Table S-3.11-8 Revised Regional Criteria Pollutant and Greenhouse Gas Emissions Clark County Air Basin, 2030

| | Criteria Pollutant Emissions | | | | | | $CO_2e$ Emissions, tons per year[a] |
|---|---|---|---|---|---|---|---|
| | ROC | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | |
| **DEMU Technology Option** | | | | | | | |
| Railway Emissions | 35 | 612 | 137 | 17 | 21 | 19 | 45,695 |
| Mobile-source Emissions | (67) | (58) | (2,231) | (3) | (8) | (4) | (136,696) |
| Net Emissions | (32) | 554 | (2,094) | 14 | 13 | 15 | (91,001) |
| General Conformity Threshold | 50 | 50 | 100 | 100 | 70 | 70 | -- |
| Exceed Threshold? | No | Yes | No | No | No | No | N/A |
| **EMU Technology Option** | | | | | | | |
| Railway Emissions | <1 | 29 | 5 | 3 | 1 | 1 | 18,197 |
| Mobile-source Emissions | (85) | (74) | (2,830) | (3) | (10) | (5) | (173,422) |
| Net Emissions | (85) | (45) | (2,825) | <1 | (9) | (4) | (155,225) |
| General Conformity Threshold | 50 | 50 | 100 | 100 | 70 | 70 | -- |
| Exceed Threshold? | No | No | No | No | No | No | N/A |

[a] Criteria pollutant emissions expressed in short tons (1 ton = 2,000 lbs); $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)

Source: ICF International, May 2010.

### Victorville Station Site 3

*Permanent Effects*

Relative to the Victorville station options evaluated in the Draft EIS, VV3 is 4.5 miles north of VV2, and 6 miles north of VV1. The facilities and associated activities at VV3 would be the same as either VV1 or VV2.

The air quality analysis in **Section 3.11.4** of the Draft EIS utilized VV2 to calculate emissions. VV3 would be located 4.5 miles further north along the I-15 freeway resulting in a slightly longer vehicle trip from for most southern California based passengers and slightly shorter train trip to Las Vegas.

To determine if VV3 would substantially change ridership, the ridership forecasts were reviewed. The review determined the location of VV3 would result in a less than one percent change in ridership. It was also determined that while vehicle travel time to VV3 would be three to four minutes longer than trips to VV1 or VV2, this would not constitute a

substantially increase in overall vehicle travel time from southern California origins.[2] Because of the modest increase in travel time, traffic-related air quality effects would remain similar to those discussed in the Draft EIS.

However, vehicles accessing VV3 would use different local roadways, primarily Dale Evans Parkway to access the station. A CO hotspot analysis was conducted to determine localized air quality effects from project-related traffic. **Tables S-3.11-9** and **S-3.11-10** summarize the results of the CO hotspot analysis which determined that traffic associated with VV3 would not result in localized CO concentrations exceeding either 1-hour or 8-hour national ambient air quality standards for CO.

*Temporary Effects*

The parking options for VV3 plan for surface parking areas ranging from about 111 acres (VV3B) to 130 acres (VV3A). VV3A would thus have a slightly larger surface parking area than VV1 or VV2 (107 and 115 acres respectively). The increase in parking area size would result in VV3A having a marginal increase in criteria pollutant emissions and GHG emissions associated with site grading, asphalt paving activity, and truck haul trips relative to VV1 or VV2.

**OMSF 2**

*Permanent Effects*

The proposed revision to OMSF 2 would reduce the footprint size but would not alter the number of employees or overall activities occurring at the site. Since pollutant emissions were calculated based on the proposed activities at the site, and these have not changed, there would be no change to the air pollutant emissions previously calculated for this site.

*Temporary Effects*

The total construction footprint for OMSF2 has been reduced by 21.7 acres since completion of the Draft EIS and therefore less grading and construction equipment would be required at this site. As a result of the reduced construction footprint, the revised OMSF2 site would result in fewer adverse construction period air quality and global climate effects when compared to the OMSF 2 site in the Draft EIS.

[2] Stantec Consulting Services, April 13, 2010.

Table S-3.11-9 VV3 Local Area Hotspot Analysis, 2013

| Intersection | Technology Option | Maximum 1-Hour 2013 Base Concentration (ppm)[b] | Maximum 1-Hour 2013 With Project Concentration (ppm)[b] | Significant 1-Hour Concentration Impact?[c] | Maximum 8-Hour 2013 Base Concentration (ppm)[d] | Maximum 8-Hour 2013 With Project Concentration (ppm)[d] | Significant 8-Hour Concentration Impact?[e] |
|---|---|---|---|---|---|---|---|
| I-15 NB Ramps and Dale Evans Parkway | DEMU | 3.0 | 3.7 | No | 1.9 | 2.4 | No |
| | EMU | 3.0 | 4.3 | No | 1.9 | 2.8 | No |
| I-15 SB Ramps and Dale Evans Parkway | DEMU | 3.0 | 3.7 | No | 1.9 | 2.4 | No |
| | EMU | 3.0 | 4.2 | No | 1.9 | 2.7 | No |
| Station Access #1 and Dale Evans Parkway | DEMU | 2.9 | 3.8 | No | 1.8 | 2.4 | No |
| | EMU | 2.9 | 4.2 | No | 1.8 | 2.7 | No |
| Future Street and Dale Evans Parkway | DEMU | 2.6 | 3.4 | No | 1.6 | 2.2 | No |
| | EMU | 3.0 | 3.5 | No | 1.9 | 2.2 | No |
| Future Street and Station Access #5 | DEMU | 3.1 | 3.3 | No | 2.0 | 2.1 | No |
| | EMU | 3.1 | 3.4 | No | 2.0 | 2.2 | No |

DEMU=Diesel-electric multiple unit train
EMU=Electric multiple unit train
ppm = parts per million
[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by DMJM Harris/AECOM, October 2009.
[b] Includes 1-hour background concentration of 2.6 ppm.
[c] The state standard for the 1-hour average CO concentration is 20 ppm.
[d] Includes 8-hour ambient background concentration of 1.6 ppm.
[e] The state standard for the 8-hour average CO concentration is 9 ppm.

Source: ICF Jones & Stokes, November 2009.

Table S-3.11-10 VV3, Local Area Hotspot Analysis, 2030

| Intersection | Technology Option | Maximum 1-Hour 2030 Base Concentration (ppm)[b] | Maximum 1-Hour 2030 With Project Concentration (ppm)[b] | Significant 1-Hour Concentration Impact?[c] | Maximum 8-Hour 2030 Base Concentration (ppm)[d] | Maximum 8-Hour 2030With Project Concentration (ppm)[d] | Significant 8-Hour Concentration Impact?[e] |
|---|---|---|---|---|---|---|---|
| I-15 NB Ramps and Dale Evans Parkway | DEMU | 2.9 | 3.1 | No | 1.8 | 2.0 | No |
| | EMU | 2.9 | 3.1 | No | 1.8 | 2.0 | No |
| I-15 SB Ramps and Dale Evans Parkway | DEMU | 3.1 | 3.3 | No | 2.0 | 2.1 | No |
| | EMU | 3.1 | 3.4 | No | 2.0 | 2.2 | No |
| Future Street and Dale Evans Parkway | DEMU | 3.2 | 3.2 | No | 2.0 | 2.0 | No |
| | EMU | 3.2 | 3.2 | No | 2.0 | 2.0 | No |

DEMU=Diesel-electric multiple unit train
EMU=Electric multiple unit train
ppm = parts per million
[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by DMJM Harris/AECOM, October 2009.
[b] Includes 1-hour background concentration of 2.6 ppm.
[c] The state standard for the 1-hour average CO concentration is 20 ppm.
[d] Includes 8-hour ambient background concentration of 1.6 ppm.
[e] The state standard for the 8-hour average CO concentration is 9 ppm.

Source: ICF Jones & Stokes, November 2009.

### Segment 2C

*Permanent Effects*

Segment 2C would reduce the total track mileage compared to Segment 1 and Segments 2A/2B alignments because it would follow a more direct route along the I-15 Freeway. This would result in a slight reduction in train emissions when compared to the project alternative evaluated in the Draft EIS. Segment 2C would not affect ridership and therefore would not result in any change in automobile related emissions.

*Temporary Effects*

Segment 2C would be shorter than the combination of Segment 1 and either Segment 2A or Segment 2B, and would therefore require less construction. The shorter rail alignment would result in less construction activity, and less construction period air quality impacts, including GHG emissions related to construction equipment and truck haul trips, when compared with the analysis for the alignment in the Draft EIS. No new adverse construction period effects would occur.

### Segment 4C

*Permanent Effects*

Segment 4C would result in a marginal increase in the emissions of criteria pollutants, GHGs, and toxic air contaminant (TAC) relative to Segment 4A or Segment 4B, insofar as Segment 4C would be about 8 miles longer than Segment 4A or 4B routing options.

Air quality analysis in the Draft EIS utilized Segment 4A as part of the total action alternative for quantitative air quality modeling. Substituting Segment 4C for Segment 4A would result in a marginal increase in total project air pollutant emissions, but would not result in a significant change in overall air pollutant emissions. The proposed project utilizing Segment 4C would continue to result in an overall reduction in total criteria pollutant, GHG, and TAC emissions compared to the No Action Alternative.

*Temporary Effects*

Construction of Segment 4C would require tunneling at three locations and would result in higher air pollutant emissions during temporary construction than either Segment 4A or Segment 4B. Mitigation Measures in **Section 3.11.5** of the Draft EIS would be applied for construction to ensure compliance with fugitive dust control requirements.

### Relocated Sloan MSF and Wigwam MSF Modification

*Permanent Effects*

Any MSF in the Las Vegas area would result in minor contributions of air pollutant emissions and GHGs. Operational air pollutant emissions from any of the proposed MSFs (Wigwam, Robindale, or the RSMSF) would be generated by employee travel to and from the site. The RSMSF is located the greatest distance from metropolitan Las Vegas; employee trips to this site would thus likely be the longest and thus have an incremental potential to result in the greatest air pollutant and GHG emissions impacts of the three sites under consideration.

*Temporary Effects*

The proposed changes to these MSFs would not substantially reduce the footprint or other aspects of these facilities that would change the construction air quality effects, including the generation of GHGs, discussed in the Draft EIS. No new adverse effects would occur.

**Frias Substation**

*Permanent Effects*

The proposed Frias Substation would be an unmanned electrical substation. The substation would not itself directly generate air pollutants or GHGs. Vehicle trips to the site (which could cause air pollutant or GHG emissions) would be limited to maintenance visits. As such, no substantial operational impacts would result. Moreover, the Frias Substation would be located immediately adjacent to the Arden-Tolson electrical transmission line and would therefore not require an extensive utility corridor, such as would be required to connect the electrical substation that is a component of the RSMSF.

*Temporary Effects*

The Frias Substation is a project addition and therefore construction related air quality effects would be in addition to those analyzed in **Section 3.11.4** of the Draft EIS.

The proposed Frias Substation would have a footprint of approximately 4.6 acres. Construction would require site grading, trenching, foundation construction, and utility structure/power line installations. Construction duration is anticipated to be two months or less. Facility construction would occur concurrent with adjacent track installation and require similar construction equipment.

The criteria air pollutant, TAC, and GHG emissions that would occur as a result of facility construction would represent a small fraction of the total regional emissions that would result from overall project construction. With respect to localized impacts, sensitive receptors closest to the proposed facility include areas of single-family residential development approximately 250 feet to the north and to the south of the proposed substation site. During the approximately two months of facility construction, these sensitive uses would experience a marginal exposure increase to localized criteria pollutant and TAC emissions. Mitigation Measures prescribed in **Section 3.11.5** of the Draft EIS, however, would, be applied to the Frias Substation. There would be no long-term emissions associated with this proposed facility following short-term construction.

**Alignment Adjustment Areas and Profile Modification**

*Permanent Effects*

The proposed AAAs would be minor alignment shifts (up to 400 feet) that would not substantially affect operating characteristics and therefore not result in a change in air quality effects discussed in the Draft EIS.

*Temporary Effects*

The AAAs would only result in minor shifts to the railway, the construction footprint would be similar to the alignments analyzed in the Draft EIS. The slight shift in the construction footprint would have no material effect on the anticipated construction-related emissions.

The Profile Modification is a 1.3 mile portion of the alignment in Segment 3B in the Mojave Desert Air Basin that would be depressed and constructed in a retained cut. This Profile Modification would require additional site work as well as retaining wall construction, when compared to the project alignment as evaluated in the Draft EIS.

The criteria air pollutant, TAC, and GHG emissions that would occur as a result of this Profile Modification would represent a small fraction of the total regional emissions that would result from overall project construction. With respect to localized impacts, there are no sensitive receptors present within a radius of several miles that have potential to be adversely affected by the marginal increase in localized pollutant emissions. Mitigation Measures prescribed in **Section 3.11.5** of the Draft EIS, however, would be applied to the Profile Modification. There would be no long-term emissions associated with this proposed facility following short-term construction.

## 3.11.4 MITIGATION MEASURES

**Mitigation Measures AQ-1** and **AQ-3** identified in **Section 3.11.5** of the Draft EIS would be applied during the construction of new rail alignments, station site options, operations and maintenance facilities, substation, Profile Modification and alignment adjustments. These mitigation measures would reduce fugitive dust emissions by requiring a fugitive dust control plan for each of the two air basins. Control measures required by the dust control plans would include watering for stabilization of disturbed surface area, covering loaded haul vehicles, and reducing non-essential earth-moving activities during high wind conditions. No additional mitigation would be required.

**Mitigation Measures AQ-2** and **AQ-4**, would continue to apply to the Alignment Adjustments, Profile Modification, and new rail alignments to reduce $NO_X$ if the DEMU technology option is chosen. These mitigation measures require the purchase or acquisition of $NO_X$ emission offset credits in each air basin.

## 3.11.5 RESIDUAL IMPACTS FOLLOWING MITIGATION

**Mitigation Measures AQ-1** and **AQ-3** would minimize fugitive dust impacts during project construction and **Mitigation Measures AQ-2** and **AQ-4** would mitigate $NO_X$ if the DEMU technology option is selected. Following implementation of these mitigation measures, the project modifications and additions would not result in any residual impacts.

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# 3.12 NOISE AND VIBRATION

This section describes the noise and vibration conditions and impacts for the project modifications and additions. The section also discusses appropriate mitigation measures for the project modifications and additions.

## 3.12.1 AFFECTED ENVIRONMENT

Procedures and standards pertinent to noise and vibration identified in **Section 3.12.3** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the project modifications and additions.

In addition to evaluating the noise and vibration impacts of the proposed project modifications and additions, the noise analysis for Segment 6 contained in **Section 3.12.6.2** of the Draft EIS has also been updated to reflect the plan and profile of the rail alignment alternatives through the metropolitan Las Vegas area between Blue Diamond Road and Flamingo Road, which are on an elevated structure at a height of approximately 63 feet. In addition, the noise analysis is updated to reflect the addition of a noise-sensitive land use in Segment 6, a mobile home park immediately east of I-15 at Blue Mountain Road.

### Regional Conditions

Since publication of the Draft EIS, there has been no substantial change to the regional noise and vibration environment within the project area. No major changes to the transportation patterns or land uses have occurred since publication of the Draft EIS other than the construction of a mobile home park immediately adjacent to Segment 6.

Of the proposed project modifications and additions, Segment 2C and Segment 4C would occur in areas not previously studied. Segment 2C would follow the I-15 freeway corridor through central Barstow. In Segment 4, Segment 4C would traverse undeveloped desert lands north and west of Segment 4B evaluated in **Section 3.12.6.2** of the Draft EIS. A discussion of the specific noise and vibration environments within the vicinity of Segment 2C and Segment 4C is provided below.

For project modifications and additions other than Segment 2C, the analysis relies upon the noise measurements identified in **Section 3.12.5.1** of the Draft EIS. Refer to **Table 3.12-6** of the Draft EIS for existing noise measurements.

### Victorville Station Site 3

VV3, including either parking option, would be located to the west of the I-15 freeway corridor in a generally undeveloped area near the Dale Evans Parkway/I-15 interchange. There are no noise- or vibration-sensitive land uses, such as residential developments or public parks, located within 1,000 feet of the proposed VV3 site. Existing noise in the vicinity of this site is dominated by traffic on I-15 and limited traffic volumes on Dale Evans Parkway.

The primary vibration source in this area is the I-15 freeway. The surrounding land is undeveloped and vacant and there are no other primary vibration sources in the vicinity of the VV3 site that would contribute to the existing vibration conditions.

### OMSF 2

The location of this facility has not changed. Only the site's footprint has been reduced. There are no noise- or vibration-sensitive uses located within 1,000 feet of OMSF 2.

### Segment 2C

**Appendix S-D** provides the detailed noise and vibration evaluation for the Segment 2C alignment options.

The Segment 2C alignment options would follow the existing I-15 corridor through the community of Lenwood and the City of Barstow. For both Segment 2C alignment options, there are a number of hotels located on the east side of the I-15 freeway near an outlet mall. There are a number of single-family residential areas adjacent to the Segment 2C alignment options through Barstow. The residential areas are located on the south side of the I-15 freeway in the western portion of Barstow and on the north and south sides of the I-15 freeway in central and eastern Barstow.

Existing noise within the vicinity of the Segment 2C alignment options is dominated by traffic on the I-15 freeway with traffic on local roads and neighborhood activity also contributing to the ambient noise level.

Noise measurements were taken within Barstow along the I-15 freeway corridor, near existing residential neighborhoods. **Table S.3-12-1** shows the existing ambient noise levels in the vicinity of the Segment 2C alignment options. **Figure S-3.12-1** depicts the location of these noise measurements. The existing noise levels at these residential areas range from approximately 62 dBA to 66dBA. Noise levels of 66 dBA are typical of urban environments but are at the limit for normally acceptable noise levels for residential uses.

Table S-3.12-1 Existing Ambient Noise Measurements – Segment 2C

| Site No. | Measurement Location | Start of Measurement | | Measurement Time (hrs) | Noise Exposure Ldn (dBA) |
|---|---|---|---|---|---|
| | | Date | Time | | |
| LT-S1 | 27788 Church Avenue, Barstow | 10-13-09 | 11:00 | 24 | 62 |
| LT-S2 | 1204 Virginia Way, Barstow | 10-13-09 | 13:00 | 24 | 66 |

Source: HMMH, 2010.

### Segment 4C

The proposed rail alignment for Segment 4C traverses through undeveloped desert lands and the Clark Mountain range north of Mountain Pass, east of the northern unit of the Mojave National Preserve. There are no noise- or vibration-sensitive uses located within 1,000 feet of Segment 4C. There are no residential developments near Mountain Pass. The closest potential noise- and vibration-sensitive receptors are located in Primm, NV, which include several hotels immediately adjacent to the I-15 corridor at the California-

Nevada border. The nearest noise- or vibration-sensitive use is located more than 2,000 feet from the proposed rail alignment.

Existing noise in this area is dominated by traffic on the I-15 freeway corridor. Through the Clark Mountains and into the undeveloped desert area, there are no substantial permanent noise sources.

There are no substantial vibration sources within the vicinity of the majority of Segment 4C, given the undeveloped nature of the desert lands southwest of the California-Nevada state line. Northeast of the state line, the northern portion of Segment 4C would be located north/northwest of Primm and the I-15 corridor. In this northern portion, the primary vibration source is the existing I-15 freeway corridor.

### Relocated Sloan MSF

The Relocated Sloan MSF (RSMSF) site is located immediately adjacent to the I-15 freeway corridor within an undeveloped area. The lands surrounding the RSMSF site are vacant, with the nearest development located approximately 4 miles to the south in Jean. There are no noise- or vibration-sensitive uses located within 1,000 feet of the RSMSF site. Existing noise in the vicinity is dominated by traffic on the I-15 freeway.

The primary vibration source in this area is the I-15 freeway. The surrounding land is undeveloped and vacant and there are no other primary vibration sources in the vicinity of the RSMSF site that would contribute to the existing vibration conditions.

### Frias Substation

The Frias Substation site is located in the southern Las Vegas metropolitan area, immediately adjacent to the I-15 freeway corridor. There are a number of single-family residential uses within 1,000 feet of the proposed site, including several clusters of 3 to 4 homes. Residential uses are located to the north on West Haleh Avenue and south on Dean Martin Drive and Polaris Avenue. Existing noise in this area is dominated by traffic on the I-15 freeway, and to a lesser extent, neighborhood traffic on local roads.

The primary source of vibration in the area is the I-15 freeway, located immediately east of the substation site. No other major vibration sources exist within close proximity to the site that would contribute to the existing vibration condition.

### Segment 6 – Revised Draft EIS Evaluation

Since the original noise measurements taken for the Draft EIS, which are detailed in **Section 3.12.5.1** of the Draft EIS, a mobile home park (the Oasis Las Vegas Motor Coach Park) was developed immediately east of the I-15 freeway in the southeastern quadrant of the I-15/Blue Mountain Road interchange. Development of this mobile home park introduced new noise- and vibration-sensitive uses within close proximity of the Segment 6 rail alignments.

Other noise- and vibration- sensitive uses within the vicinity of Segment 6 include residential developments west of the I-15 freeway and hotels and motels on both side of the -15 freeway corridor.

While there are new noise- and vibration sensitive uses, there has not been any substantial change in the ambient noise environment. As a result, the original noise measurements taken for Segment 6 and reported in **Section 3.12.5.1** of the Draft EIS still apply.

**Table S-3.12-2** shows the existing ambient noise levels for Segment 6. The existing noise environment ranges from 66 dBA to 71 dBA, which are typical of an urban environment but at the general limit for normally acceptable noise environments for residential areas.

Table S-3.12-2 Existing Ambient Noise Levels – Segment 6

| Site No. | Measurement Location | Start of Measurement | | Measurement Time (hrs) | Noise Exposure Ldn (dBA) |
|---|---|---|---|---|---|
| | | Date | Time | | |
| LT-7 | 3075 Haleh St, Las Vegas, NV | 7-25-06 | 19:00 | 24 | 66 |
| LT-8 | 7592 Thistle Poppy St, Las Vegas, NV | 7-25-06 | 20:00 | 24 | 71 |
| LT-9 | 4205 W. Tropicana Ave, Las Vegas, NV | 7-26-06 | 16:00 | 24 | 70 |

Source: HMMH, 2010.

### Alignment Adjustment Areas

AAAs 1 through 7 would not change noise and vibration levels associated with portions of Segments 2A/2B, 3B, and 6B. Existing noise and vibration in these areas is dominated by traffic on the I-15 freeway corridor.

AAA 8 would shift a portion of Segment 6B outside of the existing I-15 freeway corridor and into the median of Dean Martin Drive/Industrial Road between Hacienda Avenue and Tropicana Avenue, closer to existing noise- and vibration-sensitive uses located along Dean Martin Drive/Industrial Road. The existing noise- and vibration-sensitive uses include residential areas west of the I-15 freeway, a large mobile home park on the east side of I-15, and numerous hotels on both sides of the I-15 freeway. The primary source of noise and vibration in the area is the I-15 freeway corridor. To a lesser extent, neighborhood traffic also contributes to the existing noise environment.

Noise measurement LT-7 listed in **Table S-3.12-2** provides a representative existing noise level for the general vicinity of AAA 8. **Appendix S-D** provides the detailed noise and vibration evaluation for Segment 6B ad modified by AAA 8.

### Wigwam MSF Modification

While the development footprint of the Wigwam MSF has been modified, the location of this facility has not changed since publication of the Draft EIS. The existing noise and vibration levels are the same as presented for the Wigwam MSF in **Section 3.12.5.2** of the Draft EIS. There are a number of single-family residential uses within 1,000 feet of the Wigwam MSF site, including small clusters of three to four residences to the west on Dean Martin Drive and north on Wigwam Avenue. Existing noise in this area is dominated by traffic on the I-15 freeway, and to a lesser extent, neighborhood traffic on the nearby local roads.

The primary vibration source within this area is the I-15 freeway to the east. No other major vibration sources exiting within close proximity to the site that would contribute to the existing vibration condition.

**Profile Modification**

The proposed profile modification is located in the same existing noise and vibration environment as Segment 3B as described in **Section 3.12.5.2** of the Draft EIS. Existing noise and vibration in the vicinity of the profile modification is dominated by traffic on the I-15 freeway.

## 3.12.2 METHODS OF EVALUATION OF IMPACTS

The same methodology used in **Section 3.12.4** of the Draft EIS was used to evaluate potential noise and vibration effects of the project modifications and additions. Future noise levels were modeled and compared to the existing noise measurements to determine the change in noise levels and specific noise impacts.

There are two levels of noise impact considered – "severe" and "impact." These two classifications are consistent with FRA noise impact criteria.

- *Severe:* Severe noise impacts identify locations where a significant percentage of people would be highly annoyed by noise from the high-speed rail alignment. FRA particularly encourages noise abatement on high-speed train projects where such severe noise impacts are identified.
- *Impact:* A noise impact identifies an area where the change in the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels and the types and numbers of noise-sensitive land uses affected.

Noise is typically defined as unwanted or undesirable sound. The basic parameters of environmental noise that affect human response are (1) intensity or level, (2) frequency content, and (3) variation with time. The intensity of level of noise is expressed on a compressed scale in units of decibels (dB). By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 dB. On a relative scale, a 3 dB change in sound is usually the smallest of unit of change in noise levels perceptible to the human ear, whereas a 10 dB change in sound level would typically be perceived as a doubly (or halving) in the loudness of a sound. Noise levels and intensity also involve varying frequencies. As the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with the human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound level, and are expressed in dB notation a dBA. At a distance of 50 feet, a noise level of 60 dBA is

equivalent to a commercial air conditioner, 70 dBA is equivalent to a lawn mower, 80 dBA is equivalent to a bus travelling at 55 miles per hour (mph), and 90 dBA is equivalent to a jack hammer.

Sensitivity to noise also increases at night, as the background noise levels are typically limited and the overall ambient noise levels are usually lower than noise levels during the day. The Day-Night Sound Level ($L_{dn}$) is used to calculate a 24-hour period of cumulative noise exposure, with an added 10 dB penalty imposed on noise that occurs during the nighttime hours (between 10:00 PM and 7:00 AM).

In regards to vibration, the potential vibration impact from the project modifications and additions was assessed on an absolute basis using FRA criteria, which is based on land use and train frequency. **Table S-3.12-3** summarizes the vibration impact criteria. The vibration propagation tests conducted for the evaluation in **Section 3.12.6.2** of the Draft EIS were utilized as part of this Supplemental Draft EIS. The train vibration characteristics were combined with the ground vibration propagation test results to project vibration levels as a function of distance for the project modifications and additions.

Table S-3.12-3 Vibration Impact Criteria

| Land Use Category | Ground-Borne Vibration Impact (VdB re: 1 mico-inch/sec) | |
|---|---|---|
| | Frequent Events[1] | Infrequent Events[2] |
| Category 1: Buildings where vibration would interfere with interior operations | 65 VdB[3] | 65 VdB[3] |
| Category 2: Residences are buildings where people normally sleep | 72 VdB | 80 VdB |
| Category 3: Institutional land uses with primarily daytime use | 75 VdB | 83VdB |

Source: Federal Railroad Administration, 2005.
Notes:
1 – Frequent Events is defined as more than 70 vibration events per day.
2 – Infrequent events is defined as fewer than 70 vibration events per day.
3 – This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often require special design of the HVAC systems and stiffened floors.

This evaluation considers noise and vibration effects of the project modifications and additions for both the operational period and construction period, consistent with the evaluation of the action alternatives in **Section 3.12.6.2** of the Draft EIS. It is assumed that operation period effects would be permanent, while construction period effects would be temporary in nature.

## 3.12.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

### Regional Conditions

The proposed project modifications and additions would not introduce any new type of feature not previously considered in **Section 3.12.6.2** of the Draft EIS. Thus, there would be no substantial change to the conclusions of the regional noise and vibration effects as presented in **Section 3.12.5.1** of the Draft EIS.

### Victorville Station Site 3

*Operational Period Noise and Vibration*

VV3 would introduce new noise and vibration sources associated with train activities within the station area during operation. However, there are no noise- or vibration-sensitive receptors in close proximity to the site. As such, no operational period noise or vibration effects would occur.

*Construction Effects*

Construction of VV3 for either parking option would introduce temporary noise and vibration sources during construction activities. Since there are no sensitive receptors within 1,000 feet of VV3 for either parking option, no construction noise or vibration effects would occur.

### Segment 2C

**Appendix S-D** provides the detailed noise and vibration evaluation for the Segment 2C alignment options.

*Operational Period Noise*

Operation of the Segment 2C alignment options would result in an increase in noise associated with train pass-bys and would result in adverse noise effects on the adjacent noise- and vibration-sensitive hotel and residential uses.

The EMU and DEMU technology options would result in varying noise effects. The DEMU has a higher reference noise level (a noise level at a specific distance and speed) than the EMU. While the EMU technology option has a maximum speed of 150 mph and the DEMU technology option has a maximum speed of 125 mph, the speed difference is not large enough to overcome the higher reference level for the DEMU technology option at the maximum speed conditions.

***Segment 2C Side Running:*** **Tables S-3.12-4** and **S-3.12-5** summarize the noise effects associated with operation of the Segment 2C Side Running alignment for the EMU and DEMU technology options, respectively.

Noise effects along the Segment 2C Side Running alignment would be limited to areas within Barstow and Yermo, where the rail alignment would be in close proximity to the hotel and residential uses immediately adjacent to the I-15 freeway.

Table S-3.12-4 Noise Impacts for Segment 2C Side Running – EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Lenwood Rd, Days Inn | SB | 215 | 62 | 63 | 58 | 64 | 65 | 3.6 | 1 | 0 |
| Lenwood Rd, Country Inn and Suites | NB | 365 | 62 | 60 | 58 | 64 | 64 | 2.3 | 1 | 0 |
| L St to H St | SB | 130-350 | 62 | 58-63 | 58 | 64 | 63-65 | 1.7-3.7 | 4 | 0 |
| Grace St | SB | 45-150 | 66 | 61-69 | 61 | 66 | 67-71 | 1.3-5.0 | 7 | 15 |
| Mount Vernon Ave, Church of the Nazarene | SB | 45 | 60 | 71 | 62 | 68 | 71 | 11.0 | 0 | 1 |
| Coolwater Ln, Days Inn | SB | 110 | 66 | 64 | 61 | 66 | 68 | 2.3 | 1 | 0 |
| Western Whip Ct to Muriel Dr | SB | 60-190 | 66 | 61-68 | 61 | 66 | 67-70 | 1.2-4.0 | 7 | 8 |
| Muriel Dr to Kelly Dr | SB | 50-200 | 66 | 61-69 | 61 | 66 | 67-70 | 1.2-4.7 | 35 | 9 |
| Elephant Mountain Rd | SB | 170 | 63 | 60 | 60 | 65 | 65 | 1.6 | 3 | 0 |
| Ghost Town Rd, Oak Tree Inn | NB | 160 | 63 | 60 | 60 | 65 | 65 | 1.8 | 1 | 0 |
| Total | | | | | | | | | 60 | 33 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-5 Noise Impacts for Segment 2C Side Running – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Lenwood Rd, Days Inn | SB | 215 | 62 | 64 | 58 | 64 | 66 | 4.2 | 1 | 0 |
| Lenwood Rd, Country Inn and Suites | NB | 365 | 62 | 61 | 58 | 64 | 64 | 2.7 | 1 | 0 |
| Ironwood Rd to L St. | NB | 225-295 | 62 | 59-60 | 58 | 64 | 63-64 | 1.9-2.5 | 4 | 0 |
| L St to H St | SB | 130-775 | 62 | 59-65 | 58 | 64 | 63-67 | 1.8-5.3 | 11 | 1 |
| Grace St | SB | 45-250 | 66 | 61-72 | 61 | 66 | 67-73 | 1.2-6.9 | 26 | 17 |
| Mount Vernon Ave, Church of the Nazarene | SB | 45 | 60 | 73 | 62 | 68 | 73 | 13.4 | 0 | 1 |
| Grace St, Victory Outreach | SB | 220 | 60 | 63 | 62 | 68 | 65 | 4.8 | 1 | 0 |
| Sandalwood Ct | NB | 220-325 | 66 | 61-63 | 61 | 66 | 67-68 | 1.3-1.9 | 12 | 0 |
| Coolwater Ln, Days Inn | SB | 110 | 66 | 67 | 61 | 66 | 69 | 3.5 | 0 | 1 |
| Western Whip Ct to Muriel Dr | SB | 60-270 | 66 | 61-70 | 61 | 66 | 67-71 | 1.4-5.4 | 15 | 14 |
| Muriel Dr to Kelly Dr | SB | 50-290 | 66 | 61-71 | 61 | 66 | 67-72 | 1.3-6.5 | 57 | 14 |
| Center Ln to Mojave River | NB | 330 | 66 | 61 | 61 | 66 | 67 | 1.3 | 2 | 0 |
| Hacienda Ln | NB | 300 | 63 | 60 | 60 | 65 | 65 | 1.8 | 5 | 0 |
| Elephant Mountain Rd | SB | 170 | 63 | 61 | 60 | 65 | 65 | 2.0 | 3 | 0 |
| Ghost Town Rd, Oak Tree Inn, | NB | 160 | 63 | 61 | 60 | 65 | 65 | 2.2 | 1 | 0 |
| Total | | | | | | | | | 139 | 48 |

Source: HMMH, 2010 Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Lenwood Road, Days Inn/Country Inn and Suites, Barstow* – There are several motels, including the Days Inn and County Inn and Suites, on the east side of I-15 freeway. The Segment 2C Side Running alignment would be located across the I-15 freeway to the west. The noise impact is due to the low existing noise levels at this location.

