DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION

FHWA-NV-EIS-00-02-F
BOULDER CITY/U.S. 93 CORRIDOR STUDY
CLARK COUNTY, NEVADA

INTRODUCTION:

This Record of Decision (ROD) documents the Federal Highway Administration's (FHWA) approval of Alternative D, as the selected alternative for the proposal to improve the United States Highway 93 (U.S. 93) corridor through the City of Henderson and Boulder City, from the Foothills Road grade separation on U.S. 93/95 in Henderson to the western end of the Hoover Dam Bypass project near the Hacienda Hotel and Casino. The project is described in the *Boulder City/U.S. 93 Corridor Study Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation*, dated April 2005. Alternative D is identified as the preferred alternative in that FEIS.

PURPOSE AND NEED:

The purpose of the project is to provide overall transportation improvements in the U.S. 93 corridor by reducing traffic congestion, increasing safety, and improving regional mobility while maintaining or improving local circulation and access to local businesses. The Boulder City/U.S. 93 transportation improvements must address:

- Resolving traffic problems in the vicinity of Boulder City
- Extending freeway status of I-515 to the U.S. 93/95 interchange
- Improving operations at the junction of U.S. 93/95
- Creating a safer transportation corridor
- Accommodating future transportation demand
- Improving system linkage on U.S. 93 and maintaining route continuity

The selected alternative will address existing US 93 roadway deficiencies and provide system linkage and route continuity for sections of U.S. 93 approaching Boulder City by providing an alternate freeway route which has better operations through additional capacity, higher design speeds, a more consistent roadway cross section, and a continuous access-controlled facility throughout the project limits.

DECISION:

Alternative D is the selected alternative. This alternative is a southern bypass of Boulder City connecting the western and eastern study limits of the project. It consists of a continuous four-lane, controlled-access, divided freeway and highway passing south of the developed area of Boulder City. The alignment begins at the Foothills Road grade separation, crosses under the existing railroad, and continues just south of the existing highway to a new interchange near the Railroad Pass Hotel and Casino. From there, the freeway continues south and east to U.S. 95 with a new interchange approximately 1.2 miles south of the existing U.S. 93/95 interchange. The highway alignment then continues south and east towards Western Area Power Administration's (WAPA's) Mead Substation, running approximately 0.85-mile south of Georgia Avenue, just north of the Mead Substation. It then turns northeast to generally parallel the transmission corridor between the Boulder City Municipal Landfill and the Boulder City Rifle and Pistol Club range. Prior to descending into the headwaters of Goldstrike Canyon it crosses a ridge representing a western extension of the Eldorado Mountains, east of the developed portion of Boulder City. The highway ties into the Nevada interchange of the U.S. 93 Hoover Dam Bypass project approximately 0.75-mile east of the Hacienda Hotel and Casino. Table 1 describes the features of the alternative.

Table 1. Alternative D Features

Feature	Location	Description
1	Western Study Limit	Alignment ties into existing I-515 at the Foothills Road grade separation in the City of Henderson.
2	New Freeway: Western Study Limit to U.S. 95 (Extension of I-515)	Construct a four-lane divided freeway (extending I-515) from the western study limits to a new U.S. 93/95 interchange; the new alignment will be located south of existing U.S. 93 in this area, and existing U.S. 93 will serve as a local road.
3	Historic Railroad Crossing (within Feature 2)	Construct a grade separation at the historic Boulder City Branch Railroad (BCBRR) and U.S. 93 (the new alignment passes below the railroad grade).
4	Railroad Pass Interchange (within Feature 2)	Construct a new interchange, providing access to Boulder City via existing U.S. 93 near the Railroad Pass Hotel and Casino.
5	U.S. 93/95 Interchange	Construct a new interchange at the junction of U.S. 93 and U.S. 95 about 2-km (1.2-mi) south of the existing interchange. The interchange will contain a combination of ramp and stop-controlled access points, and will provide access to Boulder City via existing U.S. 95 and U.S. 93.
6	New Highway Segment: U.S. 95 to Eldorado Mountains foothills	Construct a new four-lane divided highway with a 20-m (65-ft) median from the new U.S. 93/95 interchange to the Eldorado Mountains foothills; this alignment passes through the flat alluvial fan area approximately 1.4 km (0.85-mi) south of Georgia Avenue.
7	Emergency Access Ramp: Buchanan Boulevard (within Feature 6)	At the crossing of Alternative D and Buchanan Boulevard, an emergency access ramp will be constructed to decrease response time by emergency vehicles to accidents. The ramp connection will consist of locked gates, and no public vehicular access will be allowed, but it will accommodate emergency vehicle access to the new roadway, and heavy equipment destined for the Mead Substation.
8	Georgia Avenue Wash Crossing (within Feature 6)	Alignment crosses the Georgia Avenue Wash (one of two major Boulder City drainages); flows are split between two sets of box culverts.
9	Mead Substation Access Road Grade Separation (within Feature 6)	Construct a grade separation at the access road and U.S. 93 (new U.S. 93 passes above the access road grade).

Table 1. Alternative D Features

Feature	Location	Description
10	Wash "C" Crossing (within Feature 6)	Crossing of Wash "C" (the second of two major Boulder City drainages); flow is directed into a channel at the crossing. Crossing provides recreational access to the Colorado River.
11	New Highway: Eldorado Mountains foothills to Eastern Study Limit	Construct a four-lane divided highway tapered to a four-lane highway with a concrete median barrier through the Eldorado Mountains to the eastern study limit.
12	Intertie Maintenance Road Crossing (within Feature 11)	A bridge will be constructed to span an existing dirt road which provides access to nearby electrical transmission facilities.
13	Eldorado Ridge Scenic Overlook (within Feature 11)	Construct a scenic overlook at the ridgeline of the Eldorado Mountains, offering views of Lake Mead and Boulder City.
14	Eastern Study Limit	Alignment ties into Hoover Dam Bypass project at the eastern study limits.

OTHER ALTERNATIVES CONSIDERED:

A range of alternatives was considered, and the preferred alternative was not identified until the impacts of the alternatives were fully investigated, and until comments on the Draft Environmental Impact Statement (DEIS) and from the public hearings were evaluated. The four reasonable alternatives subjected to full evaluation (including the No Build Alternative) were developed to a comparable level of detail in the EIS so that their comparative merits and impacts could be analyzed. The following is a brief description of the other alternatives studied in detail:

ALTERNATIVE A: NO BUILD

The No Build Alternative consists of leaving the existing roadway facilities along U.S. 93 through Boulder City as they are and would take no action to address current or projected traffic congestion, circulation, or safety problems. This alternative assumes no geometric improvements to the present-day roadway network within the study limits, except for expansion of U.S. 93 to a three-lane roadway section with a new westbound lane between the Hoover Dam Bypass tie-in and Lakeshore Road. All intersections would remain unsignalized except for the existing signalized intersections at Railroad Pass, Veterans Memorial Drive, and Buchanan Boulevard.

ALTERNATIVE B: IMPROVEMENTS TO EXISTING U.S. 93 ALIGNMENT

This build alternative consists of a freeway and arterial improvement combination that includes a general widening of existing U.S. 93 and other roadway improvements within the study limits. The improvements would consist primarily of a new four-lane divided freeway beginning at the Foothills grade separation, crossing under the existing railroad, and continuing south of the existing highway to a new diamond interchange near the Railroad Pass Hotel and Casino. From there, the highway would continue to just east of a half-diamond interchange at Veterans Memorial Drive. The existing U.S. 93/95 interchange would be replaced by a new, higher-capacity interchange. A six-lane principal urban arterial would extend from east of the new half-diamond interchange at Veterans Memorial Drive to Colorado Street, with a new traffic signal at an improved Buchanan Boulevard/U.S. 93

intersection. There would be a four-lane median barrier divided freeway through Hemenway Valley to the eastern project limit, with existing U.S. 93 converted to a frontage road and interchanges at Lake Mountain Drive, Pacifica Way, and Lakeshore Road. The freeway would tie-in to the Nevada interchange of the U.S. 93 Hoover Dam Bypass project approximately 1.2 km (0.75-mi) east of the Hacienda Hotel and Casino.

ALTERNATIVE C: NEW THROUGH-TOWN ALIGNMENT

Alternative C consists of a new through-town freeway connecting the western and eastern study limits of the project. It includes a continuous four-lane, controlled-access freeway generally parallel to existing U.S. 93, consisting of a divided freeway from the Foothills Road grade separation to the west end of Hemenway Valley, and from there it would be a median-barrier freeway to the eastern project limit. The alignment begins at the Foothills Road grade separation, crosses under the existing railroad, and continues just south of the existing highway to a new diamond interchange near the Railroad Pass Hotel and Casino. From there, the freeway would continue to the east to approximately 0.8-km (0.5-mi) south of the U.S. 93/95 interchange. The existing U.S. 93/95 interchange would be replaced by a new, higher-capacity interchange. After the alignment turns north, crossing underneath existing U.S. 93, it runs parallel to and north of Industrial Road along a transmission line corridor. A new diamond interchange would be provided at Canyon Road. This alternative meets existing U.S. 93 at the west end of Hemenway Wash and generally follows the Alternative B alignment in the Hemenway Valley area with interchanges at Lake Mountain Drive, Pacifica Way, and Lakeshore Road. The freeway would tie in to the Nevada interchange of the U.S. 93 Hoover Dam Bypass project approximately 1.2 km (0.75-mi) east of the Hacienda Hotel and Casino.

