would not be affected by the proposed fuels reduction treatment. Rare plant species do not exist in the project area, and therefore the Preferred Alternative would have no effect on rare plants.

In summary, the Preferred Alternative would have no effect on federally or state-listed species or rare plants. The Arkansas darter is not known to occur near the park and no habitat exists for the species on the project site and therefore the project would have no effect on its population or habitat. The New Mexico meadow jumping mouse is

unlikely to inhabit the one wetland area in the project site because this intermittent drainage would not provide necessary perennial stream flow habitat requirements of the species. Additionally, BMPs that prohibit equipment or workers to traverse the wetland or a 100 foot buffer of the area would be followed strictly to avoid any impacts to the wetland. It is therefore concluded that there would be no effect to the New Mexico meadow jumping mouse or its habitat. The state-listed Burrowing owl would not be present in the project area during the period when the project takes place, and suitable habitat for the species does not occur where activity will take place. There are no documented occurrences of rare plants within the project area. Therefore, the Preferred Alternative would have no effects on federal candidates or federally or state-listed species.

Table 4. Rare Wildlife Species in or Near Trinidad Lake State Park.

Common Name	Species Name	Conservation Ranking	Habitat	Potential Impacts to Species from Project
Federally and State Listed Species				
Mexican spotted owl	*Strix occidentalis*	Federal: Threatened	Old growth, mature, structurally complex forests, canyons, ponderosa pine, pine-oak.	No Effect: No individuals have been found near the park, and dense mixed conifer does not exist in the project site (USFWS 2013d).
Arkansas darter	*Etheostoma cragini*	Federal: Candidate	Shallow, clear, cool, sand or silt bottom streams with spring-fed pools and rooted aquatic vegetation.	No Effect: Project would not occur in habitat (USFWS 2013c).
Black-footed ferret	*Mustela nigripes*	Federal: Endangered, Experimental Population	Prairie grasslands.	No Effect: Project would not occur in habitat. There are a few grasslands in the project area, but no prairie dog colonies in the project site that can support the species (USFWS 2013e).
Canada lynx	*Lynx canadensis*	Federal: Threatened	Spruce-fir forests, anywhere snowshoe hare exist.	No Effect: Project would not occur in habitat (USFWS 2013f).
Gunnison's prairie dog	*Cynomys gunnisoni*	Federal: Candidate	Grasslands, semi-desert and montane shrublands, low valleys and mountain meadows.	No Effect: Habitat for the species exists, but no known colonies have been found in or near the park. Habitat for the species is not the target of the project and would not be impacted (USFWS 2013g).
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	Federal: Candidate	Persistent herbaceous wetlands, scrub-shrub wetlands.	No Effect: Habitat for the species does not exist within the project area. BMPs would be practiced to avoid disturbance to wetland and riparian areas (USFWS 2013a).

North American wolverine	*Gulo gulo luscus*	Federal: Proposed Threatened	Deep persistent, snowy areas, high elevation	No Effect: Project does not occur in habitat (USFWS 2013h).
Bald eagle	*Haliaeetus leucocephalus*	CNHP: G5, S1B, S3N State: Threatened	Winter residents around larger rivers and open reservoirs. Large trees for nesting, perching, and roosting.	No Effect: The species would nest and forage near Lake Trinidad. If a nest is present within ½ mile of the project site, impacts may occur so project activity must cease.
Ferruginous hawk	*Buteo regalis*	CNHP: G4, S3B, S4N State: Concern	Prefer live deciduous trees, riparian zones at lower elevations in the foothills and on the plains. Also, may nest in coniferous trees.	No Effect: No known nests occur in the park, but could find nesting habitat in the project area. If nest is present within ½ mile of the project site, impacts may occur so project activity must cease.
Texas horned lizard	*Phrynosoma cornutum*	CNHP: G4G5, S3 State: Concern	Plains grasslands, especially where large parches of bare soil. Lower limit of juniper growth often is upper limit for lizard's habitat in canyons and mesas.	No Effect: Some grasslands exist in project area that provides habitat, but activity would be very limited in these areas and may improve them. The species will not be active during project dates (CHA 2003b).
Burrowing owl	*Athene cunicularia*	CNHP: G4, S4B State: Threatened	Vacant animal burrows in short grass areas.	No Effect: The species usually uses burrows of prairie dogs, which are not found in the project site. The species also migrates and will not be present during project activity.
CNHP Species of Concern				
American white pelican	*Pelecanus erythrorhynchos*	CNHP: G3, S1B	Lakes and reservoirs.	No Effect: The species would not be present during most of the project and nests and forages near water.
Curve-billled thrasher	*Toxostoma curvirostre*	CNHP: G5, S3	Summer residents in arid, brushy areas, canyons, and scrubby draws. Cholla cactus is a favorite for nesting.	No Effect: Is likely to have migrated for the winter and if present in the spring, no habitat occurs in the project site.

