

Chapter 3
**Affected Environment and
Environmental Consequences**



Rubber rabbit brush in Kyle wash, east of Kyle Canyon Campground.

3.0 Introduction

This chapter provides a description of the project area affected environment and the environmental effects of implementing Alternative 1 (No Action Alternative),

Alternative 2 (Proposed Action), and Alternative 3 (Market Supported Alternative).

Chapter 3 is organized into eight parts: Section 3.1 discusses resources in the project area that were analyzed but would not be adversely affected by implementation of the Middle Kyle Complex project. Section 3.2 discusses potential effects on recreation resources. Section 3.3 discusses potential effects on biological resources, including sensitive wildlife and plant species and the Spring Mountains acastus checkerspot butterfly (*Chlosyne acastus robusta*) habitat (the significant issue). Sections 3.4 and 3.5 discuss potential effects on cultural and visual resources, respectively. Section 3.6 discusses whether implementation of the Middle Kyle Complex project is compliant with Spring Mountains National Recreation Area (SMNRA) General Management Plan. Section 3.7 identifies required disclosures and describes executive orders with which the U.S. Department of Agriculture Forest Service (Forest Service) must consider and comply. Section 3.8 contains an essay prepared by the Nuwuvi Working Group describing the Nuwuvi relationship to the Spring Mountains landscape. In addition, Sections 3.2 through 3.5 contain a description of the affected environment for the specific resource being analyzed.

Scoping and environmental analysis conducted for the project determined that further study of the following resources was not warranted:

- Mineral resources (such as saleables, leaseables, or locatables),
- Wilderness resources,
- Wild and scenic rivers,
- Rangelands,
- Animal damage control,
- Wild horse and burro,
- Federal Emergency Management Agency delineated floodplains,
- Federally listed threatened or endangered species,
- Wetlands, and
- Fisheries or aquatic resources.

There would be no effect on the resources listed above; consequently, they are not analyzed further in this Environmental Impact Statement (EIS).

The Forest Service may implement an administrative action that would prohibit dispersed camping on or within 300 feet of Forest Service roads and trails open to motorized vehicles, trailheads, county roads, and state highways within the Lee Canyon, Kyle Canyon, and Deer Creek areas of the SMNRA. Project specific resource studies were not conducted outside the Middle Kyle Complex project area. The context and intensity of potential adverse or beneficial impacts that may result from this action are, therefore, difficult to determine. Given the lack of information regarding the existing conditions and potential impacts associated with this action, detailed evaluation of the direct, indirect, and cumulative impacts is not included in this document.

3.1 Resource Impacts Considered

During the course of the analysis conducted for this EIS, the Forest Service documented the environmental impacts on project area resources in resource specialist reports. Analysis included implementation of the design criteria listed in Table 2-4. Use of these practices and techniques would reduce or minimize impacts from construction and operation of the Middle Kyle Complex project on several resources. Those resources are identified in this section. Resources that have the potential to be impacted by the proposed project are discussed in detail in subsequent sections of this chapter.

The analysis considered the direct, indirect, and cumulative effects on the following resources.

- Air quality,
- Risk assessment for non-native invasive species (NNIS) of plants,
- Geology and soils,
- Hydrology, and
- Social and economic resources.

Following is a summary of the analysis from each resource specialist report. Detailed information on the analysis is available in the resource specialist reports and other supporting documentation cited in those reports. These reports are available upon request from the SMNRA office in Las Vegas, Nevada. Further analysis was not subsequently conducted on these resources.

The potential environmental effects of implementing proposed transportation improvements were included in the effects analysis in the resource-specific specialist reports. Section 3.1.6, *Transportation*, summarizes proposed changes to existing Forest Service roads and trails in the project area.

3.1.1 Air Quality

An assessment of air quality, including emission calculations and regional air quality impacts in the Middle Kyle Complex project area, was documented in the *Air Quality Specialist Report, Middle Kyle Complex* (ICF Jones & Stokes 2009a). The report evaluated direct air quality impacts (caused by construction and operation within the SMNRA) and indirect impacts (caused by tailpipe emissions generated by vehicular activity). Cumulative effects are discussed in Section 3.7.5.

The impact assessment in the air quality analysis area included:

- the vicinity within 500 feet of major unpaved roads serving the project area, the region that could be affected by fugitive dust from vehicles;

- the regional airshed (Clark County Hydrographic Basin 212), which could be affected by regional traffic emissions; and
- Class I Visibility-protected areas within a 300-mile radius of the SMNRA.

An air quality modeling program was used to predict construction and operation emissions associated with the project. The emissions included the following pollutants that are most commonly measured and regulated (i.e., criteria pollutants): carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter smaller than 10 microns (PM₁₀), and particulate matter with a diameter less than or equal to 2.5 microns (PM_{2.5}). Because O₃ is formed in the air through a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) under sunlight, these emissions are regulated with the aim of reducing ozone formation in the lowermost region of the atmosphere.

The focus of the air quality impact assessment was to determine if construction and operation of the Middle Kyle Complex project alternatives would cause regional air quality impacts or exceed National Ambient Air Quality Standards (NAAQS) limits.

Direct and Indirect Effects

Potential direct and indirect effects on air quality are described below.

No Action Alternative

The No Action Alternative is equivalent to existing conditions; it was therefore concluded that air pollutant emissions under this alternative probably would not be significant.

Proposed Action and Market Supported Alternative

No significant air quality impacts were forecasted because of construction or operation of the Proposed Action or the Market Supported Alternative. The projected increase in criteria pollutant emissions was forecast to be well below the general conformity applicability thresholds. In addition, SMNRA emissions would be very low compared to existing emissions within the regional airshed of Clark County.

Compliance with the Dust Mitigation Plan (Humboldt-Toiyabe National Forest 2003) would ensure that recreationists and visitors outside the construction zone would not be exposed to pollutant concentrations approaching NAAQS limits. Therefore, this impact would be less than significant. During operation, air quality effects from road dust under all of the alternatives would generally be temporary and would not extend beyond the immediate vicinity of roads within the project area. The closure of user-created motorized routes and conversion of

roads in the project area to hiking, biking, and equestrian use would reduce dust and air pollutants in these areas. The majority of Forest Service roads in the project area that are currently unsurfaced would be paved under the Proposed Action and Market Supported Alternative. Since the effects of road dust are temporary and confined to small areas, this impact is not likely to be significant.

The nearest Class I visibility protected area, Grand Canyon National Park, is located 90 miles from the project area. Because project emissions that could contribute to visibility impacts are very minor and localized, Class I visibility modeling was not conducted. Projects of this size (in terms of emissions) are typically only considered for quantitative visibility analysis if a Class I visibility protected area is adjacent or within a few miles of the project area.

The proposed project is required to adhere to Clark County Department of Air Quality and Environmental Management requirements and practices. Permits for construction activities and dust control would be obtained from Clark County. In addition, implementation of design criteria and best management practices (see Table 2-4, *Design Criteria Common to Action Alternatives*) would prevent significant air quality impacts.

3.1.2 Non-Native Invasive Species of Plants

The risks for invasive weed introduction during and following construction of the Middle Kyle Complex project were documented in the *Non-Native Invasive Species Plants Specialist Report and Risk Assessment for the Spring Mountains National Recreation Area* (ICF Jones & Stokes 2009b). Implementation of the Proposed Action or Market Supported Alternative could result in the introduction, establishment, and spread of NNIS of plants through soil disturbance and vegetation removal activities associated with construction (e.g., vegetation clearing, grading, and trail construction), and during operation (e.g., increased visitor use, increased equestrian use, and increased trail network in previously undisturbed communities).

Weed establishment is associated with a variety of factors including the proximity of a weed seed source; soil disturbance; canopy opening; the movement of wild animals (birds, deer) and livestock (horses and other recreational livestock); and mechanical equipment use. The overall risk of weed spread and establishment from the proposed project would be high, because of the large scale of vegetation clearance (permanent in some areas) and ground disturbance, the proximity to existing NNIS populations, and the anticipated increase in visitor numbers and associated recreational use of the project area.

For NNIS plants to colonize an area the seeds (or other means of dispersal such as cuttings, bulbs, or root fragments) must be carried into the area by a vector and suitable conditions must be present for the NNIS plants to establish and spread. Seeds can be carried in soil clinging to machinery and vehicles and deposited in weed-free areas. Seeds can also be transported in the digestive tracts of horses and other recreational livestock and can be deposited at trailheads and along trails. Soils that are disturbed as a result of constructing buildings, roads, and

trails can provide ideal habitat for NNIS plants. Many NNIS plants take advantage of soil disturbance to enter native plant communities. Roads and trails facilitate NNIS invasion and spread by altering habitat conditions, stressing or removing native species, and allowing easier movement of vectors (humans, vehicles, livestock, and wild animals). Some invasive plant species may not require any soil disturbance to invade native ecosystems and can thrive if seeds are simply introduced.

Affected Environment

The majority of the project area lies within two plant zones: the desert shrublands zone and the low conifer woodland, montane shrubland, and chaparral zone. Also present are smaller areas of high conifer forest and woodland and azonal steep slopes and clifflands. Within these plant zones, 14 plant communities have been identified in the project area, most of which are relatively free of NNIS.

The project area supports a high diversity of plant species, including sensitive plant species and plants that provide nectar and larval food for sensitive butterfly species. Comprehensive botanical surveys conducted in the project area identified 33 occurrences of 10 sensitive plant species, many of which are unique to the Spring Mountains (Jones & Stokes 2006, 2007). Some of the sensitive plants are locally common in suitable habitat; some are more restricted in distribution; others are known from small populations (Jones & Stokes 2006, 2007). Small populations are vulnerable to local habitat alteration that can occur when NNIS invade plant communities. Larval host and nectar plants for sensitive butterflies are also common and widespread in the project area.

More than 300 plant species were identified during the botanical surveys. Almost 90% were native plants; however, approximately 30 NNIS were found in the project area. Of these, seven species of high concern were mapped: five plant species that are Nevada State A, B, or C Category Noxious Weeds and two NNIS that are Management Indicator Species (MIS). MIS are species (plants and animals) indicative of ecosystem health and the success of management of resources. All but two of the NNIS in the project area occurred only in disturbed areas: along the disturbed shoulders of SR 157 and/or in the disturbed areas of the former golf course property, including the area where landscape turf had been placed. The majority of these occurrences are point locations. It appears that the main risk factor in the project area is ground disturbance and the main vectors for spread are likely vehicles, (road maintenance equipment, off-highway vehicle [OHV], and passenger cars and trucks). The National Forest System (NFS)-designated road and trail density in the project area is currently 3.7 miles per square mile (7.2 miles per square mile including unauthorized routes), and there are large areas of undisturbed plant communities.

Of the 30 NNIS present in the project area, 27 are considered of low management concern or are located along SR 157 and not likely to be directly affected by the implementation of either action alternative. The remaining seven species are of high concern and two of these species (white horse nettle [*Solanum elaeagnifolium*] and puncture vine [*Tribulus terrestris*]) occur only on the

shoulder of SR 157 and would not be affected by either action alternative. Three species (Russian knapweed [*Acroptilon repens*], Canada thistle [*Cirsium arvense*], and Klamath weed [*Hypericum perforatum*]) are located in the former golf course property in very limited quantities and are generally point locations consisting of few plants. The risk of spread of these five species is very low because of ongoing eradication, limited quantities, the likely removal of the plants during construction of the recreation facilities, and long-term site monitoring by biologists.

Only two species, cheatgrass (*Bromus tectorum*) and red brome (*Bromus rubens*; synonym: *B. madritensis* ssp. *rubens*) are widespread in the project area and extend over areas greater than 1 acre. Cheatgrass is pervasive across the southwestern United States and can permanently alter shrub ecosystems in the Great Basin where fire and subsequent spread of the species can crowd out native forbs and shrubs (Brooks 2000). Cheatgrass was estimated to occupy approximately 142 acres in the project area. Of all of the NNIS present in the project area, cheatgrass is the one most likely to spread widely and invade weed-free areas in the long term.

Like cheatgrass, red brome is pervasive across the southwestern United States, has been present in native communities in the SMNRA since the 1950s, and has similar effects on ecosystem functions as those described for cheatgrass (Brooks 2000). Recent surveys in the project area found that red brome occupied an estimated 102 acres in the project area (Jones & Stokes 2006).

Both cheatgrass and red brome occupy disturbed areas and road sides at lower elevations in the project area. However, red brome appears to be more widespread than cheatgrass on these sparsely vegetated south sloping sites, and appears to have penetrated further than cheatgrass into undisturbed natural communities (Jones & Stokes 2006).

Forest Service policies emphasize the prevention of weed establishment and the Forest Service has developed prevention practices and project design criteria such as construction equipment cleaning provisions, avoidance of travel through known weed-infested areas, minimization of soil disturbance, and utilization of weed-free gravel sources. Implementation of these measures reduces the probability of introducing and spreading weed seeds and plant parts. These policies apply to each aspect of the construction and operation of both action alternatives and include detailed guidelines in the Forest Service Manual 2080 (Forest Service 2004) to prevent weed introduction and spread during facility construction including heavy equipment use, soil and vegetation rehabilitation, and road maintenance activities. Guidance also exists for operational and recreational activities such as outfitter and guide guidelines that cover equestrian and other recreational livestock activities and recreation guidelines.

Direct and Indirect Effects

Potential direct and indirect effects on NNIS are described below.

No Action Alternative

Under the No Action Alternative, disturbance-related impacts from project implementation that would increase the risk of establishment and spread of NNIS would not occur. However, continued unmanaged use is occurring in the project area with minimal Forest Service oversight of the existing vegetation conditions, and this type of use is expected to increase over time. Currently, there are approximately 22 miles of dirt roads and motorized trails (15 miles of designated routes and 7 miles of unauthorized roads) used by OHVs, and an additional, approximate 16 miles of unauthorized trails used by mountain bikers and equestrians in the project area. The density of the roads and trails in the project area is 7.2 miles per square mile, including NFS-designated and unauthorized routes. Consequently, under the No Action Alternative, the rate of invasive weed introduction is expected to increase beyond the range of current introduction rates. In addition, under the No Action Alternative, the former golf course property would remain disturbed ground that is currently the location of many of the NNIS observed in the project area. Under this alternative new visitor and recreational facilities would not be constructed. Limited rehabilitation of this site, along with continued treatment of the NNIS, would reduce the risk this area currently presents as a site for the continued establishment and spread of NNIS.

Under the No Action Alternative, the rates of introduction and levels of infestation currently observed are anticipated to slowly increase over time as SMNRA visitor numbers increase as projected. The current level of monitoring and weed treatment would continue and new infestation and spread of weeds would be difficult to detect and track because visitor use is dispersed and unregulated throughout the project area.

The No Action Alternative would likely result in an increase in the spread of NNIS plants in the project area and the surrounding area because of the anticipated increase in unregulated dispersed visitor use and associated ground disturbance from user created trails.



Proposed Action

Implementing the Proposed Action would permanently disturb approximately 425 acres for construction of buildings, parking areas, trails, trailheads, campgrounds, and picnic areas. An additional 653 acres would be temporarily disturbed because of construction activities. A total of 48 miles of new trails and trail improvements would be constructed, including multiuse trails in previously undisturbed vegetation communities.

Under the Proposed Action, the introduction, establishment, and spread of NNIS could increase during construction and operation as a result of the following:

- Roadsides and trails are common areas where weeds become established and spread along the corridors. The density of NFS-designated roads and trails in the project area would be 9.7 miles per square mile. Most of the NNIS observed in the project area occur along SR 157 and in the parking lot of the former golf course property, both of which are (or have been in the past) highly disturbed, heavily traveled, and denuded of native vegetation. Undeveloped trails have a similar, though lesser, effect related to the establishment and spread of NNIS. Implementing the Proposed Action would increase the total length of trails to 48 miles. The anticipated increase in recreational visitation by vehicles, OHVs, horses and other recreational livestock, mountain bikers, and hikers, would increase the probability of NNIS introduction
- Implementing the Proposed Action would result in ongoing and permanent soil disturbance along trails and in campgrounds that would provide suitable conditions for the continuing establishment of NNIS. Removal of native plant communities could potentially introduce weeds into uninfested areas or release dormant weed seeds already present. Many of the existing weeds and NNIS are located in the former golf course property, where most of the disturbance to soils from construction would occur.
- Removal of the tree and shrub canopy would fragment areas of previously undisturbed vegetation communities. Gaps in the forest canopy allow more sunlight to penetrate the forest floor; stimulating germination of some species of NNIS and allowing them to grow and survive.
- Rehabilitating portions of the former golf course property (128 acres) would involve removing non-native vegetation and replanting it with native species. However, this rehabilitation involves the removal of vegetation, soil disturbance, and the introduction of soil treatments and new plant material, thereby increasing the risk of introducing NNIS and encouraging their establishment. Because the risk of weed infestation is greater when project activities are located near an existing weed seed source, the high frequency and wide distribution of NNIS in this area would increase the risk of spreading NNIS throughout this area.

Under the Proposed Action, there would be a high risk of NNIS spread and invasion in the project area based on the risk of existing NNIS populations and the level of ground-disturbing activities that would occur. However, with implementation of the design criteria (see Table 2-4, *Design Criteria Common to*

Action Alternatives), including preventative measures, site rehabilitation, and post-implementation monitoring by SMNRA personnel, the volume of invasive weed introductions and spread is expected to be minor and below (or within) the range of current rates of introductions.

Market Supported Alternative

Construction of the Market Supported Alternative would permanently disturb approximately 331 acres, 94 acres less than the Proposed Action. An additional 579 acres would be temporarily disturbed, 74 acres less than the Proposed Action. A total of 44 miles of new trails and trail improvements would be constructed, including multiuse trails in previously undisturbed vegetation communities, approximately 6 fewer acres than under the Proposed Action. The density of designated road and multiuse trails would be 8.4 miles per square mile, 1.3 miles per square mile less than the Proposed Action. The density of roads and multiuse trails that would traverse previously undisturbed areas would increase correspondingly.

The potential direct and indirect effects of implementing the Market Supported Alternative are qualitatively similar, and in general, of similar magnitude as those described for the Proposed Action. An exception would be that the Market Supported Alternative does not include an equestrian campground or equestrian rental facility; hence, equestrian use of the project area is expected to slightly increase from existing levels of use because of the improved trail network and trailhead facilities.

Total acreage of construction and soil disturbance would be less than under the Proposed Action, resulting in somewhat fewer opportunities for NNIS to colonize. The overall number of visitors is expected to be similar, and there would, therefore, be little difference in the amount of travel into the project area and in the extent of travel on trails throughout the project area. However, overall equestrian and trail use is expected to be less than under the Proposed Action because fewer facilities would be provided. This would reduce the risk of NNIS introduction and establishment under this alternative. The design criteria (see Table 2-4, Design Criteria Common to Action Alternatives) and measures described under the Proposed Action would also be implemented under this alternative; therefore, the overall effect on NNIS introduction and establishment is expected to be somewhat less than the Proposed Action.

After construction of either action alternative, the project area will be monitored consistent with Forest Service policy to provide for control of new infestations. If weeds are shown to persist or expand, the SMNRA staff will coordinate treatment of these areas following methods consistent with the Humboldt-Toiyabe National Forest noxious weeds management program (Forest Service 2001).

3.1.3 Geology and Soils

An assessment of the geology and soils in the project area was presented in the *Geology and Soils Specialist Report, Middle Kyle Complex* (ICF Jones & Stokes 2009c). The specialist report assessed the general geology of the project area including the geologic structure, geologic formations, soils, and if there was evidence of geologic hazards such as fault displacement, ground shaking, liquefaction, slope stability, debris flows or expansive soils within the vicinity of the project area.

Affected Environment

The project area is located on the eastern flank of the Spring Mountains, which mainly consist of sedimentary rock formations. The Spring Mountains are part of the Basin and Range Province of the western United States. This province consists of north-south trending, uplifted mountains and down-dropped valleys separated by faults, which have produced a distinctive, alternating pattern of linear mountain ranges and intervening valleys.

The geologic structure of the Spring Mountains is complex and controlled by large thrust faults. Several faults have been mapped within and in the vicinity of the project area, although they are all inactive. The primary fault is the Quaternary-age (i.e., less than 1.6 million years) La Madre Fault, which is generally aligned with SR 158 in the project area. Canyon Fault and Griffith Fault exist in the western part of the project area; the Keystone Thrust Fault is in the southern part; and the Lucky Strike Fault exists in the northern part (Case, Lowe, & Hart, Inc. 2007).

Much of the project area, including most of the areas proposed for intensive development, is underlain by alluvial units of Quaternary age. The source rocks of these generally gravelly and cobbly sediments are primarily limestone and dolostone. The older of these units are cemented.

The soils analysis identified the soils that occur in the project area including the slope, runoff, and erosion characteristics of each soil map unit. Previous soil surveys mapped 11 individual soil types within the project area. In general, the soils within the project area are shallow to moderately deep over rock or subsurface cemented layer and are well drained and moderately permeable. The soils generally formed from limestone and dolostone, or alluvium or colluvium derived from these rocks and as a result the soils tend to be neutral to alkaline and have excess calcium carbonate. The project area itself consists of an alluvial terrace that has been incised by ephemeral streamflow in Kyle wash and other smaller ephemeral streams.

Because the surface soils in the project area generally have a relatively low content of expansive (i.e., shrink-swell) clays, the hazard of expansive soils is generally low. However, some areas have moderately expansive subsurface soil layers within 2 feet of the surface.

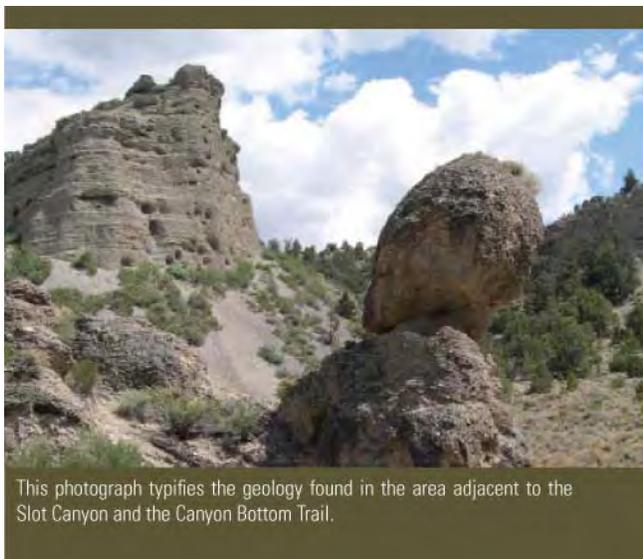
Direct and Indirect Effects

Potential direct and indirect effects on soils are described below.

No Action Alternative

Under the No Action Alternative, the Middle Kyle Complex would not be constructed and there would be no long-term adverse effects on the existing soils and geology of the project area.

Implementation of the No Action Alternative includes minor restoration of the disturbed 128-acre parcel (former golf course property) to a more natural state including the removal of non-native vegetation, debris, and some asphalt and the removal of several log structures that occur within the channel of Kyle wash. A



This photograph typifies the geology found in the area adjacent to the Slot Canyon and the Canyon Bottom Trail.

short-term impact on soils would occur during these restoration activities; however, it is anticipated that a long-term benefit to the soils in this area would result from the restoration activities.

Proposed Action

Construction of the Proposed Action would result in approximately 425 acres of permanent ground disturbance and approximately 653 acres of temporary construction disturbance. This disturbance would be the result of excavation, fill placement, road construction, utility trenching, compaction, and other activities. The protective cover of vegetation and plant litter would be removed or otherwise disturbed. Soil quality and productivity could be reduced and accelerated erosion and subsequent sedimentation of downstream waters could occur. Minor failures and dry raveling of cut slopes along new roads could also result. Depending on the scale of excavation and fill placement, there would be a potential for these activities to create or exacerbate slope failure risk, unless properly designed and implemented.

Once the Proposed Action is constructed, operation and use of the recreational facilities could reduce soil quality and productivity and cause accelerated erosion and subsequent sedimentation within the Kyle wash downstream from the project. Such adverse effects could occur as a result of hiking, biking, and the

use of horseback trails, including off-trail use of the project area for recreational purposes. Soils would be more susceptible to erosion by wind and water because of hiking boots, bicycle tires, and hooves breaking through the crust and pulverizing the soil. Soil compaction reduces the rate of water infiltration and inhibits vegetation growth through the hard compacted soil layers. Soil compaction would increase around developed recreation locations, such as camp sites, resulting from travel around the immediate established site, and travel off designated trails and roads.

There would be a beneficial effect on soil quality and erosion rates in areas where vegetation and slope restoration would be implemented, including uplands surrounding existing ponds and Kyle wash and the former golf course property.

Market Supported Alternative

The Market Supported Alternative would disturb less area than the Proposed Action, totaling approximately 331 acres of permanent ground disturbance and approximately 579 acres of temporary construction disturbance. The disturbance would primarily be the result of construction-related excavation, fill placement, road construction and widening, utility trenching, compaction, and other activities.

In comparison to the Proposed Action, the Market Supported Alternative would generally entail a slightly less extensive removal of vegetative soil cover and soil disturbance and would have a lower potential for degradation of soil quality and productivity, mostly because fewer campgrounds would be constructed. The potential for associated water quality degradation would also decrease. Potential effects associated with the operation and use of the facilities would be similar to those described under the Proposed Action.

3.1.4 Hydrology

An assessment of the hydrology in the project area was presented in the *Hydrology Specialist Report, Middle Kyle Complex* (ICF Jones & Stokes 2009d). The specialist report assessed the hydrology of the project area including the relative geology and soil characteristics within the vicinity of the project area.

Affected Environment

The project area is located within the Upper Las Vegas wash watershed. The two primary drainages in the project area, Kyle wash and Telephone Canyon wash, are ephemeral in nature.

Surface runoff is typically generated by short, intense summer rains. In addition, winter snow accounts for approximately 40% of the total precipitation in the SMNRA. It melts and drains off of the higher elevations into these washes as

both surface runoff and subsurface percolation into the underlying alluvium. This results in ephemeral streams that are highly variable in energy potential, with sudden and extreme changes in flow levels. No in-stream gauges have been established in Kyle Canyon and, therefore, no historic flow data are available.

The Mt. Charleston Water Company provides service to the existing Resort on Mount Charleston, adjacent condominiums, church, and the Nevada Department of Transportation (NDOT) maintenance station. The Las Vegas Valley Water District (LVVWD) operates the Rainbow/Echo View water system serving housing subdivisions located approximately 2.5 miles west of the project area and also provides service to the existing Forest Service facilities at Fletcher View Campground, Kyle Canyon Campground and the Kyle CCC Camp and administrative site. The Forest Service acquisition of the 128-acre parcel, located near the Resort on Mount Charleston, included two groundwater wells and associated water rights.

Presently, there are no domestic or municipal uses of surface water within the project area. The primary beneficial use of surface water in the project area is for wildlife and recreation. Two artificial ponds are located on the valley floor and three upper water storage reservoirs are located northwest of the proposed Village area. These artificial ponds, when filled with water, provide wildlife habitat and water for fire fighting in the event of a fire in the area. The water source for these ponds comes from Forest Service wells located in the project area. The liners for the valley floor ponds have deteriorated to the point that these ponds no longer efficiently or reliably store water; therefore, they cannot be used for fire protection.

There is one spring, Sidehill Spring, located in the project area. This spring is located in the northern part of the Telephone Canyon. Water from this spring is collected at the surface and piped several feet to a water trough. The water in the trough is used by area wildlife and the horses of equestrian riders.

No streams in the project area are listed as impaired pursuant to the Clean Water Act Section 303(d) (1972); however, the Las Vegas wash from Telephone Line Road to the confluence of Las Vegas wash with Lake Mead, of which these streams are tributaries, is listed as impaired or as needing further study for possible listing as an impaired water resource by the State of Nevada (2009), as required by the Clean Water Act Section 303(d).

The hydraulic properties of the geology in Kyle Canyon were summarized from various well aquifer tests by Plume (1985). The Spring Mountains range provides one of the primary groundwater recharge sources for the region. The project is located within the Las Vegas groundwater basin. Groundwater in the area occupies the fractures and solution channels in the basement rock and the interstitial pore space of the alluvium gravels. Estimates of hydraulic conductivity from the alluvium in Kyle Canyon were between 4 and 30 feet per day (Forest Service 2007). These estimates of hydraulic conductivity for the alluvium deposits represent moderately high values for well-sorted gravels, and very high values overall in the range normally found in natural surface material (Fetter 1988). The conductivity for the carbonate rocks, highly variable as it is,

represents a very high potential for transmission of groundwater (Forest Service 2007).

Direct and Indirect Effects

Potential direct and indirect effects on hydrology are described below.

No Action Alternative

Under the No Action Alternative the Middle Kyle Complex would not be constructed and there would be no new construction-related impacts on project area hydrology. The long-term increase in the greater Las Vegas area population would result in increased recreational use of the project area and subsequent, incremental increases in erosion and sedimentation due to user-created trail development and recreational use of existing trails and roadways. Potential effects on hydrology would consist of changes to peak flows resulting from increased surface runoff produced by hiking and OHV-induced soil compaction and vegetation removal.

Implementation of the No Action Alternative includes minor restoration of the disturbed 128-acre parcel (former golf course property) to a more natural state including the removal of non-native vegetation, debris and some asphalt, and several log structures within the channel of Kyle wash. A short-term displacement of soils would occur during these restoration activities; however, it is anticipated that a long-term benefit to hydrology would result from the restoration activities and the removal of the log structures. These efforts would allow the development of a natural channel morphology within Kyle wash and would thereby reduce overall channel and bank erosion and sediment transport.

Proposed Action

Construction of the Proposed Action would entail disturbing large areas of soils through excavation, fill placement, road construction, utility trenching, soil compaction, and other construction-related activities. Surface disturbances associated with the construction of the Proposed Action include approximately 425 acres of permanent and 653 acres of temporary disturbance. The protective cover of vegetation and plant litter would be removed or otherwise disturbed. Water quality could be reduced and accelerated erosion and subsequent sedimentation of downstream waters could occur. Operation and use of the recreational facilities could also reduce water quality and productivity and cause accelerated erosion and subsequent sedimentation of downstream waters. These effects may result from hiking, biking, and horseback trail use, including the establishment and use of unauthorized trails.

The potential exists for debris flows and flash floods to occur in Kyle wash and in smaller tributaries and swales. The debris flows and flash floods typically occur in response to intense rainfall. These events are exacerbated in watersheds

where a wildfire has occurred in the recent past, or in which significant areas of impervious surfaces contribute to increased runoff potential.

