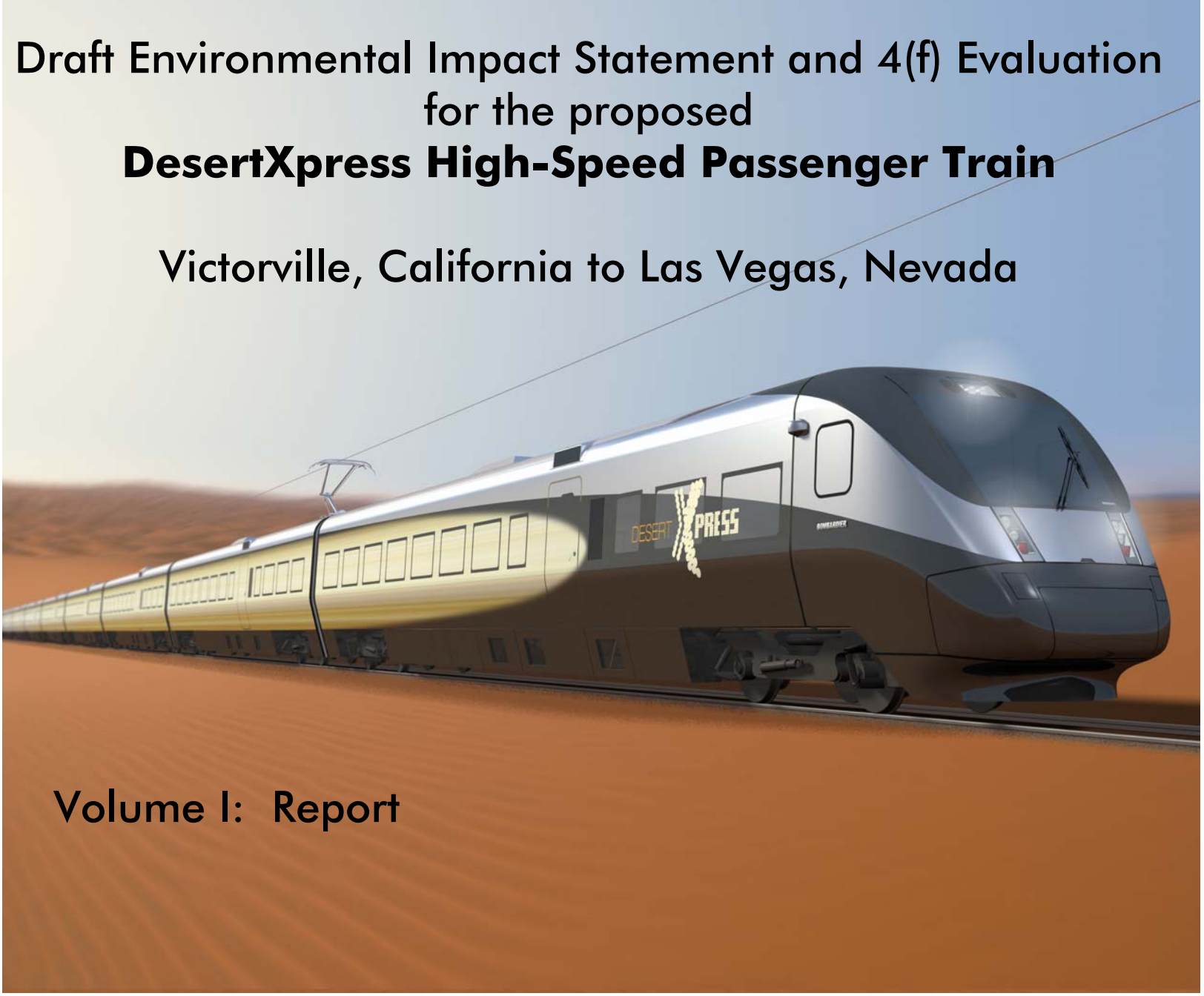
Draft Environmental Impact Statement and 4(f) Evaluation for the proposed **DesertXpress High-Speed Passenger Train**

Victorville, California to Las Vegas, Nevada



Volume I: Report

U.S. Department of Transportation
Federal Railroad Administration

Prepared by:
USDOT Federal Railroad Administration
1200 New Jersey Ave SE
Washington, DC 20590

March 2009

DESERTXPRESS HIGH-SPEED PASSENGER TRAIN
DRAFT ENVIRONMENTAL IMPACT STATEMENT
AND 4(F) EVALUATION

Prepared by
USDOT Federal Railroad Administration

With Cooperating Agencies
Bureau of Land Management
Surface Transportation Board
Federal Highway Administration
National Park Service

Pursuant to:

National Environmental Policy Act (42 U.S.C. § 4332 et seq), and implementing regulations (40 C.F.R. Parts 1500-1508), 64 FR § 28545, 23 CFR §771, 65 FR § 33960, 49 C.F.R. § 1105; 49 U.S.C. § 303 (formerly Department of Transportation Act of 1966, Section 4(f)); National Historic Preservation Act (16 U.S.C. § 470); Clean Air Act as amended (42 USC §§ 7401 et seq. and 40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 USC § 1531-1544); the Clean Water Act (33 USC § 1251-1387); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC § 4601)

Jo Strang
Acting Deputy Administrator
Federal Railroad Administration
U.S. Department of Transportation

Date March 18, 2009

Contact the following individual for additional information concerning this document:

Ms. Wendy Messenger
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Abstract: DesertXpress Enterprises Inc. proposes the construction and operation of privately financed, fully grade-separated, dedicated double track passenger-only railroad along an approximately 200-mile corridor, from Victorville, California to Las Vegas, Nevada. Alternatives evaluated in this Environmental Impact Statement (EIS) include the Proposed Action and alternatives for construction of a privately financed steel-on-wheel rail high-speed train, and a No Action alternative (No-Project or No-Build). Two train technologies are being considered: diesel/electric multiple unit (DEMU) or electric multiple unit (EMU) train sets. The DEMU train set would be able to reach a maximum speed of 125 miles per hour (mph); the EMU would be able to reach a maximum speed of 150 mph.

The need for a high-speed rail service system stems from several factors, including high and increasing travel demand with limited increases in capacity on Interstate-15 (I-15), constraints to the expansion of air travel, and frequent automobile accidents on the I-15 corridor. The DesertXpress high-speed passenger train would provide reliable and safe passenger rail transportation using proven high-speed rail technology that would be a convenient alternative to automobile travel on I-15 or air travel to and from Las Vegas, and that would add transportation capacity in the I-15 corridor. Potential environmental impacts of the alternatives include land use and community effects, conversion of agricultural land, impacts on sensitive biological resources and wetlands, visual impacts in scenic areas of the Mojave Desert, impacts on historic properties and archaeological sites, impacts on parks and recreation resources, impacts to hydrological resources, air quality effects, noise level impacts, energy effects, traffic impacts on I-15 and near station locations, effects on utility and public service providers, impacts to geology and soils, and impacts on hazardous material sites. Mitigation measures and strategies are described to avoid or minimize potential impacts.

The Draft DesertXpress High-Speed Passenger Train Environmental Impact Statement (EIS) is being made available to the public in accordance with the National Environmental Policy Act for a public review and comment period, ending Friday, May 22, 2009. Public hearings will be held as shown below.

Las Vegas Area	**Barstow Area**	**Victorville Area**
April 28, 2009	**April 29, 2009**	**April 30, 2009**
5:30 p.m.-8:00 p.m	**5:30 p.m.-8:00 p.m.**	**5:30 p.m.-8:00 p.m.**
Hampton Inn Tropicana	Ramada Inn	Green Tree Golf Course Club House
4975 Dean Martin Drive	1511 East Main St	14144 Green Tree Boulevard
Las Vegas, NV 89118	Barstow, CA 92311	Victorville, CA 92395

Locations, dates, and times of hearings will also be posted on the Federal Railroad Administration Web Site (www.fra.dot.gov), and notice will be mailed to interested parties and published in newspapers of general circulation.

Comments on this EIS are due by Friday, May 22, 2009, and should be sent to the Federal Railroad Administration by mail addressed to the:

Federal Railroad Administration
1200 New Jersey Avenue S.E. MS-20
Washington, DC 20590
Attn: DesertXpress EIS

Comment on the Draft DesertXpress High-Speed Train EIS must be received by Friday, May 22, 2009.

Visit the Federal Railroad Administration Web Site [www.fra.dot.gov], where you may:

- View and download the Draft EIS
- Request a CD-ROM of the Draft EIS
- Find a location near you to review a copy of the Draft EIS
- Find the dates and information on planned hearings and meetings

Printed copies of the Draft EIS have been placed in the following locations:

Victorville City Library	Barstow Library	Las Vegas Library
15011 Circle Drive	304 East Buena Vista	833 Las Vegas Blvd. North
Victorville, CA 92395	Barstow, CA 92311	Las Vegas, NV 89101

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Refer to Volume II of this Draft Environmental Impact Statement (EIS) for the following appendices.

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ES Executive Summary

ES-1 INTRODUCTION AND BACKGROUND

DesertXpress Enterprises, LLC (Applicant) proposes to construct and operate a privately financed interstate high-speed passenger train between Victorville, California and Las Vegas, Nevada The Applicant proposes to construct a fully grade-separated, dedicated double track passenger-only railroad along an approximately 200-mile corridor that would generally follow the I-15 freeway and existing railroad corridors/rights-of-way[1] The project would also include construction of a passenger station in Victorville, California, a passenger station in Las Vegas, Nevada, a maintenance and operation facility in Victorville, an overnight maintenance and storage facility in the Las Vegas area and associated ancillary facilities needed to maintain and operate the proposed rail line.