*Ironwood Road to H Street, Barstow* – There are a number of single-family residences to the north and south of the I-15 freeway corridor within western Barstow. The noise impacts in this location are due to the low existing noise levels and the proximity of the residences to the rail alignment.

*Grace Street, Barstow* – There are a number of single-family and multi-family residences to the north of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the rail alignment.

*Mount Vernon Avenue, Church of the Nazarene, Barstow* – There is a church adjacent to the residential area on Grace Street to the north of I-15. The noise impact at this location is due to the close proximity of the church to the rail alignment.

*Grace Street, Victory Outreach, Barstow* – There is a second church adjacent to the residential area on Grace Street to the north of I-15. The noise impact at this location is due to the close proximity of the church to the rail alignment.

*Sandalwood Court, Barstow* – There are a number of single-family residences to the south of I-15 in this area. The noise impacts at this location are due to the close proximity of the residence to the rail alignment.

*Coolwater Lane, Days Inn, Barstow* – There is a motel adjacent to a single-family residential area to the north of I-15 in the center of Barstow. The noise impact at this location is due to the close proximity of the motel to the rail alignment.

*Western Whip Court to Mojave River, Barstow* – There are a number of single-family residences to the north of I-15 and a mobile home park and several scattered residences to the south of I-15 in this portion of Barstow. The noise impacts are due to the proximity of the residences and mobile home park to the rail alignment.

*Hacienda Lane, Barstow* – There are several single-family residences to the south of I-15 at this location. The noise impacts are due to the low existing noise levels and the close proximity of the residences to the rail alignment.

*Elephant Mountain Road, Yermo* – There are a number of single-family residences to the north of I-15 at this location. The noise impacts are due to the low existing noise levels and the close proximity of the residences to the rail alignment.

*Ghost Town Road, Oak Tree Inn, Yermo* – There is a motel to the south of I-15 at this location. The noise impact is due to the low existing noise levels and the close proximity of the motel to the rail alignment.

***Segment 2C Median:*** **Tables S-3.12-6** and **S-3.12-7** summarizes noise effects associated with operation of the Segment 2C Median alignment option for the EMU and DEMU technology options, respectively.

Table S-3.12-6 Noise Impacts for Segment 2C Median – EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Days Inn, Lenwood Rd | SB | 215 | 62 | 63 | 58 | 64 | 65 | 3.6 | 1 | 0 |
| Country Inn and Suites, Lenwood Rd | NB | 365 | 62 | 60 | 58 | 64 | 64 | 2.3 | 1 | 0 |
| L St to H St | SB | 130-350 | 62 | 58-63 | 58 | 64 | 63-65 | 1.7-3.7 | 4 | 0 |
| Grace St | SB | 150-170 | 66 | 61-62 | 61 | 66 | 67 | 1.3-1.5 | 14 | 0 |
| Church of the Nazarene, Mount Vernon Ave | SB | 150 | 60 | 63 | 62 | 68 | 65 | 5.2 | 1 | 0 |
| Sandalwood Ct | NB | 120-180 | 66 | 62-64 | 61 | 66 | 67-68 | 1.4-2.1 | 9 | 0 |
| Western Whip Ct to Muriel Dr | SB | 110 | 66 | 64 | 61 | 66 | 68 | 2.3 | 14 | 0 |
| Muriel Dr to Kelly Dr | SB | 125-170 | 66 | 61-64 | 61 | 66 | 67-68 | 1.2-2.1 | 29 | 0 |
| Center Ln to Mojave River | NB | 190 | 66 | 61 | 61 | 66 | 67 | 1.3 | 3 | 0 |
| Elephant Mountain Rd | SB | 170 | 63 | 60 | 60 | 65 | 65 | 1.6 | 3 | 0 |
| Oak Tree Inn, Ghost Town Rd | NB | 160 | 63 | 60 | 60 | 65 | 65 | 1.8 | 1 | 0 |
| Total | | | | | | | | | 80 | 0 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-7 Noise Impacts for Segment 2C Median – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Days Inn, Lenwood Rd | SB | 215 | 62 | 64 | 58 | 64 | 66 | 4.2 | 1 | 0 |
| Country Inn and Suites, Lenwood Rd | NB | 365 | 62 | 61 | 58 | 64 | 64 | 2.7 | 1 | 0 |
| Ironwood Rd to L St. | NB | 225-295 | 62 | 59-60 | 58 | 64 | 63-64 | 1.9-2.5 | 4 | 0 |
| L St to H St | SB | 130-775 | 62 | 59-65 | 58 | 64 | 63-67 | 1.8-5.3 | 11 | 1 |
| L St to H St | NB | 330 | 62 | 59 | 58 | 64 | 64 | 1.9 | 1 | 0 |
| Grace St | SB | 150-250 | 66 | 61-64 | 61 | 66 | 67-68 | 1.3-2.3 | 22 | 0 |
| Church of the Nazarene, Mount Vernon Ave | SB | 150 | 60 | 66 | 62 | 68 | 67 | 7.0 | 1 | 0 |
| Sandalwood Ct | NB | 120-350 | 66 | 61-66 | 61 | 66 | 67-69 | 1.2-3.3 | 21 | 2 |
| Western Whip Ct to Muriel Dr | SB | 110-250 | 66 | 62-67 | 61 | 66 | 67-69 | 1.6-3.5 | 12 | 14 |
| Muriel Dr to Kelly Dr | SB | 100-250 | 66 | 61-66 | 61 | 66 | 67-69 | 1.3-3.3 | 38 | 5 |
| Center Ln to Mojave River | NB | 190-270 | 66 | 61-63 | 61 | 66 | 67-68 | 1.3-2.0 | 6 | 0 |
| Hacienda Ln | NB | 300 | 63 | 60 | 60 | 65 | 65 | 1.8 | 5 | 0 |
| Elephant Mountain Rd | SB | 170 | 63 | 61 | 60 | 65 | 65 | 2.0 | 3 | 0 |
| Oak Tree Inn, Ghost Town Rd | NB | 160 | 63 | 61 | 60 | 65 | 65 | 2.2 | 1 | 0 |
| Total | | | | | | | | | 127 | 22 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Similar to the Segment 2C Side Running alignment option, the noise effects along the Segment 2C Median alignment would be limited to areas within Barstow and Yermo, where the rail alignment would be in close proximity to the hotel and residential uses immediately adjacent to the I-15 freeway. The noise effects for the Segment 2C Median alignment option would be the same as those for the Segment 2C Side Running alignment option west of L Street in Barstow, as both rail alignments would follow the same I-15 side running corridor.

The noise impacts from the Segment 2C Median alignment option are the same as the Segment 2C Side Running alignment option at the following locations:

- Lenwood Road, Days Inn/Country Inn and Suites, Barstow
- Ironwood Road to H Street, Barstow
- Grace Street, Barstow
- Mount Vernon Avenue, Church of the Nazarene, Barstow
- Sandalwood Court, Barstow
- Western Whip Court to Mojave River, Barstow
- Hacienda Lane, Barstow
- Elephant Mountain Road, Yermo
- Ghost Town Road, Oak Tree Inn, Yermo

The Segment 2C Median alignment option would avoid impacts of the Segment 2C Side Running alignment option to the Victory Outreach Church on Grace Street and the Days Inn on Coolwater Lane in Barstow. No new areas of noise impact would occur.

Under the EMU technology option, the Segment 2C Median alignment option would result in a greater amount of noise impacts than the Segment 2C Side Running alignment option as the rail alignment would be located slightly closer to the residential uses to the south of the I-15 freeway corridor. However, the Segment 2C Median alignment option would avoid severe noise impacts of the Segment 2C Side Running alignment option due to its placement within the I-15 freeway median near the residential areas within central Barstow.

Under the DEMU technology option, the Segment 2C Median alignment option would result in fewer noise impacts and severe noise impacts as compared to the Segment 2C Side Running alignment option.

*Operational Period Vibration*

In terms of vibration, where near noise and vibration sensitive uses, the Segment 2C Side Running alignment would be constructed on an elevated structure. Under FRA criteria, the vibration criterion used for this assessment is 80 VdB, as the project operations would entail fewer than 70 train passbys per day. The use of elevated structures for the Segment 2C Side Running alignment would result in a 10 VdB reduction in vibration levels due to the attenuation of vibration as it travels through the elevated structure to the ground. The resulting vibration levels with the train passbys on the Segment 2C Side Running alignment would range from 50 VdB to 74 VdB at residences in the project area. These

vibration levels would not exceed the 80 VdB criterion and therefore not be considered significant.

The Segment 2C Median alignment would be constructed on an elevated structure within the vicinity of noise- and vibration-sensitive uses. Because there would be less than 70 train passbys per day, the vibration criterion used for this assessment is 80 VdB. The use of elevated structures for the Segment 2C Side Running alignment would result in a 10 VdB reduction in vibration levels due to the attenuation of vibration as it travels through the elevated structure to the ground. The resulting vibration levels associated with the train passbys on the Segment 2C median alignment would range from 50 VdB to 69 VdB at the closest residences. These vibration levels would not exceed the 80 VdB criterion and therefore not be considered significant.

*Construction Effects*

Construction of Segment 2C would introduce temporary construction related noise and vibration to areas not previously evaluated. As documented in **Section 3.12.6.1** of the Draft EIS, temporary noise during construction has the potential of being intrusive to sensitive receptors, such as residential developments, near the construction sites. Most of the construction would consist of site preparation and laying new track, and would only occur during daytime hours.

Segment 2C would include one temporary construction area (TCA), which could also generate construction noise related to mechanical equipment during construction hours. The TCA would not, however, be located within the vicinity of any noise- or vibration-sensitive uses. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Segment 4C**

*Operational Period Noise and Vibration*

While Segment 4C would result in noise and vibration associated with passby of the high-speed train during operation, no sensitive receptors would be affected. There are no noise- or vibration-sensitive uses located within close proximity to the rail alignment. In the southern portion of Segment 4C, the rail alignment would traverse through undeveloped desert lands, with no noise- or vibration-sensitive uses. Within the vicinity of the northern portion of Segment 4C, there are several hotels immediately adjacent to the I-15 freeway corridor in Primm, however, the hotels would be more than 2,000 feet from the proposed rail alignment and would not be adversely affected by the operation of the high speed train.

*Construction Effects*

Construction of Segment 4C would introduce temporary construction related noise and vibration to areas not previously evaluated. As documented in **Section 3.12.6.1** of the Draft EIS, temporary noise during construction has the potential of being intrusive to sensitive receptors, such as residential developments, near the construction sites. Most of the construction would consist of site preparation and laying new track, and would only occur during daytime hours.

Segment 4C would include five TCAs, which could also generate construction noise related to mechanical equipment during construction hours. The TCAs would not, however, be located within the vicinity of any noise- or vibration-sensitive uses. Segment 4C would also introduce construction noise related to tunneling, which could result in temporary construction noise and vibration effects. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Relocated Sloan MSF**

*Operational Period Noise and Vibration*

Operation of the RSMSF would introduce new noise and vibration sources associated with train activities and maintenance operations (i.e., mechanical equipment noise) within the vicinity of this facility. However, there are no noise- or vibration-sensitive receptors within 1,000 feet of this facility. Thus, no noise or vibration effects would occur from the operation of the RSMSF.

*Construction Effects*

Construction of the RSMSF would introduce temporary noise and vibration sources during construction activities. Since there are no sensitive receptors within 1,000 feet of the RSMSF, no construction noise or vibration effects would occur.

**Frias Substation**

*Operational Period Noise and Vibration*

The substation would be constructed as an open facility and would not require the use of fans or ventilation units, which typically serve as a primary noise source for this type of facility. While there could be a minor humming noise associated with the operation of the substation, this noise would not result in an impact to the adjacent or nearby residential developments. Further, the traffic noise associated with the I-15 freeway immediately adjacent to the Frias Substation site would remain the dominant noise source. No adverse operational noise or vibration effects would occur.

*Construction Effects*

Construction of the Frias Substation could result in temporary construction noise and vibration impacts to the adjacent residential developments. Construction noise associated with mechanical equipment, construction vehicles, and site preparation could introduce temporary noise and vibration beyond existing levels, which could temporarily affect the nearby noise- and vibration-sensitive residential developments. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Segment 6A – Revised Draft EIS Evaluation**

This analysis updates the evaluation of noise and vibration effects of Segment 6A contained in **Sections 3.12.6.1** and **3.12.6.2** of the Draft EIS.

*Operational Period Noise*

**Tables S-3.12-8** and **3.12-9** provide a revised summary of the projected noise impacts for Segment 6A for the EMU and DEMU technology options, respectively.

*Saffredi Lane* – There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment and the higher noise levels generated by the DEMU vehicle. This impact is the same as presented for Segment 6A in **Section 3.12.6.2** of the Draft EIS.

*Deluna Street* - There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment and the higher noise levels generated by the DEMU vehicle. This impact is the same as presented for Segment 6A in **Section 3.12.6.2** of the Draft EIS.

*Wigwam Avenue to Blue Diamond Road, Las Vegas* – There is a mobile home park to the east of I-15 in this area. The number of potential impacts at this location is an estimate based on aerial photography. The impacts are due to the high speeds and the elevated structure.

*Industrial Road, Silverton Casino Lodge, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Residence Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure. *Dean Martin Drive, Courtyard Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

Table S-3.12-8 Revised Noise Impacts for Segment 6A - EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Wigwam Ave to Blue Diamond Rd | NB | 180-500 | 66 | 61-67 | 61 | 66 | 67-69 | 1.4-3.5 | 352 | 55 |
| Industrial Road, Silverton Casino Lodge | SB | 500 | 66 | 62 | 61 | 66 | 67 | 1.4 | 1 | 0 |
| Dean Martin Dr, Residence Inn | SB | 385 | 66 | 62 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 400 | 66 | 61 | 61 | 66 | 67 | 1.3 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 230 | 66 | 64 | 61 | 66 | 68 | 2.2 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 270 | 66 | 63 | 61 | 66 | 68 | 1.7 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 280 | 66 | 63 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Total | | | | | | | | | 358 | 55 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-9 Revised Noise Impacts for Segment 6A – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 150 | 66 | 61 | 61 | 66 | 67 | 1.3 | 5 | 0 |
| Deluna St | SB | 140 | 66 | 62 | 61 | 66 | 67 | 1.5 | 12 | 0 |
| Wigwam Ave to Blue Diamond Rd | NB | 180-500 | 66 | 62-68 | 61 | 66 | 67-70 | 1.6-4.2 | 242 | 165 |
| Industrial Road, Silverton Casino Lodge | SB | 500 | 66 | 63 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Residence Inn | SB | 385 | 66 | 63 | 61 | 66 | 68 | 2.0 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 400 | 66 | 62 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 230 | 66 | 65 | 61 | 66 | 68 | 2.6 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 270 | 66 | 64 | 61 | 66 | 64 | 2.2 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 280 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Panorama Towers | SB | 300 | 66 | 61 | 61 | 66 | 67 | 1.3 | 3 | 0 |
| Total | | | | | | | | | 268 | 165 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.

Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Dean Martin Drive, Fairfield Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Americana 5 Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Golden Palm Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Panorama Towers, Las Vegas* – There is a group of high-rise condominiums to the west of I-15 in this area. The number of impacts shown is the number of buildings in the complex. A count of the number of residences was not

possible. The noise impact at this location is due to the high speeds and the elevated structure.

Segment 6A under the EMU technology option would result in 358 noise impacts and 55 severe noise impacts while the DEMU technology option would result in 268 noise impacts and 165 severe noise impacts.

*Operational Period Vibration*

Consistent with the conclusion in **Section 3.12.6.2** of the Draft EIS, there are no vibration impacts projected for Segment 6A due to the distance of the nearest vibration-sensitive uses and use of an elevated structure. The elevated structure would provide vibration attenuation prior to the vibration reaching the ground.

*Construction Effects*

There has been no change to the construction noise and vibration effects for Segment 6A as described in **Section 3.12.6.1** of the Draft EIS. No revision to this evaluation is required.

**Segment 6B – Revised Draft EIS Evaluation**

This analysis updates the evaluation of noise and vibration effects of Segment 6B contained in **Sections 3.12.6.1** and **3.12.6.2** of the Draft EIS. A discussion of AAAs 7 and 8 relative to Segment 6B are discussed under the heading "Alignment Adjustment Areas" below.

*Operational Period Noise*

**Tables S-3.12-10** and **3.12-11** provide a revised summary of the projected noise impacts for Segment 6B for the EMU and DEMU technology options, respectively.

*Saffredi Lane* – There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment. This impact is the same as presented for Segment 6B in **Section 3.12.6.2** of the Draft EIS.

*Deluna Street* - There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment. This impact is the same as presented for Segment 6B in **Section 3.12.6.2** of the Draft EIS.

*Tremezzo Bay Street* - There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment and the higher noise levels generated by the DEMU vehicle. This impact is the same as presented for Segment 6B under the DEMU option in **Section 3.12.6.2** of the Draft EIS.

*Dean Martin Drive/West Ali Baba Lane* - There a hotel located at the corner of this intersection. The noise impact at this location is due to the close proximity of the hotel to the proposed alignment and the higher noise levels generated by the DEMU vehicle.

Table S-3.12-10 Revised Noise Impacts for Segment 6B - EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 64-66 | 61 | 66 | 68-69 | 2.2-3.2 | 11 | 0 |
| Deluna St | SB | 40-60 | 66 | 65-67 | 61 | 66 | 68-70 | 2.6-4 | 11 | 12 |
| Wigwam Ave to Blue Diamond Rd | NB | 140-490 | 66 | 61-68 | 61 | 66 | 67-70 | 1.2-4.2 | 336 | 0 |
| Industrial Road, Silverton Casino Lodge | SB | 300 | 66 | 68 | 61 | 66 | 67 | 4.2 | 0 | 1 |
| Dean Martin Dr/W, Ali Baba Ln | SB | 210-300 | 66 | 62-64 | 61 | 66 | 67-68 | 1.6-2.4 | 5 | 0 |
| Dean Martin Dr, Residence Inn | SB | 345 | 66 | 63 | 61 | 66 | 67 | 1.8 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 360 | 66 | 62 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 130 | 66 | 63 | 61 | 66 | 68 | 1.8 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 170 | 66 | 61 | 61 | 66 | 67 | 1.3 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 180 | 66 | 61 | 61 | 66 | 67 | 1.3 | 1 | 0 |
| Dean Martin Dr, Panorama Towers | SB | 360 | 66 | 63 | 61 | 66 | 68 | 1.9 | 3 | 0 |
| Total | | | | | | | | | 371 | 13 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-11 Revised Noise Impacts for Segment 6B – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 66-68 | 61 | 66 | 69-70 | 3.3-4.6 | 0 | 11 |
| Deluna St | SB | 40-60 | 66 | 67-70 | 61 | 66 | 70-71 | 3.9-5.5 | 0 | 23 |
| Tremezzo Bay St | SB | 120 | 66 | 63 | 61 | 66 | 67 | 1.8 | 6 | 0 |
| Dean Martin Dr/W. Ali Baba Ln | SB | 210-300 | 66 | 61-65 | 61 | 66 | 67-69 | 1.3-2.9 | 8 | 0 |
| Wigwam Ave to Blue Diamond Rd | NB | 140-490 | 66 | 61-69 | 61 | 66 | 67-71 | 1.4-4.9 | 407 | 0 |
| Industrial Road, Silverton Casino Lodge | SB | 300 | 66 | 69 | 61 | 66 | 67 | 4.9 | 0 | 1 |
| Dean Martin Dr, Marriott | SB | 350 | 66 | 64 | 61 | 66 | 68 | 2.2 | 0 | 1 |
| Dean Martin Dr, Residence Inn | SB | 345 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 360 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 130 | 66 | 69 | 61 | 66 | 70 | 4.7 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 170 | 66 | 64 | 61 | 66 | 68 | 2.2 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 180 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Panorama Towers | SB | 360 | 66 | 61 | 61 | 66 | 67 | 1.3 | 3 | 0 |
| Total | | | | | | | | | 429 | 36 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Industrial Road, Silverton Casino Lodge, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Wigwam Avenue to Blue Diamond Road, Las Vegas* – There is a mobile home park to the east of I-15 in this area. The number of potential impacts at this location is an estimate based on aerial photography. The impacts are due to the high speeds and the elevated structure.

*Dean Martin Drive, Residence Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Courtyard Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Fairfield Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Americana 5 Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Golden Palm Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Panorama Towers, Las Vegas* – There is a group of high-rise condominiums to the west of I-15 in this area. The number of impacts shown is the number of buildings in the complex. A count of the number of residences was not possible. The noise impact at this location is due to the high speeds and the elevated structure.

Segment 6B under the EMU technology option would result in 371 noise impacts, and 13 severe noise impact. Under the DEMU technology option, Segment 6B would result in 429 noise impacts and 36 severe noise impacts.

This revised analysis for Segment 6B will serve as the point of comparison when considering the noise effects associated with AAAs 7 and 8.

*Operational Period Vibration*

Consistent with the conclusion in **Section 3.12.6.2** of the Draft EIS, there are no vibration impacts projected for Segment 6B due to the distance of the nearest vibration-sensitive uses and use of an elevated structure. The elevated structure would provide vibration attenuation prior to the vibration reaching the ground.

*Construction Effects*

There has been no change to the construction noise and vibration effects for Segment 6B as described in **Section 3.12.6.1** of the Draft EIS. No revision to this evaluation is required.

**Alignment Adjustment Areas**

*Operational Period Noise and Vibration*

***AAAs 1 through 7:*** The operational and construction noise and vibration effects Segments 2A/2B, 3B, and 6B as modified by AAAs 1 through 7 would be similar to those identified in **Section 3.12.6.2** of the Draft EIS, as no new noise environments would be

crossed and would not locate the rail alignment closer to noise- or vibration sensitive uses. The noise and vibration effects associated with AAAs 1 through 7 are summarized below:

- AAA 1 would shift a portion of Segment 2A/2B approximately 300 feet to the south and therefore farther away from the residential and commercial uses located in northern Barstow.
- AAAs 2 through 6 would not be located within 1,000 feet of any noise- or vibration-sensitive land uses, such as residential developments. As such, the alignment adjustments would not result in any additional noise or vibration effects beyond what was documented in **Section 3.12.6.2** of the Draft EIS for Segment 2A/2B, Segment 3B, and Segment 6B.
- AAA 7 would shift a portion of Segment 6B approximately 200 feet to the west of the I-15 freeway corridor, and thus farther away from the residential developments on the eastern side of the I-15 freeway corridor.

***AAA 8:*** **Appendix S-D** provides the detailed noise and vibration evaluation for AAA 8. AAA 8 would shift portions of the Segment 6B rail alignment to the west of the I-15 freeway corridor. Specifically between Hacienda Avenue and Tropicana Avenue, AAA 8 would shift the rail alignment into the median of Dean Martin Drive/Industrial Road and approximately 80 feet closer to noise- and vibration-sensitive uses, such as residences and hotels.

**Tables S-3.12-12** and **S-3.12-13** summarize the projected noise effects associated with operation of Segment 6B as modified by AAA 8 for the EMU and DEMU technology options, respectively. This evaluation considers the revised affected environment and environmental consequences identified for Segment 6B since publication of the Draft EIS. The noise effects associated with AAA 8 would be limited to areas west of the I-15 freeway near or along Dean Martin Drive.

As shown in **Appendix S-D**, the plan and profile set for AAA 8 provide detailed information related to train speed based on refined engineering performed after publication of the Draft EIS. While the evaluation of Segment 6B in **Section 3.12.6.2** of the Draft EIS assumed a maximum train speed of 150 mph for the entire rail alignment based on the most current information available at the time, the evaluation of Segment 6B as modified by AAA 8 considers the defined speeds along the rail alignment in this area.

In many cases, the maximum train speed has been reduced, with a resultant reduction in projected noise levels associated with train passby for both the EMU and DEMU technology options. As such, there are fewer anticipated noise impacts identified for Segment 6B as modified by AAA 8 even though the rail alignment would be shifted to the west and thereby closer to existing noise- and vibration-sensitive uses.

Table S-3.12-12 Noise Impacts for Segment 6B as Modified by AAA 8– EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 64-66 | 61 | 66 | 68-69 | 2.2-3.2 | 11 | 0 |
| Deluna St | SB | 40-60 | 66 | 65-67 | 61 | 66 | 68-70 | 2.6-4 | 11 | 12 |
| Industrial Rd, Silverton Casino Lodge | SB | 80 | 66 | 66 | 61 | 66 | 69 | 3.0 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 55 | 66 | 67 | 61 | 66 | 70 | 4.0 | 0 | 1 |
| Total | | | | | | | | | 23 | 13 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

As the Segment 6B rail alignment would not be altered south of Wigwam Avenue, the noise impacts for Saffredi Lane, Deluna Street, and Tremezzo Bay Street are the same as identified for Segment 6B in **Section 3.12.6.2** of the Draft EIS.

*Industrial Road, Silverton Casino Lodge, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Wigwam Avenue to Blue Diamond Road, Las Vegas* – There is a mobile home park to the east of I-15 in this area. The number of potential impacts at this location is an estimate based on aerial photography. The impacts are due to the high speeds and the aerial structure.

*Dean Martin Drive, Residence Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Courtyard Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Fairfield Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Americana 5 Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

Table S-3.12-13 Noise Impacts for Segment 6B as Modified by AAA 8 – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 66-68 | 61 | 66 | 69-70 | 3.3-4.6 | 0 | 11 |
| Deluna St | SB | 40-60 | 66 | 67-70 | 61 | 66 | 70-71 | 3.9-5.5 | 0 | 23 |
| Tremezzo Bay St | SB | 120 | 66 | 63 | 61 | 66 | 67 | 1.8 | 6 | 0 |
| Wigwam Ave to Blue Diamond Rd | NB | 310-460 | 66 | 61-63 | 61 | 66 | 67-68 | 1.2-1.8 | 209 | 0 |
| Industrial Road, Silverton Lodge Casino | SB | 80 | 66 | 70 | 61 | 66 | 71 | 5.8 | 0 | 1 |
| Dean Martin Dr, Residence Inn | SB | 265 | 66 | 63 | 61 | 66 | 68 | 2.0 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 300 | 66 | 63 | 61 | 66 | 67 | 1.8 | 1 | 0 |
| Dean Martin Drive, Fairfield Inn | SB | 350 | 66 | 62 | 61 | 66 | 67 | 1.6 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 55 | 66 | 72 | 61 | 66 | 73 | 7.2 | 0 | 1 |
| Dean Martin Dr, Motel 6 | SB | 105 | 66 | 65 | 61 | 66 | 68 | 2.7 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 80 | 66 | 67 | 61 | 66 | 69 | 3.5 | 0 | 1 |
| Dean Martin Dr, Panorama Towers | SB | 300 | 66 | 63 | 61 | 66 | 68 | 2.0 | 3 | 0 |
| Total | | | | | | | | | 303 | 37 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Dean Martin Drive, Golden Palm Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Panorama Towers, Las Vegas* – There is a group of high-rise condominiums to the west of I-15 in this area. The number of impacts shown is the number of buildings in the complex. A count of the number of residences was not possible. The noise impact at this location is due to the high speeds and the aerial structure.

Segment 6B as modified by AAA 8 would be constructed on an elevated structure. Because there would be less than 70 train passbys per day, the vibration criterion used for this assessment is 80 VdB. The use of elevated structures for the Segment 6B rail alignment would result in a 10 VdB reduction in vibration levels due to the attenuation of vibration as it travels through the elevated structure to the ground. The resulting vibration levels associated with the train passbys on Segment 6B with implementation of AAA 8 would range from 50 VdB to 67 VdB at the closest residences. These vibration levels would not exceed the 80 VdB criterion and therefore not considered significant.

*Construction Effects*

Construction of the AAAs would result in similar noise and vibration effects as identified in **Section 3.12.6.1** of the Draft EIS for Segment 2A/2B, Segment 3B, and Segment 6B. With implementation of AAA 8, temporary construction noise sources would be shifted slightly closer to sensitive receptors to the west of the I-15 freeway. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Wigwam MSF Modification**

*Operational Period Noise and Vibration*

There has been no change in the location of the Wigwam MSF since publication of the Draft EIS. While the Wigwam MSF would be modified to allow for the trackway connection from the south rather than the north, the Wigwam MSF would continue to have the same maintenance activities, and thus similar noise and vibration sources, as considered in **Section 3.12.6.2** of the Draft EIS. Placement of the trackway on the south side of the Wigwam MSF would, however, shift the rail alignment slightly closer to the residential developments west of Dean Martin Drive. Trains at this location would be traveling at low speeds of approximately 35 miles per hour (mph) when entering the Wigwam MSF, which would reduce the noise and vibration associated with train passby as compared to the high-speed trains traveling at full speed (125 mph to 150 mph). **Section 3.12.6.2** of the Draft EIS concluded that no adverse noise or vibration effects would occur within the vicinity of the Wigwam MSF.

*Construction Effects*

Since there has been to change in the location of the Wigwam MSF since publication of the Draft EIS, the same construction noise and vibration effects as described in **Section 3.12.6.1** of the Draft EIS would occur. Construction of the Wigwam MSF modification would have the potential to introduce temporary increases in noise related to the construction activities and equipment. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Profile Modification**

*Operational Period Noise and Vibration*

The Profile Modification would not change the lateral location of the Segment 3B and the noise generated by the high-speed trains at this location would be comparable to what was evaluated for Segment 3B in **Section 3.12.6.2** of the Draft EIS. At this location, the noise generated by the high-speed train passby would be comparable to that of a semi-truck traveling at full speed on the existing I-15 freeway. However, as the profile modification would be within a retained cut approximately 6 to 8 feet below grade, the walls lining the rail alignment would help to absorb some of the existing and project generated noise. The profile modification would have the potential to reduce noise associated with train passbys for this portion of Segment 3B. Regardless, there are no noise- or vibration-sensitive uses or users located within the vicinity of the Segment 3B Profile Modification. No adverse effects would thus occur.

*Construction Effects*

Construction of the profile modification would introduce temporary noise and vibration sources during construction activities. Since there are no sensitive receptors within 1,000 feet of the profile modification, no construction noise or vibration effects would occur.

## 3.12.4 MITIGATION MEASURES

The same types of mitigation measures identified in **Sections 3.12.7.1**, **3.12.7.2**, and **3.12.7.3** of the Draft EIS would be applied to the project modifications and additions to address potential operational and construction noise and vibration effects.