Forster's tern	*Sterna forsteri*	CNHP: G5, S2B, S4N	Migrant in and around marshes and wetlands.	No Effect: Species could stop over in wetland in project site during spring migration but BMPs prevent project from impacting the wetland.
Lewis' woodpecker	*Melanerpes lewis*	CNHP: G4, S4	Open cottonwood drainages and park-like ponderosa forests or other conifers at lower elevations.	No Effect: Ponderosa pine and cottonwood exist in the project site but are not targeted for removal. May incur some disturbance from human presence, but habitat would not be lost.
Prairie falcon	*Falco mexicanus*	CNHP: G5, S4B, S4N	Open country, cliffs, and buttes.	No Effect: Project area does not contain habitat.
White-faced ibis	*Plegadis chihi*	CNHP: G5, S2B	Reservoirs, ponds, marshes, muddy pools, stream margins, and river banks for breeding, feeding, and resting.	No Effect: Project area does not contain habitat.
Wilson's phalarope	*Phalaropus tricolor*	CNHP: G5, S4B, S4N	Inhabits prairie pools and marshes, lake and river shores. Summer resident.	No Effect: Project area does not contain habitat.
Botta's pocket gopher subsp.	*Thomomys bottae cultellus*	CNHP: G5, S3	Sandy soils of valley bottom riparian areas, but would use other soils high in clay or coarse substrate. Variety of vegetation types.	No Effect: Project may result in soil disturbance that could impact burrows. Unlikely to burrow in the project site as it does not have soil types. Riparian areas will be avoided.
Brazilian free-tailed bat	*Tadarida brasiliensis*	CNHP: G5, S1	Piñon-juniper woodlands, arid grasslands, and semidesert shrublands. Roost in caves, mines, rock fissures, or buildings in southwestern Colorado.	No Effect: Migrates to Mexico or Central America in the winter. Workers would avoid any old structures, caves, or mines they come across while in the park in effort to not disturb potentially roosting bats (CPW 2012d).

Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	CNHP: G4, S2	Semi-desert shrublands, piñon-juniper woodlands, and open montane forests. Roosts in caves and abandoned mines.	No Effect: Hibernates during winter in mines, caves or man-made structures. Workers would avoid any old structures, caves, or mines they come across while in the park in effort to not disturb potentially hibernating bats (CPW 2012c).
New Mexico spadefoot	*Spea multiplicata*	CNHP: G5, S4	Sagebrush and semidesert shrublands in basins and floodplains of streams of western Colorado. Plains grasslands in southeastern Colorado.	No Effect: CNHP identified a large population of New Mexico spadefoot toads just outside of the park boundary in Long's Canyon. The report surmised that at least a portion of this population is likely to depend on habitat within the park boundary (CPW 2001). However, this species will not be active during the project dates and no habitat is targeted for activity within the project site.
Green toad	*Bufo debilis*	CNHP: G5, S2	Plains grassland in Colorado. Emerges from rodent burrows, ant nests, and other underground retreats only after summer rains.	No Effect: Some grasslands that provide habitat exist in project area, but project activity would be very limited in these areas and may improve them (CHA 2003a). Also, species will not be active during project dates.