ES-2 PURPOSE AND NEED

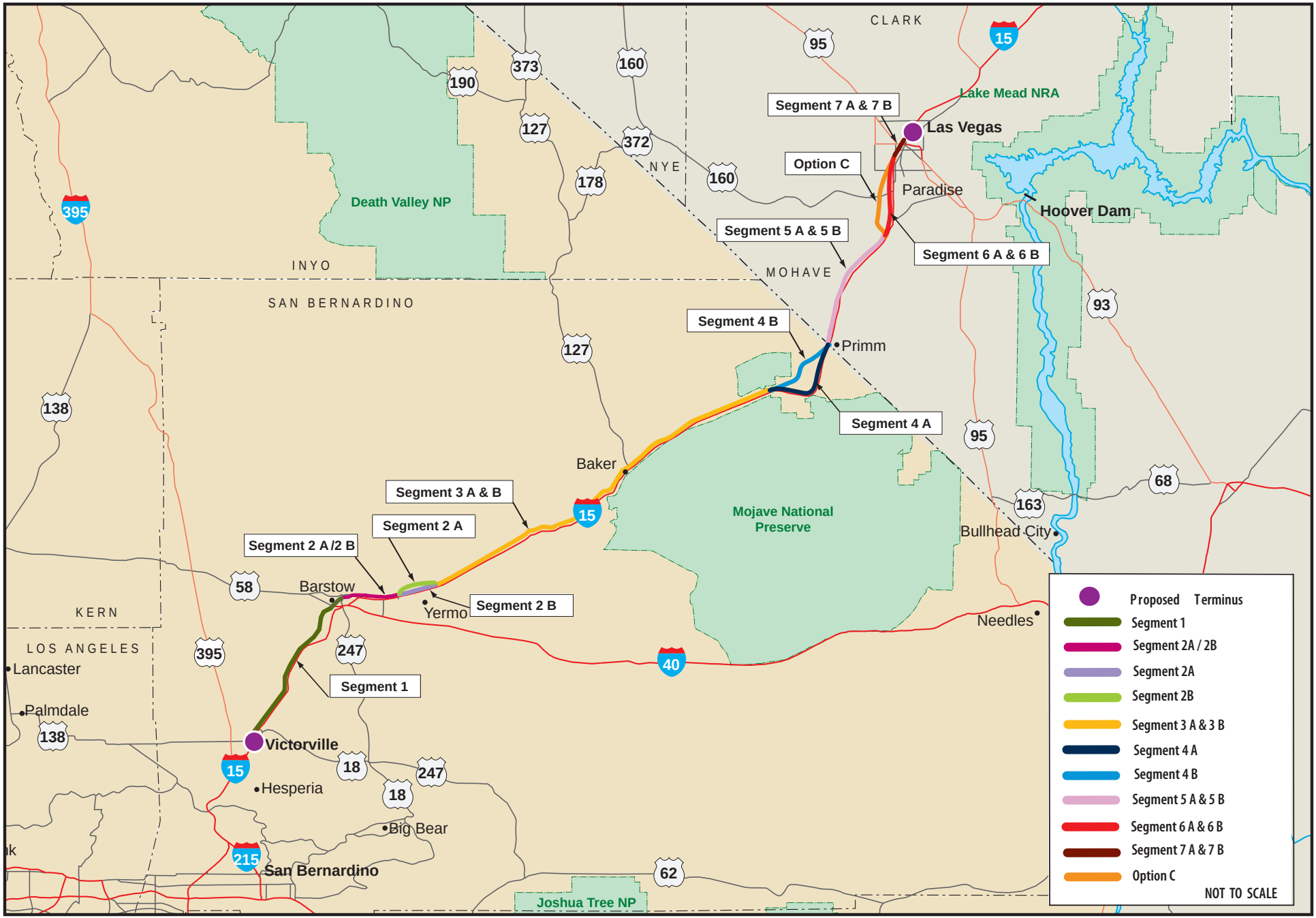
The purpose of the privately financed project is to provide reliable and safe passenger rail transportation using proven high-speed rail technology between Southern California (Victorville) to Las Vegas that is a convenient alternative to automobile travel on the Interstate-15 freeway (I-15), or air travel to and from Las Vegas, and that adds transportation capacity in the I-15 corridor.

The need for a high-speed rail service stems from several factors: high and increasing travel demand amidst lagging capacity on the I-15 corridor, frequent accidents in the I-15 corridor, and constraints to expansion of air travel. A more extensive discussion of the proposed action's purpose and need is provided in Chapter 1, Purpose and Need.

ES-3 ALTERNATIVES

The action alternatives considered in this EIS have been categorized into two primary sets: Alternative A and Alternative B. These are based on potential alignment routings for the 200 mile corridor. For analytical purposes in this EIS, each of the alignments is divided into segments. Figure ES-1 shows the location of the action alternatives. FRA's intent in organizing the document in this manner is to allow for lead

[1] The use any private railroad rights-of-way would be subject to approval by owner railroads. STB approval of the Project would not convey the authority to force any private railroad to sell, lease, or otherwise allow DesertXpress to use the right-of-way of an existing railroad.



U.S. Department of Transportation
Federal Railroad Administration

Desert Xpress Project EIS

Project Location

FIG ES-1

and cooperating agencies to "mix and match" various segments in composing a preferred alternative.

- **Alternative A** consists primarily of rail alignment segments that would be within the **median** of the I-15 freeway.
- **Alternative B** consists primarily of rail alignment segments that would be within the **fenced area** of the I-15 freeway, adjacent to automobile travel lanes.

The action alternatives would also include one of each of the following permanent physical facilities in addition to the rail alignment. As discussed below, this EIS examines multiple site options for these facilities. Similar to the consideration of rail segments noted above, FRA's intent is to allow for the lead and cooperating agencies to compose their preferred alternative by incorporating one each of the following permanent physical facilities. With very few exceptions (noted in detailed discussions below), these physical facilities can connect to all rail alignment segments.

- **Victorville passenger station**: Two site options (Site 1 and Site 2) immediately west of the I-15 freeway are under consideration.
- **Victorville Operations, Maintenance, and Storage Facility (OMSF):** Two site options (OMSF 1 and OMSF 2) immediately west of the I-15 freeway are under consideration.
- **Maintenance of Way (MOW) facility:** One site option is under consideration adjacent to the I-15 freeway near the community of Baker.
- **Las Vegas area Maintenance and Storage Facility (MSF):** Three site options (Sloan Road MSF, Wigwam Avenue MSF, and Robindale Avenue MSF) are under consideration.
- **Las Vegas area passenger station**: Four site options are under consideration in Clark County/City of Las Vegas: Southern Station, Central Station A, Central Station B, and Downtown Station.

The Applicant has proposed two possible train technologies (referred to as "technology options"), each fully applicable to any set of the action alternatives: a diesel-electric multiple unit train (DEMU) or an electric multiple unit train (EMU). The two technology options would have similar right-of-way width requirements and largely the same construction footprint. However, the EMU option would also include overhead catenary wires and supports (located along the length of the rail alignment) three electrical substations (one at an OMSF, one at the MOW, and one at an MSF), and approximately seventeen transformers (each located on 4000 to 5000 square foot parcels at 10 mile intervals along the rail corridor). The EMU option would also require three electrical utility connections from the existing electrical grid, one in Victorville, one in Baker, and one near Sloan.

See Chapter 2, Alternatives, for a more complete discussion of project features.

No Action Alternative

The No Action Alternative would not involve the construction and operation of the high-speed train and associated facilities described above under the proposed Action Alternatives. The No Action Alternative is being studied as the baseline for comparison with the proposed action alternatives. The No Action Alternative would include existing access to Las Vegas via highway (I-15) and airport (McCarran International [LAS]) access. The No Action Alternative analyzes the system physical characteristics and capacity as they exist at the time of the EIS (2006-2009) and where possible to anticipate at the planning horizon year 2030, including planned and funded improvements that would be in place by 2030.

Applicant's Proposed Alternative

The Applicant's proposed alternative, pending the results of the environmental analysis, is comprised of a mix of segments from Alternative A and B alignments. The proposed action includes the following segments:

1: Victorville to Lenwood

2A/B, 2A: Lenwood to Yermo

3B: Yermo to Mountain Pass

4A: Mountain Pass to Primm via southerly alignment across Nipton Road

5B: Primm to Sloan

6B: Sloan to Southern, Central A, Central B Stations

7B: (Only if Downtown Station is selected) Twain Avenue to Downtown Station via I-15 corridor.

Similar to the other action alternatives noted above, the applicant's alternative would originate at one of the two Victorville station alternatives and terminate at one of the four Las Vegas station alternatives and would also include maintenance facilities in Victorville, Baker, and Clark County. All of these components are analyzed in detail within Chapter 3 of this EIS.

ES-4 SUMMARY OF ENVIRONMENTAL EFFECTS

Tables ES -1 through ES 7 summarize by project segment the impacts of the action alternatives, including all permanent facilities, and the No Action Alternative.

Table ES-8 summarizes and compares the environmental effects unique to the two technology options (DEMU and EMU).

The information contained in the following tables is derived from the information, analysis and conclusions contained in this EIS and supporting appendices.

