

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is “Less than significant with mitigation” or “Less than significant impact” as indicated by the checklist on the following pages.

- | | |
|-------------------------------------|------------------------------------|
| <input type="checkbox"/> | Aesthetics |
| <input type="checkbox"/> | Agricultural Resources |
| <input type="checkbox"/> | Air Quality |
| <input checked="" type="checkbox"/> | Biological Resources |
| <input type="checkbox"/> | Cultural Resources |
| <input type="checkbox"/> | Geology/Soils |
| <input checked="" type="checkbox"/> | Hazards and Hazardous Materials |
| <input type="checkbox"/> | Hydrology/Water Quality |
| <input type="checkbox"/> | Land Use/Planning |
| <input type="checkbox"/> | Mineral Resources |
| <input type="checkbox"/> | Noise |
| <input type="checkbox"/> | Population/Housing |
| <input type="checkbox"/> | Public Services |
| <input type="checkbox"/> | Recreation |
| <input type="checkbox"/> | Transportation/Traffic |
| <input type="checkbox"/> | Utilities/Service Systems |
| <input type="checkbox"/> | Mandatory Findings of Significance |

California Environmental Quality Act Impacts Checklist

The impacts checklist starting on the next page identifies physical, biological, social, and economic factors that might be affected by the proposed project. The California Environmental Quality Act impact levels include “potentially significant impact,” “less than significant impact with mitigation,” “less than significant impact,” and “no impact.”

A brief explanation of each California Environmental Quality Act checklist determination follows each checklist topic, with a corresponding study or report, which provides a determination. The checklist is followed by a focused discussion of hazardous waste and biological resources relating to this project.

In addition, climate change is discussed to address Executive Order S-3-05, signed on June 1, 2005, by Governor Arnold Schwarzenegger. The goal of this Executive Order is to reduce California’s greenhouse gas emissions.

Please Note:

The responses to Section VII (Hazards and Hazardous Materials), items a, b, and d, were checked incorrectly in the draft environmental document and have been corrected in this final environmental document. As indicated in the discussion following the checklist, the correct response to these 3 items is “less than significant impact.”

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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I. AESTHETICS — Would the project:

Roundabout & Signalization Alternatives

a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

“No Impact” determination in the above section is based on the Visual Impact Assessment, June 2008

II. AGRICULTURE RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

Roundabout & Signal Alternatives

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

“No Impact” determinations in the above section are based on the project scope and Project Development Team determination.

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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III. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

Roundabout & Signal Alternatives

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|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Create objectionable odors affecting a substantial number of people? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

“No Impact” determinations in the above section are based on the Air Quality Report, November 2007.

IV. BIOLOGICAL RESOURCES — Would the project:

Roundabout Alternative

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“No Impact” determinations for the roundabout in the section above are based on the Natural Environmental Study (NES), August 2008 for the roundabout alternative above.

IV. BIOLOGICAL RESOURCES — Would the project:

Signalization Alternative

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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“Less than significant impact with mitigation” and Less than significant impact” determinations in the section above are based on the Natural Environmental Study (NES) with an Environmentally Sensitive Habitat Analysis attachment, August 2008 for the signal alternative above.

V. CULTURAL RESOURCES — Would the project:

Roundabout & Signal Alternatives

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Disturb any human remains, including those interred outside of formal cemeteries?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“No Impact” determinations in the above section are based on the Historic Property Survey Report, June 2008.

VI. GEOLOGY AND SOILS — Would the project:

Roundabout & Signal Alternatives

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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ii) Strong seismic ground shaking?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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iii) Seismic-related ground failure, including liquefaction?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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iv) Landslides?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Result in substantial soil erosion or the loss of topsoil?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

“No Impact” determinations in the above section are based on the scope and location of the project.

VII. HAZARDS AND HAZARDOUS MATERIALS —
Would the project:

Roundabout & Signal Alternatives

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“Less than significant impact” and “No Impact” determinations in the above section are based on review of the Preliminary Site Investigation Report by Geocon Consultants, August 2008.

VIII. HYDROLOGY AND WATER QUALITY —

Roundabout & Signal Alternatives

Would the project:

a) Violate any water quality standards or waste discharge requirements?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or offsite?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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e) Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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f) Otherwise substantially degrade water quality?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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- h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?
- i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?
- j) Result in inundation by a seiche, tsunami, or mudflow?

“Less than significant Impact and No Impact” determinations in the above section are based on the Water Quality Report, August 2008 and Flood plain Evaluation Report, June 2008.

IX. LAND USE AND PLANNING — Would the project: **Roundabout & Signalization Alternatives**

- a) Physically divide an established community?
- b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?
- c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

“No Impact” determinations in the above section are based on Community Impact Assessment, June 2008.

X. MINERAL RESOURCES — Would the project: **Roundabout & Signalization Alternatives**

- a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
- b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

“No Impact” determinations in the above section are based on the scope and location of the project.

XI. NOISE — Would the project result in: **Roundabout & Signalization Alternatives**

- a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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excessive groundborne vibration or groundbor noise levels?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“No Impact” determinations in the above section are based on the Noise Report, November 2007.

XII. POPULATION AND HOUSING —

Roundabout & Signalization Alternatives

Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“No Impact” determinations in the above section are based on the scope and location of the project.

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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XIII. PUBLIC SERVICES —

Roundabout & Signalization Alternatives

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public Facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

“No impact” determinations in the above section are based on the Community Impacts Assessment, June 2008.