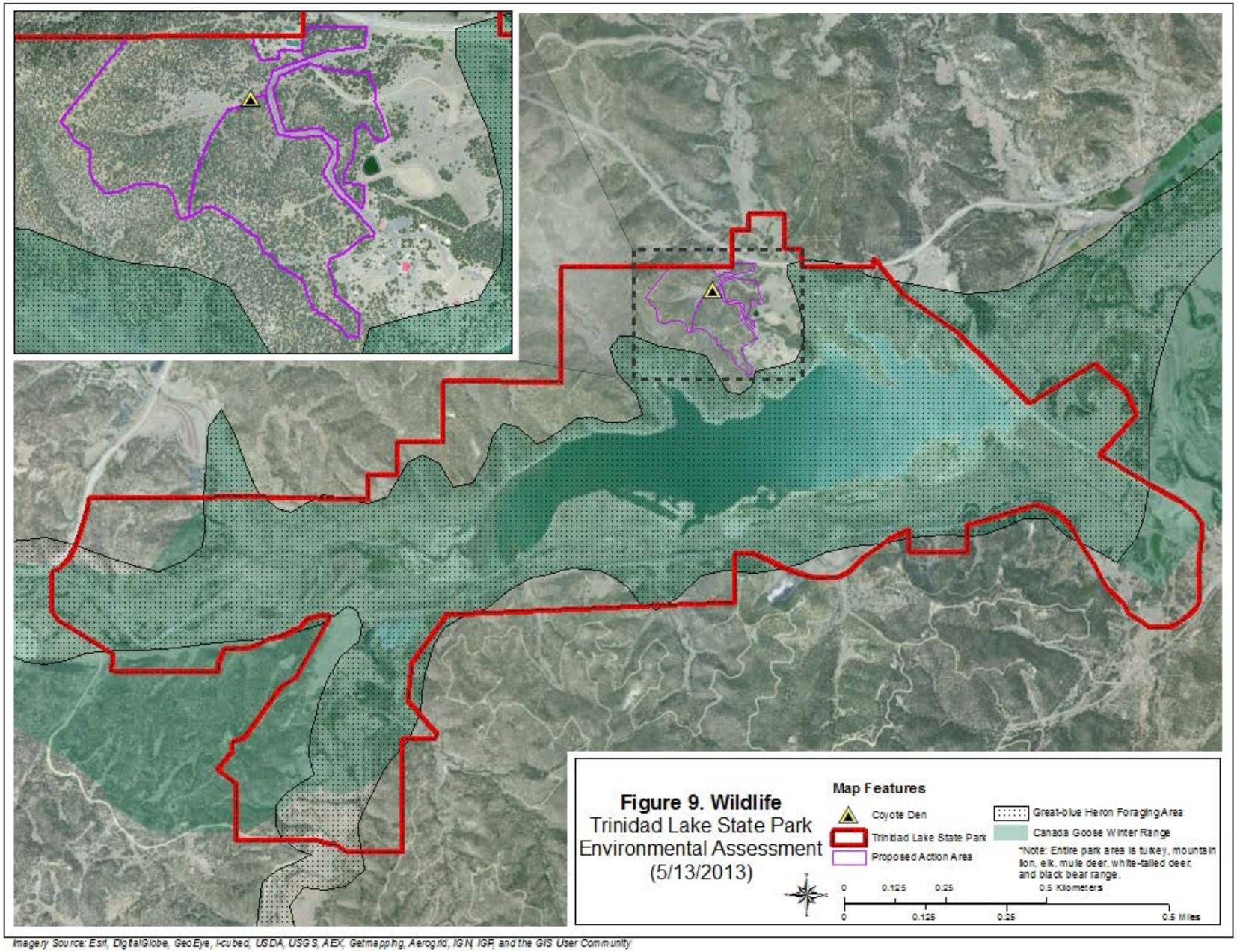
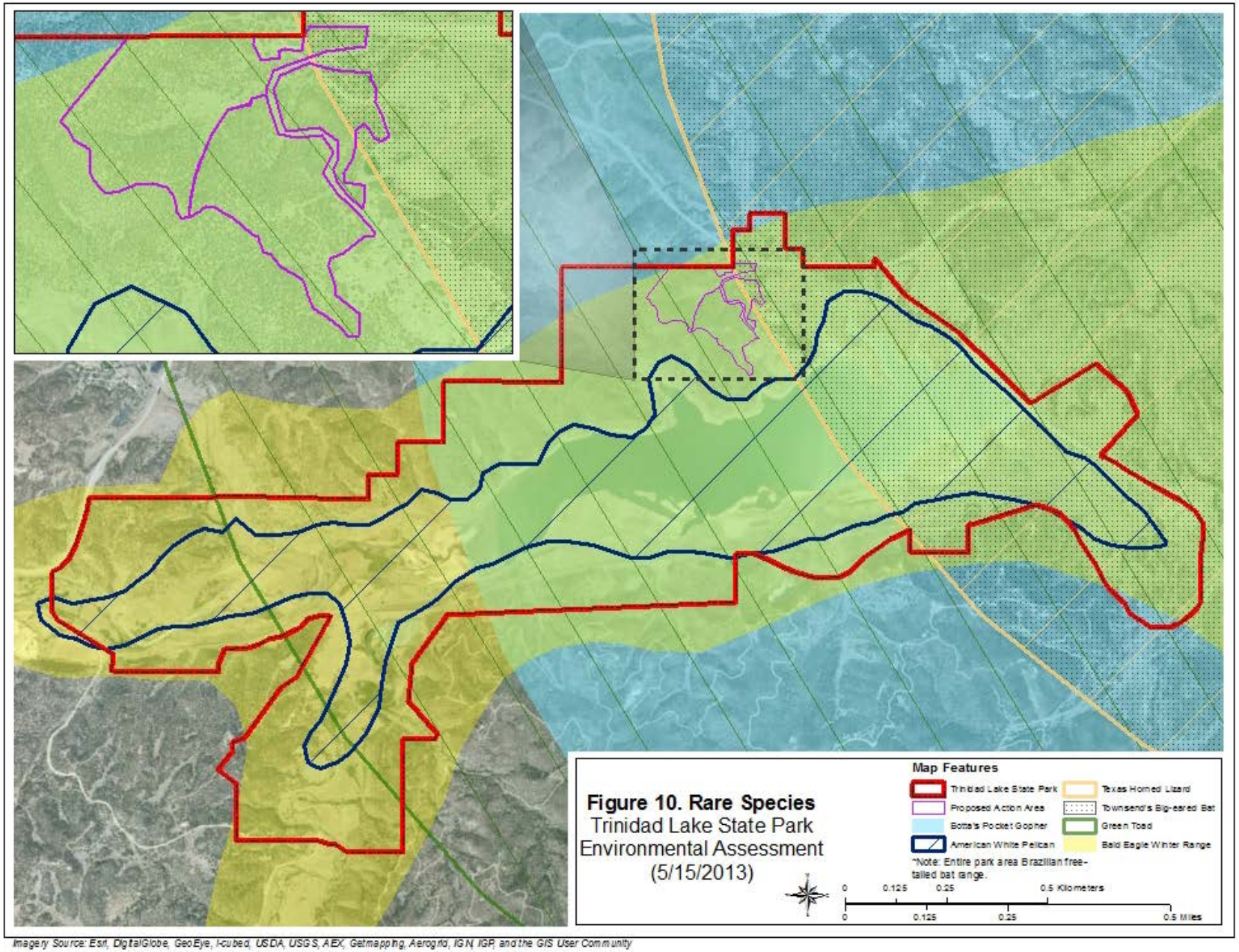


