Alternatives Analysis

New State Route 138/E-220

Palmdale to Apple Valley (SR-14 to SR-18)

California Department of Transportation
Division of Environmental Planning (MS-16A)
100 S. Main St., Ste. 100
Los Angeles, CA 90012

SCH No.: 2010091084
Caltrans Project No.: 0712000035 (EA: 2600U0)

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Introduction

An analysis of the initial alternatives being considered for the High Desert Corridor has been completed with the intent of eliminating those alternatives that are less feasible and prudent. This process was undertaken following the requirements of CEQA & NEPA together with generally accepted alternatives screening practices.

CEQA/NEPA Alternatives Analysis Guidelines

CEQA Guidelines Section 15126.6 requires that an EIR consider a range of reasonable alternatives which would feasibly attain most of the basic objectives of the project while avoiding or substantially reducing its significant impacts. It must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. CEQA allows for the elimination of those alternatives that:

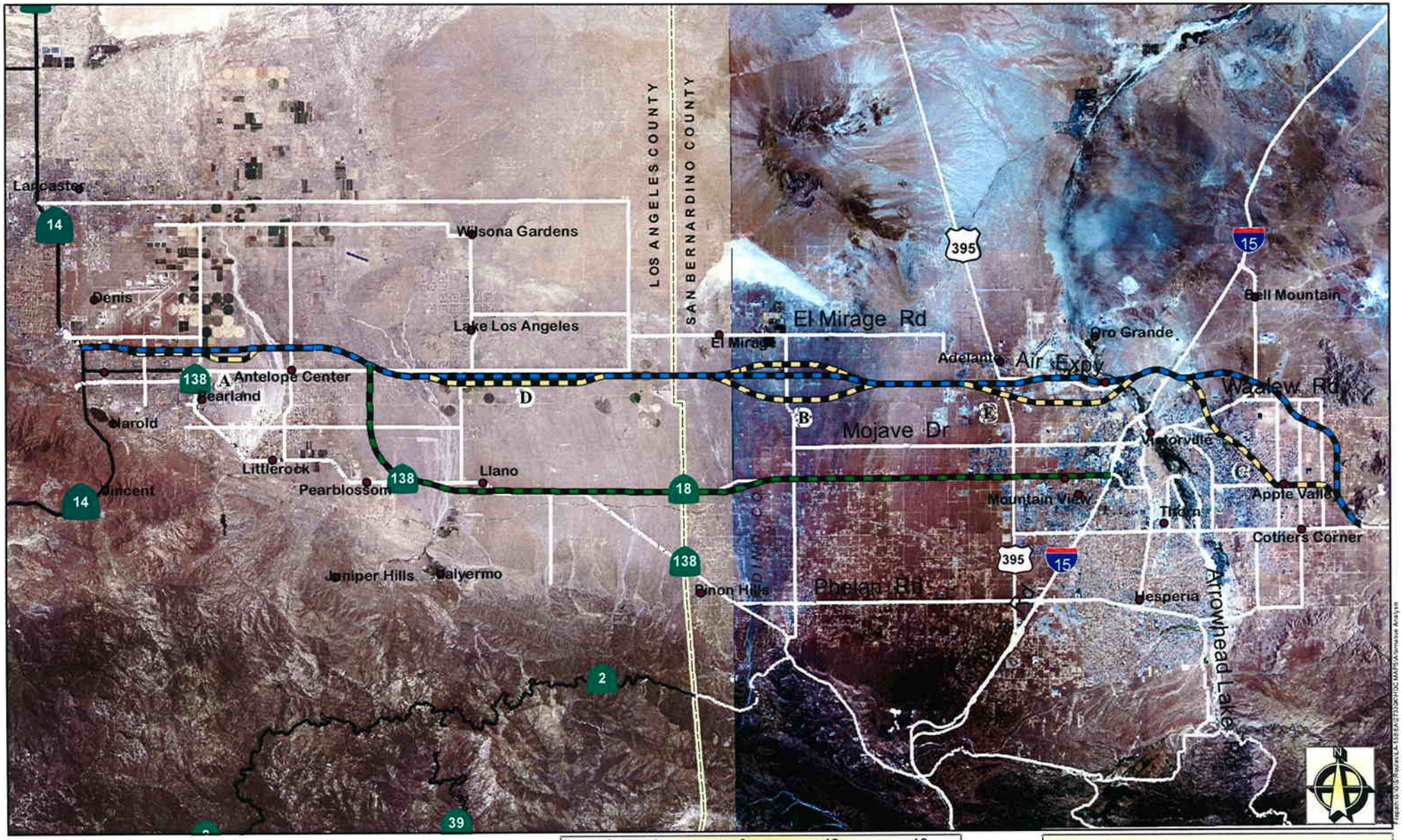
1) fail to meet the basic project objectives;
2) are infeasible due to issues concerning:
    a. Site suitability
    b. Economic viability
    c. Availability of infrastructure
    d. General plan consistency
    e. Other plans or regulatory limitations
    f. Jurisdictional boundaries
    g. Ability to acquire, control or otherwise have access to the alternative site, or
3) Fail to avoid significant environmental impacts

For NEPA, the U.S. Council on Environmental Quality (CEQ) has similar guidance. CEQ regulations require that an EIS study a "reasonable range" of alternatives that covers a "full spectrum" of potential reasonable alternatives. Reasonable alternatives include those that are practical and feasible from a technical and economic standpoint and using common sense. Alternatives can be eliminated from consideration based on any factor that is relevant to reasonableness, including failure to satisfy the project purpose and need, environmental impacts, engineering, and cost, among others.

Initial Range of Alternatives

At the time the Notice of Intent/Notice of Preparation were published, there were seven (7) alternatives and three (3) variations under consideration. As a result of public agency and community input during the scoping process and at subsequent community meetings one (1) additional alternative and two (2) additional variations were added for consideration. The alternatives and variations are shown in Figure 1.