**Noise**

Potential mitigation measures for reducing noise effects from high-speed rail operations identified in **Section 3.12.7.1** of the Draft EIS are summarized below:

- Noise Barriers – The primary requirements for an effective noise barrier are that 1) the barrier must be high enough and long enough to break the line-of-sight between the sound source and receiver, 2) the barrier must be of an impervious material with maximum surface density of 4 pounds per square foot, and 3) the

barrier must not have any gaps or holes between the panels or at the bottom.

- Relocation of Crossovers or Special Trackwork at Crossovers – Relocate track crossovers away from residential areas or use spring-rail or moveable point frogs in place of standard rigid frogs at rail turnouts.
- Building Sound Insulation – Where the rail alignment would be located at-grade and where sensitive receptors would be dispersed or limited in nature, sound insulation to improve the outdoor-to-indoor noise reduction could be considered in lieu of a noise barrier. Substantial improvements in building sound insulation (5 to 10 dBA) can often be achieved by adding an extra layer of glazing to windows, sealing holes in exterior surfaces, and providing forced ventilation and air-conditioning so windows need not be opened.
- Property Acquisitions or Easements – Where the rail alignment would be located at-grade and where sensitive receptors would be dispersed or limited in nature, property acquisitions or easements could be considered in lieu of a noise barrier. The Applicant could purchase properties likely to be impacted by train operations or could acquire easements for residences by paying homeowners to accept future train noise conditions.

**Tables S-3.12-14** and **S-3.12-15** show the noise mitigation locations for the Segment 2C alignment options. **Figure S-3.12-3** shows the general locations of the identified noise mitigation for the Segment 2C alignment options.

**Tables S-3.12-16** and **S-3.12-17** shows the updated noise mitigation locations for the Segment 6 rail alignments as revised from **Section 3.12.7.1** of the Draft EIS. **Figure S-3.12-4** shows the general locations of the identified noise mitigation for Segment 6 as revised from **Section 3.12.7.1** of the Draft EIS.

**Table S-3.12-12** shows the noise mitigation locations for AAA 8. **Figure S-3.12-5** shows the general locations of the identified noise mitigation for AAA 8.

The tables identify where noise barriers would be effective to reduce noise associated with high-speed rail operations based on FRA noise criteria. These noise mitigation locations should be taken in combination with the noise mitigation locations identified in **Section 3.12.7.1** in the Draft EIS, which identify mitigation locations for all project features evaluated in the Draft EIS.

For the Segment 2C alignment options, Segment 6, and Segment 6B with implementation of AAA 8, the noise barriers could be at the wayside or on the elevated structure. If feasible, the most effective location for the noise barriers would be on the elevated structure. It is assumed that a 4-foot barrier constructed on the elevated structure would be sufficient to reduce noise impacts and severe noise impacts associated with the Segment 2C alignment options, Segment 6, and Segment 6B with implementation of AAA 8.

However, where the rail alignment would be at-grade, noise barriers should be located on the wayside of the rail alignment where feasible. In areas where the noise-sensitive uses are not concentrated within a single area, such as the scattered residential uses along

Segment 2C, implementation of sound insulation or property acquisitions/easements may be required to mitigate these noise impacts.

### Vibration

There are several approaches to reduce ground-borne vibration from high-speed rail operations as identified in **Section 3.12.7.2** of the Draft EIS. No significant vibration effects were found for the project modifications and additions and no additional mitigation would be required.

### Construction

The relevant construction period noise control measures from **Section 3.12.7.3** of the Draft EIS are also summarized below. These construction mitigation measures would be applied to the construction of the new project features and modifications.

- Avoid nighttime construction in residential neighborhoods.
- Using specially quieted equipment with enclosed engines and/or high-performance mufflers.
- Locating stationary construction equipment as far as possible from noise-sensitive sites.
- Constructing noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Re-routing construction-related truck traffic along roadway that will cause the least disturbance to residents.
- Avoiding impact pile driving near noise-sensitive areas, where possible. If impact pile drivers must be used, their use will be limited to the period between 8:00 AM and 5:00 PM on weekdays only.

Table S-3.12-14 Noise Mitigation Locations, Segment 2C Side Running

| Location | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|
| Lenwood Road | EMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | EMU | SB | 1580 – 1587 | 700 |
| L Street to H Street | EMU | SB | 1735 – 1743 | 800 |
| Grace Street | EMU | SB | 1791 – 1821 | 3,000 |
| Coolwater Lane | EMU | SB | 1882 – 1892 | 1,000 |
| Western Whip Court to Kelly Drive | EMU | SB | 1842 – 1886 | 4,400 |
| Elephant Mountain Road | EMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | EMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *12,500* |
| Lenwood Road | DEMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | DEMU | SB | 1580 – 1587 | 700 |
| Ironwood Road to L Street | DEMU | NB | 1690 – 1713 | 2,300 |
| L Street to H Street | DEMU | SB | 1732 – 1743 | 1,100 |
| Grace Street | DEMU | SB | 1791 – 1822 | 3,100 |
| Sandalwood Court | DEMU | NB | 1824 – 1842 | 1,800 |
| Coolwater Lane | DEMU | SB | 1882 – 1892 | 1,000 |
| Western Whip Court to Kelly Drive | DEMU | SB | 1838 – 1886 | 4,800 |
| Center Lane to Mojave River | DEMU | NB | 1888 – 1891 | 300 |
| Hacienda Lane | DEMU | NB | 1945 – 1955 | 1,000 |
| Elephant Mountain Road | DEMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | DEMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *18,700* |

Source: HMMH, 2010.

Table S-3.12-15 Noise Mitigation Locations, Segment 2C Median

| Location | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|
| Lenwood Road | EMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | EMU | SB | 1580 – 1587 | 700 |
| L Street to H Street | EMU | SB | 1735 – 1743 | 800 |
| Grace Street | EMU | SB | 1791 – 1812 | 2,100 |
| Sandalwood Court | EMU | NB | 1824 – 1842 | 1,800 |
| Western Whip Court to Kelly Drive | EMU | SB | 1842 – 1886 | 4,400 |
| Center Lane to Mojave River | EMU | NB | 1888 – 1891 | 300 |
| Elephant Mountain Road | EMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | EMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *12,700* |
| Lenwood Road | DEMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | DEMU | SB | 1580 – 1587 | 700 |
| Ironwood Road to L Street | DEMU | NB | 1690 – 1713 | 2,300 |
| L Street to H Street | DEMU | SB | 1732 – 1743 | 1,100 |
| Grace Street | DEMU | SB | 1791 – 1821 | 3,000 |
| Sandalwood Court | DEMU | NB | 1822 – 1844 | 2,300 |
| Western Whip Court to Kelly Drive | DEMU | SB | 1842 – 1886 | 4,400 |
| Center Lane to Mojave River | DEMU | NB | 1887 – 1892 | 500 |
| Hacienda Lane | DEMU | NB | 1945 – 1955 | 1,000 |
| Elephant Mountain Road | DEMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | DEMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *17,900* |

Source: HMMH, 2010.

Table S-3.12-16 Noise Mitigation Locations, Segment 6 – Revised Draft EIS Analysis

| Location | Segment | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|---|
| Saffredi Ln/Deluna St | 6B | EMU | SB | 9469 – 9531 | 6,200 |
| South of Blue Diamond Rd | 6A/6B | EMU | NB | 9697-9732 | 3,500 |
| South of W Russell Rd | 6A/6B | EMU | SB | 9872 – 9888 | 1,600 |
| South of W Tropicana Ave | 6A/6B | EMU | SB | 9926 – 9942 | 1,600 |
| Harmon Ave | 6A/6B | EMU | SB | 9957 – 9975 | 1,800 |
| *Total* | | | | | *6A: 8,500*<br>*6B: 14,700* |
| Saffredi Ln/Deluna St | 6A | DEMU | SB | 9469 – 9531 | 6,200 |
| Saffredi Ln/Deluna St/Tremezzo Bay St | 6B | DEMU | SB | 9469 – 9548 | 7,900 |
| South of Blue Diamond Rd | 6A/6B | DEMU | NB | 9697-9732 | 3,500 |
| Dean Martin Dr | 6B | DEMU | SB | 9790-9810 | 1,500 |
| South of W Russell Rd | 6A/6B | DEMU | SB | 9872 – 9888 | 1,600 |
| South of W Tropicana Ave | 6A/6B | DEMU | SB | 9926 – 9942 | 1,600 |
| Harmon Ave | 6A/6B | DEMU | SB | 9957 – 9975 | 1,800 |
| *Total* | | | | | *6A: 14,700*<br>*6B: 16,400* |

Source: HMMH, 2010.

Table S-3.12-17 Noise Mitigation Locations, Segment 6B as Modified by AAA 8

| Location | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|
| Saffredi Ln/Deluna St | EMU | SB | 9469 – 9531 | 6,200 |
| South of Blue Diamond Rd | EMU | SB | 9715 – 9732 | 1,700 |
| South of W Tropicana Ave | EMU | SB | 9926 – 9934 | 800 |
| *Total* | | | | *8,700* |
| Saffredi Ln/Deluna St/Tremezzo Bay St | DEMU | SB | 9469 – 9548 | 7,900 |
| South of Blue Diamond Rd | DEMU | SB | 9715 – 9732 | 1,700 |
| South of Blue Diamond Rd | DEMU | NB | 9702 – 9732 | 3,000 |
| South of W Russell Rd | DEMU | SB | 9872 – 9888 | 1,600 |
| South of W Tropicana Ave | DEMU | SB | 9926 – 9942 | 1,600 |
| Harmon Ave | DEMU | SB | 9957 – 9975 | 1,800 |
| *Total* | | | | *17,600* |

Source: HMMH, 2010.

## 3.12.5 Residual Impacts Following Mitigation

The noise impacts associated with the Segment 2C alignment options where the rail alignment would be elevated through Barstow would be fully mitigated with implementation of the 4-foot noise barriers on the elevated structure at the specified lengths in **Tables S-3.12-14** and **S-3.12-15**. The noise impacts associated with the elevated portions of Segment 6A, Segment 6B, and Segment 6B as modified by AAA 8 would also be fully mitigated with implementation of 4-foot noise barriers on the elevated structure at the specific lengths in **Table S-3.12-16** and **S-3.12-17**.

In areas where the rail alignment would be located at-grade, at-grade noise barriers would fully mitigate noise impacts and severe noise impacts associated with operation of the project. Where sensitive receptors would be dispersed or limited in nature (i.e. one residence in generally undeveloped area), sound insulation or property acquisitions/easements could be considered in lieu of construction of a noise barrier.

Overall, implementation of the noise mitigation would fully mitigate noise impacts and severe noise impacts associated with operation of the project modifications and additions and no residual effects would remain.

As no adverse vibration effects would occur with the project modifications and additions, no residual vibration effects would remain.

Segment 3 B

Alignment Adjustment Area 1

Alignment Adjustment Area 2

Segment 2A

LT-5

Yermo

Segment 2A/2B

Note: Segments 1 and 2A/2B are one common alignment, which would be used under Alternative A or Alternative B.

Segment 1

Lenwood

LT-S1

Barstow

LT-S2

Segment 2B

Segment 3 A

Note: The dashed line represents the extent of the median option for Segment 2C.

Segment 2C

## Legend

**Noise Measurements**

- Measurement Location
- # Monitoring Site ID

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

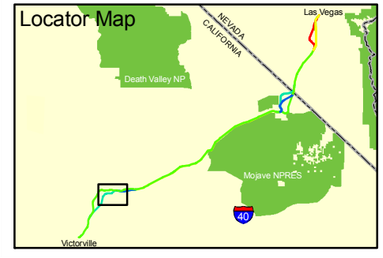
Kilometers
0 2.5 5

Miles
0 1.5 3

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map

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**DesertXpress - Supplemental EIS**

***Noise Measurement Locations, Segment 2C***

FIG **S-3.12-1**

Source: Geografika Consulting 06.17.10


## Legend

**Noise Measurements**

- Measurement Location
- Monitoring Site ID

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text: Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

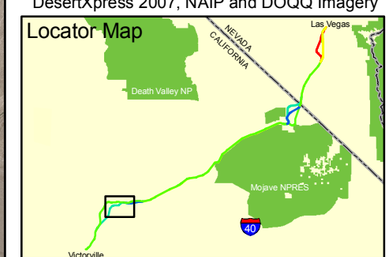
Kilometers: 0 2.5 5

Miles: 0 1.5 3

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map

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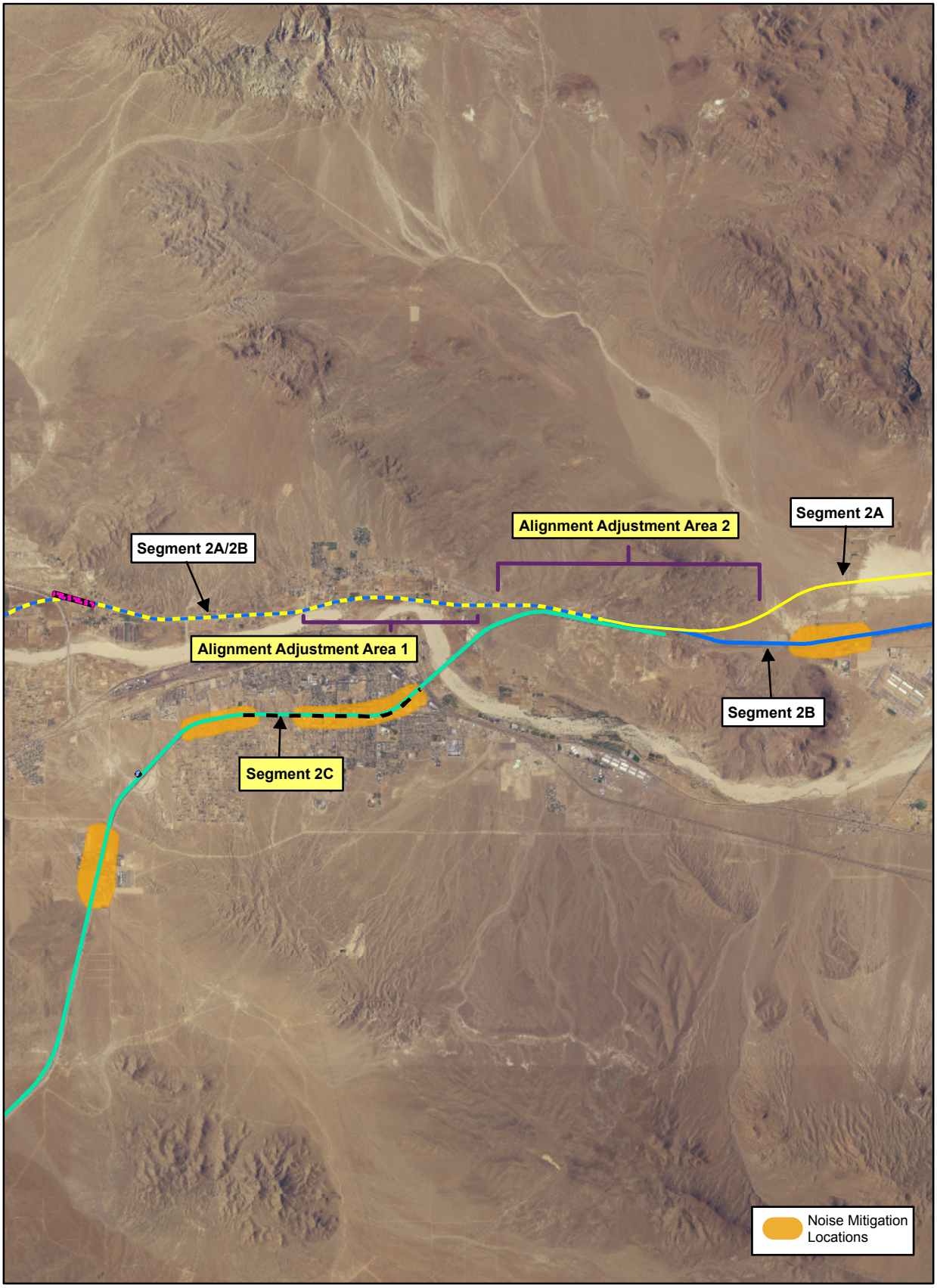
***Noise Measurement Locations, AAA 8***

FIG **S-3.12-2**

Source: Geografika Consulting 06.16.10

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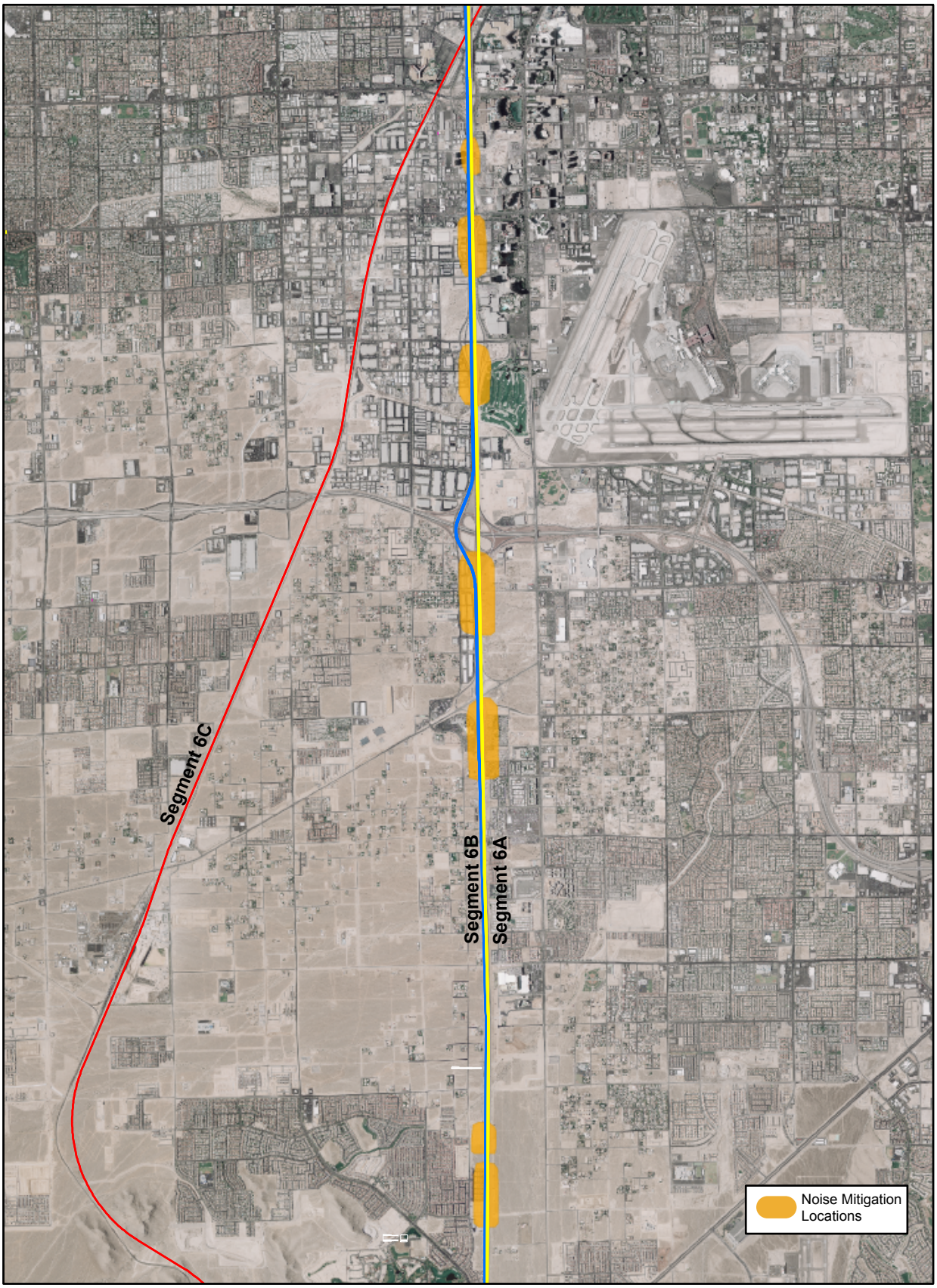
**DesertXpress - Supplemental EIS**

***Noise Mitigation Locations, Segment 2C***

**FIG S-3.12-3**

Geografika Consulting 06.10.10

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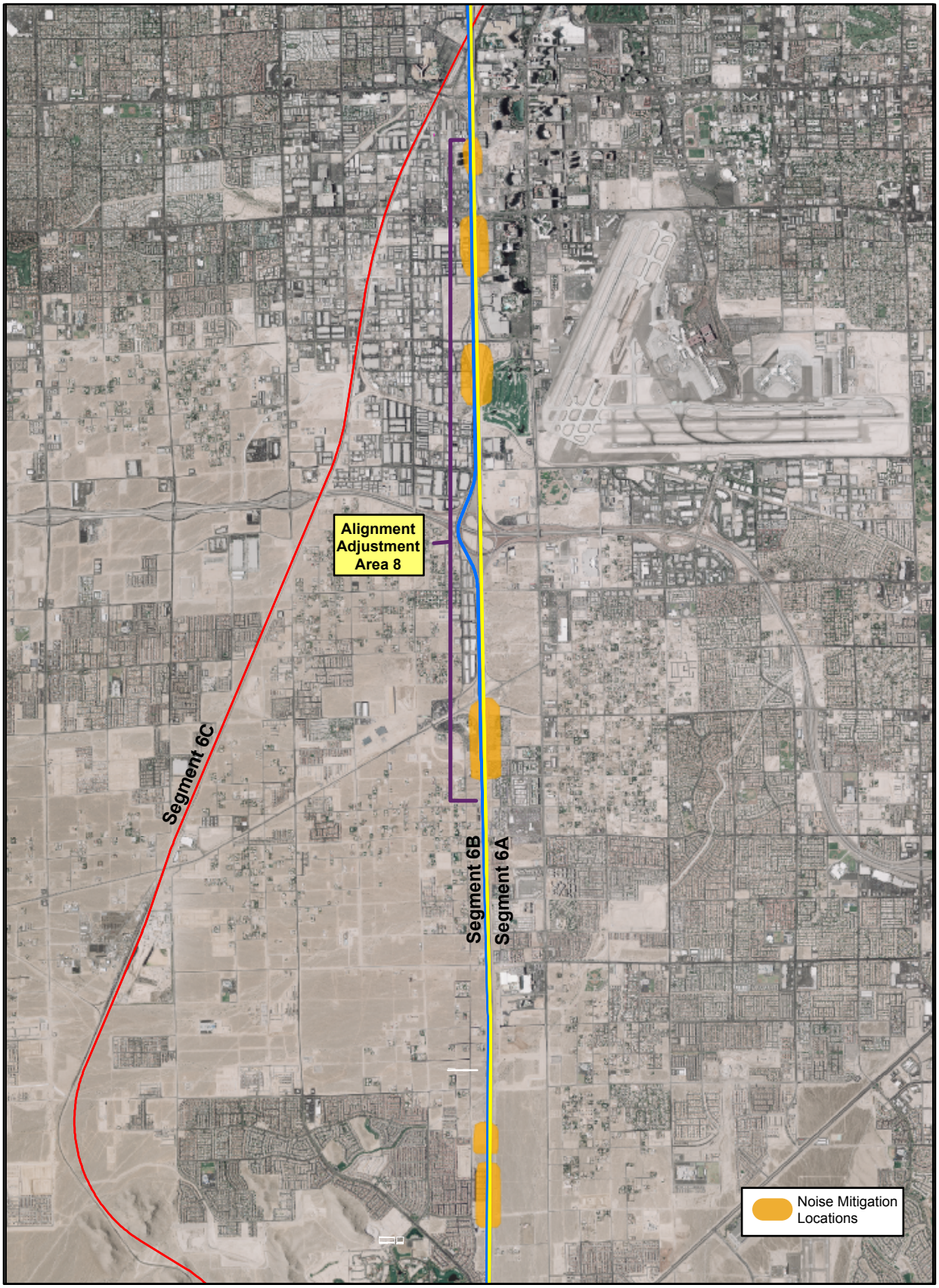
**DesertXpress - Supplemental EIS**

***Noise Mitigation Locations, Segment 6 (Revised Draft EIS Evaluation)***

**FIG S-3.12-4**

Geografika Consulting 06.17.10

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**DesertXpress - Supplemental EIS**

***Noise Mitigation Locations, Segment 6B with AAA 8***

FIG **S-3.12-5**

Geografika Consulting 06.17.10

# 3.13 ENERGY

This section analyzes the potential impact of the project modifications and additions on energy resources, both on an overall energy budget basis, as well as, on an electricity resources basis.

## 3.13.1 AFFECTED ENVIRONMENT

Regulations and standards related to Energy identified in **Section 3.13.1** of the Draft EIS have not changed since publication of the Draft EIS and therefore remain applicable to the project modifications and additions.

**Section 3.13.3** of the Draft EIS set forth the parameters for considering the energy resources in the affected environment. The geographies examined included the state level, and transportation energy used within the I-15 freeway corridor in California and Nevada. The project modifications and additions are appropriately examined within these same geographic regions. Since publication of the Draft EIS, new background information has become available for these geographies to supplement information provided in the Draft EIS on the affected environment.

### Regional Conditions

*Total Energy Consumption*

California remains second among all U.S. states in total energy consumption. On a per capita basis, California's energy usage remains ranked at 49th among all 50 states. [1] [2] Of all energy consumed in California, the transportation sector continues to represent the largest portion (40 percent), followed by the industrial, commercial and residential sectors (23 percent, 19 percent, and 18 percent, respectively).[3]

Nevada's total energy consumption is now 37th in the United States in terms of overall energy consumption,[4] and 36th on a per-capita basis.[5] Thirty three percent of Nevada's energy consumption is spent on transportation, followed by the industrial, residential, and commercial sectors, at 26 percent, 24 percent, and 17 percent, respectively.[6]

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[1] USDOE, 2005a. << http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA. accessed May 26, 2010>>

[2] USDOE, 2005b. << http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA. accessed May 26, 2010>>

[3] Calculated from USDOE, 2005a. << http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA. accessed May 26, 2010>>

[4] USDOE 2005a

[5] USDOE 2005b

[6] Calculated from USDOE 2005a

*Transportation Energy Consumption*

Since publication of the Draft EIS, the California Energy Commission (CEC) has revised its forecasts for on-road miles traveled in the state.

CEC now estimates that on-road mileage will increase by 53 percent between 2005 and 2030—from 332 billion to 507 billion.[7] Notwithstanding this large increase, the CEC predicts that in-state road transportation fuel gasoline usage is anticipated to drop between 2007 and 2030 from 15.4 billion gallons of gasoline to 13.4 billion gallons (367 million to 319 million barrels of oil) per year, as a result of the introduction of more fuel-efficient cars, fleet hybridization, and the increased use of diesel and alternative fuel vehicles.[8]

There has been no change to projected fuel usage for the state of Nevada. In-state Nevada gasoline fuel usage remains much smaller, presently estimated to be just more than 1 billion gallons (25 million barrels of oil-equivalent). [9]

There is no more recent data available than 2007 for automobile transportation on the I-15 freeway within the limits of the project study area. During year 2007, this area saw 3.67 vehicle miles traveled (VMT), which in turn required 177,441,000 gallons of gasoline, equivalent to 3.7 million barrels of oil.

*Electricity Demand*

The California portion of the project remains within service area of Southern California Edison (SCE), a large publicly-owned utility (POU) that served more than 13 million people at a peak demand of 21,786 MW in 2009. [10] [11]

The Nevada portion of the project remains within the service area of Nevada Energy, also a POU, which served 2.4 million customers at a peak load of 5,586 MW in 2009. [12] [13]

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[7] California Energy Commission (CEC). 2007. Transportation Energy Forecasts for the 2007 Integrated Energy Policy Report, Final Staff Report. Available at: www.energy.ca.gov/2007publications/CEC-600-2007-009/CEC-600-2007-009-SF.PDF. Accessed: May 26, 2010.

8 CEC 2010

California Energy Commission (CEC). 2010. Transportation Energy Forecasts and Analyses for the 2009 Integrated Energy Policy Report, Final Staff Report. Available at: www.energy.ca.gov/2010publications/CEC-600-2010-002/CEC-600-2010-002-SF.PDF. Accessed: May 26, 2010.

[9] Calculated based on Nevada per-capita gasoline production from data from U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (USDOE 2008e) and Nevada's 2006 population count (U.S. Census Bureau 2000)

[10] Southern California Edison (SCE). 2010. Southern California Edison. Available: http://www.sce.com/AboutSCE/CompanyOverview/. Accessed: May 26, 2010.

[11] Southern California Edison (SCE). 2009. Southern California Edison, Power Bulletin, Vol. 9, No. 11 November/December 2009. Available: http://www.sce.com/NR/rdonlyres/28CD1A3E-113F-4CE6-8ABA-A36A3353E9B8/0/091202_200911_Government.pdf. Accessed: May 26, 2010.

[12] NV Energy. 2010. About Us. Available: http://www.nvenergy.com/company/. Accessed: May 26, 2010.

[13] NV Energy. 2009. Nevada Power Company's Triennial Integrated Resource Plan for 2010-2029, Docket No. 09-07003. Volume 4 of 6, Technical Appendix. Available: http://www.nvenergy.com/company/rates/filings/images/vol4espta1-16.pdf. Accessed: May 26, 2010.

Because the project would cross service area boundaries in addition to state borders, it remains most fitting to analyze anticipated energy of the project in relation to total existing and forecasted regional electricity generating capacity, rather than to restrict the analysis to the specific utility generating resources themselves.

The National Energy Modeling System (NEMS) has been updated since publication of the Draft EIS to extend through 2030. The NEMS is a computer-based, energy-economy modeling system of U.S. energy markets. NEMS balances energy supply and demand, accounting for economic competition among the various energy fuels and sources.

In order to represent regional differences in energy markets, the component modules of NEMS function at the regional level. For electricity, the component modules are the regions and subregions used by the North American Electric Reliability Council. Figure 3-13.1 of the Draft EIS illustrates these regions, called Electricity Market Modular (EMM) Regions: Southern Nevada is part of Region 12 (Rocky Mountain Power area, Arizona, New Mexico and Southern Nevada (RMPA-NMSN), and California is a region unto itself (Region 13).

**Table S-3.13-1** provides updated electricity supply and demand data and projections for selected years regarding EMM Regions 12 and 13. The data continue to show a steady increase in anticipated demand for the respective regions through 2030.

Table S-3.13-1 EMM Regional Data and Projections, Regions 12 and 13

| Total Capacity (GW)[a] | 2009 | 2010 | 2013 | 2020 | 2030 |
|---|---|---|---|---|---|
| Region 12 | 53.86 | 55.56 | 59.16 | 59.88 | 69.87 |
| Region 13 | 67.69 | 72.24 | 84.04 | 84.16 | 91.34 |

Source: U.S. Department of Energy (USDOE), Energy Information Administration. 2009. Annual Energy Outlook 2010: Supplemental Tables (Table 87). Available: < http://www.eia.doe.gov/oiaf/aeo/supplement/>. Accessed: May 26, 2010. Washington, D.C.

[a] Total capacity is expressed in gigawatts (one billion watts) and is related to Net summer capacity. Net summer capacity is the steady hourly output that generating equipment is expected to supply to system load as demonstrated by tests during summer peak load. Includes small power producers and exempt wholesale generators.

## 3.13.2 METHODS OF EVALUATION OF IMPACTS

The evaluation of energy supply and demand compares potential energy consumption of the action alternatives and the No Action, which are described below.

Primary energy consideration is the energy required for train propulsion, which is based upon energy consumption factors for fossil fuels and electricity.

Energy consumption factors have been updated since publication of the Draft EIS, as the US Department of Energy has published a new edition of its Transportation Energy Data Book. **Table S-3.13-2** reflects a slightly increased consumption factor for passenger vehicles consistent with the updated Transportation Energy Data Book. No other

consumption factors have been updated, and thus remain as presented in the Draft EIS.