Table ES-1: Comparison of Segment 1 Alternatives	Segment 1 Rail Alignment and Associated TCAs	Victorville Station Site 1	Victorville OMSF Site 1	Victorville Station Site 2	Victorville OMSF Site 2	No Action Alternative
Land Use & Community Impacts						
Compatibility with Adjacent Land Uses	High within I-15 corridor, Low outside	Medium	Medium	High	High	High
Compatibility with Land Use Plans	High within I-15 corridor, Low outside	Medium-High	Medium-High	High, except for Low (residential)	High, except for Low (residential)	High
Number of housing units displaced	0	0	0	0	0	Unknown
Extent of community disruption/severance	None expected	None expected	None expected	None expected	None expected	None expected
Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities	Would cross 2 EJ census blocks (minority and poverty)	Within EJ census block (minority)	Within EJ census block (minority)	Within 1 mile of 2	Within 1 mile of 1	Expected to be similar to Segment 1 rail alignment
Growth						
Estimated permanent employment	NA	361 to 463 permanent jobs in the Victorville Station and OMSF regardless of location				None expected
Removal of obstacles to growth	None expected	None expected	None expected	None expected	None expected	None expected
Extent of effects to TOD potential	Beneficial effect	Beneficial effect	Beneficial effect	Beneficial effect	Beneficial effect	None expected
Extent of effects to economic vitality	Construction period employment	Beneficial construction and operational employment effects similar for all station/OMSF sites				None expected
Farmlands & Agriculture						
Acres of Directly Impacted Farmland	0	0	0	0	0	0 expected
Acres of Indirectly Impacted Farmland	0	0	0	0	0	0 expected
Potential Severance of Grazing Allotment	Yes; would traverse a BLM grazing allotment	All Victorville station/OMSF site options are on land identified as a grazing allotment but are immediately adjacent to I-15 freeway, minimizing severance potential				None expected
Utilities & Emergency Services						
Exceed capacity of utility or service systems:						
Electricity and Gas	No demand associated, unless EMU selected	No	No	No	No	Not expected

Table ES-1: Comparison of Segment 1 Alternatives	Segment 1 Rail Alignment and Associated TCAs	Victorville Station Site 1	Victorville OMSF Site 1	Victorville Station Site 2	Victorville OMSF Site 2	No Action Alternative
Water Supply	No demand associated	No	No	No	No	Not expected
Sewage/Wastewater	No demand associated	No	No	No	No	Not expected
Stormwater	Would require connections to existing and/or new facilities	New conveyances would be required at all station/maintenance sites in Victorville				Not expected
Solid Waste	No generation	No	No	No	No	Not expected
Police Services	No	No	No	No	No	Not expected
Fire/Emergency Services	(Assumed No)	(Assumed No)	(Assumed No)	(Assumed No)	(Assumed No)	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation						
Result in substantial traffic increases:						
Freeway Mainlines	Between Victorville and I-40, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS					LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	NA	Delays would worsen at 4 intersections	Same as Station Site 1	Delays would worsen at 2 intersections	Same as Station Site 2	None expected

Table ES-1: Comparison of Segment 1 Alternatives	Segment 1 Rail Alignment and Associated TCAs	Victorville Station Site 1	Victorville OMSF Site 1	Victorville Station Site 2	Victorville OMSF Site 2	No Action Alternative
Visual Resources						
Extent of consistency with BLM VRM Objectives	Somewhat consistent within I-15 corridor; not consistent outside I-15 corridor	All station and OMSF site options would be somewhat consistent				Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	In I-15 corridor, quality would be reduced from moderate to low. Outside corridor, quality would be reduced from mod/high to mod/low	All station and OMSF site options would be somewhat consistent				Consistent if impacts remain in existing corridor
Cultural & Paleontological						
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	16	2	5	1	6	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	0	0	0	0	0	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	0	0	0	Assumed 0
Hydrology & Water Quality						
Linear feet of impact to water resources	2491	0	12	0	2581	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	2.8	13.5	1.9	0	0	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	No	No	Yes but can be mitigated	Not expected

Table ES-1: Comparison of Segment 1 Alternatives	Segment 1 Rail Alignment and Associated TCAs	Victorville Station Site 1	Victorville OMSF Site 1	Victorville Station Site 2	Victorville OMSF Site 2	No Action Alternative
Estimated peak stormwater discharge (cubic feet/second)	NA	227	Mostly unpaved; not quantified	243	Mostly unpaved; not quantified	NA
Geology & Soils						
Expected likelihood of Surface Fault Rupture	High	High	High	High	High	High
Expected likelihood of ground shaking	High	High	High	High	High	High
Expected difficulty of excavation	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Expected likelihood of landslides	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Hazardous Materials						
Number of properties of environmental concern	0	0	0	0	0	0
Air Quality & Global Climate Change						
Exceed a state or federal standard?	No	No	No	No	No	Not expected
Result in CO Hotspot?	No	No	No	No	No	No
Expected adverse construction period impact?	No	No	No	No	No	No
Noise & Vibration						
Expected number of impacts under FRA criteria	3 for EMU, 4 DEMU	NA	NA	NA	NA	None expected
Expected number of severe impacts under FRA criteria	0 for EMU, 1 for DEMU	NA	NA	NA	NA	None expected
Expected number of vibration impacts	0	0	0	0	0	None expected
Energy						
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.					
Biological Resources						
Impose Barrier to wildlife movement	Yes, outside I-15 corridor	No	No	No	No	No new barriers
Number of stream crossings	24	0	0	2	2	No new crossings
Sensitive plant community acreage affected						
Permanent	0	0	0	0	0	Assumed 0
Temporary	0	0	0	0	0	Assumed 0

Table ES-1: Comparison of Segment 1 Alternatives	Segment 1 Rail Alignment and Associated TCAs	Victorville Station Site 1	Victorville OMSF Site 1	Victorville Station Site 2	Victorville OMSF Site 2	No Action Alternative
Desert Tortoise habitat acreage affected						
Permanent	159	93	92.4	114.5	195.2	0
Temporary	832.1	0	0	0	0	0
Mohave Ground Squirrel habitat acreage affected						
Permanent	198.5	85.1	22.6	105.2	339.7	0
Temporary	803.3	0	0	0	0	0
Potential to result in direct mortality/loss/disturbance to:						
Mojave Fringe-toed Lizard	Yes	No	No	No	No	No
Nesting raptors/migratory birds	Yes	No	No	No	No	No
Banded Gila Monster	No	No	No	No	No	No
Burrowing Owls	Yes	Yes	Yes	Yes	Yes	No
Roosting Bats	Yes, at bridge crossings	Yes, rock outcrop	No	No	No	No
American Badger	Yes	Yes	Yes	Yes	Yes	Yes
Desert Bighorn Sheep	No	No	No	No	No	No
Clark County MSHCP Covered Reptiles	No	No	No	No	No	No
Acres of Special Management Lands Lost	0	0	0	0	0	0
Section 4(f)						
Number of Section 4(f) properties used						
Park and Recreation	0	0	0	0	0	0
Cultural Resources	2	0	0	0	0	0

Table ES-2: Comparison of Segment 2 Alternatives	Segment 2A/2B, 2A Rail Alignment and Associated TCAs	Segment 2A/2B, 2B Rail Alignment and Associated TCAs	No Action Alternative
Land Use & Community Impacts			
Compatibility with Adjacent Land Uses	High within I-15 corridor, Low near Barstow, Low to medium near Yermo	High within I-15 corridor, High near commercial uses, Low near Barstow, Low near residential uses	High
Compatibility with Land Use Plans	High within I-15 corridor, Low outside	Medium-High	High
Number of housing units displaced	0	0	Unknown
Extent of community disruption/severance	Linear division through Lenwood and Yermo	Linear division through Lenwood	None expected
Number of environmental justice(EJ) communities crossed by or within 1 mile of facilities	Within 1 mile of 4 EJ census blocks (minority/poverty)	Within 1 mile of 4 EJ census blocks (minority/poverty)	Expected to be similar to Segment 1 rail alignment
Growth			
Estimated permanent employment	NA	NA	None expected
Removal of obstacles to growth	None expected	None expected	None expected
Extent of effects to TOD potential	None	None	None expected
Extent of effects to economic vitality	Construction period employment	Beneficial construction and operational employment effects similar for all station/OMSF sites	None expected
Farmlands & Agriculture			
Acres of Directly Impacted Farmland	3.37 acres	3.37 acres	0 expected
Acres of Indirectly Impacted Farmland	6.75 acres	6.75 acres	0 expected
Potential Severance of Grazing Allotment	No	No	None expected
Utilities & Emergency Services			
Exceed capacity of utility or service systems:			

Table ES-2: Comparison of Segment 2 Alternatives	Segment 2A/2B, 2A Rail Alignment and Associated TCAs	Segment 2A/2B, 2B Rail Alignment and Associated TCAs	No Action Alternative
Electricity and Gas	No demand associated, unless EMU selected	No demand associated, unless EMU selected	Not expected
Water Supply	No demand associated	No demand associated	Not expected
Sewage/Wastewater	No demand associated	No demand associated	Not expected
Stormwater	Would require connections to new conveyance facilities	Would require connections to existing and/or new conveyance facilities	Not expected
Solid Waste	No generation	No generation	Not expected
Police Services	Barstow Police Department concern of train derailment emergency	Barstow Police Department concern of train derailment emergency	Not expected
Fire/Emergency Services	(Assumed No)	(Assumed No)	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation			
Result in substantial traffic increases:			
Freeway Mainlines	Between I-40 and the California-Nevada state line, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS		LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	NA	NA	None expected
Visual Resources			
Extent of consistency with BLM VRM Objectives	Somewhat consistent in undeveloped and developed areas.	Somewhat consistent in undeveloped and developed areas.	Consistent if impacts remain in existing corridor