XIV. RECREATION —

Roundabout & Signalization Alternative

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

“No Impact” determinations in the above section are based on the scope and location of the project.

XV. TRANSPORTATION/TRAFFIC —

Roundabout & Signalization Alternative

Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Exceed, either individually or				

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Result in inadequate emergency access?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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f) Result in inadequate parking capacity?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“No impact” determinations in the above section are based on Draft Project Report” September 2008.

XVI. UTILITY AND SERVICE SYSTEMS — Would the project:

Roundabout & Signal Alternatives

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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g) Comply with federal, state, and local statutes and regulations related to solid waste?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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“No Impact” determination in the above section is based on the Draft Project Report, September 2008.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE —

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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In the above “Mandatory Findings of Significance” section XVII, “No impact” determinations are based on the cited studies named under each section in this checklist, along with “determinations” made within the entire CEQA checklist.

Affected Environment, Environmental Consequences, and Mitigation Measures

Hazardous Waste Materials

Regulatory Setting

Many state and federal laws regulate hazardous materials and hazardous wastes. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper treatment of materials during excavation and transport, and proper disposal of hazardous material is vital during project construction in order to prevent impacts to workers (and the public) from contaminated dust or water. The principle agency in California state government concerned with these issues for the protection of human health and the environment is the Department of Toxic Substances Control.

In California, properties with known hazardous waste are placed on a public list for notification and public disclosure. This list, known as the “Cortese List”, was established under Government Code 65962.5 and was published annually by the Governor's Office of Planning and Research. If a site is listed in the Cortese List database, a Negative Declaration (ND) is the minimum level of CEQA documentation required for legal compliance.

Impacts

Petroleum Hydrocarbons

The southeast portion of the project area is occupied by a retail gas station that had a documented release of petroleum hydrocarbons due to formerly leaking underground storage tanks (USTs). The release was discovered and repaired in 1989. Remediation (clean up) began in 1995 and continues to-date. Currently the remediation consists of the injection of oxygen into the groundwater to enhance the activity of naturally occurring bacteria that digest petroleum hydrocarbons (bioremediation).

The site is considered a “Cortese Site” due to past release of petroleum hydrocarbons into the soil and groundwater. Both proposed alternatives will require partial acquisition of this gas station property. The acquisition area will not encroach into the tank area where the leak occurred and there are no feasible alternatives that would entirely avoid acquisition of a portion of this site.

A Preliminary Site Investigation (PSI) was conducted in August 2008 for the service station in the southeast portion of the project area. The PSI detected no petroleum hydrocarbon in the soil that would be potentially disturbed by either alternative. According to the PSI,

excavated soil in the proposed service station acquisition area may be reused at the construction site or disposed of without restriction.

The PSI detected low levels of petroleum hydrocarbon in the groundwater. The levels found were well below the North Coast Regional Water Quality Control Board's Environmental Screening Levels. Groundwater may be removed for installation of drainage improvements that would be necessary for either alternative. Based on the Environmental Screening Levels cited above, Caltrans has concluded that the levels of petroleum hydrocarbons present in the groundwater pose no threat to human health or the environment.

Aerially Deposited Lead

The PSI also evaluated shallow soils along the shoulder of the highway within the project boundaries for the presence of Aerially Deposited Lead (ADL) from historic motor vehicle exhaust. Leaded fuel was used extensively prior to the late 1980's and then phased out.

Aerially Deposited Lead was found to be present in the project area. Excavated soil may be classified as hazardous waste and require disposal at a Class I disposal facility. The shallow soils within the unpaved highway shoulders contain lead at levels that could impact construction worker safety and the public unless appropriate measures (dust control) are implemented.

The signal alternative is more likely to generate higher levels of lead in the waste material since minor shoulder widening for hundreds of feet from the intersection will be necessary. The roundabout alternative will only disturb the roadway shoulders in the immediate vicinity of the intersection, and since the entire intersection (mostly the areas under existing pavement) will be disturbed by the construction, the average concentration of lead in the waste soil will be significantly less, most likely below thresholds for hazardous waste.

Avoidance, Minimization, and/or Mitigation Measures

Petroleum hydrocarbons

During dewatering for drainage improvements at the south end of the project, the contractor will be required to contain any wastewater in above ground tanks and dispose of it off site at a treatment facility licensed to accept the waste. The contractor would be advised to contact the local Waste Water Treatment Facility to determine whether they accept the waste. Caltrans will develop the appropriate restrictions and requirements for handling of the wastewater in the construction contract.

Aerially Deposited Lead

The existing shoulders of the roadway contain ADL; therefore, a lead compliance plan will be developed for worker and public safety. Soil containing ADL will require special handling during construction. The soil may be stockpiled and retested during construction to characterize the waste or directly hauled off-site. The ADL sample levels detected in the stockpiled material will determine the appropriate disposal method.

Bolstered dust control will be required.

No sensitive receptors (such as schools) have been identified in the project area that would require air monitoring.

BIOLOGICAL RESOURCES

Regulatory Setting

Alternative 1 - Roundabout

A Coastal Development Permit is in process for approval by the Mendocino County Planning Department because the project is in the Mendocino County Coastal Zone.

