

tribes contacted: Miwok Tribe of El Dorado Rancheria, Shingle Springs Rancheria, Todd Valley Miwok Maidu Cultural Foundation, UAIC, Washoe Tribe of NV and CA, El Dorado Co. Indian Council. Consultation concluded there would be no impacts to tribal cultural resources.

**3.19 UTILITIES AND SERVICE SYSTEMS**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.19.1 Discussion**

*Would the proposed project:*

- a. **Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?**

**No Impact.** The projects would not require relocation or construction of new or expanded water or wastewater treatment facilities; nor are electric power, natural gas, or telecommunication facilities required to complete the work. All work consists of restoration of damaged trails or other areas using mobile equipment. No utilities are needed to complete the work.

- b. **Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

**No Impact.** No new water supplies or entitlements would be needed to complete the restoration projects because there would be no change of existing water use associated with any of the projects.

- c. **Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

**No Impact.** No project activities involve or affect wastewater treatment. The projects would not require construction of new or expanded water or wastewater treatment facilities. The projects have no wastewater disposal needs. All project employees would have access to portable toilets.

- d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**
- e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

**No Impact.** (Responses d and e) The projects would not violate any statutes and regulations related to solid waste disposal as the restoration projects would not generate substantial amounts of solid waste.

**3.20 WILDFIRE**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
Is the project located in or near state responsibility areas or lands classified as high fire hazard severity zones? If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.20.1 Discussion**

*If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*

**a) Substantially impair an adopted emergency response plan or emergency evacuation plan?**

**No Impact.** Implementation of the restoration projects would not impair implementation of or physically interfere with the existing emergency response plan or emergency evacuation plan; only illegal routes would be restored.

**b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

**No Impact.** The project would not exacerbate wildfire risks as all machinery and vehicles would remain on hardened surfaces, and all potentially spark producing equipment would have spark arrestors.

- c) Require the installation of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

**No Impact.** The project does not involve the installation of infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. The restoration work thus does not require construction of new roads, fuel breaks, emergency water sources, power lines or other utilities. The work involves the one-time short duration use of machinery and labor to restore native ground on illegal roads and other areas disturbed by unauthorized OHV use.

- d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

**No Impact.** The project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. None of the project sites are within the urban/wildland interface; they are fully contained in a national forest. The restoration work does not pose a threat of future slope instability or other risks due to wildland fire.

**3.21 MANDATORY FINDINGS OF SIGNIFICANCE**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the efforts of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.21.1 Discussion**

*Would the proposed project:*

- a. **Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

**No Impact.** The proposed restoration work would not substantially degrade the quality of the environment, significantly impact fish or wildlife species or their habitat, adversely affect plant or animal communities, or affect historic or other cultural resources. The work would return USFS land to more natural conditions, which should benefit biological and cultural resources by minimizing disturbance.

- b. **Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the efforts of past projects, the effects of other current projects, and the effects of probable future projects)?**

**No Impact.** The potential for negative direct, indirect, or cumulative effects from implementation of restoration projects would be minimized with the implementation of the USFS design criteria and management requirements, including BMPs. All projects are expected to lead to positive direct, indirect, and cumulative effects by removing illegal OHV routes and restoring other areas

disrupted by OHV use. The cumulative effects from implementation of the projects are improved and enhanced recreational experiences through the restoration work.

**c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

**No Impact.** Implementation of restoration projects would not have environmental effects that would cause substantial adverse effects on humans, either directly or indirectly.

## Chapter 4 REFERENCES AND REPORT PREPARATION

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### 4.1.1 References

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- \_\_\_\_\_. 2015. Elkins Flat Restoration Project Environmental Assessment, Placerville Ranger District, Eldorado National Forest, El Dorado County, California, October 2015. EA includes a CEQA Environmental Analysis.
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#### **4.1.2 Personal Communication**

Josh Sjostrom, Recreation Officer, USFS, Placerville Ranger District. Email with Phil Gleason. RE: Need clarifying info for G17-02-03-R01. September 25, 2018.

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#### **4.1.3 Report Preparers**

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Appendix A: Design Criteria Incorporated into the Restoration Projects

Appendix B: Representative Photos of Restoration Activities

Appendix C: AQ Modelling Data

## Appendix B – Best Management Practices (BMPs)

Table 8 Region 5 Water Quality Management Handbook

BMP Number	BMP Practice (USDA 2011b)	BMP Objective
<b>12.11 Timber Management BMPs</b>		
1.1	Timber Sale Planning Process	To incorporate water-quality and hydrologic considerations into the timber sale planning process.
1.2	Timber Harvest Unit Design	To ensure that timber harvest unit design will secure favorable conditions of water quality and quantity, while maintaining desirable stream channel characteristics and watershed conditions. The design should consider the size and distribution of natural structures (snag and down logs) as a means of preventing erosion and sedimentation.
1.3	Determination of Surface Erosion Hazard for Timber Harvest Unit Design	To identify high-erosion hazard areas to adjust treatment measures and prevent downstream water-quality degradation.
1.4	Using Sale Area Maps and/or Project Maps for Designating Water-Quality Protection Needs	To ensure recognition and protection of areas related to water-quality protection delineated on a sale-area map or a project map.
1.5	Limiting the Operating Period of Timber Sale Activities	To ensure that the purchasers conduct their operations, including, erosion-control work, road maintenance, and so forth, in a timely manner, within the time specified in the timber sale contract.
1.6	Protecting Unstable Lands	To provide special treatment of unstable areas to avoid triggering mass slope failure with resultant erosion and sedimentation.
1.8	Streamside Management Zone Designation	To designate a zone along riparian areas, streams, and wetlands that will minimize potential for adverse effects from adjacent management activities. Management activities within these zones are designed to improve riparian values.
1.9	Determining Tractor-loggable Ground	To minimize erosion and sedimentation resulting from ground disturbance of tractor logging systems.
1.10	Tractor Skidding Design	By designing skidding patterns to best fit the terrain, the volume, velocity, concentration, and direction of runoff water can be controlled in a manner that will minimize erosion and sedimentation.
1.12	Log Landing Location	To locate new landings or reuse old landings in such a way as to avoid watershed impacts and associated water quality degradation.
1.13	Erosion Prevention and Control Measures during Timber Sale Operations	To ensure that the purchasers' operations will be conducted reasonably to minimize soil erosion.
1.14	Special Erosion-prevention Measures on Disturbed Land	To provide appropriate erosion and sedimentation protection for disturbed areas.
1.16	Log Landing Erosion Control	To reduce the impacts of erosion and subsequent sedimentation associated with log landings by use of mitigating measures.
1.17	Erosion Control on Skid Trails	To protect water quality by minimizing erosion and sedimentation derived from skid trails.
1.18	Meadow Protection During Timber Harvesting	To avoid damage to the ground cover, soil, and the hydrologic function of meadows.

