

3.0 California Environmental Quality Act (CEQA) Evaluation

3.1 DETERMINING SIGNIFICANCE UNDER CEQA

The proposed project is a joint project between the Solano Transportation Authority (STA), Solano County, and the City of Vallejo, in cooperation with the California Department of Transportation (Department) and the Federal Highway Administration (FHWA), and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 USC 327. The Department is the lead agency under NEPA. Solano Transportation Authority (STA) is the lead agency under CEQA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (Build Alternative) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each "significant effect on the environment" resulting from the Build Alternative and ways to mitigate each significant effect. If the Build Alternative may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of the proposed Build Alternative being evaluated in this EIR/EA and CEQA significance that apply to this process.

3.2 DISCUSSION OF SIGNIFICANCE OF IMPACTS

The CEQA Environmental Significance Checklist (**Appendix A**) identifies the physical, environmental effects that might be affected by implementation of the proposed Build Alternative. The findings for the CEQA checklist were determined in consultation with the technical studies prepared for this project, as listed in **Chapter 7.0, References**. The CEQA impact levels include: potentially significant impact, less-than-significant impact with mitigation, less-than-significant-impact, and no impact. In many cases, background studies performed in connection with the Build Alternative indicate no significant impact.

3.2.1 ISSUES WITH NO IMPACT

As part of the scoping and environmental analysis conducted for the Build Alternative, the following environmental issues were considered but no adverse impacts were identified: growth, coastal zone, wild and scenic rivers, farmlands/timberlands, utilities, emergency services, and energy. Refer to **Table 2-1**, for a more detailed description of these resource areas determined to be unaffected by the Build Alternative.

Less-than-Significant Effects of the Build Alternative

The CEQA Checklist identified the following items as “Less than Significant”. These items include resource areas where the Build Alternative would have a less-than-significant effect with the implementation of the avoidance and minimization measures identified in the relevant sections of **Chapter 2.0, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures**.

Land Use

The Build Alternative is within an existing urban context that is highly developed, and would not alter the use of land in the area. The Build Alternative does not conflict with any applicable habitat conservation plan or natural community conservation plan. See **Subsection 2.1.1, Land Use**, for further analysis.

Community Impacts

The Build Alternative consists of improvements to an existing roadway, and would not divide an established community. Existing housing and businesses would be displaced as a result of the project; however, the Department’s Relocation Assistance Program would be utilized to help displaced individuals. See **Subsection 2.1.2, Community Impacts**, for a more detailed analysis.

Traffic

The Build Alternative intends to relieve existing congestion and improve traffic flow on the local roadway network for approved redevelopment and planned growth in the area. This would be accomplished by improving the existing interchanges and intersection operations; and improving the safety of the local roadway network by reducing congestion. Replacement of the existing non-standard design features in some areas would also

improve emergency access. The Build Alternative would not conflict with any applicable transportation plans, policies, or programs. See **Subsection 2.1.3, Traffic and Transportation/Pedestrian and Bicycle Facilities**, for a more detailed analysis.

Visual

The Build Alternative would not have a substantial adverse effect on a scenic vista, damage scenic resources, degrade existing visual character of the area, or create a new source of substantial light or glare. The area of the Build Alternative is already heavily developed, and no scenic resources are known in the area. See **Subsection 2.1.4, Visual/Aesthetics**, for a more detailed analysis.

Cultural Resources

There are no archaeological or historical resources within the Build Alternative's area of potential effect (APE). The Build Alternative would not result in a significant impact to cultural resources or cause a substantial adverse change in the significance of a historical or archaeological resource. See **Subsection 2.1.5, Cultural Resources**, for a more detailed analysis.

The Build Alternative could potentially have an effect on human remains if uncovered during construction prior to implementation of mitigation. Please see **Mitigation Measure PAL-1** below.

Hydrology and Floodplain

The Build Alternative would not result in a significant impact to hydrology or floodplains, as only a small portion is within the base floodplain. The proposed improvements would not place any housing within a 100-year floodplain. Proposed structures would not impede or redirect flood flows. Additionally, the proposed improvements would not expose people or structures to a significant risk, and there is no potential for inundation. See **Subsection 2.2.1, Hydrology and Floodplain**, for a more detailed analysis.