Removal of the water diversion structure and the existing golf cart paths within the 128-acre parcel would initially displace soil and vegetative materials within and immediately adjacent to Kyle wash. These materials could be transported downstream during a rainfall event. Implementation of best management practices (BMPs) and stormwater management practices will minimize these effects and no significant adverse impacts are anticipated. The long-term beneficial impacts resulting from the removal of these structures include reduced erosion and headcutting during periods of flow in Kyle wash. Rehabilitation of the Kyle wash embankments and channel as part of the removal of these structures would return the wash to a natural channel morphology that has less potential for bank or channel erosion than currently exists.

Effects on water quality would be beneficial in areas where restoration would be implemented, including uplands surrounding existing ponds and Kyle wash and the former golf course property. Other beneficial effects of the Proposed Action would include the closure and restoration of user-created trails and abandoned roads. Establishing native vegetation and aerating compacted soils in disturbed areas would reduce erosion and sedimentation and would promote surface water infiltration and retention.

Trails

The Proposed Action would create approximately 48 miles of designated non-motorized trails for use by hikers, bikers, and equestrians, including five new trailheads. In addition, approximately 16 miles of unauthorized trails in the project area would be closed and restored to a natural vegetative condition and approximately 6 miles of existing road would be converted to non-motorized trails.

Construction of trails within, across, or immediately adjacent to Kyle wash or Telephone Canyon wash would have the greatest potential for impacts on hydrology. Construction of the Kyle Canyon Wash Trail adjacent to the wash and crossing Kyle wash would require excavating gravel soils and providing temporary storage of excavated material adjacent to the trail within the wash at locations where underground utilities are collocated in the trail corridor. This area would be prone to wind and water erosion until construction and restoration is complete. The excavated soils would be securely staged (i.e., covered) prior to reuse. The impervious pavement surface of the Kyle Canyon Wash Trail and paved trails in the Valley area would collect and concentrate surface runoff leading to increased erosion potential.

The Canyon Bottom Trail, an unpaved hiking trail, would be constructed adjacent to Kyle wash and would cross the wash, which would increase erosion and soil compaction during construction. The proposed trails in Telephone Canyon would cross the Telephone Canyon wash; impacts on hydrology from these trails would depend on the trail standard and location within the drainages.

Impacts from trail construction are short term in nature and minimal compared to the long-term benefits of having designated trails that have been constructed properly in sustainable locations. User-created trails would be closed and restored, reducing soil erosion and compaction in these areas. Soil compaction on unsurfaced trails and trails outside of drainages can intercept and collect surface runoff that can lead to concentrated flow with resultant erosion and eventual sedimentation in drainages within the basin.

Roads

Several drainage-crossing structures would be installed throughout the project area, including the replacement of several existing undersized culverts. These drainage crossings would have the potential to increase temporary erosion and soil compaction during construction. The long-term effects of these structures would reduce streambed erosion and soil compaction caused by vehicular traffic crossing unimproved low-water crossings, and from erosion and concentrated flows caused by undersized crossings. Energy dissipaters (riprap), located where warranted on roadway drainage facilities, would reduce erosion and resource damage from concentrated water flows during storm events. The road closures and site restoration would have a beneficial effect on water quality by reducing water sheet flows and soil erosion along these roads.

Under the Proposed Action, approximately 8 acres of roadway and parking areas would be paved. The impervious pavement surface would collect and concentrate surface runoff leading to increased erosion potential. The runoff, particularly from impervious parking areas, may include oils and other vehicular fluids that could impair water quality.

Main Camping and Picnic Area

Surface disturbances associated with constructing the Main Camping and Picnic Area include approximately 115 acres of permanent and 48 acres of temporary disturbance. The majority of the permanent surface disturbance would be impervious due to the construction of roads, parking stalls, the campground and picnic unit pads, and buildings. The short-term impacts associated with construction include increased erosion as vegetation is trampled and removed from project area. Soil compaction from construction and operation activities is also anticipated. Long-term effects would include soil compaction and trampling of vegetation by recreation users venturing off of established roads, trails, and paths.

Wastewater Treatment

Impacts from the construction and operation of on-site septic tanks and drain/leach fields include approximately 7 acres of permanent and 7 acres of temporary disturbance. This acreage includes approximately 1 acre of land that is already disturbed by prior land use activities.

Standard septic tank/leach field systems can contribute to groundwater contamination from increased levels of nitrite and nitrates. Pre-treatment technologies and other design considerations, as approved by the permitting

jurisdiction, can significantly reduce nitrate and nitrite concentrations. The size of the Village treatment facility includes consideration for connecting the Mt. Charleston Water Company wastewater treatment facility. The change in this treatment location has the potential to improve water quality from Forest Service Well No. 1 located near the water company's treatment facility.

Water Facilities

Groundwater wells would be retested to verify the hydraulic parameters, safe yields, water quality and the estimated and potential effects on adjacent private wells. Water demand and usage estimates indicate that under the Proposed Action, without implementing water conservation design measures, use would be at the existing water right. High pumping rates from Well No. 2 could adversely affect well production of a nearby well operated by the Mt. Charleston Water Company. High pumping rates from Well No. 1 could raise nitrate levels in the drinking water because of the nearby, up gradient leach field operated by the Mt. Charleston Water Company. The existing water line serving Kyle CCC Camp, Kyle Canyon Campground and Fletcher View Campground would be replaced with a larger-diameter pipe to meet water demands of existing and proposed facility improvements.

The existing water storage reservoirs at the upper pond site (located northwest of the Village area adjacent to SR 158) would be removed and the area would be restored. A new approximately 330,000-gallon water storage tank located near the mouth of Telephone Canyon would be constructed. This facility would permanently impact approximately 5 acres of native Utah juniper and big sagebrush vegetation. The impervious surface created by this facility would collect and concentrate surface runoff leading to increased erosion potential.

The Proposed Action identifies the relocation of the existing solid waste transfer station off of NFS lands. Removal of the solid waste transfer station may increase illegal dumping on public lands.

Market Supported Alternative

Impacts on hydrology under the Market Supported Alternative would include the same actions as described under the Proposed Action with the following exceptions. The Market Supported Alternative would cause approximately 331 acres of permanent and 579 acres of temporary disturbance. In comparison to the Proposed Action, the Market Supported Alternative would require approximately 74 acres less removal of vegetative soil cover and soil disturbance and create 71 acres less impervious surface. This would result in a lower potential for degradation of water quality and productivity compared to the Proposed Action.

Trails

Impacts on water resources as they relate to trails for the Market Supported Alternative would be similar to those of the Proposed Action with the exception that 44 miles of non-motorized trails would be constructed.

Roads

Impacts on water resources as they relate to roads for the Market Supported Alternative would be similar to those of the Proposed Action. Under this alternative, approximately 13 acres of roadway and parking areas would be paved. This creates an additional 7 acres of impervious cover than the Proposed Action relative to proposed roadway facilities.

Main Camping and Picnic Area

Impacts on water resources as they relate to campgrounds for the Market Supported Alternative would be similar to those of the Proposed Action. However, the surface disturbance for the Main Camping and Picnic Area would be decreased due to increased density and some reduction in the number of sites (camping and picnic). Surface disturbances associated with the construction of the Main Camping and Picnic Area include approximately 47 acres of permanent and 27 acres of temporary disturbance. For the most part, the permanent disturbance would be impervious cover including roads (entrance, campground, and picnic loop roads), parking stalls, campground and picnic unit pads and buildings. Long-term effects from vegetation trampling and soil compaction from recreation users traveling off established roads, trails, and paths would be less than the Proposed Action because of the reduced development scale.

Wastewater Treatment

The impacts from the construction and operation of a sewage collection system with a central waste treatment facility include approximately 19 acres of permanent and 18 acres of temporary disturbance. This acreage includes approximately 0.5 acre of land that is already disturbed by prior land use activities.

The Market Supported Alternative uses a closed-loop sewer line/sewer lagoon system. Fewer impacts on water quality would result than under the Proposed Action because the sewer lagoon system would not allow the infiltration of wastewater into the alluvial soils of the project area. There is a remote potential for discharge from the lowest lagoon cell which would require permitting from the Nevada Division of Environmental Protection.

Water Facilities

Impacts on water resources as they relate to the water distribution system for the Market Supported Alternative would be similar to those of the Proposed Action except that fewer distribution lines would be installed in the Main Camping and Picnic Area and there would be less water usage because of the reduced development scale. This alternative would not have a water supply at the Harris

Springs Road/mountain bike trailhead. The Market Supported Alternative uses a commercial water source (Mt. Charleston Water Company) for all proposed facilities except the Western Area, which would continue to use the Las Vegas Valley Water District as the water provider. This alternative involved connecting the existing Forest Service Well No. 1 and Well No. 2 to the Mt. Charleston Water Company system. Supply line corridors from Forest Service wells would be routed to Mt. Charleston Water Company water storage facilities near the Resort on Mount Charleston instead of the storage tank in Telephone Canyon.

Water storage, if required for this alternative, is proposed to occur off site on private land (near the Resort on Mount Charleston) adjacent to the existing Mt. Charleston Water Company storage tank for cost and operational efficiencies. The proposed tank would have a capacity of approximately 140,000 gallons; although, the additional tank may not be necessary depending on well yields and final design flows.

The existing open tanks, associated pipes, and equipment at the upper ponds adjacent to SR 158 would be removed. The area would be regraded to natural contours and revegetated with species appropriate to the setting. The short-term impacts associated with removal and regrading include increased erosion from vegetation trampling and removal, and soil disturbance and compaction. Revegetation would reduce erosion and sedimentation and would promote surface water infiltration and retention in the long term.

3.1.5 Social and Economic Resources

An assessment of the social and economic conditions in the project area was presented in the *Socioeconomic Technical Memorandum* (ICF Jones & Stokes 2009e). Social and economic analyses are conducted to determine what effect land management decisions may have on local communities, economies, and the people who use natural resources. The potential environmental justice effects are discussed in Section 3.7.13, *Executive Order 12898 (Environmental Justice)*. Cumulative effects are discussed in Section 3.7.5, *Cumulative Effects*.

The geographic scope of the study area is the local area of the Middle Kyle Complex within the SMNRA, including the lower, middle, and upper Kyle Canyon areas. Regional and local trends in population, demographics, employment, housing and personal income were considered.

Recently, the population of Las Vegas has seen a slight decline; however, the population of Clark County is expected to increase to 3.6 million by 2035 (Clark County Department of Comprehensive Planning 2008). A discussion of the regional demographic trend in Clark County is presented in Chapter 1, *Purpose of and Need for Action*.

The largest employers within Clark County are the Clark County School District (38,611 people), Clark County and Las Vegas Metropolitan Police Department (Metro) (14,859 people), and five Las Vegas Strip hotels and resorts that employ approximately 5,060 to 9,800 people each. The largest employment sectors are

leisure and hospitality (22.22%); casino hotels and gaming (13.69%); trade, transportation, and utilities (13.61%); professional and business services (9.36%); and government (8.65%) (Clark County Department of Comprehensive Planning 2009).

As of 2007, Clark County estimates the population of Mount Charleston to be 1,205 (Clark County Department of Comprehensive Planning 2008). Mount Charleston has relatively few employers and an economy primarily based on tourism. Private employers include two hotels in and near the town: the Mount Charleston Lodge and the Resort on Mount Charleston. The Las Vegas Ski and Snowboard Resort is a seasonal snow skiing and snowboarding resort located at the end of SR 156 in Lee Canyon with seasonal employment opportunities. Public employers include the Forest Service, NDOT, Clark County, Metro, and the Nevada Department of Forestry (NDF).

Affected Environment

The effects analysis was divided into two main areas: 1) effects related to construction, and 2) effects related to long-term operation of the project. For each of these areas, the following two factors were analyzed:

- **Housing, employment, or personal income.** These are impacts that may affect housing, employment, or personal income of the population within the study area.
- **Social wellbeing.** These are impacts that may affect the social wellbeing including the availability, amount, and quality of resources such as recreational and economic opportunities.

Direct and Indirect Effects

Potential direct and indirect effects on social and economic resources are described below.

No Action Alternative

No direct or indirect adverse socioeconomic or economic effects would occur under the No Action Alternative. Recreational activities (dispersed and developed) would continue to occur. The existing operations and facilities would continue in the same locations, including the Kyle Canyon Interim Visitor Center, Forest Service maintenance facilities, fire protection operations and living quarters for permanent and seasonal staff. Fire protection facilities for Clark County Fire and NDF would remain in the upper Kyle Canyon area. Forest Service permitted occupancies for the solid waste transfer facility and the Metro office would also remain the same.

Proposed Action

Construction-related activities may result in a minor benefit to the local economy if workers purchase goods and services from local businesses, because there are few local businesses offering goods and services in Kyle Canyon. It is estimated that the construction of new facilities may occur over a 15-year period. Throughout that 15-year period there would likely be intermittent activity, some of which may last a full construction season (e.g., the summer and shoulder season months) and some that may last a few weeks or months. This construction activity is likely to bring additional traffic and individuals to the area, but is not expected to adversely affect housing supply or substantially increase employment or personal income of residents within the study area.

During operation of the Proposed Action, there would be greater potential for economic enterprise for the residents within the study area because of the increase in the number of people visiting the Middle Kyle Complex area. Improved recreational elements could result in a slight increase in the use of privately owned vacation or rental properties that are currently used for seasonal or recreational purposes (about 45% of available housing stock). Additional permanent housing facilities would be created for Forest Service personnel, but no adverse effect on existing private housing within the study area would occur.

The introduction of new food retail vendors to the area could increase competition among food service providers that could result in an adverse economic effect on local businesses. Under the Proposed Action, there would be four to six retail shops, three food vendors, a bookstore, a meeting space, a large amphitheater, and bicycle and equestrian rentals. The Proposed Action would represent an expansion of the level of services currently offered by the Kyle Canyon Interim Visitor Center and would provide additional services and amenities to visitors. The retail concessions would offer food, beverages, souvenirs, and sundries to meet the needs of campers and day-use recreationists. Mount Charleston has lodges that offer sit-down dining and few, if any, concessions or sundries. However, the increase in the number of visitors to the area is also expected to increase the overall business for food retail vendors in the area.

Bicycle and horse rental facilities would be constructed as part of the Proposed Action, but the Forest Service would lease the facilities to a concessionaire to operate and maintain, similar to the approach for existing campground/picnic sites.

The Proposed Action would likely result in improved conditions for the social wellbeing of the study area. The addition of new facilities and visitor services and the prohibition of dispersed car camping within 300 feet of roads and trailheads would eliminate the occasionally dispersed and unorganized use of the area that has occurred in the past.

The prohibition of dispersed camping may have an adverse impact on the population that prefers low- to no-cost camping; however, fee-based facilities would still be available. Proposed facilities would enable these users to park in designated areas with designated picnic tables and associated amenities such as

public restrooms and trash receptacles. In addition, dispersed camping would continue to be available in other areas of the SMNRA; however, many of these locations are a greater travel distance from the Las Vegas area. Other visitor services would be available at no charge, such as basic visitor information services, parking at the Village, many of the outdoor facilities in the Village and Valley areas, and use of the trails and trailheads.

In general, the Proposed Action would improve visitor facilities and enhance the quality, amount, and availability of the recreation resources.

A beneficial social effect of the relocation and consolidation of fire, police, and administrative facilities of the Forest Service, Clark County, Metro, NDOT, and NDF would be increased communication and coordination among these agencies in the event of an emergency. The relocation of the Clark County Fire and NDF facilities would result in a shift in the number of public employees located in the upper Kyle Canyon (in the town of Mount Charleston) to the Middle Kyle Complex. Because of the small number of employees, this shift in location would result in few to no adverse economic or social effects. Relocating Clark County Fire and NDF facilities to the Northern Area could increase the response time to emergencies in the upper canyon.

Market Supported Alternative

The construction-related effects for the Market Supported Action are the same as those described for the Proposed Action. Overall, the Market Supported Alternative has fewer amenities to be constructed; therefore, the amount of intermittent construction activity over the proposed 15-year construction period would be decreased. However, the minor beneficial effects on the local economy that could result if workers were to purchase goods and services from local businesses would be the same.

The operation-related effects for the Market Supported Alternative would be similar to those described for the Proposed Action with the following exception. Under this alternative retail services would be limited with only one food vendor/café proposed at the Village. The introduction of this service would not result in an adverse economic effect on local businesses.

3.1.6 Transportation

A summary of proposed transportation improvements to existing facilities within the project area was documented in the *Transportation Technical Memorandum, Middle Kyle Complex* (ICF Jones & Stokes 2009f). The potential environmental effects of implementing the proposed transportation improvements were documented in the resource-specific specialist reports.

Access to the Middle Kyle Complex project is from U.S. Highway 95 (US 95) and SR 157 or SR 156 and SR 158. The location of these transportation facilities is shown on Figure 1-2.

Existing transportation facilities within the project area are shown on Figure 2-1 including the following:

- Three improved National Forest System (NFS) roads and 23 unpaved motorized routes¹. NFS routes in the project area are open to all motor vehicles, including small OHVs that may not be licensed for highway use as shown on the SMNRA Motor Vehicle Use Map (MVUM) (Forest Service 2009c);
- SR 157 and SR 158 are two-lane paved facilities under the jurisdiction of NDOT. NDOT is responsible for maintenance and operation of these roadways. SR 157 is the primary roadway providing access to Forest Service facilities in Kyle Canyon and the community of Mount Charleston in upper Kyle Canyon. SR 156 is located north of Kyle Canyon and outside of the project area. The three state routes were designated as Nevada Scenic Byways in July 1998 (NDOT 2008). Approximately 6 miles of SR 157 and approximately 4 miles of SR 158 are within the project area; and
- Harris Springs Road, under the jurisdiction of Clark County is an unpaved improved road, and 1.2 miles of this road are located within the project area.

The *Middle Kyle Canyon Development Traffic Study* (PBS&J 2007) was prepared to address traffic impacts that may occur as a result of increased traffic generated by implementing the Middle Kyle Complex project. This study found that with implementing the recommended safety and traffic movement improvements, SR 157 would operate at an acceptable level of service under the forecasted traffic volumes. The proposed improvements to SR 157 and SR 158 are summarized by alternative in Chapter 2, *Alternatives including the Proposed Action* and Appendix B.

Implementation of either action alternative would result in increased traffic congestion and travel time on SR 157 from increased visitation to the project area, proposed reduction in speed limits near the Village area, and changes in the level of service at the proposed intersections. The Market Supported Alternative may include constructing a roundabout at the proposed Village area that would require granting additional highway right-of-way easement to NDOT.

The Business Plan (PricewaterhouseCoopers [PwC] 2008) evaluated the scope, scale, and location of the development and visitor facilities including an investigation of financial considerations of various transit model alternatives for shuttle bus service. This evaluation, the *Middle Kyle Canyon Transportation Options Report* concluded that a shuttle bus system would be cost-prohibitive and was not warranted under the visitation scenarios presented in the business plan (Jacobs Carter & Burgess 2007). Additionally, the *Middle Kyle Canyon Development Traffic Study* concluded that the forecasted traffic volumes for the Middle Kyle Complex project indicated that transit (e.g., shuttle system) was not warranted to improve traffic operations on SR 157 (PBS&J 2007). Therefore, infrastructure for a shuttle system was not included in the action alternatives. However, both the Proposed Action and Market Supported Alternative include allocated areas that could be used as a transit center in the future.

¹ The term “route” refers to both trails and roads, e.g., motorized routes would include both NFS roads and trails designated for motor vehicle use.

The action alternatives include proposed changes to public access across private land and egress to permitted occupancies. Improvements (i.e., paving and widening) proposed to Clark County road (Harris Springs Road) included in the Proposed Action would increase traffic speeds on the improved segment. Implementation of the action alternatives may result in the need for public right-of-way acquisition across private land and revision of existing special use permits for permitted occupancies. This information is summarized by alternative in Appendix B.

The *Middle Kyle Complex Project Travel Analysis* (Forest Service 2009b) provided recommendations for improvement, closure, or change in designated use or restrictions on NFS routes and user-created roads and trails in the project area. The draft travel analysis plan was circulated at the same time as the September 2009 DEIS to accommodate public review and comment on the recommendations in the plan. The final travel analysis plan is available on the Humboldt-Toiyabe National Forest web site. Table 3.1-1 provides a summary of the NFS routes proposed for improvement, closure and restoration, or conversion to non-motorized use under each alternative.

Existing NFS routes in the project area, as shown on the MVUM, are currently designated for use by all motorized vehicles including OHVs. Proposed changes to the MVUM on motor vehicle use of these NFS routes are disclosed in this section and the travel analysis; the potential impacts on recreation opportunities for OHV use are discussed in Section 3.2, *Recreation Resources*.

Table 3.1-1. Summary of Proposed Changes to Existing National Forest System Routes by Alternative

NFS Route Number/Location	No Action Alternative	Proposed Action	Market Supported Alternative
45055, Kyle CCC Camp (Western Area)	0.15-mile access road in Kyle CCC Camp with 0.3 mile paved and 0.12 mile unpaved. The culvert and drainage crossing in Kyle wash would be maintained.	Culvert in Kyle wash would be replaced and drainage crossing upgraded to meet Forest Service standards. 0.04 mile would be closed and restored, 0.06 mile paved and remaining 0.05 mile would be maintained as unpaved.	Same as the Proposed Action.
45064, Kyle Canyon Campground Road (Western Area)	0.66-mile paved road in Kyle Canyon Campground. Existing turning radius of roads, turnouts, and drainage crossings would be maintained. Recreational vehicle (RV) use would be maintained to the current size of vehicle. Two culverts and drainage crossings over Kyle wash would be maintained.	Roadway segments would be widened with two-way traffic to double-lane standard, selected roads and parking stalls would be rehabilitated to accommodate larger RVs as appropriate. Existing drainage crossings in Kyle wash would be upgraded to Forest Service standards.	Two-way traffic road segments at existing width would be retained and intervisible turnouts where extra width can be accommodated with minimal resource impact would be added. Selected roads and stalls would be widened and rehabilitated only where removal of existing mature ponderosa pines could be avoided. Drainage crossings in Kyle wash would be upgraded to Forest Service standards.
45065, Fletcher View Campground Road (Western Area)	0.01-mile paved entrance to Fletcher View Campground. The culvert and drainage crossing in Kyle wash would be maintained.	Culvert in Kyle wash would be replaced and drainage crossing upgraded to Forest Service standards.	Same as the Proposed Action.
45077, Kyle-Fletcher Heliport Road (Western Area)	0.2-mile unpaved route with gate. This route is closed to motor vehicle use, excluding authorized vehicles.	Same as the No Action Alternative.	Same as the No Action Alternative.
45530, Telephone Canyon Road (Northern Area)	3.34-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	0.7 mile would be realigned and paved as the main entrance to the Northern Area. A gate would be installed at end of pavement and include a widened gravel shoulder to accommodate foot traffic. 2.6 miles would be converted to non-motorized trail and closed to all motor vehicles north of the gate, excluding authorized vehicles. Drainage crossing would be installed to Forest Service standards.	Same as Proposed Action, except gate would be installed approximately 300 feet south of the gate location under the Proposed Action. Pavement would extend north of gate for access to wildlife rehabilitation facilities by authorized vehicles only.

NFS Route Number/Location	No Action Alternative	Proposed Action	Market Supported Alternative
45530A (Northern Area)	0.42-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	Road would be realigned, paved, and extended to the east by 0.6 mile to provide access to trailhead, equestrian campground, and wastewater treatment areas in the Northern Area.	Same as the Proposed Action, although the facilities accessed would be Forest Service and interagency fire and law enforcement facilities.
45530B (Northern Area)	0.03-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	Road would be closed and restored.	Same as the Proposed Action
45531 (Main Camping and Picnic Area)	2.97-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	Road would be realigned and paved as the main access road through the Main Camping and Picnic Area, a distance of approximately 3 miles. A new road would be constructed, or the existing road improved, parallel to and connecting to SR 157 at each terminus. Abandoned road segments would be restored. Gates near each terminus would be installed at the eastern parking area to provide controlled access within the fee area. Low-water crossing on eastern end of the road would be upgraded.	Same as the Proposed Action.
45531A (Main Camping and Picnic Area)	0.23-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	Road would be realigned and paved for approximately 500 feet as the main entrance off SR 157 to the Main Camping and Picnic Area. 0.14 mile of the road would be closed and restored.	Same as the Proposed Action.
45531B thru 45531H (Main Camping and Picnic Area)	The combined total of 2.02 miles would be maintained as unpaved roads, open to all motorized vehicles.	Roads would be closed and restored.	Same as the Proposed Action.
45532A thru 45532C (Eastern Area)	The combined total of 2.97 miles would be maintained as unpaved roads, open to all motorized vehicles.	A total of 2.97 miles of road would be converted to non-motorized components of the south rim trail system. A new trailhead would be constructed just west of Harris Springs Road on 45532C. Signs and traffic management devices (e.g., barrier rock, fence) would be installed west of Harris Springs Road to discourage unauthorized vehicle access.	Same as the Proposed Action.

NFS Route Number/Location	No Action Alternative	Proposed Action	Market Supported Alternative
45532H (Eastern Area)	0.37-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	Road would be paved providing access to the new trailhead with paved parking area west of Harris Springs Road.	Same as the Proposed Action, except road and trailhead would not be paved.
45532J (Eastern Area)	0.24-mile road would be maintained as unpaved and would remain open to all motorized vehicles.	Road would be closed and restored.	Same as the Proposed Action.
45577, Wooden Pole Power Line Road (Northern Area)	Wooden Pole Power Line Road would be maintained as unpaved road open to all motorized vehicles.	OHV trailhead would be built east of 45577 north of SR 157. Trailhead would provide access to existing designated routes open to all motorized vehicles.	Same as the No Action Alternative.
25871 (Northern Area)	0.3-mile unpaved motorized trail branching off 45530 would be maintained and remain open to all motorized vehicles.	Road would be closed and restored.	Same as the Proposed Action.
25872 (Northern Area)	0.9-mile unpaved motorized trail north of SR 157 would be maintained. This trail is used for access to the existing overhead utility line and would remain open to all motorized vehicles.	Road would be closed and restored.	Same as the Proposed Action.
25875 (Eastern Area)	0.1-mile unpaved motorized trail branching off 45532A would be maintained and remain open to all motorized vehicles.	Trail would be closed and restored.	Same as the Proposed Action.
25876 (Eastern Area)	0.1-mile unpaved motorized trail branching off 45532C would be maintained and remain open to all motorized vehicles.	Trail would be closed and restored.	Same as the Proposed Action.

Notes:

Routes listed in this table are shown on Figure 2-1, the MVUM, and the Travel Analysis Plan. Table 2-1 lists the total mileages of NFS routes that would be unpaved, paved, closed, and restored or converted to non-motorized trails by alternative. The mileages of unauthorized routes that would be closed and restored and existing and proposed trail mileages are also included in Table 2-1.

3.2 Recreation Resources

Recreation resources within the project area were described in the *Recreation Specialist Report, Middle Kyle Complex* (ICF Jones & Stokes 2009g). The analysis considered the potential direct, indirect, and cumulative effects of each alternative on recreation resources. Detailed information on the analysis conducted can be found in the report, which is on file in the SMNRA office. This section of the EIS summarizes the analysis included in the specialist report, with the exception of cumulative effects, which are discussed in Section 3.7.5, *Cumulative Effects*. The affected environment for recreation resources is described in Section 1.3.1, *Need Statement 1*, and Section 2.2.1, *Alternative 1 - No Action Alternative*. Existing conditions and recreation facilities are depicted on Figure 2-1 and listed in Table 2-1. Table 2-1 also lists the recreation facilities proposed under the Proposed Action and Market Supported Alternative. Refer to the figures contained in Chapters 1 and 2 for the location of proposed recreation facilities and uses.

The Forest Service uses the recreation opportunity system (ROS) to describe the settings in which people choose to experience a particular place and the types of recreation opportunities that tend to occur within these different settings. In short, ROS is a framework for understanding the relationship between landscape setting and recreation experience.

The ROS is organized as a spectrum utilizing the following six classes: Primitive, Semi-primitive Non-motorized, Semi-primitive Motorized, Roded Natural, Rural, and Urban. Currently, the majority of the project area, including the main activity areas accessed via State Route (SR) 157 and SR 158, has been inventoried as Roded Natural. Some outlying portions of the project area, including lands east of Telephone Canyon Road, fall within the Semi-primitive Motorized category. These classifications would remain in the No Action Alternative. A very small portion of the Mt. Charleston Wilderness Area lies within the project area's southern analysis boundary, just south of the Valley's trail system; however, there are no planned construction activities within the wilderness. Based on the intent of the Wilderness Act, standard agency policy would be to manage this area and other adjacent wilderness areas with an objective of preserving primitive ROS opportunities to the greatest possible extent.

An explanation of how the ROS classification would change under the Proposed Action and the Market Supported Alternative is discussed in Section 3.2.2, *Changes to the Recreation Opportunity Spectrum*.

3.2.1 Direct and Indirect Effects

Potential direct and indirect effects on recreation resources were analyzed for each of the three alternatives using the following four topic areas:

- Quantity and Diversity of Recreation,
- Location of Recreation,
- Safety and Accessibility for Persons with Disabilities and the Elderly, and
- Visitor Experience and Quality of Recreation.

This framework allowed the analysis of effects to be conducted within a rigid and easily comparable matrix. The four topic areas were derived from analytical tools commonly used in recreation master planning. These topic areas are also reflected in the relevant desired future conditions, goals, standards and guidelines, and the purpose and need for the action as outlined in Chapter 1.

Table 3.2-1 summarizes the direct and indirect effects on recreation resources by alternative.