High Desert Corridor Full Range of Alternatives



0 2 4 8 12 16 Miles

Map Created by Sharon He & Robert Wang 08/03/2011

Full Range of Alternatives
California Department of Transportation
District 7, Los Angeles

Proposed Alternatives
A. B. C, D, E Proposed Variations

Alternatives Analysis Screening Process and Criteria

The screening process used involves three elements:

A. Determining the viability of the alternative/variation in addressing the purpose and need for transportation improvements.
B. Consideration of the various public agency and community comments regarding environmental impacts, especially those issues that were raised during public scoping.
C. Consideration of the approximate cost factors of the alternative/variation.

While there were an extensive number of subsets for these three elements, Caltrans settled on the following most relevant factors. It was important to limit the number to those factors that are generally considered the most significant with respect to the decision making process.

The screening factors supporting the purpose and need for transportation improvements were as follows:

1) Does the alternative support the area mobility needs;
2) Does the alternative support goods movement;
3) Does the alternative improve service to the 2 major study area airports; and
4) Does the alternative improve emergency access?

Five environmental screening criteria were also identified:

1) Does the alternative minimize traffic congestion;
2) Does the alternative minimize business and residential relocation;
3) Does the alternative minimize biological impacts;
4) Does the alternative minimize water quality and hydrology impacts; and
5) Does t he alternative minimize disruption due to construction-related impacts?

The final project cost screening factors evaluated were:

1) Is the alternative cost effective; and
2) How feasible is it to obtain funding for the alternative?

Each of the High Desert Corridor alternatives was evaluated using these subjective measures of effectiveness to determine how well each criteria was satisfied. Each variation was compared against the corresponding segment of the main freeway/expressway alternative for a relative comparison of how well the criteria were satisfied (Variation B-North, B-South and the main alignment were compared against each other).

Alternatives Analysis Results

Tables 1 and 2 show the results of the screening process for the 8 alternatives and 5 variations, respectively. They provide a brief description of how well each one meets the objectives set forth in the screening criteria. They are also scored with a +, o or – to allow for a relative comparison between alternatives and variations.

Table 1.

High Desert Corridor Screening Matrix								
	Alternatives							
Screening Criteria	**No-Build**	**TSM/TDM**	**Freeway/ Expressway**	**Freeway/ Tollway**	**Corridor Improvements**	**Freeway/ Expressway w/ HSR**	**Freeway/ Tollway w/ HSR**	**Hybrid Corridor**
Purpose and Need criteria								
Support east-west mobility	**(-) Poor** Would not provide a major new east-west route. Planned future projects would likely provide some minor improvement to traffic flow.	**(o) Fair** Would enhance existing routes but provide no new options for east-west movement.	**(+) Good** Would provide a major new east-west corridor to enhance mobility.	**(+) Good** Would provide a major new east-west corridor to enhance mobility.	**(o) Fair** Would enhance existing routes but provide no new options for east-west movement.	**(+) Good** Would provide a major new east-west corridor plus a potential rail option to enhance mobility.	**(+) Good** Would provide a major new east-west corridor plus a potential rail option to enhance mobility.	**(+) Good** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to support east-west mobility.
Support goods movement	**(-) Poor** Would not provide a major new route suitable for goods movement. Planned future projects would likely provide some minor improvement to traffic flow on existing goods movement corridors.	**(o) Fair** Would enhance existing routes but provide no new options for goods movement.	**(+) Good** Would provide an alternate route for truck traffic, thereby enhancing opportunities for goods movement.	**(+) Good** Would provide an alternate route for truck traffic, thereby enhancing opportunities for goods movement.	**(o) Fair** Would enhance existing routes but provide no new options for goods movement.	**(+) Good** Would provide an alternate route for truck traffic, thereby enhancing opportunities for goods movement.	**(+) Good** Would provide an alternate route for truck traffic, thereby enhancing opportunities for goods movement.	**(+) Good** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to support goods movement.

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Improve service to airports	**(-) Poor** Planned future projects may provide some minimal improvement to airport access. However, no new major east-west corridor would be built.	**(o) Fair** Enhancing existing routes would provide localized improvements to traffic flow. Improvements to airport access are likely to be slightly better than the no-build condition.	**(+) Good** Proximity to regional airports would improve access.	**(+) Good** Proximity to regional airports would improve access.	**(o) Fair** Enhancing the existing major east-west route would provide some improvements in traffic flow and may improve travel time to/from airports. Benefits are expected to be minimal.	**(+) Good** Proximity to regional airports would improve access. HSR would provide additional service option.	**(+) Good** Proximity to regional airports would improve access. HSR would provide additional service option.	**(+) Good** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to improve service to airports.
Improve emergency access	**(-) Poor** Planned future projects would likely provide some improvement to traffic flow with minimal improvement to emergency access.	**(o) Fair** Enhancing existing routes would provide localized improvements to traffic flow. There may be some minimal improvement near the airports.	**(+) Good** Would provide an alternate route for emergency vehicles/personnel and would improve access to the under-served areas along the corridor. Reduced traffic congestion would also speed access.	**(+) Good** Would provide an alternate route for emergency vehicles/personnel and would improve access to the under-served areas along the corridor. Reduced traffic congestion would also speed access.	**(o) Fair** Enhancing the existing major east-west route would provide some improvements in traffic flow and may provide some minor improvement in emergency access along those routes. Benefits are expected to be minimal.	**(+) Good** Would provide an alternate route for emergency vehicles/personnel and would improve access to the under-served areas along the corridor. Reduced traffic congestion would also speed access.	**(+) Good** Would provide an alternate route for emergency vehicles/personnel and would improve access to the under-served areas along the corridor. Reduced traffic congestion would also speed access.	**(+) Good** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to improve emergency access.