The analysis of train propulsion energy focuses on two analytical methods of energy consumption. The first is the overall energy consumption differences between the No Action Alternative and the project, considering the sum of fossil fuel consumption and electricity. The analysis identifies if the project would consume more or less energy, regardless of the source, compared to the No Action Alternative.

Table S-3.13-2 Operational Energy Consumption Factors

| Mode | Factor[c] |
|---|---|
| Passenger vehicles[a] | 5,517 BTUs/VMT |
| DEMU[b] | 408,779 BTUs/TMT |
| EMU[b] | 569,163 BTUs/TMT |

Source: ICF International, 2010.

BTUs = British thermal units.

TMT = Train-mile traveled.

[a] U.S. Department of Energy (USDOE), Energy Information Administration. 2009. Office of Energy Efficiency and Renewable Energy. Transportation Energy Data Book: Edition 28. Prepared by Oak Ridge National Laboratory, Oak Ridge, TN.

[b] The values in this table are on a per-train-mile basis, converted from the annual energy consumption values that this source provided using the planned mileage in the planned operating schedule. The values were also adjusted to reflect the planned 2030 operating schedule (from the planned 2027 operating schedule, as provided by the source (DesertXpress 2007).

[c] The conversion from diesel fuel consumption to heat content (BTUs) is 130,500 BTUs/gallon (bioenergy.ornl.gov/papers/misc/energy_conv.html). The conversion from electricity consumption (kWh) to heat content (BTU) for EMU is 10,812 BTUs/ kWh, accounts for generation, transmission and distribution losses. Calculated from generation loss factor of 9,919 BTUs/kWh for petroleum generation and a T&D loss factor of 1.07 (USDOE 2008c).

**Section 3.13.4** of the Draft EIS analysis focused on the relationship between projected VMT and the intensity of energy use by each passenger transportation mode in order to estimate the magnitude and direction of the potential change in total energy consumption between the No Action Alternative and the action alternatives with DEMU and EMU technology.

The second energy use analysis focuses specifically on electricity consumption by the EMU option, as this technology option would use electricity to propel the train. Electricity consumption gets special attention because it is not storable. The estimated EMU energy demand was compared to estimates of supply capacity within the relevant North American Electric Reliability Council Regions, which in this case are the 1) Rocky Mountain Power area, Arizona, New Mexico and Southern Nevada region and 2) the California region.

Whereas other sections in the Draft EIS discuss environmental consequences on a segment-by-segment basis, energy is evaluated in terms of operating the system as a whole, insofar as individual segments/components do not significantly influence the total anticipated energy usage of the project as a whole. Therefore, the environmental consequences and mitigation measures are discussed on a project-wide basis.

This Supplemental Draft EIS qualitatively evaluates if and how project modifications and additions would affects total energy use.

Energy is also required to construct the railroad tracks, stations, and maintenance facilities. **Table S-3.13-3** shows the construction-related energy factors associated with the project. These factors have been updated since publication of the Draft EIS to include a factor for railway tunnel construction. This Supplemental DEIS section uses these factors to calculate construction-related energy, based on the number of track miles at-grade, above-grade (elevated), and in a tunnel, in addition to the number of stations.

This Supplemental EIS evaluates how project modifications and additions do or do not result in a change in system-wide energy use.

Table S-3.13-3 Construction-Related Energy Consumption Factors

| Type of Facility | Rural Compared to Urban[g] | Factor (billions of BTUs) |
|---|---|---|
| Highway - At grade | Rural[a] | 17.07/one-way lane mi |
| | Urban[b] | 26.28/one-way lane mi |
| Highway - Elevated | Rural[a] | 130.38/one-way lane mi |
| | Urban[b] | 327.31/one-way lane mi |
| Railway - At grade | Rural[c] | 12.29/one-way trackway mile |
| | Urban[d] | 19.11/one-way trackway mile |
| Railway - Elevated | Rural[c] | 55.46/one-way trackway mile |
| | Urban[d] | 55.63/one-way trackway mile |
| Railway - Tunnel | NA[d] | 99.51/one-way trackway mile |
| Railway - Station | NA[e] | 78[f]/station |

Source: U.S. Congress, Budget Office 1977; U.S. Congress, Budget Office 1982; and California State Department of Transportation 1983.

[a] Estimates reflect average roadway construction energy consumption.

[b] Estimates reflect range maximum for roadway construction energy consumption.

[c] Estimates reflect typical rail system construction energy consumption.

[d] Estimates reflect energy consumption for BART system construction as surrogate for DesertXpress construction through urban area.

[e] Discreet (i.e., non-alignment-related facilities) are not differentiated between rural or urban because the data used to develop the respective values were not differentiated as such. Some difference between the actual values might be expected.

[f] Value for construction of freight terminal. Used as proxy for DesertXpress station consumption factors.

[g] Differences between the construction-related energy consumption factors for urban and rural settings reflect differences in construction methods, demolition requirements, utility accommodation, etc.

### Energy Payback

The energy payback period measures the number of years that would be required to pay back the energy used in construction with operational energy consumption savings. The payback period is calculated by dividing the estimate of construction energy by the amount of energy that would later be saved by the action alternatives compared to the No Action Alternative condition. It is assumed that the amount of energy saved in the study year (2030) would remain constant throughout the payback period.

## 3.13.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per the criteria for potential operational and construction effects.[14]

### Common Effects to All Project Modifications and Additions

*Overall Operational Energy Consumption*

The Draft EIS established that implementation of the project with either of the proposed technology options (DEMU or EMU) would result in lower operational energy consumption when compared to future conditions without the railway (the No Action Alternative). This change is associated with a shift from automobile usage relative to train usage. The proposed project modifications and additions do not alter this conclusion for the project as a whole. The shift is expected to result in a reduction in annual automobile travel on I-15. This reduction is expected to range between 733 million and 931 million VMT for the DEMU and EMU technologies, respectively. Although the train would require energy to operate, the reduction in automobile VMT would reduce gasoline use, and thus result in a net decrease in energy consumption.

*Peak-Period Electricity Demand*

The proposed project modifications and additions would not change the electricity demands of the EMU technology (see the Draft EIS, **Section 3.13, Energy**).

### Victorville Station Site 3, Segment 2C, and Segment 4C

*Operational Effects*

Several of the project modifications and additions would influence energy usage. VV3, Segment 2C, and Segment 4C would each individually modify the total length of the proposed rail alignment, thus influencing the total amount of energy required to power the system.

**Table S-3.13-4** shows the energy consumption of the project as a whole, adjusted for the inclusion of VV3, Segment 2C and Segment 4C.

As shown in **Table S-3.13-4**, the project as modified by VV3, 2C, and 4C would continue to result in a reduction in energy usage (expressed in barrels of oil) compared to the No Action Alternative. Specifically, in 2030, the EMU technology option would result in an energy savings of 445,000 barrels of oil per year. The DEMU would result in an energy savings of 196,200 barrels of oil per year.

[14] The Draft EIS characterized construction related impacts to energy as "indirect." This was an error. In this Supplemental Draft EIS, such impacts are properly noted as direct, temporary construction impacts."

Table S-3.13-4 Annual Overall Operational Energy Consumption

| | 2007 Existing | 2030 No Action Alternative | Project: DEMU with the variant considered in the DEIS [a] | Project: EMU with the variant considered in the DEIS [a] | Project: DEMU with VV3, 2C & 4C | Project EMU with VV3, 2C & 4C |
|---|---|---|---|---|---|---|
| Annual Auto VMT in Study Area (billions of miles)[b] | 3.67 | 7.44 | 6.70 | 6.51 | 6.72 | 6.53 |
| Estimated Project VMT (millions of miles)[c] | NA | NA | 7.33 | 5.12 | 7.05 | 4.93 |
| Annual Auto Energy Consumption[d] (MMBTUs) | 20,260,000 | 41,030,000 | 37,000,000 | 35,900,000 | 37.090.000 | 36,020,000 |
| With Project Energy Consumption [d] (MMBTUs) | 0 | 0 | 2,995,000 | 2,691,000 | 2,880,000 | 2,588,000 |
| TOTAL ENERGY CONSUMPTION (MMBTUs) | 20,260,000 | 41,030,000 | 39,981,000 | 38,588,000 | 39,966,000 | 38,611,000 |
| Change in Total Energy from Existing (MMBTUs) | NA | 20,775,000 | 19,724,000 | 18,331,000 | 19,709,000 | 18,354,000 |
| Change in Total Energy from No Action (MMBTUs) | NA | NA | -1,051,000 | -2,444,000 | -1,066,300 | -2,420,000 |
| TOTAL ENERGY CONSUMPTION (Barrels of Oil[e]) | 3,729,200 | 7,553,700 | 7,360,300 | 7,103,800 | 7,358,100 | 7,108,800 |
| Change in Total Energy from Existing (Barrels of Oil[e]) | NA | 3,824,500 | 3,631,100 | 3,374,600 | 3,628,300 | 3,378,900 |
| Change in Total Energy from No Action (Barrels of Oil[e]) | NA | NA | -193,400 | -449,900 | -196,200 | -445,600 |

Source: ICF, 2010.

[a] This is based on an action alternative with VV2, Segment 1B, Segment 2A, Segment 3B, Segment 4A, Segment 5B, Segment 6B, and Central Station B.

[b] DMJM 2008.

[c] DesertXpress 2007 and 2008.

[d] Calculated using the operational energy consumption factors from **Table S-3.13-2** which have been updated since publication of the Draft EIS.

[e] One barrel of crude oil is equal to 5.8 MMBTUs.

*Construction Effects*

Project modifications and additions that would affect energy consumption are VV3, Segment 2C and Segment 4C, insofar as they affect overall alignment length and thus energy required to construct.

**Table S-3.13-5** shows the construction energy consumption of the project as a whole, accounting for the inclusion of VV3, Segment 2C, and Segment 4C.

Construction of the project, with or without the project modifications and additions, would require the commitment of energy resources. **Table S-3.13-5** shows the level of construction energy differs between the project as evaluated in the Draft EIS and the project as altered by the modifications and additions considered in this Supplemental EIS. However, the data shows that energy consumption with the proposed project modifications and additions would not be substantially different and in most cases slightly lower than the project as analyzed in the Draft EIS. The decrease in construction energy consumption is closely linked to the overall shorter track mileage associated with the VV3 and Segment 2C project modifications/additions.

Although energy would be required for construction that energy spent would be made up by energy saved during operations in approximately 2 to 5 years. **Table S-3.13-5** shows the anticipated energy payback periods under each technology option.

Table S-3.13-5 Construction Energy Consumption

| Alternative | Facility Quantity (trackway miles & number of stations) | Energy Consumption (MMBTUS; rounded) | Payback Period (years) | |
|---|---|---|---|---|
| | | | DEMU | EMU |
| **Project as Evaluated in DEIS[a]** | | | | |
| At-Grade Rural | 120 | 1,470,936 | | |
| Above Grade Rural | 55 | 3,025,616 | | |
| Above Grade Urban | 9 | 487,289 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,139,841** | **5.1** | **2.2** |
| **Project w/VV3** | | | | |
| At-Grade Rural | 116 | 1,431,343 | | |
| Above Grade Rural | 53 | 2,954,716 | | |
| Above Grade Urban | 9 | 487,289 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,029,348** | **5.2** | **2.2** |
| **Project w/2C & 4C** | | | | |
| At-Grade Rural | 121 | 1,490,512 | | |
| Above Grade Rural | 47 | 2,628,048 | | |
| Above Grade Urban | 11 | 630,579 | | |

| Alternative | Facility Quantity (trackway miles & number of stations) | Energy Consumption (MMBTUS; rounded) | Payback Period (years) | |
|---|---|---|---|---|
| | | | DEMU | EMU |
| Tunnel | 2.3 | 228,873 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,134,011** | **4.9** | **2.2** |
| **Project w/VV3, 2C, & 4C** | | | | |
| At-Grade Rural | 119 | 1,457,063 | | |
| Above Grade Rural | 46 | 2,557,147 | | |
| Above Grade Urban | 11 | 630,579 | | |
| Tunnel | 2.3 | 228,873 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,029,662** | **4.9** | **2.2** |

Source: ICF International, 2010.
[a] This is based on an action alternative with VV2, Segment 1B, Segment 2A, Segment 3B, Segment 4A, Segment 5B, Segment 6B, and Central Station B.

### OMSF 2, Relocated Sloan MSF, Frias Substation, Alignment Adjustment Areas, Wigwam MSF Modification, and Profile Modification

*Operational Effects*

None of the other project modifications and additions, including the OMSF 2, RSMSF, Frias Substation, Alignment Adjustment Areas, Wigwam MSF Modification, and Profile Modification would influence energy consumption because they would not substantially modify the length of the proposed alignment.

*Construction Effects*

The Alignment Adjustment Areas and the Profile Modification would not substantially increase the overall alignment length and thus would have a negligible impact on the amount of energy required to construct the project as a whole. Similarly, the RSMSF, the reduced OMSF 2, and Wigwam MSF would not substantially change the amount of energy needed to construct or operate these facilities.

Construction of the Frias Substation would require additional energy to construct this 4 acre facility. The Frias Substation is needed if an MSF option in the Las Vegas Valley is selected, either Wigwam or Robindale, since neither include substations.

The addition of the Frias Substation would be minor compared to the size of the project as a whole. Moreover, the Frias Substation is directly adjacent to electrical transmission lines and thus does not require construction of a separate utility corridor. Therefore, the Frias Substation would not substantially increase energy use of the project as a whole.

When considering the potential long term effects, construction energy use is a temporary commitment of energy resources and, after constructed, the railway would reduce energy usage overall.

As stated in **Section 3.13.4.2** of the Draft EIS, construction-related energy consumption would not be anticipated to result in a substantial adverse effect as implementation of the project would result in energy payback over time when compared to the No Action Alternative.

## 3.13.4 Mitigation Measures

The project, incorporating the modifications and additions, would result in an overall reduction in total energy consumption (electric power demand and petroleum-based consumption) under either the DEMU or EMU technology options. The project, with incorporation of the modifications and additions, would continue to result in a reduction in automobile traffic that would be greater than the new energy required by the railway. As a result, operational effects of the project modifications and additions would not require mitigation.

The project modifications and additions would not change the conclusion that construction of the project would result in one-time temporary energy consumption effects related to construction. However, the following measures from **Section 3.13.5** of the Draft EIS remain applicable means to further conserve energy resources during construction:

- Develop and implement a construction energy conservation plan.
- Use energy efficient construction equipment and vehicles.
- Develop and implement a program encouraging construction workers to carpool for travel to and from construction sites.

## 3.13.5 Residual Impacts Following Mitigation

The energy analysis presented in **Section 3.13.4** of the Draft EIS identified a net energy benefit (over the No Action Alternative) as a result of implementing either technology option. Therefore, no mitigation measures were presented. The energy savings during operation of the DesertXpress High-Speed Passenger Train, when compared to future conditions without the project, would offset temporary energy consumption during construction so that it is not considered an adverse effect. The measures above were identified to further conserve energy consumption during the construction period. As DesertXpress would have the beneficial overall effect of reducing energy use over time, no residual adverse effects related to energy would occur.

# 3.14 BIOLOGICAL RESOURCES

This section discusses the potential impacts to biological resources related to the project modifications and additions and appropriate mitigation measures.

## 3.14.1 AFFECTED ENVIRONMENT

Regulations and standards pertinent to biological resources as described in **Section 3.14.1** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the proposed project.

### Regional Conditions

The regional biological environment has not changed since publication of the Draft EIS. **Table 3.14-1** of the Draft EIS provides a summary of the vegetation community types, wetlands, invasive plant species, special-status plants, and special-status wildlife vegetation communities and other land use types in the project study area.

**Figures S-3.14-1** through **S-3.14-5** show the locations of known occurrences of special-status plant and wildlife species in the vicinity of the project modifications and additions.

### Victorville Station Site 3

The VV3 site is located immediately adjacent to the I-15 freeway corridor on undeveloped lands. **Table S-3.14-1** identifies sensitive biological resources specific to the vicinity of VV3. **Figure S-3.14.1** shows the location and distribution of these sensitive biological resources.

As noted in **Table S-3.14.1**, the VV3 site crosses one stream, the Bell Mountain Wash. There are no identified sensitive plant communities within the vicinity of the VV3 site.

Table S-3.14-1 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of VV3

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| **Sensitive Plant Communities & Wetlands** | | | |
| Waters of the United States including Wetlands | | Coordination regarding jurisdiction of surface water resources within the project study area is currently underway with the USACE. The drainages within the study area are ephemeral. The principal drainage in this area is Bell Mountain Wash. | Yes |
| **Special-Status Plant Species** | | | |
| None | | | |

| Biological Resource | Status | Description | Potential Occurrence |
|---|---|---|---|
| **Special-Status Wildlife Species** | | | |
| Desert tortoise | T/T/--/W, NE | California Natural Diversity Database (CNDDB) identified suitable habitat in the area and several tortoises were observed near the study area in 2007 surveys. Suitable habitat occurs in desert scrub habitats. | Yes |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area and no suitable habitat within vicinity of VV3. | No |
| Cooper's hawk | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Least Bell's vireo | E/E/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Le Conte's thrasher | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Loggerhead shrike | --/SSC/--/W | Suitable habitat occurs within vicinity of VV3 and throughout project study area. | Yes |
| Southwestern willow flycatcher | E/E/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Prairie falcon | --/SSC/--/NE | No CNDDB occurrences within 10 miles of VV3. May occur in cliff areas near Victorville. | Yes |
| Summer tanager | --/SSC/--W. NE | No suitable habitat within vicinity of VV3. | No |
| Swainson's hawk | | No suitable nesting habitat within vicinity of VV3. | No |
| Western burrowing owl | --/T/--/W, NE | Several occurrences within 10 miles of project study area and one owl pellet observed during 2007 surveys. Suitable habitat occurs in desert scrub habitat. | Yes |
| Western yellow-billed cuckoo | C/E/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Vermillion flycatcher | --/SSC/--/ W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Yellow warbler | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Yellow breasted chat | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Pallid bat | --/SSC/S/W, NE | No CNDDB occurrence within 10 miles of VV3; may occur in cliff areas near Victorville. | Yes |

| Biological Resource | Status | Description | Potential Occurrence |
|---|---|---|---|
| Townsend's big-eared bat | --/SSC/S/W, NE | No CNDDB occurrence within 10 miles of VV3; may occur in cliff areas near Victorville. | Yes |
| Greater western mastiff bat | --/SSC/--/W, NE | No CNDDB occurrence within 10 miles of VV3; may occur in cliff areas near Victorville. | Yes |
| Spotted bat | --/SSC/S/W, NE | No CNDDB occurrences within 10 miles of project study area; may occur in cliff area at southern end of alignment near Victorville. | Yes |
| Silver-haired bat | --/SSC/--/-- | No CNDDB occurrences within 10 miles of project study area. No suitable roosting habitat within vicinity of VV3. | No |
| Mojave River vole | --/SSC/--/W | No suitable habitat within VV3. | No |
| Mohave ground squirrel | --/T/--/W, NE | Several CNDDB occurrences within 10 miles of project study area. Habitat assessment indicates suitable habitat occurs in vicinity of VV3. | Yes |
| American badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities within vicinity of VV3. | Yes |
| Banded gila monster | --/--/--/C | No suitable habitat within the vicinity of VV3. | No |
| Desert bighorn sheep | --/ FP/S/W, NE | No suitable habitat within the vicinity of VV3. | No |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

**Federal**
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
PE = proposed for federal listing as endangered under the federal Endangered Species Act.
PT = proposed for federal listing as threatened under the federal Endangered Species Act.
C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
FS = U.S. Forest Service sensitive species (Region).
-- = no listing.

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E = listed as endangered under the California Endangered Species Act.
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SSC = species of special concern in California.
-- = no listing.

**BLM**
S = listed as sensitive by the Bureau of Land Management.
-- = no listing.

**HCP**
W = species covered by the West Mojave Habitat Conservation Plan.
NE = species covered by the Northern and Eastern Mojave Plan
-- = no listing

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### OMSF 2

The size, not the location, of OMSF 2 has been modified since publication of the Draft EIS. Therefore, the assessment of existing and potential biological resources is unchanged from the information presented in **Section 3.14.4.5** of the Draft EIS. **Figure S-3.14-1** shows the sensitive biological resources within the vicinity of OMSF 2.

### Segment 2C

Both Segment 2C alignment options would be located on disturbed lands within the existing I-15 freeway corridor. **Table S-3.14-2** lists the sensitive biological resources known or with potential to occur within the vicinity of the Segment 2C alignment options. **Figure S-3.14-2** shows Segment 2C and the distributions of these sensitive biological resources near the alignment options.

Table S-3.14-2 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of Segment 2C

| Biological Resource | Status | Description | Potential for Occurrence | |
|---|---|---|---|---|
| | Federal/State/BLM/HCP | | 2C Side Running | 2C Median[1] |
| **Special Plant Communities and Wetlands** | | | | |
| None | | | | |
| **Special-Status Plant Species** | | | | |
| Barstow woolly sunflower | –/–/–/W | One CNDDB occurrence approximately 2 miles south of project study area west of Barstow. | Yes | No |
| Creamy blazing star | –/–/–/– | One CNDDB occurrence approximately 2.5 miles south of project study area at Yermo. | Yes | No |
| Crucifixion thorn | –/–/–/NE, W | One CNDDB occurrence approximately 2.5 miles south of project study area at Yermo. | Yes | No |
| Parish's phacelia | –/–/–/W | One CNDDB occurrence approximately 2.5 miles south of project study area at Yermo. | Yes | Yes |

[1] Information for the Segment 2C Median alignment option relates to areas where the Segment 2C Median alignment does not overlap with the Segment 2C Side Running alignment option (where the rail alignment is located within the I-15 median through central Barstow).

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential for Occurrence 2C Side Running | 2C Median[1] |
|---|---|---|---|---|
| Mojave monkeyflower | –/–/S/– | One CNDDB occurrence approximately 3 miles north of project study area at Yermo; others located further from project study area south of Barstow and Yermo. | Yes | No |
| **Special-Status Wildlife Species** | | | | |
| Desert tortoise | T/T/--/W, NE | Desert tortoises observed during 2007 surveys. Suitable habitat occurs throughout project study area. | Yes | No |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area. Suitable habitat occurs in sandy habitat south of Mojave River crossing. | Yes | No |
| Western burrowing owl | --/SSC/S/W, NE | No CNDDB occurrences within 10 miles of project study area. Suitable habitat occurs throughout project study area in desert scrub and agricultural habitats. | Yes | Yes |
| Le Conte's thrasher | --/SSC/--/W, NE | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities. | Yes | No |
| Loggerhead shrike | --/SSC/--/W | Observed in 2007 desert tortoise surveys. Suitable habitat occurs throughout project study area. | Yes | No |
| Western snowy plover | --/SSC/--/W, NE | No CNDDB occurrences within 10 miles of project study area. Potential nesting habitat in portion of project study area that crosses dry lakebed. | Yes | No |
| Desert bighorn sheep | --/ FP/S/W, NE | CNDDB records indicate suitable habitat within 10 miles of project study area. Suitable habitat does not occur within project study area. | No | No |
| Mohave ground squirrel | --/T/--/W, NE | Several CNDDB occurrences within 10 miles of project study area. Habitat assessment indicates suitable habitat in areas with desert scrub. | Yes | No |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence<br>2C Side Running | <br>2C Median[1] |
|---|---|---|---|---|
| Townsend's big-eared bat | --/SSC/S/W, NE | One CNDDB occurrence within 10 miles of project study area. No suitable roosting habitat in project study area. | No | No |
| Banded Gila monster | --/--/--/C | No suitable habitat within the vicinity of Segment 2C. | No | No |
| Roosting Bats | | No suitable habitat within the vicinity of Segment 2C. | No | No |
| American badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities. | Yes | No |
| **Special Management Lands** | | | | |
| Desert Tortoise Critical Habitat | | Superior-Cronese Unit | Yes | No |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

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FS = U.S. Forest Service sensitive species (Region).
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W = species covered by the West Mojave Habitat Conservation Plan.
NE = species covered by the Northern and Eastern Mojave Plan
-- = no listing

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### Segment 4C

In the Mountain Pass area, Segment 4C would be located on lands dominated by blackbrush shrubland. Segment 4C would cross the northeast flank of the Clark Mountains through steep rocky, sparsely vegetated shrubland, before descending into creosote bush scrub around Wheaton Wash and areas of mesquite shrubland.

**Table S-3.14-3** lists the sensitive biological resources known or potentially occurring within the vicinity of the Segment 4C. **Figure S-3.14-4** shows Segment 4C and the distributions of these sensitive biological resources near the rail alignment.

Table S-3.14-3 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of the Segment 4C

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| **Sensitive Plant Communities & Wetlands** | | | |
| Mesquite bosque | –/S/–/– | Three occurrence mapped in Wheaton Wash on east side of Mountain Pass. | Yes |
| **Special-Status Plant Species** | | | |
| Mormon needle grass | –/–/–/– | One CNDDB occurrence approximately 1 mile west of alignment at Mountain Pass. | Yes |
| Jaeger's ivesia | –/–/1B.3/Sensitive | Several CNDDB occurrences approximately 0.5 to 1 mile west of alignment. | Yes |
| Rusby's desert-mallow | –/–/S/NE | One CNDDB occurrence approximately 1.5 miles west of alignment at Mountain Pass. | Yes |
| Viviparous foxtail cactus | –/–/–/– | One CNDDB occurrence approximately 1.5 miles west of alignment at Mountain Pass. | Yes |
| **Special-Status Wildlife Species** | | | |
| Desert tortoise | T/T/--/W, NE | Desert tortoises observed during 2007 surveys. Suitable habitat occurs throughout project study area in desert scrub habitats. | Yes |
| Banded Gila monster | --/SSC/S/W, NE | No CNDDB occurrences within 10 miles of project study area. Suitable habitat occurs in rocky habitat. | Yes |
| Bendire's thrasher | --/SSC/S/W, NE | No occurrences in project study area. Potential nesting habitat in Joshua tree woodland. | Yes |
| Crissal thrasher | --/SSC/--/NE | No CNDDB occurrences within 10 miles of project study area. Suitable habitat in larger washes. | Yes |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| Golden eagle | PR/SSC,FP/--/NE | No CNDDB occurrences within 10 miles of project study area. Suitable nesting habitat occurs in rocky habitat. | Yes |
| Le Conte's thrasher | --/SSC/--/W, NE | No occurrences within project study area. Suitable habitat in desert scrub communities. | Yes |
| Prairie falcon | --/SSC/--/NE | No CNDDB occurrences within 10 miles of project study area. Suitable nesting habitat occurs in rocky habitat. | Yes |
| Western burrowing owl | --/SSC/S/W, NE | No occurrences within 10 miles of project study area. Suitable habitat occurs in desert scrub habitat. | Yes |
| Western snowy plover | --/SSC/--/W, NE | No CNDDB occurrences within 10 miles of project study area. Potential nesting habitat on Ivanpah Dry Lake. | No |
| California leaf-nosed bat | SC/SSC/S | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Desert bighorn sheep | --/ FP/S/W, NE | CNDDB records indicate suitable habitat within 10 miles of project study area. Suitable habitat does occur within project study area. Bighorn sheep maybe especially dependent on springs as a water source in the Clark Mountains. | Yes |
| Greater western mastiff bat | --/SSC/--/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Hoary bat | --/SSC/--/-- | One CNDDB occurrence within 10 miles of project study area. No suitable roosting habitat in project study area. | No |
| Long-legged myotis | --/--/S/NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Pallid bat | --/SSC/S/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Townsend's big-eared bat | --/SSC/S/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Spotted bat | --/SSC/S/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Western small-footed myotis | --/--/S/NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| American Badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities | Yes |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area. Suitable habitat does not occur in Segment 4. | No |
| Mohave ground squirrel | --/T/--/W, NE | Habitat assessment indicates suitable habitat does not occur in Segment 4. | No |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

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T = listed as threatened under the federal Endangered Species Act.
PE = proposed for federal listing as endangered under the federal Endangered Species Act.
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### Relocated Sloan MSF

The RSMSF is two miles from the Sloan Road MSF evaluated in the Draft EIS, within a similar biological region. Therefore, existing biological resources on and near the RSMSF are similar to those of the Sloan Road MSF site evaluated in **Section 3.14.3.2** of the Draft EIS.

**Table S-3.14-4** identifies sensitive resource types specific to the vicinity of the RSMSF. **Figure S-3.14-4** shows the RSMSF site and the locations and distributions of these sensitive biological resources.

No sensitive plant communities occur within the vicinity of the RSMSF.

Table S-3.14-4 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of the RSMSF

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| **Special Plant Communities and Wetlands** | | | |
| None | | | |
| **Special-Status Plant Species** | | | |
| Rosy two-tone beardtongue | --/--/S/C | Three NNHP occurrences within the project study area northeast of Jean. Species is known to occur within the vicinity of the RSMSF. | Yes |
| **Special-Status Wildlife Species** | | | |
| Banded gecko | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Great Basin collard lizard | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Desert iguana | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Large-spotted leopard lizard | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Desert tortoise | T/T/--/W, NE | Nevada Natural Heritage Program occurrence in project study area just north of Jean. Suitable habitat occurs. | Yes |
| Banded Gila monster | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs within the vicinity of the RSMSF near the North McCullough Mountain pass. | Yes |
| Western chuckwalla | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat does not occur within the vicinity of the RSMSF. | No |

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| Sidewinder | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Speckled rattlesnake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Mojave green rattlesnake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Glossy snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Common king snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Western leaf-nosed snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Western long-nosed snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Sonoran lyre snake | --/P/S/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs within the vicinity of the RSMSF. | Yes |
| American peregrine falcon | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat does not occur within the vicinity of the RSMSF. | No |

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| Blue grosbeak | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of the project study area. Suitable habitat occurs in larger washes that are crossed by the project. | Yes |
| Phainopepla | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs in larger washes that are crossed by the project. | Yes |
| Nesting raptors/migratory birds | -- | Suitable foraging habitat occurs in the vicinity of the RSMSF. | Yes |
| Western burrowing owls | --/P/S/W | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable nesting habitat occurs within the vicinity of the RSMSF. | Yes |
| Mohave ground squirrel | --/T/--/W, NE | Habitat assessment indicates suitable habitat does not occur in vicinity of the RSMSF. | No |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area. Suitable habitat does not occur in vicinity of the RSMSF. | No |
| American Badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities | Yes |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

**Federal**
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
PE = proposed for federal listing as endangered under the federal Endangered Species Act.
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W = species covered by the West Mojave Habitat Conservation Plan.
NE = species covered by the Northern and Eastern Mojave Plan
-- = no listing

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### Frias Substation

The proposed site for the Frias Substation is located immediately west of the I-15 freeway corridor in the southern Las Vegas metropolitan area. Due to the urbanized nature of the area, with the exception of western burrowing owl, no sensitive wildlife species exist on the site.3

**Table S-3.14-5** documents the special-status plant species with potential to occur on the Frias Substation site. The Frias Substation site is characterized as eastern Mojave Desert creosote-bursage with some *acacia gregii* (mistletoe) adjacent to Dean Martin Drive and Haleh Road intersection just north of the site.

**Figure S-3.14-3** shows the location of the substation site in relation to nearby biological resources. The Frias Substation site is not located within any designated special management lands.

### Alignment Adjustment Areas

The Alignment Adjustment Areas (AAAs) would result in slight modifications to portions of Segment 2A/2B, Segment 3B, and Segment 6B. Due to the minor shift (no more than 400 feet) associated with the AAAs, the biological environments for each rail segment (Segment 2A/2B, Segment 3B, and Segment 6B) are the same as described in **Section 3.14.3.2** of the Draft EIS.

### Wigwam MSF Modification

The orientation, not the location, of the Wigwam MSF has been modified since publication of the Draft EIS. Therefore, existing and potential biological resources at this site are the same as presented in **Section 3.14.3.2** of the Draft EIS. **Figure S-3.14-5** shows the sensitive biological resources within the vicinity of the Wigwam MSF modification.