Table 3.2-1. Comparison of Effects by Alternative

No Action Alternative	Proposed Action	Market Supported Alternative
QUANTITY AND DIVERSITY OF RECREATION		
<p>This alternative provides visitors to the Middle Kyle Complex area with the lowest quantity and diversity of recreation facilities.</p>	<p>Under this alternative the existing recreation infrastructure would be expanded and upgraded with additional recreation opportunities available to visitors. With new opportunities for recreation provided as indicated in Table 2-1, this alternative offers an increased diversity of recreation opportunities in developed settings.</p>	<p>Similar to the Proposed Action, this alternative offers a more diverse range of developed recreation opportunities than under current conditions. However, the capacity of the facilities (Table 2-1) providing these opportunities would be somewhat smaller than in the Proposed Action. It is anticipated that the smaller capacity of the facilities may correspond more accurately to user demand.</p>
<p>Kyle Canyon Interim Visitor Center with existing facilities (public restrooms, parking for approximately 10 vehicles, and limited interpretive materials) and functions would be maintained as primary source for visitor contact.</p>	<p>The Village and Valley areas would include a visitor center with a bookstore, indoor meeting room, retail, rental, food area, artist-in-residence program, plaza area, landscape and play space, large amphitheater, outdoor classrooms, transit center, wildlife/fishing pond for children, multi-purpose green space, and interpretive exhibits. An underground parking garage and surface parking area would include ± 1,300 spaces.</p> <p>Programs offered in this location would include interpretive, educational, and entertainment programs, as well as community events and activities.</p>	<p>Facilities in the Village and Valley areas would be smaller compared to the Proposed Action, as indicated in Table 2-1. The visitor center would include a bookstore, one retail/sundry/gift space, and a café. The plaza area, amphitheater, and parking facilities would be smaller and the artist-in-residence space would not be constructed. Surface parking would provide for 250 spaces.</p> <p>Programs offered in this location would be similar to those of the Proposed Action, with the exception that this alternative would include an education facility.</p>
<p>No new picnic facilities would be constructed in the project area. Picnicking would continue to occur in developed picnic areas and dispersed areas in the upper canyons and Deer Creek.</p>	<p>New picnic areas would be constructed including 89 sites/136 units (42 single, 47 double) and 6 group sites (4 50-person, 2 25-person).</p>	<p>Fewer picnic sites (46, approximately half that of the Proposed Action) and only one 50-person group site would be constructed.</p>

No Action Alternative	Proposed Action	Market Supported Alternative
<p>Kyle Canyon Campground would continue to provide camping, but would not be reconstructed.</p> <p>No new campgrounds would be constructed in the Middle Kyle Complex project area. The existing Kyle Canyon Campground would be maintained at 26 sites/32 units (20 single, 6 double)</p>	<p>Kyle Canyon Campground would be reconstructed and improved with 29 sites/38 units (21 single, 7 double, 1 triple). New campgrounds would be constructed with 211 sites/291 units (167 single, 35 double, 9 triple) and a small amphitheater. Group facilities would include a small group RV campground with 10 sites, a large group tent campground with 100 sites (2 areas, 50 sites each) and an equestrian campground with 10 sites.</p>	<p>Kyle Canyon Campground reconstruction would be similar to that of the Proposed Action (29 sites/40 units [16 single, 7 double, 1 triple]), but would include camp cabins (3 single, 2double) and a play area. New campgrounds would be constructed with fewer campsites under this alternative (48 sites/62 units [36 single, 10 double, and 2 triple] and a small amphitheater). However, this alternative would provide a broader range of camping facilities and opportunities with the commercial-style campground capable of accommodating Class A RVs with 144 sites (71 back-in sites, 48 pull-thru sites, 12 tent sites and 13 camp cabins; with a 15-unit workers' camp). Additional amenities may include a camp store, laundromat, Frisbee golf course, splash pad, playground and two multiuse playing fields. Group and equestrian campsites would not be constructed.</p>
<p>Dispersed camping would continue alongside roads and motorized trails. Established campsites may be closed as necessary to minimize or prevent resource damage.</p>	<p>The Forest Service may implement an administrative action that would prohibit dispersed camping within 300 feet on either side of Forest Service roads and trails open to motorized vehicles, trailheads, county roads, and state highways within the Lee Canyon, Kyle Canyon, and Deer Creek areas of the SMNRA, including connecting and tributary Forest Service routes such as those in the Macks Canyon and Harris Springs areas. Figure 1-4 depicts the areas where dispersed camping would be prohibited.</p>	<p>Same as the Proposed Action.</p>

No Action Alternative	Proposed Action	Market Supported Alternative
<p>Fletcher Canyon Trail (1.6 miles) and trailhead would be maintained for hiking and equestrian use.</p>	<p>Approximately 48 miles of designated non-motorized trails would be constructed for use by hikers, bikers, and equestrians, including 5 new trailheads. Of the 5 new trailheads, one would be an OHV trailhead.</p> <p>Equestrian rental facilities and a corral would be constructed at the trailhead in Telephone Canyon. A mountain bike rental facility would be constructed off Harris Springs Road.</p>	<p>Same as the Proposed Action, with the following exceptions:</p> <p>A total of 43.8 miles of non-motorized trails would be constructed;</p> <p>5 new trailheads, including a relocated Fletcher Canyon Trailhead with new facilities and additional parking would be constructed;</p> <p>A bridge (non-motorized) would be constructed over Kyle wash and the slot canyon; and</p> <p>The OHV trailhead, equestrian and mountain bike rental facilities would not be constructed.</p>
<p>16 miles of unauthorized trails created by hikers, bikers, equestrians, and OHVs would remain undesignated and may be closed as necessary to reduce or prevent resource damage.</p>	<p>The 16 miles of unauthorized trails in the project area would be closed and restored. Off-trail use would be discouraged but the available mileage of designated trails would increase threefold.</p>	<p>Same as the Proposed Action.</p>
<p>7 miles of unauthorized roads would remain undesignated and may be closed as necessary to reduce or prevent resource damage.</p>	<p>Unauthorized roads would be closed and restored. Concentrating Forest Service staffing in this area would make continued use of unauthorized roads more difficult.</p>	<p>Same as the Proposed Action.</p>
<p>Non-motorized and motorized use (including OHV) of 12.9 miles of designated unpaved NFS roads would continue.</p>	<p>5.2 miles of NFS roads in the project area would be closed to motorized and non-motorized use and the roads would be restored; however, 6 miles would be converted to non-motorized trails and available for hikers, bikers, and equestrians. OHV use would be allowed at the OHV trailhead where a short segment of NFS 45577 is located in the project area. OHV use of this designated road would continue for access to routes outside the project area as designated on the SMNRA MVUM.</p>	<p>Same as the Proposed Action, with the exception that 5.6 miles of NFS roads would be converted to non-motorized trails. The OHV trailhead on NFS 45577 would not be constructed.</p>
<p>Use of 1.4 miles of NFS motorized trails currently on the MVUM (25871, 25872, 25875, and 25876) would continue.</p>	<p>The 1.4 miles of motorized trails would be closed to motorized use and removed from the MVUM. Motorized use of designated NFS routes outside the project area would be permitted as designated on the SMNRA MVUM.</p>	<p>Same as the Proposed Action.</p>

No Action Alternative	Proposed Action	Market Supported Alternative
<p>Hunting and trapping would continue to occur in the project area, as permitted by Nevada Department of Wildlife (NDOW) and Nevada Revised Statutes (NRS). Recreational shooting of firearms (e.g., target practice) would continue to occur.</p>	<p>Discharging a firearm is prohibited within 150 yards of developed recreation facilities (campgrounds, picnic areas, buildings, occupied areas, and trails) and Forest Service facilities (36 Code of Federal Regulations [CFR] 261Subpart A 261.10 [d][1 and 2]). The opportunity for shooting in areas in the project area that fall within the CFR criteria, including blackpowder shooting at the Harris Springs site, would be eliminated. Hunting and trapping would continue as permitted by NDOW and NRS on the SMNRA. Implementation of this alternative would not comply with GMP guideline 11.71 and would require an amendment to the GMP. Recreational shooting (e.g., target practice) would be allowed outside 150 yards of the developed areas. See Section 3.6 for additional information on compliance with the GMP.</p>	<p>Same as the Proposed Action.</p>
<p>Wildlife viewing and sightseeing would continue.</p>	<p>Same as the No Action Alternative, although the quality of sightseeing opportunities is expected to improve over the existing conditions due to construction of proposed facilities in the Village and Valley areas.</p>	<p>Same as the Proposed Action.</p>

LOCATION OF RECREATION

<p>The majority of current recreation use occurs in the few existing developed recreation sites in the project area; that use would be largely unchanged under this alternative as the capacity and nature of those sites would generally limit any major qualitative or quantitative shifts in use. Recreation use does occur and would continue to occur outside of the developed sites. Use patterns and locations would continue to generally be defined by user groups. Without set capacities or controls, use levels could conceivably increase for some activities in some locations, and this development could cause those use patterns to spread over greater areas. Mountain biking might be the most likely candidate for this growth.</p>	<p>The Proposed Action would emphasize providing recreation opportunities in structured settings with defined facilities in defined areas, such as the Village, Valley, picnic areas, campgrounds, and designated trail network. Visitor information and services would encourage and direct visitors to those structured opportunities rather than letting them find their own way in undefined locations. Overall, facilities would be sited in a way that respects the natural and cultural history of the area. Facilities will be arranged and grouped in a way that would allow users to access a variety of different facilities via the trail network, rather than by automobile. Opportunities for dispersed activities in undefined areas would be de-emphasized and less accessible in the project area. Much of that use would be redirected to the developed facilities but some would likely be displaced to other portions of the SMNRA or to other private and public lands in the area.</p>	<p>Recreation opportunities would be structured in a similar approach as in the Proposed Action, in defined areas such as the Village, Valley, picnic areas, campgrounds, and designated trail network. Likewise, the effects described for dispersed activities and trail closures would be the same as the Proposed Action. However, one distinction between the two action alternatives is that Village facilities would be constructed on both sides of SR 157 and would necessitate speed reductions through this area. Traffic calming devices or a roundabout may be constructed.</p>
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No Action Alternative	Proposed Action	Market Supported Alternative
	<p>User-created trails, such as equestrian trails and mountain bike trails, would be closed and specific trails designated for these uses. Trail closures and use designations were determined based on safety concerns or where damage to surrounding natural resources was occurring. Consideration was given to provide trails for equestrians and mountain bikers that offer a variety of terrain and level of difficulty.</p>	
<p>SAFETY AND ACCESSIBILITY FOR PERSONS WITH DISABILITIES AND THE ELDERLY</p>		
<p>Visitor safety and accessibility are compromised due to the unstructured nature of the recreation facilities and uses. Accessible recreation facilities are available at Kyle Canyon Interim Visitor Center and Kyle Canyon Campground. Many of these facilities and services do not meet the standards set forth by the Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG) or Forest Service Trail Accessibility Guidelines (FSTAG). Currently there are no trails outside of these developed areas accessible to people with disabilities.</p>	<p>Visitor safety and accessibility would be improved with defined structures, facilities, and uses. Barrier-free design techniques would be applied to new recreation infrastructure to make recreation safe and accessible to people with disabilities and the elderly.</p> <p>Kyle Canyon Campground facilities would be upgraded to the extent practicable to meet accessibility standards set forth by FSORAG and FSTAG. All new restroom and shower facilities would be fully accessible.</p> <p>Accessibility to recreation resources would be increased as trails would be constructed that represent a wide variety of skill and ability levels. Likewise, trails would be designed to meet the needs of different user groups including people with disabilities and the elderly. New 8-foot paved FSTAG trails would be constructed connecting the Fletcher View Campground, the Kyle CCC Camp, and Kyle Canyon Campground to the Village. Additional paved FSTAG trails would connect the Village, Valley, and Main Camping and Picnic areas to the Slot Canyon overlook and trailhead off Harris Springs Road.</p>	<p>Same as the Proposed Action with the exception that the paved FSTAG trail would only extend to the Slot Canyon overlook.</p>
<p>Dispersed camping poses health and safety issues in that it may lead to unsanitary and improper disposal of trash and human waste.</p>	<p>Implementation of the administrative action prohibiting dispersed camping would avoid this situation by directing camping to designated facilities with appropriate trash disposal systems, restrooms, and RV dumps.</p>	<p>Same as the Proposed Action.</p>

No Action Alternative	Proposed Action	Market Supported Alternative
<p>Passenger car access would continue to be limited to the existing developed sites and trails immediately accessible from the highway. High clearance vehicles would be needed for travel on the more primitive roads.</p>	<p>Visitor safety and accessibility would be improved. All locations with newly developed recreation facilities would have high standard road access, allowing for safe travel by all types of passenger vehicles.</p>	<p>Same as the Proposed Action.</p>
<p>Safety of existing unauthorized trail infrastructure is compromised for all users due to the improvised nature of many of the facilities, lack of designated use areas, and limited information. The existing trail network is currently utilized by equestrians, mountain bikers, OHV users, and hikers. The majority of the trail network is user-created, not designed to any standards, and not formally maintained or signed. Lack of trail use designations has led to unsafe conditions and user conflicts.</p>	<p>Trails would be designated, designed, and managed for appropriate mixes or individual user groups to enhance safety. Trails would be maintained or improved and certain trails would be paved. OHV use would generally be directed to locations outside the project area. This approach would limit conflict between non-motorized and motorized trail users and increase safety within the Middle Kyle Complex.</p>	<p>Same as the Proposed Action, with the addition of the bridge over Kyle wash and the slot canyon. The bridge may improve safety because trail users on the Rim Trail would not have to utilize Harris Springs Road to access the South Rim Trail system.</p>
<p>Lack of a way-finding infrastructure such as road signs, trail signs, and signed parking areas leads to visitor confusion and disorientation. These conditions result in a lack of understanding of the area and further undermine user safety.</p>	<p>To increase safety for all users, every trail and road would be signed and designated uses would be clearly identified. Other way-finding tools such as information kiosks with trail maps and mileages would be posted at all trailheads.</p>	<p>Same as the Proposed Action.</p>
<p>Hunting, trapping, and shooting of firearms would continue to occur in the area. These activities pose potential safety issues to other users such as hikers, bikers, and equestrians.</p>	<p>Discharging a firearm is prohibited within 150 yards of developed recreation facilities (campgrounds, picnic areas, buildings, occupied areas, and trails) and Forest Service facilities (36 CFR 261Subpart A 261.10 [d][1 and 2]). Safety would be improved for hikers, bikers, and equestrians within these areas. Recreational shooting (e.g., target practice) would be allowed outside 150 yards of the developed areas. Hunting and trapping would continue as permitted by NDOW and NRS on the SMNRA.</p>	<p>Same as the Proposed Action.</p>

No Action Alternative	Proposed Action	Market Supported Alternative
VISITOR EXPERIENCE AND QUALITY OF RECREATION		
<p>Lack of visitor safety, way-finding infrastructure, and accessibility undermine the quality of the visitor experience. Existing campground facilities are in declining condition as facilities age and become more outdated and maintenance backlogs increase. Further, visitor experience is compromised by the lack of diversity (or range) of opportunities provided by the existing recreation. This alternative provides visitors to the Middle Kyle Complex with the lowest diversity of recreation facilities. This lack of diversity in recreation facilities results in a lack of diversity in user groups who look for facilities, amenities, services, and clear information. Conversely, for those visitors who prefer the freedom to create their own trail or recreational experience, this alternative provides more options.</p>	<p>Increasing the diversity of the developed recreation resources available at the Middle Kyle Complex while improving visitor safety and accessibility would result in an improved visitor experience. Improved visitor information, visitor services, a broader array of educational and entertainment programs, and newly constructed or reconstructed facilities in good condition and offering a broader array of visitor amenities would also improve the quality of visitors' experiences.</p> <p>The Proposed Action offers a diverse range of recreation opportunities. In this alternative, both active and passive pursuits would be provided and would be aimed at a broad range of ages and skill levels. Overall, the range of recreation activities available under the Proposed Action would be designed to better serve a diverse population of users, thus increasing the likelihood of a positive recreation experience regardless of age or ability level. However, opportunities in undeveloped, unstructured settings would be reduced from current conditions. Visitors truly seeking those sorts of experiences may be less satisfied under the Proposed Action. Overall, the management of the site would improve and would likely result in improved visitor experience.</p>	<p>Same as the Proposed Action, with the addition of the bridge over Kyle wash and the slot canyon. This feature would offer an interesting and unique recreation experience, in addition to providing the site with a continuous and uninterrupted trail system by connecting the north and south rim trail systems. Visitor experience may be positively affected because trail users would be able to stay on trails, rather than needing to utilize a portion of Harris Springs Road to connect between the two trail systems.</p>
<p>Note: When referring to picnic or camp sites, a "site" is an individually developed area that may be a single unit, double unit or triple unit. The term "unit" refers to the number of family units at a site. For example, a triple unit would have parking space for three vehicles, three picnic tables, and three tent pads at a single location, and would be counted as three units. All quantities presented in this table are approximate; actual quantities may vary after final design and site layout has been completed. Information presented in this table is a summary detail only. For additional information refer to the alternative descriptions and figures provided in Chapter 2, <i>Alternatives, Including the Proposed Action</i> and Appendix B, <i>Detailed Comparison of Alternatives</i>. Quantities provided in this table are for areas within the Middle Kyle Complex project area.</p>		

In summary, implementation of the Proposed Action or Market Supported Alternative would reduce the opportunities for dispersed unmanaged recreation activities in the project area as compared with the No Action Alternative because unauthorized trails, routes, and campsites in the project area would be closed and restored or converted to designated uses. Much of that use would be redirected to the developed facilities proposed for construction, while some users would likely be displaced to other areas of the SMNRA. Shooting of firearms would also be redirected to other areas of the SMNRA as permitted by NDOW and NRS due to the prohibition on discharging firearms near developed recreation and Forest Service facilities. Recreational shooting (e.g., target practice) would be allowed outside 150 yards of the developed areas. Hunting and trapping within the project area would continue as permitted by NDOW and the NRS and as allowed under 36 CFR 261Subpart A 261.10 (d)(1and 2).

OHV use would only be allowed on the segment of the designated road (NFS 45577) within the project area for access to designated routes outside the Middle Kyle Complex area. Analysis of the OHV market in the Business Plan indicated that the Middle Kyle Complex project area has inadequate trail mileage or various levels of challenging terrain to sustain a viable OHV trail system. Relative to the east side, the analysis identified the west and north sides of the SMNRA and adjacent Bureau of Land Management (BLM)



The proposed OHV trailhead would be constructed under the Proposed Action providing access to designated motorized routes. NFS road 45577 is shown in this photo.

lands as more viable and sustainable for an OHV system (PwC 2008).

It is anticipated that construction of the proposed recreation facilities would provide a beneficial effect for most users that would offset the displacement of dispersed recreation activities. Dispersed recreation activities would still be available in other areas of the SMNRA as well as on adjacent BLM lands throughout Clark County. Overall implementation of the Middle Kyle Complex project would increase the diversity and quantity of recreation opportunities for a broader range of users than currently exists, would improve visitor safety, and would provide accessible recreation facilities; the visitor experience and quality of recreation would therefore be improved.

3.2.2 Changes to the Recreation Opportunity Spectrum

The ROS is a system utilized by the Forest Service to understand the settings in which people choose to experience a particular place and what types of recreation opportunities tend to occur within these different settings.

Seven factors are used to determine classification within the ROS spectrum. Below is a summary of these seven factors:

- **Access:** This factor refers to type and mode of travel.
- **Remoteness:** This factor refers to the extent to which individuals perceive themselves removed from the sights and sounds of human activity.
- **Social Encounters:** This factor refers to the number and type of other recreationists met along roads and trails, or camped within sight or sound of others.
- **Visitor Management:** This factor refers to the degree to which visitors are regulated and controlled as well as the level of information and services provided for visitor enjoyment.
- **Facilities and Site Management:** This factor refers to the level of site development.
- **Visitor Impacts:** This factor refers to the impacts of visitor use on the environment.
- **Naturalness:** This factor refers to the degree of naturalness of the setting; it affects psychological outcomes associated with enjoying nature.

Currently, the majority of the project area, including the proposed main activity areas accessed via SR 157 and SR 158, has been inventoried as Roded Natural. This Roded Natural status is largely determined by the Access factor because the project area is situated along the state highways. Some outlying areas, including areas east of Telephone Canyon Road, fall within the Semi-primitive Motorized category. These classifications would remain under the No Action Alternative. Table 3.2-2 summarizes the ROS analysis by alternative.

Table 3.2-2: ROS Analysis for the No Action Alternative, Proposed Action, and Market Supported Alternative

Analysis Factors	No Action Alternative	Proposed Action	Market Supported Alternative
Access	Access to the project area includes vehicular access on developed roads, state highways, and primitive roads. SR 157 provides the primary access through the project area, making the area easily accessible but not necessarily facilitating access to all specific locations within the area. Both non-motorized and motorized trails exist within the project area, providing more primitive access from the highway to many more remote corners of the project area. Opportunities for cross-country (i.e., non-designated trails and roads) still exist, although motorized travel off of designated routes is prohibited.	Same as No Action Alternative, except for the following differences: <ul style="list-style-type: none"> ▪ Semi-primitive motorized trails would be closed and opportunities for non-motorized cross-country travel in much of the project area would be developed; ▪ Vehicular access from the highway to both proposed recreation and administrative facilities would be improved via new paved roads and parking areas (displacing more semi-primitive motorized access); ▪ Parking areas would be located at major recreation resources including the Village, trailheads, picnic areas, and camping areas, greatly increasing the capacity of those areas for vehicular access. 	Same as the Proposed Action, with the following exceptions: <ul style="list-style-type: none"> ▪ Vehicular parking capacities would not be as large. Harris Springs Road and the access road to the trailhead would not be paved.
Remoteness	Limited portions of the project area provide some feeling of remoteness due to the ability to be out of sight and sound of human activity. Virtually no area would meet the guideline for the primitive class (more than a 1.5-hour walk). Most of the area provides little to no feeling of remoteness because of the immediate proximity to the highway.	Same as the No Action Alternative except that there would be additional areas, such as the Village and recreation facilities, where a feeling of remoteness will not be relevant. The additional development in the project area would reduce the acreage where visitors could gain a sense of remoteness. Visitors would still be able to access a feeling of remoteness via the trail network.	Same as the Proposed Action.
Social Encounters	Social encounters range from a moderate to high chance of social encounters along primary system roads and trails to less of a chance of social encounters (i.e., fewer than six people per day) in more remote areas of the site.	The newly developed recreation facilities would greatly increase the areas with high likelihood of encountering large numbers of other users, especially in the Village, Valley, campgrounds, and picnic facilities. Areas with lower potential for encounters would be reduced. Overall, social encounters with other users are more likely to occur under this alternative.	Generally the same as the Proposed Action, but with slightly less area with a high potential for large numbers of encounters.

Analysis Factors	No Action Alternative	Proposed Action	Market Supported Alternative
Visitor Management	Visitor management and control ranges from control that is noticeable but harmonizes with the natural environment (i.e., simple information facilities) to no on-site control or information facilities. Controls are primarily located in existing developed sites. Outside of developed sites, controls are minimal.	Management of visitors would be more obvious, with more sophisticated information exhibits and an improved way-finding system would be present. Concentration of on-site staffing of the new visitor facilities would increase the area covered by a higher level of visitor controls/management.	Same as the Proposed Action, but with less developed area with high levels of visitor controls/management.
Facilities and Site Management	Level of site development ranges from rustic to moderately developed facilities that provide some comfort for the user (in existing developed recreation sites) to no facilities and no site development over the majority of the project area.	The number and variety of recreation facilities would greatly increase. Facilities would be designed for the comfort and convenience of the visitor and may be highly developed, complex, and refined but in harmony with the setting. The Village is an example of a highly developed facility.	Same as the Proposed Action, except that the commercial-style campground proposed under the Market Supported Alternative would be highly developed. This facility should be in harmony with the setting.
Visitor Impacts	Visitor impacts include disturbance of areas around developed recreation sites; site compaction and loss of understory vegetation in some use areas around campsites in campgrounds and dispersed camping areas; the creation of unauthorized routes by mountain bikers, OHVs, and equestrians; and illegal dumping and litter. The extent of these effects ranges from considerable prevalence and visibility in some highly used locations to no noticeable impacts in other areas. Levels of site hardening to manage visitor impacts range from fully hardened campsites and walkways in existing developed sites to no site hardening in the undeveloped use areas.	Same as No Action Alternative except site hardening would be more prevalent in the newly developed areas. New paved and natural surface trails would also become more prevalent. User-created routes would be eliminated by new trail development. Visitor impacts at dispersed campsites would be significantly reduced with the closure of dispersed camping areas. Illegal dumping and litter and pioneering of new single- and double-track routes would be reduced with improved visitor management and control.	Same as the Proposed Action.
Naturalness	Naturalness ranges from preservation of the natural environment to some modification (i.e., the natural environment of the area has been clearly altered, most notably by the abandoned golf course facilities). Other existing developed facilities contribute varying degrees of modification to the natural setting. In general, the project area is predominantly natural in appearance with the exception of the presence of SR 157 and SR 158.	Same as No Action Alternative except that new developed facilities would contribute new human-made modifications to the natural environment. Some existing modifications would be restored to more natural appearances but most recreation settings would clearly include some level of improved facilities and associated modifications to the natural setting. For example, landscaping with native and limited non-native materials would occur in the Village, campgrounds, picnic areas, and administrative area.	Same as the Proposed Action.

Figure 3.2-1 below illustrates the ROS classification spectrum for the No Action Alternative, Proposed Action, and the Market Supported Alternative.

Figure 3.2-1. ROS Spectrum by Alternative

No Action Alternative						
Classification	Primitive	Semi-Primitive Non Motorized	Semi- Primitive Motorized	ROADED NATURAL	Rural	Urban
				ROADED NATURAL		
Proposed Action and Market Supported Alternative						
Classification	Primitive	Semi-Primitive Non Motorized	Semi- Primitive Motorized	Roaded Natural	Rural	URBAN
				Roaded Natural	Rural	URBAN

Besides being used as a system to inventory and explain the types of recreation opportunities that areas provide, the ROS system can also be used as a tool to document management objectives for the desired types of opportunities that should be available, and such desired conditions can be different from actual current conditions. Neither the Toiyabe Land and Resource Management Plan nor the SMNRA General Management Plan mapped specific ROS classes as desired conditions, objectives, standards, or guidelines.

Implementation of the Proposed Action would alter the ROS for Kyle Canyon by expanding the ROS spectrum to include the Rural and Urban classifications for the highly developed areas. The Urban classification is warranted due to the highly developed nature of the Village with the visitor center buildings and outdoor facilities. It is important to note that this development does not mean that areas within the Village could not still have some Rural characteristics such as the landscaped and open space areas. The Rural classification is warranted for the campgrounds, picnic areas, and Valley, which would be less densely and highly developed than the Village but clearly more developed than the Roaded Natural designation. Trail experiences available to visitors would straddle the spectrum of ROS classification from Urban in the Village to Primitive in the wilderness area.

Overall, the project area would have significant zones of Urban, Rural, and Roaded Natural under the Proposed Action. The Urban and Rural settings would

be the most prominent and frequently used settings since they would be the destination areas, but those classifications would be limited to these highly developed zones. Most of the remainder of the project area, which would have more basic facilities (trails and trailheads) or no facilities, would still provide a Roaded Natural recreation setting. Forest Service developed recreation policy discourages developing National Forest facilities and areas to Urban ROS levels. However, at this location the Urban classification is not unwarranted for a variety of reasons. First, the more developed areas (the Village and Valley) where much of the use would be concentrated are located on land already disturbed by the abandoned golf course. Second, this project is unique in that it is located in an area where development is already present with the existing hotel and condominium. An important objective of this project is to create an attractive setting in a unique location with proximity of the urban center of Las Vegas that would be comfortable to those less familiar with a natural setting in order to encourage them to explore the surrounding natural environment.

The ROS classifications under the Market Supported Alternative would be essentially the same as the Proposed Action. The smaller size of the Village and the reduced facilities located here in the Market Supported Alternative would make it feel somewhat less Urban, but it would still be a highly developed area relative to Forest Service norms. Conversely, the commercial-style campground in this alternative would be somewhat more developed than the campground in the Proposed Action, but it would still generally fall within the Rural classification.

3.3 Biological Resources

3.3.1 General Biological Resources

An assessment of general wildlife and wildlife habitats in the Middle Kyle Complex project area was presented, along with sensitive species, in the *Wildlife Biological Specialist Report for the Middle Kyle Complex Project* (ICF Jones & Stokes 2009h).

Affected Environment

The potential effects on wildlife are focused on changes to habitat in addition to disturbance and displacement of individual species. The potential effects on plants include habitat degradation due to ground disturbance by people and animals. Habitat, organized by vegetation series (Nachlinger and Reese 1996), present in the project area include big sagebrush, blackbrush-Stansbury cliffrose, blackbrush/Utah juniper, white fir-ponderosa pine-curleaf mountain mahogany, singleleaf pinyon pine/big sagebrush, mixed desert shrub, point leaf Manzanita-silk tassel, rubber rabbit brush, Stansbury cliffrose, cliff jamesia/rock spirea-Jaeger ivesia, dwarf mountain mahogany/Jaeger ivesia, montane mass-wasted slope habitat, and wash habitat.

The project area is a mosaic of natural vegetation, Forest Service recreation and other infrastructure, disturbed areas resulting from the operation of the former golf course, and transportation facilities. Impacts resulting from the implementation of the No Action Alternative are not anticipated to be significant since no change in the current use of the project area is anticipated. Some beneficial impacts would result from revegetation and restoration of the former golf course. A list of wildlife species observed in the project area is included in Appendix C.

Direct and Indirect Effects

No Action Alternative

The project area would continue to be used for camping, hiking, mountain biking, equestrian activities, and OHV activities. No improvements to Kyle CCC Camp, Fletcher Canyon Trailhead, or Kyle Canyon Campground would occur. The Proposed Action would not be implemented and no project-related loss or fragmentation of habitat would occur as a result of implementing the No Action Alternative. The project area would continue to be used for dispersed recreation resulting in adverse impacts on individual plants and degradation of wildlife habitat.

Proposed Action

Implementation of the Proposed Action would result in approximately 425 acres of permanent and approximately 653 acres of temporary construction disturbance. Permanent disturbance would result in the removal of individual plants and replacement with recreational and administrative facility components of the Proposed Action. This would occur at various proposed facility locations (e.g., the new and modified campgrounds, picnic areas, trailheads, trails, and administrative buildings). There would be approximately 108 acres of permanent impacts and 32 acres of temporary impacts on vegetation and wildlife habitat occurring within the Village, Valley, and Kyle Canyon Campground. These impacts would occur in areas that were disturbed previously by development activities or ongoing recreational activities and would, therefore, possess less valuable wildlife habitat or large blocks of undisturbed vegetation communities. In addition to the loss of individual plants, potential wildlife habitat fragmentation may occur in areas that are currently undeveloped (north of SR 157 and along the bench south of SR 157). A list of wildlife species observed in the project area is included in Appendix C.