1.19	Streamcourse and Aquatic Protection	<p>1) To conduct management actions within these areas in a manner that maintains or improves riparian and aquatic values.</p> <p>2) To provide unobstructed passage of stormflows.</p> <p>3) To control sediment and other pollutants entering streamcourses.</p> <p>4) To restore the natural course of any stream as soon as practicable, where diversion of the stream has resulted from timber management activities.</p>
1.20	Erosion-control Structure Maintenance	To ensure that constructed erosion-control structures are stabilized and working.
1.21	Acceptance of Timber Sale Erosion-control Measures Before Sale Closure	To ensure the adequacy of required erosion-control work on timber sales.
1.22	Slash Treatment in Sensitive Areas	To maintain or improve water quality by protecting sensitive areas from degradation which would likely result from using mechanized equipment for slash disposal.
1.25	Modification of the Timber Sale Contract	To modify the TSC if new circumstances, or conditions indicate that the timber sale will damage soil, water, or watershed values.
<b>12.21 Road Management BMPs</b>		
2.2	General Guidelines for the Location and Design of Roads	Locate roads to minimize problems and risks to water; aquatic, and riparian resources. Incorporate measures that prevent or reduce impacts, through design for construction, reconstruction, and other route system improvements.
2.3	Road Construction and Reconstruction	Minimize erosion and sediment delivery from roads during road construction or reconstruction, and their related activities.
2.4	Road Maintenance and Operations	To ensure water-quality protection by providing adequate and appropriate maintenance and by controlling road use and operations.
2.5	Water Source Development and Utilization	To supply water for road construction, maintenance, dust abatement, fire protection, and other management activities, while protecting and maintaining water quality.
2.6	Road Storage	Ensure that roads placed in storage are maintained so that drainage facilities and runoff patterns function properly, and damage to adjacent resources is prevented. Stored roads are managed to be returned to service, at various intervals.
2.7	Road Decommissioning	<p>Stabilize, restore, and vegetate unneeded roads to a more natural state as necessary to protect and enhance NFS lands, resources, and water quality. The end result is that the decommissioned road will not represent a significant impact to water quality by:</p> <ol style="list-style-type: none"> <li>1. Reducing erosion from road surfaces and slopes and related sedimentation of streams;</li> <li>2. Reducing risk of mass failures and subsequent impact on water quality;</li> <li>3. Restoring natural surface and subsurface drainage patterns;</li> <li>4. Restoring stream channels at road crossings and where roads run adjacent to channels.</li> </ol>
2.8	Stream Crossings	Minimize water, aquatic, and riparian resource disturbances and related sediment production when constructing,

		reconstructing, or maintaining temporary and permanent water crossings.
2.10	Parking and Staging Areas	Construct, install, and maintain an appropriate level of drainage and runoff treatment for parking and staging areas to protect water, aquatic, and riparian resources.
2.11	Equipment Refueling and Servicing	Prevent fuels, lubricants, cleaners, and other harmful materials from discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources.
2.13	Erosion Control Plan	Effectively limit and mitigate erosion and sedimentation from any ground-disturbing activities, through planning prior to commencement of project activity, and through project management and administration during project implementation. 1. Provide seamless transition between planning-level (NEPA) mitigation descriptions and on-the-ground implementation of erosion-control measures tailored to site conditions. 2. Ensure that all disturbance-related mitigation requirements and provisions for field revisions or modifications are accurately captured in one comprehensive document for each project or activity. 3. Activities include, but are not limited to: timber sale harvest; facility site, road, bridge; trail and appurtenance construction, reconstruction, and maintenance; watershed improvement; road and trail decommissioning; legacy site restoration, administratively permitted activities; and vegetation and fuels management activities. 4. Comply with overarching area plans, such as Northwest Forest Plan and Sierra Nevada Framework Plan Amendment.
<b>12.51 Vegetation Manipulation BMPs</b>		
5.2	Slope Limitations for Mechanical Equipment Operation	To reduce gully and sheet erosion and associated sediment production by limiting tractor use.
5.3	Tractor Operation Limitation in Wetlands and Meadows	To limit turbidity and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion by excluding the use of mechanical equipment in wetland and meadows except for the purpose of restoring wetland and meadow function.
5.6	Soil Moisture Limitations for Mechanical Equipment Operations	To prevent compaction, rutting, and gulying, with resultant sediment production and turbidity.
5.7	Pesticide Use Planning Process	To introduce water quality and hydrologic considerations into the pesticide use planning process.
5.8	Pesticide Application According to Label Directions and Applicable Legal Requirements	To avoid water contamination by complying with all label instructions and restrictions for use.
5.9	Pesticide Application Monitoring and Evaluation	a. To determine whether pesticides have been applied safely, were restricted to intended target areas, and have not resulted in unexpected non-target effects. b. To document and provide early warning of hazardous conditions resulting from possible pesticide contamination of water or other non-target areas. c. To determine the extent, severity, and duration of any potential hazard that might exist.