Table ES-2: Comparison of Segment 2 Alternatives	Segment 2A/2B, 2A Rail Alignment and Associated TCAs	Segment 2A/2B, 2B Rail Alignment and Associated TCAs	No Action Alternative
Effect to FHWA Visual Quality/Sensitivity With Project	In undeveloped areas, quality decreased from moderate/high to moderate. Low/moderate quality in developed areas.	In undeveloped areas, quality decreased from moderate/high to moderate. Near I-15, quality decreased from moderate to low.	Consistent if impacts remain in existing corridor
Cultural & Paleontological			
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	20	24	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	3	7	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	Assumed 0
Hydrology & Water Quality			
Linear feet of impact to water resources	1128	11035	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	9.2	19.5	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	Not expected
Estimated peak stormwater discharge (cubic feet/second)	NA	NA	NA
Geology & Soils			
Expected likelihood of Surface Fault Rupture	High near Barstow, Low near Yermo.	High near Barstow, Low near Yermo.	High
Expected likelihood of ground shaking	High	High	High
Expected difficulty of excavation	Moderate	Moderate	Moderate
Expected likelihood of landslides	Moderate near Barstow, Low near Yermo.	Moderate near Barstow, Low near Yermo.	Moderate
Hazardous Materials			
Number of properties of environmental concern	4	6	0
Air Quality & Global Climate Change			

Table ES-2: Comparison of Segment 2 Alternatives	Segment 2A/2B, 2A Rail Alignment and Associated TCAs	Segment 2A/2B, 2B Rail Alignment and Associated TCAs	No Action Alternative
Exceed a state or federal standard?	No	No	Not expected
Result in CO Hotspot?	No	No	No
Expected adverse construction period impact?	No	No	No
Noise & Vibration			
Expected number of impacts under FRA criteria	57 for EMU, 77 for DEMU	60 for EMU, 83 for DEMU	None expected
Expected number of severe impacts under FRA criteria	31 for EMU, 41 for DEMU	35 for EMU, 46 for DEMU	None expected
Expected number of vibration impacts	19	23	None expected
Energy			
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.		
Biological Resources			
Impose Barrier to wildlife movement	No	No	No new barriers
Number of stream crossings	16	12	No new crossings
Sensitive plant community acreage affected			
Permanent	0	0	Assumed 0
Temporary	4.6 acres of Mesquite Shrubland	0	Assumed 0
Desert Tortoise habitat acreage affected			
Permanent	174.1	152.5	0
Temporary	740.2	585.2	0
Mohave Ground Squirrel habitat acreage affected			
Permanent	23.2	40.3	0
Temporary	872	319.4	0
Potential to result in direct mortality/loss/disturbance to:			
Mojave Fringe-toed Lizard	Yes, near Mojave River	No	No
Nesting raptors/migratory birds	Yes	Yes	No
Banded Gila Monster	No	No	No
Burrowing Owls	Yes	Yes	No

Table ES-2: Comparison of Segment 2 Alternatives	Segment 2A/2B, 2A Rail Alignment and Associated TCAs	Segment 2A/2B, 2B Rail Alignment and Associated TCAs	No Action Alternative
Roosting Bats	Yes, in caves and mines	Yes, in caves and mines	No
American Badger	Yes	Yes	Yes
Desert Bighorn Sheep	No	No	No
Clark County MSHCP Covered Reptiles	No	No	No
Acres of Special Management Lands Lost	60.9 acres of Superior-Cronese Desert Tortoise Critical Habitat	60.7 acres of Superior-Cronese Desert Tortoise Critical Habitat	0
Section 4(f)			
Number of Section 4(f) properties used			
Park and Recreation	0	0	0
Cultural Resources	6	7	0

Table ES-3 Comparison of Segment 3 Alternatives	Segment 3A Rail Alignment and Associated TCAs	Segment 3B Rail Alignment and Associated TCAs	Baker Maintenance of Way Facility	No Action Alternative
Land Use & Community Impacts				
Compatibility with Adjacent Land Uses	High within I-15 corridor, Low outside	High within I-15 corridor, Low outside	High	High
Compatibility with Land Use Plans	High within I-15 corridor, Low outside	Medium-High	Medium-High	High
Number of housing units displaced	0	0	0	Unknown
Extent of community disruption/severance	None expected	None expected	None expected	None expected
Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities	Would cross 3 EJ census blocks (minority and poverty)	Would cross 3 EJ census blocks (minority and poverty)	Outside any EJ census block	Expected to be similar to Segment 1 rail alignment
Growth				
Estimated permanent employment	NA	NA	8 employees	None expected
Removal of obstacles to growth	None expected	None expected	None expected	None expected
Extent of effects to TOD potential	None	None	None	None expected
Extent of effects to economic vitality	Construction period employment	Construction period employment	Beneficial construction and operational employment effects	None expected
Farmlands & Agriculture				
Acres of Directly Impacted Farmland	0	0	0	0 expected
Acres of Indirectly Impacted Farmland	0.31 acres	0	0	0 expected
Potential Severance of Grazing Allotment	No, Adjacent to grazing lands	No, Adjacent to grazing lands	No, Adjacent to grazing lands	None expected
Utilities & Emergency Services				
Exceed capacity of utility or service systems:				
Electricity and Gas	No demand associated, unless EMU selected	No demand associated, unless EMU selected	No	Not expected
Water Supply	No demand associated	No demand associated	No	Not expected
Sewage/Wastewater	No demand associated	No demand associated	No	Not expected

Table ES-3 Comparison of Segment 3 Alternatives	Segment 3A Rail Alignment and Associated TCAs	Segment 3B Rail Alignment and Associated TCAs	Baker Maintenance of Way Facility	No Action Alternative
Stormwater	Would require connections to existing and/or new conveyance facilities	Would require connections to existing and/or new conveyance facilities	New conveyances would be required	Not expected
Solid Waste	No generation	No generation	No	Not expected
Police Services	No	No	No	Not expected
Fire/Emergency Services	(Assumed No)	(Assumed No)	(Assumed No)	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation				
Result in substantial traffic increases:				
Freeway Mainlines	Between I-40 and the California-Nevada state line, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS		NA	LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	NA	NA	NA	None expected
Visual Resources				
Extent of consistency with BLM VRM Objectives	Somewhat consistent in I-15 corridor. Not consistent near wilderness areas in Preserve.	Somewhat consistent in I-15 corridor. Not consistent near wilderness areas in the Mojave National Preserve.	High level of contrast with views from Preserve.	Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	In Preserve, quality reduced from high to moderate. Outside Preserve, quality reduced from moderate/high to moderate.	In Preserve, quality reduced from high to moderate. Outside Preserve, quality reduced from moderate/high to moderate.	Consistent, as constructed near I-15 corridor.	Consistent if impacts remain in existing corridor
Cultural & Paleontological				
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	19	40	0	Assumed to be same as Segment 1 - about 16

Table ES-3 Comparison of Segment 3 Alternatives	Segment 3A Rail Alignment and Associated TCAs	Segment 3B Rail Alignment and Associated TCAs	Baker Maintenance of Way Facility	No Action Alternative
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	6	9	0	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	0	Assumed 0
Hydrology & Water Quality				
Linear feet of impact to water resources	4059	8192	0	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	0	2.7	0	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	No	Not expected
Estimated peak stormwater discharge (cubic feet/second)	NA	NA	NA	NA
Geology & Soils				
Expected likelihood of Surface Fault Rupture	High from Yermo to Baker, low from the east of Baker.	High from Yermo to Baker, low from the east of Baker.	High	High
Expected likelihood of ground shaking	Low/moderate from Yermo to Baker, moderate from the east of Baker.	Low/moderate from Yermo to Baker, moderate from the east of Baker.	Low/Moderate	High
Expected difficulty of excavation	Moderate	Moderate	Moderate	Moderate
Expected likelihood of landslides	Moderate	Moderate	Moderate	Moderate
Hazardous Materials				
Number of properties of environmental concern	2	2	0	0
Air Quality & Global Climate Change				
Exceed a state or federal standard?	No	No	No	Not expected
Result in CO Hotspot?	No	No	No	No
Expected adverse construction period impact?	No	No	No	No
Noise & Vibration				
Expected number of impacts under FRA criteria	0	0	0	None expected

Table ES-3 Comparison of Segment 3 Alternatives	Segment 3A Rail Alignment and Associated TCAs	Segment 3B Rail Alignment and Associated TCAs	Baker Maintenance of Way Facility	No Action Alternative
Expected number of severe impacts under FRA criteria	0	0	0	None expected
Expected number of vibration impacts	0	0	0	None expected
Energy				
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.			
Biological Resources				
Impose Barrier to wildlife movement	No	No	No	No new barriers
Number of stream crossings	105	117	1	No new crossings
Sensitive plant community acreage affected				
Permanent	0	57.2 acres of Joshua Tree Woodland; 1.2 acres of Mesquite Shrubland	0	Assumed 0
Temporary	0	0	0	Assumed 0
Desert Tortoise habitat acreage affected				
Permanent	7.6	620.5	0	0
Temporary	40.9	1852	0	0
Mohave Ground Squirrel habitat acreage affected				
Permanent	0	0	0	0
Temporary	70.1	61.5	0	0
Potential to result in direct mortality/loss/disturbance to:				
Mojave Fringe-toed Lizard	No	No	No	No
Nesting raptors/migratory birds	No	Yes	Yes	No
Banded Gila Monster	No	Yes	No	No
Burrowing Owls	No	Yes	Yes	No
Roosting Bats	No	Yes, in caves and mines	No	No
American Badger	Yes	Yes	Yes	Yes
Desert Bighorn Sheep	No	Yes	No	No
Clark County MSHCP Covered Reptiles	No	No	No	No