The Proposed Action would accommodate more visitors than the Market Supported Alternative and, therefore, would potentially have greater impacts on vegetation and wildlife habitat from facilities operation than the Market Supported Alternative. This alternative would also have potentially greater impacts on vegetation and wildlife habitat than the No Action Alternative. Temporary impacts include construction-related crushing of vegetation as a result of equipment operations and pedestrian foot traffic from construction crews. A temporary reduction in functional use of the habitat (i.e., foraging, nesting, and shelter) would result from construction activities. The implementation of the project Vegetation Management Plan is anticipated to return the areas temporarily impacted by construction to a natural vegetative state. In addition to these construction-related impacts, operation of the facilities may result in increased human presence in the area resulting in vegetation trampling, highway mortality, wildlife harassment and displacement due to human intrusion and noise.

Because the Proposed Action has the potential to attract more recreational visitors, this alternative is anticipated to have more operational impacts resulting from off-trail recreational use than the No Action Alternative or the Market Supported Alternative. Table 3.3-1 displays the permanent and temporary impacts on the various project area habitat types.

Table 3.3-1. Acreage Summary of Potential Permanent and Temporary Project Impacts that May Result from Implementation of the Proposed Action

Land Cover Type*	Total Habitat Available within Project Area (acres)	Permanent Impact Area (acres)	Temporary Impact Area (acres)	Total Acres of Impact
Desert Shrublands: Big Sagebrush	86.39	3.88	13.14	17.02
Desert Shrublands: Blackbrush/Stansbury Cliffrose	116.30	35.41	28.49	63.90
Desert Shrublands: Blackbrush/Utah Juniper	313.00	34.72	60.91	95.62
Developed	51.48	23.75	12.02	35.77
High Conifer Woodland: White Fir-Ponderosa pine/curleaf mountain mahogany	34.45	3.91	16.67	20.58
Low Conifer Woodland: Singleleaf Pinyon Pine/Big Sagebrush	2,601.23	123.56	319.72	443.28
Mixed Desert Shrub	38.69	2.70	9.66	12.36
Montane Shrublands: Point leaf Manzanita/Silk Tassel	499.75	52.99	79.97	132.96
Rubber rabbit brush	32.95	29.60	0.77	30.38
Ruderal /Disturbed	21.60	14.60	5.81	20.41
Stansbury Cliffrose	151.49	72.05	35.02	107.07
Steep Slopes and Clifflands: Cliff jamesia/rock spirea-Jaeger ivesia	8.35	0.99	3.28	4.27
Steep Slopes and Clifflands: Dwarf Mountain Mahogany/Jaeger ivesia	6.94	0.16	0.54	0.70
Steep Slopes and Clifflands: Montane Mass-wasted Slopes Habitat	283.57	11.16	32.06	43.21
Wash	57.93	15.04	35.09	50.13
Total	4,304.12	424.52	653.15	1,077.66

*Vegetation Series are based on Nachlinger and Reese 1996.

Market Supported Alternative

Implementation of the Market Supported Alternative would result in similar impacts as those described for the Proposed Action. The overall footprint of the Market Supported Alternative is smaller than the Proposed Action, totaling approximately 330 acres of permanent ground disturbance and approximately 579 acres of temporary construction disturbance. The Market Supported Alternative would permanently impact approximately 122 acres and temporarily impact 41 acres of vegetation and wildlife habitat within the proposed Village,

Valley and existing Kyle Canyon Campground. These impacts would occur in areas that were disturbed due to previous or ongoing activities. In addition to loss of individual plants, potential wildlife habitat fragmentation may occur in areas that are currently undeveloped (north of SR 157 and along the bench south of SR 157). A list of wildlife species



observed in the project area is included in Appendix C. The facilities identified in the Market Supported Alternative are reduced in scale from the Proposed Action. This alternative would accommodate fewer visitors than the Proposed Action and, therefore, would potentially have fewer impacts on vegetation and wildlife habitat from facilities operation than the Proposed Action, but more impacts than the No Action Alternative. Table 3.3-2 displays the permanent and temporary impacts on the various project area habitat types.

Table 3.3-2. Acreage Summary of Potential Permanent and Temporary Project Impacts that May Result from Implementation of the Market Supported Alternative

Land Cover Type*	Total Habitat Available within Project Area (acres)	Permanent Impact Area (acres)	Temporary Impact Area (acres)	Total Acres of Impact
Desert Shrublands: Big Sagebrush	86.39	0.41	3.31	3.73
Desert Shrublands: Blackbrush-Stansbury Cliffrose	116.30	9.50	22.74	32.23
Desert Shrublands: Blackbrush/Utah Juniper	313.00	22.45	54.48	76.92
Developed	51.48	22.23	8.57	30.80
High Conifer Woodland: White Fir-Ponderosa pine-curlleaf mountain mahogany	34.45	4.34	17.66	21.99
Low Conifer Woodland: Singleleaf Pinyon Pine/Big Sagebrush	2,601.23	105.88	275.95	381.82
Mixed Desert Shrub	38.69	1.79	6.18	7.97
Montane Shrublands: Point leaf Manzanita-Silk Tassel	499.75	52.05	78.93	130.99
Rubber rabbit brush	32.95	29.56	0.81	30.37
Ruderal/Disturbed	21.60	12.81	5.14	17.95
Stansbury Cliffrose	151.49	44.32	41.08	85.40

Land Cover Type*	Total Habitat Available within Project Area (acres)	Permanent Impact Area (acres)	Temporary Impact Area (acres)	Total Acres of Impact
Steep Slopes and Clifflands: Cliff jamesia/rock spirea-Jaeger ivesia	8.35	0.99	3.28	4.27
Steep Slopes and Clifflands: Dwarf Mountain Mahogany/Jaeger ivesia	6.94	0.16	0.54	0.70
Steep Slopes and Clifflands: Montane Mass-wasted Slopes Habitat	283.57	9.23	25.61	34.84
Wash	57.93	15.03	34.79	49.83
Total	4,304.12	330.75	579.07	909.81

*Vegetation Series are based on Nachlinger and Reese 1996.

Implementation of Design Criteria that include minimizing vegetation and snag removal to the greatest extent possible, avoiding sensitive habitat, and restoring habitat following construction would reduce these impacts (see Chapter 2, *Design Criteria*).

3.3.2 Spring Mountains Acastus Checkerspot Butterfly Habitat

This section discusses the potential effects of construction of the Middle Kyle Complex project on sensitive biological resources, including effects on habitat of the Spring Mountains acastus checkerspot butterfly. Potential effects on the Spring Mountains acastus checkerspot butterfly were identified as a significant issue by the Forest Service and for this reason the effects analysis is presented below.

Potential impacts on other sensitive species were not identified as a significant issue; the detailed analysis is therefore not presented in the EIS. Table 3.3-3 at the end of this chapter provides a summary of the analysis and potential effects on these sensitive species. The effects analysis for these species is included in the specialist reports on file at the SMNRA office.

The specialist reports listed below were prepared to evaluate potential effects on sensitive species:

- *The Wildlife Biological Assessment/Biological Evaluation, Middle Kyle Complex Project* (ICF Jones & Stokes 2009i) and the *Botany Biological Assessment/Biological Evaluation, Middle Kyle Complex Project* (ICF Jones & Stokes 2009j) considered threatened, endangered, and sensitive species with potential to occur in the Humboldt-Toiyabe National Forest.
- *The Final Wildlife Management Indicator Species Report for the SMNRA Middle Kyle Complex Project* (ICF Jones & Stokes 2009k) and the *Final*

Botanical Management Indicator Species Report for the SMNRA Middle Kyle Complex Project (ICF Jones & Stokes 2009i) evaluated MIS listed in the SMNRA General Management Plan (1996).

- The *Wildlife Biological Specialist Report* (ICF Jones & Stokes 2009h) and the *Botany Biological Specialist Report* (ICF Jones & Stokes 2009m) evaluated the other “species of concern” listed under the SMNRA Conservation Agreement (CA), “covered” species listed under the Clark County Multiple Species Habitat Conservation Plan (MSHCP), neotropical migratory bird species, and the Nevada Natural Heritage Program list of “sensitive taxa” species for Clark County, Nevada (Nevada Heritage Database).

Affected Environment

The Spring Mountains acastus checkerspot butterfly (*Chlosyne acastus robusta*) is endemic to the Spring Mountains of Nevada. It is a subspecies of the species *Chlosyne acastus*, which occurs throughout the western United States from Canada, east to North Dakota, and south through Utah, Colorado, Nevada, and California, and east into New Mexico. The *robusta* subspecies has a restricted distribution within the Spring Mountains at only a few known breeding sites, although its host plant occurs throughout the SMNRA (Hiatt and Boone 2004; NatureServe 2007).

These species is primarily found in riparian areas and in mixed-conifer and pinyon-juniper habitat, but has been recorded in sagebrush (RECON 2000). Many documented sites have been in areas of disturbance or old burns (Boyd and Austin 1999). It uses washes and other linear open areas (e.g., dirt roads and trails) as topographically distinct mate location sites where rabbit brush (*Chrysothamnus* spp.) is often present (Boyd and Austin 1999). Several taxa of rubber rabbit brush (varieties of *Chrysothamnus* and *Ericameria*), including yellow rabbit brush (*Chrysothamnus viscidiflorus*) (Boyd 2004) and perhaps rubber rabbit brush (*Chrysothamnus nauseosus*) (Boyd and Austin 2000; Boyd 2004) are used by the butterfly as larval host plants. Nectar host plants are known to include dogbane (*Apocynum* sp.), Palmer’s penstemon (*Penstemon palmeri*), narrowleaf yerba santa (*Eriodictyon angustifolium*), sweetclover (*Melilotus* sp.), ceanothus (*Ceanothus* sp.), lobe-leaf groundsel (*Packera multlobata*) (Boyd and Austin 2000), and golden-eye (*Viguiera multiflora*) (RECON 2000).

The Spring Mountains acastus checkerspot butterfly’s flight season is typically from mid-June through early July (Weiss et. al. 1997), but has been recorded as early as the middle of May (Boyd and Austin 1999), and may be as brief as 2 weeks (Boyd and Austin 1999). Key attributes of larval habitat typically include open canopy areas and the presence of larval host plants and nectar sources within close proximity.

The Spring Mountains acastus checkerspot butterfly is listed as a Forest Service sensitive species and is ranked globally as T1 – critically imperiled (NatureServe 2007), and is state ranked as S1. The S1 state ranking indicates that the



Desert ceanothus (Spring Mountains Acastus Checkerspot butterfly nectar plant) and point leaf Manzanita.

subspecies is critically imperiled due to extreme rarity, imminent threats, and/or biological factors at risk

(<http://heritage.nv.gov/lists/sensan02.htm>). It is also listed as a species of concern in the CA for the SMNRA (Forest Service, Intermountain Region et al. 1998) and a covered species under the Clark County MSHCP (RECON 2000). The species occurs at only 12 known sites adjacent to recreation and transportation areas making it susceptible to local threats (RECON 2000).

To determine where the Spring Mountains acastus checkerspot butterfly and habitat may be present within the project area; surveys were conducted for species sightings and host plant documentation in 2006 and 2007. Areas of

direct species observance included: in and adjacent to Kyle wash located south and southeast of the intersection of SR 157 and SR 158; an old golf cart path on the east end of the small terrace south of the Resort on Mount Charleston; a location south of SR 157 and east of the Resort on Mount Charleston; an area just east of the Kyle Canyon Campground; in locations east of the proposed Village and along a proposed hiking/biking/equestrian trail between Telephone Canyon Road and SR 158; and along the southern edge of Kyle Canyon.

Host larval and nectar plants can be found more broadly in the project area and were recorded and mapped throughout the survey area. White rubber rabbit brush (*Ericameria nauseosa* var. *holocea*) and viscid rabbit brush (*Chrysothamnus viscidiflorus* var. *viscidiflorus*), were common in the western portion of the survey area, where the butterfly was observed. Viscid rabbit brush is common along the edges of the main Kyle wash and the lower wash in Telephone Canyon. Both taxa are also common along the sides of SR 158. Smooth fruit rabbit brush, variety *leiosperma*, also occurs in the western portion of the survey area. Two other taxa of rabbit brush occur at lower elevations and are restricted to the eastern portion of the survey area where there were no observations of the butterfly. A third variety of rubber rabbit brush—Mojave rabbit brush, var. *mojavensis*—is a common to dominant component of the area's desert scrub habitat and is common in the lower wash. A second variety of sticky-leaf rabbit brush—downy rabbit brush, var. *puberulus*—is a small shrub that occurs at the eastern end of the bench scattered in the blackbrush community, in the survey area south of the wash in the southeastern portion of the survey area, and at mid-elevations on the Angel Peak road. Nectar host plants for the Spring Mountains acastus checkerspot butterfly are common wherever the larval host plants occur and are generally common throughout the entire survey area.

Direct and Indirect Effects

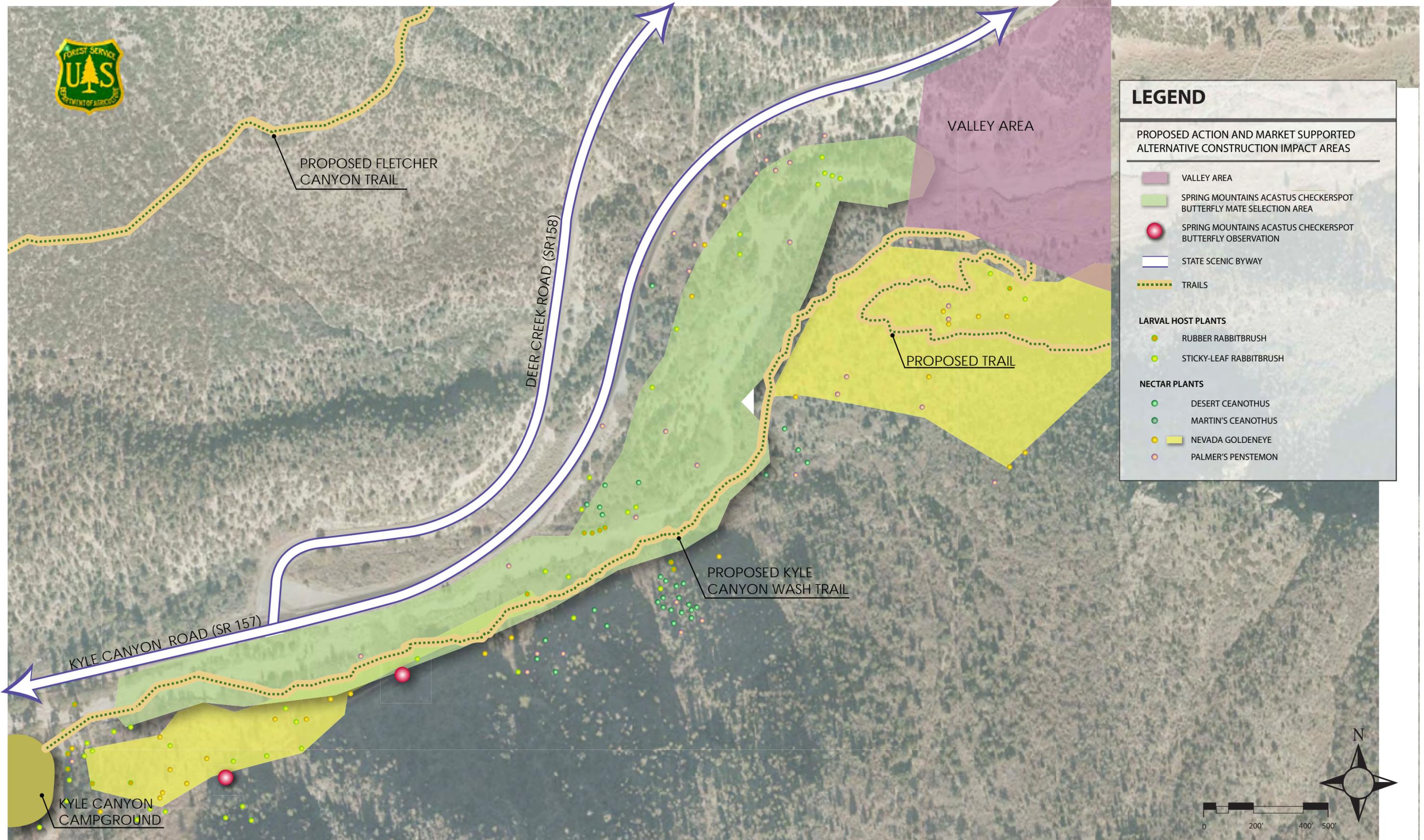
As described in Chapter 2, the Forest Service may implement an administrative action that extends outside the Middle Kyle Complex project area. Under the Proposed Action and the Market Supported Alternative this administrative action proposes prohibiting dispersed camping within 300 feet on either side of Forest Service roads and trails open to motorized vehicles, trailheads, county roads, and state highways within the Lee Canyon, Kyle Canyon, and Deer Creek areas of the SMNRA, including tributary Forest Service routes such as those in Macks Canyon and Harris Springs area. Since no resource studies have been conducted outside the Middle Kyle Complex project area, it is difficult to determine the context and intensity of potential adverse and beneficial effects. Given the lack of information regarding the existing conditions outside the project area and potential effects associated with this action, this analysis is unable to evaluate the direct, indirect, and cumulative effects in detail.

No Action Alternative

The project area would continue to be utilized for camping, hiking, mountain biking, equestrian use, and OHV use. No improvements to Kyle CCC Camp, Fletcher Canyon Trailhead, or Kyle Canyon Campground would occur. The Proposed Action would not be implemented and no project-related loss or fragmentation of habitat would occur as a result of implementing the No Action Alternative. Kyle wash below Kyle Canyon Campground would continue to be used for dispersed recreational hiking resulting in adverse impacts on Spring Mountains acastus checkerspot butterfly host and nectar plants. According to the *Spring Mountains National Recreation Area Landscape Analysis* (Entrix 2008), this type and level of recreational use may result in permanent and temporary loss of habitat, habitat degradation, and injury or death of individual butterflies.

Proposed Action

Implementation of the Proposed Action would result in permanent impacts on approximately 30 acres of potential habitat including over 29.4 acres in the proposed Valley area. These approximate 29.4 acres are the site of the former golf course property. This disturbance within the Valley area is a result of the footprint of the proposed trails and associated dispersed, off-trail hiking and recreational activities in this area. Approximately 0.60 acre of permanent impacts would occur within mate selection habitat in Kyle wash. Temporary impacts include approximately 2.0 acres of potential habitat, including approximately 0.7 acre within the mate selection area and 1.3 acres within Kyle wash outside of the mate selection area and in the Valley area. Figure 3.3-1 depicts the mate selection habitat in Kyle wash. The temporary impacts include habitat alteration resulting from vegetation crushing and soil compaction during construction activities. These areas are expected to return to pre-disturbance condition within 2 to 3 years depending on the level and method of revegetation and restoration implemented. The permanent impacts would result in the



MIDDLE KYLE COMPLEX

SPRING MOUNTAINS ACASTUS CHECKERSPOT
 FIGURE 3.3-1: BUTTERFLY HABITAT IN KYLE WASH



removal of habitat due to operation and maintenance of the proposed Kyle Canyon Wash Trail.

Implementation of the Proposed Action would result in the permanent removal of larval host and nectar plants within the Kyle Canyon colony. The proposed trail alignment was designed through coordination with the U.S. Fish and Wildlife Service (USFWS) to minimize adverse impacts on the primary butterfly habitat within Kyle wash. While the majority of the habitat would be avoided by the implementation of this alternative, some direct conversion of habitat to trail bed would occur resulting in a permanent loss of habitat. In addition, some construction impacts would result in crushing host and nectar plants. If butterfly larvae are present on these plants at the time of facility construction, some mortality of individuals may occur.

Restricting the construction of the proposed Kyle Canyon Wash Trail and buried utilities to outside the butterfly flight periods will reduce potential impacts on individual flight-stage adult Spring Mountains acastus checkerspot butterflies within the Kyle wash colony. This would also minimize the disturbance of mate selection behavior and foraging of individuals of the species.

Some limited reconstruction of the trails and topography within the proposed Valley area may result in short-term impacts on vegetation on the property. Reconstruction of the proposed hiking trails and the revegetation and restoration of the site will provide some additional Spring Mountains acastus checkerspot butterfly habitat and enhance the overall habitat within the Kyle wash colony.

Operation of the proposed trail facility is anticipated to increase recreational hiking within this portion of Kyle wash. While it is anticipated that the majority of the hiking will occur on the proposed trail, some off-trail hiking through the wash is likely to occur. The off-trail hiking may result in host and nectar plant trampling; trampling of individual butterflies; and harassment of individuals during foraging, resting, or mating activities.

Overall, it was determined that the Proposed Action may impact individuals, but is not likely to result in a trend toward federal listing or loss of viability to the Spring Mountains acastus checkerspot butterfly. Implementation of design criterion W5 (see Table 2-4) would minimize effects from construction activities on this species.

Cumulative effects on the Spring Mountains acastus checkerspot butterfly are included in Section 3.4.5, *Cumulative Effects*.

Market Supported Alternative

The direct, indirect, and cumulative impacts associated with implementation of the Market Supported Alternative would be the same as the impacts described for the Proposed Action. The proposed alignment of the Kyle Canyon Wash Trail is in the same location as that described under the Proposed Action. Overall, it was determined that the Market Supported Alternative may impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of

viability of the Spring Mountains acastus checkerspot butterfly. Design criterion W5 (see Table 2-4) would minimize effects from construction activities.

Mitigation Measure – Wildlife 1

To further reduce impacts on the Spring Mountains acastus checkerspot butterfly, a permanent fence would be constructed at Kyle Canyon Campground to funnel trail users onto the Kyle Canyon Wash Trail, including a fence along the first 100 feet of the trail. Recreation use of the Kyle Canyon Wash Trail in the mate selection habitat area will be monitored for impacts off the designated trail and additional fence sections installed if necessary to prevent impacts from user-created trails.

This mitigation measure is common to both the Proposed Action and the Market Supported Alternative.

3.3.3 Summary of Effects on Sensitive Biological Species Analyzed in Detail

More than 155 wildlife and plants species were considered in the analysis conducted for the EIS; 80 were analyzed in detail. Species that were not analyzed in detail were not observed during surveys conducted in the project area, do not occur in the project area, or do not occur, nor have the probability to occur, in the SMNRA. Therefore, there would be no effect on these species as a result of the Middle Kyle Complex project.

Table 3.3-3 summarizes the direct effects analysis for each species. Indirect effects for alternatives are addressed in Section 3.3.1, *General Biological Resources*.



Table 3.3-3. Summary of Species Analyzed in Detail and Determination of Effects for the Proposed Action and Market Supported Alternative