5.10	Pesticide Spill Contingency Planning	To reduce contamination of water by accidental pesticide spills.
5.11	Cleaning and Disposal of Pesticide Containers and Equipment	To prevent water contamination resulting from cleaning, or disposal of pesticide containers.
5.12	Streamside Wet Area Protection During Pesticide Spraying	To minimize the risk of pesticides inadvertently entering waters, or unintentionally altering the riparian area, SMZ, or wetland.
5.13	Controlling Pesticide Drift During Spray Application	To minimize the risk of pesticide falling directly into water, or non-target areas.
<b>12.61 Fire Suppression and Fuels Management BMPs</b>		
6.2	Consideration of Water Quality in Formulating Fire prescriptions	To provide for water-quality protection while achieving the management objective through the use of prescribed fire.
6.3	Protection of Water Quality from Prescribed Burning Effects	To maintain soil productivity; minimize erosion; and minimize ash, sediment, nutrients, and debris from entering water bodies.
<b>12.71 Watershed Management BMPs</b>		
7.4	Forest and Hazardous Substance Spill Prevention Control and Countermeasure Plan	To prevent contamination of waters from accidental spills.
7.8	Cumulative Off-site Watershed Effects	To protect the identified beneficial uses of water from the combined effects of multiple management activities which individually may not create unacceptable effects, but collectively may result in degraded water-quality conditions.

Table 9 National BMPs for Water Quality Management on National Forest System Lands

BMP Number	BMP Practice (USDA 2012b)	BMP Objective
<b>General Planning Activities</b>		
Plan-1	Forest and Grassland Planning	Use the land management planning and decisionmaking processes to incorporate direction for water quality management consistent with laws, regulation, and policy into land management plans.
Plan-2	Project Planning and Analysis	Use the project planning, environmental analysis, and decisionmaking processes to incorporate water quality management BMPs into project design and implementation.
Plan-3	Aquatic Management Zone Planning	To maintain and improve or restore the condition of land around and adjacent to waterbodies in the context of the environment in which they are located, recognizing their unique values and importance to water quality while implementing land and resource management activities.
<b>Aquatic Ecosystem Management Activities</b>		
AqEco-1	Aquatic Ecosystem Improvement and Restoration Planning	Reestablish and retain ecological resilience of aquatic ecosystems and associated resources to achieve sustainability and provide a broad range of ecosystem services.
AqEco-2	Operations in Aquatic Ecosystems	Avoid, minimize, or mitigate adverse impacts to water quality when working in aquatic ecosystems.
AqEco-4	Stream Channels and Shorelines	Design and implement stream channel and lake shoreline projects in a manner that increases the success in meeting

		project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality, and riparian resources.
<b>Chemical Use Management Activities</b>		
Chem-1	Chemical Use Planning	Use the planning process to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from chemical use on NFS lands.
Chem-2	Follow Label Directions	Avoid or minimize the risk of soil and surface water or groundwater contamination by complying with all label instructions and restrictions required for legal use.
Chem-3	Chemical Use Near Waterbodies	Avoid or minimize the risk of chemical delivery to surface water or groundwater when treating areas near waterbodies.
Chem-5	Chemical Handling and Disposal	Avoid or minimize water and soil contamination when transporting, storing, preparing and mixing chemicals; cleaning chemical equipment; and cleaning or disposing chemical containers.
Chem-6	Chemical Application Monitoring and Evaluation	Determine whether chemicals have been applied safely, have been restricted to intended targets, and have not resulted in unexpected nontarget effects.
<b>Wildland Fire Management Planning</b>		
Fire-1	Wildland Fire Management Planning	Use the fire management planning process to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during wildland fire management activities.
Fire-2	Use of Prescribed Fire	Avoid, minimize, or mitigate adverse effects of prescribed fire and associated activities on soil, water quality, and riparian resources that may result from excessive soil disturbance as well as inputs of ash, sediment, nutrients, and debris.
Fire-3	Wildland Fire Control and Suppression	Avoid or minimize adverse effects to soil, water quality, and riparian resources during fire control and suppression efforts.
Fire-4	Wildland Fire Suppression Damage Rehabilitation	Rehabilitate watershed features and functions damaged by wildland fire control and suppression-related activities to avoid, minimize, or mitigate long-term adverse effects to soil, water quality, and riparian resources.
<b>Road Management Activities</b>		
Road-1	Travel Management Planning and Analysis	Use the travel management planning and analysis processes to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during road management activities.
Road-2	Road Location and Design	Locate and design roads to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.
Road-3	Road Construction and Reconstruction	Avoid or minimize adverse effects to soil, water quality, and riparian resources from erosion, sediment, and other pollutant delivery during road construction or reconstruction.
Road-4	Road Operations and Maintenance	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling road use and operations and providing adequate and appropriate maintenance to minimize sediment production and other pollutants during the useful life of the road.
Road-5	Temporary Roads	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from the construction and use of temporary roads.

Road-6	Road Storage and Decommissioning	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by storing closed roads not needed for at least 1 year (Intermittent Stored Service) and decommissioning unneeded roads in a hydrologically stable manner to eliminate hydrologic connectivity, restore natural flow patterns, and minimize soil erosion.
Road-7	Stream Crossings	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing, reconstructing, or maintaining temporary and permanent waterbody crossings.
Road-9	Parking and Staging Areas	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing and maintaining parking and staging areas.
Road-10	Equipment Refueling and Servicing	Avoid or minimize adverse effects to soil, water quality, and riparian resources from fuels, lubricants, cleaners, and other harmful materials discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources during equipment refueling and servicing activities.
Road-11	Road Storm-Damage Surveys	Monitor road conditions following storm events to detect road failures; assess damage or potential damage to waterbodies, riparian resources, and watershed functions; determine the causes of the failures; and identify potential remedial actions at the damaged sites and preventative actions at similar sites.
<b>Mechanical Vegetation Management Activities</b>		
Veg-1	Vegetation Management Planning	Use the applicable vegetation management planning processes to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during mechanical vegetation treatment activities.
Veg-2	Erosion Prevention and Control	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by implementing measures to control surface erosion, gully formation, mass slope failure, and resulting sediment movement before, during, and after mechanical vegetation treatments.
Veg-3	Aquatic Management Zones	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when conducting mechanical vegetation treatment activities in the AMZ.
Veg-4	Ground-Based Skidding and Yarding Operations	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during ground-based skidding and yarding operations by minimizing site disturbance and controlling the introduction of sediment, nutrients, and chemical pollutants to waterbodies.
Veg-6	Landings	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from the construction and use of log landings.
Veg-7	Winter Logging	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from winter logging activities.
Veg-8	Mechanical Site Treatment	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling the introduction of sediment, nutrients, chemical, or other pollutants to waterbodies during mechanical site treatment.