Figure 9. Wildlife
Trinidad Lake State Park
Environmental Assessment
(5/13/2013)
Map Features
Coyote Den
Trinidad Lake State Park
Proposed Action Area
Great-blue Heron Foraging Area
Canada Goose Winter Range
*Note: Entire park area is turkey, mountain lion, elk, mule deer, white-tailed deer, and black bear range.
0 0.125 0.25 0.5 Kilometers
0 0.125 0.25 0.5 Miles
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community


Map Features
Trinidad Lake State Park
Proposed Action Area
Botta's Pocket Gopher
American White Pelican
Texas Horned Lizard
Townsend's Big-eared Bat
Green Toad
Bald Eagle Winter Range
*Note: Entire park area Brazilian free-tailed bat range.
0 0.125 0.25 0.5 Kilometers
0 0.125 0.25 0.5 Miles
Figure 10. Rare Species
Trinidad Lake State Park
Environmental Assessment
(5/15/2013)
Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

3.3 The Human Environment

3.3.1 Land Use

Both actions are predicted to have no impact to the land use of adjacent parcels or within the park. The project is aimed to treat land only in Trinidad LSP and would not alter the way land is managed or owned by any other proprietors outside or within the park.

3.3.2 Infrastructure

Infrastructure within the park includes potable water supply, wastewater treatment, solid waste disposal, energy sources, trails, campgrounds, restroom facilities, the Visitor's Center, and transportation routes.

Trails and campgrounds are used frequently by park visitors. The park contains 14 miles of hiking trails, 46 picnic sites, and 73 campground sites. The Carpios Ridge Campground boundary is next to the south boundary of the project site (Figure 11). The campground will not incur impacts from the project, except for noise impacts which is discussed in section 3.3.5 Noise. Transportation within the park is limited to a few main roads that direct visitors to campgrounds, the lake, picnic areas, and trail heads. There are a total of 1.2 miles of paved roads and 5.0 miles of unpaved roads within the park (CPW, 2001). The majority of the interior park roads are asphalt, with some public roads being gravel and/or dirt. Service roads used by park staff also exist and are primarily gravel and/or dirt and are blocked by gates so that only Park Staff may enter. Surrounding major roads include Interstate 25 to the east (approximately 0.8 miles) and Highway 12 to the North, which actually runs through the park and very close to the project site.

The Preferred Alternative would utilize paved and gravel roads within the park, which could deteriorate their quality. Impacts to roads are expected to be minimal and would be repaired by the contractor. No new roads or parking areas are to be created. Areas used for staging already exist and would not require clearing of vegetation for construction of parking areas (Figure 11). The Preferred Alternative would not impact existing buildings, campgrounds, or picnic sites. The Preferred Alternative would occur close to some trails, but work is expected to be completed in the area within one to two days and will not affect the condition of trails. Contractors would avoid trails to ensure they are not impacted by activity.

The No Action Alternative could harm existing infrastructure by increasing the likelihood of catastrophic fires capable of burning buildings in the park. Harm to buildings and people inside of them would be a risk with choosing the No Action Alternative.

3.3.3 Cultural Resources

Cultural resources include sites, buildings, structures, or objects that may have significant archeological and historic values, or properties that may play a significant traditional role in a community's history, beliefs, customs, and practices.

Sections 106 and 110 of the National Historic Preservation Act (NHPA, 16 USC 470) provide the framework for federal review and protection of cultural resources, and to ensure that they are considered during federal project planning and execution. The implementing regulations for the Section 106 process (36 CFR Part 800) have been developed by the Advisory Council on Historic Preservation (ACHP). The Secretary of Interior maintains a National Register of Historic Places (NRHP) and sets forth significance criteria (36 CFR Part 60) for inclusion in the register. Cultural resources may be considered "historic properties" for the purpose of consideration by a federal undertaking if they meet NRHP criteria. Historic properties may be those that are formally placed in the National Register by the Secretary of the Interior, those that meet the criteria and are determined eligible for inclusion, and historic properties that are yet undiscovered but may meet eligibility criteria.