ALTERNATIVES CONSIDERED BUT ELIMINATED

Thirty-five alignment segments with logical combinations yielding over 40 potential corridor alignments were identified during the initial public involvement and scoping phase of the project. From these, 16 potential corridor build alternatives (including the 3 build alternatives carried forward for detailed analysis) were recognized as viable for screening evaluation. The alternatives generally to the north of Boulder City through the River Mountains were designated as the Northern Alternatives, those aligned through the developed areas of Boulder City were designated as Through-Town Alternatives, and the alternatives passing south of the Boulder City Airport were designated as Southern Alternatives. A detailed explanation of these alternatives and the screening process by which they were eliminated from detailed study is included in Chapter 2 of the FEIS.

SELECTION OF ALTERNATIVE D:

Alternative D was selected because it best meets the purpose and need of the project compared to the other alternatives, and after considering: (1) its broad public acceptance based on comments received on the DEIS, (2) less noise, air quality, and visual impacts to Boulder City compared to the other build alternatives, (3) fewer impacts to cultural resources than the other build alternatives, (4) less segmentation of the City and degradation of quality of life compared to the other build alternatives, (5) significantly less construction disruption of the existing corridor than any of the other build alternatives.

The following criteria and narrative describe the basis and essential considerations used in the choice of Alternative D as the selected alternative:

Criterion 1: The purpose and need of the project must be achieved.

Alternative D resolves traffic problems by diverting through-traffic from the urbanized environment of Boulder City onto a southern bypass. Traffic projections indicate acceptable levels of service are attained at all critical links and intersections through the design year. Alternative D extends freeway designation through the proposed U.S. 93/95 interchange with the addition of an access controlled freeway and a Railroad Pass interchange. Alternative D increases safety along the existing roadway by reducing the number of vehicles through Boulder City, and by improving the roadway connection at the Railroad Pass Hotel and Casino, currently a high crash-rate intersection.

Alternative D addresses the purpose and need goals of accommodating future transportation demand, improving system linkage, and maintaining route continuity. Alternative D provides an alternate route to existing U.S. 93 which the other alternatives do not provide. This will provide a greater ability to accommodate future growth by allowing existing U.S. 93 to accept increases in local traffic volumes as Alternative D accounts for the growth of regional traffic volumes. Under all other alternatives, local and regional traffic volumes are intermixed on the same facility which limits the alternatives' capacity to address future traffic growth. Route continuity is not maintained with Alternative B due to the allowance for an arterial street section in downtown Boulder City. Driveways and signalized intersections in an otherwise freeway type facility would be inconsistent with driver expectations and with the intent to provide a regional transportation facility.

Criterion 2: Social impacts to Boulder City should be avoided or minimized.

Alternative D will bypass the developed portion of Boulder City and therefore no neighborhoods or community facilities will be impacted. Alternative D will maintain the quality of life that Boulder City residents predominantly desire. Numerous public comments (see FEIS Volume II) express the view that either Alternative B or C would divide Boulder City and irrevocably change the small-town atmosphere that many residents desire. Alternative D will divert most non-local traffic away from developed areas in Boulder City and alleviate existing and anticipated future congestion, noise, air quality, and traffic safety issues in Boulder City as well as the Railroad Pass area. In addition, the barrier effect on intra-town movement created by the existing U.S. 93 alignment will be diminished due to decreased traffic volumes.

Implementation of Alternative D will not affect pedestrian and bicycle circulation in the area south of Boulder City. Safety, accessibility, and connectivity will improve for pedestrians and bicyclists along the existing U.S. 93 through Boulder City due to traffic volume reduction.

Criterion 3: Impacts to cultural resources should be avoided or minimized.

As discussed in FEIS section 4.8 cultural resources within the Area of Potential Effect (APE) of the alternatives include archaeological sites, historic structures, and potential Traditional Cultural Properties (TCPs). The No Build Alternative would have no effect on cultural resources. Implementation of Alternative B would impact three archaeological sites and 30

historic structures or groups of structures eligible for the National Register of Historic Places (NRHP) within its APE. Implementation of Alternative C would affect five archaeological sites and 29 historic structures eligible for the NRHP, while Alternative D will affect three eligible archaeological sites and only 9 historic structures within its APE. One potential TCP would be affected by the implementation of Alternative C.

Criterion 4: Impacts to biological and water resources should be avoided or minimized.

Alternatives B and C have greater negative construction and operational impacts to surface water quality than will be the case under Alternative D. Construction impacts would not occur under the No Build Alternative. Operational impacts on surface waters under the No Build Alternative would be much the same as for Alternatives B and C.

Because Alternative D has both the steepest maximum grade (6.0 percent), as well as the greatest volume of cuts and fill of the build alternatives, it would have the most water quality impact with respect to erosion. The No Build Alternative has both the lowest maximum grade (5.5 percent), as well as the shortest total length of steep grades of all the alternatives and would therefore have the least water quality impact with respect to erosion.

The No Build Alternative (Alternative A) would have no impact on jurisdictional waters of the United States. Construction of Alternative D will have a greater impact on waters of the U.S. (5.68 acres affected) than would the No Build Alternative, or Alternative B (3.58 acres) or Alternative C (3.82 acres). The differences in operational impacts (the placement of fill and engineered structures in dry arroyos) among the alternatives are negligible (approximately 3.12 acres for Alternative D, compared to 1.70 and 1.72 acres for Alternatives B and C, respectively). There will be no adverse impacts to downstream aquatic ecosystems resulting from the construction of Alternative D.

The No Build Alternative would not result in any construction or operational impacts to floodplains. Alternatives B and C would have approximately three times the impact to floodplains as Alternative D, and both would impact the regulatory floodway in Hemenway Wash, while implementation of Alternative D will not affect that floodway.

Under the No Build Alternative, impacts to vegetation and wildlife would be restricted to existing negative highway/wildlife interactions. Negative highway/wildlife interactions are expected to increase for all alternatives, including Alternative A. Because the same corridor nucleus also exists under Alternative B, its construction would entail the least disturbance to local vegetation and wildlife habitat of the three build alternatives. Under Alternative B, disruption of approximately 327 acres of wildlife habitat would occur. In comparison, the estimated area of habitat impacted by Alternative C is 460 acres and, for Alternative D, 679 acres. Alternatives B and C would avoid areas that currently receive heavy use by desert bighorn sheep (*Ovis canadensis nelsoni*), while Alternative D passes through an area on the western limits of the Eldorado Mountains that does receive heavy use by bighorn sheep.

Criterion 5: Adverse economic impacts to Boulder City and the region should be avoided or minimized.

Implementation of the No Build Alternative (Alternative A) would have no employment and economic output impacts. Based on preliminary engineering estimates, estimates of construction costs, payroll, and multipliers, impacts from the build alternatives are summarized below (all dollar figures are in millions):

	Alternative B	Alternative C	Alternative D
Construction Costs	$189.1	$195.7	$312.3
Sales Multiplier Impact	$87.9	$90.7	$144.7
Employment (person years)	2,721	2,810	4,481
Payroll Expenditures	$112.9	$116.6	$186.3

Estimated sales, employment, and payroll associated with construction of the project are proportionate to cost and are highest under Alternative D. Therefore, positive economic impacts from construction would be greatest from Alternative D, the selected alternative.

The No Build Alternative would not have any construction activity or related impacts to local businesses. Impacts to businesses along U.S. 93 during construction of Alternative B would include temporarily increased congestion, noise, dust, and possibly interrupted or reduced access. Also, implementation of Alternative B would expand the existing highway west of Buchanan Boulevard by approximately 20 feet and would require displacement of approximately five businesses and partial displacement of seven additional businesses along U.S. 93. Neither Alternative C nor Alternative D would result in business displacements along existing or proposed roadways, and construction of either alternative is not likely to directly affect businesses located along existing U.S. 93. Alternative D would have the least construction impact of all of the build alternatives because the alignment is south of the developed portion of Boulder City.

Compared to the build alternatives, the No Build Alternative would likely result in increased congestion, an overall reduction in mobility in the project area, and increased risk of crashes. Therefore, some businesses may experience a reduction in sales revenues as local residents avoid shopping in the congested business district. Under Alternative B, median islands between Veterans Memorial Drive and Buchanan Boulevard would make access to some businesses more difficult than currently exists, however the impacts are not likely to be substantial. The improved mobility from this alternative would likely result in overall improved sales for many businesses relative to that expected under the No Build Alternative. Under Alternative C, it is likely that the retail district along U.S. 93 between Veterans Memorial Drive and Canyon Road would experience lower sales, employment, and tax revenue than would be the case under the No Build Alternative or Alternative B. Compared to Alternative D, Alternative C would have less potential impact on the retail sector resulting from bypassing existing retail establishments (see FEIS pp. 4-106 to 4-109), because the interchange at Canyon Road would provide nearby access to these establishments.