Water Quality and Storm Water Runoff

The Build Alternative would not result in significant impacts to water quality or storm water runoff. Construction activities and roadway operations would be regulated, and include protective measures. The project would not violate any water quality standards, deplete groundwater supplies, alter drainage patterns, or create capacity exceeding runoff. See **Subsection 2.2.2, Water Quality**, for a more detailed analysis.

Geology

The Build Alternative would not result in a significant impact to the geology of the site. All structures constructed as part of the Build Alternative would comply with the Department's seismic design standards. People and structures would not be exposed to substantial adverse effects involving fault rupture or other seismic-related issues. The proposed improvements would not result in the substantial soil erosion or the loss of topsoil and is not located on unstable soil, an unstable geologic unit, or expansive soil. See **Subsection 2.2.3, Geology/Soils/Seismic/Topography**, for a more detailed analysis.

Hazards

The Build Alternative would not create any significant hazards to the public or environment. Measures would be taken to avoid exposure to hazardous materials and aerially deposited lead. No hazardous materials would be emitted as a result of the project, and no people or structures would be exposed to a significant risk of loss. Additionally, the proposed improvements would not impair implementation or interfere with any emergency plans. See **Subsection 2.2.5, Hazardous Waste/Materials**, for a more detailed analysis.

Air Quality

The Build Alternative would not cause a significant change to air quality in the project area, conflict with the implementation of an applicable air quality plan, violate any air quality standards, or contribute to any air quality violation. In addition, the Build Alternative would not result in a net increase of any criteria pollutants, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors. See **Subsection 2.2.6, Air Quality**, for a more detailed analysis.

CEQA conclusions for potential impacts related to Greenhouse Gas Emissions are discussed in detail further below (see “Climate Change, CEQA Conclusions”).

Noise

Implementation of the Build Alternative would result in an increase in noise levels between 0 and 6 dBA. The CEQA Checklist defines a significant noise impact as an increase in noise levels “in excess of the standards established in the local general plan or noise ordinance...” In accordance with Policy 2c of the City of Vallejo General Plan Noise Element, the Build Alternative would be required to limit project-related noise increases to no more than 5dBA in residential areas where the with-project noise level is less than the maximum “normally acceptable” level of 75dBA (see Table 2 of the Noise Element, Residential Land Use Category). For those areas that would be above the “normally acceptable” level of 75dBA, project related noise increases must be limited to no more than 3dBA.

Subsection 2.2.7, Noise, provides a detailed analysis of the projected noise increases for both year 2015 and cumulative 2035 conditions (with and without the Build Alternative). Under both the year 2015 and cumulative 2035 conditions, the Build Alternative would not result in a noise increase in areas that would experience noise levels above the “normally acceptable” threshold of 75dBA (see **Table 2.2.7-6**, receivers R3 and R4). For those areas below the “normally acceptable” threshold, the residences in the vicinity of Moorland Street would be the only noise-sensitive areas that would experience a noise increase of 5dBA or more (see **Table 2.2.7-6**, receivers ST-9, R5, and R6). This increase in noise levels would be considered a significant under Policy 2c of the City of Vallejo General Plan, and is considered a significant impact under CEQA.

However, noise abatement options were evaluated for the residences in the vicinity of Moorland Street as “noise barrier 3” (see **Figure 2-31**). Noise barrier 3 is proposed along the property line of Moorland Street residential properties that would remain with the Build Alternative, along the northbound Moorland Street right-of-way, and along a segment of westbound Redwood Parkway at the right-of-way. The noise barrier is

proposed to replace the existing acoustical shielding that would be lost with the removal of homes on the east side of Moorland Street. Construction of noise barrier 3 (proposed as a 10-foot-high wall) would feasibly reduce noise levels in this area by 6 and 11 dBA. Because the cost of the barrier is less than the reasonable allowance (see **Table 2.2.7-8**), this barrier is likely to be incorporated into the Build Alternative. Construction of the barrier as part of the Build Alternative would reduce potential project-level and cumulative noise impacts under CEQA to a less-than-significant level.

Construction noise would be minimized through noise abatement measures. People would not be exposed to noise levels or groundborne vibration exceeding local standards. There would be no significant permanent increase in noise levels, and temporary noise level increase would be reduced through restricted construction times, equipment mufflers, and staging of construction away from sensitive receptors.

In addition, the project is not within an airport land use plan or within the vicinity of a private airstrip.