## Georgetown Project Design Criteria

In addition to all relevant best management practices, the proposed action includes the following specific requirements:

- Design Criteria Related to Sensitive Plants
  - Any sensitive or watchlist plant occurrences discovered prior to or during project implementation would be reported to the project botanist and flagged for avoidance.
- Design Criteria Related to Noxious Weeds
  - Known infestations of invasive plant species would be flagged with noxious weed flagging prior to project implementation and would be avoided or treated in accordance with the *Forestwide Treatment of Invasive Species Project* (ENF 2013).
  - Work on trails that pass through extensive infestations would be conducted last, otherwise equipment would be cleaned prior to working on other uninfested NFS lands.
  - Any newly discovered infestations of invasive plant species would be mapped, reported to the project botanist, and evaluated for possible treatment and/or avoidance.
  - Equipment would be cleaned prior to entering the project area to avoid the introduction of invasive plant species.
  - Mulch or straw used for erosion control would be certified weed free. A certificate from the county of origin stating the material was inspected is required.
  - Any seed used for erosion control or restoration would be from a locally collected source and approved by the project botanist.
- Design Criteria related to Terrestrial Wildlife Species
  - The District Biology Staff would be notified prior to restoration of segments of routes within ¼ mile of known or suspected breeding centers for Northern Goshawk and California Spotted Owl in order to obtain current species occupancy status. If breeding centers are occupied, a limited operating period would restrict disturbance caused by noise and human presence during the breeding season for spotted owl (March 1- August 31) and goshawk (February 15-September 15).
- Design Criteria Related to Aquatic Wildlife Species
  - A 300 foot buffer surrounding identified suitable habitat for TES amphibian species will exclude ground disturbing activities.
  - A spotter will walk in front of machinery to prevent squishing of frogs and turtles, if they are present.

- Design Criteria Related to Cultural Resources
  - The District Archeologist will be notified in advance of implementation.
  - If previously unrecorded sites are discovered, work would cease until activities are approved by the District Archeologist.

## Design Features

- The use of ground-based mechanized/motorized vehicles or equipment to implement the restoration activities would not occur during the proposed seasonal closures for Deer Valley 4wd Trail (19E01) and the Blue Lakes/Meadow Lake Road (09N01) to limit impacts to Yosemite toad and Sierra Nevada yellow-legged frog.
- Restoration activities associated with Deer Creek and the unnamed perennial stream between Meadow Lake and Twin Lake would be completed during a period of low streamflow. This typically occurs in late summer and early fall. The project Hydrologist will be consulted before implementation of work to the Deer Valley 4wd Trail (19E01) and Blue Lakes/Meadow Lake Road (09N01) to insure that streamflow is low enough for road maintenance and restoration activities to occur.
- Restoration activities associated with Deer Valley 4wd Trail (19E01) and Blue Lakes/Meadow Lake Road (09N01) would be monitored for efficacy as outlined in the Eldorado National Forest Travel Management SEIS Settlement Agreement Monitoring Plan (2015).
- All equipment would avoid traveling off the hardened road surface (i.e. outside of the route footprint) or crossing into aquatic habitat *to the extent possible* during restoration activities associated with the hardening of the approaches at the stream crossing at Deer Creek (in meadow 9N83-2) along the Deer Valley 4wd Trail and the culvert installation, repair, and maintenance on the Blue Lakes/Meadow Lake Road. Aquatic habitat includes the portion of route 19E01 that crosses directly through Deer Creek.
- Where equipment travels off the hardened road surface for restoration work, such as the reroute, these areas shall be surveyed for existing Yosemite toads just prior to starting work to avoid crushing. Surveys for Yosemite toads and Sierra Nevada yellow-legged frogs will be conducted by qualified Forest Service personnel just prior to starting work to avoid crushing. If either Sierra Nevada yellow-legged frogs or Yosemite toads are found within the area, the potential for direct impacts shall be assessed by qualified personnel and dealt with according to the Terms and Conditions described in USDI FWS 2014. Since Yosemite toads have been found to have site fidelity to burrows, extra attention will be given to identify existing burrows during the survey.

Burrows will be avoided where possible. Qualified personnel (i.e. biologist) will remain on-site during implementation of all of the proposed restoration and maintenance actions.

- Fuels and other toxic materials will be stored outside of riparian conservation areas (per SNFPA S&G 99) to limit the exposure of the listed species to the toxic materials.
- The use of low velocity water pumps and screening devices for pumps (per SNFPA S&G 110) will be utilized during drafting for project treatments to preventing mortality of eggs, tadpoles, juveniles, and adult Sierra Nevada yellow-legged frog and Yosemite toad. A drafting box measuring 2 feet on all sides covered in a maximum of 0.25 inch screening is required.
- The efficacy and accuracy of the snow sensor at Blue Lake for indicating snow melt conditions in the project area will be assessed by FS biologists or other qualified staff during the first few seasons of implementing the seasonal closure. Field verification of snow melt and trail condition will occur prior to lifting the seasonal closure.
- If Lahontan Cutthroat Trout are found in Meadow, Blue, or Deer Creek, their safety shall be assessed by the on-site biologist and the USFWS will be notified of the occupancy detection.
- Should any Forest Service sensitive plant species or watch list plant species be located associated with this project location, district biology staff would be informed, and steps taken to evaluate, and mitigate any possible effects not covered by this assessment.
- A limited operating period (LOP) for northern goshawks (February 15 through September 15) would restrict restoration activities along a portion of the Deer Valley 4wd Trail that is located within ¼ mile of the goshawk activity center, unless surveys confirm that goshawks are not nesting. The timing of the LOP would coincide with the hydrology design criteria for restoration activities taking place during a period of low stream flow.
- All off-road equipment would be cleaned to insure it is free of soil, seeds, vegetative matter or other debris that could contain seeds before entering the project area.
- Any straw or mulch used for erosion control would be certified weed-free. A certificate from the county of origin stating the material was inspected is required.
- Any revegetation material used for restoration or erosion control would be from a locally collected source.
- Infestations of noxious weeds that are discovered during project implementation would be documented and locations mapped. New sites would be reported to the Forest botanist.
- All gravel, fill, rock or other material would be weed free. Onsite sand, gravel, or rock would be used where possible.
- Known cultural resource sites will be flagged prior to work and avoided during implementation. There is to be no vehicle travel, vehicle or material staging, rock collection, or tree felling within the flagged areas.

- Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area and the District Archaeologist be notified immediately. Work may resume after approval by the District Archaeologist; provided any recommended Standard Protection Measures are implemented.

**Table 3. Design Criteria for the Cody Meadow Restoration Project.**

Resource	Design Criteria
Hydrology	<ul style="list-style-type: none"> <li>Construction activities in Cody Meadow would occur during the time of the year when the flow of Cody Creek is at its lowest. This typically occurs between August 1 and October 30.</li> <li>Appropriate permits would be obtained and best management practices used to prevent impacts to downstream water quality during implementation.</li> <li>Construction would be supervised on-site by at least one person who has worked on at least one previous pond and plug project.</li> <li>Construction activities in Cody Meadow would occur after the completion of action item #3.</li> <li>There will be no livestock use of Cody Meadow for at least five years following construction activities and only after resource specialists have determined that livestock use would not destabilize stream segments and plugs and ponds.</li> <li>Fill material associated with the culvert would be used to construct plugs associated with action item #2.</li> <li>The boardwalk across Cody Meadow would be designed to allow passage by people and horses (no vehicles), as well as to allow for the movement of surface water and subsurface water through the meadow.</li> <li>The boardwalk would be designed and constructed by a company that has experience in constructing boardwalks across wet meadows.</li> <li>The design of the boardwalk would be approved one or more of the following: project Hydrologist, Aquatic Specialist, Soil Scientist.</li> <li>Action items 7 and 8 would be supervised by one or more of the following: Hydrologist, Aquatic Specialist, Botanist, Soil Scientist.</li> </ul>
Aquatics	<p>Surveys shall be conducted prior to implementation of the project for Sierra Nevada yellow-legged frogs within and adjacent to the project area. Should any TES species be located before or during implementation, protection measures/mitigations would be implemented to reduce potential for effects to TES species as recommended by biologists.</p>
Soils	<p>Action item #1 would be supervised by the project Soil Scientist. If the project Soil Scientist is not available, then action item #1 would be supervised by the project Hydrologist.</p>
Recreation	<ul style="list-style-type: none"> <li>Action item #5 would be supervised by the project Recreation Specialist or by a person designated by the project Recreation Specialist.</li> <li>The trail (between road 10N04 and the western edge of Cody Meadow) would be designated for use by horses, hikers, and mountain bicycles. The trail would not be designed for use by motorized vehicles.</li> </ul>
Wildlife	<ul style="list-style-type: none"> <li>Should any TEPS species be located before or during project implementation, protection measures/mitigations would be implemented to mitigate potential for effects to species as recommended by the district wildlife biologist.</li> <li>On-site surveys will be conducted for the western bumblebee in areas of proposed work prior to implementation to assess if the species is in the area of concern and if mitigation measures are needed.</li> <li>Meadow and adjacent habitat will be surveyed to assess if great gray owl and willow flycatcher have become established in the area prior to restoration work and applicable mitigation measures put in place to reduce potential impacts. Should the great gray owl be detected, a LOP from March 1 to August 15 (SNFP SEIS ROD Appendix A-39) will be put into place for nesting birds.</li> <li>LOPs will be placed from March 1 through August 15 for spotted owls nesting within ¼ mile of project activities (SNFP SEIS ROD Appendix A-60, Appendix A-38).</li> <li>LOPs will be placed from February 15 through September 15 for northern goshawk nesting within ¼ mile of project activities (SNFP SEIS ROD Appendix A-60, Appendix A-62).</li> <li>LOPs will be placed from May 1 through June 30 to protect marten den sites (100-acre buffers) from disturbance 30 (SNFP SEIS ROD Appendix A-62) if marten are detected denning in the area.</li> <li>Should golden or bald eagles roost or nest in or adjacent to the project, mitigations under the Eagle Act will aid in preventing disturbance.</li> <li>To prevent disturbance to deer, LOPS will be placed from May until the end of July to enable the area to provide security cover and lack of disturbance to does delivering and caring for fawns.</li> <li>The boardwalk will be designed so as not to present a barrier to deer and other terrestrial wildlife and will be reviewed by the district biologist prior to final design completion.</li> </ul>