Archeological resources on federal lands are protected under the Archeological Resources Protection Act (ARPA, 16 USC 470dd). Native American human remains, burials, and associated burial goods are protected under Section 3 (c) of the Native American Graves Protection and Repatriation Act (NAGPRA, 25 USC 3001), and its implementing regulations (43 CFR Part 10). These regulations also require federal officials to take reasonable steps to determine whether a planned activity may result in the excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony from federal lands (43 CFR Part 10.3(c)(1)).

Traditional Cultural Properties (TCPs) are listed under the National Register of Historic Places and qualify if they meet criteria specified in the National Register's Criteria for Evaluation (36 CFR Part 60.4). TCPs possess "traditional" assets that involve beliefs, customs and practices of a living community of people that has been passed down through generations. The traditional culture aspect of a historic site therefore plays a specific role in a community's beliefs, customs, and practices. There were no TCPs found in the project areas and no tribal concerns were raised regarding TCPs.

Indian Trust Assets (ITAs) are a legal interest in assets held in trust by the US Government for Indian tribes or individuals. The US has an Indian Trust Responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statues, executive orders, and rights further interpreted by the courts. The Secretary of the Department of the Interior (DOI), acting as the trustee, holds many assets in trust. Some examples of ITAs are lands, minerals, water rights, hunting and fishing rights, titles and money. ITAs cannot be sold, leased, or alienated without the express approval of the US Government. The Indian Trust Responsibility requires that all federal agencies take all actions reasonably necessary to protect such trust assets.

The Department of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and DOI's Secretarial Order 3175 require that the Corps, as the project's lead federal agency, consult with tribes and assess the impacts of its projects on ITAs. No ITAs are known by the Corps to occur within the proposed project area and no concerns were identified during scoping with Native American tribes.

Cuartelejo HP Associates (Cuartelejo) contracted with CPW to conduct an archaeological pedestrian survey and cultural resources evaluation of the project area in July 2012. The work was conducted under Cuartelejo's state permit number 2012-54. The results of the survey and reevaluation were documented in a report by Richard Carrillo, Roche L. Lindsey and Michelle A. Slaughter titled, *Final Cultural Resources Report for the Fuels Management Class III Cultural Resources Survey, Trinidad Lake State Park, Las Animas County, Colorado*. Two previously recorded prehistoric sites (5LA.1526 and 5LA.8565), were reevaluated, and a five new cultural resources (four isolated finds [IFs] and one prehistoric archaeological site) were identified and documented during the pedestrian survey. Three of the newly recorded resources were prehistoric (IFs 5LA.13142, 5LA. 13145, and site 5LA.13146) and two were historic (IFs 5LA.13143 and 5LA.13144). The USACE determined that 5LA.1526 and 5LA.8565 are eligible for listing under the NRHP criterion "d", 5LA.13146 would be treated as an eligible historic property for the purposes of project planning, and 5LA.13142, 5LA.13143, 5LA.13144, and 5LA.13145 are not eligible for listing in the NRHP. The Colorado State Historic Preservation Officer (SHPO) concurred with USACE determinations of NRHP eligibility and effect for the proposed project on March 15, 2013 (CHS Consultation # 63705). Details of Native American consultation, SHPO concurrence, and the full survey report are located in Appendix 2.

The Preferred Alternative could have negative impacts on sites 5LA.1526, 5LA.8565, and 5LA.13146. BMPs to be followed to avoid adverse effects include:

- Erecting orange construction fence around these sites and a 20 meter buffer to ensure avoidance by heavy machinery.
- Hand thinning would only be used within these sites when necessary, and resultant fuel loads would be scattered around the sites to reduce big fuel loads in one spot and to also help counter erosion impacts.
- CPW staff would periodically visit the site to ensure the BMPs are being followed.

The No Action Alternative would have no impacts to the cultural sites. If a fire occurs in the area, it is likely to be more intense without the proposed thinning, and subsequently could adversely affect the condition of cultural resources in the project area.

3.3.4 Native American Consultation

Consultation with Native American tribes or nations is required under the provisions of the NHPA regulations, Protection of Cultural and Historic Properties (36 CFR Part 800), revised rules effective January 11, 2001, EO 13175 (Consultation and Coordination with Indian Tribal Governments), and Department of Defense Instruction (DoDI) 4710.02 (DoD Interactions with Federally-Recognized Tribes). These statutes recognize the rights and privileges of federally recognized tribes or nations, but not tribes without federal standing or activist groups (Indians and/or non-Indians). The Bureau of Indian Affairs maintains a list of federally recognized tribes. Only federally recognized Tribes or Nations can participate in consultation under the provisions of these statutes and their regulations.

The DoDI 4710.02 provides guidance for interacting and working with federally recognized American Indian and Alaska Native governments or tribes. This Instruction implements DoD policy, assigns responsibilities, and provides procedures for DoD interactions with federally recognized tribes. DoD policy is based on tribal input, federal policy, treaties, and other federal statutes. The DoD policy supports tribal self-governance and government-to-government relations between the federal government and tribes. Although these principles are intended to provide general guidance to DoD components on issues affecting tribes, DoD personnel must consider the unique qualities of individual tribes when applying these principles, particularly at the installation level. These principles recognize the importance of increasing understanding and addressing tribal concerns, past, present, and future. These concerns would be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands.