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Screening Criteria	**No-Build**	**TSM/TDM**	**Freeway/ Expressway**	**Freeway/ Tollway**	**Corridor Improvements**	**Freeway/ Expressway w/ HSR**	**Freeway/ Tollway w/ HSR**	**Hybrid Corridor**
Environmental criteria								
Minimize traffic congestion	**(o) Fair** Planned future projects would likely provide some improvement to traffic flow and reduce traffic congestion.	**(o) Fair** Enhancing existing routes would provide some improvement to traffic flow and reduce traffic congestion.	**(+) Good** An alternate route for east-west travel would reduce traffic on the heavily congested SR-138 and SR-18. In the developed cities on the eastern and western ends of the corridor, the new route would reduce traffic on local streets.	**(+) Good** An alternate route for east-west travel would reduce traffic on the heavily congested SR-138 and SR-18. In the developed cities on the eastern and western ends of the corridor, the new route would reduce traffic on local streets.	**(+) Good** Enhancing the existing major east-west route would improve traffic flow and would provide some congestion relief.	**(+) Good** An alternate route for east-west travel would reduce traffic on the heavily congested SR-138 and SR-18. In the developed cities on the eastern and western ends of the corridor, the new route would reduce traffic on local streets. HSR would likely provide additional benefits for long-distance east-west travel.	**(+) Good** An alternate route for east-west travel would reduce traffic on the heavily congested SR-138 and SR-18. In the developed cities on the eastern and western ends of the corridor, the new route would reduce traffic on local streets. HSR would likely provide additional benefits for long-distance east-west travel.	**(+) Good** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to reduce traffic congestion.

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High Desert Corridor Screening Matrix								
	Alternatives							
Screening Criteria	**No-Build**	**TSM/TDM**	**Freeway/ Expressway**	**Freeway/ Tollway**	**Corridor Improvements**	**Freeway/ Expressway w/ HSR**	**Freeway/ Tollway w/ HSR**	**Hybrid Corridor**
Minimize business/residential relocation	**(+) Good** Planned future projects may require some business/residential relocation. These are expected to be minimal.	**(+) Good** Minor widening and other improvements may require some business/residential relocation. These are expected to be minimal.	**(o) Fair** Would require full or partial acquisition of hundreds of parcels. However, most of those properties are undeveloped; relatively few occupied residences and business would have to be relocated.	**(o) Fair** Would require full or partial acquisition of hundreds of parcels. However, most of those properties are undeveloped; relatively few occupied residences and business would have to be relocated.	**(o) Fair** A major widening of the existing routes would require some right-of-way acquisition and relocations.	**(o) Fair** Would require full or partial acquisition of hundreds of parcels. However, most of those properties are undeveloped; relatively few occupied residences and business would have to be relocated.	**(o) Fair** Would require full or partial acquisition of hundreds of parcels. However, most of those properties are undeveloped; relatively few occupied residences and business would have to be relocated.	**(o) Fair** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to minimize relocations.
Minimize biological impacts	**(+) Good** Due to their relatively small scope, planned future projects are expected to have minimal impact on biological resources.	**(+) Good** Due to their relatively small scope, minor widening and other improvements are expected to have minimal Impact on biological resources.	**(-) Poor** Would traverse 3 major drainages and impact Mohave ground squirrel and desert tortoise habitat. Joshua tree woodland would also be affected. May seriously impact wildlife movement.	**(-) Poor** Would traverse 3 major drainages and impact Mohave ground squirrel and desert tortoise habitat. Joshua tree woodland would also be affected. May impact wildlife movement.	**(o) Fair** Would traverse 2 major drainages. Would also have fairly minor impacts to "less sensitive" Mohave ground squirrel, desert tortoise and Joshua tree habitat. May impact wildlife movement.	**(-) Poor** Would traverse 3 major drainages and impact Mohave ground squirrel and desert tortoise habitat. Joshua tree woodland would also be affected. May impact wildlife movement.	**(-) Poor** Would traverse 3 major drainages and impact Mohave ground squirrel and desert tortoise habitat. Joshua tree woodland would also be affected. May impact wildlife movement.	**(-) Poor** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to minimize biological impacts.

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High Desert Corridor Screening Matrix								
	Alternatives							
Screening Criteria	**No-Build**	**TSM/TDM**	**Freeway/ Expressway**	**Freeway/ Tollway**	**Corridor Improvements**	**Freeway/ Expressway w/ HSR**	**Freeway/ Tollway w/ HSR**	**Hybrid Corridor**
Minimize water quality/ hydrology impacts	**(+) Good** Due to their relatively small scope, planned future projects are expected to have minimal impact on water quality and hydrology.	**(+) Good** Due to their relatively small scope, minor widening and other improvements are expected to have minimal Impact on water and hydrology.	**(-) Poor** Would traverse 3 major drainages and numerous smaller channels. Potential impacts to water and sediment transport. Potential impacts to water quality due to increase in impervious surface, highway runoff and litter.	**(-) Poor** Would traverse 3 major drainages and numerous smaller channels. Potential impacts to water and sediment transport. Potential impacts to water quality due to increase in impervious surface, highway runoff and litter.	**(-) Poor** Would traverse 2 major drainages and numerous smaller channels. Potential impacts to water and sediment transport. Potential impacts to water quality due to increase in impervious surface, highway runoff and litter.	**(-) Poor** Would traverse 3 major drainages and numerous smaller channels. Potential impacts to water and sediment transport. Potential impacts to water quality due to increase in impervious surface, highway runoff and litter.	**(-) Poor** Would traverse 3 major drainages and numerous smaller channels. Potential impacts to water and sediment transport. Potential impacts to water quality due to increase in impervious surface, highway runoff and litter.	**(-) Poor** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to minimize water quality/hydrology impacts.
Minimize construction Impacts	**(+) Good** Due to their relatively small scope, planned future projects are expected to have minimal construction-related impact. (+)	**(+) Good** Due to their relatively small scope, minor widening and other improvements are expected to have minimal construction-related impact.	**(-) Poor** Major construction activities would result in temporary traffic, noise and air quality impacts spread out over a multi-year construction period.	**(-) Poor** Major construction activities would result in temporary traffic, noise and air quality impacts spread out over a multi-year construction period.	**(-) Poor** Major construction activities would result in temporary traffic, noise and air quality impacts spread out over a multi-year construction period.	**(-) Poor** Major construction activities would result in temporary traffic, noise and air quality impacts spread out over a multi-year construction period.	**(-) Poor** Major construction activities would result in temporary traffic, noise and air quality impacts spread out over a multi-year construction period.	**(-) Poor** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to minimize construction impacts.
Project Cost criteria								