All build alternatives include interchanges at the west and east end of the project which would improve access to U.S. 93 and to Lake Mead. The extent to which Boulder City is successful in promoting the town will affect how the local economy would fare after

implementation of any of the alternatives. FEIS section 4.11.2 concludes that removal of most of the through-traffic by Alternative D would present a more attractive environment for many businesses not dependent on significant numbers of through traffic customers. Additionally, the overall economy of Boulder City would remain reasonably healthy in the mid- to long term if Alternative D were implemented (FEIS pp. 4-106 to 4-109).

After considering that the No Build Alternative fails to meet the Purpose and Need for the project, Alternative D is the preferable alternative for four of the five criteria. Table 2 shows a comparative summary of the determinations based on the above criteria (an "X" indicates the preferable alternative under the respective criterion):

Table 2. Summary of Determinations by Criterion Discussed Above

Alternative	Purpose and Need	Social Impacts	Cultural Resources Impacts	Biological and Water Resources Impacts	Economic Impacts
No Build (Alternative A)	a		X	X	
Alternative B				b	
Alternative C					
Alternative D	X	X	b		X

a- Does not meet the purpose and need of the project.
b- Least impact of the build alternatives.

The absence of impacts from the No Build Alternative on biological, water, and cultural resources were given careful consideration in balancing the essential factors described in these screening criteria. However, the preferable aspects of Alternative D regarding the project's purpose and need, the least adverse social impacts, the beneficial economic impacts, and the benefits of the safest transportation facility, outweigh the impacts to biological, water, and cultural resources when considering the overall benefits and impacts collectively (see FEIS pp. 2-36 to 2-41).

In a letter dated April 21, 2005 from the U.S. Environmental Protection Agency (EPA) to the FHWA, the EPA indicates its concurrence that Alternative D is the Least Environmentally Damaging Practicable Alternative (LEDPA). It also concurs with the conceptual mitigation plan for the construction of Alternative D, which includes the avoidance, minimization and mitigation measures summarized below and listed in Attachment 1 of this Decision.

Impacts to cultural resources will be mitigated through the execution of the measures stipulated in the interagency Programmatic Agreement (PA), which include the development and execution of a Treatment Plan and continuing government-to-government consultations with concerned Native American groups.

Based on these considerations, Alternative D is the preferable alternative when considering environmental benefits and impacts collectively.

SUMMARY OF MITIGATION MEASURES FOR THE SELECTED ALTERNATIVE:

This section summarizes the measures adopted to minimize and mitigate impacts resulting from the implementation of Alternative D, and it identifies the standard and special measures for the project incorporated into the Decision (see FEIS Chapters 4, 6, and 7 for full descriptions of all measures to minimize harm adopted for this project). The mitigation measures identified in the FEIS, as well as additional measures developed through implementation of the PA and included as conditions of the Biological Opinion (BO), will be incorporated into the design development and construction contract documents. The measures identified are described below and summarized in Attachment 1 to this ROD. Attachment 1 also provides reference to the specific portions of the FEIS discussing a particular topic and associated mitigation.

AIR QUALITY

Analyses provided in Section 4.2 of the FEIS demonstrate that implementation of Alternative D will neither create new violations of the National Ambient Air Quality Standards (NAAQS), nor will it increase the frequency or severity of existing violations.

Construction Mitigation

Construction contractors will be required to obtain and maintain all applicable air quality control permits. Dust control permits will be acquired from the Clark County Department of Air Quality and Environmental Management (DAQEM) for construction. All required steps will be taken to prevent fugitive dust emissions at all times during construction. Dust abatement measures, as specified in a dust mitigation plan, will be used; and the project will follow the DAQEM Best Management Practices (BMP) manual for construction activities. These BMPs are based on soil type and construction activity, are designed to decrease respirable particulate matter (PM_{10}) emissions, and include measures described in FEIS Section 4.2.2.

Operational Phase

Studies show that operation of any of the build alternatives would result in no exceedances of criteria pollutants. Therefore, no project-specific mitigation measures for operation are identified. Dispersion modeling to assess potential CO emissions impacts demonstrates that implementation of Alternative D will cause no new violations of the CO standard, nor will it increase the frequency or severity of violations. Comparative studies indicate that operation of Alternative D will not exceed any of the PM_{10} standards. Examination of the nature of ozone (O_3) concentrations in the Boulder City area also leads to the conclusions that operation of Alternative D will not adversely impact O_3 levels.

NOISE

Construction Mitigation

Alternative D is a bypass well south of the developed portion of Boulder City so that construction activities will be well removed from sensitive human receptors. Regardless of that, standard practices will be used to minimize noise from construction activities. In the event of extremely noisy work, affected parties will be notified in advance of the activity.

Operational Mitigation

Because the Alternative D will be well south of the community of Boulder City, no mitigation measures are contemplated for its operation. Traffic noise levels in Boulder City are expected to drop with the diversion of 1/3 of the traffic out of the developed areas of the community.

BIOLOGY/THREATENED SPECIES

All appropriate Nevada Department of Wildlife (NDOW), National Park Service (NPS), and U.S. Fish and Wildlife Service (USFWS) permits will be obtained prior to initiation of the project, and conditions therein will be part of construction contract requirements. Mitigation will be conducted as stipulated in the FEIS and in the BO issued by USFWS.

Construction Mitigation

Protected or otherwise sensitive plants will be identified and removed prior to construction as required by state and federal guidelines. Salvaged plants will be held for replanting along construction zone margins, other project-affected areas, or alternate lands. Vegetation and topsoil salvage and replacement, and noxious weed control measures, will be implemented. As noted in FEIS Section 4.4.3, the BO issued pursuant to completion of detailed design of Alternative D USFWS will stipulate measures to minimize take of Mojave desert tortoise, and other sensitive species that would be specified in the BO, resulting from project construction. These measures will be incorporated as conditions in the contracting documents. It is anticipated that desert tortoise surveys, tortoise fencing of construction areas, relocation of tortoises found on-site, 24-hour clearance of areas to be disturbed, and onsite biological monitoring will be stipulated to mitigate impacts to the desert tortoise. The BO developed by USFWS will also stipulate coordination with state and federal wildlife agencies for other species. In accordance with the Clark County Multiple Species Habitat Conservation Plan (MSHCP), a per acre fee for tortoise habitat impacted by construction will be remitted prior to construction.

Bat surveys will be conducted prior to the start of construction. If important bat roosts are discovered within or closely adjacent to a construction zone, they will not be disturbed until the animals naturally vacate the site. If construction occurs during the breeding season for migratory birds, areas will be surveyed for nests prior to disturbance and, if nests are encountered, they will not be disturbed by construction personnel or equipment until nestlings fledge. Burrows in the disturbance area suitable for the burrowing owl will be collapsed prior to the nesting season. If occupied owl burrows are encountered during the nesting season, they will be avoided until young owls leave the nest, or until it is determined that the nesting attempt failed. Prior to the finalization of construction plans, the highway section occurring within bighorn sheep habitat will be walked with NDOW and NPS biologists to evaluate and select appropriate construction phase mitigation measures for bighorn sheep (FEIS pp. 4-22 to 4-24).

Operational Mitigation

Fencing and other barriers that prevent animals from entering the roadway will be incorporated into the final design of the project. Wildlife crossings will be constructed to reduce direct bighorn sheep and other wildlife mortalities resulting from attempted highway

crossing, as well as to mitigate adverse population impacts resulting from reduced contact between population segments separated by the new highway alignment. Crossings will include wildlife-proof fencing installed to direct animals to the crossing points. Box culvert crossings will be constructed below grade to allow their floors to be filled with soil similar to the surrounding habitat. The following crossings will be constructed to mitigate impacts to wildlife and, where feasible, mitigate other impacts as well, such as access issues and to avoid operational impacts to waters of the U.S.:

- A multi-use box culvert to allow wildlife and recreational crossings at "Wash C" east and north of the Mead Substation,
- Earth-fill box culverts at waters of the U.S. crossings D-8 and D-9 north of the Boulder City Rifle and Pistol Club,
- Two box culverts at waters of the U.S. crossing D-10 south of Eldorado Ridge,
- A bridge to span the intertie maintenance road also south of Eldorado Ridge,
- A bridge crossing a relatively deep canyon immediately north of the Eldorado Ridge,
- Bridges spanning waters of the U.S. at crossings D-12 and D-13 in the headwaters of Goldstrike Canyon, and
- A box culvert in the vicinity of the eastern project limits to perpetuate a crossing established as part of the Hoover Dam Bypass project.

The crossings located in the rugged terrain north of Eldorado Ridge, an area frequented by desert bighorn sheep, will have associated fencing conforming to NDOW and NPS standards for ungulate fencing. Reviews of wildlife crossings with NPS, NDOW, and other affected agencies will occur during final design development, and these agencies will be afforded the opportunity to comment on the suitability of the design.