Alternative 2 - Signalization

For the traffic signalization alternative, additional permits would be required because of impacts to the culvert at PM 59.18. However, due to selection of the preferred roundabout alternative, the following permits are not applicable to the project:

- CA Department of Fish and Game (CDFG) would require a 1602 Lake or Streambed Alteration Agreement for the work within the creek and within the riparian channel at PM 59.18.
- A permit under Section 401 of the Clean Water Act would be required by the North Coast Regional Water Quality Control Board (NCRWQCB) for work within the Ordinary High Water Mark (OHWM) and the riparian channel at PM 59.18.
- A Nationwide Permit (NWP) under Section 404 of the Clean Water Act would be required by the US Army Corp of Engineers (USACE) for the work within the OHWM and within the riparian channel at PM 59.18.

BIOLOGICAL RESOURCES *CONTINUED*

The below table summarizes the permits required for each alternative.

Table 2: PERMITS

PERMIT	Signalization Alternative	Roundabout Selected Alternative
Mendocino County Coastal Development Permit	Yes	Yes
CDFG 1602 Streambed Alteration Agreement	Yes	No
USACE 404 Permit	Yes	No
NCRWCQB 401 Water Quality Control Agreement	Yes	No

Essential Sensitive Habitat Areas: Coastal Riparian & Bishop Pine Forest

Impacts

Five Essential Sensitive Habitat Areas (ESHAs) have been identified within 100 ft of the project limits for both alternatives. Four of the ESHAs are coastal riparian areas.

Alternative 1 - Roundabout

This alternative will not impact any of the five ESHAs identified within 100 ft of the project limits.

Alternative 2 - Signalization

For the signalization alternative, impacts would occur to the riparian vegetation east of the culvert at PM 59.18, due to highway lane widening, access requirements for culvert, and creation of additional riparian plantings for compensatory mitigation. There may be a potential for impacts from utility relocation to the coastal riparian ESHAs. Approximately 255 square (sq) ft of US Army Corp of Engineers (USACE), North Coast Regional Water Quality Control Board (NCWRCQB), and California Department of Fish and Game (CDFG) jurisdictional riparian vegetation would be permanently removed for road widening. Approximately 500 – 750 sq ft of vegetation classified as coastal riparian would be impacted. Approximately 2600 sq ft of riparian vegetation could be temporarily impacted due to access requirements and mitigation planting. If impacts to coastal riparian occur due to utility relocation, riparian vegetation will be mitigated by replanting at a replacement ratio of 3:1 on site.

Avoidance, Minimization, and/or Mitigation Measures

Alternative 1 – Roundabout

No permits would be required under Section 404 of the Clean Water Act, Section 401 of the Clean Water Act, and Section 1602 Streambed Alteration Agreement.

BIOLOGICAL RESOURCES *CONTINUED*

Alternative 2 - Signalization

Riparian vegetation is under the jurisdiction of the USACE, NCRWQCB, CDFG and the California Coastal Commission (CCC) (Mendocino County has been delegated the authority to issue Local Coastal permits). These resource agencies would require that the replanted vegetation match the existing riparian and coastal scrub in density and types of species. The NCRWQCB recommends that the vegetation be replaced at a 3:1 ratio for on-site mitigation and that new plantings be monitored for three years. If, after three years, the plantings have not achieved at least 80% survival, Caltrans would be required to plant additional vegetation and to ensure its survival for at least another two years. Monitoring reports would also be required for a three to five year period.

Waters of the US

Impacts

Alternative 1 - Roundabout

No impacts to waters of the US are anticipated; therefore, no permits under Section 404 of the Clean Water Act, Section 401 of the Clean Water Act, or 1602 Streambed Alteration Agreement would be required for this alternative.

Alternative 2 – Signalization

Permanent and temporary impacts to waters of the US would occur. Alternative 2 would result in 75 sq ft of temporary impacts to waters of the US, and 32 sq ft of permanent impacts are anticipated, totaling 107 sq ft of impacts to waters of the US. Therefore, alternative 2 would require 4 regulatory agency permits, specifically for impacts to waters of the US.

Table 3 - Biological Impacts Summary

Impacts	Signalization Alternative	Roundabout Alternative
Special Status Species	None	None
Bishop Pine Forest	None	None
USACE/CDFG Riparian – permanent impacts	255 sq ft*	None*
USACE/CDFG Riparian – temporary impacts	2600 sq ft*	None*
Coastal Riparian ESHA – permanent impacts	500 - 750 sq ft*	None*
USACE Waters of the US – permanent impacts	32 sq ft	None
USACE Waters of the US – temporary impacts	75 sq ft	None

* Possible additional impacts from utility relocation have not been calculated.

BIOLOGICAL RESOURCES *CONTINUED*

Waters of the US

Avoidance, Minimization, and/or Mitigation Measures

Alternative 1 – Roundabout

No measures are necessary given the current project scope.

Alternative 2 – Signalization

- A Nationwide Permit (NWP) under Section 404 of the Clean Water Act would be required for the work within the OHWM and within the riparian channel at PM 59.18.
- A permit under Section 401 of the Clean Water Act would be required by the North Coast Regional Water Quality Control Board for work within the OHWM and the riparian channel at PM 59.18, and for the work along the roadside drainage if deemed jurisdictional by USACE.
- An Agreement under Section 1602 of the CDFG code would be required. CDFG will restrict work within the creek to periods of low flow and dry weather:
 - **Work Window:** June 1 to October 15.
 - The CDFG would require that, if the stream is flowing during construction, Caltrans divert the entire stream flow around or through the work area during the excavation and/or construction activities. If the stream is flowing, it will need to be diverted using gravity flow through temporary culverts/pipes or pumped around the work site through hoses.

NOISE

Regulatory Setting

The California Environmental Quality Act (CEQA) provides the broad basis for analyzing and abating highway traffic noise effects. The intent is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation are required under CEQA.