Table ES-3 Comparison of Segment 3 Alternatives	Segment 3A Rail Alignment and Associated TCAs	Segment 3B Rail Alignment and Associated TCAs	Baker Maintenance of Way Facility	No Action Alternative
Acres of Special Management Lands Lost	0	268.5 acres of Superior-Cronese Desert Tortoise Critical Habitat, 225.7 acres of Ivanpah Desert Tortoise Critical Habitat, 3.6 acres of Cronese ACEC.	0	0
Section 4(f)				
Number of Section 4(f) properties used				
Park and Recreation	0	0	0	0
Cultural Resources	7	8	0	0

Table ES-4: Comparison of Segment 4 Alternatives	Segment 4A Rail Alignment and Associated TCAs	Segment 4B Rail Alignment and Associated TCAs	No Action Alternative
Land Use & Community Impacts			
Compatibility with Adjacent Land Uses	Low within the Preserve	Low	High
Compatibility with Land Use Plans	High-Low	Medium-High	High
Number of housing units displaced	0	0	Unknown
Extent of community disruption/severance	None expected	None expected	None expected
Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities	2	1	2
Growth			
Estimated permanent employment	NA	NA	None expected
Removal of obstacles to growth	None expected	None expected	None expected
Extent of effects to TOD potential	None	None	None expected
Extent of effects to economic vitality	Construction period employment	Beneficial construction and operational employment effects similar for all station/OMSF sites	None expected
Farmlands & Agriculture			
Acres of Directly Impacted Farmland	0	0	0 expected
Acres of Indirectly Impacted Farmland	0	0	0 expected
Potential Severance of Grazing Allotment	None	Yes; would traverse an allotment	None expected
Utilities & Emergency Services			
Exceed capacity of utility or service systems:			
Electricity and Gas	No demand associated, unless EMU selected	No demand associated, unless EMU selected	Not expected
Water Supply	No demand associated	No demand associated	Not expected
Sewage/Wastewater	No demand associated	No demand associated	Not expected

Table ES-4: Comparison of Segment 4 Alternatives	Segment 4A Rail Alignment and Associated TCAs	Segment 4B Rail Alignment and Associated TCAs	No Action Alternative
Stormwater	Would require connections to existing and/or new facilities	Would require connections to new facilities	Not expected
Solid Waste	No generation	No generation	Not expected
Police Services	No	No	Not expected
Fire/Emergency Services	(Assumed No)	(Assumed No)	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation			
Result in substantial traffic increases:			
Freeway Mainlines	Between I-40 and the California-Nevada state line, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS		LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	NA	NA	None expected
Visual Resources			
Extent of consistency with BLM VRM Objectives	Not consistent within and outside Clark Mountains.	Somewhat within and outside Clark Mountains.	Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	Within Preserve, quality reduced from high to moderate. Moderate quality outside the Preserve.	Moderate quality in Clark Mountains. High quality outside Clark Mountains.	Consistent if impacts remain in existing corridor
Cultural & Paleontological			
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	7	8	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	1	1	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	Assumed 0

Table ES-4: Comparison of Segment 4 Alternatives	Segment 4A Rail Alignment and Associated TCAs	Segment 4B Rail Alignment and Associated TCAs	No Action Alternative
Hydrology & Water Quality			
Linear feet of impact to water resources	734	319	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	0	0	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	Not expected
Estimated peak stormwater discharge (cubic feet/second)	NA	NA	NA
Geology & Soils			
Expected likelihood of Surface Fault Rupture	High	High	High
Expected likelihood of ground shaking	Low/Moderate	Low/Moderate	High
Expected difficulty of excavation	Moderate	High	Moderate
Expected likelihood of landslides	Moderate	High	Moderate
Hazardous Materials			
Number of properties of environmental concern	1	0	0
Air Quality & Global Climate Change			
Exceed a state or federal standard?	No	No	Not expected
Result in CO Hotspot?	No	No	No
Expected adverse construction period impact?	No	No	No
Noise & Vibration			
Expected number of impacts under FRA criteria	0	0	None expected
Expected number of severe impacts under FRA criteria	0	0	None expected
Expected number of vibration impacts	0	0	None expected
Energy			
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.		
Biological Resources			
Impose Barrier to wildlife movement	Yes, outside I-15	Yes, outside I-15	No new barriers
Number of stream crossings	29	42	No new crossings

Table ES-4: Comparison of Segment 4 Alternatives	Segment 4A Rail Alignment and Associated TCAs	Segment 4B Rail Alignment and Associated TCAs	No Action Alternative
Sensitive plant community acreage affected			
Permanent	0.5 acres of Mesquite Shrubland	0	Assumed 0
Temporary	0	0	Assumed 0
Desert Tortoise habitat acreage affected			
Permanent	42.2	111.8	0
Temporary	371.7	500.3	0
Mohave Ground Squirrel habitat acreage affected			
Permanent	0	0	0
Temporary	0	0	0
Potential to result in direct mortality/loss/disturbance to:			
Mojave Fringe-toed Lizard	No	No	No
Nesting raptors/migratory birds	Yes	Yes	No
Banded Gila Monster	Yes	Yes	No
Burrowing Owls	Yes	Yes	No
Roosting Bats	Yes, in caves and mines	Yes, in caves and mines	No
American Badger	Yes	Yes	Yes
Desert Bighorn Sheep	Yes	Yes	No
Clark County MSHCP Covered Reptiles	No	No	No
Acres of Special Management Lands Lost	20.4 acres of Ivanpah Desert Tortoise Critical Habitat, 13.8 acres of the Mojave National Preserve	0	0
Section 4(f)			
Number of Section 4(f) properties used			
Park and Recreation	1 (Mojave National Preserve)	0	0
Cultural Resources	0	0	0

Table ES-5 Segment 5 Alternatives Comparison	Segment 5A Rail Alignment and Associated TCAs	Segment 5B Rail Alignment and Associated TCAs	Las Vegas MSF Site 1 (Sloan Road)	No Action Alternative
Land Use & Community Impacts				
Compatibility with Adjacent Land Uses	High	High	High	High
Compatibility with Land Use Plans	Low near limited residential areas, Medium to high elsewhere*	Low near limited residential areas, Medium to high elsewhere*	Low	High
Number of housing units displaced	0	0	0	Unknown
Extent of community disruption/severance	None	None	None	None expected
Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities	0	0	0	Expected to be similar to Segment 1 rail alignment
Growth				
Estimated permanent employment	None	None	154 to 251 jobs from the station/maintenance facility regardless of location	None expected
Removal of obstacles to growth	None expected	None expected	None expected	None expected
Extent of effects to TOD potential	None	None	None	None expected
Extent of effects to economic vitality	Slight adverse effects to Primm and Jean	Slight adverse effects to Primm and Jean	None	None expected
Farmlands & Agriculture				
Acres of Directly Impacted Farmland	None	None	None	0 expected
Acres of Indirectly Impacted Farmland	None	None	None	0 expected
Potential Severance of Grazing Allotment	None	None	None	None expected
Utilities & Emergency Services				
Exceed capacity of utility or service systems:				
Electricity and Gas	No demand associated, unless EMU selected	No demand associated, unless EMU selected	No	Not expected
Water Supply	No	No	No	Not expected
Sewage/Wastewater	No	No	No	Not expected

Table ES-5 Segment 5 Alternatives Comparison	Segment 5A Rail Alignment and Associated TCAs	Segment 5B Rail Alignment and Associated TCAs	Las Vegas MSF Site 1 (Sloan Road)	No Action Alternative
Stormwater	No	No	No	Not expected
Solid Waste	No	No	No	Not expected
Police Services	No	No	No	Not expected
Fire/Emergency Services	New staff, equipment and a new station	New staff, equipment and a new station	No	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation				
Result in substantial traffic increases:				
Freeway Mainlines	DEMU or EMU options would reduce freeway volumes and positively affect LOS			LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	NA	NA	NA	None expected
Visual Resources				
Extent of consistency with BLM VRM Objectives	Consistent in Primm and Jean. Somewhat consistent elsewhere.	Consistent	Not consistent	Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	No change within Primm and Jean. Slight decrease in visual quality elsewhere.	No change within Primm and Jean. Slight decrease in visual quality elsewhere.	Adverse change in visual quality	Consistent if impacts remain in existing corridor
Cultural & Paleontological				
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	4	16	0	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	2	10	0	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	0	Assumed 0
Hydrology & Water Quality				

Table ES-5 Segment 5 Alternatives Comparison	Segment 5A Rail Alignment and Associated TCAs	Segment 5B Rail Alignment and Associated TCAs	Las Vegas MSF Site 1 (Sloan Road)	No Action Alternative
Linear feet of impact to water resources	0	0	0	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	0	0.9		Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	No	Not expected
Estimated peak stormwater discharge (cubic feet/second)	NA	NA	Unknown	NA
Geology & Soils				
Expected likelihood of Surface Fault Rupture	None	None	None	High
Expected likelihood of ground shaking	Low to High	Low to High	Low to High	High
Expected difficulty of excavation	Moderate	Moderate	Moderate	Moderate
Expected likelihood of landslides	Moderate	Moderate	Moderate	Moderate
Hazardous Materials				
Number of properties of environmental concern	0	0	0	0
Air Quality & Global Climate Change				
Exceed a state or federal standard?	No	No	No	Not expected
Result in CO Hotspot?	No	No	No	No
Expected adverse construction period impact?	No	No	No	No
Noise & Vibration				
Expected number of impacts under FRA criteria	0	0	0	None expected
Expected number of severe impacts under FRA criteria	0	0	0	None expected
Expected number of vibration impacts	0	0	0	None expected
Energy				
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.			
Biological Resources				
Impose Barrier to wildlife movement	No	No	No	No new barriers
Number of stream crossings	49	49	1	No new crossings
Sensitive plant community acreage affected				