Biology

The Build Alternative would adversely affect Waters of the U.S., California Department of Fish and Game (CDFG) streambeds, and riparian habitat. However, as part of the Build Alternative, much of the impacted jurisdictional water features to the east of Fairgrounds Drive (totaling approximately 0.623 acres) would be restored on-site at a 1:1 replacement ratio. Impacts to the jurisdictional water features and freshwater marsh communities associated with Rindler Creek would thereby be offset through the complete on-site replacement of the affected creek segment. The procurement of on-site restoration for impacts to these areas would be permitted and verified by the appropriate regulatory oversight agencies prior to project construction. The on-site restoration of Rindler Creek is anticipated to provide satisfactory mitigation for impacts to riparian habitat, including the removal of 151 trees. Restoration on-site will also ensure that functions, such as water flow through the BSA, will continue unchanged.

Additional effects to wetlands and Waters of the U.S. that would not be restored on site as part of the Build Alternative is considered a significant impact (see **Impact BIO-1** below).

The Build Alternative would not have an adverse effect on any special status plan or animal species, or interfere with the movement of any native resident or migratory fish or wildlife species. The Build Alternative would not conflict with the provisions of a habitat conservation plan, nor would it conflict with the provisions of the City of Vallejo's tree preservation ordinance. See **Section 2.3, Biological Environment**, for a more detailed analysis.

Significant Environmental Effects of the Build Alternative

Paleontology

Impact PAL-1: Implementation of the Build Alternative could have an adverse effect on previously undiscovered paleontological resources.

Implementation of **Mitigation Measure PAL-1** described below under subheading Mitigation Measures would reduce this impact to a less-than-significant level.

Biology

Impact BIO-1: Implementation of the Build Alternative could have an adverse effect on federally protected wetlands and other Waters of the U.S.

Implementation of **Mitigation Measure BIO-1** described below under subheading Mitigation Measures would reduce this impact to a less-than-significant level.

Unavoidable Significant Environmental Effects

The Build Alternative would not have any environmental impacts that would remain significant after mitigation measures are incorporated.

Growth-Inducing Impacts

The Build Alternative could potentially induce economic growth by introducing additional short-term employment opportunities from construction within the project area. Construction workers could be drawn from the construction employment labor force already residing in the City of Vallejo and the surrounding communities. It is not likely that construction workers would relocate their place of residency as a consequence of working on the proposed Build Alternative, which would have a relatively short construction period. Employment opportunities provided by construction would not constitute a substantial growth in employment. The Build Alternative is a transportation improvement project and would not result in the direct or indirect hire of permanent employees in the City.

Growth in an area may result from the removal of a physical impediments or restriction to development. In this context, growth impediments may include nonexistent or inadequate access to an area or lack of essential public services (i.e., electricity, sanitary sewers, water service, natural gas, and police and fire protection). The Build Alternative is located within an urbanized and developed area of the City of Vallejo. While the project would widen existing roadways and improve circulation and access to local roadways, the overall volume of traffic would not increase over the forecasted/growth prediction for the City and County, as identified in adopted land use planning documents (i.e., general plan, Solano 360 Vision, etc.). Additionally, the project would not create any new connections to other roadways or areas. There are no pending or recently-approved projects whose construction is conditioned upon the implementation of the Build Alternative.

The project would not result in any direct growth-inducing impacts, because no development is tied to the construction of the widening, ramp improvements, and intersection improvements. The Build Alternative would not expand an essential public service and would not require public services once operational. The Build Alternative is not considered growth inducing with respect to removal of an impediment to growth and economic growth.

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization's in 1988, has led to increased efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs 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).

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas (GHG) Mitigation" is a term for reducing GHG emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation," refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)¹.

Transportation sources (passenger cars, light duty trucks, other trucks, buses and motorcycles) in the state of California make up the largest source (second to electricity generation) of greenhouse gas emitting sources. Conversely, the main source of GHG emissions in the United States is electricity generation followed by transportation. The dominant GHG emitted is CO₂, mostly from fossil fuel combustion.

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improve system and operation efficiencies, 2) reduce growth of vehicle miles traveled (VMT), 3) transition to lower GHG fuels, and 4) improve vehicle technologies. To be most effective all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce GHG emissions from transportation sources.

¹ http://climatechange.transportation.org/ghg_mitigation/

Regulatory Setting

State

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level.