### Profile Modification

The Profile Modification entails depressing a portion of the Segment 3B rail alignment within a retained cut and therefore would not cross any new biological resource environments not previously identified for Segment 3B in **Section 3.14.3.2** of the Draft EIS. **Figure S-3.14-3** shows the sensitive biological resources within the vicinity of the Profile Modification.

Table S-3.14-5 Sensitive Biological Resources with Potential to Occur on Frias Substation Site

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| **Sensitive Plant Communities & Wetlands** | | | |
| None | | | |
| **Special-Status Plant Species** | | | |
| Las Vegas bearpoppy | --/SS/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. | No |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| Las Vegas catseye | --/SS/--/E | No Nevada Natural Heritage Program occurrences in vicinity of project study area. | No |
| Las Vegas buckwheat | --/--/S/-- | Suitable habitat known to occur within the Segment 6 rail alignment. | No |
| Yellow two-tone beardtongue | --/--/S/E | Suitable habitat known to occur within the Segment 6 rail alignment and on Frias Substation site. | Yes |
| **Special-Status Wildlife Species** | | | |
| Western burrowing owl | --/T/--/W, NE | Several occurrences within 10 miles of project study area. Suitable habitat occurs in desert scrub habitat. | Yes |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database
**Federal**
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
PE = proposed for federal listing as endangered under the federal Endangered Species Act.
PT = proposed for federal listing as threatened under the federal Endangered Species Act.
C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
FS = U.S. Forest Service sensitive species (Region).
-- = no listing.

**State**
E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
-- = no listing.
**BLM**
S = listed as sensitive by the Bureau of Land Management.
-- = no listing.
**HCP**
W = species covered by the West Mojave Habitat Conservation Plan.
NE = species covered by the Northern and Eastern Mojave Plan
-- = no listing

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## 3.14.2 METHODS OF EVALUATION OF IMPACTS

The same methodology used in **Section 3.14.2.2** of the Draft EIS was used to evaluate potential direct and indirect biological resources effects of the proposed modifications and additions.

Direct effects would include, but are not limited to, grubbing, grading, and other construction and operation activities that disturb vegetation and soil resources and disrupt the biological or hydrologic function of surface water features.

- Permanent direct effects would result from the placement of fill material for the railway bed and associated stations, operation, and maintenance facilities thus converting the area from its current condition to a transportation facility.

- Temporary direct effects would result from soil compaction, construction dust, water and contaminant runoff from the construction area, and construction-related noise and vibrations from construction equipment.

Indirect effects include, but are not limited to, the modification of habitat functions resulting from wind-blown dust, erosion of sediments, noxious weed invasion, or hydrologic modifications.

FRA has coordinated with the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and California Department of Fish and Game (CDFG) throughout the development of the Supplemental Draft EIS. For a discussion of agency coordination, refer to **Section 3.14.2.2** of the Draft EIS and **Chapter 4.0** of this Supplemental Draft EIS.

Additional field surveys to document existing biological conditions and evaluate potential effects were conducted for the project modifications and additions.

Consistent with the thresholds established in **Section 3.14.4.2** of the Draft EIS, effects on vegetation and wildlife would be considered adverse if any of the following impacts were to occur:

- Loss of individual or populations of a Federal or state-listed threatened or endangered species or their habitat
- Loss of critical habitat for Federally listed threatened or endangered species
- Loss of habitat that is sensitive or rare in the region, such as mesquite shrubland, Joshua tree wooded shrubland, wetlands, cliff face formations, and surface water sources
- Substantial loss of populations or habitat of a species that is a Federal candidate, is federally proposed for listing, is a BLM sensitive species, is a California species of special concern, is on the CNPS Inventory 1B or 2, is identified as a covered species in the Clark County MSHCP, is regionally rare, or is otherwise so sensitive as to jeopardize the continued existence of the species in the region
- Loss of long-term disruption of wildlife movement corridor
- Substantial permanent loss of natural vegetation
- Substantial loss of diversity of species or natural communities and wildlife habitat
- Incompatibility with local, state, or Federal land management plans

## 3.14.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

**Victorville Station Site 3**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of VV3 for either parking option would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blown deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of VV3 would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of VV3 for either parking option would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

There are no sensitive vegetation communities on or within the vicinity of the VV3 site. No effects would occur.

*Impacts to Special-Status Plant Populations*

Within the footprint of VV3 under either parking option, special-status plant populations and their habitat would be permanently removed and converted to transportation use. VV3A would have the potential to result in fewer impacts to special-status plant species as compared to VV3B, since the parking area would be constructed within an already disturbed utility corridor below overhead electrical transmission lines as opposed to being developed on currently undisturbed lands. As documented in **Section 3.14.4.5** of the Draft EIS, focused presence/absence surveys have not been conducted for the project alignment due to prolonged drought in the region between 2005 and 2009. These surveys will be conducted prior to initiating construction and stipulated project avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

Construction and operation of VV3 would remove or degrade desert tortoise habitat. The affected acreage of each VV3 parking option, including the tail tracks connecting the station to the rail alignment, is summarized below:

- VV3A would permanently impact 205.5 acres and temporarily impact 38.5 acres of desert tortoise habitat.
- VV3B would permanently impact 217.9 acres and temporarily impact 38.5 acres of desert tortoise habitat.

*Barrier to Wildlife Movement*

I-15 serves as an existing barrier to wildlife movement within the vicinity of VV3 due to its linear nature. VV3 would not introduce a new linear barrier to wildlife movement, since movement around the station building and the associated parking areas would be maintained. VV3's proximity to I-15 blunts the potential for the station area to serve as a barrier to wildlife movement. No effects would occur.

*Direct Mortality of Mohave Ground Squirrels*

Construction of VV3 could result in injury or mortality of Mohave ground squirrel and remove foraging habitat. Operation of VV3 would convert suitable habitat to transportation use. The affected acreage of each VV3 parking option, including the tail tracks connecting the station to the rail alignment, is summarized below:

- VV3A would permanently impact 205.5 acres of Mohave ground squirrel habitat. VV3A would temporarily impact 38.5 acres of Mohave ground squirrel habitat.
- VV3B would permanently impact 217.9 acres of Mohave ground squirrel habitat. VV3B would temporarily impact 38.5 acres of Mohave ground squirrel habitat.

*Direct Mortality of Mojave fringe-toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard in the VV3 area nor is there suitable habitat for this species in the vicinity of VV3. No permanent or temporary effects would occur.

*Potential Loss or Disturbance of Nesting Raptors and Migratory Birds*

No suitable nesting habitat for raptors or migratory birds is located on or within the vicinity of VV3 under either parking option. No permanent or temporary effects would occur.

*Direct Mortality of Banded Gila Monster*

There are no known occurrences of banded gila monster in the VV3 area nor is there suitable habitat in the vicinity of VV3. No permanent or temporary effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

VV3 is not located within Clark County and is therefore not subject to the Clark County MSHCP.

*Potential Loss of Disturbance to Burrowing Owls*

Construction and operation of VV3 could include the direct loss of burrows and foraging habitat for burrowing owls. The shoulders or roads, dirt mounds and berms, and open areas provide suitable habitat for burrowing owls, especially where open culverts, ground squirrel burrows, desert tortoise burrows, and badger burrows occur. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same

habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for VV3 for either parking option.

*Potential Loss or Disturbance to Roosting Bats*

No suitable nursery or roosting habitats for bats are located on or within the vicinity of VV3. No permanent or temporary effects would occur.

*Effects to American Badger*

Construction of the VV3 parking options could result in the injury or mortality of badgers. As American badgers utilize the same habitat as desert tortoise, the affected acreage of American badger habitat is comparable to the affected acreage of desert tortoise habitat.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep in the VV3 area nor is there suitable habitat in the vicinity of VV3. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

VV3 would not be located within a Desert Wildlife Management Area (DWMA) or Area of Critical Environmental Concern (ACEC), as defined by the BLM. No effects to critical habitat would occur.

*Direct and Indirect Impacts to Wetlands/Waters of the United States*

VV3 would result in the bisection of Bell Mountain Wash. Construction of VV3A or VV3B would permanently remove vegetation from Bell Mountain Wash and would cause soil and vegetation disturbance within the channel and banks. This includes permanent disturbance from the placement of culverts within the drainage and temporary impacts resulting from construction activity, such as sedimentation and erosion. Construction pollutants could also be spilled into the drainage.

**OMSF 2**

The reduced size of OMSF 2 would not result in any new direct or indirect biological resource effects beyond those described in **Section 3.14.4.5** of the Draft EIS since the location of the facility has not changed. Construction and operation of OMSF 2 could introduce or spread noxious weeds; could result in the loss or damage to native vegetation communities; impact special-status plant populations; permanently and temporarily impact desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, burrowing owls, and American badger; and result in direct and indirect impacts to wetlands and Waters of the United States.

**Segment 2C**

Segment 2C would truncate the length of Segment 1 by 12 miles by removing the northern reaches of Segment 1; Segment 1 and Segment 2C would connect about 7 miles southwest of Lenwood. Therefore, Segment 2C would reduce impacts to biological resources associated with the northern reaches of Segment 1. These resources include sensitive plant and wildlife habitat areas, as shown on **Figure S-3.14-1**.

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

Construction of the Segment 2C alignment options would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of the Segment 2C alignment options would not increase or decrease the risk of introducing or spreading noxious weeds as described in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation the Segment 2C alignment options would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

There are no sensitive vegetation communities on or within the vicinity of Segment 2C.

*Impacts to Special-Status Plant Populations*

Within the footprint the Segment 2C alignment options, special-status plant populations and their habitat would be permanently removed and converted to transportation use. As previously stated, focused presence/absence surveys have not been conducted but will be completed prior to initiating construction. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

Construction and operation of Segment 2C would result in the removal or degradation of desert tortoise habitat. During the construction period, construction activities within the temporary construction area (TCA) along Segment 2C would also temporarily affect desert tortoise habitat. Affected acreages of each Segment 2C alignment option are below:

- Segment 2C Side Running: Permanent impacts to 37.5 acres and temporary impacts to 101.4 acres of desert tortoise habitat.
- Segment 2C Median: Permanent impacts to 37.4 acres and temporary impacts to 97.1 acres of desert tortoise habitat.

*Barrier to Wildlife Movement*

No wildlife fragmentation would occur as a result of Segment 2C, as the rail alignment would be within the existing I-15 freeway corridor whether side running or within the

median. I-15 already establishes an existing linear barrier for wildlife movement to the east and west south of Lenwood and to the north and south through Barstow.

*Direct Mortality of Mohave Ground Squirrels*

Construction of Segment 2C could result in injury or mortality of Mohave ground squirrel and removal of foraging habitat. Construction activities within the TCA along Segment 2C could also result in temporary impacts to Mohave ground squirrels and associated habitat. Each option would result in permanent impacts to 36 acres and temporary impacts to 89.1 acres of Mohave ground squirrel habitat.

*Direct Mortality of Mojave Fringe-toed Lizard*

Suitable habitat for the Mojave fringe-toed lizard is present in the vicinity of the Mojave River. The Segment 2C Side Running option would traverse through areas near the Mojave River and would convert Mojave fringe-toed lizard habitat to transportation use and permanently remove suitable habitat.

The Segment 2C Median option would be located within the existing I-15 median immediately west of the Mojave River which does not contain suitable habitat for the Mojave fringe-toed lizard. The Segment 2C Median option would not have an adverse effect on Mojave fringe-toed lizard.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

The Segment 2C alignment options could affect suitable nesting habitat for raptors and migratory birds south of and through Barstow, where each alignment options would follow the same rail alignment immediately adjacent to the I-15 freeway. There is no suitable nesting habitat for raptors or migratory birds within the median of the I-15 freeway. As such, where the Segment 2C Median alignment option would cross into the I-15 median in central Barstow, no effects to nesting raptors or migratory birds would occur.

Construction activities could result in the removal or disturbance of shrubs that provide potential nesting habitat. The impacted acreage of suitable nesting habitat for raptors and migratory birds would be comparable to the affected acreage described for desert tortoise habitat for the Segment 2C alignment options.

*Direct Mortality of Banded Gila Monster*

There are no known occurrences of banded gila monster in Segment 2C nor is there suitable habitat located in the vicinity of the Segment 2C. No permanent or temporary effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

Segment 2C is not located within Clark County and is therefore not subject to the Clark County MSHCP.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the Segment 2C alignment options could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs

during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). The Segment 2C Side Running alignment option would traverse areas of suitable burrowing owl habitat within the I-15 freeway corridor. The portion of Segment 2C Median alignment option located within the median of the I-15 freeway would not affect suitable burrowing owl habitat and therefore have slightly less impact on burrowing owl habitat than Segment 2C Side Running.

As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the Segment 2C alignment options. Permanent impacts to burrowing owl would be similar for the Segment 2C alignment options, while the Segment 2C Side Running alignment option would result in slightly greater temporary impacts than the Segment 2C Median alignment option.

*Potential Loss or Disturbance to Roosting Bats*

No suitable nursery or roosting habitats for bats are located in or within the vicinity of Segment 2C. No permanent or temporary effects would occur.

*Effects to American Badger*

Segment 2C could affect suitable habitat for American badger south of Barstow, where the alignment would be located immediately adjacent to the I-15 freeway. Construction of the rail alignment immediately adjacent to the I-15 freeway could result in the injury or mortality of badgers. The impacted acreage of suitable habitat for American badger would be comparable to the affected acreage described for desert tortoise habitat for the Segment 2C alignment options.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep in Segment 2C nor is there any suitable habitat located in the vicinity of Segment 2C. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

Segment 2C would be located within the existing I-15 transportation corridor and would not traverse through lands within a DWMA or ACEC. Segment 2C would avoid impacts to the Superior-Cronese Desert Tortoise Critical Habitat area associated with Segment 2A and Segment 2B, as evaluated in the Draft EIS.

*Direct and Indirect Impacts to Wetlands/Waters of the United States*

The Segment 2C alignment options would cross 12 streams. Construction of the rail alignment would cause soil and vegetation disturbance within the channel and banks of these streams. Permanent disturbance would occur as a result of the placement of culverts within the drainages. Temporary impacts would result from construction activity, which could cause sedimentation, erosion, and runoff of construction pollutants into the drainage.

**Segment 4C**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of Segment 4C would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of Segment 4C would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of Segment 4C would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

Construction and operation of Segment 4C would convert sensitive vegetation and sensitive plant habitat areas to transportation use. Segment 4C would permanently impact 1.9 acres and temporarily impact 3.1 acres of Mesquite Shrubland.

*Impacts to Special-Status Plant Populations*

Within the footprint of Segment 4C, special-status plant populations and their habitat would be permanently removed and converted to transportation use. Focused presence/absence surveys will be completed in 2010. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

Construction of Segment 4C would involve the removal or degradation of desert tortoise habitat. Construction activities within the five TCAs along Segment 4C would also result in temporary impacts to desert tortoise and habitat. Segment 4C would permanently impact 182.9 acres and temporarily impact 490.0 acres of desert tortoise habitat.

*Barrier to Wildlife Movement*

Segment 4C would travel away from the I-15 freeway corridor north of Mountain Pass and would cause habitat fragmentation by creating a new linear feature through currently undeveloped lands. The rail alignment would create a barrier to wildlife movement for species including, but not limited to, desert bighorn sheep and desert tortoise. Segment 4C could isolate or block existing habitat east of the proposed rail alignment and west of the existing I-15 corridor.

*Direct Mortality of Mohave Ground Squirrels*

There are no known occurrences of Mohave ground squirrels nor is there suitable habitat located in the vicinity of Segment 4C. No permanent or temporary effects would occur.

*Direct Mortality of Mojave fringe-toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard nor is there suitable habitat located in the vicinity of Segment 4C. No permanent or temporary effects would occur.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

Segment 4C could disturb nesting habitat for raptors and migratory birds. The cliff areas through the Clark Mountains provide potential nesting habitat for American peregrine falcons, prairie falcons, and golden eagles. Construction activities, such as grading and tunneling, could result in the removal or disturbance of these areas that provide suitable habitat for migratory birds and raptors.

*Direct Mortality of Banded Gila Monster*

Segment 4C could affect suitable habitat for the banded gila monster, particularly near the Mountain Pass area. Construction activities within this area, specifically the use of heavy machinery, could result in direct mortality of banded gila monsters.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

The northern portion of Segment 4C within Nevada is located within the planning jurisdiction of the Clark County MSHCP. Construction of the rail alignment would temporarily impact suitable habitat for Clark County MSHCP covered reptile species. The affected acreage of retile habitat would be comparable to the impacted acreage for desert tortoise habitat.

*Potential Loss of Disturbance to Burrowing Owls*

Development of Segment 4C could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for Segment 4C.

*Potential Loss or Disturbance to Roosting Bats*

Caves and mines located within the vicinity of Segment 4C, specifically within the Clark Mountains, provide potential roosting and nursery sites for bats. Disturbance of these roosting and/or nursery sites during construction activities, such as tunneling, or operation of the trains could result in the injury or mortality of roosting bats.

*Effects to American Badger*

Segment 4C would be located within an area with suitable habitat for American badger. Construction activities such a grubbing and off-road travel could result in adverse effects to the badger. Since American badgers utilize similar habitat as the desert tortoise, the amount of impacted acreage is the same as described for desert tortoise habitat for Segment 4C.

*Direct Effects to Desert Bighorn Sheep*

Suitable habitat for desert bighorn sheep occurs in the Mountain Pass area of Segment 4C. Construction activities associated with Segment 4C, particularly proposed tunneling, could directly affect desert bighorn sheep by disrupting lambing areas and by altering the flow of natural springs, which provide critical water supply.

*Loss of Special Management Lands*

Segment 4C would not traverse through lands within a DWMA or ACEC. *Direct and Indirect Impacts to Wetlands/Waters of the United States*

Segment 4C would cross 48 streams. Construction of the rail alignment would cause soil and vegetation disturbance within the channel and banks of these streams. Permanent disturbance would occur as a result of the placement of culverts within the drainages. Temporary impacts would result from construction activity, which could cause sedimentation, erosion, and runoff of construction pollutants into the drainage.

**Relocated Sloan MSF**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of the RSMSF would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of the RSMSF would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of the RSMSF would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

There are no sensitive vegetation communities on or within the vicinity of the RSMSF site. No effects would occur.

*Impacts to Special-Status Plant Populations*

Within the footprint of the RSMSF, special-status plant populations and their habitat would be permanently removed and converted to transportation use. Focused presence/absence surveys have not been conducted but will be completed prior to initiating construction. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

The RSMSF would result in permanent and temporary impacts to desert tortoise habitat. The RSMSF would permanently impact 9.1 acres of habitat and temporarily impact 11.4 acres of habitat. The RSMSF would result in an adverse effect because it would reduce the areas suitable for foraging habitat and for the construction of burrows.

*Barrier to Wildlife Movement*

The linear nature of I-15 creates a barrier to wildlife movement in the vicinity of the RSMSF. The RSMSF would not introduce a new barrier to wildlife movement. No adverse effects would occur.

*Direct Mortality of Mohave Ground Squirrels*

There are no known occurrences of Mohave ground squirrels nor suitable habitat located in the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Direct Mortality of Mojave fringe-toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard nor suitable habitat located in the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

Construction and operation of the RSMSF may impact nesting habitat for raptors and migratory birds. Construction activities could remove or disturb shrubs and trees that provide suitable nesting habitat.

*Direct Mortality of Banded Gila Monster*

Construction activities could result in direct mortality of gila monsters and permanently remove suitable habitat.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

The RSMSF could impact reptile species covered under the Clark County MSHCP. The impact to suitable Clark County MSHCP covered reptile species habitat is comparable to the affected acreage of desert tortoise habitat.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the RSMSF could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season

(February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the RSMSF.

*Potential Loss or Disturbance to Roosting Bats*

No suitable nursery or roosting habitats for bats are located on or within the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Effects to American Badger*

Construction of the RSMSF would have the potential to affect American badger habitat, which could result in the injury or mortality of badgers. The impact to suitable American badger habitat is comparable to the affected acreage of desert tortoise habitat.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep nor suitable habitat in the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

The RSMSF would not be located within a DWMA or ACEC. No adverse effects to critical habitat would occur.

*Direct and Indirect Impacts to Wetlands/Water of the United States*

The RSMSF would not impact any stream and would therefore not have an effect on wetlands or Waters of the United States. The RSMSF would avoid the stream crossings associated with the Las Vegas MSF site options evaluated in the Draft EIS.

**Frias Substation**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of the Frias Substation would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, development of the Frias Substation would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of the Frias Substation would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

Construction activities associated with the Frias Substation would result in the loss of sensitive vegetation communities, which could result in long-term degradation of a sensitive plant community. The Frias Substation would impact approximately 4.6 acres of Mojave creosote vegetation.

*Impacts to Special-Status Plant Populations*

Within the footprint the Frias Substation, special-status plant populations and their habitat would be permanently removed and converted to transportation use. As previously stated, focused presence/absence surveys have not been conducted but will be completed prior to initiating construction. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

The Frias Substation site does not include any suitable habitat for desert tortoise given its disturbed nature within the suburban context of the metropolitan Las Vegas area. No permanent or temporary effects would occur.

*Barrier to Wildlife Movement*

The areas surrounding the Frias Substation is no longer viable as a wildlife movement corridor due to the surrounding urbanization, including I-15. No effects to an existing wildlife movement corridor would occur.

*Direct Mortality of Mohave Ground Squirrels*

There are no known occurrences of Mohave ground squirrel or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Mortality of Mojave-fringe Toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

There are no known occurrences of nesting raptors or migratory birds or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Mortality of Banded Gila Monster*

There are no known occurrences of banded gila monster or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

There are no known occurrences of Clark County MSHCP covered reptile species or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the Frias Substation could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the Frias Substation.

*Potential Loss or Disturbance to Roosting Bats*

There are no known occurrences of roosting bats or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Project-Related Effects to American Badger*

There are no known occurrences of American badger or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

The Frias Substation would not be located within a DWMA or ACEC. No adverse effects to critical habitat would occur.

*Direct and Indirect Impacts to Wetlands/Water of the United States*

The Frias Substation would be situated between two existing drainages to the north and south. The underground 25 kilovolt (kV) feeder that connects the Frias Substation to the autotransformer and rail alignment would, however, cross beneath the existing drainage to the north. It is assumed that these drainages have been previously disturbed due to the development of Dean Martin Drive to the west and the nearby residential development. Temporary impacts would result from construction activity, which could cause sedimentation, erosion, and runoff of construction pollutants into the drainage.

The Frias Substation would not cross any streams and would therefore not have an effect on wetlands or Waters of the United States.

### Alignment Adjustment Areas

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

Construction associated with the AAAs would have the potential to introduce or spread noxious weeds. These effects would be the same as described for Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.14.4.5** of the Draft EIS, as the AAAs would only involve a shift of the rail alignments. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. Implementation of the AAAs would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

Implementation of the AAAs would not result in additional impacts to sensitive vegetation communities beyond the impacts identified for the respective rail alignments (Segment 2A/2B, Segment 3B, and Segment 6B) in the Draft EIS. The effects to sensitive vegetation communities for each rail alignment with the implementation of the AAAs are summarized below:

- **AAAs 1 and 2:** AAAs 1 and 2 would not result in any additional impacts to sensitive vegetation communities beyond the impacts for Segment 2A/2B in the Draft EIS. Segment 2A/2B, 2A and Segment 2A/2B, 2B would still each result in an impact to 4.6 acres of Mesquite Shrubland.
- **AAAs 3 through 6:** AAAs 3 through 6 would not result in any additional impacts to sensitive vegetation communities beyond the impacts for Segment 3B in the Draft EIS. Segment 3B would still result in permanent impacts to 1.9 acres of Mesquite Shrubland and 83.8 acres of Joshua tree wooded shrubland and temporary impacts to 13.4 acres of Mesquite Shrubland and 194.4 acres of Joshua tree wooded shrubland.
- **AAAs 7 and 8:** No sensitive vegetation communities occur within the vicinity of AAAs 7 and 8 and no effects would occur.

*Impacts to Special-Status Plant Populations*

Within the footprint of the AAAs, special-status plant populations and their habitat would be permanently removed and converted to transportation use. Focused presence/absence surveys have not been conducted but will be completed prior to initiating construction.

Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

The effects of each AAA to desert tortoise are summarized below:

- **AAAs 1 and 2:** AAAs 1 and 2 would result in a slight reduction in permanent and temporary impacts to desert tortoise for Segment 2A/2B.
    - With AAAs 1 and 2, Segment 2A/2B, 2A would permanently impact 171.1 acres of desert tortoise habitat, as compared to 174.1 acres without the AAAs. With AAAs 1 and 2, Segment 2A/2B, 2A would temporarily impact 700.8 acres of desert tortoise habitat, as compared to 731.5 acres without the AAAs.
    - With AAAs 1 and 2, Segment 2A/2B, 2B would permanently impact 150.7 acres of desert tortoise habitat, as compared to 152.5 acres without the AAAs. With AAAs 1 and 2, Segment 2A/2B, 2B would temporarily impact 547.8 acres of desert tortoise habitat, as compared to 585.2 acres without the AAAs.
- **AAAs 3 through 6:** AAAs 3 through 6 would result in an increase in permanent and temporary impacts to desert tortoise for Segment 3B. With AAAs 3 through 6, Segment 3B would permanently impact 619.9 acres of desert tortoise habitat as compared to 616.5 acres without the AAAs. With AAAs 3 through 6, Segment 3B would temporarily impact 1,848.3 acres of desert tortoise habitat as compared to 1,840 acres without the AAAs.
- **AAA 7:** AAA 7 would result in an increase in permanent and temporary impacts to desert tortoise for Segment 6B. With AAA 7, Segment 6B would permanently impact 39.5 acres of desert tortoise habitat as compared to 37.8 acres without the AAA. With AAA 7, Segment 6B would temporarily impact 127.5 acres of desert tortoise habitat as compared to 116.6 acres without the AAA.
- **AAA 8:** AAA 8 would not cross any suitable habitat for desert tortoise. No permanent or temporary impacts would occur.

*Barrier to Wildlife Movement*

The AAAs would not introduce any new barriers to wildlife movement than already presented in the respective rail alignments (Segment 2A/2B, Segment 3B, and Segment 6B) considered in the Draft EIS.

*Direct Mortality of Mohave Ground Squirrels*

The effects of each AAA to Mohave ground squirrel are summarized below:

- **AAAs 1 and 2:** AAAs 1 and 2 would result in a slight increase in permanent impacts and a reduction in temporary impacts to Mohave ground squirrel for Segment 2A/2B.
    - With AAAs 1 and 2, Segment 2A/2B, 2A would permanently impact 23.4

acres of Mohave ground squirrel habitat, as compared to 23.2 acres without the AAAs. No change to the temporary effects of Segment 2A/2B, 2A would occur with AAAs 1 and 2; Segment 2A/2B, 2A would still temporarily impact 864.6 acres of Mohave ground squirrel habitat.

- With AAAs 1 and 2, Segment 2A/2B, 2B would permanently impact 40.2 acres of Mohave ground squirrel habitat, as compared to 40.3 acres without the AAAs. No change to the temporary effects of Segment 2A/2B, 2B would occur with AAAs 1 and 2; Segment 2A/2B, 2B would still temporarily impact 319.4 acres of Mohave ground squirrel habitat.

- **AAAs 3 through 6:** AAAs 3 through 6 would not alter the affected acreage of Mohave ground squirrel for Segment 3B. No permanent impacts would occur, as Segment 3B would continue to temporarily impact 61.5 acres of Mohave ground squirrel habitat.
- **AAAs 7 and 8:** AAAs 7 and 8 would not result in Segment 6B crossing through any suitable habitat for Mohave ground squirrel. No permanent or temporary impacts would occur.

*Direct Mortality of Mojave Fringe-toed Lizard*

The potential effects of each AAA to Mojave fringe-toed lizard are summarized below:

- **AAAs 1 and 2:** Similar to Segment 2A/2B evaluated in **Section 3.14.4.5** of the Draft EIS, these alignment adjustments would traverse through suitable habitat for Mojave fringe-toed lizard near the sand dunes associated with the Mojave River. Implementation of the alignment adjustments would convert Mojave fringe-toed lizard habitat to transportation use and permanently remove suitable habitat. With AAAs 1 and 2, Segment 2A/2B would continue to affect a similar amount of habitat for Mojave fringe-toed lizards as assumed in the Draft EIS.
- **AAAs 3 through 6:** No suitable habitat for Mojave fringe-toed lizard occurs in or within the vicinity of the alignment adjustments to Segment 3B. AAAs 3 through 6 would thus result in no additional effects.
- **AAAs 7 and 8:** Since the Mojave fringe-toed lizard is not considered a threatened or sensitive species within Nevada, AAAs 7 and 8 would not introduce any such impacts to Segment 6B.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

Segment 2A/2B, Segment 3B, and Segment 6B with incorporation of the AAAs would traverse through suitable nesting habitat for raptors and migratory birds. Construction and operation of the rail alignments with the AAAs could remove or disturb trees or shrubs which provide suitable habitat, representing an adverse effect similar to the effect identified in **Section 3.14.4.5** of the Draft EIS.

*Direct Mortality of Banded Gila Monster*

The potential effects or each AAA to banded gila monster are summarized below:

- **AAAs 1 and 2:** No suitable habitat for banded gila monster occurs in or within the vicinity of the alignment adjustments to Segment 2A/Segment 2B. No effects would occur.
- **AAAs 3 through 6:** Similar to Segment 3B evaluated in the Draft EIS, these alignment adjustments would traverse through suitable habitat for banded gila monster. Construction of the alignment adjustment areas could result in direct mortality of banded gila monsters. With AAAs 3 through 6, Segment 3B would continue to affect a similar amount of habitat for banded gila monster as assumed in the Draft EIS.
- **AAAs 7 and 8:** No suitable habitat for banded gila monster occurs in or within the vicinity of the alignment adjustments to Segment 2A/Segment 2B. No effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

The potential effects of each AAA to the Clark County MSHCP covered reptile species are summarized below:

- **AAAs 1 through 6:** AAAs 1 through 6 would not be located within Clark County and would not be subject to the Clark County MSHCP.
- **AAAs 7 and 8:** Construction of AAAs 7 and 8 would temporarily impact suitable habitat for banded gecko, Great Basin collard lizard, desert iguana, large-spotted leopard lizard, desert tortoise, chuckwalla, sidewinder, specked rattlesnake, Mojave green rattlesnake, glossy snake, common king snake, western leaf-nosed snake, western long-nosed snake, and Sonoran lyre snake. Construction activities may result in the injury or mortality of these species. Since the impacted acreage of habitat suitable for Clark County MSHCP covered reptile species is the same as for the desert tortoise, implementation of AAA 7 would result in a slight increase in temporary and permanent effects to the Clark County MSHCP covered reptile species.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the AAAs could include the direct loss of burrows and foraging habitat for burrowing owls, similar to the effects of Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.14.4.5** of the Draft EIS. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the AAAs.

*Potential Loss or Disturbance to Roosting Bats*

Bridges, caves, and rock outcrops within the vicinity of the AAAs provide potential roosting and nursery sites for bats. Similar to Segments 2A/2B, Segment 3B, and Segment 6B in the Draft EIS, AAAs 1 through 8 could disturb roosting or nursery sites and could cause injury or mortality of bats.

*Effects to American Badger*

The potential effects of each AAA to American badger are summarized below:

- **AAAs 1 through 6:** Segment 2A/2B and Segment 3B with implementation of AAAs 1 through 6 would be located in areas suitable for American badger habitat. Similar to the conclusion in **Section 3.14.4.5** of the Draft EIS, construction of the rail alignments with the AAAs could result in the injury or mortality of badgers. Since American badgers utilize similar habitat as the desert tortoise, the amount of impact by AAAs 1 through 6 is anticipated to be the same as described for desert tortoise. With AAAs 1 and 2, Segment 2A/2B would result in a slight reduction in permanent and temporary impacts to American badger, while Segment 3B with AAAs 3 through 6 would result in a slight increase in permanent and temporary impacts to American badger.
- **AAAs 7 and 8:** AAAs 7 and 8 do not result in Segment 6B crossing suitable habitat for American badger and no effects would occur.