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
U.S. FISH & WILDLIFE SERVICE FEDERALLY LISTED THREATENED, ENDANGERED, OR CANDIDATE SPECIES				
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Endangered	No effect	No riparian vegetation occurs within or near the project area. The southwestern willow flycatcher is not known to nest in or adjacent to the action area. No southwestern willow flycatchers were observed during the avian surveys for the project.	Same as the Proposed Action.
Desert tortoise (<i>Gopherus agassizii</i>)	Threatened	No effect	No project-related loss or fragmentation of habitat would occur as a result of implementing the Proposed Action. The project is located above the known elevation limit of Mojave desert tortoise; no desert tortoise sign was observed during project surveys, and habitat quality present within the project area is marginal, exhibiting poor foraging opportunities and substrate conditions for burrowing due to elevation and geological conditions.	Same as the Proposed Action.
Lahontan cutthroat trout (<i>Oncorhynchus clarki henshawi</i>)	Threatened	No effect	This species occurs in Carpenter Canyon on the west side of the SMNRA within an unrelated drainage basin. The species does not occur within the Proposed Action area.	Same as the Proposed Action.
REGIONAL FORESTER’S (R4) LIST OF SENSITIVE SPECIES FOR THE TOIYABE NATIONAL FOREST				
Pale Townsend’s big-eared bat (<i>Corynorhinus townsendii pallescens</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	No impact on roost sites would occur as a result of this project. The project will have minimal impact (653 acres temporary / 425 acres permanent) to foraging habitat. Foraging habitat is available across the SMNRA. No springs or water sources are anticipated to be modified as a result of implementing the Proposed Action. The Proposed Action activities are primarily focused near existing disturbance and infrastructure.	Same as the Proposed Action except 579 acres of temporary and 331 acres of permanent foraging habitat would be affected.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Spotted bat (<i>Euderma maculatum</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	No individuals have been detected in the SMRNA since 1997. No individuals were detected in the project area during acoustical monitoring.	Same as the Proposed Action.
Northern goshawk (<i>Accipiter gentilis</i>)	Sensitive	May impact individuals, but is not likely to cause a trend to federal listing or loss of viability	The Proposed Action would temporarily impact approximately 17 and permanently impact approximately 4 acres of the existing white fir-ponderosa pine-curl leaf mountain mahogany habitat. Temporary impacts include prey habitat alteration resulting from understory vegetation removal or crushing during construction activities. Permanent impacts would result in the permanent removal of foraging habitat due to operation and maintenance of proposed facilities.	Same as the Proposed Action except 18 acres of temporary and 4 acres of permanent habitat would be affected.
Peregrine falcon (<i>Falco peregrinus anatum</i>)	Sensitive	May impact individuals, but is not likely to cause a trend to federal listing or loss of viability	The Proposed Action would temporarily impact approximately 3 acres and permanently impact approximately 1 of the existing cliff/nesting habitat. The implementation of this alternative would result in the permanent and temporary disturbance of approximately 409 and 604 acres, respectively, of potential foraging habitat.	Same as the Proposed Action except 317 acres permanent and 571 acres temporary potential foraging habitat.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	The project area includes elevation range of this species; however, no individuals are known to occur in the project area and no individuals were recorded.	Same as the Proposed Action.
Flammulated Owl (<i>Otus flammeolus</i>)	Sensitive	May impact individuals, but is not likely to cause a trend to federal listing or loss of viability	Proposed Action would temporarily impact approximately 17 acres and permanently impact approximately 4 acres of the existing white fir - ponderosa pine - curlleaf mountain mahogany habitat. Temporary impacts include prey habitat alteration resulting from understory vegetation removal or crushing during construction activities. Permanent impacts would result in the removal of foraging habitat due to operation and maintenance of proposed facilities.	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Mt. Charleston blue butterfly (<i>Icaricia shasta charlestonensis</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	There have been no recorded occurrences in this area since 1995. The project area is within the elevation range of this species; however, no individuals were observed during project area surveys. The host and nectar plant, occur within the project area; however, these plants are widespread.	Same as the Proposed Action.
Spring Mountains acastus checkerspot (<i>Chlosyne acastus robusta</i>)	Sensitive	May impact individuals, but is not likely to cause a trend to federal listing or loss of viability to the to the Spring Mountains acastus checkerspot butterfly	Implementation of the Proposed Action would result in permanent impacts on approximately 30 acres of potential habitat including over 29.4 acres in the proposed Valley area. This disturbance in the Valley area is a result of the footprint of the proposed trails and associated dispersed, off-trail hiking and recreational activities within this area. Approximately 0.6 acre of permanent impacts would occur in the mate selection habitat in Kyle wash. Temporary impacts include approximately 2.0 acres of potential habitat, including approximately 0.7 acre within the mate selection area and 1.3 acres in Kyle wash outside of the mate selection area and within the Valley area. The temporary impacts include habitat alteration resulting from vegetation crushing and soil compaction during construction activities. The permanent impacts would result in the permanent removal of habitat due to operation and maintenance of proposed Kyle Canyon Wash Trail. Implementation of Mitigation Measure (MM)-Wildlife 1 will reduce impacts on the mate selection habitat.	Same as the Proposed Action.
Dark Blue (<i>Euphilotes ancilla purpura</i>)	Sensitive	May impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability	Implementation of the Proposed Action would result in permanent impacts on approximately 34 acres and temporarily impact approximately 18 acres of potential butterfly host and nectar plant habitat. This includes approximately 30 acres of permanent and 0.8 acre of temporary impacts on dark blue butterfly host and nectar plant habitat within Kyle wash, the Kyle Canyon Campground, and the Valley area. The temporary impacts include habitat alteration resulting from vegetation crushing and soil compaction during construction activities. The permanent impacts would result in the removal of habitat primarily due to operation and maintenance of proposed Kyle Canyon Wash Trail.	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Morand's checkerspot (<i>Euphydryas anicia morandi</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	The project area is within the elevation range of the species; however, the upper elevation limits of the project area are at the lower elevation limits of this species known distribution.	Same as the Proposed Action.
Rough Angelica (<i>Angelica scabrida</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	The project area is within the elevation range of the species; however, no individuals of this species were observed in the project area.	Same as the Proposed Action.
Rosy King's sandwort (<i>Arenaria kingii</i> ssp. <i>rosea</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	No records exist for Rosy King's sandwort within the project area and no individuals were detected during project area botanical surveys. The Western Area occurs within the lower limits of the elevation range for this species.	Same as the Proposed Action.
Clokey milkvetch (<i>Astragalus aequalis</i>)	Sensitive	May impact individuals, but is not likely to cause a trend to federal listing or loss of viability.	A total of 270 plants affected, as many as 65 plants may be avoided along trails by implementation of MM-Botany 1. Potential habitat would be restored by removal of the Kyle Canyon Interim Visitor Center and associated parking lot. Implementation of the restoration and revegetation activities would improve existing habitat and increase Clokey milkvetch populations within the project area. The use of native plants, including Clokey milkvetch, is prescribed for revegetation of disturbed areas.	Same as the Proposed Action except that there will be 305 plants affected, as many as 65 plants may be avoided along trails by implementation of MM-Botany 1.
Funeral milkvetch (<i>Astragalus funereus</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	No individual funeral milkvetch were observed during project area botanical surveys.	Same as the Proposed Action.
Half-ring pod milkvetch (<i>Astragalus mohavensis</i> var. <i>hemigyus</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	The half-ring milkvetch is not known to occur in Kyle Canyon. Individual half-ring milkvetch were not observed during project area botanical surveys. The Harris Springs road intersection with SR 157 is at the upper elevation range of this species.	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Lee Canyon milkvetch (<i>Astragalus oophorus</i> var. <i>clokeyanus</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Lee Canyon milkvetch is not known to occur in Kyle Canyon, and it was not observed during project area botanical surveys.	Same as the Proposed Action.
Spring Mountains milkvetch (<i>Astragalus remotus</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Spring Mountains milkvetch is not known to occur in Kyle Canyon and it was not observed during project area botanical surveys.	Same as the Proposed Action.
New York Mountain Catseye <i>Cryptantha tumulosa</i>)	Sensitive	May impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability	2,213 plants would be affected out of approximately 7,600 plants observed in the project area. This species is an annual whose numbers fluctuate depending on annual rainfall and available soil habitat.	Same as the Proposed Action except that 2,155 plants will be affected out of approximately 7,600 plants observed in the project area.
Nevada willowherb (<i>Epilobium nevadense</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Nevada willowherb was not observed during project area botanical surveys. The project area is near the lower elevation range for this species.	Same as the Proposed Action.
Spring Mountains goldenweed (<i>Ericameria compacta</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Spring Mountains goldenweed was not observed during project area botanical surveys. The project area is near the lower elevation range for this species.	Same as the Proposed Action.
Clokey buckwheat (<i>Erionogum hermannii clokeyi</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Clokey buckwheat was not observed during project area botanical surveys. Past observations within lower Kyle Canyon appear to be var. <i>sulcatum</i> .	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Clokey greasebush (<i>Glossopetalon clokeyi</i>)	Sensitive	May impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability	Potential impacts on Clokey greasebush includes 431 plants affected without MM-Botany 2; 1 plant affected with MM-Botany 2. Approximately 1,000 individual plants were observed in the project area.	Same as the Proposed Action.
Smooth dwarf greasebush (<i>Glossopetalon pungens glabrum</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Smooth dwarf greasebush was not observed during project area botanical surveys. This species is not known to occur in Kyle Canyon.	Same as the Proposed Action.
Jaeger ivesia (<i>Ivesia jaegeri</i>)	Sensitive	May impact individuals of the species, but is not likely to result in a trend toward federal listing or loss of viability	Potential impacts on Jaeger ivesia includes 3,030 plants affected without MM-Botany 2; 0 plants affected with MM-Botany 2. Approximately 14,500 plants were observed in the project area.	Same as the Proposed Action.
Bicolored penstemon (<i>Penstemon bicolor</i> var. <i>bicolor</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Bicolored penstemon was not observed during project area botanical surveys. This species is not known to occur in Kyle Canyon. The Harris Springs road intersection with SR 157 is near the upper elevation range for this species.	Same as the Proposed Action.
Rose-colored penstemon (<i>Penstemon bicolor</i> var. <i>roseus</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Rose-colored penstemon was not observed during project area botanical surveys. Except for a single 1937 Nevada Natural Heritage record, this species is not known to occur in the SMNRA including Kyle Canyon.	Same as the Proposed Action.
Death Valley beardtongue (<i>Penstemon fruticiformis</i> ssp. <i>amargosae</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Death Valley beardtongue was not observed during project area botanical surveys. The project area is above the elevation range of this species.	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Clokey mountain sage (<i>Salvia dorrii</i> var. <i>clokeyi</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Clokey mountain sage was not observed during project area botanical surveys. This species is known to occur in Kyle Canyon; however, no plants are expected to be impacted by implementation of the proposed project.	Same as the Proposed Action.
Charleston ground daisy (<i>Townsendia jonesii</i> var. <i>tumulosa</i>)	Sensitive	No impacts on this species are anticipated as a result of the project	Charleston ground daisy was not observed during project area botanical surveys. This species is known from SR 156 and within upper Kyle Canyon outside the project area.	Same as the Proposed Action.
CONSERVATION AGREEMENT SPECIES (CA) AND MSHCP COVERED SPECIES (COVERED)				
Allen's Lappet-browed bat (<i>Idionycteris phyllotis</i>)	CA	The proposed project would adversely impact foraging habitat but would not impact species viability	Approximately 653 acres of foraging habitat would be temporarily impacted during construction and 425 acres would be permanently impacted as a result of implementing the Proposed Action. These impacts are within the vegetated areas of the Proposed Action and do not include any open water habitat impacts. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.	Same as the Proposed Action except the temporary impacts are approximately 579 acres and approximately 331 acres would sustain permanent impacts.
Silver-haired bat (<i>Lasionycteris noctivagans</i>)	Covered	The proposed project would adversely impact foraging habitat but would not impact species viability	Approximately 653 acres of foraging habitat would sustain temporary impacts during construction and 425 acres would sustain permanent impacts as a result of implementing the Proposed Action. These impacts are within the vegetated areas of the Proposed Action and do not include any open water habitat impacts. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.	Same as the Proposed Action except the temporary impacts affect approximately 579 acres and approximately 331 acres would sustain permanent impacts.
Western small-footed myotis (<i>Myotis ciliolabrum</i>)	CA	The proposed project would adversely impact foraging habitat but would not impact species viability	Approximately 653 acres of foraging habitat would sustain temporary impacts during construction and 425 acres would sustain permanent impacts as a result of implementing the Proposed Action. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.	Same as the Proposed Action except the temporary impacts affect approximately 579 acres and approximately 331 acres would sustain permanent impacts.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Long-eared myotis (<i>Myotis evotis</i>)	Covered, CA	The proposed project would adversely impact foraging habitat but would not impact species viability	Approximately 653 acres of foraging habitat would sustain temporary impacts during construction and 425 acres would sustain permanent impacts as a result of implementing the Proposed Action. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.	Same as the Proposed Action except the temporary impacts affect approximately 579 acres and approximately 331 acres would sustain permanent impacts
Fringed myotis (<i>Myotis thysanodes</i>)	CA	The proposed project would adversely impact foraging habitat but would not impact species viability	Approximately 653 acres of foraging habitat would sustain temporary impacts during construction and 425 acres would sustain permanent impacts as a result of implementing the Proposed Action. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.	Same as the Proposed Action except the temporary impacts affect approximately 579 acres and approximately 331 acres would sustain permanent impacts.
Long-legged myotis (<i>Myotis volans</i>)	Covered, CA	The proposed project would adversely impact foraging habitat but would not impact species viability	Approximately 653 acres of foraging habitat would sustain temporary impacts during construction and 425 acres would sustain permanent impacts as a result of implementing the Proposed Action. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.	Same as the Proposed Action except the temporary impacts affect approximately 579 acres and approximately 331 acres would sustain permanent impacts
Yuma myotis (<i>Myotis yumanensis</i>)	CA	No impacts on this species are anticipated as a result of the project	This species requires large bodies of water for foraging purposes. Its presence within the SMNRA is likely incidental, and its viability is not dependent on habitat within the SMNRA. The lined ponds provide open water foraging habitat. Under the Proposed Action, it is anticipated that the open water habitat would continue to be available for foraging.	Same as the Proposed Action. This alternative would provide additional open-water foraging habitat associated with the lagoons and wildlife rehabilitation facility.
Palmer's Chipmunk (<i>Neotamias palmeri</i>)	Covered, CA	The proposed project would adversely impact habitat but would not impact species viability	Project construction activities may impact potentially suitable Palmer's chipmunk denning and foraging habitat. Trees, snags, or downed logs that could be used by Palmer's chipmunk for nesting may be removed from the project area, as necessary. Foraging Palmer's chipmunk in the project area may experience equipment noise and vibration during project construction and noise associated with public use of the proposed facilities. Injury and mortality of Palmer's chipmunk could occur as a	Same as the Proposed Action except the temporary impacts affect approximately 18 acres.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
			<p>result of collision with construction vehicles and equipment and den collapse/removal caused by mechanical activities during construction. Palmer's chipmunk could become entrapped in open utility trench segments or other excavations during construction, and would be vulnerable to injury, mortality, and predation.</p> <p>17 acres of habitat would sustain temporary impacts during construction and approximately 4 acres would sustain permanent impacts as a result of implementing the Proposed Action.</p>	
Western burrowing owl (<i>Athene cunicularia hypugea</i>)	CA	No impacts on this species are anticipated as a result of the project	The project area is at the extreme edge of this species' range, and management actions are not likely to impact the western burrowing owl and its viability. The project area would continue to be utilized for dispersed camping, hiking, mountain biking, equestrian, and OHV use. Some degradation of nesting and foraging habitat and direct loss of individual nests from collapse may occur.	Same as the Proposed Action.
Phainopepla (<i>Phainopepla nitens</i>)	Covered	No impacts on this species are anticipated as a result of the project	No known or observed nest sites occur within or near the Proposed Action area. No riparian vegetation occurs within the Proposed Action area.	Same as the Proposed Action.
Summer tanager (<i>Piranga rubra</i>)	Covered	No impacts on this species are anticipated as a result of the project	No known or observed nest sites occur within or near the Proposed Action area. No riparian vegetation occurs within the Proposed Action area.	Same as the Proposed Action.
Banded gecko (<i>Coleonyx variegatus</i>)	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	<p>Potential impacts on banded gecko include disturbance to habitat, approximately 118 acres of temporary and 91 acres of permanent disturbance.</p> <p>Temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.</p> <p>The permanent impacts would result in the permanent removal of foraging habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action except the temporary impacts affect approximately 92 acres and approximately 47 acres would sustain permanent impacts.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Great Basin collared lizard (<i>Crotophytus insularis bicinctores</i>)	Covered	The proposed project would adversely impact foraging habitat but would not impact species viability within the SMNRA	<p>Potential impacts on Great Basin collared lizard include disturbance to habitat, approximately 547 acres of temporary and 268 acres of permanent disturbance.</p> <p>The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.</p> <p>The permanent impacts would result in the permanent removal of foraging habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action except the temporary impacts affect approximately 476 acres and approximately 207 acres would sustain permanent impacts.
Western red-tailed skink (<i>Eumeces gilberti rubricaudatus</i>)	Covered	The proposed project would adversely impact foraging habitat but would not impact species viability within the SMNRA	<p>Potential impacts on western red-tailed skink include disturbance to habitat, approximately 35 acres of temporary and 15 acres of permanent disturbance of permanent disturbance, within the project area.</p> <p>The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.</p> <p>The permanent impacts would result in the permanent removal of foraging habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action.
Large-spotted leopard lizard (<i>Gambelia wislizenii wislizenii</i>)	Covered	The proposed project would adversely impact foraging and denning habitat but would not impact species viability within the SMNRA	<p>Potential impacts on large-spotted leopard lizard include disturbance to habitat, approximately 112 acres of temporary and 77 acres of permanent disturbance of permanent disturbance, within the project area.</p> <p>The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.</p> <p>The permanent impacts would result in the permanent removal of foraging habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action except the temporary impacts affect approximately 87 acres and approximately 34 acres would sustain permanent impacts.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Banded Gila monster (<i>Heloderma suspectum cinctum</i>)	CA	No direct or indirect effects on Gila monster are anticipated from the implementation of the proposed project	No Gila monster sightings have been documented within or near the project area. Additionally, the project area does not contain suitable habitat for this species.	Same as the Proposed Action.
Western chuckwalla (<i>Sauromalus ater</i>)	Covered, CA	No direct or indirect effects on Gila monster are anticipated from the implementation of the proposed project	No known or observed common chuckwalla occurs within or near the project area. Potentially suitable habitat exists in steep slopes and clifflands in the project area; however, project activities are not anticipated to occur within the habitat (i.e., rocky outcrops).	Same as the Proposed Action.
Glossy snake (<i>Arizona elegans</i>)	Covered	The proposed project would adversely impact foraging habitat but would not impact species viability within the SMNRA	<p>Potential impacts on the glossy snake include disturbance to habitat, approximately 547 acres of temporary and 268 acres of permanent disturbance, within the project area.</p> <p>Some impacts are anticipated from the continued dispersed recreation use of the area especially from direct mortality from increased vehicular traffic on SR 157, Harris Springs Road, and unpaved designated roads and trails within the project area.</p> <p>The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.</p> <p>The permanent impacts would result in the removal of foraging habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action except the temporary impacts affect approximately 477 acres and approximately 207 acres would sustain permanent impacts.
Speckled rattlesnake (<i>Crotalus mitchelli</i>)	Covered	The proposed project would adversely impact foraging habitat but would not impact species viability within the SMNRA	<p>Potential impacts on the speckled rattlesnake include disturbance to habitat, approximately 547 acres of temporary and 268 acres of permanent disturbance, within the project area.</p> <p>Some impacts are anticipated from the continued dispersed recreation use of the area, including equestrian use. Some direct mortality is anticipated from increased vehicular</p>	Same as the Proposed Action except the temporary impacts affect approximately 477 acres and approximately 207 acres would sustain permanent impacts.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
California (common) kingsnake <i>Lampropeltis getulus californiae</i>	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	<p>traffic on SR 157, Harris Springs Road, and designated roads and trails within the project area.</p> <p>The temporary impacts include trampling and/or removing vegetation by equipment during construction of the Proposed Action facilities.</p> <p>The permanent impacts would result in the removal of foraging habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action except the temporary impacts affect approximately 477 acres and approximately 207 acres would sustain permanent impacts.
Sonoran lyre snake <i>Trimorphodon biscutatus lambda</i>	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	<p>Potential impacts on the Sonoran lyre snake include disturbance to habitat, approximately 547 acres of temporary and 268 acres of permanent disturbance, within the project area. Presence has not been documented in the SMNRA.</p> <p>Some impacts on potential habitat are anticipated from the continued dispersed recreation use of the area habitat fragmentation from roads and trails. Some direct mortality may occur from increased vehicular traffic on SR 157, Harris Springs Road, and designated roads and trails within the project area.</p> <p>The temporary impacts include trampling and/or removing vegetation by equipment during construction of the proposed project facilities.</p> <p>The permanent impacts would result in the permanent removal of habitat due to operation and maintenance of proposed facilities.</p>	Same as the Proposed Action except the temporary impacts affect approximately 477 acres and approximately 207 acres would sustain permanent impacts.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Spring Mountains comma skipper (<i>Hesperia comma mojavensis</i>)	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	Potential impacts on the Spring Mountains comma skipper include disturbance to habitat, approximately 605 acres of temporary and 389 acres of permanent disturbance. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the proposed project facilities. The permanent impacts would result in the removal of habitat (physically/mechanically removing host/nectar plants) due to operation and maintenance of proposed facilities.	Same as the Proposed Action except the temporary impacts affect approximately 541 acres and approximately 298 acres would sustain permanent impacts.
Nevada admiral (<i>Limenitis weidemeyerii nevadae</i>)	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	Potential impacts on the Nevada Admiral include disturbance to habitat, approximately 493 acres of temporary and 311 acres of permanent disturbance. The temporary impacts include trampling and/or removing vegetation by equipment during construction of the proposed project facilities. The permanent impacts would result in the removal of habitat due to operation and maintenance of proposed facilities.	Same as the Proposed Action except the temporary impacts affect approximately 454 acres and approximately 263 acres would sustain permanent impacts.
Spring Mountains icarioides blue butterfly (<i>Icaricia icarioides austinorum</i>)	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	Potential impacts on the Spring Mountains Icaroides blue include disturbance to habitat, approximately 17 acres of temporary and 4 acres of permanent disturbance. The permanent impacts would result in the permanent removal of habitat due to operation and maintenance of proposed facilities.	Same as the Proposed Action except the temporary impacts affect approximately 18 acres and approximately 4 acres would sustain permanent impacts.
Carole's silverspot butterfly (<i>Speyeria zerene carolae</i>)	Covered	The proposed project would adversely impact habitat but would not impact species viability within the SMNRA	Potential impacts on the Carole's silverspot butterfly include disturbance to habitat, approximately 17 acres of temporary and 4 acres of permanent disturbance. The permanent impacts would result in the permanent removal of habitat due to operation and maintenance of proposed facilities.	Same as the Proposed Action except the temporary impacts affect approximately 18 acres and approximately 4 acres would sustain permanent impacts.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Charleston ant (<i>Lasius nevadensis</i>)	CA	No impacts	Surveys for the Charleston ant were not conducted in the project area.	Same as the Proposed Action.
Clokey paintbrush (<i>Castilleja martinii</i> var. <i>clokeyi</i>)	Covered	The proposed project would adversely impact individual plants and habitat but would not impact species viability within the SMNRA.	Potential impacts on Clokey paintbrush include 1 plant affected. Approximately 70 individual plants were observed in the project area.	Same as the Proposed Action.
Clokey thistle (<i>Cirsium clokeyi</i>)	Covered	No impacts on this species are anticipated as a result of the proposed project.	The project area includes elevation range of this species; however, no individuals are known to occur in the project area.	Same as the Proposed Action.
Inch high fleabane (<i>Erigeron uncialis</i> var. <i>conjugans</i>)	Covered	The proposed project would adversely impact individual plants and habitat but would not impact species viability within the SMNRA.	Potential impacts on inch high fleabane include 347 plants affected without MM-Botany 2; 91 plants affected with MM-Botany 2. Approximately 1,600 individual plants were observed in the project area.	Same as the Proposed Action.
Smooth dwarf greasebush (<i>Glossopetalon pungens</i> var. <i>pungens</i>)	Covered, CA	No impacts on this species are anticipated as a result of the project.	No records exist for pungent dwarf greasebush within the project area and no individuals were detected during project area botanical surveys. It is unlikely that pungent dwarf greasebush occurs within the project area because the project is located outside the known geographic range of this species.	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Hitchcock bladderpod (<i>Lesquerella hitchcockii</i> , syn. <i>Physaria hitchcockii</i> var. <i>hitchcockii</i>)	Covered	No impacts on this species are anticipated as a result of the project.	No records exist for Hitchcock bladderpod within the project area and no individuals were detected during project area botanical surveys. Suitable soils and microsite conditions occur in the project area. Potential habitat in the project area consists of pinyon pine/big sagebrush, and white fir-ponderosa pine-curleaf mountain mahogany and vegetation series with steep slopes and clifflands habitat.	Same as the Proposed Action.
Charleston pinewood lousewort (<i>Pedicularis semibarbata</i> var. <i>charlestonensis</i>)	Covered	No impacts on this species are anticipated as a result of the project.	One Charleston pinewood lousewort population of 13 plants occurs within the project area. The population will not be directly or indirectly affected by the Proposed Action.	Same as the Proposed Action.
Charleston beardtongue (<i>Penstemon leiophyllus</i> var. <i>keckii</i>)	Covered, CA	No impacts on this species are anticipated as a result of the project.	No individual Charleston beardtongue were detected during project area botanical surveys. No suitable habitat exists within the project area.	Same as the Proposed Action.
Jaeger beardtongue (<i>Penstemon thompsoniae</i> ssp. <i>jaegeri</i>)	Covered	The proposed project would adversely impact individual plants and habitat but would not impact species viability within the SMNRA.	Potential impacts on Jaeger beardtongue include 109 plants affected without MM-Botany 2; 0 plants affected with MM-Botany 2. Approximately 300 individual plants were observed in the project area.	Same as the Proposed Action.
Charleston violet (<i>Viola purpurea</i> var. <i>charlestonensis</i> , syn. <i>Viola charlestonensis</i>)	Covered	The proposed project would adversely impact individual plants and habitat but would not impact species viability within the SMNRA.	Potential impacts on Charleston violet includes 199 plants affected without MM-Botany 2; 183 plants affected with MM-Botany 2. Approximately 1,900 plants were observed in the project area.	Same as the Proposed Action except the Potential impacts on Charleston violet includes 204 plants affected without MM-Botany 2; 188 plants affected with MM-Botany 2.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
MANAGEMENT INDICATOR SPECIES OF THE SMNRA				
Elk (<i>Cervus canadensis</i>)	MIS	Not expected to adversely impact viability of elk.	Construction of proposed facilities would result in the permanent loss of approximately 197.6 acres of blackbrush, sagebrush, and pinyon-juniper habitats that represent potential habitat for this species.	Same as the Proposed Action except the permanent impacts affect approximately 138.2 acres
Yellow-rumped warbler (<i>Dendroica coronata</i>)	MIS	Not expected to adversely impact yellow-rumped warbler species viability.	The only suitable breeding habitat in the project area is limited to a small area of ponderosa pine forest at the extreme western end of the project area. The construction of this alternative would permanently impact 3.9 acres of suitable habitat.	Same as the Proposed Action except the permanent impacts are approximately 4.3 acres.
Brown-headed cowbird (<i>Molothrus ater</i>)	MIS	Beneficial habitat changes/increase population.	Although project actions would permanently impact as much as 424.5 acres of habitat (much of it suitable for cowbird use), the resulting habitat fragmentation and edge where the species is best known to parasitize other birds would increase substantially.	Same as the Proposed Action except the permanent impacts affect approximately 330.7 acres.
Phainopepla (<i>Phainopepla nitens</i>)	MIS	No impact.	No habitat for the Phainopepla exists within the project area.	No habitat for the Phainopepla exists within the project area.
Western tanager (<i>Piranga ludoviciana</i>)	MIS	Not expected to adversely impact western tanager species viability.	3.9 acres of suitable habitat may be subject to permanent impacts. The only suitable breeding habitat in the project area is limited to a small area of ponderosa pine forest at the extreme western end.	Same as the Proposed Action except the permanent impacts affect approximately 4.3 acres.
Cheatgrass (<i>Bromus tectorum</i>)	MIS	There is a potential for spread of non-native invasive species including cheatgrass.	Cheatgrass is most prevalent in the eastern portion of the project area where local infestations exist, and around the 128-acre disturbed area in the western project area. Proposed ground-disturbing actions in these areas, as well as ground-disturbing actions in other portions of the project area (e.g., OHV use, trails, campgrounds, equestrian facilities, recreational support facilities, commercial enterprises, access roads) all have the potential to create conditions conducive to the establishment and spread of cheatgrass. The construction of the Proposed Action would temporarily disturb 653 acres and permanently disturb	Same as the Proposed Action except temporarily impacts would affect 579 acres and permanent impacts would affect 331 acres. Included would be 10 miles of new roadway or roadway improvements and approximately 44 miles of trail or trail improvements.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Red brome (<i>Bromus rubens</i>)	MIS	Potential exists for spread of non-native invasive species, including red brome.	<p>425 acres of ground. Included are 15 miles of new roadway or roadway improvements and approximately 48 miles of trail or trail improvements. An increase in recreational use (including visitation by vehicles, OHVs, horses and other pack and recreational livestock, mountain bikers, and hikers) is expected to contribute to the spread of cheatgrass under this alternative. The nature of the site disturbance (i.e., narrow corridors and discrete development zones in previously disturbed areas) may help confine weed infestations to limited areas where infestations may be controlled more effectively. Proposed restoration of abandoned roads, trails, and other disturbed sites provides the opportunity to reduce the incidence of cheatgrass in these areas over the long term. This species will be monitored by the Forest Service as part of the ongoing invasive species management plan.</p> <p>Red brome is most prevalent in the eastern portion of the project area where local infestations exist. Proposed improvements in this area include trail, trailhead, and trail access construction. These ground-disturbing actions, as well as ground-disturbing actions in other portions of the project area (e.g., campgrounds, recreational support facilities, equestrian facilities, commercial enterprises, access roads) all have the potential to create conditions conducive to the establishment and spread of red brome. These ground-disturbing actions are estimated at 653 acres of temporary impact under the Proposed Action and 425 acres of permanent disturbance. The total length of new trails and the density of multiuse trails will increase substantially, and will traverse previously undisturbed areas. A large increase in recreational use (including visitation by vehicles, OHVs, horses and other pack and recreational livestock, mountain bikers, and hikers) is expected and may also contribute to the spread of red brome under the Proposed Action. The nature of the site disturbance (i.e., narrow corridors and discrete development zones in</p>	Same as the Proposed Action except temporary impacts would affect 579 acres and permanent impacts would affect 331 acres. Included would be 10 miles of new roadway or roadway improvements and approximately 44 miles of trail or trail improvements.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Blue grama grass (<i>Bouteloua gracilis</i>)	MIS	This species could be affected.	previously disturbed areas) may help confine weed infestations to limited areas where infestations may be controlled more effectively. Proposed restoration of abandoned roads, trails, and other disturbed sites provides the opportunity to reduce the incidence of red brome in these areas over the long term. Nevertheless, when compared to the No Action Alternative, the proposed ground-disturbing activities and expected recreational use increase opportunities for the establishment and spread of red brome. Direct and indirect impacts on blue grama grass include trail, trailhead, and trail access construction; infrastructure improvements to retained roads and trails; removal and restoration of unneeded facilities; and new recreational facilities and activities at the Village and Valley sites.	The direct and indirect effects of the Market Supported Alternative on blue grama grass would be similar to or slightly greater than the Proposed Action.
Silk tassel (<i>Garrya flavescens</i>)	MIS	This species could be affected	Implementation of the Proposed Action would temporarily impact 80 acres and permanently impact 53 acres of montane shrub habitat known to support this plant; direct and indirect effects on individuals could occur. In addition, 336 acres of temporary impacts and 127.5 acres of permanent impacts would occur to pinyon-juniper, and white-fir ponderosa pine communities that contain some individual silk tassel.	Similar to the Proposed Action, total ground-disturbing impacts of montane shrub habitat would affect 52 acres permanently and 89 acres temporarily. In addition, 294 acres of temporary impacts and 110 acres of permanent impacts would occur to pinyon-juniper and white-fir ponderosa pine communities that contain some individual silk tassel.
Lemmon's hymenoxys (<i>Hymenoxys lemmonii</i>)	MIS	No effect	The Proposed Action is expected to have no direct or indirect effects on Lemmon's hymenoxys.	Same as the Proposed Action.

Species	Status	Determination of Effects	Proposed Action	Market Supported Alternative
Winterfat (<i>Krascheninnikovia lanata</i>)	MIS	No effect	The Proposed Action is expected to have little to no direct or indirect effects on winterfat. Effects on desert shrublands from implementing the Proposed Action include 103 acres of temporary and 74 acres of permanent impacts.	Same as the Proposed Action except 81 acres of temporary and 32 acres of permanent impacts would occur.
Aspen (<i>Populus tremuloides</i>)	MIS	No effect	The Proposed Action is expected to have no direct or indirect effects on aspen.	Same as the Proposed Action.
Desert almond (<i>Prunus fasciculata</i> var. <i>fasciculata</i>)	MIS	This species could be affected	Effects on desert scrubland–blackbrush habitats from implementing the Proposed Action include 89 acres of temporary and 70 acres of permanent impacts.	Same as the Proposed Action except 77 acres of temporary and 32 acres of permanent impacts would occur.
Golden currant (<i>Ribes aureum</i> var. <i>aureum</i>)	MIS	No effect	The Proposed Action is expected to have no direct or indirect effects on golden currant.	Same as the Proposed Action.

3.4 Cultural Resources

Projects and undertakings on federal lands or that involve federal funding or permits are required by law to take into consideration the effects of projects on significant historic properties within the project area. A reasonable effort must be made to identify and record the properties within the project area and to evaluate their significance in terms of the criteria for assessing the National Register of Historic Places (NRHP) eligibility of the property. The NRHP is a federally established and maintained listing of places and objects significant in American history, architecture, archaeology, engineering, and culture. The Forest Service, in consultation with the Nevada State Historic Preservation Office (SHPO) is responsible for assessing the eligibility of each property for the NRHP and for the determining the effects of the project on all identified properties.

Cultural resource surveys of the project area were conducted to determine the nature and distribution of cultural resources (including but not limited to archaeological resources, ethnographic resources, and historic structures) that could be directly or indirectly affected by project activities. These surveys were conducted during the periods of October and June 2006, May and July 2007, and in September 2008. The *Middle Kyle Complex Cultural Resources Survey* (ICF Jones & Stokes 2009n) was prepared to document all cultural resources within the project area. The report also provides NRHP eligibility and management recommendations for Forest Service consideration. This report is not available for public review, because of the sensitive nature of the information it contains regarding the archaeological sites.

This section of the EIS summarizes the potential environmental effects on cultural resources, with the exception of cumulative effects, which are discussed in Section 3.7.5, *Cumulative Effects*.

3.4.1 Affected Environment

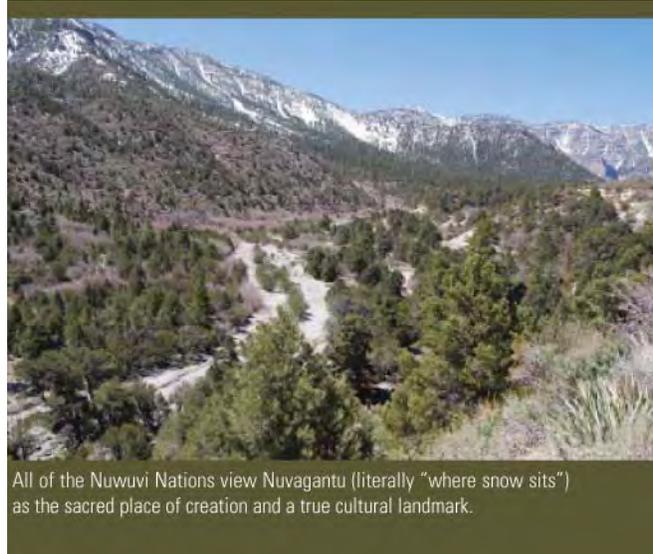
Cultural resource surveys have been conducted in and around the project area since 1972. These surveys recorded multiple prehistoric and historic archaeological sites and historic structures. An inventory of these previously recorded sites is included in the survey conducted for this project, in addition to newly recorded archaeological (prehistoric and historic) and historic structures.

Prehistoric archaeological sites recorded are associated with ancient cultures present in the area from approximately 9,000 years ago to more recent cultures who occupied the area.

Historic archaeological sites and historic structures in the area are associated with the exploration of the Spring Mountains, European/American settlement of Las Vegas, transportation, recreation, logging, and mining. The federal

government has administered the area since the early 1900s. Military presence in the area includes overseeing the CCC in the 1930s and establishment of a gunnery school in 1941.

The Spring Mountains are part of the traditional territory of the Southern Paiute and Chemehuevi (Nuwuvi Nations) in southern Nevada. While each nation has its own significant sites within its territory, all of the Nuwuvi Nations view *Nuvagantu* (literally “where snow sits” or the Spring Mountains landscape) as the sacred place of creation and a true cultural landmark. *Nuvagantu* provides everything the Nuwuvi Nations need to survive as a people, including places to harvest forest products and conduct certain activities (Nuwuvi Working Group and Spoon 2009). To more effectively consult with tribal governments interested in the project area, a working group of tribal representatives from the Nuwuvi Nations has been formed for this project. The Forest Service and the tribal working group have collaborated on the proposed alternatives. In addition, the tribal working group prepared an essay to describe the Nuwuvi relationship to the Spring Mountains landscape and provide readers and the decision maker with a better understanding of the Nuwuvi way of knowing. This essay is presented in Section 3.8, *Nuwuvi and the Spring Mountains Landscape*. The Nuwuvi Working Group will continue to collaborate with the Forest Service throughout the EIS process and into the final design and implementation of the project as appropriate.