Table ES-5 Segment 5 Alternatives Comparison	Segment 5A Rail Alignment and Associated TCAs	Segment 5B Rail Alignment and Associated TCAs	Las Vegas MSF Site 1 (Sloan Road)	No Action Alternative
Permanent	0	0	0	Assumed 0
Temporary	0	0	0	Assumed 0
Desert Tortoise habitat acreage affected				
Permanent	0.2	203.2	9.7 to 13.9	0
Temporary	8.7	685.6	0	0
Mohave Ground Squirrel habitat acreage affected				
Permanent	0	0	0	0
Temporary	0	0	0	0
Potential to result in direct mortality/loss/disturbance to:				
Mojave Fringe-toed Lizard	No	No	No	No
Nesting raptors/migratory birds	Yes	Yes	Yes	No
Banded Gila Monster	No	No	No	No
Burrowing Owls	No	Yes	No	No
Roosting Bats	No	Yes	No	No
American Badger	Yes	Yes	Yes	Yes
Desert Bighorn Sheep	No	No	No	No
Clark County MSHCP Covered Reptiles	Yes	Yes	Yes	No
Acres of Special Management Lands Lost	0	0	0	0
Section 4(f)				
Number of Section 4(f) properties used				
Park and Recreation	0	0	0	0
Cultural Resources	0	4	0	0

* Note: Overall Alternative A would create less of a conflict with existing land use designations than Alternative B since Alternative A is located in the freeway median.

Table ES-6: Segment 6 Alternatives Comparison	Segment 6A Rail Alignment and Associated TCAs	Segment 6B Rail Alignment and Associated TCAs	Segment 6C Rail Alignment and Associated TCAs	Las Vegas MSF Site 2 (Wigwam)	Las Vegas MSF Site 3 (Robindale)	No Action Alternative
Land Use & Community Impacts						
Compatibility with Adjacent Land Uses	High near undeveloped and commercial/industrial uses, Low near residential uses	High near undeveloped and commercial/industrial uses, Low near residential uses	High near undeveloped and commercial/industrial uses, Low near residential uses	Medium to High	Medium	High
Compatibility with Land Use Plans	Low near residential areas, Medium to high elsewhere*	Low near residential areas, Medium to high elsewhere*	Low near residential areas, Medium to high elsewhere	Medium to High	Low	High
Number of housing units displaced	0	0	0	0	1	Unknown
Extent of community disruption/severance	None	None	Division through Sloan	None	None	None expected
Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities	Would cross 4 EJ census blocks (minority and poverty)	Would cross 4 EJ census blocks (minority and poverty)	Would cross 2 EJ census blocks (minority and poverty)	0	0	Expected to be similar to Segment 6A rail alignment
Growth						
Estimated permanent employment	None	None	None	154 to 251 jobs from the station/maintenance facility regardless of location	154 to 251 jobs from the station/maintenance facility regardless of location	None expected
Removal of obstacles to growth	None	None	None	None	None	None expected
Extent of effects to TOD potential	None	None	None	None	None	None expected
Extent of effects to economic vitality	None	None	None	Beneficial construction and operational employment effects similar for	Beneficial construction and operational employment effects similar for all	None expected

Table ES-6: Segment 6 Alternatives Comparison	Segment 6A Rail Alignment and Associated TCAs	Segment 6B Rail Alignment and Associated TCAs	Segment 6C Rail Alignment and Associated TCAs	Las Vegas MSF Site 2 (Wigwam)	Las Vegas MSF Site 3 (Robindale)	No Action Alternative
				all station/OMSF sites	station/OMSF sites	
Farmlands & Agriculture						
Acres of Directly Impacted Farmland	None	None	None	None	None	0 expected
Acres of Indirectly Impacted Farmland	None	None	None	None	None	0 expected
Potential Severance of Grazing Allotment	None	None	None	None	None	None expected
Utilities & Emergency Services						
Exceed capacity of utility or service systems:						
Electricity and Gas	No demand associated, unless EMU selected	No demand associated, unless EMU selected	No demand associated, unless EMU selected	No	No	Not expected
Water Supply	No	No	No	No	No	Not expected
Sewage/Wastewater	No	No	No	No	No	Not expected
Stormwater	No	No	No	No	No	Not expected
Solid Waste	No	No	No	No	No	Not expected
Police Services	No	No	No	No	No	Not expected
Fire/Emergency Services	New staff, equipment and a new station	New staff, equipment and a new station	New staff, equipment and a new station	No	No	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, but conflicts can be mitigated	Assumed yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation						
Result in substantial traffic increases:						

Table ES-6: Segment 6 Alternatives Comparison	Segment 6A Rail Alignment and Associated TCAs	Segment 6B Rail Alignment and Associated TCAs	Segment 6C Rail Alignment and Associated TCAs	Las Vegas MSF Site 2 (Wigwam)	Las Vegas MSF Site 3 (Robindale)	No Action Alternative
Freeway Mainlines	DEMU and EMU options would reduce freeway volumes and positively affect LOS					LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	NA	NA	NA	NA	NA	None expected
Visual Resources						
Extent of consistency with BLM VRM Objectives	Somewhat consistent in undeveloped southern portions, consistent elsewhere.	Somewhat consistent in undeveloped southern portions, consistent elsewhere.	Consistent	Consistent	Consistent	Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	No change	No change	No change	No change	No change	Consistent if impacts remain in existing corridor
Cultural & Paleontological						
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	1	0	19	0	0	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	0	1	4	0	0	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	0	0	0	Assumed 0
Hydrology & Water Quality						
Linear feet of impact to water resources	0	0	77	0	0	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	0.8 to 12.6	11.9 to 23.1	3.7 to 4.2	1.7 to 2.1	0	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	No	No	No	Not expected

Table ES-6: Segment 6 Alternatives Comparison	Segment 6A Rail Alignment and Associated TCAs	Segment 6B Rail Alignment and Associated TCAs	Segment 6C Rail Alignment and Associated TCAs	Las Vegas MSF Site 2 (Wigwam)	Las Vegas MSF Site 3 (Robindale)	No Action Alternative
Estimated peak stormwater discharge (cubic feet/second)	NA	NA	NA	Unknown	Unknown	NA
Geology & Soils						
Expected likelihood of Surface Fault Rupture	None	None	None	None	None	High
Expected likelihood of ground shaking	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	High
Expected difficulty of excavation	High	High	High	High	High	Moderate
Expected likelihood of landslides	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Hazardous Materials						
Number of properties of environmental concern	6	6	3	0	0	0
Air Quality & Global Climate Change						
Exceed a state or federal standard?	No	No	No	No	No	Not expected
Result in CO Hotspot?	No	No	No	No	No	No
Expected adverse construction period impact?	No	No	No	No	No	No
Noise & Vibration						
Expected number of impacts under FRA criteria	0 for EMU, 17 for DEMU	22 for EMU, 7 for DEMU	0	0	0	None expected
Expected number of severe impacts under FRA criteria	0	12 for EMU, 34 for DEMU	0	0	0	None expected
Expected number of vibration impacts	0	0	0	0	0	None expected
Energy						
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.					
Biological Resources						
Impose Barrier to wildlife movement	No	No	Yes	No	No	No new barriers
Number of stream crossings	18 to 20	18 to 20	27 to 28	1	1	No new crossings
Sensitive plant community acreage affected						
Permanent	0	0	0	0	0	Assumed 0

Table ES-6: Segment 6 Alternatives Comparison	Segment 6A Rail Alignment and Associated TCAs	Segment 6B Rail Alignment and Associated TCAs	Segment 6C Rail Alignment and Associated TCAs	Las Vegas MSF Site 2 (Wigwam)	Las Vegas MSF Site 3 (Robindale)	No Action Alternative
Temporary	0	0	0	0	0	Assumed 0
Desert Tortoise habitat acreage affected						
Permanent	40.2	38	78.2	3	8.8	0
Temporary	116.6	116.6	329.2	0	0	0
Mohave Ground Squirrel habitat acreage affected						
Permanent	0	0	0	0	0	0
Temporary	0	0	0	0	0	0
Potential to result in direct mortality/loss/disturbance to:						
Mojave Fringe-toed Lizard	No	No	No	No	No	No
Nesting raptors/migratory birds	No	Yes	Yes	No	No	No
Banded Gila Monster	No	No	No	No	No	No
Burrowing Owls	No	Yes	Yes	No	No	No
Roosting Bats	No	Yes	Yes	No	No	No
American Badger	Yes	Yes	Yes	Yes	Yes	Yes
Desert Bighorn Sheep	No	No	No	No	No	No
Clark County MSHCP Covered Reptiles	Yes	Yes	Yes	Yes	Yes	No
Acres of Special Management Lands Lost	0	0	0	0	0	0
Section 4(f)						
Number of Section 4(f) properties used						
Park and Recreation	0	0	0	0	0	0
Cultural Resources	0	0	2	0	0	0

* Note: Overall Alternative A would create less of a conflict with existing land use designations than Alternative B since Alternative A is located in the freeway median.