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible.

In accordance with the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level.

The project is not considered a Type 1 project, which is defined by 23 Code of Federal Regulations (CFR) 772 as: follows: "A proposed Federal or Federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of traffic lanes..." The project does not meet the Type 1 definition above and therefore does not require a "Traffic Noise Analysis".

Impacts

Caltrans has determined that the project does not meet the criteria for a Type 1 project as described above. However, temporary impacts may occur during construction. Noise may be generated from the contractor's equipment and vehicles. Avoidance measure will be incorporated into the construction contract to minimize temporary impacts.

No long-term impacts will occur due to the nature of the project.

Avoidance, Minimization, and/or Abatement Measures

Noise generated during construction would be contained if the contractor conforms to the provisions of Caltrans Standard Specifications, **Section 7-1.01 I, "Sound Control Requirements"**. This section requires the contractor to comply with all local sound control and noise level rules, regulations and ordinances, which apply to any work performed pursuant to the contract. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

Climate Change under the California Environmental Quality Act Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of greenhouse gases related to human activity that include carbon dioxide (CO₂), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (1, 1, 1, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year; however, in order to enact the standards California needed a waiver from the U.S. Environmental Protection Agency (EPA). The waiver was denied by Environmental Protection Agency in December 2007 and efforts to overturn the decision have been unsuccessful. See *California v. Environmental Protection Agency*, 9th Cir. Jul. 25, 2008, No. 08-70011.

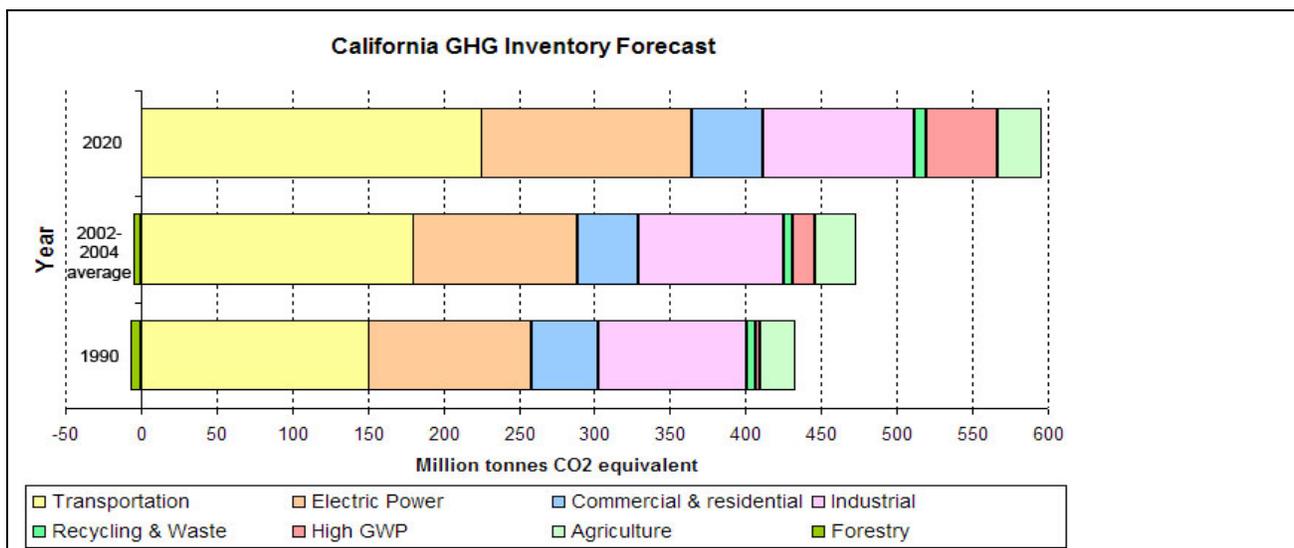
On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's greenhouse gas emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall greenhouse gas emissions reduction goals while further mandating that *California Air Resources Board* create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and greenhouse gas reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing greenhouse gas emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (EPA) to regulate greenhouse gas as a pollutant under the Clean Air Act (*Massachusetts vs. Environmental Protection Agency et al.*, 549 U.S. 497 (2007)). The court ruled that greenhouse gases do fit within the Clean Air Act's definition of a pollutant, and that the Environmental Protection Agency does have the authority to regulate greenhouse gases. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting greenhouse gas emissions.

According to *Recommendations by the Association of Environmental Professionals on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gases. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines sections 15064(i)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

As part of its supporting documentation for the Draft Scoping Plan, California Air Resources Board recently released an updated version of the greenhouse gas inventory for California (June 26, 2008). Shown below is a graph from that update showing the total greenhouse gas emissions for California for 1990, 2002-2004 average, and 2020 projected if no action is taken.