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High Desert Corridor Screening Matrix								
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Screening Criteria	**No-Build**	**TSM/TDM**	**Freeway/ Expressway**	**Freeway/ Tollway**	**Corridor Improvements**	**Freeway/ Expressway w/ HSR**	**Freeway/ Tollway w/ HSR**	**Hybrid Corridor**
Cost effectiveness	**(-) Poor** There are no costs, but there are also no solutions to the transportation problems (benefits). The lack of improvements will result in a long-term economic cost to the region.	**(o) Fair** Anticipated low cost makes this a favorable option, but benefits not seen as very meaningful.	**(+) Good** Would provide a full solution to the transportation problems. Costs are yet to be determined but are expected to be commensurate with the benefits.	**(+) Good** Would provide a full solution to the transportation problems. Costs are yet to be determined but are expected to be commensurate with the benefits.	**(-) Poor** This is the longest route and would cost the most. It fails to adequately meet purpose and need while having fairly high impacts.	**(+) Good** Would provide a full solution to the transportation problems. Costs are yet to be determined but are expected to be commensurate with the benefits. HSR costs to be provided by others.	**(+) Good** Would provide a full solution to the transportation problems. Costs are yet to be determined but are expected to be commensurate with the benefits. HSR costs to be provided by others.	**(+) Good** The intent is to use the most appropriate elements of the other alternatives to meet the needs of the project and mininmize impacts. It is presumed to be cost effective.
Funding feasibility	**(+) Good** No funding needed.	**(+) Good** Pursuing a series of low cost improvements makes funding more easily attainable.	**(o) Fair** To be determined.	**(+) Good** There is a high potential for funding through a Public Private Partnership (P3).	**(o) Fair** To be determined.	**(o) Fair** To be determined.	**(+) Good** There is a high potential for funding through a Public Private Partnership (P3).	**(o) Fair** To be determined.
Total Score	(0)	(+5)	(+3)	(+4)	(-2)	(+3)	(+4)	(+4)
Selected for further anaysis?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Evaluation Coding:
+ Good (Alternative greatly satisfies screening criteria)
o Fair (Alternative moderately satisfies screening criteria)
- Poor (Alternative poorly satisfies screening criteria)

Table 2.

High Desert Corridor Screening Matrix						
	Variations					
Screening Criteria	**A**	**B-North**	**B-South**	**C**	**D**	**E**
Purpose and Need criteria						
Support east-west mobility	**(o) Same** Variation A is slightly less direct than the main alignment but would still enhance east-west mobility.	**(o) Same** Variation B-North and B-South are slightly less direct than the main alignment but there would be no difference in the enhancement of east-west mobility.	**(o) Same** Variation B-North and B-South are slightly less direct than the main alignment but there would be no difference in the enhancement of east-west mobility.	**(-) Worse** Variation C would enhance east-west movement primarily by enhancing existing roads. This improvement is considered inferior to having an additional route.	**(o) Same** Variation D is slightly less direct than the main alignment but would still enhance east-west mobility.	**(+) Better** Variation E is slightly less direct than the main alignment but would still enhance east-west mobility. It would also provide a second east-west option in this area because the existing Air Expressway Rd. would remain open.
Support goods movement	**(o) Same** Variation A provides a slightly less-direct route and is slightly farther from the Palmdale airport compared to the main alignment. This is not expected to affect goods movement.	**(o) Same** Variation B-North would neither improve nor diminish goods movement relative to the main alignment or B-South.	**(o) Same** Variation B-South would neither improve nor diminish goods movement relative to the main alignment or B-North.	**(o) Same** Variation C would pass through a more densely populated area that would likely require more surface interchanges than the main alignment. Although traffic might move a little slower, there should be minimal impact on goods movement.	**(o) Same** Variation D would neither improve nor diminish goods movement relative to the main alignment.	**(o) Same** Variation E would provide a suitable option for trucks travelling between I-15 and SR-14. However, it would route traffic south away from the SCLA (SCLA is proposed to become a major distribution hub). Although an I/C is proposed at Phantom St. West, there is currently no road to connect that I/C with SCLA. Access to the HDC would still be available via Air Expressway until Phantom West is constructed. Therefore, Variation E would provide a similar level of support for goods movement as the main alignment.

Table 2.