Table ES-6a: Segment 6 Station Site Option Comparison	Las Vegas Southern Station	Las Vegas Central Station A	Las Vegas Central Station B	No Action Alternative
Land Use & Community Impacts				
Compatibility with Adjacent Land Uses	High	High	High	High
Compatibility with Land Use Plans	High	High	High	High
Number of housing units displaced	0	0	0	Unknown
Extent of community disruption/severance	None	None	None	None expected
Number of environmental justice communities crossed by or within 1 mile of facilities	Within 1 mile of 2	Within 1 mile of 4	Located on an EJ block; within 1 mile of 4	Assumed 0
Growth				
Estimated permanent employment	154 to 251 jobs from the station/maintenance facility regardless of location			None expected
Removal of obstacles to growth	None expected	None expected	None expected	None expected
Extent of effects to TOD potential	Beneficial Effect	Beneficial Effect	Beneficial Effect	None expected
Extent of effects to economic vitality	Beneficial construction and operational employment effects similar for all station/OMSF sites			None expected
Farmlands & Agriculture				
Acres of Directly Impacted Farmland	None	None	None	0 expected
Acres of Indirectly Impacted Farmland	None	None	None	0 expected
Potential Severance of Grazing Allotment	None	None	None	None expected
Utilities & Emergency Services				
Exceed capacity of utility or service systems:				
Electricity and Gas	No	No	No	Not expected
Water Supply	No	No	No	Not expected
Sewage/Wastewater	No	No	No	Not expected
Stormwater	No	No	No	Not expected
Solid Waste	No	No	No	Not expected

Table ES-6a: Segment 6 Station Site Option Comparison	Las Vegas Southern Station	Las Vegas Central Station A	Las Vegas Central Station B	No Action Alternative
Police Services	No	No	No	Not expected
Fire/Emergency Services	No	No	No	Not expected
Potential conflict with existing utility distribution systems	Assumed yes, but conflicts can be mitigated	Assumed yes, but conflicts can be mitigated	Assumed yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation				
Result in substantial traffic increases:				
Freeway Mainlines	DEMU and EMU options would reduce freeway volumes and positively affect LOS			LOS would degrade from D to F between Victorville and I-40
Station Area Intersections	Would change the LOS to unacceptable at 2 intersections and contribute to failing LOS at others	Would change the LOS to unacceptable at 3-4 intersections depending on the technology option and contribute to failing LOS at others	Would change the LOS to unacceptable at 2 intersections and contribute to failing LOS at others	None expected
Visual Resources				
Extent of consistency with BLM VRM Objectives	Consistent	Consistent	Consistent	Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	No change	No change	No change	Consistent if impacts remain in existing corridor
Cultural & Paleontological				
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	0	0	0	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	0	0	0	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	0	Assumed 0
Hydrology & Water Quality				
Linear feet of impact to water resources	0	0	0	Assumed similar to Segment 1 - about 2490

Table ES-6a: Segment 6 Station Site Option Comparison	Las Vegas Southern Station	Las Vegas Central Station A	Las Vegas Central Station B	No Action Alternative
Acres within a 100-year floodplain	11.9	12.6 with Alternative A, 23.1 with Alternative B	7.3 with Alternative A, 20.3 with Alternative B, 0.9 with Option C	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	No	Not expected
Estimated peak stormwater discharge (cubic feet/second)	131	69	86	NA
Geology & Soils				
Expected likelihood of Surface Fault Rupture	None	None	None	High
Expected likelihood of ground shaking	Low to Moderate	Low to Moderate	Low to Moderate	High
Expected difficulty of excavation	High	High	High	Moderate
Expected likelihood of landslides	Moderate	Moderate	Moderate	Moderate
Hazardous Materials				
Number of properties of environmental concern	0	0	0	0
Air Quality & Global Climate Change				
Exceed a state or federal standard?	No	No	No	Not expected
Result in CO Hotspot?	No	No	No	No
Expected adverse construction period impact?	No	No	No	No
Noise & Vibration				
Expected number of impacts under FRA criteria	0	0	0	None expected
Expected number of severe impacts under FRA criteria	0	0	0	None expected
Expected number of vibration impacts	0	0	0	None expected
Energy				
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.			
Biological Resources				
Impose Barrier to wildlife movement	No	No	No	No new barriers
Number of stream crossings	2	0	0	No new crossings
Sensitive plant community acreage affected				
Permanent	0	0	0	Assumed 0
Temporary	0	0	0	Assumed 0

Table ES-6a: Segment 6 Station Site Option Comparison	Las Vegas Southern Station	Las Vegas Central Station A	Las Vegas Central Station B	No Action Alternative
Desert Tortoise habitat acreage affected				
Permanent	0	0	0	0
Temporary	0	0	0	0
Mohave Ground Squirrel habitat acreage affected				
Permanent	0	0	0	0
Temporary	0	0	0	0
Potential to result in direct mortality/loss/disturbance to:				
Mojave Fringe-toed Lizard	No	No	No	No
Nesting raptors/migratory birds	No	No	No	No
Banded Gila Monster	No	No	No	No
Burrowing Owls	No	No	No	No
Roosting Bats	No	No	No	No
American Badger	No	No	No	Yes
Desert Bighorn Sheep	No	No	No	No
Clark County MSHCP Covered Reptiles	No	No	No	No
Acres of Special Management Lands Lost	0	0	0	0
Section 4(f)				
Number of Section 4(f) properties used				
Park and Recreation	0	0	0	0
Cultural Resources	0	0	0	0

Table ES-7: Segment 7 Alternatives Comparison	Segment 7A Rail Alignment and Associated TCAs	Segment 7B Rail Alignment and Associated TCAs	Segment 7C Rail Alignment and Associated TCAs	Las Vegas Downtown Station	No Action Alternative
Land Use & Community Impacts					
Compatibility with Adjacent Land Uses	High, Low near residential areas if the Downtown Station site is selected	High, Low near residential areas if the Downtown Station site is selected	High near undeveloped and commercial/industrial uses, Low near residential uses	High	High
Compatibility with Land Use Plans	High	High	Low near residential areas, Medium to high elsewhere	Medium to High	High
Number of housing units displaced	0	0	0	0	Unknown
Extent of community disruption/severance	None	None	None	None	None expected
Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities	Would cross 6 EJ census blocks (minority and poverty)	Would cross 6 EJ census blocks (minority and poverty)	Would cross 7 EJ census blocks (minority and poverty)	Within an EJ block (minority and poverty)	Expected to be similar to Segment 1 rail alignment
Growth					
Estimated permanent employment	None	None	None	154 to 251 jobs from the station/maintenance facility regardless of location	None expected
Removal of obstacles to growth	None	None	None	None expected	None expected
Extent of effects to TOD potential	None	None	None	Beneficial Effect	None expected
Extent of effects to economic vitality				Beneficial construction and operational employment effects similar for all station/OMSF sites	None expected

Table ES-7: Segment 7 Alternatives Comparison	Segment 7A Rail Alignment and Associated TCAs	Segment 7B Rail Alignment and Associated TCAs	Segment 7C Rail Alignment and Associated TCAs	Las Vegas Downtown Station	No Action Alternative
Farmlands & Agriculture					
Acres of Directly Impacted Farmland	None	None	None	None	0 expected
Acres of Indirectly Impacted Farmland	None	None	None	None	0 expected
Potential Severance of Grazing Allotment	None	None	None	None	None expected
Utilities & Emergency Services					
Exceed capacity of utility or service systems:					
Electricity and Gas	No demand associated, unless EMU selected	No demand associated, unless EMU selected	No demand associated, unless EMU selected	No	Not expected
Water Supply	No	No	No	No	Not expected
Sewage/Wastewater	No	No	No	Final project plans will be reviewed to determine sufficiency of utility line capacity	Not expected
Stormwater	No	No	No	No	Not expected
Solid Waste	No	No	No	No	Not expected
Police Services	No	No	No	No	Not expected
Fire/Emergency Services	No	No	No	No	Not expected
Potential conflict with existing utility distribution systems	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Yes, but conflicts can be mitigated	Assumed yes, but conflicts can be mitigated	Assumed yes, and that conflicts can be mitigated
Traffic & Transportation					
Result in substantial traffic increases:					
Freeway Mainlines	DEMU and EMU options would reduce freeway volumes and positively affect LOS				LOS would degrade from D to F between Victorville and I-40

Table ES-7: Segment 7 Alternatives Comparison	Segment 7A Rail Alignment and Associated TCAs	Segment 7B Rail Alignment and Associated TCAs	Segment 7C Rail Alignment and Associated TCAs	Las Vegas Downtown Station	No Action Alternative
Station Area Intersections	NA	NA	NA	Would change the LOS to unacceptable at 1 intersection and contribute to failing LOS at others	None expected
Visual Resources					
Extent of consistency with BLM VRM Objectives	Consistent	Consistent	Consistent	Consistent	Consistent if impacts remain in existing corridor
Effect to FHWA Visual Quality/Sensitivity With Project	No change	No change	No change	No change	Consistent if impacts remain in existing corridor
Cultural & Paleontological					
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	0	0	0	0	Assumed to be same as Segment 1 - about 16
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	0	0	0	0	Assumed to be same as Segment 1 - about 0
Number of Historic Architectural Resources Directly/Indirectly Affected	0	0	0	2	Assumed 0
Hydrology & Water Quality					
Linear feet of impact to water resources	0	0	0	0	Assumed similar to Segment 1 - about 2490
Acres within a 100-year floodplain	0.2	0.1	0	0	Assumed similar to Segment 1 - about 2.8
Result in substantial drainage pattern alteration	No	No	No	No	Not expected
Estimated peak stormwater discharge (cubic feet/second)	Unknown	Unknown	Unknown	49	NA