Assembly Bill 1493 (AB 1493), Pavley. Vehicular Emissions: Greenhouse Gases (AB 1493), 2002: requires the California Air Resources Board (ARB) 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. In June 2009, the United States Environmental Protection Agency (U.S. EPA) Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own GHG emission standards for motor vehicles beginning with model year 2009. California agencies will be working with Federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger cars model years 2017-2025.

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 GHG 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.

AB32 (AB 32), the Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that ARB 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.

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 ten percent by 2020.

Senate Bill 97 (Chapter 185, 2007): required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions. The Amendments became effective on March 18, 2010.

Federal

Although climate change and GHG reduction is a concern at the federal level; currently there are , no regulations or legislation that have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and Executive Order 13514- *Federal Leadership in Environmental, Energy and Economic Performance*.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the U.S. EPA has the authority to regulate GHG. The Court held that the U.S. EPA Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆)--in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's *Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles*, which was published on September 15, 2009.² On May 7, 2010 the final *Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards* was published in the Federal Register.

U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a memorandum on May 21, 2010.³

The final combined U.S. EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon (MPG) if the automobile industry were to meet

² <http://www.epa.gov/climatechange/endangerment.html>

³ <http://epa.gov/otaq/climate/regulations.htm>

this carbon dioxide level solely through fuel economy improvements. Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On January 24, 2011, the U.S. EPA along with the U.S. Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model years 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011), signals continued collaboration that could lead to an extension of the current National Clean Car Program.

Project Analysis

An individual project does not generate enough GHG 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 GHG.⁴ In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines sections 15064(h)(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.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG. As part of its supporting documentation for the Draft Scoping Plan, CARB released the GHG inventory for California (Forecast last updated: 28 October 2010). The forecast is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. See **Figure 3-1**. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006)).⁵

⁴ This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the SCAQMD (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

⁵ Caltrans Climate Action Program is located at the following web address:
http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. As shown in **Figure 3-2**, the highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour, mph) and speeds over 55 mph; the most severe emissions occur from 0-25 mph. To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO₂, may be reduced.

The modifications along portions of Redwood Parkway, Fairgrounds Drive, and intersections to I-80 and SR 37 will help relieve congestion in the traffic peak hour period during the day. With construction of the project, the vehicle miles traveled (VMT) will remain the same as the No-Build Alternative. During the peak hours, the speeds between 10-30 mph would generally very slightly increase and the speed during the off peak hours would remain the same. The combination of this would have an overall neutral effect on the GHG emissions generated in the project area when compared with the No-Build Alternative. **Table 3-1** below shows GHG emissions as expressed in tons per day of CO₂. The net difference between the Build Alternative and No-Build Alternative is so small that they are not reflected in the calculations when show in terms or tons per day.

Table 3-1 No-Build Alternative Versus Build Alternative CO₂ Emissions

	CO ₂ Emissions by Year (in tons/day)		
	2010	2015	2035
Existing	29	--	--
No-Build Alternative	--	35	40
Build Alternative	--	35	40