High Desert Corridor Screening Matrix						
	Variations					
Screening Criteria	**A**	**B-North**	**B-South**	**C**	**D**	**E**
Improve service to airports	**(o) Same** Variation A is slightly farther from the airport than the main alignment but this is not expected to affect airport access.	**(o) Same** Variation B-North would neither improve nor diminish airport service relative to the main alignment or B-South.	**(o) Same** Variation B-South would neither improve nor diminish airport service relative to the main alignment or B-North.	**(o) Same** Although traffic might move a little slower on Variation-C due to the presence of more interchanges, there should be little change in accessability to the SCLA facility.	**(o) Same** Variation D would neither improve nor diminish service to airports relative to the main alignment.	**(o) Same** Variation E would route traffic south away from the SCLA. Although an I/C is proposed at Phantom St. West, there is currently no road to connect that I/C with SCLA. Access to the HDC would still be available via Air Expressway until Phantom West is constructed. Therefore, Variation E would provide a similar level of access to SCLA as the main alignment.
Improve emergency access	**(o) Same** Variation A is slightly closer to the the developed areas of Palmdale than the main alignment. However, any affect on emergency access would be minimal.	**(o) Same** Variation B-North would neither improve nor diminish emergency access relative to the main alignment or B-South.	**(o) Same** Variation B-South would neither improve nor diminish emergency access relative to the main alignment or B-North.	**(-) Worse** The main alignment would be built along a new route that would improve accessibility to the northern part of town. Variation C would be build primarily along an existing roadway and would do little to improve emergency access.	**(o) Same** Variation D would be slightly farther away from the populated areas of Lake Los Angeles. However, the distance is not expected to affect emergency access.	**(+) Better** Variation E would provide an alternate route and would be located closer to populated areas than the main alignment. It would improve emergency access.

Table 2.

High Desert Corridor Screening Matrix						
	Variations					
Screening Criteria	**A**	**B-North**	**B-South**	**C**	**D**	**E**
Environmental criteria						
Minimize traffic congestion	**(o) Same** Although slightly closer to the developed areas of Palmadale, Variation A is expected to provide similar congestion relief benefits when compared to the main alignment.	**(o) Same** There would be no change in traffic congestion relative to the main alignment or B-South.	**(o) Same** There would be no change in traffic congestion relative to the main alignment or B-North.	**(-) Worse** The main alignment would provide an alternate route for traffic whereas Variation C would primarily use an existing (albeit upgraded) road.	**(o) Same** Variation D is not expected to improve nor diminish traffic congestion relative to the main alignment.	**(+) Better** Variation E would provide a short, alternate route for traffic in the vicinity o fthe SCLA and federal prison and would be expected to reduce congestion more than the main alignment.
Minimize business/residential relocation	**(+) Better** Variation A would require acquisition of a smaller portion of the LA World Aiports Property.	**(-) Worse** The main alignment would pass through the center of a dairy farm and require the relocation of several buildings. Variation B-North would bisect the dairy but would mainly impact the movement of cattle and people. B-South would avoid the dairy completely. No other relocations would be required for any of these options.	**(+) Better** The main alignment would pass through the center of a dairy farm and require the relocation of several buildings. Variation B-North would bisect the dairy but would mainly impact the movement of cattle and people. B-South would avoid the dairy completely. No other relocations would be required for any of these options.	**(-) Worse** The main alignment would pass through a rural part of town and require relatively few residential/business relocations. Variation C would pass through a developed area and would require extensive relocations.	**(+) Better** Variation D was proposed as a way to move the alignment away from the developed areas of Lake Los Angeles. It would result in fewer business/ residential relocations.	**(-) Worse** The main alignment would require the acquisition of some LADWP property that is currently being used to access Rockview Park (possible 4(f) issue). Variation E would avoid this but would require the relocation of several residences and businesses. A small housing tract would also be isolated

Table 2.

High Desert Corridor Screening Matrix						
	Variations					
Screening Criteria	**A**	**B-North**	**B-South**	**C**	**D**	**E**
Minimize biological impacts	**(-) Worse** Variation A is slightly less direct and would impact slightly more desert scrub habitat. It would also require a slightly larger footprint within Little Rock Cr.	**(o) Same** Although Variation B-North and B-South are slightly longer than the main alignment, they all traverse through the same habitat and would experience the same issues related to sensitive species. There would be no difference in biological impacts.	**(o) Same** Although Variation B-North and B-South are slightly longer than the main alignment, they all traverse through the same habitat and would experience the same issues related to sensitive species. There would be no difference in biological impacts.	**(o) Same** Both Variation C and the main alignment pass through areas that contain relatively few biological resources. Impacts are expected to be similar.	**(o) Same** Variation D and the main alignment both pass through similar habitat and are expected to have similar impacts to biological resources.	**(+) Better** Both Variation E and the main alignment pass through similar upland habitats. They both cross the Mojave River, but Variation E would result in slightly less shading impacts. Variation E would impact Southwestern Willow Flycatcher critical habitat in one location instead of two.
Minimize water quality/ hydrology impacts	**(-) Worse** Variation A would approach Little Rock Cr. from an angle and would likely require additional columns in the wash. Impacts are expected to be slightly larger.	**(o) Same** Although Variation B-North and B-South are slightly longer than the main alignment, they all cross the same small channels and would experience the same issues related to water quality and hydrology. There is not expected to be any difference in impacts.	**(o) Same** Although Variation B-North and B-South are slightly longer than the main alignment, they all cross the same small channels and would experience the same issues related to water quality and hydrology. There is not expected to be any difference in impacts.	**(o) Same** Both Variation C and the main alignment pass through areas that contain similar water quality/hydrology resources. Impacts are expected to be similar.	**(o) Same** Variation D and the main alignment both pass through similar areas and are expected to have similar impacts to water quality/hydrology.	**(o) Same** Both Variation E and the main alignment would cross the Mojave River. Variation E would not cross Oro Grande Wash but potential potential water quality impacts are expected to be similar.

Table 2.