Table ES-7: Segment 7 Alternatives Comparison	Segment 7A Rail Alignment and Associated TCAs	Segment 7B Rail Alignment and Associated TCAs	Segment 7C Rail Alignment and Associated TCAs	Las Vegas Downtown Station	No Action Alternative
Geology & Soils					
Expected likelihood of Surface Fault Rupture	None	None	None	None	High
Expected likelihood of ground shaking	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	High
Expected difficulty of excavation	High	High	High	High	Moderate
Expected likelihood of landslides	Moderate	Moderate	Moderate	Moderate	Moderate
Hazardous Materials					
Number of properties of environmental concern	2	2	3	0	0
Air Quality & Global Climate Change					
Exceed a state or federal standard?	No	No	No	No	Not expected
Result in CO Hotspot?	No	No	No	No	No
Expected adverse construction period impact?	No	No	No	No	No
Noise & Vibration					
Expected number of impacts under FRA criteria	0	2 for EMU, 1 for DEMU	0	0	None expected
Expected number of severe impacts under FRA criteria	0	19 for EMU, 21 for DEMU	0	0	None expected
Expected number of vibration impacts	0	0	19	0	None expected
Energy					
Result in Significant Change in Energy Consumption?	Analysis examined project as a whole, examining DEMU vs EMU vs. No Action. See DEMU/EMU comparison table for discussion.				
Biological Resources					
Impose Barrier to wildlife movement	No	No	No	No	No new barriers
Number of stream crossings	0	0	0	0	No new crossings
Sensitive plant community acreage affected					
Permanent	0	0	0	0	Assumed 0
Temporary	0	0	0	0	Assumed 0
Desert Tortoise habitat acreage affected					

Table ES-7: Segment 7 Alternatives Comparison	Segment 7A Rail Alignment and Associated TCAs	Segment 7B Rail Alignment and Associated TCAs	Segment 7C Rail Alignment and Associated TCAs	Las Vegas Downtown Station	No Action Alternative
Permanent	0	0	0	0	0
Temporary	0	0	0	0	0
Mohave Ground Squirrel habitat acreage affected					
Permanent	0	0	0	0	0
Temporary	0	0	0	0	0
Potential to result in direct mortality/loss/disturbance to:					
Mojave Fringe-toed Lizard	No	No	No	No	No
Nesting raptors/migratory birds	No	No	No	No	No
Banded Gila Monster	No	No	No	No	No
Burrowing Owls	No	No	No	No	No
Roosting Bats	No	No	No	No	No
American Badger	No	No	No	No	Yes
Desert Bighorn Sheep	No	No	No	No	No
Clark County MSHCP Covered Reptiles	No	No	No	No	No
Acres of Special Management Lands Lost	0	0	0	0	0
Section 4(f)					
Number of Section 4(f) properties used					
Park and Recreation	0	0	0	0	0
Cultural Resources	0	0	0	0	0

Table ES-8: Comparison of Incremental Impacts of Technology Options	Incremental Impacts of DEMU Technology Option	Incremental Impacts of EMU Technology Option
Land Use & Community Impacts		
Area of disturbance	No change	Additional 2 acres for autotransformers and X acres for utility corridors. Catenaries would be located within the rail alignment area.
Compatibility with Adjacent Land Uses	NA	NA
Compatibility with Land Use Plans	NA	NA
Number of housing units displaced	None	None
Extent of community disruption/severance	NA	NA
Number of environmental justice communities crossed by or adjacent to facilities	None	None
Growth		
Estimated permanent employment	None	None
Removal of obstacles to growth	None	None
Extent of effects to TOD potential	None	None
Extent of effects to economic vitality	None	None
Farmlands & Agriculture		
Acres of Directly Impacted Farmland	None	None
Acres of Indirectly Impacted Farmland	None	None
Potential Severance of grazing allotment	None	None
Utilities & Emergency Services		
Exceed capacity of utility or service systems:		
Electricity and Gas	None	Would require significant electrical power for vehicle propulsion.
Water Supply	None	None
Sewage/Wastewater	None	None
Stormwater	None	None
Solid Waste	None	None

Table ES-8: Comparison of Incremental Impacts of Technology Options	Incremental Impacts of DEMU Technology Option	Incremental Impacts of EMU Technology Option
Police Services	None	None
Fire/Emergency Services	None	None
Potential conflict with existing utility distribution systems	NA	NA
Traffic & Transportation		
Result in substantial traffic increases:		
Freeway Mainlines: Expected mode shift from freeway to train	Up to 1100 vehicles/hour in peak hours by 2030	Up to 1400 vehicles/hour during peak hours by 2030
Station Area Intersections	At least 2 California interactions plus at least 24 Nevada intersections would degrade in service	At least 3 California interactions plus at least 28 Nevada intersections would degrade in service
Visual Resources		
Extent of consistency with BLM VRM Objectives	Consistent	Less consistent due to inclusion of catenaries, autotransformers, and utility corridors
Effect to FHWA Visual Quality/Sensitivity With Project	None	Additional effect related to inclusion of catenaries, autotransformers, and utility corridors
Cultural & Paleontological		
Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected	None	5 additional resources in utility corridor
Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected	None	5 additional resources in utility corridor
Number of Historic Architectural Resources Directly/Indirectly Affected	None	None
Hydrology & Water Quality		
Linear feet of impact to water resources	None	Autotransformers would add 104 feet of impact in the entire project area
Acres within a 100-year floodplain	None	None

Table ES-8: Comparison of Incremental Impacts of Technology Options	Incremental Impacts of DEMU Technology Option	Incremental Impacts of EMU Technology Option
Result in substantial drainage pattern alteration	None	Autotransformer sites 7 and 11 would result in drainage alteration
Estimated peak stormwater discharge (cubic feet/second)		
Geology & Soils		
Expected likelihood of Surface Fault Rupture	NA	NA
Expected likelihood of ground shaking	NA	NA
Expected difficulty of excavation	NA	NA
Expected likelihood of landslides	NA	NA
Hazardous Materials		
Number of properties of environmental concern	NA	NA
Air Quality & Global Climate Change		
Exceed a state or federal standard?	Yes - 0_3 precursor emissions of No_x	No
Result in CO Hotspot?	No	No
Expected adverse construction period impact?	Not in exceedance of conformity thresholds	Not in exceedance of conformity thresholds
Noise & Vibration		
Expected number of impacts under FRA criteria	189	144
Expected number of severe impacts under FRA criteria	143	97
Expected number of vibration impacts	61	61
Energy		
Result in Significant Change in Energy Consumption?	Change in energy consumption from No Action: -193,000 barrels of oil	Change in energy consumption from No Action: -449,370 barrels of oil
Biological Resources		
Impose Barrier to wildlife movement	None	None
Number of stream crossings	None	None
Sensitive plant community acreage affected		

Table ES-8: Comparison of Incremental Impacts of Technology Options	Incremental Impacts of DEMU Technology Option	Incremental Impacts of EMU Technology Option
Permanent	None	None
Temporary	None	None
Desert Tortoise habitat acreage affected		
Permanent	None	Autotransformers would add 1.38 acres; utility corridors would add 9.7 acres (6.5 in Victorville, 0.7 in Barstow, 2.5 in Sloan)
Temporary	None	None
Mohave Ground Squirrel habitat acreage affected		
Permanent	None	Autotransformer 2B would add 0.16 acres; utility corridors would add 6.5 acres in Victorville.
Temporary	None	None
Potential to result in direct mortality/loss/disturbance to:		
Mojave Fringe-toed Lizard	None	None
Nesting raptors/migratory birds	None	None
Banded Gila Monster	None	None
Burrowing Owls	None	None
Roosting Bats	None	None
American Badger	None	None
Desert Bighorn Sheep	None	None
Clark County MSHCP Covered Reptiles	None	None
Acres of Special Management Lands Lost	None	None
Section 4(f)		
Number of Section 4(f) properties used		
Park and Recreation	None	None
Cultural Resources	None	Direct Use of 2 additional cultural resource sites by Utility Corridors.

ES-5 AVOIDANCE AND MINIMIZATION OF ADVERSE EFFECTS

As currently planned, the DesertXpress Project would avoid and minimize many potential adverse environmental effects. Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures, includes in each topic area a discussion of mitigation measures and strategies. In addition, design and construction practices have been identified that would be employed as the DesertXpress project is developed further in the final design phase and construction stages. Key aspects of the design practices include, but are not limited to the following:

- Minimize impact footprint and associated direct impacts to farmlands, parklands, biological, and water resources through maximum use of existing transportation corridors.
- Increase safety and circulation and potentially reduce air pollution and noise impacts through use of grade separation at road crossings.
- Placement of the majority of the DesertXpress alignment within existing highway and railroad rights-of-way, to reduce the need for additional right-of-way and minimize potential impacts to agricultural resources and other natural resources.
- Cooperate with regulatory agencies to develop acceptable specific design and construction standards for steam crossings, including but not limited to maintaining open surface (bridged versus closed culvert) crossings, infrastructure setbacks, erosion control measures, sediment-controlling excavation/fill practices, and other best management practices.
- Fully lined tunnels with impermeable material to prevent infiltration of groundwater or surface waters.

ES-6 PUBLIC AND AGENCY INVOLVEMENT

This Draft EIS has been prepared with extensive public and agency involvement, which is summarized in Chapter 4.0, Comments and Coordination.

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