The installation of artificial lighting along the highway will be limited to access locations to lessen intrusive nighttime glare extending into adjacent lands and interfering with routine activities of nocturnal animals. Reliance on natural lighting will also reduce the attraction of the highway to wildlife, thereby decreasing highway-related wildlife mortalities.

The Nevada Department of Transportation (NDOT) is a responsible party under the Clark County Multiple Species Habitat Conservation Plan (MSHCP) and the conservation measures that NDOT is undertaking under the MSHCP, as described in the FEIS section 4.4.3, when applied to this project and not duplicating the measures listed above, will further mitigate the impacts of construction of the selected alternative.

The FHWA and NDOT will coordinate with the NPS, NDOW, and other affected agencies in the NPS, NDOW, and other affected agencies' development of a bighorn sheep management plan that will assist in mitigating the adverse population impacts of existing U.S. 93 on bighorns in the River and Eldorado Mountains. The NDOT will also assist NPS and NDOW should these agencies identify substantive safety concerns along existing U.S. 93 involving bighorn sheep/vehicle collisions. Should the need be identified, NDOT will seek to implement measures that minimize future bighorn/vehicle accidents consistent with the

management objectives of the Lake Mead National Recreation Area (LMNRA) and the objectives of a future bighorn sheep management plan.

Funding for continued GPS-collar tracking of bighorn sheep movements will be provided during the design phase of Alternative D to include the most up-to-date information on habitat use patterns into the design of wildlife crossing features. This monitoring will be extended through the construction phase and one year beyond the opening of the roadway to public travel to provide NDOW, NPS, and other concerned agencies with information for their management of bighorn sheep populations in the area.

To further address the adverse impacts resulting from the fragmentation of bighorn sheep habitat in the northern Eldorado Mountains, NDOT and FHWA will work with the City of Boulder City to establish a wildlife preserve in the Eldorado Ridge area within the City limits, as described in FEIS Section 6.6.1. This will be an area of about 500 acres in which no development will be permitted by the City to help maintain continuity of wildlife utilization of the Eldorado Ridge between the northern portion of Boulder City on the west, and the LMNRA on the north and east (FEIS pp. 4-24 to 4-29).

WATER RESOURCES

Construction Mitigation

The National Pollutant Discharge Elimination System (NPDES) Construction General Permit, including a site-specific Storm Water Pollution Prevention Plan (SWPPP) from the State of Nevada for this project will include, as conditions of the permit, requirements for monitoring and maintaining water quality in surface runoff. The construction contract requirements will include these conditions to limit discharge of pollutants.

The SWPPP is intended to control pollutant discharge into storm water runoff and addresses the requirements of the Nevada General Stormwater Permit. The information it will provide, directed at controlling impacts to storm water runoff, includes:

- A detailed site description, and description of construction activities including the sequence of intended major soil disturbing activities
- Estimates of area to be disturbed
- Estimates of runoff coefficients during both pre- and post-construction phases, as well as data describing the soil and anticipated quality of any discharge
- Drainage patterns and approximate slopes expected after major grading operations
- Locations of structural and nonstructural controls, stabilization practices, offsite materials (including waste, borrow, and equipment storage areas), and surface waters and where storm water discharges to those surface waters
- The location and description of discharges not associated with the project
- Measures to be implemented as part of construction to control pollutants in storm water discharges

- Storm water controls (i.e., detention and/or infiltration basins, swales, rip-rap, retaining walls)
- Maintenance activities to keep erosion and sediment controls in effective operating condition
- Protocols for the inspection of
  - Erosion and sediment control devices
  - construction site equipment
  - material storage areas, and
  - construction entrance and exit points
- Descriptions of all non-storm water related discharges associated with construction activity, and pollution prevention measures to control these discharges

BMPs will also be implemented along the project corridor to reduce water quality impacts to the Colorado River and desert washes. The NDOT Handbook of BMPs (Water Quality Manuals) will be utilized as a guidance document for establishing and implementing appropriate BMPs. In addition, the Las Vegas Valley 208 Water Quality Management Plan, as amended, shall also be consulted to identify appropriate BMPs for implementation.

BMPs for maintenance of water quality during construction may include, but are not limited to, the following:

- Construction equipment will be cleaned on a regular basis to minimize potential deposition and runoff contamination from petroleum-based chemicals. The equipment will be inspected daily for leaks and repaired immediately upon discovery of a leak.
- Designated locations shall be provided for servicing, washing, and refueling of equipment, away from temporary channels or swales that would quickly convey runoff to a drainage system and into a receiving water.
- Contaminated material shall be kept at a safe distance from a drainage system. Temporary barriers and containers will confine any contaminated materials. Upon completion of construction, all contaminated material on the construction site will be removed and disposed of in accordance with federal, regional, and local regulations. A spill response, containment, and cleanup plan will be developed by the contractor and implemented.
- If construction of temporary access roads produces a channel that contains a path of least resistance to a major drainage, a silt barrier will be placed and maintained to trap sediment before it flows with surface runoff to offsite channels. Trapped sediment and debris that accompanies it will be taken offsite before the barrier is removed at completion of construction. Where needed, small basins to trap

sediment with surface runoff and to detain it during the construction period will be installed.

- All disturbed areas will receive water quality treatment prior to the discharge leaving the site through appropriate BMP-engineered features. Treatments may include silt fences, sediment basins, and hay bales. All trapped sediment will be removed from the site or disposed of on the project in a manner as to not create erosion or contamination potential

Operational Mitigation

Soils along the banks of drainage channels at roadway crossings will be stabilized to prevent erosion and sediment deposition. Soils may be stabilized using measures such as erosion-control blankets or soil stabilizers. Where practicable in this desert area, revegetation may be used as well to slow surface runoff, anchor unstable soils, and break up drainage flow patterns.

Mitigation measures will also include, as needed, roadway channels constructed to prevent erosion and sediment basins that function as a containment/retention area for sediments as well as hazardous waste. Erosion-resistant drainage channels and energy-dissipating structures will be constructed at all culverts where discharge velocity would otherwise cause downstream erosion (FEIS pp. 4-34 to 4-37).

WATERS OF THE U.S.

Drainages crossed by Alternative D that ultimately flow into Lake Mead or the Colorado River are considered jurisdictional waters of the U.S. and occur north and east of the approximate position of the Boulder City Rifle and Pistol Club Range. There are no self-sustaining wetlands impacted by this project.

Construction Mitigation

Impacts will be minimized by designating construction access, material stockpiling, and construction staging areas outside the limits of waters of the U.S. Effective temporary barriers, such as silt screen fences and sediment traps, will be required to be installed to restrict debris from entering adjacent desert washes and waters of the U.S. as described in FEIS Chapter 4 (pp. 4-51 to 4-52). Construction activity within the washes will be restricted during rainfall events to minimize adverse impacts from construction-related erosion and sediment runoff.

Operational Mitigation

Bridges at waters of the U.S. crossings D-12 and D-13 (FEIS pp. 4-23 to 4-27 will be designed and constructed to avoid operational impacts to these desert washes. Structural piers and retaining walls will be protected to prevent erosion and deposition of material in the washes. If design analysis indicates the need, energy dissipaters will be installed at culvert crossings to reduce the energy of floodwaters and minimize natural deposition into the wash crossings throughout the life of the facility. Appropriate BMPs will be implemented to avoid and minimize impacts to waters of the U.S. and maintain water quality and maintenance of the natural landscape in the project area.

Compensation for an estimated 3.12 acres of waters of the U.S. impacted by the operation of Alternative D will be made at a 1:1 replacement to loss ratio as established in consultations with the U.S. Army Corps of Engineers (ACOE) and the EPA.

FLOODPLAINS

Construction Mitigation

Natural floodplains will be perpetuated using culverts and/or bridges. Facilities will be designed and constructed such that no adverse impacts to the 100-year event will be created.

Impacts to floodplains will be mitigated by the adoption of BMPs to maintain the integrity of the floodplains located in the vicinity of the construction site. As noted above, the NDOT Handbook of BMPs (Water Quality Manuals) will be utilized as a guidance document for implementing appropriate BMPs. The following are BMP improvements to be applied by NDOT and its contractors, during construction:

- Construction staging, access points, and material stockpiling shall be kept away from regulatory flood zones
- Temporary construction berms, and other means of redirecting storm water, shall be constructed in such a way as to not expand an area with flooding as described in the FEIS Section 4.7.3.
- Locations for servicing, washing, and refueling of equipment will be designated away from channels or swales that would convey runoff to regulatory flood zones.
- Contaminated material shall be kept at a safe distance from entry into the flood zones. Temporary barriers and containers to confine the materials shall be used.

