Appendix A

Final Scoping Report

Final Scoping Report

ExxonMobil Interim Trucking for SYU Phased Restart Project

Case No: 17RVP-00000-0081
AP No: APN 081-220-014
SCH Number: 2018061035

CEQA Lead Agency:
Santa Barbara County
Planning & Development
123 East Anapamu Street
Santa Barbara, CA 93101
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Phone: (805) 568-3560

October 2018

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Introduction

This scoping report documents the public scoping effort conducted by Santa Barbara County Planning and Development (County) for the ExxonMobil Interim Trucking for the SYU Phased Restart Project (Project). ExxonMobil Production Company, the Project applicant, has filed an application with the County to modify their existing Santa Ynez Unit (SYU) Development Plan Permit (87-DP-32cz). In compliance with California Environmental Quality Act (CEQA), the County held a 30-day public scoping period to allow the members of the public, regulatory agencies, and interested parties an opportunity to comment on the scope of the Supplemental Environmental Impact Report (SEIR) and to identify issues that should be addressed in the environmental document. This report documents the notification that occurred, the Scoping Workshop that was held, and the written comments received during the scoping period.

Project Scoping

This section describes the methods used to notify the public and agencies about the scoping process conducted for the Project. It outlines how information was made available for public and agency review and identifies the different avenues available for providing comments on the Project. The 30-day scoping period began on June 15, 2018 and ended on July 16, 2018.

Notice of Preparation

On June 15, 2018, the County issued a Notice of Preparation (NOP) consistent with CEQA Guidelines Section 15082, which summarized the proposed Project, stated its intention to prepare an SEIR, and requested comments from interested parties (the NOP is provided in Attachment A). NOPs were mailed to responsible and trustee agencies, the State Clearinghouse, and individuals on the County's Energy Division interested parties list. Fifteen copies were submitted to the State Clearinghouse.

Scoping Workshop

On July 11, 2018, the County held a Scoping Meeting at the Planning Commission Hearing Room, Engineering Building, 123 E. Anapamu Street, Santa Barbara, CA. John Zorovich, Errin Briggs and Kathryn Lehr were at the meeting representing the County. Kathryn Lehr provided a presentation that discussed the intent of the Scoping Workshop, the SEIR timeline, the approval process, and a brief overview of the proposed Project.

Attendees were then able to provide verbal comments. Attachment B includes the sign-in sheet documenting the stakeholders who signed in as attending the workshop, and the speaker sheets that document the stakeholders who spoke at the meeting. A total of 63 stakeholders signed the sign-in sheets, and 34 stakeholder provided verbal comments at the meeting.

Internet Website

The County has established a Project-specific website to provide ongoing information about the Project. The website includes an electronic version of the NOP, which provides a description of the proposed Project. The website also includes information about the scoping meeting, documents that have been submitted to the County by the applicant, and County staff's contact information. The website will continue to provide Project information to the public throughout the application process. The website address is:

http://sbcountyplanning.org/energy/projects/exxon.asp.

Email Address

Kathryn Lehr is the County Planner who is managing the SEIR for the proposed Project. The Project website provides a direct link to Ms. Lehr's email address, as well as the energy@countyofsb.org email address which is provided as another means of submitting comments on the scope and content of the SEIR. Comments received by email will be considered in the SEIR and have been incorporated into this Scoping Report.

Distribution List

The County has compiled a Project-specific mailing list for the Project. This list includes responsible and trustee agencies, the County Supervisors, the State Clearinghouse, and all residents within 1,000 feet of the project boundaries, and individuals on the County's Energy Division interested parties list.

To the extent feasible, the mailing list will be updated based on the comment letters received during the scoping comment period. This mailing or distribution list will continue to be used throughout the environmental review process for the project to distribute public notices and will continue to be updated to ensure all interested parties are notified of key project milestones.