**Table 3 (continued).** Design criteria for the Cody Meadow Restoration Project.

Resource	Design Criteria
Botany	<p><u>Specific Design Features for the Cody Meadow Restoration Project</u></p> <ul style="list-style-type: none"> <li>▪ Staging areas within the meadow would be approved by RCO team. Following project completion staging areas and other disturbed ground will be re-vegetated with a site appropriate mix of native species determined by project botanist.</li> <li>▪ Fens within Cody Meadow would be flagged prior to project implementation for avoidance. Crews conducting repair work at HC#12 will be informed of the location of the fen in close proximity to the head cut.</li> <li>▪ Areas of lodgepole removal within Cody Meadow will be identified by the project botanist and soil scientist.</li> <li>▪ Construction of parking area for Cody Meadow will be located outside of sensitive plant population. Sensitive plant habitat within close proximity of the proposed trail head and parking area will be flagged for avoidance prior to project construction. Parking area and trails will not be located in such a manner as to increase vehicle or other traffic through the Sensitive plant population.</li> <li>▪ Project Botanist will be on-site during construction of plug and ponds and in-channel riffles to assist with the salvage of native materials during initial construction and subsequent placement of root wads and sod mats once the plugs and ponds are constructed. Reseeding and re-vegetation of plugs and ponds will occur at the direction of the project botanist.</li> </ul> <p><u>Standard Botany Design Features for all ground disturbing projects</u></p> <ul style="list-style-type: none"> <li>▪ All off-road equipment will be cleaned to ensure it is free of soil, seeds, vegetative matter or other debris before entering the project area. Straw or mulch used for erosion control will be certified weed-free. A certificate from the county of origin stating the material was inspected is required. On-site material also may be used if it comes from a weed-free area.</li> <li>▪ Any seed used for restoration or erosion control will be from a locally collected source (ENF, Seed, Mulch and Fertilizer Prescription, 2000). Sand, gravel, fill material, and boulders used within the project area must come from weed free sources. Consult with Forest Botanist for sources of weed-free material.</li> </ul> <p><u>Modification to Proposed Action</u></p> <ul style="list-style-type: none"> <li>▪ Native seeds from grasses and forbs would be collected prior to implementation of the Cody Meadow restoration project and used for revegetation following project completion.</li> <li>▪ Re-vegetation within the viewshed of proposed trail and boardwalk crossing of Cody Meadow will be a high priority.</li> </ul>

### *Design Criteria*

#### *Riparian Conservation Objectives:*

As described in the Riparian Conservation Objectives (RCO) Consistency Report prepared for the Elkins Flat Restoration Project, it has been determined that all actions are in compliance with all of the Riparian Conservation Objectives (RCOs) and associated Standards and Guidelines (S&Gs) of the Sierra Nevada Forest Plan Amendment (SNFPA) of 2004 (Riparian Conservation Objectives Consistency Report 2014).

#### *Wildlife:*

Should any nesting or denning sites for terrestrial species be discovered during project activities, Limited Operating Periods (LOPs) will be established and any additional mitigations needed as determined by the district wildlife biologist and in coordination with the project leader (Biological Evaluation/Assessment for Terrestrial Wildlife 2012). Should any bald eagles or golden eagles be detected during project activities, appropriate mitigations, as determined by the district wildlife biologist, would be implemented to protect nesting sites (Eagle Act Report 2012).

Prior to tree removal, trees will be checked for any signs of cavities that may hold roosting or denning wildlife. Should they be found, coordination between the project leader and wildlife biologist will provide any needed mitigations including but not limited to implementation occurring in the fall, outside the breeding season.

#### *Aquatic Species:*

Surveys from 2010 to 2013 for Foothill Yellow-legged, California Red-legged frogs and Western pond turtles indicated that multiple reaches were determined to have low-gradients with low to moderate habitat suitability. In order to reduce potential impacts to these species, an oversized embedded culvert would be installed on the ephemeral stream as described in the proposed action.

Should any Threatened, Endangered, or Sensitive species (TES) be located before or during implementation, the Supervisor's Office biology staff would be informed and steps would be taken to evaluate and mitigate any possible effects not covered by this EA (Biological Evaluation/Assessment for Aquatic Species 2014).



### *Archaeology:*

Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area and the District Archaeologist be notified immediately. Work may resume after approval by the District Archaeologist; provided any recommended Standard Protection Measures are implemented. Should any cultural resources become damaged in unanticipated ways by activities proposed in this project; the steps described in the Regional PA for inadvertent effects will be followed.

Should the project boundaries or activities be expanded beyond the current APE, Section 106 compliance for this project will be incomplete until additional cultural resource review is completed (Heritage Resource Report (R2013-05-03-60002)).

### *Botanical Resources:*

All equipment and vehicles (Forest Service and contracted) used for project implementation must be free of invasive plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or cleaning facility before the equipment and vehicles enter the project area.

Only native seed mixes and/or certified weed free straw (preferably certified rice straw) will be used (ENF Seed and Mulch Rx 2000). Sand, gravel, fill material and boulders used within the project area would come from weed-free sources. Consult with the Forest Botanist for sources of weed-free material.

All weed occurrences within the project area will be treated prior to project implementation. Any additional infestations discovered prior to or during project implementation should be reported to the Botanist for prioritization and assessed for treatment.

Post project monitoring will begin following the first year of implementation and continue for three years following project completion to inspect the sites for invasive plant infestation. If any new or increased infestations are detected, the infestations will be treated in accordance with the Eradication and Control of Invasive Plants Environmental Assessment.

### *Soils:*

Decompaction and erosion control will be directed by watershed staff who will be on the project site at the time of implementation. Short term erosion control methods are defined in detail in the Soil Report and the *Restoration* section of the Proposed Action described above.

Additionally, upon implementation of the reroute of trail 14E25, the new trail segment will be closed to the public for 1 year from completion of the construction of the trail to allow for proper recovery and compaction (A Field Evaluation of the Use of Small Trail Tractors 2001 and 2014).

### *Hydrology:*

Standard erosion control techniques would be used during the construction of the "pull through loop" and grading of the staging area to reduce sediment delivery to the ephemeral stream as a result of construction activities. These erosion control techniques may include, but not be limited to: straw wattles, fabric fences, and bales of straw



## Appendix B

### 2018 Restoration Grant Application - Photographs

#### Georgetown Ranger District



**Photo 1** Route 59 - Barrier rock installation location in the foreground, illegal route shown climbing in background.





**Photo 2** Route 59 - Foreground shows gully on illegal route. Branches were thrown on this route in the past, but illegal OHV traffic created a new trail adjacent to the old route to bypass the larger obstacles (Photo 3).