Scoping letters were sent to 17 members of ten different tribes on March 11, 2013, explaining the project purpose and the finding of historic properties in the project area. No responses from any tribes have been received. Appendix 2 has a list of letter recipients.

3.3.5 Noise

Under NEPA, the Noise Control Act of 1972 (Public Law [PL] 92-574), EO 12088, and 32 CFR 651, federal agencies are required to assess the environmental impact of noise produced by their activities. Within such an assessment, strategies are promulgated to establish proper land-use planning criteria that protect both on- and off-post receptors from environmental noise.

Noise levels at Trinidad LSP is important to consider because of the large numbers of people that camp overnight in the park and because nearby residential communities may hear activities within the park. The park does not have regulations for noise and reduced noise activity hours; however, activities are often postponed to later in the morning and end early in the evening to reduce the risk of disturbing visitors and

neighbors.

The Preferred Alternative would produce noise that could disturb neighbors, the campground, and daytime users. Campgrounds are located on the south and southeast sides of the project area (Figure 11). BMPs that would be followed in order to reduce noise in campgrounds during project activity are:

- Work would occur throughout the project site October 1st through April 1st, 7:00 a.m. to 5:00 p.m., Monday through Friday, except for within 100 meters of the Carpios Ridge Campground. Some months would allow weekend work (see below).

- Work near the campgrounds would occur during non-busy months, December to January, during weekdays from 7:00 a.m. to 5:00 p.m.

- Work would occur on the weekends October 1st through March 1st and would be at least 100 meters away from the campground. The noise level at this distance from a 90 decibels (dB) truck would be approximately 51 dB. A quiet neighborhood usually attenuates approximately 40 dB.

- No machinery would be warmed up before 7:00 a.m.

The No Action Alternative would not impact noise levels at the park.

3.3.6 Hazardous and Toxic Materials/Waste

Hazardous materials are defined within several laws and regulations to have certain meanings. For this document, a hazardous material is any one of the following:

- any substance designated pursuant to Section 311(b)(2) of the CWA;
- any element, compound, mixture, solution, or substance designated pursuant to Section 102 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA);
- any hazardous waste under the Resource Conservation and Recovery Act (RCRA) as defined below;
- any toxic pollutant listed under the Toxic Substances Control Act (TSCA);
- any hazardous air pollutant listed under Section 122 of the CAAA; and
- any imminently hazardous chemical substance or mixture with respect to which the USEPA Administrator has taken action pursuant to Subsection 7 of TSCA.

Hazardous wastes are defined as any solid, liquid, contained gaseous or semi-solid waste, or any combination of wastes, which pose either a substantial present or potential hazard to human health or the environment, as determined by ignitable, corrosive, reactive, or toxic characteristics as defined in RCRA or are specifically listed in the law as an "F", "K", "P", or "U" listed waste.

The Preferred Alternative could have impacts concerning Hazardous and Toxic Materials or Waste but BMPs would be followed by contractors to reduce any fuel spills, including:

- Fueling of equipment would occur within designated areas and at least 100 feet from surface water.
- Storage of fuels, oils, and lubricants would be according to all federal, state and local laws and regulations.
- All equipment that would be used at the site shall be inspected prior to being mobilized to the site to ensure that there are no leaks or drips. Equipment would be inspected daily for leaks. There shall be no fueling of the equipment or maintenance work performed at the project site. The equipment operator shall keep a spill kit on board including absorbent pads that can be used to contain any drips or spills that may result from operating the equipment. Any equipment in disrepair shall be removed from the site immediately.
- A containment system and clean-up of materials would be provided on site.

If a spill were to occur, contractors would be responsible for cleaning the spill area. There are no other impacts expected to occur from the Preferred Alternative.

The current situation that would be maintained by the No Action Alternative does not involve hazardous waste or toxic materials. The Preferred Alternative would potentially introduce fuels and oils to the site, but BMPs will be followed to avoid any effects such materials could have. Therefore, neither Alternative will have an impact to the project site.

3.3.7 Socioeconomics

Neither the Preferred Alternative nor the No Action Alternatives are expected to have any impacts concerning Socioeconomics. The Preferred Alternative and the No Action Alternative do not involve any socioeconomic components.

3.3.8 Environmental Justice

Neither the Preferred Alternative nor the No Action Alternatives are expected to have any impacts concerning Protection of Children and Environmental Justice.

3.3.9 Recreation Opportunities

Trinidad LSP allows hunting, camping, hiking, fishing, and horse-back riding throughout the year. Visitors may hunt waterfowl, rabbits, doves, and other small game from Labor Day to Memorial Day. A campground is next to the project site and a trail runs through the project site (Figure 11).