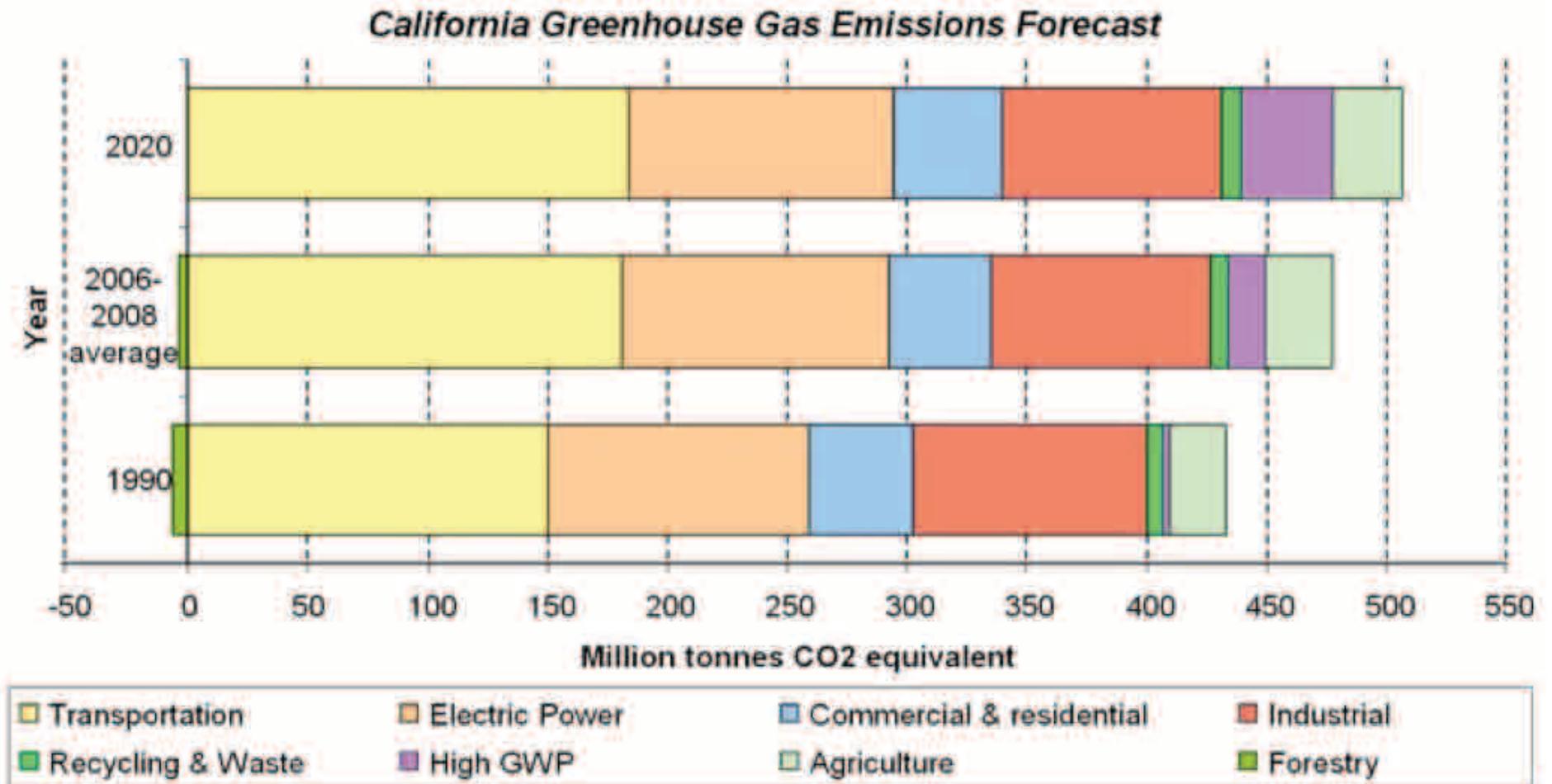
Department, 2012a.

Due to the small changes in the traffic, the daily CO₂ emissions are not expected to change as a result of the project. The CO₂ emission numbers are only useful for a comparison between alternatives; the numbers are not necessarily an accurate reflection of what the true CO₂ emissions will be because CO₂ emissions are dependent on other factors that are not part of the model, such as fuel mix⁶, rate of acceleration, and the aerodynamics and efficiency of the vehicles.