**Photo 3** Route 59 - Bypass route discussed in photo 2



**Photo 4** Route 32 – Gate and barrier rock location to prevent OHV use of route 32.





Photo 5 Unauthorized trails accessed via Route 32



Photo 6 Unauthorized trails accessed via Route 32





**Photo 7** Unauthorized trails accessed via Route 32



**Photo 8** Unauthorized trails accessed via Route 32



Placerville Ranger District

*Cody Meadow Restoration Area*



**Photos 9 and 10** – Unauthorized OHV use through Cody Meadow Restoration Area. Restoration of the roads in this project area will decrease OHV impacts to the meadow



# Elkins Flat Restoration Area

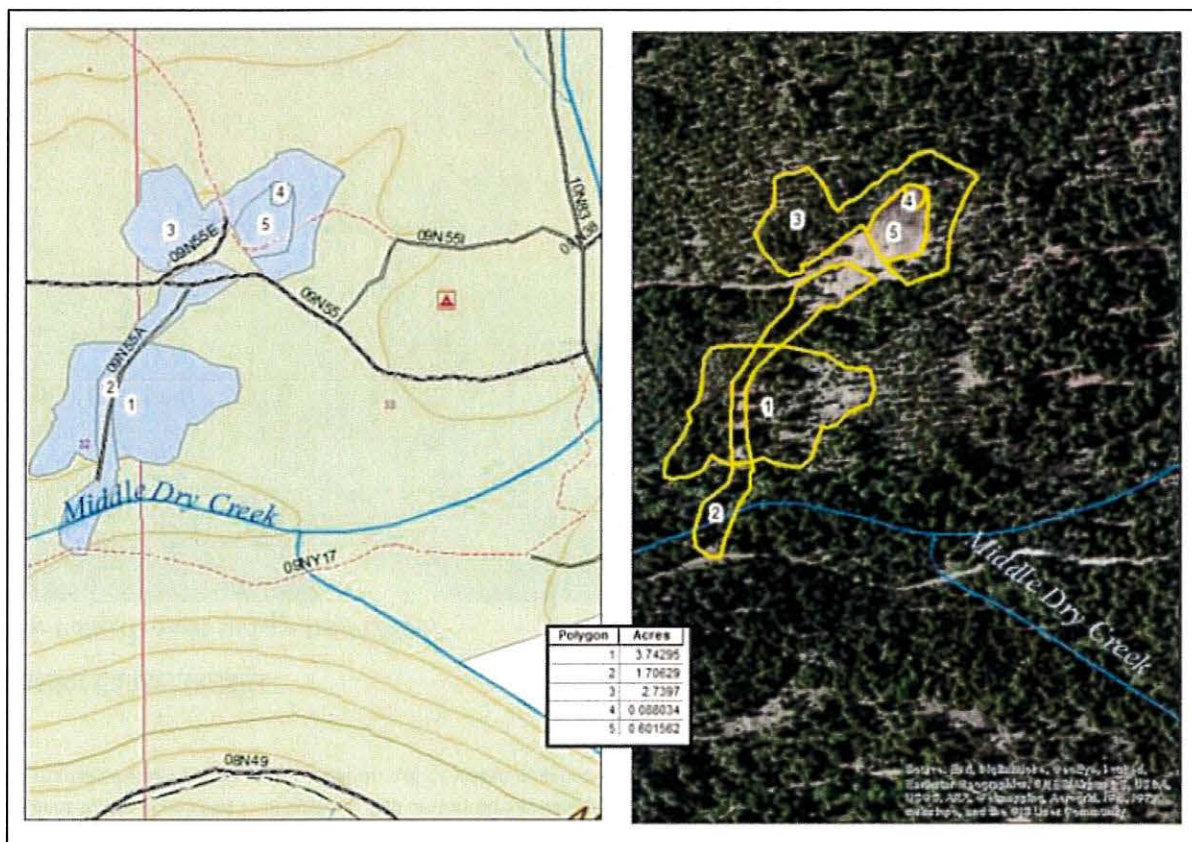


Photo 11 – Elkins Flat Restoration Area Polygons







**Photos 12 and 13** Photos show the denudation of this unmanaged OHV parking and staging area adjacent to the Elkins Flat Trail System. Soil restoration activities coupled with plans for development of a managed staging area in this location will decrease negative impacts to the soils and local streams.