There are 15 previously recorded sites (nine prehistoric sites, five historic, one multi-component) in the project APE. Seven of these sites have been included in a larger site boundary within the project area. Two sites are described as two-object isolates apparently collected when they were recorded and therefore would no longer be considered sites under the current NRHP guidelines.

Twenty-two new archaeological sites (four prehistoric, 17 historic, one multi-component) were identified during the Middle Kyle Complex project cultural resources surveys between 2004 and 2008. Three of the archaeological sites identified during the 2004 survey (and assigned trinomials) have subsequently been combined into a single site designated as loci within a larger site. Six sites have been included as loci within a larger site. Three sites recorded by Jones & Stokes during the 2004 survey have also been included as Loci within a larger site.

One historic property, the Kyle Ranger Station, was previously recorded and determined NRHP eligible and is located in the project area. The historic property includes six historic structures constructed in the 1930s by the CCC. The historic structures are located in the area known as the Kyle administrative site and the Kyle CCC Camp. This document refers to the existing area where these structures are located as the Kyle CCC Camp. The existing conditions of this area are discussed in Section 1.3.2, *Need Statement 2*.

The Forest Service is recommending four newly recorded sites be considered NRHP eligible including three historic and one prehistoric site, within the project APE. These sites include a historic-period campsite and artifact scatter with features related to possibly longer term occupancy (tent pad) and is possibly associated with CCC activities in the region; a historic debris scatter; a multicomponent site consisting of a historic artifact scatter dating to ca. 1930s and likely associated with the CCC; and, the Pilsner rock shelter with a lithic scatter.

The project has the potential to adversely affect three historic sites and one prehistoric NRHP-eligible (recommended) sites. The Forest Service and the Nevada SHPO have developed a Programmatic Agreement that will guide Section 106 of the National Historic Preservation Act (NHPA) consultation between the Forest Service, Nevada SHPO, and culturally affiliated tribes throughout project design and construction. In addition, the agreement will guide the development of any cultural resource mitigation identified through the Section 106 consultation process.

3.4.2 Direct and Indirect Effects

Effects on cultural resources consist of qualitative determinations as to whether historic features and recorded sites are preserved and protected. Section 106 of the NHPA allows for projects to result in a finding of “no historic properties affected” (sometimes listed as “no effect”), “no adverse effect,” or “adverse effect,” as defined below.

- **No Historic Properties Affected (No Effect).** There are either no historic properties present in the APE, or there are historic properties present in the APE, but the undertaking will have no effect on them as defined in 36 CFR 800.16(i).
- **No Adverse Effect.** There could be an effect on a historic property, but the effect would not be harmful to those characteristics that qualify the property for inclusion in or eligibility for the NRHP.
- **Adverse Effect.** Project impacts may directly or indirectly alter any of the characteristics that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association, or a property’s ability to offer research potential.

The criteria of adverse effect described in the guidelines for NHPA (36 CFR 800.5[a]) define adverse effects on significant cultural resources as any of the following actions, regardless of whether they occur singly or in combination with one another:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

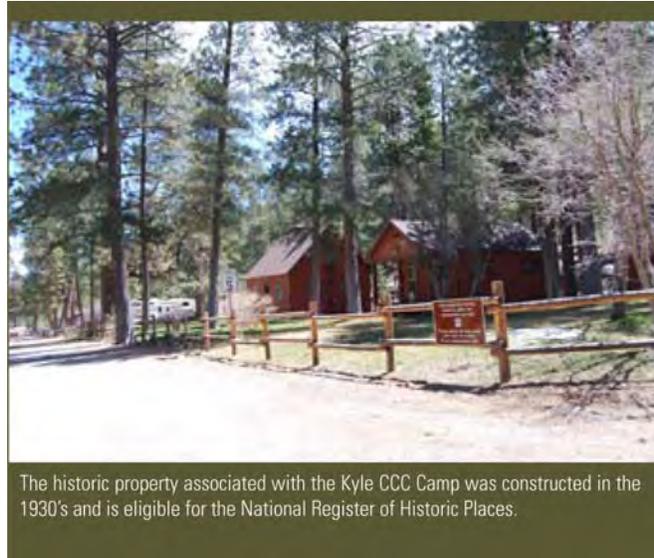
Potential effects on cultural resources include vandalism and unauthorized artifact collection associated with recreation activities and/or other pursuits in the project area. Ground-disturbing activities associated with construction have the potential to unearth and damage previously undetected archaeological sites.

No Action Alternative

Under the No Action Alternative, much of the project area would continue to be used for unregulated camping, hiking, mountain biking, equestrian, and OHV use. Under this alternative, impacts on historic properties would continue as they have in the past. Historic properties located in areas where recreational use occurs, and is heaviest, would continue to experience some form of disturbance from trampling or concentration of use or directly through removal. Vandalism, site disturbance, and artifact collection would continue to occur as a result of the dispersed nature of recreation activities in the project area. In areas having both high site density and recreational usage, sites impacted by trampling, erosion, vertical and horizontal artifact displacement, and artifact breakage would continue.

The historic structures located in the Kyle CCC Camp would remain in the same location and setting. Existing non-historic structures would remain in the same location and existing Forest Service functions in this area would continue. While the non-historic structures in this area were designed to conform to the historic

setting of the Kyle Ranger Station, these structures were not part of the original facility layout or historic setting. Interpretive information is currently not offered regarding the historic significance of the historic structures constructed by the CCC.



Proposed Action

The Proposed Action has the potential to adversely affect each of the recommended NRHP-eligible sites. The impacts would result primarily from trail and facility construction and use. Under the Proposed Action the historic structures located at the Kyle CCC Camp would be restored and maintained for managed public use as a historic site. Non-historic structures would be removed and the areas restored.

Under this alternative, impacts on cultural resources are anticipated to result from the construction of proposed facilities in the form of vertical and horizontal displacement and artifact breakage. The recreational activities within the project area may also result in trampling, breakage, vandalism, site disturbance and artifact collection and removal. Implementation of the Proposed Action is anticipated to reduce the dispersed recreation in the area and may reduce impacts on cultural resources associated with this type of use. It is anticipated that implementation of this alternative would have greater adverse impacts on cultural resources than the Market Supported Alternative due to the potential to attract a larger number of visitors to the site.

This is a sacred landscape to Nuwuvi people. The proposed activities and development in general is not culturally compatible in areas of Nuwuvi significance, and would have an adverse impact on the landscape.

Market Supported Alternative

Potential effects on cultural resources under the Market Supported Alternative are anticipated to be similar to those described for the Proposed Action. Slot Canyon trail bridge construction and the commercial style-campground were identified by the Nuwuvi Working Group as areas of high concern regarding impacts on the landscape.

Implementation of the Market Supported Alternative is anticipated to attract fewer visitors than the Proposed Action and, therefore, operational impacts on cultural resources would be less.

3.5 Visual Resources

Visual Quality Objectives (VQOs) are assigned to a landscape based on a variety of factors including the landscape's degree of visibility from primary travelways, visitor use areas and the public's perception of the quality of the landscape. These factors vary by location.

The SMNRA GMP includes a management guideline suggesting that the natural appearance of scenery within the state highway viewshed (the viewshed or viewscape is the area being viewed) be maintained. Such management guidelines identify "preferred or advisable courses of action and allows for operational flexibility."

The Forest Service Visual Management System defines five different VQO classes, which are used to describe desired future conditions (Forest Service 1974). Described below, these classes describe differing levels of alteration that are acceptable within particular viewsapes:

- **Preservation.** Generally, applies to specially designated areas such as wilderness. It requires that no visible changes occur in the landscape from forest development practices. Preservation denotes a very high level of concern for scenic resources and provides for "very high scenic integrity."
- **Retention.** Requires that management activities or alterations not be visually apparent to the casual visitor. The valued landscape character "appears intact." The goal is to ensure that management activities repeat the line, form, color, and texture of the characteristic landscape, thus reducing visual contrast. Retention denotes a high level of concern for scenic resources and provides for "high scenic integrity."
- **Partial Retention.** Human activities may be evident but must remain "visually subordinate" to the characteristic landscape. The valued landscape character may appear slightly altered and provide for "moderate scenic integrity."
- **Modification.** Alterations may dominate the original characteristic visual landscape. However, alterations must borrow from the natural line and form to such an extent and on such a scale that they are comparable to natural occurrences. This objective has "low scenic integrity."
- **Maximum Modification.** Permits a dominant visual change to the characteristic landscape, particularly in the foreground and middleground; however, the activities should appear natural in the background view (generally farther than 3 or 4 miles from the viewer). This objective has "very low scenic integrity."

The Forest Service has not completed detailed visual resource mapping for the Middle Kyle Complex; however, it has developed VQO classifications for the entire SMNRA. Lands within the project area fall within one of three inventory VQO classes: Preservation, Retention or Partial Retention (as shown on

Figure 3.5-1). The Land and Resource Management Plan (LRMP) (1986) for the Toiyabe National Forest provides Forest-wide direction to “protect the scenic quality of the forest by achieving the designated VQOs.” This directive generally adopts inventoried VQOs as plan direction except where management area direction provides more specific guidance.

The lands within the foreground and middleground views of SR 157 and 158 are classified as Retention. This Retention corridor varies in width from less than 1,400 feet wide (700 feet on either side of SR 157) to more than 2 miles wide (approximately 1 mile on either side of SR 158). Outlying lands fall within the categories of Preservation, Partial Retention, Modification, and Maximum Modification. Priority is given to the protection of views from primary travelways and primary visitor use areas: particularly foreground views (generally up to 0.5 mile from viewer) and middleground views (generally 0.5 mile to 3 miles) from primary travelways. A very small portion of the project area falls within the Preservation VQO class; however, no construction or alteration is proposed to occur within this area.

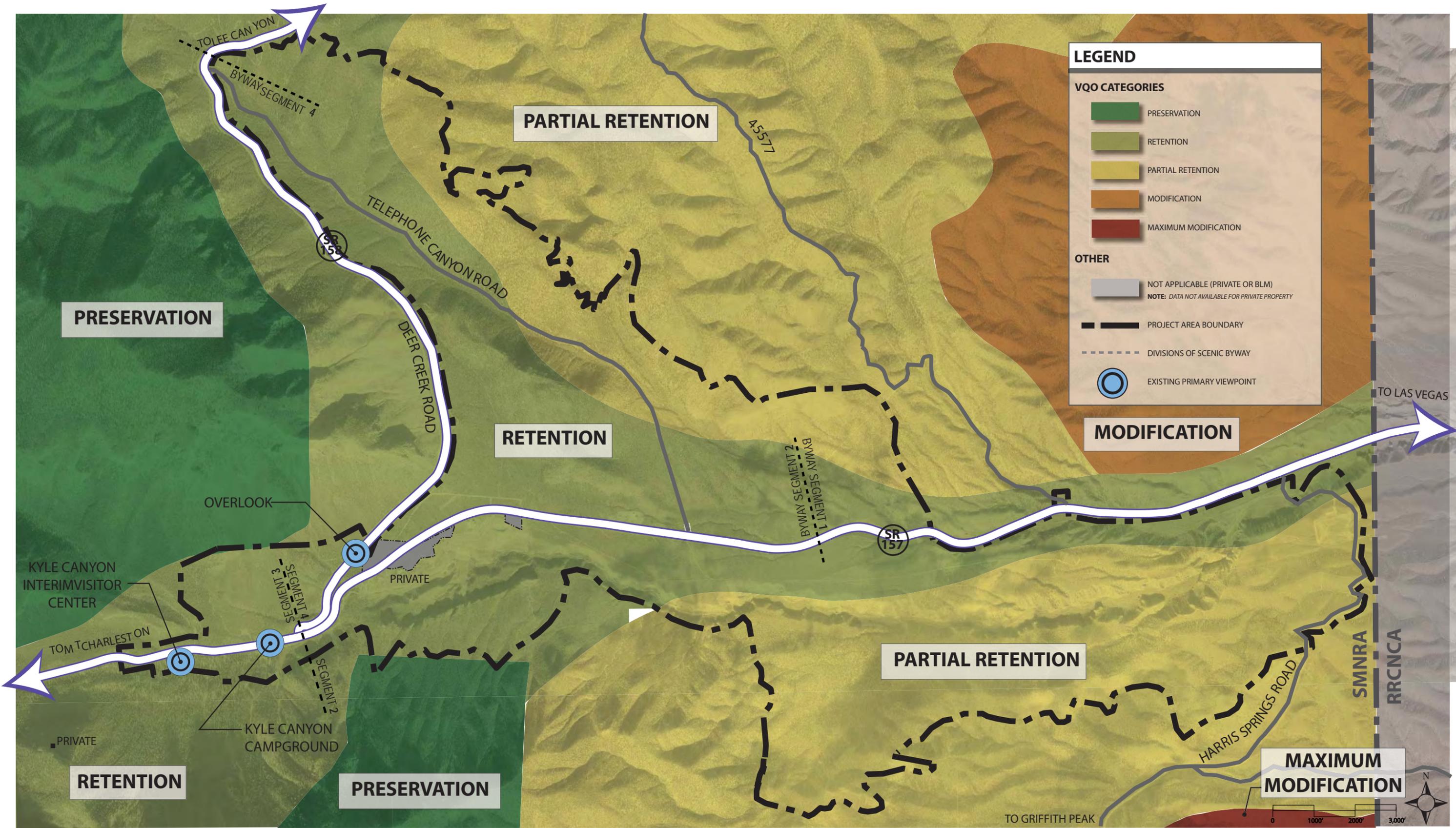
3.5.1 Affected Environment

A variety of environmental factors combine to establish the unique visual character of a particular landscape. These factors include natural features such as geology, landform, vegetation, and water features, as well as human-made elements including structures or roads. Within the project area, these attributes coalesce to compose a distinctive and scenic environment that is representative of the Spring Mountains ecosystem.

At the lower elevations near the eastern project boundary, a diverse mosaic of desert plants provides sparse cover. Native species such as yucca, cholla, and blackbrush create a subdued palette dominated by light greens, gray-greens, and grays. Seasonally, these areas are host to brighter colors such as yellow, cream, orange, and purple, as native wildflowers put forth conspicuous blooms.

Desert shrublands occur on open plateaus or rolling hills which offer expansive views of surrounding terrain. From many places in the project area, visitors may observe distant mountain ridges to the east. To the west, Mount Charleston and neighboring peaks provide a focal point throughout much of the project area. From Harris Springs Road, these peaks are evident soaring over the desert plateaus below. Another major feature of the project area is Kyle Canyon itself. In the eastern portion of the project area, SR 157 winds through this drainage, which is comparatively wide in this area. West of Harris Springs Road, the main branch of the canyon is confined to a narrow slot.

West of Harris Springs Road the highway climbs out of the canyon and ascends a gently sloping plateau. Though desert shrubs are still evident, the vegetation gradually transitions to low conifer woodland dominated by Utah juniper and singleleaf pinyon pine. These trees remain small, generally 25 feet or lower. Large native shrubs including mountain mahogany and cliffrose are important components of the vegetation. This plant community covers a large portion of



MIDDLE KYLE COMPLEX ENVIRONMENTAL IMPACT STATEMENT

INVENTORIED VISUAL QUALITY OBJECTIVES
FIGURE 3.5-1:



the project area including lands surrounding Telephone Canyon and those adjacent to SR 158. In the heart of the project area, a wide, gently sloping plateau extends south to the edge of Kyle Canyon, providing views of distinctive geology both west and east of the canyon. Looking south, across the canyon, a sheer cliff is a conspicuous feature in the view. Looking west, the crest of the Spring Mountains range is a dominant scenic feature.

West of the intersection with SR 158, the character of the natural scenery changes again. In this area, SR 157 follows the bottom of the drainage. Views become confined as the sloping walls of the canyon narrow and vegetation becomes taller. Forests of ponderosa pine and white fir predominate, offering a sense of shelter to the visitor. With their tall, straight trunks, these trees contribute a vertical emphasis to the natural landscape, and establish a deeper, darker palette. Deep browns and reddish browns (the trunks) and deeper greens (needles) replace the gray-greens and light olives of the lower elevation vegetation. Though these forested areas feel more enclosed than the deserts and low conifer woodlands, a visitor may still enjoy striking views of sheer rock faces in the distance. Generally, these geological features are gray or buff.

Nuwuvi consider views to be important cultural resources that contribute to the location and performance of American Indian ceremonialism. Views combined with other cultural resources produce sacred places where power is sought for medicine and other types of ceremonies. Central views are experienced from high places, including mountaintops and mesa edges. Panoramic American Indian views gain additional sanctity when they contain highly diverse topography. Viewscape panoramas are further enhanced by the presence of volcanic cones and lava flows. Views are connected to song and storyscapes, especially when the vantage point has a panorama composed of locations in songs and stories. Vital to the indigenous American Indian experience of views is isolation.

Existing Viewpoints and Views

The Forest Service places priority on the protection of visual resources within view from primary travelways, secondary travelways and primary visitor use areas. Primary travelways include major roads and trails. These linear facilities present a sequence of views. Secondary travelways include Harris Springs Road, NFS 45577, Telephone Canyon Road, and multiple NFS roads. These roads provide access to secondary destinations within the project area and surroundings. Primary visitor use areas include campgrounds, visitor centers, picnic areas, and observation points.

Primary Travelways

The primary travelways in the project area are SR 157 and SR 158, both of which are segments of the Mt. Charleston Scenic Byway. The portions of the travelways were divided into the following four segments (see Figure 3.5-1).

Byway Segment 1

The existing visual condition of Byway Segment 1 would generally meet Retention with some localized conditions more consistent with Partial Retention. This is the eastern extent of SR 157 in the project area. It begins at the entrance to the SMNRA, continues past intersections with Harris Springs Road and NFS 45577, and



View from Rim Trail overlooking SR 157.

ends after climbing out of Kyle Canyon and arriving on the level plateau. SR 157 winds through the desert environment of lower Kyle Canyon and maintains a high degree of scenic integrity. Aside from the road itself, there are few human-made features to intrude upon the natural scene: a few unpaved roads and minimal signs. The canyon walls confine views to a relatively narrow area.

Byway Segment 2

The existing visual condition of the national forest lands in Byway Segment 2 could be categorized as meeting Modification VQO due to the scars above and the utilitarian and abandoned developments along the road and, therefore, being inconsistent with GMP guidance. This is the section of SR 157 extending west from Byway Segment 1 to the intersection with SR 158. The scenery that is viewed from Byway Segment 2 is characterized as “mostly natural appearing.” However, several human-made features intrude upon the scene, diminishing the quality of views from the byway. The features include old road scars on the lower flanks of Fletcher Peak, a utility corridor with tall poles that parallels the highway, signs for the Las Vegas Metro, a solid waste transfer station, and the NDOT maintenance yard.

Though partially screened from view by native vegetation, the access roads are visible from the scenic byway. In particular, a remote access weather station associated with the NDOT facility is located adjacent to the road. There is also a large pullout on the north side of the road that creates a large area of bare gravel that interrupts the pattern of native vegetation. The largest disruption to the natural scene is the 128-acre parcel recently acquired by the Forest Service and nearby parcels of private property. The 128-acre parcel, the former golf course property, is screened from the road by a berm and vegetation; however, the chain-link fence is noticeable from the highway along with glimpses of the abandoned parking lot with non-native trees. In addition, several standing buildings on nearby private land can be seen from this segment. Some undeveloped private parcels in this area may eventually be developed, with additional effects on visual quality.

Byway Segment 3

Byway Segment 3 is generally categorized as Partial Retention because of the facilities being evident but still largely subordinate to the natural landscape. This segment includes the SR 157 junction with SR 158 and extends to the western edge of the project area. West of the intersection with SR 158, there are a few minor intrusions to the road's natural viewshed. Forest Service recreational and administrative developments lie within view and are apparent, but they have largely been designed to harmonize with the natural landscape. Kyle Canyon Campground is separated from the highway by Kyle wash and nestled under tall ponderosa pines. The Forest Service administrative and maintenance area is also set back from the road. Because these buildings are modestly scaled and painted brown, they recede from view. The visitor center is adjacent to the road, but it is a small rustic-inspired structure designed to coordinate with the historic Kyle CCC Camp structures in the maintenance area.

Byway Segment 4

Byway Segment 4 meets Modification VQO because of disturbed areas sufficiently dominating the landscape. The portion of SR 158 lying within the project area is very scenic. Overall, there are few built features, except for a small trailhead at the north end of the project area. The highway climbs fairly high as it rounds the flanks of Fletcher Peak. This stretch of highway offers panoramic views to the south and east. Looking west, the natural character of the Mount Charleston Wilderness Area remains intact. On this stretch of road there is an informal pullout that overlooks most of the project area. Overall, this vantage point provides a panoramic and attractive view. Natural scenery within view includes rocky cliffs overlooking Kyle Canyon and distant mountain ridges. The broad terrace to the north of Kyle Canyon is evident in the middleground more than 1 mile away. It appears as a large, flat area of unbroken native vegetation. The curvilinear edge of the plateau defines the course of Kyle Canyon. Several structures and other built features are also evident. In particular, the 128-acre parcel, the site of the proposed Village development, is especially prominent. This disturbed area is located less than 1 mile away and squarely in the center of the view. Leveled building footprints, abandoned surface parking, and other disturbed areas appear as a light gray expanse, contrasting with the gray-greens of the natural surroundings. Ornamental trees stand in neglected beds, and pioneer trees push up through the cracks in the parking area. These elements contribute to the overall character of the area as neglected. This disturbed area dramatically reduces the quality of views from SR 158 and especially this overlook, which is a primary viewpoint in the project area.

Secondary Travelways

Secondary travelways include Harris Springs Road, NFS 45577, Telephone Canyon Road, and multiple NFS roads. The secondary roads are unpaved, fairly primitive, and provide access to secondary destinations within the project area and surroundings. Scenery varies by location, but overall, these roads afford views of natural scenery with few developments. One service road parallels the

north rim of Kyle Canyon leading to an informal overlook of the slot canyon. This is an interesting view, but the presence of an overhead utility line crossing the canyon detracts from the natural character. Along this road to the west lie other viewpoints into Kyle Canyon including one view marred by the presence of an old dumping ground. Cars and other items lay strewn about the canyon in this area.

Unauthorized trails also weave through the project area, including a trail through the slot canyon allowing visitors to be in scenic natural settings. Of note is the trail in the slot canyon. At ground level the slot canyon is an especially scenic geologic feature largely devoid of structures or facilities. The sense of remoteness in this area is somewhat diminished by the presence of litter and graffiti in the slot canyon, motorized trails leading into the canyon, and the long utility line spanning the canyon. This last element, in particular, reduces the visual quality of an otherwise scenic setting.

Primary Use Areas

Existing primary use areas within the project area include Kyle Canyon Campground and Kyle Canyon Interim Visitor Center, which are the only existing areas of concentrated visitor use. Kyle Canyon Campground is located in a very scenic environment, nestled under tall pines, alongside Kyle wash. Views outward are confined to the immediate area by tall trees and steep slopes, though glimpses of distant mountain scenery may be enjoyed. The visitor center was designed to be temporary. This area is also shaded by tall pines, but its proximity to the road makes it very busy and loud during periods of heavy traffic.

Secondary Use Areas

Existing secondary use areas in the project area are largely limited to trailheads and informal pullouts. One area that deserves mention is the 128-acre disturbed area south of SR 157. Though closed, this area receives limited use by residents; it overlooks a comparatively wide stretch of Kyle Canyon, where a former golf course is currently being reclaimed by nature. The quality of views in this area is mixed. To the west, the scenic peaks of the Spring Mountains range are visible. Looking south across the canyon, the line of cliffs is a dramatic backdrop. But the view into this valley includes evidence of the former golf course property. The remnants of two ponds and deteriorating asphalt paths detract from the surrounding natural scenery.

3.5.2 Direct and Indirect Effects

Using the Forest Service methodology for visual resources impact analysis, the direct, indirect, and cumulative effects on visual resources of the three alternatives were examined and determined by:

- Analyzing projected effects of specific proposed facilities on priority views;
- Assessing the collective effects of the project on the natural landscape character of the project area; and
- Determining whether existing VQOs would be met.

The specific effect of a particular proposed facility on visual resources may be either beneficial or adverse:

- Beneficial effects would enhance the existing landscape character or views from primary viewpoints.
- Adverse effects would reduce the existing landscape character or the quality of views from identified viewpoints.

Where possible, the magnitude of the effect on the scenery within view from specific vantage points is quantified. These effects are described as negligible, minor, moderate, or major.

- **Negligible.** Negligible effects would cause imperceptible changes to the relative level of natural appearance to the current landscape, i.e., the landscape would continue to meet the same VQO that it currently does. A landscape that is currently natural in appearance would continue to meet the GMP direction to maintain naturally appearing scenery (Retention VQO).
- **Minor.** Minor effects would be slightly detectable or confined to a small area. These effects would cause a one-level change in the VQO that would be met, at least in that specific location. For example, a minor adverse effect would cause an area that now meets Retention to then meet Partial Retention after implementation.
- **Moderate.** Moderate effects would be those that are readily apparent. They would generally cause a two-level change in the VQO that would be met in that specific location. A moderate adverse effect would cause an area that now meets Retention to meet Modification after implementation.
- **Major.** Major effects are those that are substantial, highly noticeable, and/or result in a change to the overall landscape character. Adverse major effects would cause an area to fall to a Maximum Modification VQO.

The following sections summarize the potential effects on views from primary and secondary travelways and primary use areas. Additional detail and discussion is contained in the *Visual Resources Specialist Report, Middle Kyle Complex* (ICF Jones & Stokes 2009). The cumulative effects are discussed in Section 3.7.5, *Cumulative Effects*.

No Action Alternative

Under the No Action Alternative the Middle Kyle Complex would not be constructed and there would be no effects on the existing visual character. The Mt. Charleston Scenic Byway would continue as the primary travelway through the area and views from this corridor would remain the same. Views from SR 158 of the former golf course property would continue to be apparent and unattractive to visitors. However, the disturbed areas within the former golf course property would undergo restoration to a more natural state, with removal of non-native vegetation, debris and the asphalt trails, although the parking lot would not be removed. These restoration efforts would allow for a higher VQO to be met over time. There would be no new primary or secondary use areas; thus, the overall opportunities for viewing scenery would not be expanded. Because the impact of the disturbed area and other nearby landscape alterations on views from the scenic byway (in Byway Segment 2 and in Byway Segment 4), the Retention VQO would not be achieved. The condition of these views would continue to be consistent with the Modification VQO.

Proposed Action

Under the Proposed Action, the effects on the visual character would be adverse. Overall, when measured against GMP direction to maintain natural-appearing scenery—or at least predominantly natural scenery—the effect of constructing and operating project facilities on the views from the byway would be negative because of the increased amount of apparent landscape alterations associated with the new recreation and administrative facilities.

The potential effects of the Proposed Action to priority views are summarized in Table 3.5-1.

Table 3.5-1. Proposed Action - Direct and Indirect Effects on Existing Views

Feature	Potential Change in Visual Quality Objective Value				
	No Effect	Negligible Effect	Minor	Moderate	Major
PRIMARY TRAVELWAYS					
Byway Segment 1					
Proposed campgrounds and on-site sewage treatment system with septic tanks and leachfields	No Effect				
New trailhead parking lots (at NFS 45577 and Harris Springs Road)		Negligible Effect			
Proposed improvements in Kyle wash and road cuts associated with upgrading and paving Harris Springs Road			Adverse		

Feature	Potential Change in Visual Quality Objective Value				
	No Effect	Negligible Effect	Minor	Moderate	Major
Byway Segment 2					
Relocated entrance to NDOT maintenance facility with weather station	No Effect				
Proposed Village and Valley areas New trailhead in Telephone Canyon area with equestrian rental facility		Negligible Effect			
Relocation of Las Vegas Metropolitan Police Proposed campgrounds and picnic areas including campstore/registration area at main entry Relocated interagency fire and law enforcement, and proposed Forest Service administrative and operations facilities including biomass facility Proposed employee/volunteer housing and research center			Adverse		
Biomass heating/cooling plants/stacks				Adverse	
Burial of overhead utility lines and restoration areas including relocation of solid waste transfer station off NFS lands				Beneficial	
Byway Segment 3					
Reconstruction of Kyle Canyon Campground and improvements at Kyle CCC Camp Proposed upgrade at Kyle wash crossing at entrance to Fletcher View Campground		Negligible Effect			
Proposed Kyle Canyon Wash Trail (paved)			Adverse		
Restoration areas (removal of interim visitor center and restrooms)			Beneficial		
Byway Segment 4					
Proposed Village area south of SR 157		Negligible Effect			
Proposed campgrounds and picnic areas Proposed trailheads and parking areas, equestrian campground, biomass facility and Forest Service administrative area				Adverse	

Feature	Potential Change in Visual Quality Objective Value				
	No Effect	Negligible Effect	Minor	Moderate	Major
SECONDARY TRAVELWAYS					
Proposed closure of a portion of Telephone Canyon Road to motorized vehicles			Beneficial		
Limiting and concentrating OHV use to designated trailhead and motorized routes					
Proposed trail use designations (hiking, biking, equestrian) and improvements to existing trail network (including paved multiuse trails)					
Burial of overhead utility drainage crossings along proposed Rim Trail					
Clean up of dump area and restoration of helipad site					
Burial of overhead utility lines along Kyle Canyon Wash Trail					
PRIMARY VISITOR USE AREAS					
Proposed Village		Negligible Effect			
Proposed Valley			Beneficial		

Summary of Effects on Inventoried Visual Quality Objective Zones

Under the Proposed Action, proposed modifications to the trail network would negatively impact visual quality objectives and would be negligible. The improvements would occur on lands inventoried as Retention and Partial Retention. Trails and trailheads would be constructed within Partial Retention zones where roads and trails (authorized and user created) already exist. In fact, many of the existing roads and trails are wider than standard recreational trails and the width would be reduced when converted to trails. This outcome would reduce the visual impact of these existing roads and trails.