*Direct Effects to Desert Bighorn Sheep*

The potential effects of each AAA to desert bighorn sheep are summarized below:

- **AAAs 1, 2, 7, and 8:** AAAs 1, 2, 7, and 8 do not result in Segment 2A/2B or Segment 6B crossing suitable habitat for desert bighorn sheep and no effects would occur.
- **AAAs 3 through 6:** AAAs 3 through 6 would affect portions of Segment 3B which cross through suitable habitat for desert bighorn sheep. Construction-related activities could directly affect desert bighorn sheep by disrupting lambing and by altering the flow of natural springs, which provide critical water supply. Desert bighorn sheep could also use the rail corridor for movement and as a result, operation of the passenger train could result in the mortality of sheep. With AAAs 3 through 6, Segment 3B would continue to affect a similar amount of habitat for desert bighorn sheep as assumed in **Section 3.14.4.5** of the Draft EIS.

*Loss of Special Management Lands*

Implementation of the alignment adjustments would not alter the affected acreage of special management lands for Segment 2A/2B, Segment 3B, and Segment 6B.

- **AAAs 1 and 2:** Implementation of AAAs 1 and 2 would not alter the affected acreage of special management lands for Segment 2A/2B. Segment 2A/2B would continue to impact 60.9 acres of Superior-Cronese Desert Tortoise Critical Habitat.
- **AAAs 3 through 6:** Implementation of AAAs 3 through 6 would not alter the affected acreage of special management lands for Segment 3B. Segment 3B would

continue to impact 268.5 acres of Superior-Cronese Desert Tortoise Critical Habitat, 225.7 acres of Ivanpah Desert Tortoise Critical Habitat, and 3.6 acres of the Cronese ACEC.

- **AAAs 7 and 8:** AAAs 7 and 8 would not be located within any special management lands. Segment 6B with implementation of AAAs 7 and 8 would result in no effects to special management lands.

*Direct and Indirect Impacts to Wetlands/Waters of the United States*

The AAAs would not result in any new stream crossings for Segment 2A/2B, Segment 3B, and Segment 6B. Segment 2A/2B would cross 16 streams, Segment 3B would cross 117 streams, and Segment 6B would cross 16 to 18 streams.

**Wigwam MSF Modification**

The modification to the Wigwam MSF would not introduce any new direct or indirect biological resource effects beyond those described in **Section 3.14.4.5** of the Draft EIS. Construction and operation of the Wigwam MSF modification could introduce or spread noxious weeds; could result in the loss or damage to native vegetation communities; impact special-status plant populations; permanently and temporarily impact desert tortoise, Mojave fringe-toed lizard, nesting raptors and migratory birds, Clark County MSHCP covered reptile species, and burrowing owls; and result in direct and indirect impacts to wetlands and Waters of the United States.

**Profile Modification**

The Profile Modification would not create any new direct or indirect biological resource impacts beyond those previously identified for Segment 3B in **Section 3.14.4.5** of the Draft EIS as the location of the rail alignment has not changed. Placing the rail alignment in a 1.3 mile long retained cut would not foreseeably alter the potential biological resources associated with this portion og Segment 3B. Segment 3B with implementation of the Profile Modification could continue to introduce or spread noxious weeds; could result in the loss or damage to native vegetation communities; result in the loss of sensitive vegetation communities; impact special-status plant populations; permanently and temporarily impact desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, nesting raptors and migratory birds, banded gila monster, burrowing owls, roosting bats, and American badger; impacts to special management lands; and result in direct and indirect impacts to wetlands and Waters of the United States.

## 3.14.4 MITIGATION MEASURES

**Section 3.14.5** of the Draft EIS included **Mitigation Measures BIO-1** through **BIO-21**, which are applicable to the project modifications and additions. The relevant mitigation measures from **Section 3.14.5** of the Draft EIS are summarized below:

- **Mitigation Measure BIO-1:** Requires implementation of a mandatory environmental awareness training program for all personnel working within the project area.
- **Mitigation Measure BIO-2:** Requires preconstruction surveys for special-

status species, to be conducted by a qualified biologist prior to the start of construction. Preconstruction surveys for Mohave ground squirrel, Mojave fringe-toed lizard, banded gila monster, BLM sensitive and Clark Coounty MSHCP covered reptile species, burrowing owls, roosting bats, American badger, desert bighorn sheep, sensitive botanical species, and noxious weeds shall be required.

- **Mitigation Measure BIO-3:** Requires implementation of construction monitoring measures.
- **Mitigation Measure BIO-4:** Requires the implementation of specific measures to avoid the dispersal of noxious weed into uninfested areas.
- **Mitigation Measure BIO-5:** Requires the confinement of construction equipment to a designated work zone (including access roads) at each project site.
- **Mitigation Measure BIO-6:** Requires the reestablishment of preconstruction site conditions to allow for revegetation.
- **Mitigation Measure BIO-7:** Requires the retention and stockpiling of topsoil.
- **Mitigation Measure BIO-8:** Requires the restoration of natural site topography to pre-project contours.
- **Mitigation Measure BIO-9:** Requires the implementation of erosion control measures as part of an erosion control and restoration plan, as appropriate.
- **Mitigation Measure BIO-10:** Requires a tree or plant removal permit from San Bernardino County and the Nevada Division of Forestry and/or the BLM in order to relocate succulents within the project alignment.
- **Mitigation Measure BIO-11:** Compensate for the loss of sensitive vegetation communities prior to initiating construction.
- **Mitigation Measure BIO-12:**[2] Requires implementation of preconstruction surveys for sensitive vegetation and the identification of sensitive areas.
- **Mitigation Measure BIO-13:** Requires the avoidance of known special-status plant populations during project design.
- **Mitigation Measure BIO-14:** Requires compensation for adverse effects on special-status plant populations, per the direction of the USFWS and CDFG.
- **Mitigation Measure BIO-15:** Requires the preparation of a desert tortoise relocation plan in conjunction with the USFWS Las Vegas and Ventura Ecological Services Offices, BLM, NPS, and the CDFG.
- **Mitigation Measure BIO-16:** Requires the preparation of a final mitigation monitoring report for USFWS, BLM, and state agencies.

[2] The Draft EIS did not include a Mitigation Measure BIO-12. To correct this error from the Draft EIS, Mitigation Measure BIO-13 from the Draft EIS is reflected as Mitigation Measure BIO-12 in this Supplemental Draft EIS. Subsequent mitigation measure numbers were revised accordingly.

- **Mitigation Measure BIO-17:** Requires the implementation of mitigation measures outlines by the Nevada USFWS ecological services office to protect desert tortoise.
- **Mitigation Measure BIO-18:** Requires the compensation for the permanent loss of desert tortoise habitat.
- **Mitigation Measure BIO-19:** Requires the construction of exclusion fencing and culverts to match the existing I-15 or UPRR culverts.
- **Mitigation Measure BIO-20:** Requires the compensation for the permanent loss of Mohave ground squirrel habitat.
- **Mitigation Measure BIO-21:** Requires the avoidance of active burrows or the passive relocation of owls.

## 3.14.5 Residual Impacts Following Mitigation

While the mitigation measures above would mitigate permanent biological resources effects related to the construction and operation of the project modifications and additions, the modifications and additions would result in the permanent conversion of lands identified as sensitive habitat areas to transportation use.

Segment 2A / 2B

Note: Segments 1 and 2A/2B are one common alignment that would be used under Alternative A or Alternative B.

Segment 1

Segment 2C

Lenwood

Barstow

Barstow Marine Corps Logistics Base

Superior-Cronese DWMA

Fremont-Kramer DWMA

Newberry Mountains Wilderness

Victorville Station Site 3A / 3B

Victorville OMSF 2

Victorville Site 2

Victorville Site 1

Victorville OMSF 1

Oro Grande

Southern California Logistics Airport

Victorville

Apple Valley

Segment 1

Victorville Station Site 3A / 3B

Dale Evans Pky

Boulder Rd

Victorville OMSF Site 2

Segment 1

15

## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-4 for list of species names

Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

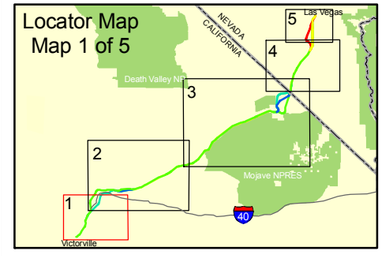
Kilometers: 0 2 4

Miles: 0 1.5 3

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 1 of 5

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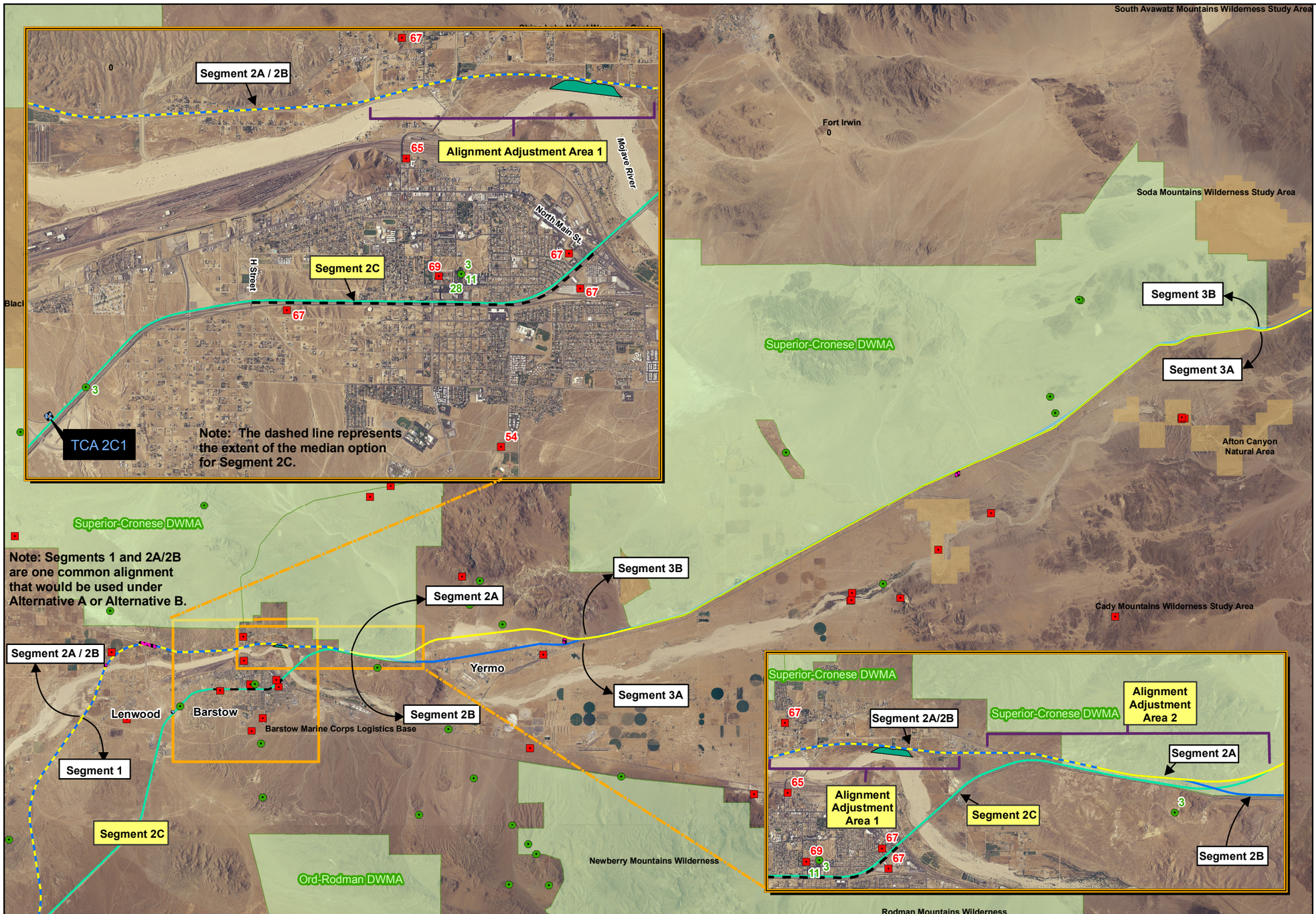
**DesertXpress - Supplemental EIS**

*Biological Resources (1)*

FIG **S-3.14-1**

Geografika Consulting 06.07.10




## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-4 for list of species names
Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

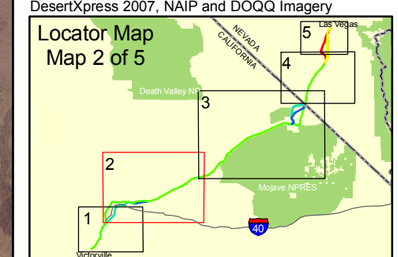
### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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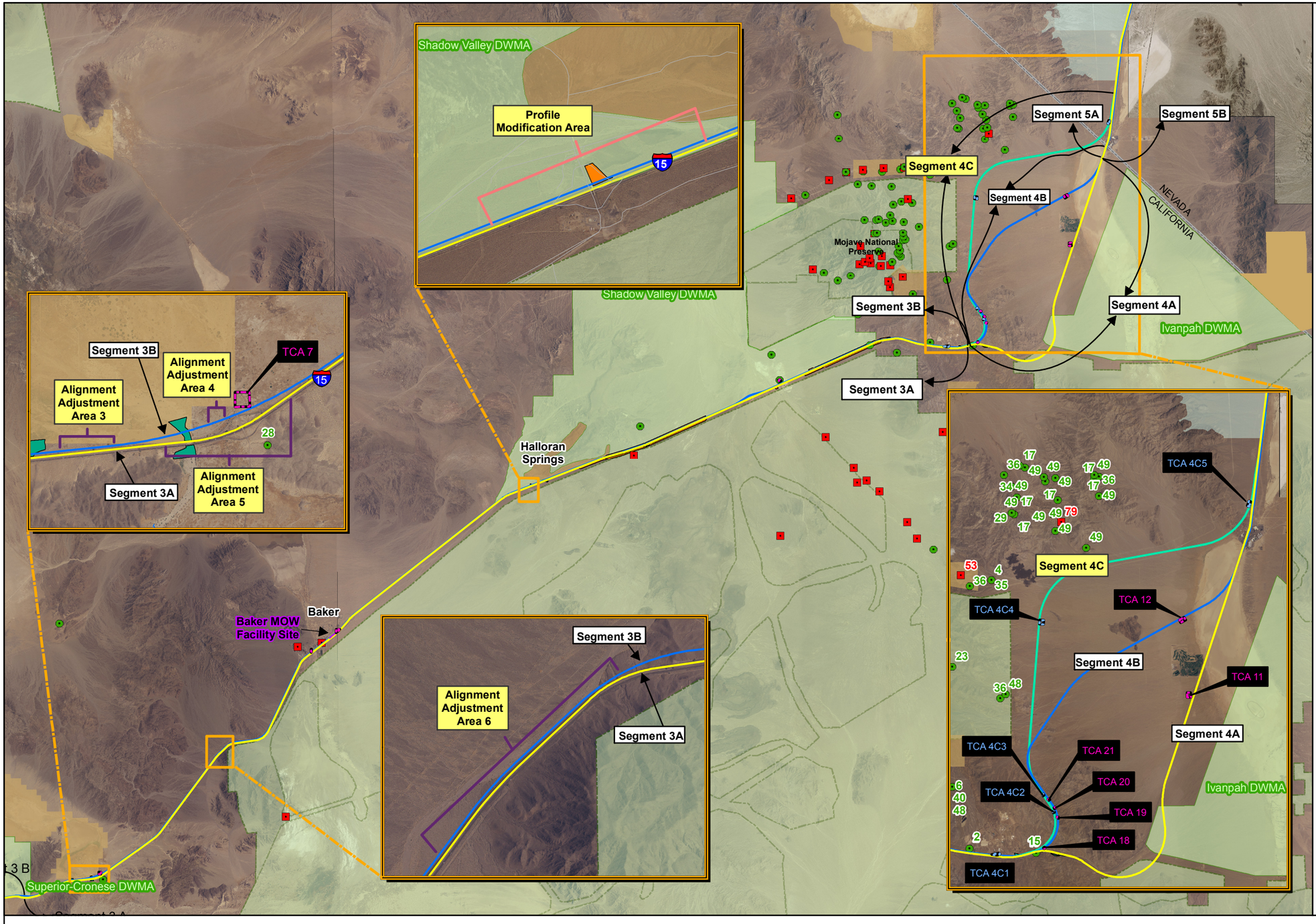
**DesertXpress - Supplemental EIS**

*Biological Resources (2)*

FIG **S-3.14-2**

Geografika Consulting 06.08.10




## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-4 for list of species names
Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

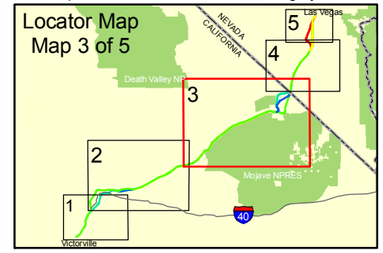
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 5 miles

0 2.5 5 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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**DesertXpress - Supplemental EIS**

*Biological Resources (3)*

FIG **S-3.14-3**

Geografika Consulting 06.15.10

TCA 14

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-4 for list of species names

Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Relocation Sloan MSF / Substation Site Option
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

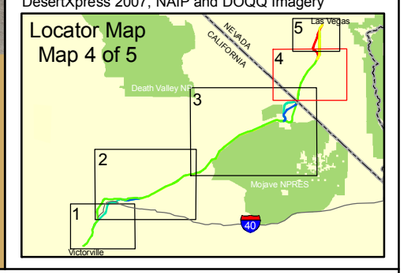
1 inch equals 3 miles

NORTH

0 3 6 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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**DesertXpress - Supplemental EIS**

***Biological Resources (4)***

FIG **S-3.14-4**

Geografika Consulting 06.15.10

TCA 22
Las Vegas Central Station B
Segment 6 C
Segment 7 A
Segment 7 B
Segment 6 A
Las Vegas Southern Station
TCA 16
Alignment Adjustment Area 8
Segment 6 B
Segment 6 A
Robindale MSF
Wigwam MSF
Segment 7C
Las Vegas Downtown Station
Segment 7B
Segment 7A
Las Vegas Central Station A
Las Vegas Central Station B
Las Vegas Southern Station
Robindale MSF
Segment 6C
Segment 6B
Segment 6A
TCA 14
Segment 6 B
Segment 6 A
Frias Substation

## Legend

### Biological Resources

**Sensitive Vegetation Community**
- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***
- Plants
- Animals

* See Figure S-3.14-4 for list of species names

Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments
- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Frias Substation and Wigwam MSF Modifications
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

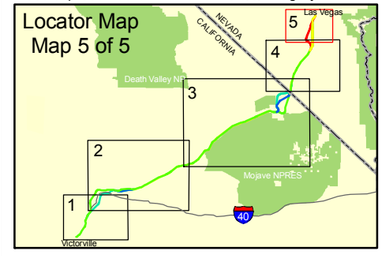
1 inch equals 2 miles

0 1 2 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 5 of 5

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**DesertXpress - Supplemental EIS**

*Biological Resources (5)*

FIG **S-3.14-5**

Geografika Consulting 06.15.10


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**DesertXpress - Supplemental EIS**

***Special Status Species Within the Project Region***

FIG **S-3.14-6**

Geografika Consulting 06 08.10

# 3.15 SECTION 4(F) EVALUATION

This section discusses the potential impacts of the project modifications and additions on resources protected by Section 4(f) of the Department of Transportation Act of 1966.

## 3.15.1 AFFECTED ENVIRONMENT

Regulations and standards related to Section 4(f) identified in **Section 3.15.1.1** of the Draft EIS have not changed since publication of the Draft EIS and therefore remain applicable to the project modifications and additions.

### Regional Conditions

**Figures S-3.15.1** through **S-3.15.5** show the proposed project modifications and additions in relation to public park and recreation facilities within the project area.

*Historic Architectural Resources*

The Draft EIS identified two historic architectural resources in the vicinity of the proposed project. However, the Draft EIS concluded that there would be no direct use of these resources and with mitigation, no constructive use of the resources would occur.

The project modifications and additions are not located near the historic architectural resources identified in the Draft EIS and no new resources are present. The project modifications and additions would not change the conclusion that there would be no use of historic resources within the project area that qualify for protection under Section 4(f).

*Clean Air Act Class 1 Areas*

The Draft EIS identified eight wilderness and national park resources that, while not being directly affected by the proposed action, are located within 100 miles and meet certain criteria under the Clean Air Act[1] that qualify these resources as being sensitive to air pollution and thus qualifying for protection under Section 4(f):

- Domeland Wilderness
- San Gabriel Wilderness
- San Gorgonio Wilderness
- Agua Tibia Wilderness
- San Jacinto Wilderness
- Cucamonga Wilderness
- Grand Canyon National Park
- Joshua Tree National Park

[1] 42 U.S.C. 7472

The project modifications and additions would not substantially alter the air quality analysis or conclusions (see **Section 3.12, Air Quality,** of this Supplemental Draft EIS) contained in the Draft EIS. Based on this analysis the Draft EIS concluded that emissions from the action alternatives would be greatly dispersed prior to entering the airsheds of these resources and would, therefore, not have a substantial impact on the visibility in any of these areas.

**Public Parks and Recreational Facilities**

*Victorville Station Site 3*

There are no public parks or recreational areas in close proximity to VV3. **Figure S-3.15.1** shows that the closest such resources are located south of VV1 in the City of Victorville. As such, no direct or constructive use of recreational resource properties would occur with regard to VV3.

*OMSF 2*

There are no public parks or recreational areas in proximity to OMSF 2. **Figure S-3.15.1** shows that the closest such resources are located south of VV1 in the City of Victorville. As such, no direct or constructive use of recreational resource properties would occur with modification to OMSF 2.

*Segment 2C*

Segment 2C would be located near several public parks and recreation facilities. **Figure S-13.5-2** shows the locations of these facilities relative to Segment 2C.

***Barstow Heights Park:*** Barstow Heights Park is an approximately 0.8 acres public park located in Barstow at Rimrock Road and H Street. This neighborhood park includes a playground and picnic area.

***Dana Park:*** Dana Park is an approximately 8.8 acre public park located in Barstow to the north of I-15 at 850 Barstow Road. Park amenities include a playground, indoor pool, and tennis courts.

***Cameron Park:*** Cameron Park is a small neighborhood public park located just north of I-15 within Barstow at the intersection of Yucca Street and Kelly Drive.

***Lillian Park:*** Lillian Park is an approximately 3.7 acre public park located in Barstow north of I-15 at 901 Bigger Street. Park amenities include a picnic area and baseball field.

***John Sturnacle Park:*** John Sturnacle Park is an approximately 10.4 acre public park located in Barstow to the north of I-15 at 1434 Sage Drive. Park amenities include a playground, picnic area, baseball field, and basketball court.

***Foglesong Park:*** Foglesong Park is an approximately 35 acre park located in Barstow to the north of I-15 at 300 Avenue G. Park amenities include a playground, athletic field, swimming pool, and picnic area.

***Daha Park:*** Daha Park is a small neighborhood park located in Barstow just north of I-15 at East Virginia Way and Barstow Road.

***H Street Soccer Fields:*** The H Street Soccer Fields is an approximately 15 acre public recreation field located in Barstow just north of I-15 at Avenue H and Vineyard Street. Amenities include soccer fields.

***Smith Park[2]:*** Smith Park is a neighborhood park located in Yermo to the south of I-15 at Yermo Road and McCormick Street.

***Hurst Park[2]:*** Hurst Park is a neighborhood park located in Yermo to the south of I-15 at Yermo Road and Calico Road.

*Segment 4C*

The northern unit of the Mojave National Preserve is located more than one mile to the west of Segment 4C.

*Relocated Sloan MSF*

There are no public parks or recreation areas located near the RSMSF site.

*Frias Substation*

Western Trails Park is a public park located near the Frias Substation site.

*Alignment Adjustment Areas*

The Section 4(f) evaluation in the Draft EIS identifies public parks and recreation facilities that qualify for protection along the proposed rail corridor. The AAAs involve minor modifications to the rail alignment and would not result in direct use, nor indirect use of the public parks and recreation facilities qualifying for protection under Section 4(f).

***AAA 1:*** AAA 1 would shift a portion of Segment 2A/2B near Barstow fewer than 400 feet to the south, and incrementally closer to numerous park and recreational facilities in the City of Barstow. However, the shift associated would nonetheless keep Segment 2A/2B on

[2] The Section 4(f) evaluation within the Draft EIS did not include Smith Park or Hurst Park. Subsequent to the Draft EIS publication, it was determined that Smith Park would be in close proximity to Segment 2B and thus should have been included in the Draft EIS as a Section 4(f) resource potentially affected by Segment 2B. If Segment 2B is selected as part of the Agency Preferred Alternative, the Final EIS will include an evaluation of Smith Park relative to Segment 2B.

the north side of the Mojave River and thus substantially separate from the various parks and recreational facilities within urbanized Barstow.

***AAAs 7 and 8:*** AAAs 7 and 8 would shift portions of the Segment 6B alignment to the outer edge of the I-15 freeway right of way or into the right-of-way associated with Industrial Road/South Dean Martin Drive. These minor shifts would move the rail line incrementally closer to several parks in the Las Vegas area but the closest public park would still be over 1 mile away.

*Wigwam MSF Modification*

Western Trails Park is a public park located near the Wigwam Avenue MSF site.

*Profile Modification*

The Mojave National Preserve is located south of the I-15 freeway in the vicinity of the proposed profile modification.

**Cultural Resources**

There is one cultural resource located in close proximity to Segment 2C that could qualify for protection under Section 4(f), the Old National Trails Highway (CA-SBR-2910H). In addition, there is one cultural resource located in close proximity to the AAAs and Profile Modification that could qualify for protection under Section 4(f).

## 3.15.2 Methods of Evaluation of Impacts

**Section 3.15-4** of the Draft EIS included a preliminary Section 4(f) Evaluation, developed pursuant to 23 U.S.C. 138 and 49 U.S.C. 303. Following these legislative requirements, the Draft EIS's Section 4(f) evaluation restated the project's purpose and need, described major action alternatives, the project's use of Section 4(f) resources, presented avoidance alternatives, and measures to minimize harm.

This Supplemental 4(f) evaluation examines the project modifications and additions articulated in **Chapter 2.0, Alternatives**, of this Supplemental DEIS to determine if they would result in the use a Section 4(f) resource. The Final EIS will include a Final Section 4(f) evaluation, which examines potential Section 4(f) uses associated with the Agency Preferred Alternative.

## 3.15.3 Environmental Consequences

Each project modifications and addition was evaluated based on the criteria for adverse effects related to Section 4(f) Resources as described in **Section 3.15.1.1** of the Draft EIS. The discussions below consider the potential effects of the project modifications and additions to public parks and recreational facilities and cultural resources.

## Public Parks and Recreation Facilities

*Victorville Station Site 3, OMSF 2, and Relocated Sloan MSF*

There are no public parks or recreation areas located near the VV3, OMSF 2, or RSMSF sites.

*Segment 2C*

The closest public park or recreational facility is 0.8 miles away from Segment 2C. As a result, Segment 2C would not result in the direct use of any of these facilities. Segment 2C would also not result in constructive use of these facilities. The public parks and recreational facilities are of sufficient distance from Segment 2C to not be affected by noise, dust, or other potential indirect effects that would result in constructive use.

*Segment 4C*

Segment 4C would be located near the northern Clark Mountain unit of the Mojave National Preserve. The northern unit of the Preserve is accessible only by off-road vehicle or foot. Segment 4C would be located largely atop a plain located at a substantial elevation below the mostly rugged terrain of the northern unit of the Preserve. Given the distance between Segment 4C and the Preserve as well as local topographic considerations, Segment 4C would not result in a direct or constructive use of the Preserve.

*Frias Substation, Alignment Adjustment Areas, and Wigwam MSF Modification*

AAA 8, the Wigwam MSF, and the Frias Substation would result in built portions of the project being located outside the I-15 corridor. Of these, only the Frias Substation would include the addition of a facility to the west of South Dean Martin Drive, a largely commercial/industrial corridor paralleling the I-15 freeway and South Las Vegas Boulevard throughout much of the Las Vegas metropolitan area.

**Figure S-3.15-5** depicts the location of Western Trails Park in relation to project features. Given the distance of this park from the Frias Substation site (over 1 mile to the west) no use or constructive use of this resource would occur.

*Profile Modification*

The profile modification would occur on the opposite side of the I-15 freeway from the Mojave National Preserve and therefore would not result in direct use of the Preserve. Placing the rail alignment in a retained cut would further reduce any potential for constructive use of the Preserve as potential noise and visual effects would be further reduced.

**Cultural Resources**

The majority of project modifications and additions will not have any impact on cultural resources protected under Section 4(f). However, one of the project modifications and additions was designed by the applicant to avoid the use of a 4(f) property by minimizing the impact of the project on the integrity of the site. The FRA is consulting with the BLM and Native American tribes regarding potential impacts to this site and will make a final determination regarding impacts to this site in the Final Section 4(f) evaluation.

As a result of FRA's continuing tribal consultation efforts, FRA has determined that the disclosure of any information about the location, character, or ownership of the property may risk harm to the resource. Therefore, FRA is withholding additional information that has the potential to disclose the location or character of the resource.

## 3.15.4 Avoidance Alternatives

The proposed project modifications and additions would not affect the conclusion in **Section 3.15.4** of the Draft EIS Section 4(f) evaluation regarding avoidance alternatives. Other than the No Action alternative, there are no feasible and prudent alternatives that would avoid all Section 4(f) resources.

**Alternative Development Process**

As documented in **Section 3.15.5** of the Draft EIS Section 4(f) evaluation, several alignment alternatives were studied by the Applicant and were rejected from further consideration using standardized technical and environmental criteria. These criteria were developed largely by the Applicant. The process used by the applicant to evaluate conceptual alignment alternatives and to make feasibility and practicability determinations in consultation with the Lead and Cooperating agencies during the environmental review process is further described in the Draft EIS (see Chapter 2, Alternatives).

As noted above, certain project modifications and additions were proposed by the Applicant subsequent to publication of the Draft EIS in order to present additional alternatives that would, among other things, avoid or minimize the potential for a Section 4(f) use to occur. For example, Segment 4C provides a routing alternative through the Clark Mountain area that would avoid the direct Section 4(f) use associated with Segment 4A. Additional modifications have been proposed to avoid and minimize impacts to cultural resource sites.