High Desert Corridor Screening Matrix						
	Variations					
Screening Criteria	**A**	**B-North**	**B-South**	**C**	**D**	**E**
Minimize construction Impacts	**(-) Worse** Variation A would be expected to have slightly more construction impacts due to its longer path, more time required for construction and more work required at Little Rock Cr.	**(-) Worse** Construction of the main alignment would require prior relocation of the buildings associated with running the farm, moving the occupants away from noise/air quality impacts. Variation B-North would be located approximately 1500 feet from the buildings. B-South would be located farther away in an area without sensitive receptors.	**(+) Better** Construction of the main alignment would require prior relocation of the buildings associated with running the farm, moving the occupants away from noise/air quality impacts. Variation B-North would be located approximately 1500 feet from the buildings. B-South would be located farther away in an area without sensitive receptors.	**(-) Worse** The main alignment passes through areas with relative few sensitive receptors. Variation C passes through a developed area with numerous sensitive receptors. Noise, air quality, traffic and other access issues would be much greater with Variation C.	**(+) Better** Variation D is located farther away from developed areas and there are fewer sensitive receptors present. Therefore, construction impacts for Variation D are expected to be less.	**(-) Worse** Variation E would pass closer to sensitive receptors and would have a greater potential for construction-related impacts.
Project Cost criteria						
Cost effectiveness	**(-) Poor** Cost is expected to be slightly higher than main alignment due to increased length. Purpose and need met equally well but with slightly higher environmental impacts.	**(-) Poor** Cost is expected to be slightly higher than main alignment due to increased length. Does not alleviate environmental concerns.	**(o) Fair** Cost is expected to be slightly higher than main alignment due to increased length. However, environmental impacts are reduced.	**(-) Poor** Both cost and environmental impacts are expected to be substantially higher due to R/W acquisition.	**(o) Fair** Cost is expected to be slightly higher than main alignment due to increased length. However, environmental impacts are reduced.	**(o) Fair** Cost is expected to be higher than main alignment due to increased length, R/W acquisition and utility relocation. However, environmental impacts are reduced.

Table 2.

High Desert Corridor Screening Matrix						
	Variations					
Screening Criteria	**A**	**B-North**	**B-South**	**C**	**D**	**E**
Funding feasibility	**(o) Fair** To be determined.	**(o) Fair** To be determined. As with main alignment, could benefit from Public Private Partnership funding.	**(o) Fair** To be determined. As with main alignment, could benefit from Public Private Partnership funding.	**(o) Fair** To be determined.	**(o) Fair** To be determined. As with main alignment, could benefit from Public Private Partnership funding.	**(o) Fair** To be determined. As with main alignment, could benefit from Public Private Partnership funding.
Total Score	(-1)	(-3)	(+2)	(-5)	(+2)	(+2)
Selected for further anaysis?	Yes	No	Yes	No	Yes	Yes

Evaluation Coding:
+ Better (Variation would satisfy screening criteria better than the main alignment option)
o Same (Variation would satisfy screening criteria equally well compared to the main alignment option)
- Worse (Variation would satisfy screening criteria worse than the main alignment option)

Project Alternatives:

- **No Build Alternative**

Description:
The No Build (No Action) Alternative consists of those transportation projects that are already planned and committed to be constructed by or before 2035 (subject to additional requirements under CEQA and NEPA). Consequently, Alternative 1 represents future travel conditions in the HDC study area without the HDC project and it is the baseline against which other transportation alternatives proposed for the study area will be assessed.

Analysis:
The No-Build Alternative would rely upon other projects to meet the transportation needs of the High Desert region and would itself do nothing to meet the project purpose and need. Mobility and goods movement would continue to suffer as would airport and emergency access. A lack of construction means that environmental impacts would be avoided and there would be no project cost or funding issues to contend with.

This alternative will continue to be carried forward as required by NEPA and CEQA.

- **Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative**

Description:
This Alternative includes the operational investments, policies, and easily implemented, low capital cost improvements aimed at improving goods movement, passenger auto and transit travel and reducing the negative environmental impacts of transportation for cities and operations in the HDC Study area. Improvements might include such things as minor roadway widening, addition of turn lanes, Intelligent Transportation Systems, bus system improvements, etc.

Analysis:
The TSM/TDM Alternative would minimally support the purpose and need for transportation improvements. The intent of this alternative is, by definition, to propose improvements which have minimal environmental impacts and are relatively low cost proposals. As a consequence, when you prepare a comprehensive evaluation of this alternative using the three categories of screening, this option performs poorly in addressing purpose and need, but has good performance in the environmental and cost categories.

This Alternative will continue to be carried forward and requires more detailed definition.

- **Freeway/Expressway Alternative (Avenue P-8, I-15 and SR-18)**

Description:
This alternative consists of a combination of a controlled-access freeway and an expressway. It generally follows Avenue P-8 in Los Angeles County and then runs slightly south of El Mirage Road in San Bernardino County; it then extends to Air Expressway Road near I-15 and curves south to terminate at Bear Valley Road.

Analysis:
This alternative fully satisfies the project purpose and need and would be beneficial in reducing traffic congestion; it scores well on those evaluation criteria. However, a new facility on a new alignment would inevitable result in environmental impacts. Since much of the project is located in a sparsely-populated, fragile desert environment, impacts to biological and hydrological resources are of concern. Cost and funding are also issues to contend with in the future.

This Alternative will continue to be carried forward with special attention being given to finding ways to avoid, minimize or mitigate environmental concerns.

- **Freeway/Tollway Alternative (Avenue P-8, I-15 and SR-18)**

Description:
This alternative follows the same route as the Freeway/Expressway Alternative with alterations made in coordination with a Public Private Partnership analysis.

Analysis:
This alternative fully satisfies the project purpose and need and would be beneficial in reducing traffic congestion; it scores well on those evaluation criteria. However, a new facility on a new alignment would inevitable result in environmental impacts. Since much of the project is located in a sparsely-populated, fragile desert environment, impacts to biological and hydrological resources are of concern. Cost will be an area to contend with in the future; however, private funding through a Public Private Partnership, if determined to be feasible, could help alleviate this concern.