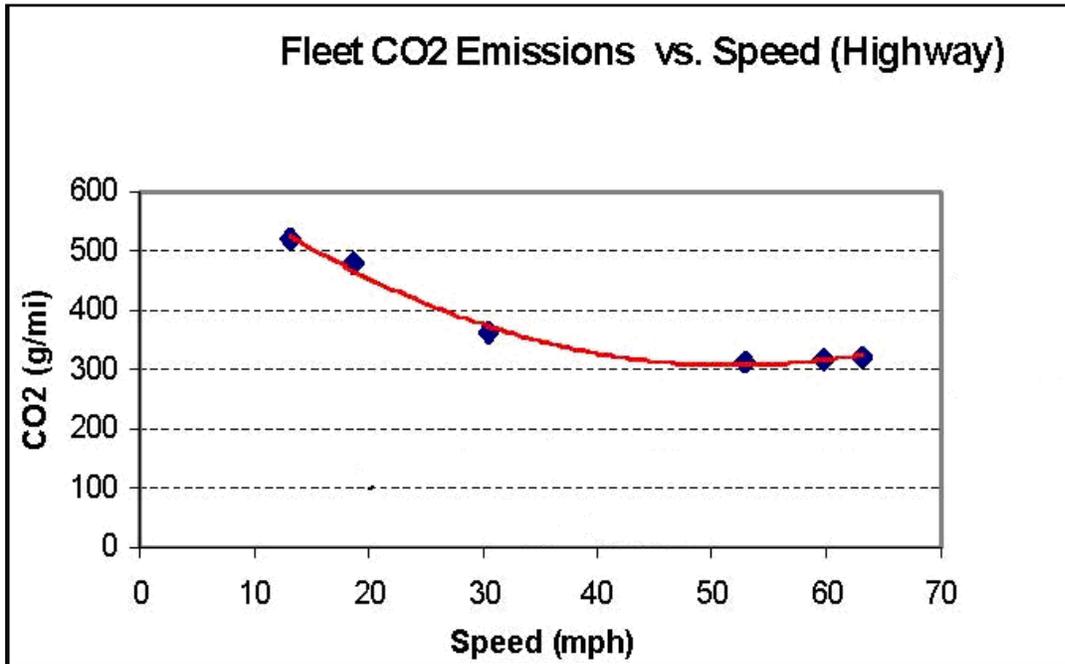
<http://www.arb.ca.gov/cc/inventory/data/forecast.htm>

California Greenhouse Gas Inventory

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human made greenhouse gas emissions are from transportation. Caltrans has created and is implementing the *Climate Action Program at Caltrans* (December 2006). This document can be found at: <http://www.dot.ca.gov/docs/ClimateReport.pdf>.

One of the main strategies in the Department's Climate Action Program to reduce greenhouse gas emissions is to make California's transportation system more efficient. Transportation's contribution to greenhouse gas emissions is dependent on 3 factors: the types of vehicles on the

road, the type of fuel the vehicles use, and the time/distance the vehicles travel. The highest levels of CO₂ from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour). Optimum speeds are between 45 and 50 miles per hour. See Figure below “Fleet CO₂ Emissions vs. Speed (Highway)”. Looking at the state transportation system as a whole, enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in greenhouse gas emissions.



There are numerous key greenhouse gas variables that are likely to change dramatically during the design life of the proposed project and that could thus dramatically change the projected CO₂ emissions.

First, vehicle fuel economy is increasing. The Environmental Protection Agency’s annual report, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008* (<http://www.epa.gov/oms/fetrends.htm>), which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy, has improved each year beginning in 2005, and is now the highest since 1993. Most of the increase since 2004 is due to higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52 percent in 2004 with projections at 48 percent in 2008.

The Table above shows the alternatives for vehicle fuel economy increases currently being studied by the National Highway Traffic Safety Administration in its Draft Environmental Impact Statement (EIS) for New Corporate Average Fuel Economy (CAFE) Standards (June 2008):

Second, near zero carbon vehicles will come into the market during the design life of this project. According to a March 2008 report released by University of California Davis (UC Davis), Institute of Transportation Studies:

“Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California – several in the hands of the general public – with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.

“A number of the U.S. Department of Energy 2010 milestones for fuel cell vehicles development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the U.S. DOE suggest that 10,000s of vehicles per year from 2015 to 2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles.”¹

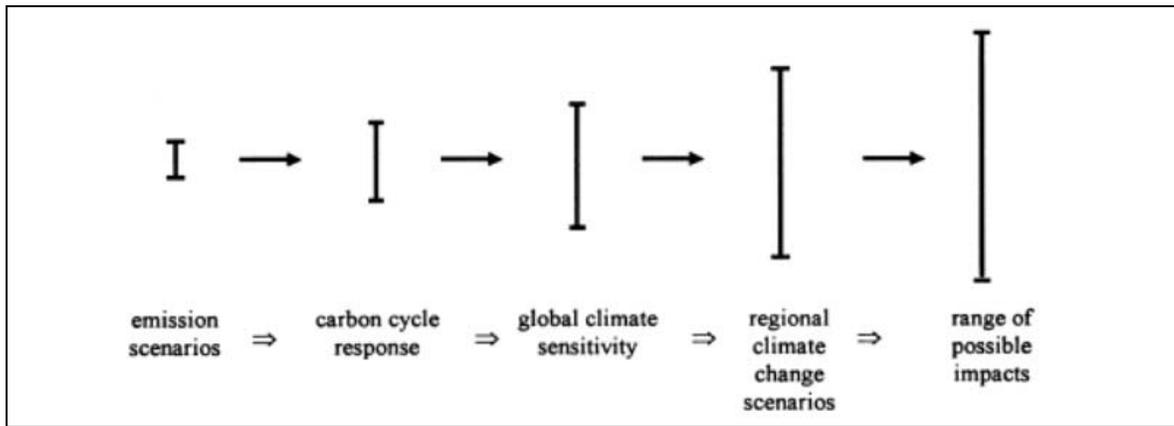
Third and as previously stated, California has recently adopted a low-carbon transportation fuel standard. *California Air Resources Board* is scheduled to come out with draft regulations for low carbon fuels in late 2008 with implementation of the standard to begin in 2010.

Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, *Effects of Gasoline Prices on Driving Behavior and Vehicle Market*, <http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf> the Congressional Budget Office found the following results based on data collected from California: 1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly; 2) the market share of sports utility vehicles is declining; and 3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel-efficient vehicles.

Taken from pp. 3-48 and 3-49 of the National Highway Traffic Safety Administration Draft Environmental Impact Statement for New Corporate Average Fuel Economy Standards (June 2008), the figure illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

“Cascade of uncertainties typical in impact assessments showing the “uncertainty explosion” as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses.”

¹ Cunningham, Joshua, Sig Cronich, Michael A. Nicholas. March 2008. *Why Hydrogen and Fuel Cells are Needed to Support California Climate Policy*, UC Davis, Institute of Transportation Studies, pp. 9-10.



Cascade of Uncertainties

Much of the uncertainty in assessing an individual project’s impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory framework in place that would allow for a ready assessment of what the modeled 11.4 to 20.9 ton increase in CO₂ emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of CO₂ equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons of CO₂ from 2000 to 2030, which represents an increase of between 25 and 90%.²

The assessment is further complicated by the fact that changes in greenhouse gas emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of greenhouse gas emissions, rather than causing “new” greenhouse gas emissions. Although some of the emission increases might be new, a net global increase, reduction, or no change, is uncertain and there are no models approved by regulatory agencies that operate at the global or even statewide scale.

The complexities and uncertainties associated with project level impact analysis are further borne out in the recently released Draft Environmental Impact Statement completed by the National Highway Traffic Safety Administration Corporate Average Fuel Economy Standards, June 2008. As the text quoted below shows, even when dealing with greenhouse gas emission scenarios on a national scale for the entire passenger car and light truck fleet, the numerical differences among alternatives is very small and well within the error sensitivity of the model.

“In analyzing across the Corporate Average Fuel Economy 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative)

² Intergovernmental Panel on Climate Change (IPCC). February 2007. Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. <http://www.ipcc.ch/SPM2feb07.pdf>.

ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the MY 2011-2015 Corporate Average Fuel Economy alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO₂, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all greenhouse gases in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO₂ emissions from the United States light vehicle fleet is expected to decline in the future, due primarily to rapid growth of emissions from developing economies (which are due in part to growth in global transportation sector emissions).” [NHTSA Draft Environmental Impact Statement for New Corporate Average Fuel Economy Standards, June 2008, pp.3-77 to 3-78]

PROJECT ANALYSIS

Project Improvements & Existing Traffic Conditions

Within the project limits at SR 1, traffic is subject to persistent congestion. The project intends to relieve traffic congestion and improve safety, which would be accomplished by either alternative: alternative 1 (roundabout) or alternative 2 (signalization). Caltrans has also considered a no build (no action) alternative. The roundabout alternative was selected as the preferred alternative after evaluation, which included identifying the environmental impacts and calculating the costs. The roundabout alternative would reduce congestion by allowing constant traffic flow through the intersection, reducing stop-and-go movements and the resulting vehicle back-ups within this section of the SR 1 corridor. The roundabout’s reduction of stop-and-go traffic would reduce the levels of greenhouse gases, and carbon dioxide (CO₂) emissions compared to both the signal alternative and the no build alternative.

Current Conditions

Under current conditions (“no build” alternative), traffic operations would worsen, resulting in increased delays due to increased traffic volume over the next 24 years (see Table 4 below). Furthermore, during the peak hour, there are more than 200 southbound vehicles turning left onto Simpson Lane.

Project Area and Side Streets



The assumed growth rate is 50% over 20 years. Without improvements, traffic delays and stop-and-go patterns will worsen, thus increasing greenhouse gas emissions.

Caltrans, Fort Bragg City Council, Mendocino Council of Governments, Mendocino County Board of Supervisors, and local residents all concur that the Simpson Lane and SR 1 intersection is congested. The map above depicts SR 1 and the two connecting side streets where delays occur. The longest delays occur for traffic traveling onto and off Simpson Lane (see Table 5).

Air Quality Characteristics & Air District Area

The project is located within North Coast Air Basin, which is currently classified as “in attainment” for CO₂ federal air quality standards and state standards. Carbon dioxide is a common indicator of the various greenhouse gases. Carbon dioxide and most of the greenhouse gases are not currently listed in the Clean Air Act as Priority Pollutants; therefore, there is no federal or state ambient air quality limit for these gases.

Design Speeds & Correlating Emissions

The highest levels of CO₂ from vehicles occur at stop-and-go speeds. The signal would result in stop-and-go speeds as opposed to the roundabout that would provide a constant traffic pattern. Consequently, the roundabout would result in lower CO₂ levels than the signal alternative.

Project Growth: Current and Future Characteristics

Community growth and characteristics can provide a perspective on how growth could potentially affect future traffic operations and greenhouse emissions. If we characterize and compare current and future population growth, we can anticipate increased traffic congestion, which would contribute to CO₂ emissions. Thus, a look at the community’s current and future growth and traffic data can assist Caltrans and the local stakeholders in making determinations about project impacts and potential contributions to greenhouse gas emissions.