The Preferred Alternative could deter visitors from camping during the project or alter their use of the park. Contractors would follow BMPs to reduce noise and disturbance to visitors during peak park use season. These BMPs are outlined in Section 3.3.5 Noise. Work near trails would require trail closures, but would aim to be completed in a one to two days to reduce the amount of closure time. Hunting and fishing would not be impacted by this alternative because hunting areas do not overlap with the project site.

The No Action Alternative could result in more catastrophic fires, which would impact recreational activities in the area, depending on the severity of the wildfire and proximity of recreational activities to burned areas. The occurrence of a catastrophic, high intensity fire could result in closure of recreational areas of the park for indefinite periods of time and could reduce healthy vegetation that attracts wildlife which provides recreation for visitors.

3.4 Cumulative Impacts

NEPA defines cumulative impacts as "…the impact on the environment which results from the incremental impact of the action when added to other, past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

A project to create a biking and walking trail from the City of Trinidad to the park has been proposed by the City of Trinidad. Funding for the project and approval from the USACE to construct the trail on their land has still not been approved, so the likelihood of this action is unclear. Planning of the trail is still underway, and the path and proximity of the potential trail to the project site is unknown. It is unlikely the trail project would cumulatively impact the project area because it is unlikely to be implemented in the near future.

Two communities near the park, Spirit Mountain Ranch and Santa Fe Trail Ranch, have Community Wildfire Protection Plans. The plans advise residents to trim Gambel oak scrub and remove trees near structures. These actions are all done on a private property-basis and the extent of fuels treatment in these areas is unknown and unlikely to negatively contribute to cumulative impacts in the area. Additional fire suppression techniques would be beneficial to the overall area by reducing overall fuel loads in the case of a catastrophic, widespread fire.

No other activities have been identified that would contribute to cumulative impacts to the environment in this area.

4.0 Conclusions and Summary

This EA addresses the potential impacts of the reduction of fuels in a 78-acre piñon-juniper woodland in Trinidad LSP. Work is to be completed Monday through Friday, 7:00 A.M. to 5:00 P.M., October 1st – April 1st with the exception of seasonal allowances during non-busy months, and more stringent activity hours and dates when performing work near the campground. The thinning of forest fuels would protect visitors in the park from potential wildfires in the area, create fuel breaks for firefighters, reduce the amount of fuels, lessen the impact of a wildfire, create foraging habitat for wildlife, and reduce woody encroachment in meadows and other grasslands. A summary of impacts produced by the Preferred Alternative and the No Action Alternative can be found in Table 5. Overall, the project is expected to impact some resources, but have no significant on the environment of the project site and surrounding areas. The project is also expected to have numerous beneficial effects to resources in the area and will improve overall ecosystem health in the long-term.