Operational Mitigation

Alternative D crosses drainages that have Federal Emergency Management Agency (FEMA)-mapped floodways near the Mead Substation. The design of engineered features to accommodate the runoff regime of this area will comply with all FEMA and Clark County Regional Flood Control District (CCRFCD) flood control requirements. Improvements to flood control facilities lying within the roadway prism will be part of the project design, and bridge structures or culverts under the new roadway will be incorporated into the hydraulic modeling (FEIS pp. 4-34 to 4-37, 4-57 to 4-60).

CULTURAL RESOURCES

Formal consultations have been completed with the Nevada State Historic Preservation Office (SHPO) on the historic properties inventories within the Area of Potential Effect (APE) of Alternative D. A PA providing for mitigation measures to be implemented prior to and during construction of the selected alternative has been signed by NDOT, FHWA, SHPO, and agencies responsible for management of these resources within the project APE. Subsequent to the completion of detailed engineering design to adequately assess effects of the construction of the selected alternative, the PA calls for the following project-specific actions to be taken in consultation with the SHPO:

- An Assessment of Effects to historic properties

- The development of a Treatment Plan for mitigating impacts
- The implementation of mitigation measures called for in the Treatment Plan

Ongoing consultation with interested Native American groups will continue. In addition, the provisions of a Memorandum of Agreement between FHWA, NDOT, the Bureau of Reclamation (Reclamation), and the Bureau of Land Management (BLM) regarding treatment of an historic property on Reclamation and BLM land will be executed prior to construction (FEIS pp. 4-61 to 4-66).

LAND USE

A Traffic Control Plan will be prepared and approved prior to commencement of construction activity to mitigate impacts resulting from temporary change or restriction of access to commercial land uses along the existing U.S. 93 corridor. Features of this plan may include, but will not be limited to, a public awareness campaign and the use of flaggers, signage, detours, alternative access points, and phasing of construction activities to reduce conflicts with existing land uses.

Potential land use conflicts within the LMNRA from the construction and operation of Alternative D will be mitigated through continuing consultation with the NPS to identify practicable mitigation measures. Operational phase impacts to casual recreational use of the desert in the vicinity of the Alternative D alignment will be mitigated by the construction of crossings providing access to the area south of the alignment, identified under "Bicycles/Pedestrians", below.

VISUAL RESOURCES

Construction Mitigation

Certain views during the construction period will be altered by the presence of construction vehicles, equipment, personnel, and activities. This impact is an unavoidable consequence of project construction. Impacts to visual resources from fugitive dust emission during construction are not anticipated because a dust mitigation plan will be developed and implemented. This will include the use of dust suppression techniques, such as watering and applying chemical stabilizers, control of construction traffic, and other measures to minimize dust generation. If nighttime construction is necessary, lighting will be directed away from residences and will be shielded so that emission of light from the construction site is minimized.

Operational Mitigation

Topography masks the alignment of Alternative D within the LMNRA, reducing adverse visual impact to NPS-managed lands. Where the motorists' view of Lake Mead is created atop Eldorado Ridge, the roadway pullout and vista point lookout to be developed there will provide views of longer duration of the LMNRA and its scenic attributes. The overlook will also reduce the potential public safety impact caused by drivers viewing scenery while attempting to maneuver vehicles at a safe speed.

Constructed concrete slope protection and bridge abutments will use desert varnish stain to blend with the natural surrounding environment within the Lake Mead National Recreation Area. Corridor landscaping will be addressed during final design. NDOT landscape policy outlines a cost allocation of 3 percent of total construction estimate.

ECONOMIC AND SOCIAL IMPACTS

Potential impacts to businesses due to reduced visibility and greater distance from the realigned U.S. 93 and consequent loss of drive-by patrons will be mitigated by installing signage prior to each highway off-ramp to alert drivers to the availability of food, gas, and lodging services.

As noted above, a Traffic Control Plan will be implemented to reduce economic impacts associated with the temporary change or restriction of access to businesses along the existing U.S. 93 corridor. Features of the Traffic Control Plan may include, but will not be limited to, the following:

- Using flaggers, detours, and temporary signage to inform drivers that access to businesses during construction is temporarily changed or restricted
- Developing alternative access points for affected businesses
- Coordinating with affected business owners to develop strategies to maintain access to businesses during construction

Implementation of a Traffic Control Plan also will reduce short-term social impacts associated with the change or restriction of access to businesses near construction. Because Alternative D will divert most nonlocal traffic away from the developed areas of Boulder City, there will be some unavoidable adverse impacts to local businesses dependent on through-traffic for their customer base. However, diversion of this volume of through-traffic away from the developed portion of Boulder City will improve the City's quality of life and is expected to have long-term positive economic and social consequences (FEIS pp. 4-106 to 4-110; 4-114).

BICYCLES/PEDESTRIANS

Provisions for safe pedestrian and bicycle access throughout the corridor during construction will be part of a construction management plan for Alternative D. Specific issues that will be addressed include pedestrian/bicycle access across U.S. 93 and detour plans for pedestrians and bicyclists. Appropriate and well-marked signage and striping shall be included to allow for safe transport. Where new roadways cross existing recreational trails, access will be maintained by detouring users around the construction.

Additional measures to mitigate operational impacts associated with Alternative D include the following:

- Provide a local access connector from the Railroad Pass area using existing U.S. 93 and connecting to Foothills Road.
- Construct a grade separation for continued access from Boulder City to the Mead Substation.

- Construct a crossing to the east of Mead Substation to allow for equestrian and four-wheel drive access to recreational areas south of Boulder City.
- Construct crossings at the NPS backcountry roads (Canyon Point Road and Boy Scout Canyon Road) and various power line roads.
- Provide appropriate pedestrian and bicycle route signage.

HAZARDOUS WASTE

No sites with potential environmental concerns were identified within the planned construction areas for Alternative D, and therefore no specific hazardous waste mitigation measures are necessary for its implementation. Minimal hazardous waste is expected to be generated during construction (e.g., wastes from on-site minor maintenance and repair of construction vehicles). The generators will be required to have an EPA generator identification number, and hazardous wastes will be managed according to appropriate procedures and disposed of at EPA-permitted facilities in accordance with applicable laws and regulations. Transporters and disposal sites will possess the required permits.

CONSTRUCTION IMPACTS

Other sections in this ROD stipulate mitigation measures for construction impacts on the full range of environmental values and issues. This section focuses on the mitigation of traffic and circulation impacts.

Prior to construction, the contractor will develop a Traffic Control Plan that will specify the appropriate traffic control and safety devices to be installed and maintained on routes to be utilized for construction access to ensure traffic safety. These may include, but will not be limited to, the installation of warning lights, signs, traffic cones, and signals. Traffic safety devices will warn oncoming motorists of construction vehicles ahead. Locations where these devices are necessary will include, but are not necessarily limited to, the following:

- Construction of the new interchange at Railroad Pass Hotel and Casino
- Construction of the new interchange at U.S. 95
- The approaches to the construction areas in the vicinity of Buchanan Boulevard
- Construction of the new east end interchange in the vicinity of the Hacienda Hotel and Casino

Traffic safety devices will be installed prior to use of the pre-existing roads within the project limits for gravel hauling or other heavy truck trips, including the delivery of heavy equipment and construction vehicles.

The Traffic Control Plan will include contractor-prepared and implemented traffic detour plans for intersections with existing roads, such as U.S. 95 that will provide for a safe vehicle flow around the work zone. This plan will comply with all NDOT safety standards and provide adequate speeds and sight distances for drivers. The plan will also address the routing of bicyclists and pedestrians through the work zone and provide for adequate signage to allow safe passage into residential, commercial, government, and recreational areas.

The Traffic Control Plan must be approved by NDOT prior to commencement of any construction activity and fully implemented to reduce adverse impacts associated with the temporary loss of access to commercial areas along the existing U.S. 93 corridor. Features of the Traffic Control Plan will include, but will not be limited to, a public awareness campaign and the use of alternative access points, and phasing of construction activities to reduce conflicts with existing land uses.

The contractor will also repair any roads damaged by construction activities, returning them to preconstruction conditions. All road repairs will be scheduled and conducted to ensure that safe operating conditions are maintained.

SECTION 4(f) EVALUATION:

The eastern project limit is located several miles within the LMNRA, and the project area also contains several long linear structures (historic railroad line, historic transmission lines, recreational trails), and therefore it is not possible to avoid Section 4(f) lands with any of the build alternatives, including Alternative D.

Only the No Build Alternative would avoid the use of Section 4(f) lands. However, it does not meet the purpose and need of the project, which include the goals of reducing corridor traffic congestion and crash rates while enhancing regional mobility. Specifically, the No Build Alternative does not:

- Eliminate the numerous access points to adjacent businesses and neighborhoods.
- Resolve the variation of U.S. 93 from a full-freeway section in the west segment to a two-lane section in the east segment.
- Improve conditions on segments of U.S. 93 that contribute to fatal crash rates equal to or greater than the statewide rates for similar facility types. The worst segment, from the west study limit to the U.S. 93/95 interchange, has a fatal crash rate approximately five times the state average.
- Reduce the rate of accidents involving hazardous materials at Railroad Pass, which is nearly five times as high as the average for the State of Nevada (FEIS pp. 1-15 to 1-17), and at other critical corridor locations.
- Correct the condition in which the U.S. 93 arterial section through Boulder City will continue to act as an ever-worsening bottleneck to regional and interstate commerce.