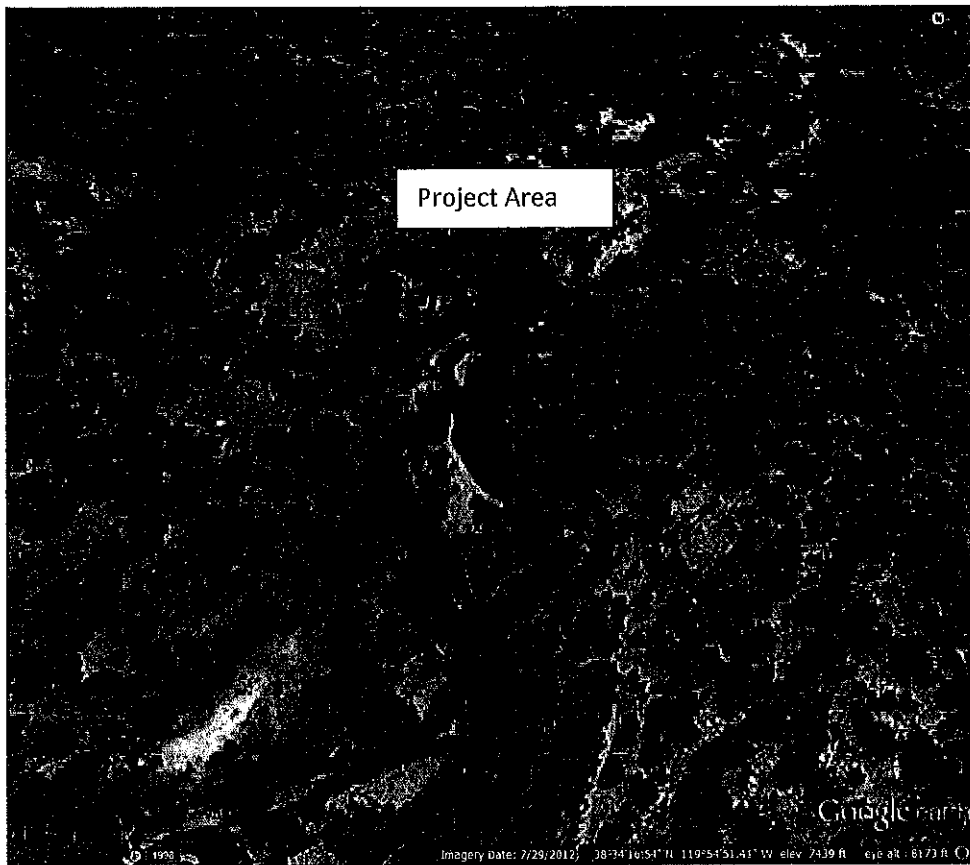
### **Amador Ranger District**

*Deer Valley (Forest Service Trail 19E01)*





**Photo 14 and 15** Deer Valley Trail (19E01) Restoration Area showing where the trail parallels and then enters Deer Creek at an angle. Restoration project activities will decrease negative OHV impacts to Deer Creek.



**Photo 16 - Aerial view of the Deer Valley 4wd Trail (19E01) at the crossing of Deer Creek and Meadow 09N83-2 in Deer Valley.**



Pacific Ranger District\*



**Photo 17** – 11NY27A Road. Continued use of this road by OHV's has impacted the adjacent meadow. Restoration of this road will decrease these negative impacts.

\*Access to all of the Pacific Ranger District project photos was not possible at the time of submittal of the application (Forest Service project file database where photos are stored is unavailable due to unanticipated extended maintenance/update). The photo shown above was the only accessible photo.

Photographs are expected to become available in the next few months when the database maintenance is completed – At which time they will be submitted to the California OHV Division grant administrator assigned to the project.



**Forestwide Restoration on the Eldorado National Forest IS/MND**

AQ/GHG Technical Appendix

Prepared by MIG, Inc.

**Table 1. Standard Conversions**

Gallons per hp-hr ROG+NOx (1996 and later)	Days Per Month	kg CO2/gal of Diesel	kg CH4/gal of Diesel	kg N2O/gal of Diesel
10.5	22	10.21	0.00057	0.00026

**Table 2. Global Warming Potentials**

CH4	N2O
28	265

**Table 3. Air Quality Calculations**

Location / Equipment	Horsepower	Runtime	Total Fuel Used
<b>Georgetown</b>			
Dump trucks	400	10	381
Backhoe	98	15	140
Medium Excavator	163	15	233
Sutter 500 Trail Tractor	83	16	126
Trucks	325	20	619
Chainsaws	25	6	14
<i>Gallons Subtotal</i>			<i>1,513.6</i>
<i>Months of Construction</i>			<i>11.0</i>
<i>Gallons Per Month</i>			<i>137.6</i>
<i>Avg Gallons Per Day</i>			<i>6.3</i>
<i>Worst Case, Avg Daily Gallon Consumption per Quarter (x2)</i>			<i>12.5</i>
<b>Pacific Ranger District - John Don't</b>			
Excavator with Transport	163	80	1,242
Utility Bed Truck	350	80	2,667
Dump Truck	400	24	914
Stake Bed 1 Ton Truck	350	40	1,333
<i>Subtotal</i>			<i>6,156.2</i>
<i>Months of Construction</i>			<i>1.0</i>
<i>Gallons Per Month</i>			<i>6,156.2</i>
<i>Avg Gallons Per Day</i>			<i>279.8</i>
<i>Worst Case, Avg Daily Gallon Consumption per Quarter</i>			<i>93.3</i>

Table 3. Air Quality Calculations (con't)

Location / Equipment		Horsepower	Runtime	Total Fuel Used
Placerville Ranger District - Elkins Flat				
	Excavator with Transport	163	110	1,708
	Utility Bed Truck	350	120	4,000
	Dump Truck	400	32	1,219
	Stake Bed 1 Ton Truck	350	40	1,333
	<i>Subtotal</i>			8,260.0
	<i>Months of Construction</i>			12.0
	<i>Gallons Per Month</i>			688.3
	<i>Avg Gallons Per Day</i>			31.3
	<i>Worst Case, Avg Daily Gallon Consumption per Quarter (x2)</i>			62.6
Placerville Ranger District - Cody Meadows				
	Excavator with Transport	163	115	1,785
	Utility Bed Truck	350	120	4,000
	Dump Truck	400	32	1,219
	Stake Bed 1 Ton Truck	350	40	1,333
	<i>Subtotal</i>			8,337.6
	<i>Months of Construction</i>			12.0
	<i>Gallons Per Month</i>			694.8
	<i>Avg Gallons Per Day</i>			31.6
	<i>Worst Case, Avg Daily Gallon Consumption per Quarter (x2)</i>			63.2
<b>EDCAQMD Avg Gallons Per Day</b>				<b>231.5</b>
El Dorado TOS				402.0
Gap				170.5
Amador Ranger District				
	SWECO	83	100	790.5
	Trucks	350	500	16,666.7
	Power Carrier	5	100	47.6
	Motorcycles	50	200	952.4
	ATVs	50	200	952.4
	<i>Subtotal</i>			19,409.5
	<i>Months of Construction</i>			10.0
	<i>Gallons Per Month</i>			1,941.0
	<i>Avg Gallons Per Day</i>			88.2
	<i>Worst Case, Avg Daily Gallon Consumption per Quarter (x2)</i>			176.5
<b>GBUACPD Avg Gallons Per Day</b>				<b>176.5</b>
El Dorado TOS				402.0
Gap				225.5



Table 4. GHG Calculations

Jurisdiction	Gallons	CO2 (kg)	CH4 (kg)	N2O (kg)	MTCO2e
EDCAQMD	24,267.4	247,770.45	141.23	0.04	251.7
BGUAPCD	19,409.5	198,171.24	112.96	0.03	201.3
<i>Total</i>	<i>43,677.0</i>	<i>445,941.7</i>	<i>254.2</i>	<i>0.1</i>	<i>453.1</i>