This Alternative will continue to be carried forward pending the results of the Public Private Partnership analysis. Special attention will be given to finding ways to avoid, minimize or mitigate environmental concerns.

- **Corridor Improvements Alternative (Ave. P-8, SR-138 and SR-18)**

Description:
This Alternative follows the same route as the Freeway/Expressway Alternative between SR-14 and approximately 126th St. East. The alternative would then curve south until it joins SR-138. From there the alternative includes widening of SR-138 and SR-18 (generally between 126th St. East and I-15).

Analysis:
Although this alternative satisfies the project purpose and need better than the No-Build alternative, it primarily enhances existing routes and, along most of the corridor, does not provide additional transportation options; it does not compare well against the various freeway/expressway/tollway alternatives. Meanwhile, this alternative fails to avoid many environmental resources and does poorly at minimizing impacts. It has few of the benefits in terms of satisfying the project purpose and need but has most of the adverse environmental impacts that would be associated with a more robust alternative.

The environmental costs are considered to be too high compared to the transportation benefit that would be achieved. This alternative will not be carried forward for further analysis.

- **Freeway/Expressway Alternative with High Speed Rail right-of-way**

Description:
This Alternative follows the same route as the Freeway/Expressway Alternative and includes additional right of way for a High Speed Rail (HSR) facility. If a HSR facility is proven to be viable, its engineering and environmental analysis would be funded by others at a later date.

Analysis:
This alternative fully satisfies the project purpose and need and would be beneficial in reducing traffic congestion; it scores well on those evaluation criteria. By providing another transportation option, a potential HSR facility would do even more to increase long-distance east-west mobility and reduce congestion than a freeway/expressway by itself. As with the other freeway/expressway alternatives, a new facility on a new alignment would result in environmental impacts. Impacts to biological and hydrological resources are of concern in this sparsely-populated, fragile desert environment. Cost and funding are also issues to contend with in the future.

This Alternative will continue to be carried pending discussions with the High Speed Rail authorities. Special attention will be given to finding ways to avoid, minimize or mitigate environmental concerns.

- **Freeway/Tollway Alternative with High Speed Rail right-of-way**

Description:
This Alternative is similar to the Freeway/Tollway Alternative and includes additional right of way for a High Speed Rail (HSR) facility. This alternative would include a Public-Private Partnership analysis. If a HSR facility is proven to be viable, its engineering and environmental analysis would be funded by others at a later date.

Analysis:
This alternative fully satisfies the project purpose and need and would be beneficial in reducing traffic congestion; it scores well on those evaluation criteria. By providing another transportation option, a potential HSR facility would do even more to increase long-distance east-west mobility and reduce congestion than a freeway/tollway by itself. As with the other freeway/expressway alternatives, a new facility on a new alignment would inevitable result in environmental impacts. Since much of the project is located in a sparsely-populated, fragile desert environment, impacts to biological and hydrological resources are of concern. Cost will be an area to contend with in the future; however, private funding through a Public Private Partnership, if determined to be feasible, could help alleviate this concern.

This Alternative will continue to be carried forward pending the results of the Public Private Partnership analysis. Special attention will be given to finding ways to avoid, minimize or mitigate environmental concerns.

- **Hybrid Corridor Alternative**

Description:
This alternative would consist of a combination of all or some of the previously identified alternatives, whose elements (TSM/TDM, Freeway, Expressway, Tollway, HSR) would be pieced together to best fit the needs of each section of the corridor. The determination of which elements to use, and at which locations, would be determined based on the results of the traffic study, environmental studies and public input.

Analysis:
This alternative would utilize the most appropriate elements of the other alternatives and would be structured such that all aspects of the project purpose and need would be met in a way that best minimizes project impacts.

This Alternative will continue to be carried forward but requires more detailed definition. Special attention will be given to finding ways to avoid, minimize or mitigate environmental concerns.

Project Variations:

- **Variation A**

Description:
Located in the City of Palmdale, this variation would result in the freeway/expressway running slightly south of the main alignment, approximately between 15th St. East and Little Rock Wash.

Analysis:
Variation A matches the main alignment option equally in all screening criteria but one; it compares favorably when looking at business/residential relocations because it is located closer to the southern

boundary of the L.A. World Airports property; a smaller portion of the property would have to be acquired. However, this is a single government-owned property, as opposed to numerous privately owned parcels. It is not possible to determine a clear alignment preference based on the current level of information.

Both Variation A and the main alignment option will be carried forward for further study.

- **Variation B-North and B-South**

Description:

The freeway/expressway would run slightly north, or south, of the main alignment between Oasis Rd. and Caughlin Rd. east of the county line.

Analysis:

Both Variation B-North and the main alignment option would require the acquisition/relocation of a portion of a local dairy operation; with B-North, however, the operational buildings would remain in place and would be subject to construction-related noise and air quality impacts. Variation B-South would require relocation of a smaller property.

Variation B-South and the main alignment option will be carried forward for further analysis.

Variation B-North will be dropped from further consideration.

- **Variation C**

Description:

The freeway/expressway would swing south of the main alignment and pass through the center of the Town of Apple Valley before connecting with SR-18 and Bear Valley Road.

Analysis:

Variation C has no benefits when compared to the main alignment option. Instead, it would result in serious adverse consequences for the Town of Apple Valley. It would bisect the community, harming community cohesion, and result in the relocation of numerous business and residential properties. There is strong public opposition to this variation.

Variation C will be dropped from further consideration.

- **Variation D**

Description:

Located near the community of Lake Los Angeles, the freeway/expressway would run slightly south of the main alignment, just south of Avenue R, approximately between 150th St. East and 230th St. East.