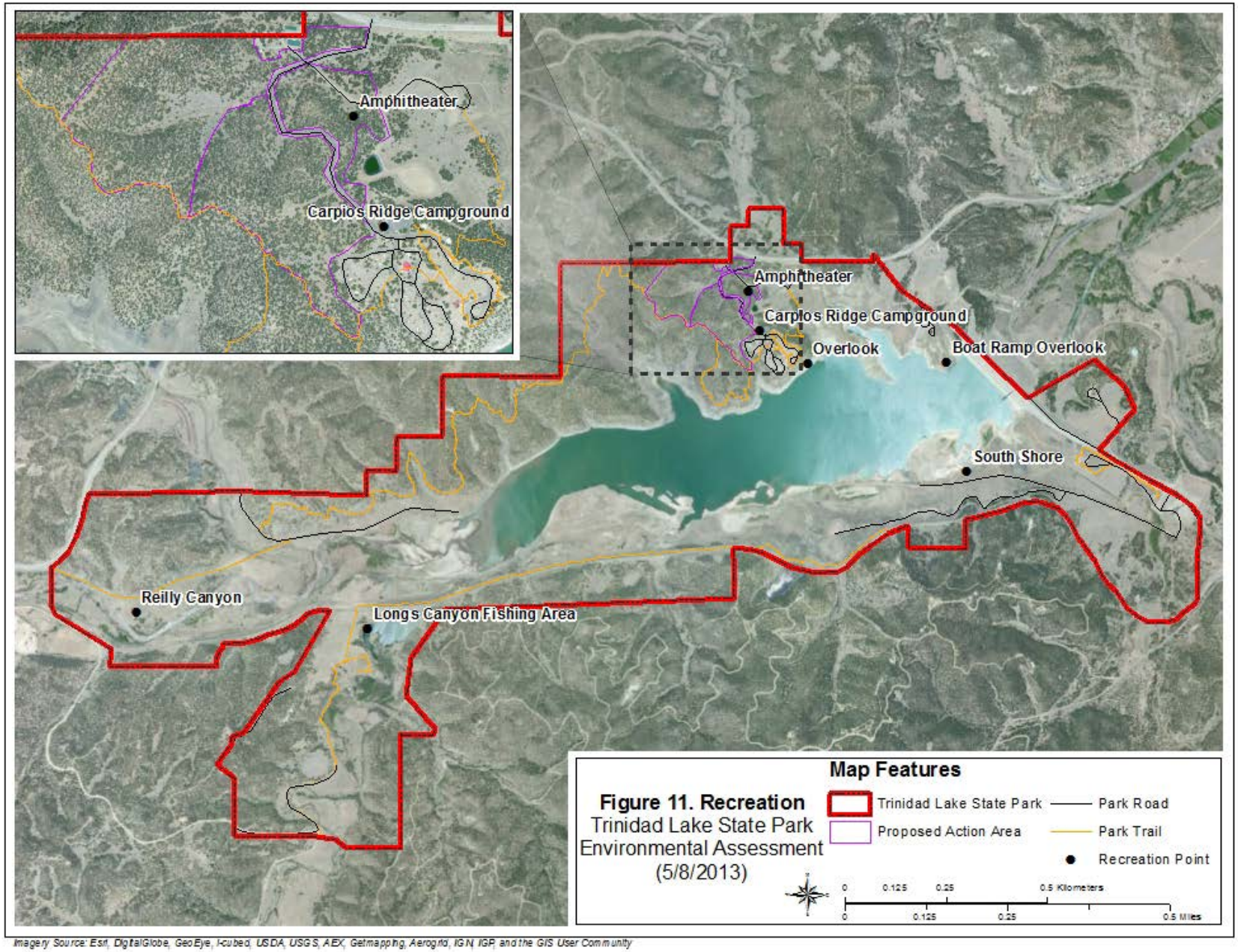


Figure 11. Recreation
Trinidad Lake State Park
Environmental Assessment
(5/8/2013)

Table 5. Summary of Effects of the Preferred Alternative and No Action Alternative.

Resource	Preferred Alternative		No Action Alternative	
	Short-term effect	Long-term effect	Short-term effect	Long-term effect
Air Quality	Minor adverse effect	No effect to beneficial effect	No effect	No effect to minor adverse effect
Soils	Minor adverse effect	Beneficial effect	No effect	No effect to adverse effect
Geology	No effect	No effect	No effect	No effect
Climate and Climate Change	No effect	No effect	No effect	No effect
Hydrology, water quality, wetlands and floodplains	No effect	No effect	No effect	No effect to minor adverse effect
Vegetation Communities	Minor adverse effect	Beneficial effect	Adverse effect	Adverse effect
Invasive Species and Noxious Weeds	No effect	No effect	No effect	No effect to adverse effect
Fish and Wildlife	Minor adverse effect	Beneficial effect	No effect	Adverse effect
Threatened, Endangered, and Rare Species	No effect	No effect	No effect	No effect
Infrastructure	No effect	No effect	No effect	No effect to adverse effect
Cultural Resources	No effect	No effect to beneficial effect	No effect	No effect to adverse effect
Noise	Minor adverse effect	No effect	No effect	No effect
Hazardous Waste and Toxic Materials	No effect	No effect	No effect	No effect
Recreational Opportunities	Minor adverse effect	No effect	No effect	No effect to adverse effect
Public Safety	Beneficial effect	Beneficial effect	No effect	No effect to adverse effect
Land Use	No effect	No effect	No effect	No effect
Socioeconomics and Environmental Justice	No effect	No effect	No effect	No effect
Cumulative Impacts	No effect	No effect	No effect	No effect

5.0 Preparation, Consultation and Coordination

5.1 Preparation

This EA was prepared by AMEC, Environment & Infrastructure, Inc. for CPW and USACE. Personnel primarily responsible for the preparation include:

- Melissa Greulich, Environmental Scientist, AMEC
- Matt Schulz, Forest Management and GIS Coordinator, CPW

5.2 Quality control

This Environmental Assessment has been reviewed for quality control purposes. Reviewers include:

- Doug McFarling, Principal Program Manager, AMEC
- Dana Price, Botanist, USACE
- Jeremy Decker, Archaeologist, USACE
- Julie Alcon, Chief, Environmental Resources Section, USACE
- Chelsea Reale, Environmental Scientist, USACE

5.3 Consultation and Coordination

Agencies that were consulted in the process of creating this EA include:

- US Fish and Wildlife Service
- The City of Trinidad, Colorado
- Arkansas Valley Audubon Society
- Rocky Mountain Bird Observatory
- Colorado State Land Board

The USACE and CPW closely coordinated to produce the EA. An initial meeting was held prior to conducting research and outlined all foreseeable effects and issues to address.

5.4 Public and Agency Review

The public review of the draft EA occurred May 31, 2013 – June 30, 2013. A Notice of Availability was published in the Trinidad Times on May 31, 2013. A copy of the Notice of Availability and affidavit of publication appear in Appendix 1. Letters of

notification were sent to individuals and agencies listed in Appendix 1 Section 1.6. Copies of the draft EA were available on the websites of USACE and CPW. Paper copies were available on request or at the Carnegie Public Library, 202 N. Animas St., Trinidad, Colorado and at the Trinidad Lake State Park Visitor's Center. No comments were received from the public. One individual requested additional information but did not wish to comment.

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