As discussed in detail in Chapter 7 of the FEIS, none of the build alternatives clearly minimize harm to Section 4(f) resources. Each alternative impacts different types, numbers, and areas of Section 4(f) resources. For example, Alternative B impacts 8.3 acres of the historic Boulder City Branch Railroad (BCBRR), but only 46.4 acres from the LMNRA. Alternative D only uses 0.3 acre of the BCBRR, but 58.9 acres from the LMNRA. Alternative C impacts 0.6 acre of the BCBRR and 41.0 acres of the LMNRA. All three build alternatives have Section 4(f) impacts that are of the same relative magnitude, and therefore because of this, there is no clear harm minimizing alternative.

The selected Alternative D will avoid the following Section 4(f) resources that would otherwise be impacted by Alternative B or C:

- Boulder Ridge Golf Course
- River Mountains Loop Trail
- Old Nevada Highway 41/U.S. 93 Segment
- Historic SCE North and South Transmission Lines

As noted above, implementation of Alternative D will have impact to Section 4(f) lands in the LMNRA. The NPS administers the LMNRA and prepared an independent Impairment Determination (FEIS Appendix D) that noted the following:

> "Much of the acreage that would be utilized by implementing this alternative (Alternative D) has been previously impacted by the existing utility corridor and approved backcountry road.... The recreational use and value of the lands within and near the utility corridor is considered low." (parentheses added)

The Impairment Determination further notes that:

> "The effects of the Preferred Alternative (Alternative D) will not impair Park resources or values necessary to fulfill specific purposes identified in the Park's enabling legislation. Impacts documented in the EIS.... will not affect resources or values key to the natural and cultural integrity of the Park or alter opportunities for enjoyment of the Park. The Preferred Alternative will not impair Park resources and will not violate the NPS Organic Act." (parentheses added).

Construction and operation of Alternative D are expected to have negligible impact on the visitor use of, and access to the LMNRA. During the construction period, recreation activity areas identified by NPS will be designated as construction safety zones, and recreation will be restricted or temporarily prohibited for protection of the public. Trail-use regulations within the LMNRA will be adjusted as needed to accommodate construction activities and to assure the safety of trail users. Scheduling of construction activities will be closely coordinated with NPS, and there will be ongoing public information provided.

Cuts, fills, and other land modification will be designed and constructed to minimize impact to scenic values, especially in undeveloped areas. Mitigation techniques will include rough cuts, feathering cut/natural environment interfaces, use of artificial desert varnish on rock cuts to match adjacent natural colors, colored concrete, and other state-of-the-art methods. Care will be taken to remove all construction debris and other trash from the work area as soon as construction is completed. Excavated topsoil will be stored during construction and replaced on appropriate disturbed areas outside the highway shoulders after construction to aid in re-establishing desert vegetation. Cactus, yucca, and candidate plant species will be removed and replanted or reseeded in consultation with NPS. NPS has provided NDOT and FHWA with specific measures that will be implemented to minimize harm in a list of *Restoration Considerations for Construction Activities* (FEIS Appendix A).

Historic properties constituting Section 4(f) resources that will be affected by construction of Alternative D include three electric transmission lines and seven associated towers, and the BCBRR. To minimize harm to these linear historic features, the initial considerations of alignment alternatives included evaluation of how the corridors might be oriented to avoid them, or to minimize impacts at the crossings. Documentation of the historic electric transmission line towers to Historic American Engineering Record standards will be accomplished prior to replacing them to mitigate impacts to these resources. For the BCBRR, a new grade separation in the vicinity of Railroad Pass will be constructed to minimize harm to this resource and to allow for its future use.

COMMENTS ON THE FEIS:

The FEIS was circulated for comment beginning on March 31, 2005 with the comment period extending through May 13, 2005. The Notice of Availability was published in the *Federal Register* on April 8, 2005. Nine letters from agencies, organizations, and individuals were received. These comments and FHWA responses are contained in Attachment 2 to this ROD.

CONCLUSION:

For the reasons outlined above, Alternative D is the alternative that best meets the purpose and need of the project and minimizes environmental and social impacts, and it was identified as the preferred alternative in the FEIS.

FHWA is committed to ensuring this project is designed to fit harmoniously into the natural and man-made environment, with the least possible impact on the adjacent community. Innovative design and construction techniques will be pursued to the extent practicable. FHWA, through NDOT, will continue to seek opportunities to contribute to a healthier and more pleasing environment through the use of improved and/or innovative mitigation and enhancement measures. All practicable measures to minimize environmental harm have been adopted and are incorporated into this decision.

To maintain and further the cooperative efforts developed during the EIS process, close coordination with EPA, Army Corps of Engineers, NPS, USFWS, SHPO, NDOW, and other concerned agencies will continue as the project proceeds.

Based upon careful consideration of all social, economic, and environmental impacts presented in the FEIS; the various technical studies completed; the input received from other agencies, organizations, and the public indicating broad public acceptance of Alternative D; and on the factors and project commitments outlined above, it is the decision of FHWA to select Alternative D for the Boulder City/U. S. 93 Corridor project.

RECORD OF DECISION APPROVAL:

The Record of Decision for the Boulder City/U.S 93 Corridor EIS is hereby approved.

12/8/05

Date

Susan Klekar
Division Administrator
Federal Highway Administration

SUMMARY OF MITIGATION MEASURES

Tables 1 and 2 that follow summarize the mitigation measures that are to be implemented as part of the construction and operation of Alternative D of the Boulder City/U.S. 93 Corridor Study. The Nevada Department of Transportation (NDOT) will have primary responsibility for ensuring that these measures are implemented. The mitigation measures are shown in two tables, according to the stage of project development in which they would be implemented: construction and operation. Construction measures (C) will be implemented during the construction period, and Operational measures (O) will be implemented or are intended to be realized through design and during daily operation of the corridor, or as incidents or conditions may dictate. These measures will be documented in project plans, designs, specifications and compliance documents as appropriate. For reference purposes, the resource designations used in the Final Environmental Impact Statement (FEIS) and FEIS page number are provided so that the reader may find the cross-referenced discussion in context, if needed, to clarify understanding of a given mitigation measure.

Abbreviations and acronyms used in the following tables are as follows:

AQ	Air Quality
BIO	Biological Resources
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
B&P	Bicycles and Pedestrians
C	Construction
CI	Construction Impacts
CR	Cultural Resources and Traditional Cultural Properties
CuI	Cumulative Impacts
DAQEM	Clark County Department of Air Quality and Environmental Management
E&S	Economic or Social Impacts
FHWA	Federal Highway Administration
FP	Floodplains
HW	Hazardous Waste
LMNRA	Lake Mead National Recreation Area
LU	Land Use
MSHCP	Clark County Multiple Species Habitat Conservation Plan
N	Noise
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NPS	National Park Service
O	Operational
PA	Programmatic Agreement
PM_{10}	Particulate Matter less than 10 microns in size
SHPO	State Historic Preservation Office (Officer)
SWPPP	Storm Water Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service

VR	Visual Resources
WR	Water Resources
WUS	Wetlands and Waters of the United States

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	FEIS	
C-1	AQ, pp. 4-2, 4-6	Construction contractors will be required to obtain and maintain all applicable Air Quality control permits. Dust control permits will be acquired from DAQEM prior to construction.
C-2	AQ, pp. 4-5, 4-6	Dust abatement measures as specified in a dust mitigation plan will be used, and the project will follow the DAQEM BMP manual for construction activities. These BMPs are designed to decrease PM_{10} emissions, and include: • Minimize land disturbances by initiating construction in phases, where possible • Use watering trucks to minimize dust • Cover trucks when hauling dirt • Use dust suppressants on traveled paths that are not paved • Stabilize the surface of dirt piles, if not removed immediately • Use windbreaks to prevent any accidental dust pollution • Limit vehicular paths and stabilize temporary roads within the construction area • Minimize dirt track-out by cleaning trucks before leaving the construction site or by paving a few hundred feet of the exit road just before entering the public road • Revegetate or rock-mulch any disturbed land not paved • Remove unused material and dirt piles • Revegetate all vehicular paths created during construction
C-3	AQ, p. 4-6	Excavation and grading operations will be suspended when constant wind speed attains 25 miles per hour (mph) or if instantaneous wind speeds (gusts) are measured to be at least 40 mph. Wind speeds shall be determined at the DAQEM air quality monitoring station in Boulder City. Suspension will continue until 1 hour after the wind speed falls below the constant or gust maximum
C-4	AQ, pp. 4-2	Appropriate emissions permits will be obtained for the mobile and stationary construction equipment required for this project. These permits will specify additional BMPs that must be followed to assure that emissions of hydrocarbons, nitrogen and sulfur oxides, and carbon monoxide remain within acceptable limits.
C-5	AQ, p. 4-6	Maintaining appropriate tuning of construction equipment engines, avoiding excessive idle times, and assuring that all mufflers and exhaust systems meet manufacturer specifications.