The project area is located on the cusp of the US Bureau Census Tract that includes the City of Fort Bragg. The project site is within the southern boundary of the unincorporated section of the City of Fort Bragg, Mendocino County. A review of the 2000 Census data reports a total population of approximately 7,026 residents within the tract³. Based upon past census trends, Mendocino County is projected to reach a population of 103,109 (low) to 130,001 (high) by 2025. This population increase would inherently increase traffic on the highway along this section of SR 1. During peak hours, there are more than 200 southbound vehicles turning left onto Simpson Lane. The traffic data obtained from Caltrans Traffic Operations indicate that the average daily traffic will increase from 17,000 vehicles to 29,200 vehicles by 2030, which is an anticipated growth rate of 50% over 20 years (see traffic data in the Table 4 below). Given the growth rate and increased traffic volumes, CO₂ emissions would increase. However, the roundabout would accommodate these projected increased traffic volumes.

³ Reference: United States Bureau Census
MEN 1- Simpson Lane Intersection Project

Table 4 – Traffic Volume Data

Annual Average Daily Traffic		Vehicle/Day
Base Year	2006	17,000
	2010	19,000
	2020	24,100
	2030	29,200

Furthermore, a no build alternative would result in failure at the intersection. Caltrans Traffic Operations has calculated traffic conditions for the year 2020, using simulation software. The southbound left turn movement onto Simpson Lane will result in a line of cars extending approximately 1,159 feet (approximately 47 vehicles). Since the highway cannot manage this number of vehicles, the line of vehicles will essentially stop all southbound traffic. This traffic condition will result in extended idle time, thus increased CO2 greenhouse emissions.

Operational Delays

Operational efficiency of the intersection would be improved by either alternative; however, the roundabout alternative provides greater improvement. Level of Service (LOS) is defined by the Highway Capacity Manual 2000 as: “A qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.” There are six Levels of Service, and they are identified by letters ranging from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Each LOS represents a range of operating conditions and the driver’s perception of those conditions.

In general, LOS for an intersection can be determined by the average vehicle delay experienced at an intersection by the driver. The roundabout will provide the overall intersection with a LOS B in the year 2028. Level of Service has an average intersection delay experienced by the driver of 10 to 20 seconds; progression of vehicles is good. Signalization would provide the intersection with an LOS D in the year 2028. LOS D has an average intersection delay experienced by the driver of 35 to 55 seconds; progression of vehicles is unfavorable and intersection is showing signs of being congested.

Traffic slows to navigate a roundabout, but only rarely do vehicles stop and idle. In a signalized intersection, a percentage of the traffic is always idling at a standstill. Idling cars consume fuel and emit greenhouse gases. In general, the roundabout would have less delay and idling time, better fuel efficiency, and lower CO₂ emissions.

In Table 5, future traffic delays are projected for the year 2028 for each alternative: roundabout, signal, and no build. The “no build” refers to maintaining the existing SR 1 facility in its current condition. Delays are shown for each movement/turn in each direction. The results indicate that the roundabout would reduce the delays (wait time to turn) for all turn possibilities at the intersection. Compared to the signal alternative, the roundabout provides an approximate 50% improvement in delays and idle time, resulting in reduced CO₂ emissions.

For traffic waiting on Simpson Lane to turn south/left onto SR 1, the roundabout would reduce delay time from 600 seconds (10 minutes) to 11 seconds (~1/10 minute) as compared to the no build alternative.

Table 5 – Traffic Delays (Seconds) in 2028

	Southbound on SR 1 turning left (west) onto Simpson Ln	Southbound on SR1 through the intersection	Northbound on SR1 turning left (west) onto Old Coast Highway	Northbound on SR1 through the Intersection	Westbound on Simpson Ln turning right (north) onto SR	Westbound on Simpson Ln turning left (south) onto the SR 1
Roundabout	5	2	9	18	9	11
Signalization	29	8	15	20	16	41
No Build	120	13.9	8.5	3.3	360	600

In summary, the roundabout would have the following greenhouse gas emissions reducing benefits:

- **Reduce congestion:** High traffic volumes and inadequate access control on and off the SR 1 have contributed to congestion, delays, and undesirable operating conditions at the intersection. Reduced delay at the local connecting streets would improve local accessibility. Congestion relief would reduce frequent long lines of traffic.
- **Traffic Flow Control:** Consistent movement would reduce the CO₂ emissions due to the relatively non-varying traffic speeds and flow through the roundabout as compared to the current congested operations at the intersection. Consistent flow through the roundabout would reduce idling time, which in turn would reduce CO₂ emissions.
- **Reduced greenhouse gas emissions:** The roundabout alternative would result in fewer CO₂ emissions due to reduced stop-and-go movement as compared to the no build or the signal alternative. In addition, because the roundabout is designed to maintain a consistent driving speed, the roundabout would allow traffic movement traveling onto and off SR 1 and the side streets (Simpson Lane and Old Coast Highway), thereby reducing CO₂ greenhouse gases.
- **Growth Management:** Taking into account current growth variables projected by the US Bureau of Census, the roundabout would better facilitate the increased number of vehicles.
- **Caltrans Standard Specification Provisions:** According to Caltrans Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction; in addition, the contractor must comply with the North Coast Air Basin’s rules, ordinances, and regulations with regard to air quality restrictions.
- **County’s Regional Transportation Plan:** The roundabout is consistent with the Transportation Plan, which discusses improved traffic flow, and reduction of congestion and accidents for the region.

- **Compliance with AB 32:** The roundabout alternative supports the climate change strategies of AB 32. In addition, the roundabout increases pedestrian and bicycle accessibility, thereby encouraging the use of these alternative transportation modes that reduce greenhouse gases.
- The below excerpts further support the benefits of the roundabout design in reducing CO₂ emissions.