Analysis:

The shift in alignment resulting from Variation D appears to be beneficial because it would help reduce the number of residential relocations and the construction-related impacts compared to the main alignment option. However, additional detailed analysis will be required before it can be determined if one option is clearly favored over the other.

Both Variation D and the main alignment option will be carried forward for further analysis.

- **Variation E**

Description:

Located near the cities of Adelanto and Victorville, the freeway/expressway would run just south of the federal prison.

Analysis:

Variation E appears to be favorable from the perspective of meeting purpose and need and reducing impacts to natural resources. It would, however, take the corridor farther away from the SCLA facility and result in additional impacts to the human environment. There is enough justification to continue analyzing both options.

Both Variation E and the main alignment option will be carried forward for further study.

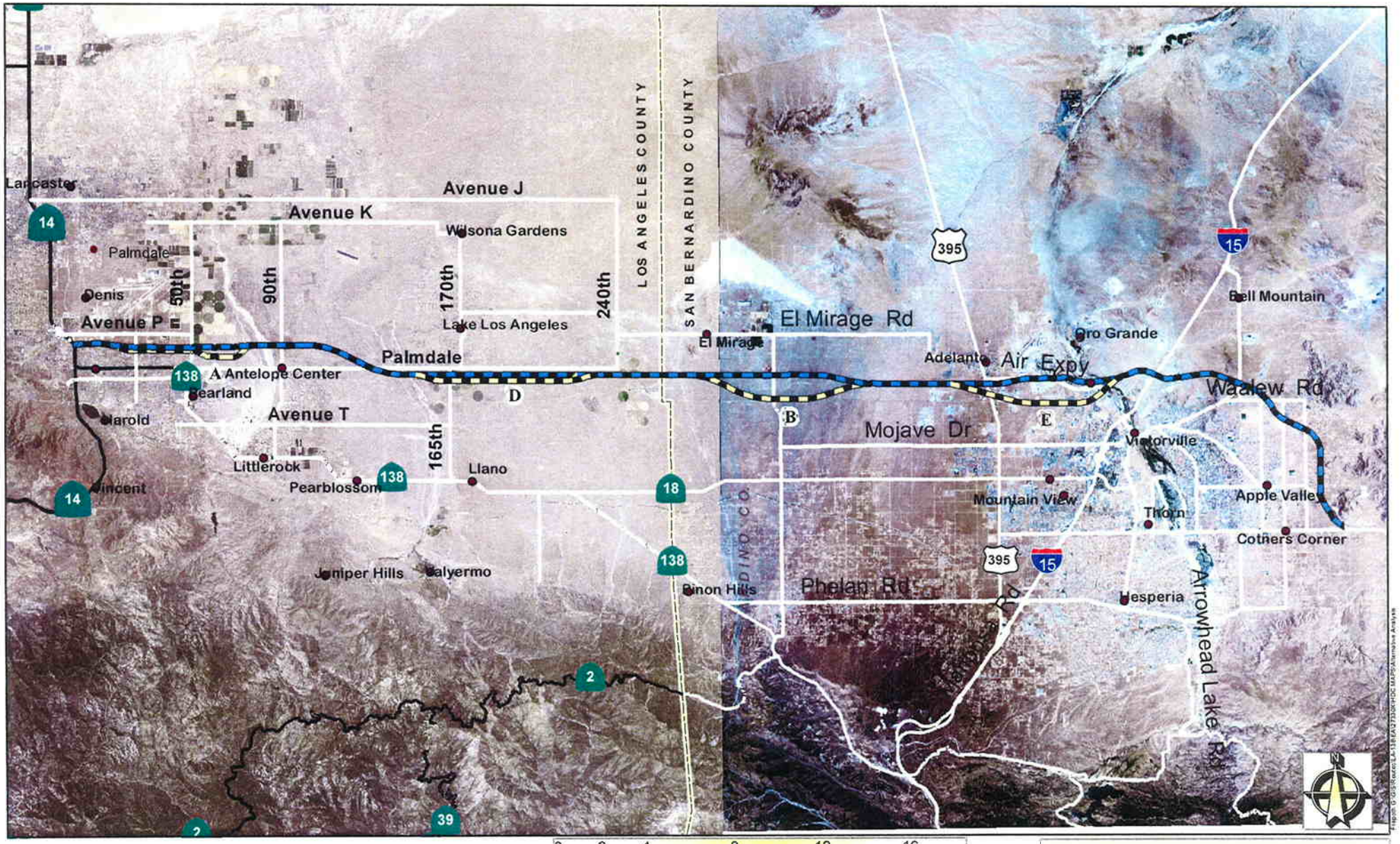
Summary of Alternatives and Variations Carried Forward for Further Analysis

Based on the results presented above, the following list indicates those alternatives and variations that will be analyzed further in the technical studies and the environmental document:

- No Build Alternative;
- Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative;
- Freeway/Expressway Alternative (Avenue P-8, I-15 and SR-18);
- Freeway/Tollway Alternative (Avenue P-8, I-15 and SR-18);
- Freeway/Expressway Alternative with High Speed Rail right-of-way;
- Freeway/Tollway Alternative with High Speed Rail right-of-way;
- Hybrid Corridor Alternative;
- Variation A, including the main alignment option;
- Variation B-South, including the main alignment option;
- Variation D, including the main alignment option;
- Variation E, including the main alignment option.

These are shown in Figure 2 below.

High Desert Corridor Alternatives Carried Forward For Further Analysis



0 2 4 8 12 16 Miles

Map Created by Sharon He & Robert Wang 08/03/2011

Alternatives Carried Forward
California Department of Transportation
District 7, Los Angeles

Proposed Alternatives
A. B. D, E Proposed Variations