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	FEIS	
C-6	N, p. 4-10	Most construction activities will be well removed from sensitive receptors. Should extremely noisy work be required, potentially affected parties will be notified. .
C-7	BIO, pp. 4-22, 7-21	Protected or otherwise sensitive plants will be removed prior to construction as required by state and federal guidelines. Salvaged plants will be held for replanting along construction zone margins, other project-affected areas, or alternate lands.
C-8	BIO, p. 4-22	A noxious weed control program will be instituted that, among other elements, calls for the cleaning of construction equipment prior to their use on this project.
C-9	BIO, pp. 4-22, 7-21	Vegetation and topsoil salvage and replacement will be implemented. Agency guidelines and management practices will be implemented.
C-10	BIO, p. 4-22	In the BO issued pursuant to completion of detailed design of Alternative D, the USFWS will stipulate measures to minimize take of Mojave desert tortoise and other sensitive species. These measures will be incorporated as conditions in the contracting documents. It is anticipated that desert tortoise surveys, tortoise fencing of construction areas, relocation of tortoises found on site, 24-hour clearance of areas to be disturbed, and onsite project monitoring will be stipulated.
C-11	BIO, p. 4-22	Tortoise burrows in the construction area will be inspected, and collapsed if unoccupied to prevent reoccupation prior to construction.
C-12	BIO, p. 4-23	Pursuant to the MSHCP, a per-acre fee for tortoise habitat impacted by project construction will be assessed. These monies are employed to offset the costs of the tortoise recovery program.
C-13	BIO, p. 4-23	If construction occurs during the migratory bird breeding season, an onsite biological monitor will survey the area(s) subject to construction and, if nests are located before or during construction, they will not be disturbed by construction personnel or equipment until the birds fledge.
C-14	BIO, p. 4-23	Bat surveys will be conducted prior to the start of construction. If viable bat roosts are discovered within or closely adjacent to a construction zone, they will not be disturbed until the animals naturally vacate the site.

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	**FEIS**	
C-15	BIO, p. 4-23	Burrows in the construction zone suitable for the burrowing owl will be collapsed prior to the nesting season. If occupied burrows are encountered during the nesting season, they will be avoided until the young owls leave the nest, or until it is established that the nesting attempt failed.
C-16	BIO, p. 4-24	Prior to completion of design and location of construction-phase bighorn sheep crossings, the alignment crossing bighorn sheep habitat will be walked with agency biologists to evaluate and select appropriate construction-phase mitigation measures for bighorn sheep.
C-17	WR, p. 4-34	A National Pollutant Discharge Elimination System Construction General Permit (including a site-specific SWPPP) from the State of Nevada will include requirements for limiting discharge of pollutants.
C-18	WR, pp. 4-35	The SWPPP for the project will specify, among other things, the following mitigation measures: • Locations of structural and nonstructural controls, stabilization practices, offsite materials (including waste, borrow, and equipment storage areas), surface waters and where storm water discharges to those surface waters • The location and description of discharges not associated with the project • Measures to be implemented as part of construction to control pollutants in storm water discharges • Storm water controls such as detention or infiltration basins, swales, rip-rap, or retaining walls • Maintenance activities to keep erosion and sediment controls in effective operating condition • Protocol for the inspection of erosion and sediment control devices, disturbed areas of the construction site, equipment and material storage areas, and construction entrance and exit points • Descriptions of all non-stormwater-related discharges associated with construction activity, and pollution prevention measures to control these discharges

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	FEIS	
C-19	WR, p. 4-35	BMPs will also be implemented along the project corridor to reduce water quality impacts to the Colorado River and desert washes. The NDOT's Handbook of BMPs (Water Quality Manuals) will be utilized as a guidance document for implementing appropriate BMPs.
C-20	WR, p. 4-35	The Las Vegas Valley 208 Water Quality Management Plan, as amended, will be consulted to identify appropriate BMPs for implementation.
C-21	WR, pp. 4-35 to 4-36	BMPs to be used to maintain water quality during construction include, but are not limited to, the following: • Construction equipment will be cleaned on a regular basis. • Equipment will be inspected daily for leaks and repaired immediately upon discovery of a leak. • Designated locations will be provided for servicing, washing, and refueling of equipment, away from temporary channels or swales. • Contaminated material shall be kept at a safe distance from a drainage system. Temporary barriers and containers will confine any contaminated materials. • Upon completion of construction, all contaminated material on the construction site will be removed and disposed of in accordance to federal, regional, and local regulations. • A spill response, containment, and cleanup plan will be developed and implemented by the contractor. • If construction of temporary access roads produces a channel that contains a path of least resistance to a major drainage, a silt barrier will be installed and maintained to trap sediment. Trapped sediment and debris that accumulate will be taken offsite before the barrier is removed after completion of construction. • Where needed, small basins to trap sediment runoff and to detain it during the construction period will be installed.
C-22	WUS, p. 4-51	Impacts will be minimized by designating construction access, material stockpiling, and construction staging areas outside of the limits of jurisdictional waters of the U.S. (WUS).
C-23	WUS, p. 4-51	Temporary barriers such as silt screen fences and sediment traps will be utilized to limit debris entering adjacent desert washes and WUS.
C-24	WUS, p. 4-51	Construction activity within the washes will be restricted during rainfall events to minimize adverse impacts from construction-related erosion and sediment runoff.

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	**FEIS**	
C-25	FP, p. 4-59	Impacts to floodplains will be mitigated by the adoption of BMPs to maintain their integrity in the vicinity of the construction site. The State of Nevada's Handbook of BMPs will be utilized as a guidance document for implementing appropriate BMPs. The BMPs to be applied by NDOT and its contractors during construction of the preferred alternative include, but are not limited to, the following: • Construction staging, access points, and material stockpiling will be kept away from regulatory flood zones. • Temporary construction berms, and other means of redirecting storm water, shall be constructed in such a way as to not expand an area with flooding potential. • Locations for servicing, washing, and refueling of equipment will be designated away from channels or swales that would convey runoff to regulatory flood zones. • Contaminated material shall be kept at a safe distance from entry into the flood zones. Temporary barriers and containers will be used to confine the materials.
C-26	CR, p. 4-62	A PA providing for mitigation measures prior to and during implementation of Alternative D has been signed by NDOT, FHWA, the SHPO, and agencies responsible for cultural resources management along the alignment. Subsequent to the completion of detailed engineering design to adequately assess effects, the PA calls for the following project-specific actions to be taken in consultation with SHPO: • An assessment of effects to historic properties • The development of a Treatment Plan for mitigating those effects • The implementation of mitigation measures called for in the Treatment Plan
C-27	CR, p. 4-62 to 4-63	Consultation with interested Native American groups will be ongoing to identify concerns regarding impacts to cultural resources and Traditional Cultural Properties, if any.
C-28	CR, p. 4-62	The provisions of a Memorandum of Agreement between SHPO, FHWA, NDOT, BLM, and the Bureau of Reclamation regarding treatment of an historic property on Reclamation and BLM land will be carried out.

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	FEIS	
C-29	CR, p. 4-65	Mitigation measures for impacts to historic structures determined to be subject to adverse effects will include documentation of the structures in accordance with the standards of the Historic American Engineering Record.
C-30	CR, pp. 7-14, 7-22 to 7-23	A grade separation at the crossing of the historic Boulder City Branch Railroad will be constructed to allow for the Nevada State Railroad Museum's planned re-establishment of railroad service.
C-31	LU, p. 4-74	A Traffic Control Plan will be prepared and implemented to mitigate impacts resulting from temporary change or restriction of access to commercial land uses along the existing U.S. 93 corridor. Features of this plan may include, but would not be limited to, a public awareness campaign, the use of flaggers, signage, detour plans, and alternative access points.
C-32	LU, p. 7-21	Certain recreational use areas within the LMNRA will be designated safety zones during construction, and recreational access to those areas will be limited for safety purposes. Scheduling of construction activities within these areas will be closely coordinated with LMNRA, and there will be on-going public information provided.
C-33	VR, p. 4-98; AQ, p. 4-5	Impacts to visual resources from fugitive dust emission during construction will be reduced by the implementation of a dust mitigation plan incorporating DAQEM BMPs. This will include the use of dust suppression techniques, such as watering and applying chemical stabilizers, control of construction traffic, and other measures to minimize dust generation.
C-34	VR, p. 4-98	If nighttime construction is necessary, lighting will be directed away from residences and will be shielded so that emission of light from the construction site is minimized.
C-35	VR, p. 4-146	Vehicles and equipment not in use will be relocated to staging areas that offer the least visual intrusion feasible to visitors to help maintain views of the LMNRA.
C-36	VR, p. 7-21	Care will be taken to remove all construction debris and other trash from the work area as soon as construction is completed.
C-37	B&P, p. 4-123	Provisions for safe pedestrian and bicycle access during construction will be part of a construction management plan for Alternative D construction. The plan will address accommodating pedestrians along existing U.S. 93 during construction, detour plans, and signage.