The majority of the development in the Proposed Action would occur within areas inventoried as Retention. Some of this development would be minimal, such as trails. Large developed facilities could impact views from primary viewpoints or from the byway. This is true of views of the Village, the campground and picnic areas, and the development north of SR 157, as seen from the Byway Segment 4, as well as views of the Village, as seen in Byway Segment 2 along SR 157. If these developments are designed and built with visual resource considerations in mind, the Proposed Action would meet the stated Modification VQO. These two byway views would be the principal inconsistencies with the GMP guidance to maintain natural-appearing, or at least predominantly natural appearing, scenery.

Effects on Natural Landscape Character

Under the Proposed Action, proposed modifications to the trail network would have a negligible impact on visual quality objectives. Proposed facilities would be located within all three vegetation zones: high desert shrubland, low conifer woodland (or transition zone), and conifer forest.

Localized impacts on landscape character would be greatest in the low conifer zone, where most development would occur. Changes to landscape character in this zone would be evident from SR 157 and from SR 158. The most obvious change would be the more developed nature of the Village area. The Village and other major development proposed in this area would occur in a portion of this zone that is largely devoid of pinyons and junipers, and is instead dominated by cliffrose or cleared of vegetation. Therefore, the planting of pinyons and junipers in these areas would have a positive effect on scenery, moving these areas closer to the desired landscape character. If non-native shade trees were planted instead, the visual contrast with the natural landscape character would be somewhat greater. Restoration of old road scars, old dumping grounds, and other areas would have a moderate beneficial effect on natural landscape character in this zone.

Proposed facilities in high desert shrubland areas would be mostly trails, which would result in negligible effects on the natural landscape character. Developments in the forest zone would also be minimal, with little or no overall effect on landscape character.

The Forest Service acknowledges that all new construction will have a degree of impact on the American Indian experience of viewsapes and isolationism. In the design and construction phases of the Middle Kyle Complex, consultation will be conducted with culturally affiliated American Indian nations to ensure that these impacts are mitigated where and when feasible.

Market Supported Alternative

With regard to VQOs, the combined effect of proposed facilities under the Market Supported Alternative would be similar to that described for the Proposed Action. Overall, when measured against GMP direction to maintain natural-appearing scenery, or at least predominantly natural scenery, the effect of the proposed facilities on the views from the byway would be negative because of the increased amount of apparent landscape alterations associated with the proposed recreation and administrative facilities.

The potential effects of the Market Supported Alternative to priority views are summarized below in Table 3.5-2.

Table 3.5-2. Market Supported Alternative - Direct and Indirect Effects on Existing Views

Feature	Potential Change in Visual Quality Objective Value				
	No Effect	Negligible Effect	Minor	Moderate	Major
PRIMARY TRAVELWAYS					
Byway Segment 1					
Proposed campgrounds, trail bridge over Kyle wash/Slot Canyon (not visible) and sewer treatment facility with lagoons or package treatment facility	No Effect				
Proposed trailhead parking areas off Harris Springs Road		Negligible Effect			
Byway Segment 2					
Proposed Village and Valley areas, trailhead in Telephone Canyon area and proposed wildlife rehabilitation facility		Negligible Effect			
Proposed earthen landscaped berm between campground and SR 157 (minor adverse in short term; negligible in long term).					
Relocated entrance to solid waste transfer facility					
Proposed campgrounds (traditional and commercial styles) and picnic areas including campstore/registration area at main entry			Adverse		
Relocated Metro, proposed interagency law and fire enforcement buildings, Forest Service administrative and operations facilities					
Forest Service employee and volunteer housing					
Burial of overhead utility lines and restoration areas				Beneficial	
Byway Segment 3					
Proposed improvements at Kyle CCC Camp		Negligible Effect			
Proposed upgrade at Kyle wash crossing at entrance to Fletcher View Campground					
Proposed improvements to Fletcher Canyon Trailhead			Adverse		
Proposed reconstruction of Kyle Canyon Campground and Kyle Canyon Wash Trail (paved)					
Restoration areas (removal of non-historic structures, interim visitor center and restrooms and parking area and existing Fletcher Canyon Trailhead parking area on SR 157)				Beneficial	

Feature	Potential Change in Visual Quality Objective Value				
	No Effect	Negligible Effect	Minor	Moderate	Major
Byway Segment 4					
Proposed Village area south of SR 157		Negligible Effect			
Proposed campground (commercial) and picnic areas Proposed Village area (north of SR 157), trailhead and parking areas, wildlife rehabilitation facilities Interagency and Forest Service administrative and operations facilities, including staff and volunteer housing				Adverse	
SECONDARY TRAVELWAYS					
Proposed closure of a portion of Telephone Canyon Road to motorized vehicles Restricting OHV use to designated motorized routes outside project boundary Proposed trail use designations (hiking, biking, equestrian) and improvements to existing trail network (including paved multiuse trails) Clean up of dump area and restoration of helipad site Concealing overhead utility lines in trail bridge over Kyle wash/Slot Canyon Burial of overhead utility drainage crossings along Rim Trail Burial of overhead utilities along Kyle Canyon Wash Trail				Beneficial	
Proposed trail bridge over Kyle wash/Slot Canyon			Adverse		
PRIMARY VISITOR USE AREAS					
Proposed Village		Negligible Effect			
Proposed Valley			Beneficial		

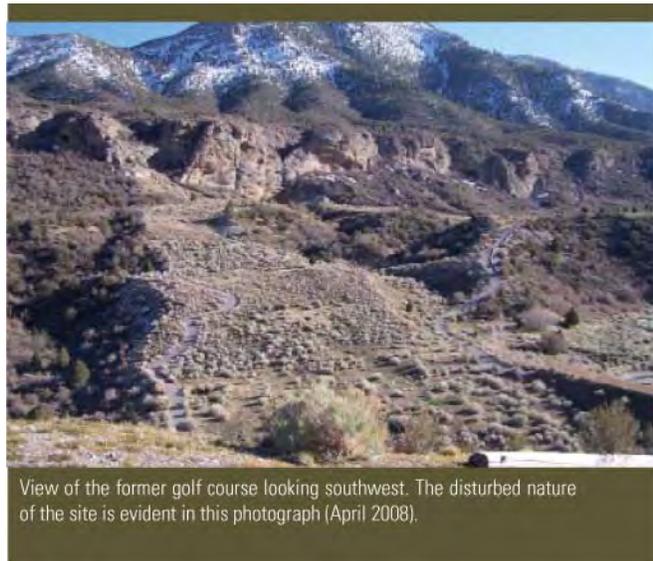
Summary of Effects on Inventoried Visual Quality Objective Zones

Effects would be the same as the Proposed Action with the following exceptions:

- The only additional facility that falls within the Partial Retention VQO is the wildlife rehabilitation center. When viewed from Byway Segment 2, the visual impacts of this facility would not exceed the thresholds set by the Partial Retention VQO. From SR 158, this facility should not be visible, as it would be screened by natural topography.
- Within the Retention corridor, differences from the Proposed Action include a general downsizing of recreation facilities, which would tend to reduce the extent of the associated landscape alterations and create a slight quantitative reduction in the acreage of alterations that would be inconsistent with VQO guidelines. The qualitative nature of those alterations would be much the same in both the Proposed Action and the Market Supported Alternative, with the exception of the configuration of the commercial campground in this alternative, which would create a more intensively modified but smaller area than the comparable campgrounds in the Proposed Action.

Still, the changes in landscape quality perceived by most SMNRA visitors would be much the same under both the Proposed Action and the Market Supported Alternative, and the

general conclusions regarding VQO compliance under this alternative would be the same as under the Proposed Action.



View of the former golf course looking southwest. The disturbed nature of the site is evident in this photograph (April 2008).

Effects on Natural Landscape Character

Effects would be the same as those described under the Proposed Action, with the exception that the denser, more developed character of the commercial campground would create a more urban zone than the traditional Forest Service-style campground in the Proposed Action. The more urban character of the commercial campground would be most visible from the viewpoints along SR 158.

3.6 Compliance with the General Management Plan for the SMNRA

The Proposed Action and Market Supported Alternative are consistent with the Forest Land and Resource Management Plan, which includes the Land and Resource Management Plan for the Toiyabe National Forest (Forest Service 1986), and the General Management Plan (GMP) for the Spring Mountains National Recreation Area, An Amendment to the Land and Resource Management Plan, Toiyabe National Forest (Forest Service 1996) with the exception of GMP Standard 0.31 and GMP Guideline 11.71.

3.6.1 GMP Standard 0.31

GMP Standard 0.31 states “New roads, administrative facilities, and developed recreation sites other than low-impact facilities (trails, trailhead parking, signs, restrooms etc.) will be outside a 100-yard buffer zone around known Clokey’s eggvetch (*Astragalus oophorus* var. *clokeyanus*) and rough angelica (*Angelica scabrida*) populations or potential habitat and outside biodiversity hotspots (defined as areas of particular diversity or sensitivity).” No populations or individual plants of Clokey’s eggvetch or rough angelica were found in the project area during the resource surveys. In addition, the project area is not located within areas of potential habitat for Clokey’s eggvetch, which occurs in upper Lee and Clark Canyons and the Wheeler Pass area. However, new construction is proposed to occur within the 100-yard buffer zone of potential habitat for rough angelica.

Rough angelica is unique to the east side of the Spring Mountains and is on the Regional Forester’s (Forest Service Region 4) list of sensitive species for the Toiyabe National Forest. Potential impacts on this species were documented in the *Botany Biological Assessment/Biological Evaluation for the Middle Kyle Complex Project* (ICF Jones & Stokes 2009j).

Within the project area, potential habitat for this species exists in Kyle Canyon Campground and extends west to include the Fletcher Canyon Trailhead, Kyle Canyon Interim Visitor Center, Kyle CCC Camp, and Fletcher View Campground.

In 2002, rough angelica populations and individual plants over an estimated 50 acres were documented in upper Kyle Canyon. A historical observation of this species has been made within the project area near Kyle Canyon Campground (Entrix 2008).

3.6.2 GMP Guideline 11.71

GMP Guideline 11.71 states “Identify and manage the Harris Springs site as a designated group use site, available for blackpowder shooting and other uses.” The location of the “Harris Springs site” as referred to in the GMP is located approximately 0.5 mile south of SR 157 west of Harris Springs Road.

The Harris Springs site is shown on Figure 2-1 as a disturbed area where informal parking and roaded access currently exists. A former landfill occupied this area previously and was closed in the early 1990s. Because of the site’s disturbed condition, it was identified in the GMP as suitable for permitted dispersed group use activities.

3.6.3 Direct and Indirect Effects

No Action Alternative

The project area would continue to be used for developed and dispersed camping, hiking, mountain biking, equestrian, and OHV use. Proposed recreation and visitor facilities would not be constructed. This alternative would comply with GMP Standard 0.31 in that no construction would occur within the 100-yard buffer zone of potential habitat for rough angelica. This alternative would also comply with GMP Guideline 11.71 in that the Harris Springs site would continue to be available for permitted designated group use, including blackpowder shooting and other uses.

Proposed Action and Market Supported Alternative

GMP Standard 0.31

Implementing the Proposed Action would require a project-specific amendment to the GMP. Construction would occur within the 100-yard buffer zone of potential habitat for rough angelica. Implementation of the Proposed Action would result in approximately 4 acres of permanent and approximately 17 acres of temporary construction disturbance to potential habitat for rough angelica. The permanent impacts would result in the permanent removal of habitat due to construction, operation and maintenance of proposed facilities or improvements including upgrading of the water main for the Western Area, Fletcher View Campground, Kyle CCC Camp, Fletcher Canyon Trailhead, and Kyle Canyon Campground. The Kyle Canyon Interim Visitor Center and associated facilities (restrooms and parking area) would be relocated and the site would be restored, as would other disturbed areas in the Kyle CCC Camp. In all, approximately 1.4 acres would be restored and these areas would provide additional potential rough angelica habitat.

The temporary impacts associated with implementing this alternative include soil compaction and trampling of potential rough angelica habitat by equipment during construction of the Proposed Action facilities. These temporary impacts are expected to return to predisturbance condition within 3 to 5 years depending on the level and method of revegetation and restoration that is implemented.

Implementing the Market Supported Alternative would also require a project-specific amendment to the GMP. Potential effects on rough angelica habitat would be the same as described for the Proposed Action, with the exception that this alternative would disturb an additional approximate 0.5 acre of potential habitat on both a permanent and temporary basis. The increase in disturbed habitat would be due to relocation of the Fletcher Canyon Trailhead off SR 157, additional off-highway parking spaces proposed in this area and construction of the trail on the southern perimeter of the Kyle Canyon Campground. Approximately 1.3 acres of disturbed area within the Kyle CCC Camp would be restored and provide potential rough angelica habitat. Restored areas include the former locations of the Kyle Canyon Interim Visitor Center and Fletcher Canyon Trailhead.

No impacts on individuals of this species are anticipated as a result of implementing the Proposed Action or Market Supported Alternative. The project area is located within the elevation range of the species and within potential habitat; however, no individuals or populations of this species were observed in the project area.

GMP Guideline 11.71

Implementation of either action alternative would not comply with GMP Guideline 11.71 because of the proposed development of recreation facilities at the Harris Springs site. Under the Proposed Action, a mountain bike rental facility, trailhead and non-motorized trails are proposed in this location. Under the Market Supported Alternative, only the trailhead and non-motorized trails would be built.

Construction of these facilities would eliminate use of this area for permitted designated group uses, including blackpowder shooting. Discharge of firearms, including blackpowder shooting, would be prohibited within 150 yards of developed recreation and Forest Service facilities. However, designated group uses and blackpowder shooting would continue to be available at other suitable locations on the SMNRA. Implementation of either action alternative would require a project-specific amendment to the GMP.

3.7 Required Disclosures and Executive Orders

The National Environmental Policy Act (NEPA) at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with...other environmental review laws and executive orders.”

3.7.1 Climate Change Considerations

The Forest Service has identified climate change as one of its top priorities and has issued guidance to include climate change considerations in project planning and NEPA documents. Climate change has the potential to affect the nation’s forests and rangelands. The Forest Service has developed various adaptation and mitigation measures, both in terms of responding to climate change (adaptation) and reducing contributions to climate change (mitigation).

An evaluation of the potential impacts of the implementing the Middle Kyle Complex project on global climate change in terms of its contribution to state and national greenhouse gas (GHG) emissions was conducted and included in a technical memorandum prepared for the Forest Service.

The analysis determined that while implementation of the project would increase project area GHG emissions over the existing condition, the increase would only result in short-term emissions and would not be a continuous new source of GHGs. As such, implementing the Proposed Action or Market Supported Action would not impede the state of Nevada’s ability to meet its 2020 GHG emission reduction goal.

The use of forest biomass was identified in the Proposed Action as a mitigation measure to offset GHG emissions because it reduces the need to consume fossil fuels (Forest Service 2008a). The Market Supported Alternative does not include the use of forest biomass.

While there is no existing mechanism for assigning a significance determination of project-related GHG emissions for Forest Service projects, it can be assumed that this project will have a negligible impact on future Forest Service climate change strategies.

Forests act as a “carbon” sink, as sequestered carbon is trapped in the biomass and soils of the forest. The Middle Kyle Complex project would have a negligible impact on carbon sequestration within the Humboldt-Toiyabe National Forest because the action alternatives would have little impact on tree harvesting or planting.

3.7.2 Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this charge includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which humans and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

The short-term use of the environment versus preserving its long-term productivity relates to converting the natural productivity of the land to some developed use. The natural productivity of the land is considered a renewable use of the land; developed use generally has a relatively short economic lifespan and is regarded as a short-term use. Both of the action alternatives include converting existing undeveloped land to a developed use and thus converting long-term natural productivity to a relatively short-term developed use.

The Proposed Action would convert approximately 425 acres of currently undeveloped land to a developed use. This acreage includes the 128 acres of land previously used as a golf course, currently in early successional stages of natural revegetation, and improvements to existing campground, administrative, and visitor areas where the natural productivity of adjacent vegetation communities are adversely affected by ongoing use of the facilities. In addition, the Proposed Action would require the conversion of undeveloped areas to a developed use (construction and operation of proposed buildings, parking areas, roadways, and trails). The Market Supported Alternative would result in the conversion of approximately 331 acres from undeveloped land to a developed use and have a similar impact on natural productivity as the Proposed Action.

3.7.3 Unavoidable Adverse Effects

Implementation of either action alternative could potentially result in adverse environmental effects that cannot be effectively mitigated. The interdisciplinary procedure used to identify specific management actions in the alternatives was designed to eliminate or reduce the potential adverse effects. The development of alternatives included avoidance of potentially adverse environmental effects through project design, development of design criteria, and mitigation measures. However, some adverse effects on the environment that cannot be totally mitigated may occur. These effects are disclosed in applicable resource section or specialist reports. In addition, the application of Forest Plan standards and guidelines and site-specific implementation direction are intended to further limit the extent, severity, and duration of these effects. The intensity and duration of these effects depends on the alternative and the design criteria and mitigation measures applied to protect resources. In all cases, the effects would comply with established legal limits, regulation, policy, and best available science.

The adverse impacts on the Spring Mountains acastus checkerspot butterfly host larval and nectar plants, wildlife habitat, visual quality objectives, and the landscape important to the culturally affiliated Nuwuvi nations are unavoidable adverse effects resulting from the construction and operation of a proposed project. The unavoidable adverse effects would essentially be the same for both action alternatives.

3.7.4 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources that cannot be regained include the loss of Spring Mountains acastus checkerspot butterfly habitat within Kyle wash, including the mate selection area, due to construction of the Kyle Canyon Wash Trail for recreational use and utility right-of-ways.

Implementation of both action alternatives would result in permanent impacts on approximately 30 acres of potential habitat including over 29 acres within the proposed Valley area, the site of the former golf course property. Approximately 0.6 acre of permanent impacts would occur within mate selection habitat in Kyle wash. Temporary impacts include approximately 2.0 acres of potential habitat, including approximately 0.7 acre within the mate selection area and 1.3 acres within Kyle wash outside of the mate selection area and in the Valley area. Of the approximately 53 acres of wash habitat within the project area, approximately 28 acres is suitable Spring Mountains acastus checkerspot butterfly habitat.

Implementation of the Middle Kyle Complex involves the commitment of a range of natural, physical, human, and fiscal resources. Land affected in the construction of the proposed facilities would be committed to development of administrative facilities, recreation facilities, and visitor services; however, in the future the facilities or the land could be converted to another use should a greater need arise. Initial project construction would irretrievably commit fossil fuels and construction materials to the project.

3.7.5 Cumulative Effects

The Council on Environmental Quality (CEQ) provides the following definition of a cumulative effect (40 CFR 1508.7).

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.

CEQ guidance recommends that a cumulative impact analysis focus on effects that can be evaluated meaningfully. This recommendation, along with guidance from the U.S. Environmental Protection Agency (EPA) in the publication *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (EPA 1999), and guidance from CEQ in the publications *Considering*

Cumulative Effects under the NEPA (CEQ 1997), was used to complete the cumulative impacts analysis for the EIS, taking into consideration an updated list of past, present, and reasonably foreseeable projects.

A list of the past, current, and reasonably foreseeable federal, state, and other local activities that could contribute to cumulative effects is provided in Table 3.7-1.

Table 3.7-1. Past, Present, and Reasonably Foreseeable Activities in the SMNRA

Location	Acres
KYLE CANYON	
SMNRA Entrance Sign, SR 157	0.1
Old Harris Springs Dump	125.0
Kyle Dump Station	5.0
State of Nevada Highway Station	25.0
Interagency Kyle Heliport	15.0
Old Kyle Heliport including Kyle RAWs Station	15.0
U.S. Forest Service Fletcher View Campground	0.5
U.S. Forest Service Kyle Canyon Campground	20.0
U.S. Forest Service Kyle RV Site	0.5
U.S. Forest Service Kyle Guard Station	25.0
Power lines including roads	45.0
Kyle Fuel Break (Forest Service)	350.0
Private Homes (Permit)	40.0
Cathedral Rock Picnic Area Rehabilitation Project	35.0
Mary Jane Trailhead	04.0
Private Homes/Lands	265.0
DEER CREEK/ANGEL PEAK	
Deer Creek Picnic Area	3.0
Mahogany Grove	25.0
North Loop Trailhead	7.0
Hill Top Campground	30.0
Archery Range	100.0
Bonanza Trailhead	7.0
Scout Canyon Trailhead	5.0
Desert View Overlook	7.0
Spring Mountain Youth Camp	450.0
Angel Peak Communication Site	75.0
Private homes/lands	147.0
LEE CANYON	
Old Mill Picnic Area Including Lee and Nevada Department of Forestry Stations	50.0

Location	Acres
Las Vegas Ski and Snowboard Resort	80.0
Foxtail Area	20.0
Bristlecone Trail Head	5.0
Dolomite Campground	20.0
McWilliams Campground	30.0
Sawmill	8.0
Blue Tree	20.0
Old Road Disturbance, SR 156	30.0
Macks Canyon Road	40.0
Macks Canyon Fuel break	125.0
Private homes/lands	335.0
COLD CREEK	
New Fire Station	15.0
Old U.S. Fish and Wildlife Service Station	25.0
Private homes/lands	496.0
MOUNTAIN SPRINGS	
Numerous Trespasses on Forest Service Lands	50.0
Non-System Roads	10.0
Potosi Communication Site	30.0
Augie Spa Road	15.0
Private homes/lands	234.0
TORINO RANCH	
Disturbance throughout the Site	75.0 +/-
Lovell Summit Fuel Break	275.0
Private Homes/Lands	46.0
TROUT CANYON	
Road System	15.0
Non-System Road	10.0
Power Lines	7.0
Private Homes/Lands	145.0
NEW AND FUTURE PROJECTS	
Lee Meadows Restoration	39.0
Deer Creek Water Resource Protection Devices	Unknown
Kiosk Project	2.0 acres total throughout SMNRA
Cathedral Parking Area/Picnic Site	20.0
Lovell Trailhead and Trail	7.0

Air Quality

The cumulative effects analysis area includes the counties of Clark, Nye, and Lincoln, Nevada, and Class I visibility-protected areas in northwestern Arizona, southwestern Utah, and southeastern California. The project air quality impact assessment concluded that SMNRA activities, including the proposed Middle Kyle Complex, would not individually or cumulatively exceed NAAQS standards, nor would activities contribute significantly to the cumulative air quality concentrations at the Class I visibility-protected areas. Therefore, it was also concluded the project's impacts on cumulative regional air quality within the nonattainment area in Clark County would be less than significant.

Non-Native Invasive Species

The cumulative effects analysis area for NNIS plants is the SMNRA. Several projects are planned in the SMNRA. These projects would follow Forest Service policies that emphasize the prevention of weed establishment and would incorporate prevention and avoidance practices and mitigation measures to prevent the introduction, establishment, and spread of NNIS plants. The cumulative effects of the No Action Alternative on NNIS in the project area would not perceptibly interact with past, present, or foreseeable future actions in the SMNRA as many of the ongoing disturbances would continue.

One SMNRA-wide project, the Wildland Urban Interface Fuels Reduction project, is by far the largest and would involve different treatment methods to reduce fuels, including machine removal, hand removal, burn piles, and cable removal, on approximately 3,200 acres. The Wildland Urban Interface Fuels Reduction project includes an analysis of the effects on NNIS plants and incorporates prevention, avoidance, and design criteria to reduce the risk of introduction, establishment, and spread of NNIS plants. Implementation of the Middle Kyle Complex project in conjunction with those past, present, and reasonably foreseeable projects could contribute to NNIS cumulative effects within the landscape. These include incremental habitat loss, fragmentation and degradation, and urbanization, and increased opportunities for the introduction and spread of NNIS plants. However, with the incorporated design criteria and ongoing monitoring and treatment protocols, it is expected that none of these projects will result in an increase in NNIS in the SMNRA.

The cumulative effects are the same for both the Proposed Action and Market Supported Alternative.

Geology, Soils, and Hydrology

The cumulative impact analysis area is the Kyle wash watershed. The potential adverse water quality effects caused by accelerated erosion during construction of the action alternatives and by ongoing use of the recreational facilities could combine with adverse effects from other ground-disturbing or soil-compacting

activities elsewhere in the Kyle wash watershed. Such activities could include homesite development, road construction and maintenance, fuelbreak or fireline establishment, and other activities that entail vegetation removal, excavation, or soil compaction. Soil compaction within the analysis area can increase surface water run-off coefficients, erosion, and sedimentation while reducing soil productivity and water infiltration rates.

Social and Economic Resources

Cumulative effects are those effects that contribute cumulatively to social and economic consequences of the Middle Kyle Complex project with the additive changes of past, present, and reasonably foreseeable actions.

There are 11 other proposed recreational improvements that are outside the Middle Kyle Complex project area, but within the SMNRA. Along with the proposed project, these projects are expected to increase visitor recreational use and result in a beneficial additive effect to the social and economic conditions of the study area. No cumulatively adverse effects are anticipated from the No Action Alternative, the Proposed Action, or the Market Supported Alternative.

Recreation

The cumulative impacts analysis area for recreation is the SMNRA. The SMNRA is anticipated to have increased demand for recreation use due to an increase in visitors. The recreational opportunities provided in the SMNRA include both developed and undeveloped facilities along with user-created trails. The Proposed Action and Market Supported Alternative would provide more accessible trails and would likely increase the number and range of user groups to the project area.

Under the Market Supported Alternative, potential cumulative effects would be the same as the Proposed Action with the following qualification: since this alternative would have fewer facilities to maintain than the Proposed Action, it would accommodate fewer individuals.

Spring Mountains Acastus Checkerspot Butterfly Habitat

The cumulative effects area for Spring Mountains acastus checkerspot butterfly is the SMNRA and the area around Switchback Spring in Red Rock Canyon National Conservation Area (RRCNCA). The habitat contained within the SMNRA and the RRCNCA is the only known habitat for this species. The projects considered as part of the cumulative effects analysis are listed in Table 3.7-1. Past, present, and reasonably foreseeable actions that impact this species included dispersed recreational use, roadway maintenance along SR 158 (loss or reduction of populations through mowing), recreational trail development

and use within areas of known habitat, campground improvements, fire suppression, OHV use, spring diversion and modification, and continued development of private lands in Lee and Kyle Canyons. The acreage of habitat degradation—particularly loss of larval host plant habitat—as a result of past actions is presently unknown; however, colony sites are specific and adjacent to known developments within Kyle Canyon, and it is likely that some permanent habitat loss has resulted.

The Potosi Boy Scout Camp and its users pose another, yet smaller, threat from dispersed recreation and trampling (Weiss et al. 1997) for the colony that exists at this site. Mowing along the Deer Creek Highway could destroy nectar host plants and reduce populations of this species (RECON 2000). Between the lower Kyle Canyon Campground and the site of the Middle Kyle Canyon Complex, Boyd and Austin (1999) noted blading and OHV use within the wash. The SMNRA WUI fuels treatment project will overlap with the Middle Kyle Complex project area and includes approximately 300 feet on both sides of SR 157. This species could be affected by these activities, because in the long term it results in permanent cumulative loss of habitat. However, on the additive side, several land parcels have been added to the SMNRA habitat base since the MSHCP was signed, and some of them have incidental sightings of this species (Forest Service 2009d).

Cumulative impacts on the Spring Mountains acastus checkerspot butterfly include habitat impacts resulting from construction disturbance during flight periods and from trampling host and nectar plants during dispersed recreation and infrastructure operation and maintenance activities within the area encompassed by projects included in the cumulative impact analysis.

The construction impacts on the Spring Mountains acastus checkerspot butterfly larval host and nectar plants are the same under both action alternatives. The Proposed Action may attract more individual recreational users to the area than the Market Supported Alternative and, therefore, more operational use of the Kyle Canyon Wash Trail and off-trail hiking may occur under the Proposed Action. Implementation of the Proposed Action may result in greater operational impacts on the butterfly habitat. Cumulative impacts under the Market Supported Alternative would be similar to those described for the Proposed Action.

Potential cumulative effects on other biological resources were addressed in the wildlife and botany specialist reports.

Visual Resources

The cumulative impacts analysis area for visual resources is Kyle Canyon. Residential development in upper Kyle Canyon has converted the visual setting of some areas from forest woodlands to developed urban setting. Within the project area, the former golf course property, multifamily residential development, commercial buildings, a developed recreational campground, and administrative site have modified the visual resources to a developed urban setting. The Wildland Urban Interface Fuels Reduction project, which aims to

reduce wildfire risk through the creation of vegetation fuel breaks and reduced fuel loads will have some short-term impacts on visual resources throughout Kyle Canyon. The renovation or enhancement of existing picnic areas and campgrounds in upper Kyle Canyon for the purposes of resource protection, compliance with accessibility standards, and increased visitor health and safety will enhance the overall appearance of the recreation facilities within the analysis area.

In terms of compliance with VQOs in the GMP, the Proposed Action and Market Supported Alternative would create an appreciable increase in landscape alteration visible most notably from the Deer Creek highway. Overall, fewer acres would meet the GMP guideline of maintaining natural appearing (or even primarily natural) scenery with development of new recreation and administrative facilities. While the Village development would be more inviting and attractive than the existing abandoned parking area, it would not be any more natural in appearance.

Cultural Resources

Prehistoric and historic properties are non-renewable resources; consequently, any adverse effects are considered permanent. All effects are cumulative and diminish the overall resource of historic and prehistoric properties to one degree or another. When artifacts are damaged or improperly removed from their original context, they are permanently lost. Any action that contributes to site deterioration or damage is an irreversible action. Past activities (including the building of structures to support recreational use), mining activities, historic timber harvest, fire and fire suppression activities, road building, trails, and other construction and development have directly affected cultural resources within the SMRNA by reducing the quality and/or quantity of sites due to disturbance or obliteration. In addition to the direct effects from past actions, indirect effects may include increased site access and exposure to the elements. Soil compaction and artifact displacement can result from dispersed recreational use (hiking, biking, and equestrian use) and the use of motorized vehicles and camping in the areas of prehistoric sites.

The Forest Service, through coordination with the Nevada State Historic Preservation Office (SHPO) and culturally affiliated Nuwuvi tribes, will develop appropriate mitigation to minimize or avoid potential adverse impacts on cultural resources within the project area.

3.7.6 Clean Air Act

The Clean Air Act, as amended in 1990, is designed to reduce air pollution, protect health, and protect visibility. It requires each state and local air quality agency to develop a State Implementation Plan (SIP) to ensure that NAAQS are attained and maintained for expected pollutants. SMNRA is in the jurisdiction of the Clark County Department of Air Quality and Environmental Management (CCDAQEM).