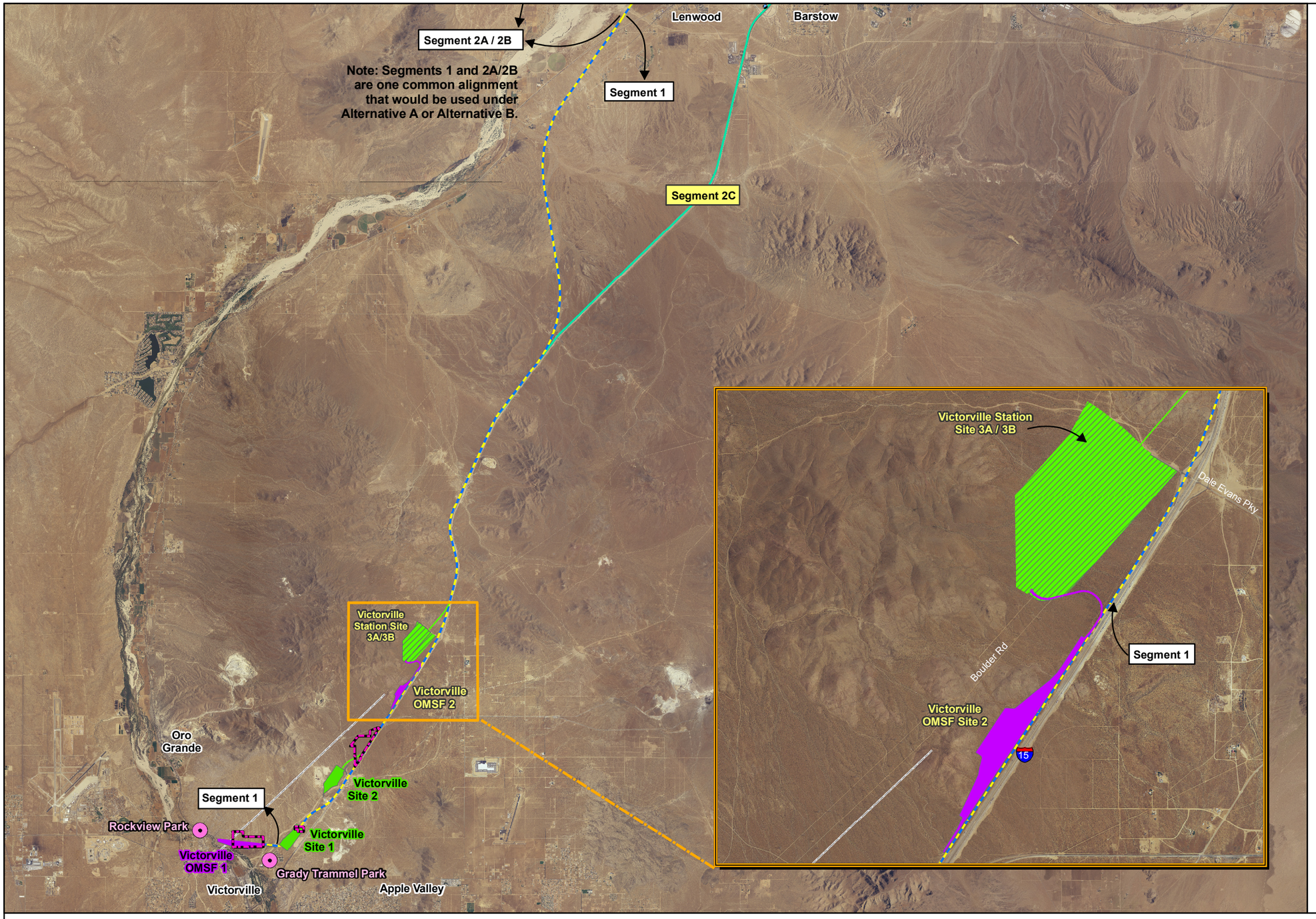
## 3.15.5 Least Harm Analysis and Concluding Statement

Under Section 4(f), the determination of least overall harm will evaluate and balance the following factors:

- The ability to mitigate adverse impacts to each Section 4(f) property;

- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the officials with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

The Final EIS will include a final Section 4(f) evaluation that examines the Agency Preferred Alternative and any Section 4(f) uses that may result. The final evaluation will incorporate input from the agencies and members of the public during circulation of the Draft and Supplemental Draft EIS, as well as from the outcome of the Section 106 consultation process.




## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

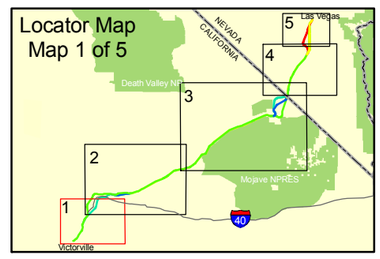
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

Kilometers
0 2 4

Miles
0 1.5 3

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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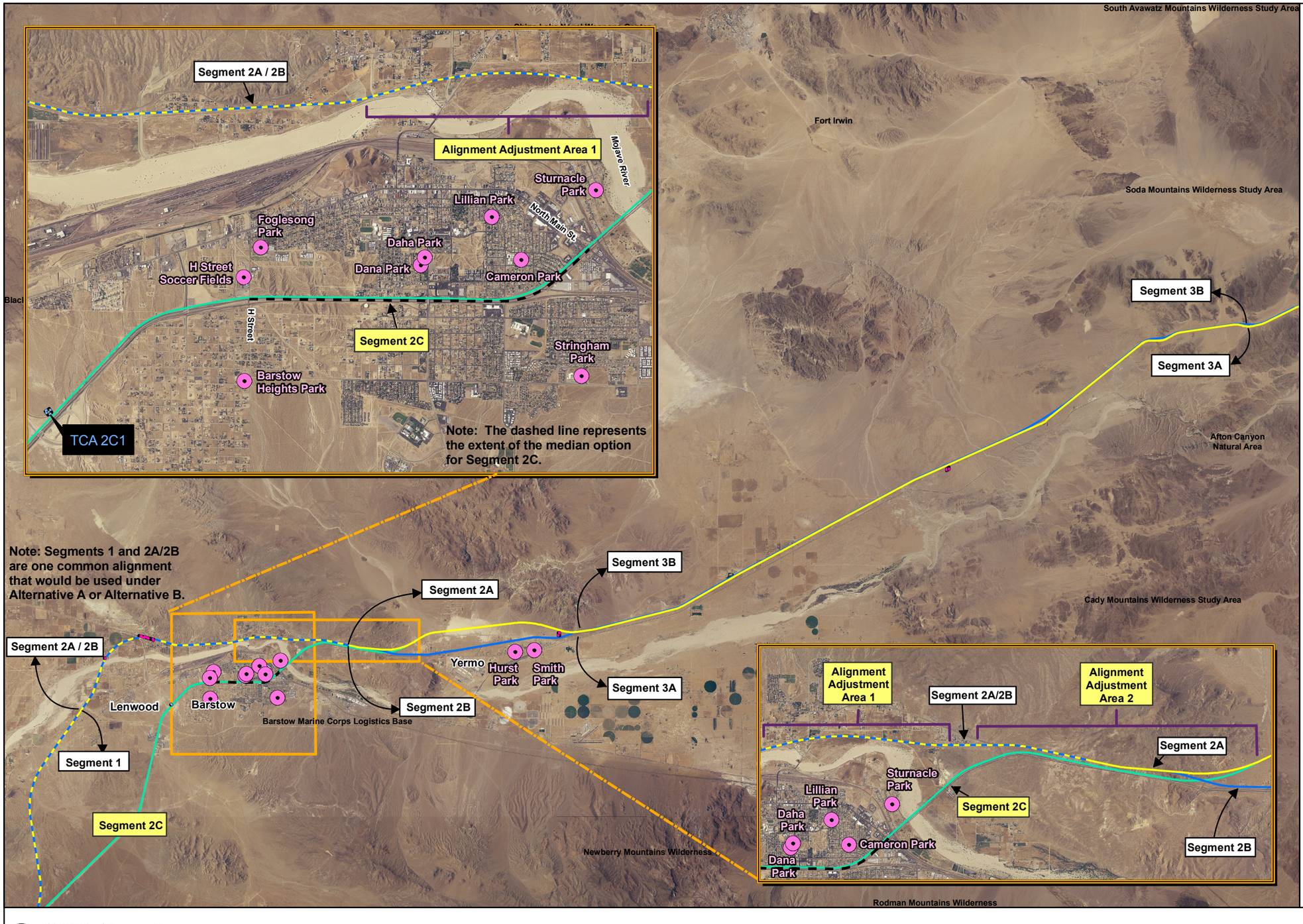
**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (1)*

FIG **S-3.15-1**

Geografika Consulting 06.16.10




## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

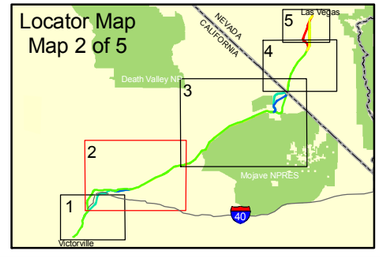
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

0 5 10 Kilometers

0 4 8 Miles

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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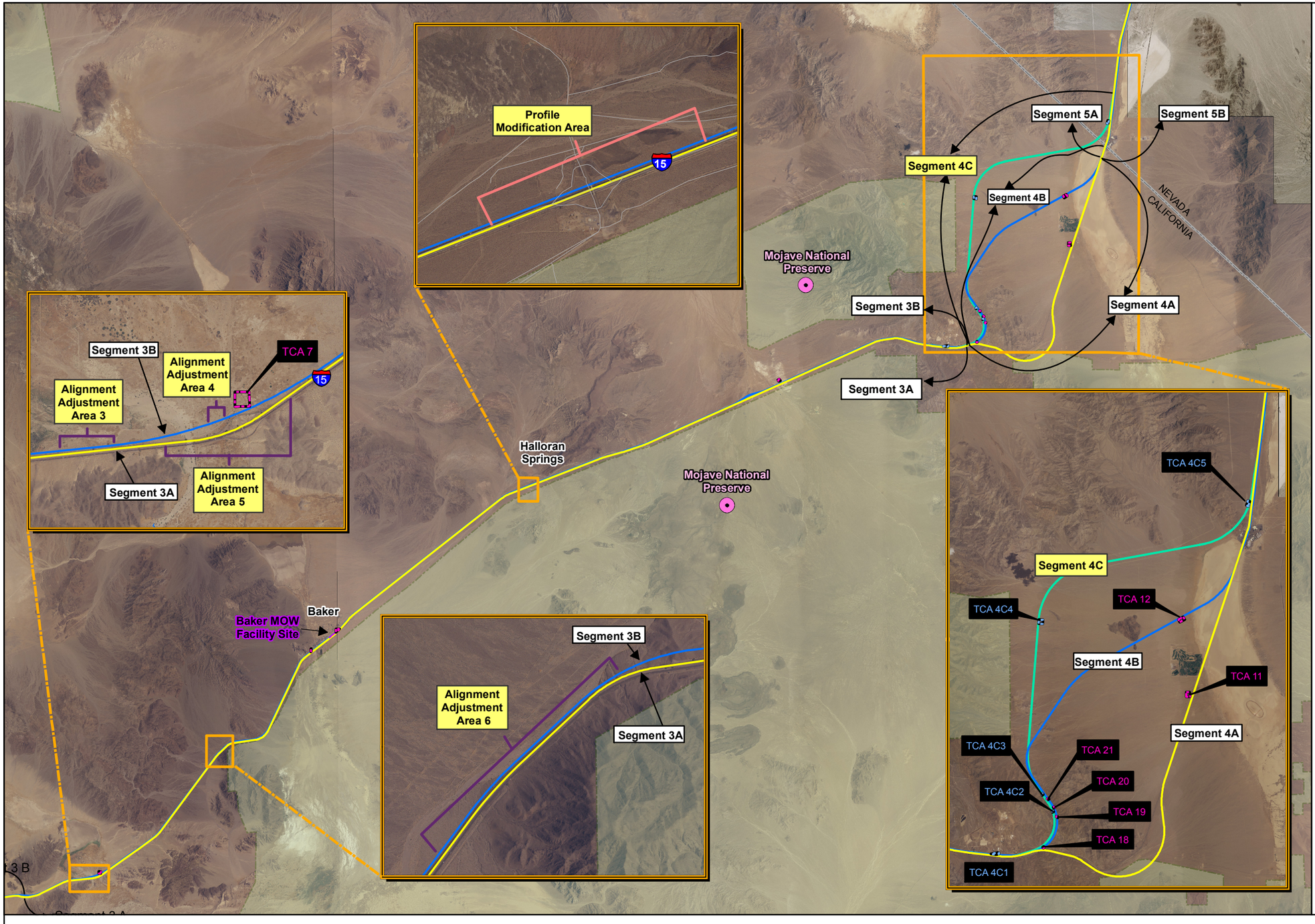
**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (2)*

FIG **S-3.15-2**

Geografika Consulting 06.016.10




## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
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**Ancillary Facility Sites**

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- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

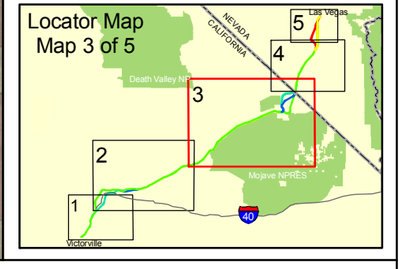
1 inch equals 5 miles

0 3 6 Kilometers

0 2.5 5 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (3)*

FIG **S-3.15-3**

Geografika Consulting 06.16.10

TCA 14

Stonewater Park

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

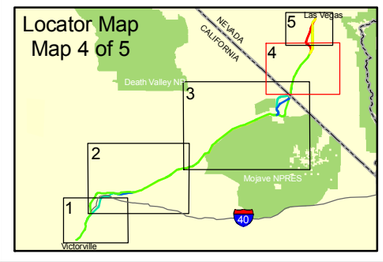
0 2.5 5 Kilometers

0 3 6 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (4)*

FIG S-3.15-4

Geografika Consulting 06.16.10

TCA 22
Las Vegas Central Station B
Segment 6 C
Segment 7 A
Segment 7 B
Segment 6 A
Las Vegas Southern Station
TCA 16
Alignment Adjustment Area 8
Las Vegas Blvd
McCarran International Airport
Segment 6 B
Western Trails Park
Robindale MSF
Wigwam MSF
160
15
Segment 7C
Las Vegas Downtown Station
Mary Dutton Park
Bob Baskin Park
Segment 7B
Segment 7A
Las Vegas Central Station A
Las Vegas Central Station B
Las Vegas Southern Station
Western Trails Park
Robindale MSF
Segment 6A
Segment 6C
Segment 6B
TCA 14
Stonewater Park
Segment 6 B
Segment 6 A
Frias Substation

## Legend

**Public Parks and Recreation Facilities**

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- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 2 miles

Kilometers
0 1.25 2.5

Miles
0 1 2

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 5 of 5
NEVADA
CALIFORNIA
Las Vegas
Death Valley NP
Mojave NPRES
Victorville
1
2
3
4
5
40

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**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (5)*

FIG **S-3.15-5**

Geografika Consulting 06.16.10

# 3.16 CUMULATIVE IMPACTS

This chapter summarizes the potential cumulative physical and growth-related environmental consequences associated with the project modifications and additions.

## 3.16.1 RELATED PROJECTS CONSIDERED IN THE CUMULATIVE ANALYSIS

### Past Activities and Actions

Past activities and projects described in the cumulative analysis within **Section 3.16.2** of the Draft EIS are considered as part of this analysis. Over the past decade, numerous past projects, such as residential, industrial, commercial, or service area projects, have been completed and developed as a result of the rapid urbanization in Victorville and Las Vegas. Between Victorville and Las Vegas, the trend in urbanization has not been as rapid, with a limited number of isolated projects between the two cities. The action alternatives evaluated in the Draft EIS as well as the project modifications and additions were designed considering the location of these past projects, so as to limit disruption or displacement where possible. These past projects are part of the existing environmental conditions and establish a baseline for the potentially affected environment.

### Reasonably Foreseeable Present and Future Actions and Projects

**Section 3.16.3** of the Draft EIS presented information describing the reasonably foreseeable present and future actions considered in the cumulative analysis. Since publication of the Draft EIS, several new transportation improvement projects have been identified within Clark County and are discussed in this section under the heading "Transportation Projects." No new reasonably foreseeable present or future project related to parks, recreation, or natural preservation; development; energy; or public utilities have been identified within the project region since publication of the Draft EIS. Summaries of all reasonably foreseeable present and future actions considered in the cumulative analysis are provided below.

**Figures S-3.16-1** through **S-3.16-5** show the location of the reasonably foreseeable present and future projects in relation to the project modifications and additions. The related present and future projects are summarized below.

#### *Transportation Projects*

*Interstate 15 Capacity Improvements* –Caltrans and NDOT are planning for future highway improvements along I-15 between Victorville and Las Vegas. **Figures S-3.16-1** through **S-3.16-5** show the location of the I-15 capacity improvements. The Caltrans improvements include widening the I-15 bridge over the Mojave River, several interchange modifications, widening portions of the I-15 freeway to increase capacity, and the addition of truck lanes near Mountain Pass.

NDOT is proposing several improvements and projects along the I-15 corridor, including the NEON project and the I-15 South project, which involve the reconstruction of existing interchanges, local access improvements, a High-

Occupancy Vehicle (HOV) lane connecting I-15 to US 95, construction of new interchanges. Other planned capacity improvements on the I-15 freeway between I-215 and US 95 include:

- I-15 from California state line to Sloan Road: widen from 6 to 8 lanes
- I-15 from Sloan Road to Blue Diamond Road (6 lanes to 10 lanes)
- I-15 between I-215 and I-515: widen from 10 to 14 lanes (preliminary engineering)
- I-15 between Russell Road and Sahara Avenue: widen from 8 to 10 lanes (preliminary engineering and right-of-way acquisition)

*New Roadways intersecting I-15 or the proposed rail alignment:*

- Starr Avenue: construction of a 6 lane roadway from I-15 to St. Rose Parkway (Clark County)
- I-15 at I-215: construction of new direct connector high-occupancy vehicle ramps (Clark County)

*Interstate 15 Joint Point of Entry* – This project proposes the construction of a Commercial Vehicle Enforcement Facility and an Agricultural Inspection Facility between Nipton Road and Yates Road on southbound I-15 just south of the California-Nevada state line. **Figure S-3.16-5** shows the location of the Joint Point of Entry project.

*California High Speed Rail* – This project is a proposed high-speed rail system in California. The high-speed train system would serve Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. Due to the proposed distance of the California High Speed Rail and the number of alignment options, this future project is not shown on a figure.

*Supplemental Commercial Airport in Ivanpah Valley* – This project would involve the construction of a new airport in the Ivanpah Valley, just south of Las Vegas, to serve as a supplement facility to the existing McCarran airport in Las Vegas. **Figure S-3.16-6** shows the location of the proposed airport.

*Southern Nevada Regional Heliport* – The Clark County Department of Aviation (CCDOA) has proposed a new heliport site just south of Sloan to the west of I-15. **Figure S-3.16-6** shows the location of the proposed helipad.

- *Intermodal Transport Terminal near Downtown Las Vegas* – This project would be located north of the northernmost DesertXpress passenger station option (Downtown Las Vegas). Should this Terminal be constructed, it would be complementary to DesertXpress service in providing train passengers with connections to local transit services.
- *Las Vegas Managed Lanes Demonstration Project* – This is a trial project of high occupancy toll (HOT) lanes on I-15 from the intersection of I-215 in the south to north of Downtown Las Vegas, and beyond the proposed terminus of the DesertXpress project)

*The California-Nevada Interstate Maglev Train* - This project proposes to construct a new rail line using magnetic levitation technology between Las Vegas and Primm, Nevada

as a segment of the high-speed MAGLEV system between Las Vegas, Nevada, and Anaheim, California. Congress provided $45 million through Section 102 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59, 119 Stat. 1144, August 10, 2005) (SAFETEA-LU) as amended by the SAFETEA-LU Technical Corrections Act of 2008 (Public Law 110-244, 122 Stat. 1572, June 6, 2008) to fund deployment of a maglev project between Las Vegas and Primm, Nevada. NDOT is working with FRA to define the scope of work for a funding agreement to support the preparation of an environmental impact statement analyzing the impacts associated with the proposed Maglev project.

### *Parks, Recreation, or Natural Preservation Projects*

*West Mojave Coordinated Management Plan* – The BLM has proposed the West Mojave Coordinated Management Plan to define a regional strategy for conserving plant and animal species and their habitats. The plan would also define an efficient, equitable, and cost-effective process for complying with regulations and policies related to threatened and endangered species (i.e., Endangered Species Act), such as desert tortoise and Mohave ground squirrel. The plan area would cover approximately 9.4 million acres of public land managed by the BLM. Due to the large expanse covered under this plan, this area is not shown on a figure.

*Mixed-Use Recreation – Ivanpah Dry Lake* – This project would allow for the continued issuance of Casual Use permits and Permitted and Organized event permits in the Ivanpah Dry Lake area. **Figure S-3.16-5** shows the location of the Mixed-Use Recreation area.

### *Development Projects*

*North Triangle Specific Plan* – This plan is proposed within the North Mojave Plan area in Victorville. The North Triangle Specific Plan anticipates the inclusion of transportation related facilities, such as the Victorville passenger station and OMSF. **Figure S-3.16-1** shows the location of the North Triangle Specific Plan.

*Mixed-Use Development – Jean*– This project would involve the development of approximately 166 acres near Jean. The project would develop a mixed-use community, including affordable housing, commercial business, retail, and a new hotel and casino. **Figure S-3.16-6** shows the location of this mixed-used development.

- *Fast Food Restaurant Development – Primm*– This project would involve the development of a fast food restaurant in Primm. **Figure S-3.16-5** shows the location of this development.

### *Energy Projects*

*BLM Solar and Wind Energy Projects* –BLM has receive**d several propo**sals for solar energy and wind energy projects in the California Desert. The Ivanpah Solar Electric Generating System project is one of the solar energy projects under consideration. **Figures S-3.16-4** and **S-3.16-5** show the location of the proposed energy projects.

*Ivanpah Energy Center* – The Ivanpah Energy Center would be located in Primm on the east side of I-15 and would include the development of a 500- Mw gas-turbine combined-cycle power plant. **Figure S-3.16-5** shows the location of this energy center.

*Primm Solar Generating Plant* – The Primm Solar Generating Plant project would involve the construction of a 250 Mw solar trough plant on approximately 2,500 acres in Primm. **Figure S-3.16-5** shows the location of this solar generating plant.

***Public Utilities Projects***

*Expansion of Kinder-Morgan CalNev Pipeline System* – Kinder Morgan is proposing the addition of a third gasoline pipeline alongside the two existing pipelines that currently comprise the CalNev pipeline system from southern California to Las Vegas. **Figures S-3.16-1** though **S-3.16-7** show the location of the Kinder Morgan CalNev Pipeline.

*Ivanpah Substation* – Southern California Edison (SCE) has proposed to construct a new Ivanpah Substation sized to accommodate 230/115 kV facilities. **Figure S-3.16-5** shows the location of this substation.

## 3.16.2 Methods of Evaluation of Impacts

NEPA regulations and standards related to cumulative impacts have not changed since publication of the Draft EIS. A cumulative impact is defined as an impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts may result from individually minor actions by collectively significant actions taking place over a defined period of time.[1]

The same methodology and regulations and standards pertinent to the analysis of cumulative effects as identified in **Section 3.16.1** of the Draft EIS was used to evaluate the potential cumulative effects associated with the implementation of the project modifications and additions. The analysis focuses on determining if the proposed project modifications and additions would alter the analysis or conclusions regarding cumulative effects contained in the Draft EIS.

## 3.16.3 Analysis of Cumulative Impacts

**Land Use and Community Impacts**

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis for land use and community impacts considered in **Section 3.16.4** of the Draft EIS includes San Bernardino County and Clark County. As concluded in **Section 3.16.4** of the Draft EIS, the DesertXpress project, in combination with the cumulative projects, would further the land use trend of concentrating urban land uses (i.e., residential, commercial, industrial) within Victorville and Las Vegas. As the DesertXpress project does not propose significant land use changes along the rail alignment, the related projects between Victorville and Las Vegas (i.e., the energy projects, public utilities projects, and transportation project) would maintain the slow trend of land

[1] 40 CFR 1508.8(b)

use changes in this generally undeveloped area. Since the construction of the DesertXpress project would occur primarily within existing freeway or railroad rights-of-way, except at the proposed station and maintenance facility sites, and since the land use effects resulting from the DesertXpress project and the related projects would be site and project-specific the cumulative impacts related to land use and community would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

VV3 would be located outside of the North Triangle Specific Plan area, which could foster urban development outside of the central Victorville area. Segment 4C would avoid land use conflicts associated with Segment 4A which include the Mojave National Preserve and the Joint Port of Entry project site. Segment 4C would avoid land use conflicts associated with Segment 4B which include the Ivanpah Solar Electric Generating System project site. Segment 4C would therefore reduce the overall cumulative effect to conflicts with adjacent land uses.

Overall, implementation of the project modifications and additions would not substantially alter the cumulative conclusions contained in **Section 3.16.4** of the Draft EIS. The DesertXpress project with the modifications and additions, in combination with the related projects would not result in a cumulative impact to land use and the community.

**Growth**

*Summary of Cumulative Effects Identified in Draft EIS*

Cumulative growth effects were evaluated on a county-wide basis (within San Bernardino County and Clark County). Both San Bernardino County and Clark County are expected to experience population, household, and employment growth through 2030. The DesertXpress project in combination with the transportation improvement and development projects could contribute to growth in San Bernardino County and Clark County. Cumulatively, the DesertXpress project in combination with the related transportation projects could increase the number of visitors to the Las Vegas area, but would not necessarily result in a new permanent population or housing stock. The DesertXpress project would contribute less than one percent of the anticipated employment growth in San Bernardino County and Clark County and would not result in a cumulative impact to employment growth. Overall, cumulative effects to growth would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

Implementation of the project modifications and additions would not change the direct and indirect growth effects described in **Section 3.16.4** of the Draft EIS. The modifications and additions alter the locations and/or sizes of the station and maintenance facilities but do not change the program of their expected uses or employment capacity.

### Farmlands/Agricultural Lands

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative impacts to farmlands includes only San Bernardino County, as no farmlands or grazing lands are present in the project region within Clark County.

As concluded in **Section 3.16.4** of the Draft EIS, the DesertXpress project in combination with the future widening and capacity improvements to I-15 near Victorville and Barstow, the North Triangle Specific Plan, and the California High Speed Rail project, as well as other projects and development in San Bernardino County, would continue the regional trend of converting farmland and grazing land to non-agricultural use. However, in relation to San Bernardino County's annual farmland conversion rate, the amount of important farmland affected by the project would be less than one percent of total conversions. **Section 3.16.4** of the Draft EIS concluded that the DesertXpress project would not have a considerable contribution to the cumulative farmland effects, as specific farmland and grazing land impacts would be mitigated.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the cumulative effects to farmland and grazing land identified in **Section 3.16.4** of the Draft EIS. Similar to VV2, VV3 would be located within a BLM grazing allotment and would result in the permanent conversion of grazing lands to transportation use. Segment 4C would also be located within a designated grazing allotment, similar to Segment 4B, and could affect grazing activities. However, these effects would be similar to those identified in **Section 3.3.4.2** of the Draft EIS. Conversely, implementation of the Segment 2C would reduce impacts to farmland and grazing land because it would be located within the I-15 freeway corridor rather than undeveloped lands which Segment 2A/2B would cross. Overall, the project modifications and additions would not affect the cumulative farmland and grazing land effects identified in **Section 3.16.4** of the Draft EIS.

### Utilities and Emergency Services

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative effects related to utilities and emergency services in **Section 3.16.4** of the Draft EIS includes the utility and emergency service provider service areas. As concluded in **Section 3.16.4** of the Draft EIS, the DesertXpress project in combination with the related transportation and development projects would place additional demand on the existing public utilities and service providers. These projects would cumulatively affect the capacity of the existing public utilities and the ability of service provides to provide adequate levels of service. Conversely, public utility projects, such as the expansion of the Kinder-Morgan CalNev Pipeline and the development of the Ivanpah Substation would increase the capacity of existing utilities which could serve the DesertXpress project and other cumulative developments. Since the DesertXpress project incorporates mitigation requirements to reduce effects related to utilities and emergency

services and that the future projects would be required to undergo a similar environmental review process, the cumulative impact related to public utilities in San Bernardino County and Clark County would be negligible.

The DesertXpress project in combination with development of the related projects could also result in utility infrastructure conflicts, such as crossing overhead electric transmission lines or underground utility mains. Coordination with local utility providers would be required for the DesertXpress project and the cumulative development projects, thereby reducing the cumulative effects related to utility crossings.

*Cumulative Effects with Implementation of Project Modifications and Additions*

Regarding water, wastewater, and stormwater services, the project modifications and additions would not change the cumulative analysis contained in **Section 3.16.4** of the Draft EIS. The project modifications and additions would not alter the water demands, wastewater generation, or stormwater runoff of the project as a whole.

However, based on additional consultation with the Victorville Water District (VWD) following publication of the Draft EIS, VWD clarified that the construction of VV2, VV3, and OMSF 2 would not be adequately served by existing water facilities due to their distance from existing water mains. In combination with development associated with the North Triangle Specific Plan, the Victorville Station site options and OMSF 2 could cumulatively contribute to the need for additional water facilities to adequately serve the area. As stated in **Section 3.4.4.2** of the Draft EIS, a Water Supply Assessment would be required to determine the size and extent of the new water facilities needed, which would mitigate the effects of the DesertXpress project to water services and facilities. With this mitigation, the project modifications and additions would not alter the cumulative effects related to water, wastewater, and stormwater service providers and cumulative effects would remain negligible.

Implementation of Segment 4C would result in slightly greater effects related to emergency services as compared to Segment 4A or Segment 4B. Portions of Segment 4C are more remote which would affect the ability to access and respond quickly in the event of an emergency. Segment 4C, in combination with the Ivanpah Solar Electric Generating System project, would create a cumulative need for basic emergency services in this otherwise undeveloped area. Thus, the cumulative effects on emergency services would be slightly greater with Segment 4C.

Regarding utility conflicts, implementation of the project modifications and additions would not result in a substantial change to the nature or number of utility infrastructure crossings considered in **Section 3.4.4.2** of the Draft EIS. Cumulative effects would remain negligible.

### Traffic

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis considered in **Section 3.16.4** of the Draft EIS includes transportation corridors between Southern California and Las Vegas, such as the I-15 freeway mainline and surrounding local roadways. As stated in **Section 3.16.4** of the

Draft EIS, the DesertXpress project in combination with the related transportation and development projects would cumulatively affect traffic in the area of cumulative analysis. Along the I-15 freeway corridor, the DesertXpress project in combination with the I-15 transportation improvements would improve traffic conditions on I-15 in year 2030, thereby resulting in a beneficial cumulative impact. However, the DesertXpress project in combination with the related development projects within Victorville and Las Vegas would result in adverse cumulative effects to study intersections near the station site options. The adverse cumulative effects would be isolated at the DesertXpress project termini. Mitigation measures identified in **Section 3.5.5** of the Draft EIS would lessen the adverse effects related to traffic as a result of the DesertXpress project. It is also anticipated that the agencies responsible for review, approval, and permitting of the related projects would require similar mitigation to alleviate potential adverse traffic effects. As such, the cumulative impact of the related projects in combination with the DesertXpress project would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the overall beneficial effect of the project which would reduce mainline traffic on the I-15 freeway, as the project would continue to be located within the same region and would continue to provide high-speed passenger train service between Victorville and Las Vegas.

Regarding cumulative traffic effects at local intersections, **Section 3.5, Traffic and Transportation**, of this Supplemental Draft EIS contains analysis of the cumulative traffic impacts associated with VV3.

### Visual Resources

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis for effects related to visual resources includes the viewshed, or the visible environment, surrounding the DesertXpress project. The DesertXpress project in combination with the related projects would result in a cumulative impact to visual resources. The DesertXpress project and the related projects would also cumulatively contribute to an overall increase in light and glare in the area of cumulative analysis. While cumulative development would introduce new urban visual features into the open, expansive undeveloped areas between Victorville and Las Vegas, cumulative visual effects would be isolated to the viewshed in the related projects' sites. Thus, the cumulative impact of the transportation, development, and energy projects in combination with the DesertXpress project would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

VV3 and Segment 4C would introduce new facilities in areas not previously analyzed from a cumulative visual perspective. VV3 would spread urban development further into the undeveloped area between Victorville and Barstow. Due to the presence of overhead electric transmission lines, the I-15 freeway, and periodic billboards, the addition of VV3 would not substantially detract from the existing landscape.

Similar to Segment 4B, Segment 4C would combine with the Ivanpah Solar Electric Generating System and would introduce prominent man-made elements into the otherwise largely undeveloped visual landscape. Since the Ivanpah Solar Electric Generating System would have a larger, concentrated footprint, implementation of Segment 4C would not have a considerable contribution to the cumulative visual change. Additionally, views of this area would be limited and would only be distantly visible from wilderness areas of the Mojave National Preserve or peaks of the Clark Mountains. Overall, the cumulative impact of the DesertXpress project with the project modifications and additions and related projects would not be substantial.