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	FEIS	
C-38	B&P, p. 4-123	Where new roadways cross existing recreational trails to be maintained in the final configuration, access will be maintained by detouring users around the construction.
C-39	HW, p. 4-137	The generators of hazardous waste (e.g., petroleum byproducts from equipment maintenance) will acquire an Environmental Protection Agency (EPA) generator identification number. Hazardous wastes will be managed according to appropriate procedures and disposed of at EPA-permitted facilities in accordance with applicable laws and regulations.
C-40	HW, p. 4-137	Transporters of hazardous waste and disposal sites will have the required permits in place.
C-41	CI, p. 4-147	The contractor will develop a Traffic Control Plan that will specify the safety devices to be installed and maintained on routes to be utilized for construction access to ensure traffic safety. These may include, but will not be limited to, the installation of warning lights, signs, traffic cones, and signals.
C-42	CI, 4-147	Traffic safety devices will warn oncoming motorists of construction vehicles ahead and will be placed wherever needed, including at: • Construction of the new interchange at the Railroad Pass Hotel and Casino • Construction of the new interchange at U.S. 95 • The approaches to the construction areas in the vicinity of Buchanan Boulevard • Construction in the vicinity of the Nevada interchange near the Hacienda Hotel and Casino
C-43	CI, p. 4-147	Traffic safety devices will be installed prior to use of the pre-existing roads within the project limits for gravel hauling or other heavy truck trips, including the delivery of heavy equipment and construction vehicles.
C-44	CI, p. 4-147	For construction of crossings with existing roads, the contractor will provide for safe vehicle flow around the work zone and assure compliance with all NDOT safety standards, including providing adequate speeds and sight distances for drivers. The plan will also address the routing of bicyclists and pedestrians through the work zone and provide for adequate signage to allow safe passage into residential, commercial, government, and recreational areas.

TABLE 1: BOULDER CITY /U.S. 93 CORRIDOR STUDY CONSTRUCTION MITIGATION MEASURES

Mitigation Measure		Description
ROD	**FEIS**	
C-45	CI, p. 4-147	The contractor will repair any roads damaged by construction activities and return them to preconstruction conditions. All road repairs will be scheduled and conducted to ensure that safe operating conditions are maintained.

TABLE 2: BOULDER CITY /U.S. 93 CORRIDOR STUDY OPERATIONAL MITIGATION MEASURES

Mitigation Measure		Description
ROD	FEIS	
O-1	BIO, p. 4-24	Fencing and other barriers that prevent animals from entering the roadway will be installed and properly maintained.
O-2	BIO, p. 4-24 to 4-27	Wildlife crossings that permit wildlife to safely cross beneath the highway at points other than traffic grade separations will be used to reduce the extent to which wildlife movement is disrupted and to reduce wildlife mortality. These features will include large-dimension culverts constructed below grade to allow their floors to be filled with soil, and bridges north of the crest of Eldorado Ridge.
O-3	BIO, p. 4-24	Prior to final design and placement of any wildlife crossings, consultations with USFWS, NDOW, and NPS will be completed, and agency input will be incorporated into the construction crossing designs.
O-4	BIO, p. 4-27	The installation of artificial lighting along the route will be limited to access locations to perpetuate natural lighting along the highway, and to lessen intrusive, nighttime glare extending into adjacent lands. Reliance on natural lighting will also reduce the attraction of the highway to wildlife, thereby decreasing highway-related wildlife mortalities.
O-5	BIO, pp. 4-27 to 4-28	As a responsible party under the Clark County MSHCP, NDOT will follow through on its conservation measures which include: • Inventory all wildlife crossings and tortoise fencing • Complete land disturbance/take forms and include with regular reports to the USFWS • Design new roadside structures to prevent animal entrapment • Install movement directing devises in conjunction with crossings and protective fencing • Culverts, fencing, and other measures will be designed and constructed to facilitate the passage of terrestrial species.
O-6	BIO, p. 4-28; CuI, p. 6-33	The FHWA and NDOT will involve NPS, NDOW, and other affected agencies and municipalities in reviews of wildlife crossings and other mitigation measures during final design development. If deviations of the agreed-upon measures are necessary, then the affected agencies will be consulted to confirm that the measures remain adequate.
O-7	CuI (BIO), p. 6-33	FHWA and NDOT will confirm the project mitigation measures with the affected agencies prior to the application to the Army Corps of Engineers for a permit pursuant to the Clean Water Act.

TABLE 2: BOULDER CITY /U.S. 93 CORRIDOR STUDY OPERATIONAL MITIGATION MEASURES

Mitigation Measure		Description
ROD	**FEIS**	
O-8	CuI (BIO), p. 6-33	NDOT and FHWA will coordinate with NPS and NDOW in their effort to develop and implement a bighorn sheep management plan for the area. NDOT commits to assisting these agencies, to the extent feasible, should substantive safety concerns along existing U.S. 93 involving bighorn sheep/vehicle collisions be identified.
O-9	CuI (BIO), pp. 6-33 to 6-34.	Bighorn sheep monitoring will continue through the construction phase and one year beyond the opening of Alternative D to public travel to provide agencies with data to assist in their bighorn sheep management efforts.
O-10	CuI (BIO), p. 6-34	A Wildlife Preserve will be established through the City of Boulder City zoning process in the Eldorado Ridge area to help maintain the continuity of bighorn utilization across this area.
O-11	WR, p. 4-37; WUS, p. 4-52	Soils along the banks of drainage channels at roadway crossings will be stabilized to prevent erosion and sediment deposition using measures such as erosion-control blankets, thereby reducing the potential for increased sediment yield into storm water runoff.
O-12	WR, p. 4-37	Cut and fill slopes will be stabilized through replacement of conserved topsoil, boulders, and vegetation previously stripped from cuts.
O-13	WR, p. 4-37, WUS, p. 4-52	Hazardous waste and sediments will be retained by facilities such as sediment basins.
O-14	WR, p. 4-37; WUS, p. 4-52; CuI, p. 6-37	Energy dissipators and channel linings will be used to reduce downstream channel velocities to their existing conditions, and minimize changes in sedimentary regime..
O-15	WUS, p. 4-51; CuI, p. 6-37	Bridges, culverts, and other engineered features will be designed and constructed to avoid waters of the U.S. to the extent described in FEIS Section 4.6.
O-16	WUS, p. 4-52; CuI, p. 6-37	Bridges and culverts will be designed to minimize the effects of these structures on the hydrodynamics of the washes.
O-17	WUS, p. 4-52; CuI, p. 6-37	Roadway channels, structural piers, and retaining walls will be constructed to minimize erosion and sedimentation in the washes.
O-18	CuI (WUS), p. 6-37	NDOT will compensate for unavoidable impacts to waters of the U.S. at a 1:1 ratio.

TABLE 2: BOULDER CITY /U.S. 93 CORRIDOR STUDY OPERATIONAL MITIGATION MEASURES

Mitigation Measure		Description
ROD	**FEIS**	
O-19	FP, p. 4-59	Design measures will be adopted to convey storm water in a safe and effective way, accommodating the capacity for intense storm runoff, such as a 100-year flood.
O-20	FP, p. 4-60	Drainage design will comply with CCRFCD and FEMA requirements. .
O-21	FP, p. 4-60	The drainages within the vicinity of Alternative D will be considered and perpetuated in the final design.
O-22	B&P (LU), p. 4-129	Access will be maintained to areas south and east of the roadway by the construction of crossings east of Mead Substation, and at the Canyon Point and Boy Scout Canyon NPS backcountry roads.
O-23	B&P (LU), p. 4-129	Access to pre-existing power line roads will be maintained.
O-24	VR, p. 4-99	A roadway pullout and vista point lookout will be constructed atop Eldorado Ridge to allow long duration views of the LMNRA and its scenic attributes. The overlook will reduce the potential public safety impact caused by drivers viewing scenery while attempting to maneuver vehicles at a safe speed.
O-25	VR, p. 7-21	Cuts, fills, and other landscape modifications will be designed and constructed to minimize impact to scenic values in undeveloped areas. These will include the use of rough cuts, feathered cut/natural environment interfaces, desert varnish stain to blend with the natural surrounding environment, and colored concrete.
O-26	E&S, p. 4-98, 4-110	Potential impacts to businesses due to loss of drive-by patrons will be mitigated by providing highway signs indicating the availability of food, gas, and lodging services prior to each new interchange.
O-27	B&P, pp. 4-129	Measures to mitigate operational impacts associated with Alternative D include the following: • Provide a local access connector from the Railroad Pass area using existing U.S. 93 and connecting to Foothills Road. • Construct a grade separation for continued access from Boulder City to Mead Substation. • Construct a crossing to the east of Mead Substation to allow for equestrian and four-wheel drive access to recreational areas south of Boulder City. • Construct crossings at the NPS backcountry roads (Canyon Point Road and Boy Scout Canyon Road). • Provide appropriate pedestrian and bicycle route signage.