An assessment of air quality, including emission calculations and regional air quality impacts in the Middle Kyle Complex project area, was presented in the *Air Quality Specialist Report, Middle Kyle Complex* (ICF Jones & Stokes 2009a).

No significant air quality impacts were forecasted as a result of construction or operation of the Middle Kyle Complex project. The projected increase in emissions of criteria pollutants was forecast to be well below the General Conformity applicability thresholds. In addition, SMNRA emissions would be very low compared to existing emissions within Clark County.

The project is required to adhere to Clark County Department of Air Quality and Environmental Management requirements and practices. Permits for construction activities and dust control would be obtained from the County. In addition, implementation of design criteria and best management practices measures (see Table 2-4, *Design Criteria Common to Action Alternatives*) would prevent significant air quality impacts.

3.7.7 Clean Water Act

Water quality is regulated by the Clean Water Act (CWA), which was promulgated in 1977. The CWA is the primary federal law protecting the nation's waters, including lakes, rivers, aquifers, and coastal areas. Pertinent sections include:

- Section 401 (state water quality certification);
- Section 402 (National Pollutant Discharge Elimination System [NPDES] permits); and
- Section 404 (permit for discharge of dredged or fill material in waters of the United States).

The EPA is the federal agency with regulatory authority for Sections 401 and 402 of the CWA. The EPA has delegated portions of this authority to the State of Nevada. Nevada Division of Environmental Protection (NDEP) is the governing agency for issues related to water quality, including Section 401 certification and Section 402 NPDES permits. Construction of the Middle Kyle Complex project under either action alternative would require obtaining an NPDES permit to comply with Section 402 of the CWA. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared as part of the NPDES permit.

The U.S. Army Corps of Engineers has provided a Preliminary Jurisdictional Determination (RGL 08-02) for the project area. The preliminary determination is a non-binding written indication that there may be waters of the United States within the project area. For this reason, the Forest Service will obtain and comply with required section 401 and 404 permits.

3.7.8 National Forest Management Act of 1976

The National Forest Management Act of 1976 (NFMA) as amended and its implementing regulations at 36 CFR 219, include principles for management of the lands and resources of the NFS. The NFMA requires that each national forest develop a land and resource management plan and provide for diversity of plant and animal communities in order to meet overall multiple-use objectives. Analysis conducted for this EIS is in compliance with the 1986 Toiyabe National Forest Land and Resource Management Plan and the 1996 the General Management Plan for the SMNRA, an amendment to the Toiyabe Forest Plan with the exception of GMP Standard 0.31 and Guideline 11.71. See Section 3.6, *Compliance with the General Management Plan for the SMNRA* for a discussion regarding compliance with the GMP for the SMNRA.

3.7.9 Energy and Natural or Depletable Resource Requirements and Conservation Potential of Various Alternatives and Mitigation Measures

Energy would be consumed during the construction and operation of the Middle Kyle Complex. Prior to construction energy would be used to manufacture and ship materials. During construction, energy would be used by the Forest Service and contractors traveling to the project area; energy would also be used for transportation and storage of materials and operation of construction machinery.

During operation energy would be consumed by vehicles traveling to the project area, by daily operation of Forest Service vehicles, and by daily operation of vehicles by federal, state, and local agencies. Energy would likewise be required to support the daily operation of the proposed facilities.

Energy consumed that relates to recreation would be based on number of visitors to the area. Recreation use in the area is expected to change based on implementation of any of the alternatives.

There would be no energy requirement for the No Action Alternative. Energy conservation measures would be the same for all action alternatives. The Forest Service and contractors would strive to keep vehicles and equipment in good working condition. The Forest Service would also try to make efficient use of vehicles and equipment and minimize energy consumption where possible.

The Market Supported Alternative would have less capacity and fewer facilities to operate and maintain than the Proposed Action. Operation and maintenance costs are anticipated to be less, as would proper operation and maintenance of all sites and facilities. Similarly, the smaller capacity and size of the proposed facilities under this alternative are anticipated to consume a smaller amount of energy or nonrenewable resources with a greater potential for conservation of natural resources than the Proposed Action.

The Forest Service evaluated several environmentally sustainable options for heating, cooling, and powering facilities in the Middle Kyle Complex in the *Utility Feasibility Studies for Middle Kyle Canyon Development, Spring Mountains National Recreation Area* (AJC Architects et al. 2007). The Proposed Action includes biomass heating/cooling plants for visitor and Forest Service buildings. This system relies on steam generated through the combustion of wood chips, a renewable resource that could be locally and regionally harvested as part of the Forest's ongoing fuels reduction program. This alternative would consume a smaller amount of energy or depletable resources than the Market Supported Alternative.

Implementation of design criterion FD 1 would ensure new and reconstructed facilities reflect the unique settings of the SMNRA and are visually attractive, functional, and sustainable. The Forest Service would follow the applicable requirements for compliance with U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) and guidelines in the *Spring Mountains National Recreation Area Built Environment Image Guide* (Shapins Associates 2007). Construction of operation of the proposed facilities under these guidelines would require less energy and/or depletable resources.

Implementation of the proposed best management practices, design criteria, and mitigation measures would minimize potential impacts on natural resources in the project area and increase the conservation potential.

3.7.10 Endangered Species Act of 1973

Under Section 7 of the federal Endangered Species Act (ESA) (16 U.S.C. 1531-1544) as amended, federal agencies are required to ensure that their actions do not jeopardize the continued existence of species listed as endangered or threatened, or result in destruction or adverse modification of designated critical habitats used by those species. Threatened and endangered species include all plant and animal species currently listed or proposed for listing as threatened endangered, or candidate by the USFWS.

Three species listed as endangered or threatened have potential to occur in the SMNRA. It was determined by analysis that the three listed species (southwestern willow flycatcher [endangered], Mojave Desert tortoise [threatened], and Lahontan cutthroat trout [threatened]) would not be affected by the Middle Kyle Complex project. While all three species occur in southern Nevada, no habitat exists within the project area.

3.7.11 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703–711) prohibits the take of any migratory bird or any part, nest, or egg of any such bird, where take is defined as an attempt to “pursue, hunt, shoot, capture, collect, or kill.” This act applies to all persons and organizations in the United States, including federal

and state agencies. The MBTA is administered by USFWS, with regulation of listed migratory birds delegated to the agency staff handling Section 7 of the ESA, and regulation of unlisted migratory birds delegated to the USFWS Migratory Bird Division.

Effects on migratory birds were considered in three reports prepared for the Middle Kyle Complex project: the *Final Wildlife Management Indicator Species Report for the Middle Kyle Complex Project* (ICF Jones & Stokes 2009k), the *Wildlife Biological Specialist Report for the Middle Kyle Complex Project* (ICF Jones & Stokes 2009h) and the *Wildlife Biological Assessment/Biological Evaluation Middle Kyle Complex Project* (ICF Jones & Stokes 2009i). These reports include analysis of the direct, indirect, and cumulative effects of the Middle Kyle Complex project on migratory birds.

Implementation of design criteria (see Table 2-4, *Design Criteria Common to Action Alternatives*) would lessen the potential for impacts on migratory bird species.

Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds)

On January 10, 2001, President Clinton signed EO 13186, directing federal agencies to take certain actions to further implement the MBTA (16 USC 703–711). The federal agencies were directed to develop and implement a memorandum of understanding with the USFWS to promote conservation of migratory bird populations. Forest Service Agreement # 08-MU-1113-2400-264, *Memorandum of Understanding Between the U.S. Department of Agriculture Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds*, identifies specific activities where cooperation between Parties will contribute to the conservation of migratory birds and their habitats (Forest Service 2008b).

To comply with EO 13186 and the MBTA, three reports were prepared for the Middle Kyle Complex project, the *Final Wildlife Management Indicator Species Report for the SMNRA Middle Kyle Complex Project* (ICF Jones & Stokes 2009k), the *Wildlife Biological Specialist Report for the Middle Kyle Complex Project* (ICF Jones & Stokes 2009h), and the *Wildlife Biological Assessment/Biological Evaluation Middle Kyle Complex Project* (ICF Jones & Stokes 2009i). These reports include analysis of the direct, indirect, and cumulative effects of the Middle Kyle Complex project on migratory birds.

3.7.12 Section 106 of the National Historic Preservation Act

The NHPA of 1966, as amended, sets forth national policy and procedures regarding “historic properties,” including districts, sites, buildings, structures, and objects included in or eligible for the NRHP. Section 106 of NHPA requires

federal agencies to consider the effects of their undertakings on such properties, following regulations issued by the Advisory Council on Historic Preservation (ACHP) (36 CFR 800). The Forest Service, in consultation with the Nevada SHPO is responsible for the determination of eligibility for listing in the NRHP and for the finding of effect. The ACHP is given the opportunity to comment on the project and its effects on cultural resources and to participate in the development of a Memorandum of Agreement, if required.

Cultural resource surveys of the Middle Kyle Complex area were conducted to determine the nature and distribution of cultural resources (including but not limited to archaeological sites and historic structures) that could be directly or indirectly affected by project activities. These surveys were conducted during the periods of October and June 2006, May and July 2007, and September 2008. The *Middle Kyle Complex Cultural Resources Survey* (ICF Jones & Stokes 2009n) was prepared to document the survey results and provide NRHP-eligibility recommendations and management recommendations for Forest Service consideration. This report is not available for public review.

The project has the potential to adversely affect three historic sites and one prehistoric NRHP-eligible (recommended) sites. The Forest Service and the Nevada SHPO have developed a Programmatic Agreement that will guide Section 106 of the NHPA consultation between the Forest Service, Nevada SHPO, and culturally affiliated tribes throughout project design and construction. In addition, the agreement will guide the development of any cultural resource mitigation identified through the Section 106 consultation process.

3.7.13 Executive Order 12898 (Environmental Justice)

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This EO directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

The potential environmental justice effects were analyzed in the *Socioeconomic Technical Memorandum Middle Kyle Complex* (ICF Jones & Stokes 2009e) prepared for the Middle Kyle Complex project to comply with EO 12898. Analysis in the technical memorandum found that construction of the Middle Kyle Complex would not result in adverse environmental or human health effects that would fall disproportionately on low-income or minority populations.

The Proposed Action and Market Supported Alternative include fee-based campgrounds, picnic areas and programs, and prohibition of dispersed camping. However, improved trails, trailheads and many of the proposed recreational facilities at the Village and Valley areas would be available at no cost. In

addition, public outreach was conducted on behalf of the Forest Service to determine the types of activities and experiences that were desired by Middle Kyle Complex users. Several organized groups, including minority organizations, indicated an interest in improved and/or enlarged facilities (PwC 2008). In light of these facts, the Middle Kyle Complex is not expected to disproportionately affect the ability of low-income or minority populations to enjoyably recreate within the SMRNA.

No minority or low-income populations have been identified that would be subjected to disproportionately high and adverse effects by the Middle Kyle Complex as determined above.

3.7.14 Executive Order 13112 (Invasive Species)

On February 3, 1999, President Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The EO instructed federal agencies to identify their own actions affecting the status of invasive species and to not authorize, fund, or carry out actions likely to promote or introduce such species in the United States or elsewhere.

The risks for invasive weed introduction during and following construction of the Middle Kyle Complex project were analyzed in the *Non-Native Invasive Species Plants Specialist Report and Risk Assessment for the Spring Mountains National Recreation Area* (ICF Jones & Stokes 2009b).

The Middle Kyle Complex project design includes preventative measures against the spread of NNIS of plants in order to meet Forest Standards and Guides, as well as EO 13112 and Forest Service Manual (FSM) 2081.03. Further, after construction, the project area will be monitored for a period of time consistent with Forest Service policy. Control of new infestations would occur in accordance with the Humboldt-Toiyabe National Forest Decision Notice for the Noxious Weed Control Program (2001).

The measures to control and prevent the importation and movement of non-native invasive species across the SMNRA are included in the report and risk assessment including actions described in Forest Service Manual 2080.

3.7.15 Executive Order 13007 (Native American Sacred Sites)

EO 13007 was signed on May 24, 1996, by President Clinton to address the accommodation of sacred sites. The EO directs federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with agency functions,

to accommodate access to and ceremonial use of American Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of sacred sites.

Culturally affiliated tribes¹ that have a connection to the Spring Mountains were informed about the Middle Kyle Complex project during the pre-NEPA public involvement process conducted for the *Middle Kyle Canyon Framework Plan* (Shapins Associates 2005) and through ongoing public involvement during preparation of the EIS, as outlined in Section 1.6.5, *American Indian Collaboration*, Section 3.4, *Cultural Resources*, and Section 3.8, *Nuwuvi and the Spring Mountains Landscape* of the EIS.

Components of the Middle Kyle Complex project provide for continued tribal access to and use of the area.

3.7.16 Executive Order 11988 (Floodplain Management)

EO 11988, signed on May 24, 1977, and amended on July 20, 1979, implements NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973. The EO directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Agencies' actions must reflect consideration of alternatives to avoid impacts in floodplains and modify the proposed project to minimize such impacts where impacts are unavoidable.

There are no Federal Emergency Management Agency delineated floodplains within the Middle Kyle Complex project area and there would be no impacts on floodplains. However, a hydrologic analysis was conducted to quantify potential peak flows that could occur within the Kyle Canyon watershed. This included determining the 50- and 100-year floodplain areas within portions of the project area. This analysis was included in the *Middle Kyle Development – Geotechnical, Materials, and Related Studies* (Case, Lowe, & Hart 2007). Design guidance for culverts, parking areas, and storm drain systems was provided in the report. Specifically, facility locations and measures to maintain the integrity of the floodplains were incorporated in the design of the Middle Kyle Complex project.

¹ The culturally affiliated tribes include the following tribal governments: the Las Vegas Paiute Tribe, the Pahrump Paiute Tribe, the Moapa Band of Paiute Indians, the Paiute Indian Tribe, and the Colorado River Indian Tribes (Chemehuevi only). Culturally affiliated refers to tribal governments that consider the Spring Mountains landscape to be their creation place.

3.7.17 Executive Order 11990 (Protection of Wetlands)

EO 11990, signed on May 24, 1977, and amended by EO 12608 on September 9, 1987, regulates the activities of federal agencies with regard to wetlands. Under this EO each federal agency must provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds there is no practical alternative to such construction or the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding the head of the agency may take into account economic, environmental, and other pertinent factors (Section 2[a]). Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands (Section 2[b]).

There are no wetlands within the project area under the jurisdiction of the U.S. Army Corps of Engineers. There are no non-jurisdictional wetlands that would be adversely impacted from implementation of either action alternative.

3.7.18 Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)

EO 13175 was signed by President Clinton on November 6, 2000. This EO directs federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, to strengthen government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates on Indian tribes.

Section 1.6.5, *American Indian Collaboration*, in Chapter 1, Section 3.4, *Cultural Resources*, and Section 3.8, *Nuwuvi and the Spring Mountains Landscape* in Chapter 3, provide information on the consultation and coordination efforts conducted for the Middle Kyle Complex project in compliance with this EO.

3.8 Nuwuvi and the Spring Mountains Landscape

Section 3.4, *Cultural Resources*, introduced the significance of the Spring Mountains landscape as the sacred place of creation and a true cultural landmark for the Nuwuvi Nations. The Nuwuvi Working Group prepared the following essay to describe the Nuwuvi relationship to the Spring Mountains landscape from their perspective and to provide readers and the decision maker with a better understanding of the Nuwuvi way of knowing.

The following information is an excerpt from Appendix A3, *Nuwuvi Participatory Consultation*, and is quoted verbatim from that document.

Nuwuvi and the Spring Mountains Landscape

Introduction

The following essay presents information collected through ethical participatory processes by Jeremy Spoon, Ph.D. and the Nuwuvi Working Group between October 2008 and February 2009. The purpose is to describe the Nuwuvi relationship to the Spring Mountains landscape from their perspective. The hope is to provide readers a better understanding of the Nuwuvi way of knowing that informs the decision-making process. Working Group members contacted a total of 21 Nuwuvi informants (5 males and 16 females) between the ages of 48 and 82. Interviews were semi-structured (Bernard 2002), following six thematic topics including the Spring Mountains landscape. The text is written in the first-person plural in order to express that Nuwuvi co-conducted the research and writing of the document, rather than a non-American Indian. This literary device also reinforces an image of a living culture (Nuwuvi Working Group and Spoon 2009a).

Research from various anthropologists provided background to the ethnographer and is incorporated where applicable. These contributions include publications and reports by Stoffle et al. (2004) and Stoffle et al. (2009) about the Spring Mountains, classic ethnography by Sapir (1992), Steward (2002 [1938]), Kelly (1939), Fowler and Fowler (1971), and Kelly and Fowler (1986), as well as more recent efforts, including the Inter-Tribal Council of Nevada (1976), Stoffle and Zedeno (2001), Stoffle et al. (1999), Stoffle et al. (2001), and Knack (2001).

Nuwuvi Past, Present, and Future

We are a Numic speaking people who call the southern Great Basin home. Our oral history explains that we were created at Nuvagantu or Nuvankai (the Spring Mountains landscape) at the beginning of time. We call ourselves Nuwuvi or Nungwu, meaning 'the people.' In English we are known as the Southern Paiute and Chemehuevi. These names came from other non-native peoples; however we have adopted them as our English identity. Our territory spans four states (Nevada, Utah, Arizona, and California) and our current population has

diminished to approximately 3,000 people. We presently live on various reservations and in rural communities and nearby cities.

Starting in mid 19th century, we were relocated by the federal government to reservation lands. Some of us were allotted territories within our traditional areas, while others were denied recognition by the government, which in the case of the Pahrump Paiute, continues to this day. Some of our people also resisted going to reservations, retreating to different parts of our traditional territory. Most of these reservations were thought to be unproductive lands that other settlers did not want to inhabit at that time.

The Moapa Paiute of southern Nevada were relocated to lands east of the Sheep Mountains near the Virgin River. This area was originally intended for all southern Nevada Paiutes. The Las Vegas Paiute were first given a small area of land near downtown Las Vegas, which was gifted to them by the Euro-American settler Helen J. Stewart. These lands were later expanded to an area between the Spring and Sheep Mountains. The five bands of Southern Paiute in Utah were all allotted land during this era. After some time, the federal government terminated all but one of them. These nations were later reinstated under the umbrella of the Paiute Indian Tribes of Utah. The Kaibab Paiute of Arizona share their lands with Pipe Springs National Monument and a nearby Mormon community. For the Chemehuevi Tribe, many individuals were relocated to the Colorado River Indian Tribes reservation (which houses Chemehuevi, Hopi, Navajo and Mojave peoples) when some of their land was covered by water with the construction of a dam in Arizona and California. Some returned later with the reestablishment of the Chemehuevi Tribe reservation, while others stayed where they were relocated or out-migrated to other areas.

The most far-reaching change that the contact period caused is that it disconnected some Nuwuvi from our land. It was a time of great hardship, where we saw many of our peoples die in unfortunate circumstances. The fact that we persist today shows the resilience of our culture to these outside forces. Some say that we are still in the contact period. Examples of the most significant events were Spanish exploration in the late 18th century, the enslavement of our people by the Spanish and others, the Mormon migration, the official opening of the Santa Fe Trails, horse trading, the gold rush, Mormon expansion, and old diseases in the New World. Enslavement and disease in particular drastically reduced our population and disrupted many social institutions. Some say as much as 80% or more of our population perished during this era. European settlers also took away ceremonial locations and made ceremonial acts illegal after the Ghost Dance ceremony of 1890 (Stoffle et al. 2004; Kelly and Flower 1986).

During this time when our population was rapidly declining, settlers encroached upon our lands. As more and more people settled, our lands were taken away and we were forced out. In some areas, we were forbidden to access resources, such as Pinyon-Juniper forests and springs, and we were generally not allowed to practice our spiritual traditions. Our farming tradition also was not respected, as the settlers did not understand our method compared to theirs. No treaties were made for the lands lost in the Spring Mountains landscape area, resulting in the loss of large tracts of land through settler land claims. Without our lands and with

restrictions on our spiritual traditions, our culture had to adapt to survive the outside occupation.

Our Livelihoods

Our system of survival is complex and continues to adapt and change depending on the circumstances affecting us. It provides for us what we need to survive in this landscape. Before contact with western peoples and contrary to what is written in most history books, we were more than merely hunters and gatherers wandering throughout the desert. Rather, our way of life was sophisticated—receiving the songs, stories, foods, and medicines that we needed to survive by the Creator. This included hunting numerous animals such as Mule Deer, Mountain Sheep, Jackrabbit, Desert Tortoise, and Cotton Tail, as well as gathering resources such as teuv (pine nuts) and op (mesquite beans). We also farmed various crops, such as squash, corn and beans while harvesting hundreds of medicinal plants for healing. There are areas that we returned to each year for resources and managed them with values of respect so that they continued to provide what we needed. Many of these traditions persist today and are mixed with other strategies to survive. Much of our value system that reinforces respect and maintains balance remains consistent even when our subsistence practices adapt and change.

During the reservation era we adapted to our changing circumstances and began other ways of life to survive. These included ranching, farming, mining, serving in the military, and more. Many of our peoples also out-migrated to cities in search of employment, especially in the case of non-federally recognized tribes. Our peoples helped in the development of the areas around us, providing labor and crucial knowledge of the land. In many cases, we taught the settlers how to live in this environment based on our extensive knowledge. It is in this era that we received our western names.

Today, each federally recognized tribe has a tribally owned business enterprises that they share to benefit tribal citizens. These include casinos, golf courses, gas stations, various stores, museums, cultural centers, and more. All of these businesses support the infrastructure of the tribes and provide resources for social, cultural, and environmental programs.

Persistence and Change

Contact with westerners caused far-reaching change among our peoples. Many political and economic forces influenced our culture and ways of life. Because of these factors, there is much generational change that has occurred. Similar to many indigenous cultures, American Indian people are faced with many challenges today. The younger generations have many distractions and often know less about our connections with our traditional lands and many do not speak the Nuwuvi language. The older generations are very concerned about these changes and the affects on the culture. They remain very interested in programs that reinforce the culture and language.

As a point of resistance to the contact period, some Nuwuvi have not only retained and transmitted much about the culture, but also initiated projects to safeguard these traditions. The participation of the seven nations in this project at the Spring Mountains is an example of our unity and how we want to preserve our culture. It also demonstrates the importance of this area and our desire to collaborate with the federal government.

Nuwuvi and Nuvagantu (The Spring Mountains Landscape)

Mountains are sacred places to us. They provide everything that we need to survive as a people and a culture. Mountains are our spiritual places, where we harvest resources and conduct ceremonies that are central to our lives. Every mountain in the Nuwuvi territory has a name and was the place of significant events that helped to shape our history and relation to our land.

Nuvagantu (literally ‘where snow sits’ or the Spring Mountains landscape) is our holy land, and considered a true cultural landmark. It is important to us because it is the site of our creation, which defines who we are as a people. Nuvagantu is also a crucial reserve of resources that we use and a place to visit with family. Our connection to this landscape reinforces our ties to the Creator, the land, and our people (Stoffle et al. 2004; Stoffle et al. 2009).

Since the beginning of time, the Creator made Nuwuvi at Nuvagantu and here we became attached to this place and the place to us. The land is alive, which means that there is power in all things such as rocks, water, air, plants, animals, and humans. All of these beings are interconnected; they can talk with each other and work together to balance the world. The land has eyes and ears. It can talk and knows our thoughts. This makes it in balance and provides guidance. When treated badly, the mountains and everything within them suffers. Misuse of these areas upsets the balance and can cause great harm as well as diminish their power.

We come here for spiritual power and resources, but do not stay, as the mountain must rest. You must have a good heart to visit here and ask permission to take or use anything, which can never be more than you need. This land has been a protected area long before it was designated a National Recreation Area. Today, the U.S. Forest Service manages the land. We appreciate their efforts to protect the landscape and work collaboratively to co-manage the area with them to make sure that it remains in balance both physically and spiritually.

Nuvagantu provides everything we need to survive as a people. It is our school, place of worship, pharmacy, and grocery store, along with many other things. The Creator made it this way for us. For this reason, we treat the land with the utmost of respect and make sure that our actions do not harm it in any way. We travel here when we need to, returning throughout each year at the appropriate times. It is part of a complex ecological system that the Creator made for us to manage. We rely on thousands of years of experience when we interact with the landscape to ensure that it is kept as it was given to us at creation.

Our Values of Respect and Balance

We consider the land and everything within it to be alive and deserving respect. This value is the foundation for how we treat each other and the land. In Nuvagantu, this means we do not harvest more than we need and we must always feed the Mountain and give an offering before taking anything away. We also leave things behind for the other living beings in this place, as we know that they need the land's resources and we are connected to them through creation. In any interaction with the land, we must have the appropriate state of mind, rooted in respect. When we take something away from this place, we make sure to share it with people who were not able to make the journey. This is the same way we treat the people and the land in our territory; however this landscape is extra special because of what happened here and the power that it holds.

Sometimes the land is unable to produce because it is not in balance. This can be the result of an over harvest of resources, the influx of non-native invasive plants, littering, pollution, or a host of other factors. To restore balance, the land needs to hear our songs and voices, and of course, be treated with respect. Native plant revegetation programs and controlled burning in a culturally acceptable manner also help to re-establish balance.

Songs and Landscape (Songscales)

Our songs are sacred to us. They are vocal snapshots that talk about places and the things that happened there. These songs include the words of the animals that cannot talk anymore and are gifts from the wind, water, and land. The Creator and other deities filled the area with these songs. Some songs have dances that express our connection to the land and other living beings. They are in the Southern Paiute language and are transmitted orally from generation to generation. Specific individuals know certain songs, while more people know others. There are songs that we sing to the land that make it in balance. When they are not sung, we suffer and the land suffers. Some of our songs describe locations in the Spring Mountains and the other living beings that reside here.

The Salt and Silver Songs are our most sacred songs. They are sung at funerals to appease the spirits and to return the soul back to the Creator. Only certain individuals know these songs that are passed down from generation to generation. As the song is sung, the soul takes a physical journey through Nuvagantu, crossing Nuwuvi territory. The order of the songs is very important, as they lead the soul on its journey. As life began at Nuvagantu, the soul must travel through here to balance the universe and ensure a safe journey to the afterlife. We believe that the origin of the songs is near Nuvagantu. These songs reinforce the deep connection we have with this place and how it is part of us.

Ecological and Management Knowledge

Our culture has an intimate knowledge of the flora, fauna, and other natural features in our lands. These resources were provided for us by the Creator to help us survive. The harvesting of wild plants and the hunting of animals are some of the traditions that have sustained us since the beginning of time. In all of these activities, we treat living things with respect, never harvesting or hunting too

much. When we do take the life of an animal, we ask for its permission while explaining our intentions and giving thanks for helping us. We never waste anything and use every part and share our taking as a gift we can and share with our families and friends. As children, we are taught the rules about who can hunt, when, and at what age. The landscape provides us with food and resources that make us whole and help us in our daily lives.

In Nuvagantu, we harvest many plant species for food including Pinyon nuts, Indian Spinach, Mesquite beans, Currant, Water Cress, various cactus fruit, berries, Yucca, and Cattails. There are also various plants that provide us with tools for survival, such as Sumac and Willow for basket making and Bitterbrush, Sage Brush, and Banana Yucca for pine nut roasting, to mention a few. Our complex way of life also includes intimate knowledge about animals, which we establish relationships with before we hunt. We hunt Mule Deer, Mountain Sheep, rabbit, quail, doves, desert tortoise, and more. In all hunts, we make sure not to take away too much and to treat the animals we are hunting with respect by talking to them and thanking them for giving up their lives to help us.

The teuv (pine nut) harvest is one of our most important traditions. It renews our ties to the land, providing us with a crucial food source and restores harmony within the mountain. The harvest also is an opportunity to rekindle our bonds with family members and individuals from the various Southern Paiute/Chemehuevi nations. There are various places in the Nuvagantu landscape that we prefer to harvest pine nuts in. These harvests are an opportunity for us to transmit our culture to the younger generations. It is also a time when we renew our ties with friends and family that live in other parts of our land. We offer morning prayers, sing songs and play games together. It is a very happy time.

We know that poor environmental management moves the world out of balance, causing the land and our people to be unhealthy. It is vitally important for our people to establish the appropriate relations with these living elements in order to survive, which includes talking to them in the Paiute language with a good heart and the appropriate state of mind. You must therefore explain your actions to the element with which you establish a relationship. Tools made from flora and fauna must be ceremonially retired to the landscape when they are no longer in use and sometimes suitable replacements are made as offerings to the landscape. We have relationships with these living things both in the past and in the present.

Our Welcome Statement

The following is a Welcome Statement intended for the public written in collaboration with Jeremy Spoon, Ph.D. and the U.S. Forest Service about our relationship with the Spring Mountains landscape. It concisely shares the Nuwuvi relation with our ancestral holyland:

Welcome to our sacred land, Nuvagantu. It is a place that is alive and has power. The land has feelings to greet you, eyes to see you, and ears to hear you. It talks from every place in your sight. All of the plants, animals, rocks, water, snow, and air in this landscape are living and need to be in balance to remain healthy. To sustain this balance, we treat all beings with the utmost respect, as we have since the beginning of time. We are inseparable from these mountains, which are

powerful, yet delicate. Our language and songs resonate through the springs, trees, rocks, and animals. We harvest resources here and renew our cultural and familial ties.

Nuwuvi (Southern Paiute/Chemehuevi) continue to care for this land as we have for thousands of years, long before it became a National Recreation Area. We along with the U.S. Forest Service actively strive to keep the land in balance in culturally appropriate ways. Although you may not see us, you will surely hear our voices and feel our presence. Take a moment to get acquainted with this special place and allow it to know you. Use your senses and open your heart. This is a landscape where your spirit can be replenished and you can learn valuable lessons. Please walk softly on these grounds as we do and it will continue to thrive for generations.

Conclusion

This essay describes our ancestral connection to the Spring Mountains landscape, and in a broader sense, our relationship to the Nuwuvi traditional homeland. It helps to frame why we think the way we do about this project and others associated with public lands in the four state territory. Our sincere hope is that our way of knowing this landscape is respected at the same level as others. The information we shared was communicated to help educate others about our history and traditions. We hope that our efforts are considered in the developments for the Middle Kyle Complex, as well as other parts of the SMNRA. This landscape is an integral part of what makes us who we are and we care deeply about the management of it.