### Cultural and Paleontological Resources

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis for effects related to cultural resources includes the identified historic and archeological sites within the Area of Potential Effect (APE). Cumulative impacts to historical, archeological, and paleontological resources can occur when development of an area results in the removal of a substantial number of historic structures or archeological sites that when taken in combination could degrade the physical historical record of an area. While impacts associated with cultural resources tend to be limited to individual project sites and do not generally result in substantial cumulative impacts, the DesertXpress project in combination with the capacity improvements to I-15, the Joint Port of Entry project, and wind energy projects would result in cumulative impacts to such resources. The action alternatives evaluated in the Draft EIS would cross through the same lands identified for the use of these projects, which could combine to further degrade or damage recorded or unknown cultural and paleontological resources within the vicinity. The DesertXpress project includes site specific mitigation measures to reduce effects to cultural and paleontological resources and would thereby not have a considerable contribution to the overall cumulative effect.

*Cumulative Effects With Implementation of Project Modifications and Additions*

Similar to the action alternatives identified in the Draft EIS, the project modifications and additions, when combined with the related projects, could cumulatively affect cultural and paleontological resources within the area of cumulative analysis. For example, Segment 2C could combine with the I-15 capacity improvement projects to affect cultural or paleontological resources. However, the same mitigation measures as identified in **Section 3.7.5** of the Draft EIS would be applied to the project modifications and additions to reduce adverse effects related to recorded and unknown cultural and paleontological resources.

### Hydrology

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative effects to hydrology and water quality includes the watersheds affected by the DesertXpress project. As stated in **Section 3.16.4** of the Draft EIS, the DesertXpress project in combination with the past, present, and future transportation, development, public utility, and energy projects would cumulatively effect

hydrology and water quality within the area of cumulative analysis due to the crossing of existing drainages, streams, and channels. The cumulative development could also contribute to the increase in impervious surfaces in the region, thereby resulting in additional stormwater runoff. Construction activities associated with the DesertXpress project and the related projects could also result in cumulative effects to water quality, as contaminants or sedimentation could be released into nearby waterways. The related projects located within the 100-year floodplain, such as the Southern Nevada Supplemental Airport, could also combine with the DesertXpress project to cumulatively affect the floodplain. However, the DesertXpress project includes site specific mitigation measures, such as compliance with NPDES permit requirements, the use of Best Management Practices (BMPs), proper design of drainage facilities, and reducing encroachment to the 100-year floodplain. With implementation of these mitigation measures, the DesertXpress project would not considerably contribute to the cumulative impacts to hydrology and water quality.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not substantially change the cumulative effects related to stormwater runoff and impacts to water resources. Construction and operation of VV3 in combination with the related transportation improvements along the I-15 corridor could result in additional cumulative effects to water quality and drainage patterns, as VV3 would impact a branch of Bell Mountain Wash not previously bisected by VV1 or VV2. VV3 would also result in more impervious surface than VV1 or VV2, which could cumulatively combine with the related projects and result in a slight increase in cumulative effects related to stormwater runoff. Segment 4C would also result in a longer rail alignment than Segment 4A or Segment 4B, which could also increase the cumulative stormwater runoff when combined with the anticipated runoff of the related projects. However, the same site specific mitigation measures in **Section 3.8.5** of the Draft EIS would be applied to the project modifications and additions to reduce effects to hydrology and water effects. Even with implementation of the project modifications and additions, the DesertXpress project would not have a considerable contribution to the overall cumulative effect related to hydrology and water quality.

### Geology and Soils

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative effects related to geology and soils includes the seismic fault zones that underlie the DesertXpress project alternatives. Geotechnical impacts related to the DesertXpress project in combination with past, present, and future projects in the area of cumulative analysis would involve hazards associated with site-specific soil conditions, erosion, and ground shaking during earthquakes which could expose individuals to risk. The impacts for each cumulative project would be specific to each site and would not be common to contribute to (or shared with, in an additive sense) the impacts on other sites. Thus, no cumulative impacts would occur.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the nature of the project's geologic impacts, since the modifications and additions would be located within the same project region and would be exposed to the same geologic and seismic hazards as identified in **Section 3.9.4.3** of the Draft EIS.

### Hazardous Materials

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis considered for hazardous materials effects includes the properties of moderate to high environmental concern identified within a 1/8-mile radius around the DesertXpress project. Environmental effects related to hazardous materials generally occur on a site-specific basis and do not cumulatively combine with other related projects. The related projects within close proximity to the DesertXpress project are generally geographically disperse and it is not anticipated that they would use quantities of hazardous materials that would combine in such a way to endanger human or environmental health. Hazardous materials are also strictly regulated by state and federal laws to ensure that they do not result in a gradual toxification of the environment. Therefore, it is not anticipated that there would be any cumulative effects related to hazards or hazardous materials.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would be located within the same regional environment considered for the cumulative analysis in **Section 3.16.4** of the Draft EIS and would not introduce any new effects related to hazards or hazardous materials than the action alternatives evaluated in **Section 3.10.4.2** of the Draft EIS. Since impacts related to hazards and hazardous materials are site specific in nature, implementation of the project modifications and additions in combination with the related projects would not result in any cumulative effects, consistent with the conclusion in **Section 3.16.4** of the Draft EIS.

### Air Quality and Global Climate Change

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis considered for air quality effects includes the Mojave Desert Air Basin in California and the Clark County Air Basin in Nevada. The DesertXpress project in combination with the related transportation, development, energy, and public utility projects would cumulatively contribute to air quality and greenhouse gas effects. However, the DesertXpress project would not substantially contribute to the cumulative impact, as operation of the either the EMU or DEMU technology options would not exceed criteria pollutant emissions standards within either affected air basin, with the exception of NOx emissions under the DEMU technology option. Mitigation measures would be implemented to reduce construction and operational air quality impacts. Thus, the DesertXpress project would not considerably contribute to the cumulative effect related to air quality and global climate change.

*Cumulative Effects with Implementation of Project Modifications and Additions*

Implementation of the project modifications and additions would not result in a change to the anticipated ridership or train technology options considered in **Section 3.11.4.2** of the Draft EIS. Therefore, the modifications and additions would not affect the anticipated criteria air pollutant or greenhouse gas emission effects identified in **Section 3.11.4.2** of the Draft EIS. The DesertXpress project, with implementation of the project modifications and additions, would continue to improve air quality and would reduce greenhouse gas emissions in the respective air basins due to the anticipated transportation mode shift from automobile traffic to high-speed passenger train. Segment 2C would be shorter than the combination of Segment 1 and either Segment 2A or Segment 2B and would therefore require less construction activity, which would reduce construction period air quality and greenhouse gas emissions. Conversely, construction of Segment 4C would require slightly greater construction activities than Segment 4A or Segment 4B due to increased tunneling and an increased length in the rail alignment. However, overall air pollutant emissions would be reduced with implementation of the DesertXpress project and would not have a considerable contribution to the cumulative air quality or greenhouse gas effects.

**Noise and Vibration**

*Summary of Cumulative Effects Identified in Draft EIS*

The area for cumulative analysis includes a ¼-mile radius from the DesertXpress project. As noise attenuates with distance, significant noise impacts are not anticipated beyond the ¼-mile radius. The DesertXpress project in combination with the related transportation, development, and energy projects would increase noise and vibration levels in urbanized areas along the rail alignment, including Victorville, Lenwood, Barstow, Yermo, and southern Las Vegas, resulting in potentially adverse cumulative effects. Recommended mitigation measures for the DesertXpress project would lessen the adverse effects of the project related to noise and vibration. It is reasonable to assume that similar mitigation measures would be applied to the related projects to reduce potentially adverse effects and that each project would be required under separate environmental review to evaluate the existing noise environment and whether such development would exceed the established noise and vibration level standards. Nonetheless, when taken collectively, the DesertXpress project in combination with the related projects would result in a cumulative increase in noise and vibration within in the area of cumulative analysis.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the cumulative analysis as the project would continue to result in an overall increase in noise and vibration levels within the area of cumulative analysis. The project modifications and additions would not introduce new sources of noise not previously considered. The project modifications and additions would change the location of specific noise and vibration effects. However, the nature of the noise and vibration impacts would remain the same and the same types of mitigation from **Section 3.12.7** of the Draft EIS would be applied.

### Energy

*Summary of Cumulative Effects Identified in Draft EIS*

The area of analysis for cumulative effects related to energy includes California and Nevada, specifically San Bernardino County and Clark County. The DesertXpress project in combination with the related transportation, development, public utility, and energy projects would result in cumulative impacts related to energy and electricity consumption. While the transportation projects, such as the I-15 capacity improvements, SNSA, and Southern Nevada Regional Heliport, would contribute to an increase in transportation energy consumption. Conversely, the California High Speed Rail and the proposed energy projects could have a positive effect on energy consumption and generation. Operation of the DesertXpress project would constitute less than one percent of the projected statewide electricity demand in California and Nevada and would reduce overall energy consumption in effecting a substantial mode shift from automobile to train. Mitigation to reduce construction period energy use, such as an energy conservation plan, would also be applied. As such, the DesertXpress project would not considerably contribute to the overall cumulative energy effect.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the anticipated ridership or train technology options considered in **Section 3.13.4.2** of the Draft EIS. Since the cumulative analysis related to energy in **Section 3.16.4** of the Draft EIS was based on the train technology options and ridership levels, the project modifications and additions would not alter the conclusion in **Section 3.16.4** of the Draft EIS and the DesertXpress project would continue to not considerably contribute to the overall cumulative energy effect.

### Biological Resources

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis includes the areas and site of identified biological resources within a 400-foot-wide corridor surrounding the DesertXpress project. The DesertXpress project in combination with the related projects would result in the conversion of open space lands to developed land, contributing to the loss of ruderal habitats, wetland habitats, and other biological resources in the area of cumulative analysis. Transportation, development, energy, and public utility projects would cumulatively affect plant and animal species, including desert tortoise, Mohave ground squirrel, and numerous special-status plant species. Conversely, the West Mojave Coordinated Management Plan would provide a regional strategy for conserving plant and animal species in the area of cumulative analysis. Recommended mitigation measures for the DesertXpress project have lessened the adverse effects related to biological resources. Nonetheless, the DesertXpress project would result in the permanent conversion of biological resources to transportation use and would have a considerable contribution to the overall cumulative effect.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not substantially change the overall cumulative effect to biological resources.

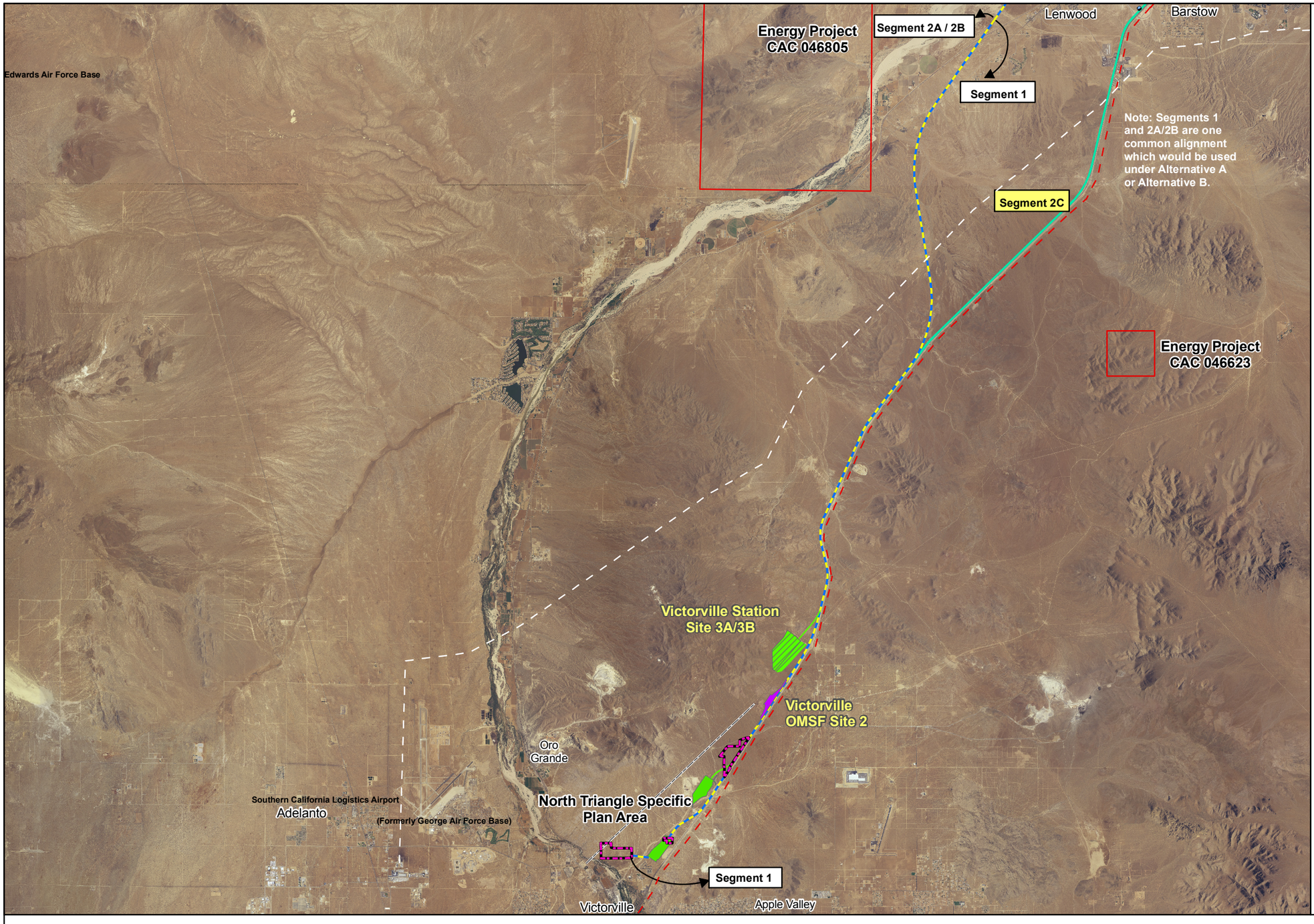
Segments 4C would result in slightly greater effects to desert tortoise habitat and sensitive vegetation communities than Segment 4A or Segment 4B evaluated in the Draft EIS.

Segment 2C would follow the existing I-15 corridor rather than traversing through undeveloped lands as would Segment 2A/2B, and would result in a slight reduction in impacts to special-status plant and wildlife species, including desert tortoise and Mohave ground squirrel.

Although the acreage of affected biological resources would be slightly altered with implementation of the project modifications and additions, no new species would be impacted. The DesertXpress project would continue to result in the permanent conversion of biological resources to transportation use and would continue to have a considerable contribution to the overall cumulative effect.

## 3.16.4 Cumulative Effects Related to the No Action Alternative

The No Action Alternative would not involve the construction and operation of the DesertXpress project, nor any of the project modifications and additions evaluated as part of this Supplemental Draft EIS. Therefore, the same cumulative effects associated with the related projects as documented in **Section 3.16.4.1** of the Draft EIS would continue to occur.




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

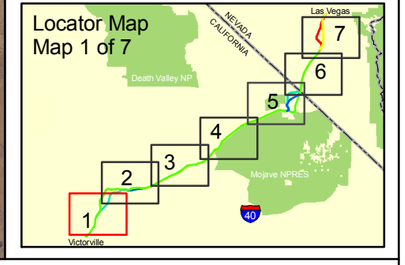
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008



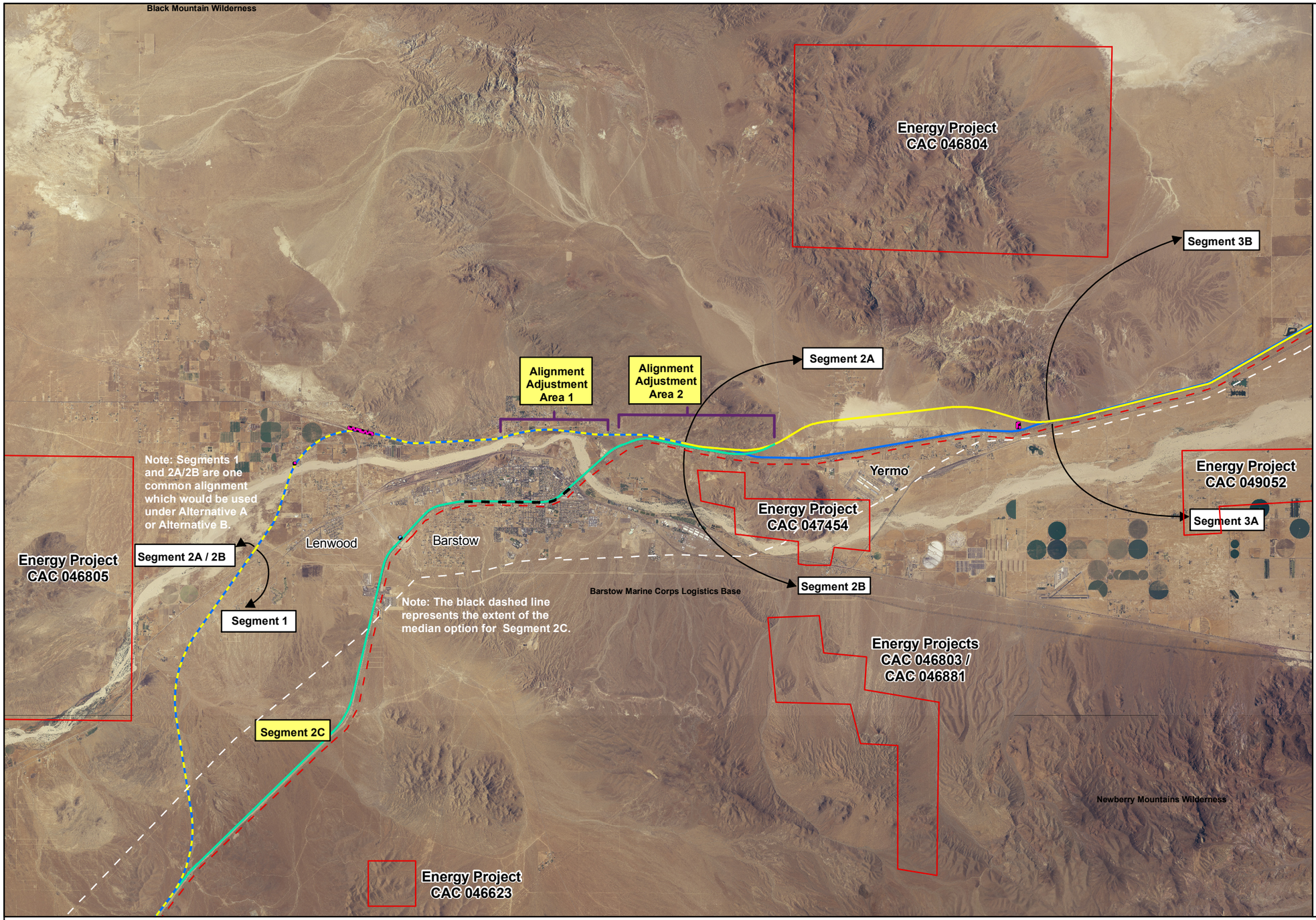

U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (1)***

**FIG S-3.16-1**

Source: Geografika Consulting 06.10.10




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

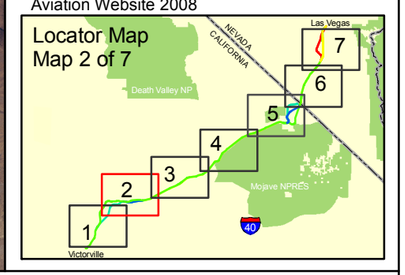
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (2)***

**FIG S-3.16-2**

Source: Geografika Consulting 06.10.10

Fort Irwin

Soda Mountains Wilderness Study Area

Alignment Adjustment Areas 3, 4 & 5

Segment 3B

Segment 3A

Afton Canyon Natural Area

Cady Mountains Wilderness Study Area

Segment 3B

Energy Project CAC 049052

Segment 3A

## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

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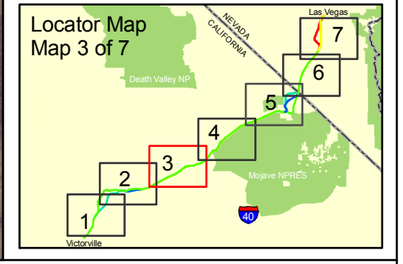
Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (3)***

FIG **S-3.16-3**

Source: Geografika Consulting 06.10.10


## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

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- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
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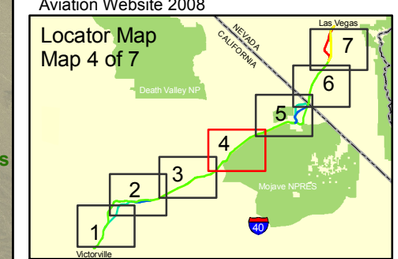
NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (4)***

**FIG S-3.16-4**

Source: Geografika Consulting 06.10.10

North Mesquite Mountains Wilderness

Mesquite Wilderness

Stateline Wilderness

Kingston Range Wilderness

Segment 5A

Segment 5B

Primm

Ivanpah Energy Center

Fast Food Restaurant

Segment 4C

Energy Project CAC 648669

Mixed Use/ Recreation

Primm Solar Generating Plant

ISEGS Project Site

NEVADA

CALIFORNIA

Energy Project CAC 648668

Wilderness Area 3

Ivanpah Substation (Approximate Location)

Wind Energy Project CACA 44236 (Approximate Location)

Port of Entry Site (Approximate Location)

Segment 4B

Segment 3B

Segment 4A

Segment 3A

Wind Energy Project CACA 44988 (Approximate Location)

Mojave National Preserve

Wilderness Area 7

Wilderness Area 6

Wilderness Area 11

## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

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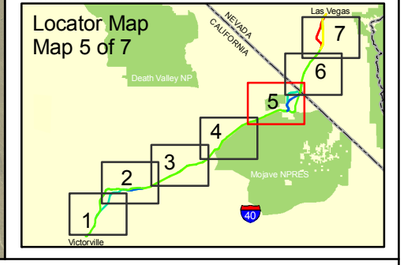


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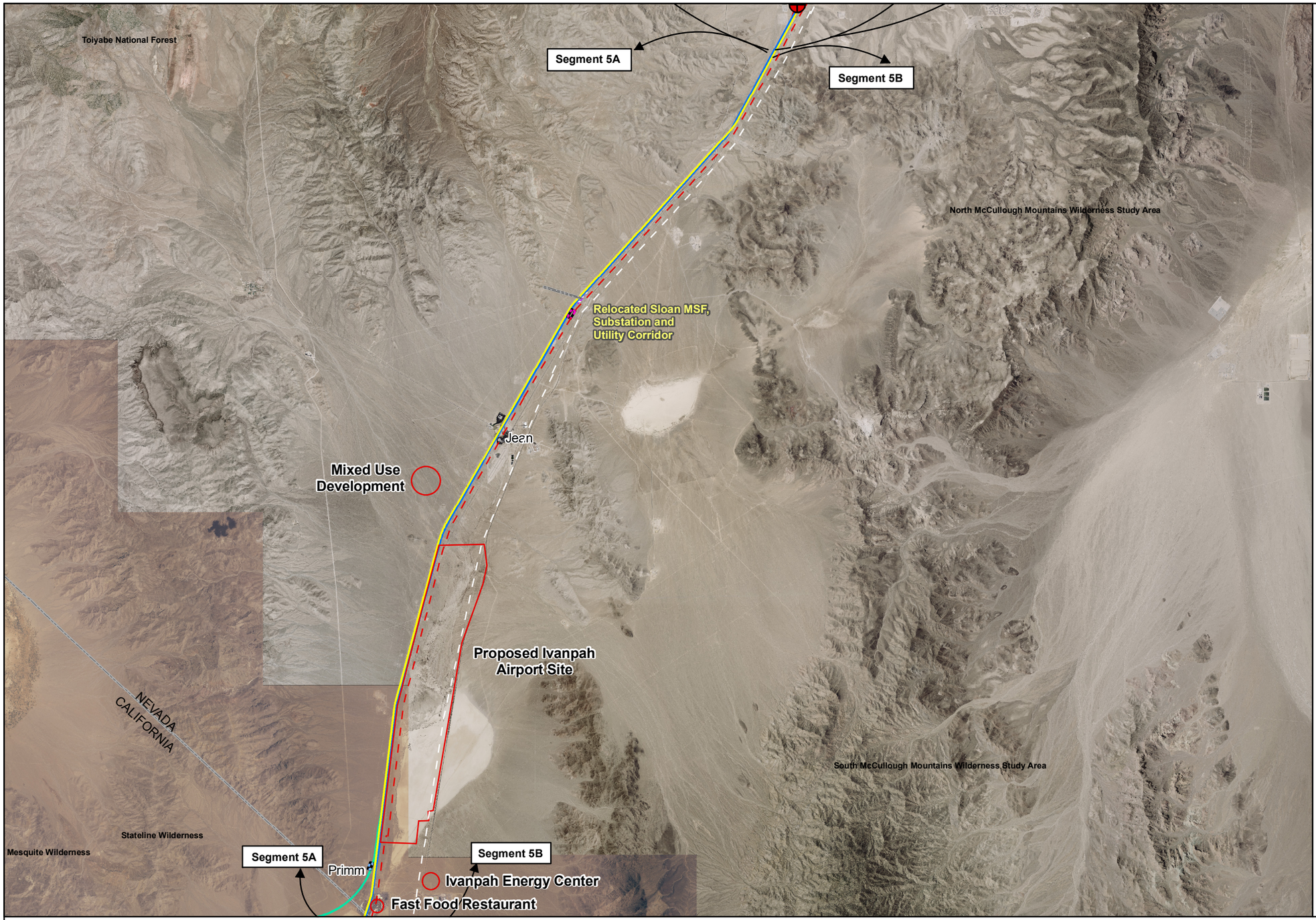
**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (5)***

**FIG S-3.16-5**

Source: Geografika Consulting 06.10.10




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
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### Ancillary Facility Sites

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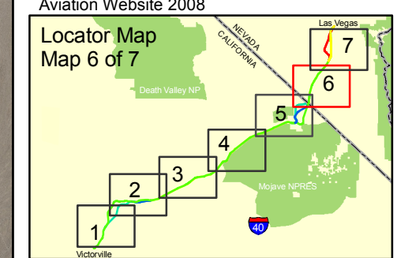


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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (6)***

**FIG S-3.16-6**

Source: Geografika Consulting 06.10.10

La Madre Mountains Wilderness Study Area

Nellis Air Force Base

Lake Mead National Recreation Area

Lake Mead

Red Rock Canyon National Conservation Area

Toiyabe National Forest

North McCullough Mountains Wilderness Study Area

Segment 7C

Segment 7A

Segment 7B

Segment 6A

Segment 6B

Segment 6C

Segment 5A

Segment 5B

Wigwam MSF

Alignment Adjustment Area 8

Frias Substation

Alignment Adjustment Area 7

Proposed Southern Nevada Regional Heliport (Approximate Location)

## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

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- Common Alignment used under Alternative A or Alternative B
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Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

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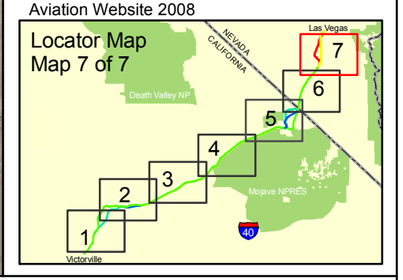


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DesertXpress - Supplemental EIS

*Potential Cumulative Projects (7)*

FIG S-3.16-7

Source: Geografika Consulting 06.10.10

# 3.17 IRRETRIEVABLE AND IRREVERSIBLE COMMITTMENTS OF PUBLIC RESOURCES

The irretrievable and irreversible commitments of public resources identified in **Chapter 3.17, Irretrievable and Irreversible Commitments of Public Resources,** of the Draft EIS are not substantially changed by the proposed project modifications and additions.

As stated in **Chapter 3.17, Irretrievable and Irreversible Commitments of Public Resources**, of the Draft EIS, implementation of the action alternatives would involve a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the rail line, stations, maintenance and other ancillary facilities associated with this project would be considered an irreversible commitment during the time period that the land is used for a project. However, if a greater need arises for use of the land or if the rail line and facilities are no longer needed, the land could be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and construction materials such as cement, aggregate, and bituminous material would be expended to construct the project. Additionally, large amounts of labor and natural resources are used in the making of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of funds, which are not retrievable.

The commitment of these resources is based on the concept that residents and businesses within the region would benefit from the improved quality of the transportation system. These benefits would consist of improved accessibility, increased capacity and energy savings, which are expected to outweigh the commitment of these resources.

The project modifications and additions evaluated in this Supplemental Draft EIS do not substantially change the irretrievable and irreversible commitment of public resources associated with the DesertXpress project. As noted in the Supplemental Draft EIS, the project modifications and additions contribute to a decrease in total energy demand (fewer barrels of oil), and thus could be considered to reduce the commitment of irretrievable resources, relative to the conclusions made in the Draft EIS.

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# 3.18 SHORT TERM USES VERSUS LONG TERM PRODUCTIVITY

Project implementation, including the project modifications and additions, would result in attainment of short-term and long-term transportation and economic objectives at the expense of some long-term social, aesthetic, biological, noise, parkland, and other land use impacts.

## 3.18.1 BUILD ALTERNATIVES

**Chapter 3.18, Short Term Uses Versus Long Term Productivity**, of the Draft EIS identified various losses and benefits associated with the action alternatives. The proposed project modifications and additions would not change the conclusions in the Draft EIS pertaining to short term uses and long term productivity.

**Short-term losses include:** Economic losses experienced by businesses affected by construction impacts such as noise, motorized and non-motorized traffic delays or detours; and recreational impacts such as access inconveniences to the little league fields and/or the regional park, and trail detours or closures.

**Short-term benefits include:** Increased jobs and revenue generated during construction.

**Long-term losses would include:** Permanent loss of plant and wildlife resources, visual impacts, conversion of farmlands and grazing lands, noise increases, cultural resource site values lost, use of construction materials and energy.

**Long-term gains include:** Improvement of the transportation network in the region and the project vicinity, increased capacity and reduction of congestion on the I-15 freeway, use of private funds to construct and operate the project, more expeditious project delivery through use of private funds, increased jobs, revenue through creation of new passenger train operation, and support of approved development.

## 3.18.2 NO ACTION ALTERNATIVE

The No Action Alternative would offer none of the gains or have the losses listed above. Private funding to provide public transportation facilities would not be available.

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# 3.19 UNAVOIDABLE ADVERSE EFFECTS

The development of a high-speed passenger rail service from Victorville, CA to Las Vegas, NV would result in unavoidable adverse effects to the physical and human environment, which were described in **Chapter 3.19, Unavoidable Adverse Effects**, of the Draft EIS and included effects in the following resource categories: Traffic and Transportation, Cultural and Paleontological Resources, and Section 4(f) Resources. The unavoidable adverse effects for the DesertXpress project have not substantially changed since the publication of the Draft EIS. However, the project modifications and additions would reduce impacts in several areas, which are described below.

## 3.19.1 TRAFFIC AND TRANSPORTATION

In **Chapter 3.19, Unavoidable Adverse Effects,** of the Draft EIS, the unavoidable adverse effects at a Victorville Station Site 1 and two Stoddard Wells Road intersections were detailed. VV3 (VV3A or VV3B parking options) would avoid the significant impacts associated with VV1 and VV2 and would not result in any unavoidable adverse effects.

## 3.19.2 CULTURAL AND PALEONTOLOGICAL RESOURCES

There is the potential for unavoidable adverse effects to cultural resources sites resulting from direct impacts from placement of the rail line and facilities and the use of TCAs within the APE. Project modifications and additions would result in differing numbers of impacts to cultural resources, as summarized in **Table S-3.7-2**.

## 3.19.3 SECTION 4(F) RESOURCES

One of the project modifications and additions was designed by the Applicant to reduce the potential impact of the project on the integrity of a cultural resource site assumed to qualify for protection under Section 4(f).

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