Because roundabouts improve the efficiency of traffic flow, they also reduce vehicle emissions and fuel consumption. In one study, replacing a signalized intersection with a roundabout reduced carbon monoxide emissions by 29 percent and nitrous oxide emissions by 21 percent.⁹ In another study, replacing traffic signals and stop signs with roundabouts reduced carbon monoxide emissions by 32 percent, nitrous oxide emissions by 34 percent, carbon dioxide emissions by 37 percent, and hydrocarbon emissions by 42 percent.¹⁰ Constructing roundabouts in place of traffic signals can reduce fuel consumption by about 30 percent.^{9,11} At 10 intersections studied in Virginia, this amounted to more than 200,000 gallons of fuel per year.⁸ And roundabouts can enhance aesthetics by providing landscaping opportunities.

⁹Várhelyi, A. 2002. The effects of small roundabouts on emissions and fuel consumption: a case study. *Transportation Research Part D: Transport and Environment* 7:65-71.

¹⁰Mandavilli, S.; Russell, E.R.; and Rys, M. 2004. Modern roundabouts in United States: an efficient intersection alternative for reducing vehicular emissions. Poster presentation at the 83rd Annual Meeting of the Transportation Research Board, Washington DC.

¹¹Niittymäki, J. and Höglund P.G. 1999. Estimating vehicle emissions and air pollution related to driving patterns and traffic calming. Presented at the Urban Transport Systems Conference, Lund, Sweden.

In summary, the roundabout alternative would result in less delay time for each turn option, thus less CO₂ emissions. The signal and the no build alternative would produce more CO₂ emissions due to increased delays, stop-and-go speeds, and projected increases in traffic volumes and congestion. Because of the congestion relief anticipated with the implementation of the project, the project is not expected to contribute to the climate change effect.

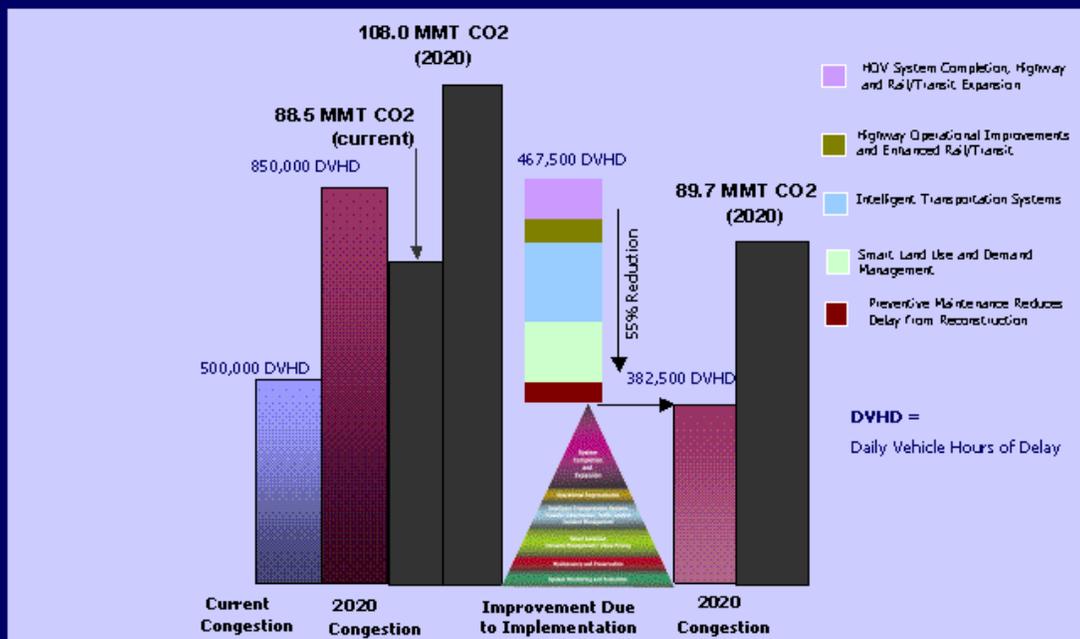
CEQA Conclusion

Based on the above information, Caltrans has concluded that, in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, a determination is too speculative regarding the project's direct cumulative impacts to climate change. However, Caltrans does anticipate a reduction in greenhouse CO₂ emissions for the roundabout alternative as compared to the signal or no build alternatives. Nonetheless, Caltrans is taking further steps to facilitate a reduction in energy consumption and greenhouse gas emissions. These steps are discussed in the AB 32 Compliance section below.

AB 32 Compliance

Caltrans is actively involved on the Governor's Climate Action Team as the California Air Resources Board works to implement AB 1493 and to help achieve the targets set forth in Assembly Bill 32. Many of the strategies Caltrans is using to help meet the targets in Assembly Bill 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a \$222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including \$107 in transportation funding during the next decade. As shown in the figure below, the Strategic Growth Plan targets a significant decrease in traffic congestion below current levels and a corresponding reduction in greenhouse gas emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

Outcome of Strategic Growth Plan



Conceptual Framework for Reducing Congestion that Needs to be Verified Through Experience

* Numbers reflect SHWY system

Outcome of Strategic Growth Plan

As part of the *Climate Action Program at Caltrans* (December 2006, <http://www.dot.ca.gov/docs/ClimateReport.pdf>), Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislation efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the United States Environmental Protection Agency and the California Air Resource Board. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

Strategy	Program	Partnership		Method/Process	Estimated CO2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.007	2.17
Mainstream Energy & Greenhouse Gas into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	3.6
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67