Construction Emissions

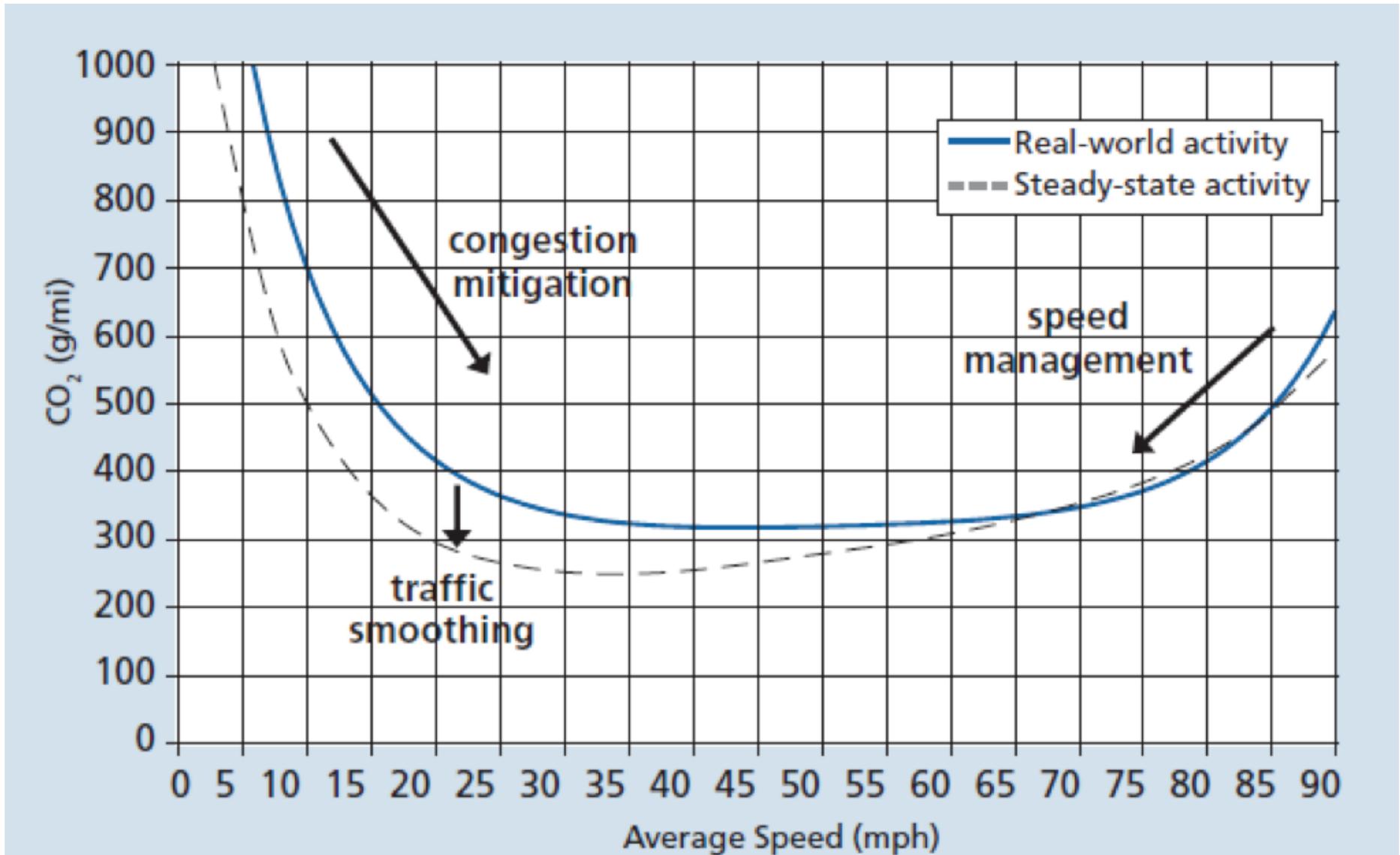
Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during

⁶ The EMFAC model emission rates can vary dramatically depending on the amount of additives like ethanol and the source of the fuel components.



California Greenhouse Gas Forecast

Source: California Air Resources Board, 2010.



Possible Effects of Traffic Operation Strategies
in reducing On-road CO₂ Emissions

Figure

construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Currently, neither the Department nor the Bay Area Air Quality Management District (BAAQMD) have adopted significance thresholds that apply to construction projects.

CEQA Conclusion

Greenhouse Gas Reduction Strategies

AB 32 Compliance

The Department continues to be actively involved on the Governor's Climate Action Team as CARB works to implement the Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies the Department is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former 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 \$100.7 billion in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG 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 are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO₂ reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as depicted in **Figure 3-3**.

The Department 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. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department 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; the Department is doing this by supporting on-going research efforts at universities, by supporting legislative 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 U.S. EPA and ARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the UC Davis.

Table 3-2 summarizes the Department and statewide efforts that the Department is implementing in order to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at the Department (December 2006).

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures discussed on the pages following will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project.



Mobility Pyramid

Figure

Adaptation Strategies

"Adaptation strategies" refer to how the Department and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the Federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency report October 14, 2010 outlining recommendations to President Obama for how Federal Agency policies and programs can better prepare the United States to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the Federal Government implement actions to expand and strengthen the Nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaption must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed Executive Order S-13-08 which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This Executive Order set in motion several agencies and actions to address the concern of sea level rise.

The California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state and federal public and private entities to develop. The California Climate Adaptation Strategy (Dec 2009)⁷, which summarizes the best known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency.

⁷ <http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF>

Table 3-2 Climate Change/CO₂ Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO ₂ Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	The Department	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	The Department	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	The Department	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	The Department	Regions	State ITS; Congestion Management Plan	0.007	2.17
Mainstream Energy & GHG 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 0.0225
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 0.36	4.2 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

The strategy outline is in direct response to Executive Order S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including Environmental Protection; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

Resources Agency was also directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010⁸ to advise how California should plan for future sea level rise. The report is to include:

- relative sea level rise projections for California, Oregon and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates;
- the range of uncertainty in selected sea level rise projections;
- a synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems; and
- a discussion of future research needs regarding sea level rise.

Prior to the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data.

Until the final report from the National Academy of Sciences is released, interim guidance has been released by The Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise.

All projects that have filed a Notice of Preparation (NOP), and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects as of the date of Executive Order S 13 08 may, but are not required to, consider these planning guidelines. The NOP for the project was filed in January 2011.

Furthermore Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance and operational improvements of the system and economy

⁸ The Sea Level Rise Assessment report is currently due to be completed in 2012 and will include information for Oregon and Washington State as well as California.

of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, the Department is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted in response to Executive Order S-13-08 and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment which is due to be released in 2012.

Given that the project is not located in an area vulnerable to future sea level rise and that the NOP for the project was filed in January 2011, it is not necessary for the proposed project to consider a range of sea level rise scenarios.

Mitigation Measures for Significant Impacts Under CEQA

Mitigation Measure PAL-1: Monitoring and Mitigation Program

A qualified paleontologist shall design a monitoring and mitigation program and implement the program during project-related excavation and earth disturbance activities prior to construction. The paleontological resource monitoring and mitigation program shall include preconstruction coordination, construction monitoring, emergency discovery procedures, and sampling and data recovery. Prior to the start of construction, the paleontologist shall conduct a field survey of exposures of sensitive stratigraphic units within the study area that would be disturbed. Finally, construction personnel would be informed that fossils could be discovered during excavation, that these fossils are protected by laws, on the appearance of common fossils, and on proper notification procedures.

Both the Great Valley Sequence and Holocene Alluvium have low sensitivity for paleontological resources. However, Holocene Alluvium typically occurs as thin layer overlying Pleistocene Alluvium, which has a high potential for paleontological resources. Excavation in areas covered by Holocene Alluvium would likely encounter sediments of the Pleistocene Alluvium in the shallow subsurface. As such, construction activities within Pleistocene Alluvium areas covered by the Holocene

- where Rindler Creek is being shifted 1,333 feet to the east
- where augering and excavations for lighting, roadside sign poles, closed circuit television poles, and signal foundations occur,
- where excavations for retaining walls and sound walls occur,
- where Fairgrounds Drive will be widened

Mitigation Measure BIO-1: Compensatory Mitigation for Jurisdictional Water Features

Any impacts jurisdictional water features that cannot be procured on-site as part of the relocation of Rindler Creek shall be subject to formalized mitigation requirements of the regulatory agencies. A conceptual restoration and mitigation plan shall be prepared prior to permit applications to regulatory agencies. The on-site restoration of Waters of the U.S. combined with the implementation of other components of the conceptual restoration and mitigation plan will ensure no net loss of functions and values of Waters of the U.S.

The off-site mitigation ratio proposed for Waters of the U.S., including wetlands, under jurisdiction of the USACE, is 3:1 acres of mitigation per acre of permanent impact. Temporary impacts are proposed for mitigation at 1:1 acres of mitigation to impact.

Compensatory mitigation requirements among agencies are not cumulative. Mitigation acreage can be used to satisfy the requirements of multiple agencies, just as a single acre of impact to an existing resource may result in multiple requirements by agencies with varying jurisdictions. In summary, a single acre of wetland mitigation may satisfy both State and Federal agency mitigation requirements, if the characteristics of the wetland meet the definitions of each agency.

An estimate of the mitigation requirement is presented in **Table 3-3**.

Table 3-3 Proposed Wetland Mitigation for Estimated Impacts to USACE Jurisdictional Areas

Impacts	Impact		Mitigation (acres)	
	Permanent Impact	Temporary Impact	3:1 ratio (Off Site)	1:1 ratio (On Site)
Rindler Creek Realignment	0	0.621	-	0.621
All Other Build Alternative Improvements	0.039	0	0.117	-
<i>TOTAL</i>	<i>0.039</i>	<i>0.621</i>	<i>0.117</i>	<i>0.621</i>

Source: Department, 2011g.