Scoping Comments

This section the report provides a summary of the comments received on the NOP for the Project. Comments on the Project were received verbally at the scoping meeting and well as in writing.

Scoping Meeting Comments

Table 1 provides a summary of the verbal comments that were received at the scoping meeting on July 11, 2018. Comment summaries are provided for each stakeholder that spoke at the scoping meeting.

Table 1 Comments Received at the Scoping Meeting

Commenter	Summary of Comments
Linda Krop *Environmental Defense Center*	• SEIR baseline should be no production as is current situation. • SEIR should include the substantial risk of noted dangerous areas on proposed route such as Windy Gap in Gaviota and Highway 166. • SEIR should include recent tanker truck incident in Santa Barbara that shut down 101 during the Thomas Fire. • Transportation of oil by truck results in no containment for oil spills along entire trucking route. • Transportation of oil by truck is inconsistent with County Oil Transportation Policies. • SEIR should address consistency with policies coving GHGs and risk. • SEIR needs to look at the restart of the full SYU project. • The SEIR should include complete GHG life cycle impacts of the Project. • The deadline for scoping comments should be extended to July 20 to allow for full 30 days comment period from date of receipt of notice.
Mia Lopez *Coastal Band of Chumash Nation*	• SEIR should include analysis of spill risk from Project adjacent to route for 7 miles on land and 100 miles on the ocean. • Chumash sacred areas do not need to be formally identified to exist and are located along entire truck transportation route.
Jonathan Ullman *Sierra Club Los Padres Chapter*	• Climate change is leading to warmer temperatures in SBC. • County needs to deal with sea level rise. • SEIR should include robust analysis of climate change. • SEIR should include climate change impacts to residents, roads etc. • SEIR should include impacts to County roads from trucking. • SEIR should include impacts to traffic to County roads that may be used for evacuation routes during natural disasters. • The SEIR should include an analysis of the line 901 incident. • SEIR should include impacts from the resumption of production from platforms. • SEIR should address quality of life issues for SBC and Central Coast residents.
Alena Simon *Food and Water Watch*	• SEIR should note the Project GHG emissions are 10 times the County threshold. • SEIR needs to provide details on offsets for GHG emissions (sources, location, etc.) • Emission offsets should be obtained within the County. • SEIR should include social cost of carbon. • Noted risk to community from fire at LFC and wanted to know how they would be dealt with.
Michael Lyons *Get Oil Out (GOO)*	• SEIR should include the toxic impacts to residents from oil spills. • Increase of trucking of oil increases the risk of an oil spill. • Project will result in over one billion gallons oil transported by truck over a ten-year period. • There have been numerous truck oil spills on roadway over the past 50 years.
Bob Poole *WSPA*	• The No Project Alternative analysis should be robust and note a No Project decision will result in an increase in foreign oil imports with associated negative environmental impacts. • State consumes about 2 million barrels of oil per day with 70% being imported via ocean tanker. • Increase in oil imports means increase impact to environment including air quality, GHG, and oil spill impacts. • Trucking oil from SYU has lower GHG emissions than other sources of oil. • Oil production in the United States in regulated and mitigated whereas overseas oil production is not.

Table 1 Comments Received at the Scoping Meeting

Commenter	Summary of Comments
Jing Wan *ExxonMobil*	• Noted ExxonMobil safety record at LFC with no incidents in history of LFC. • SEIR should acknowledge Project will employ 200 employees and 100 sub-contractors. • SEIR should include positive economic impact to community through taxes and charitable donations. • SEIR should focus on the Project only and not the oil industry in general or the existing SYU facilities that already have a valid permit from the County. • Noted the previous temporary trucking project completed by ExxonMobil resulted in zero incidents or issues. • SEIR should note that the Project will utilize a total of 12 trucks with 6 on the road and 6 loading/unloading at any given time. • Noted that the trucking route was developed in consultation with the County. • Noted that the proposed route for the Project is shorter than the routes currently in use for transporting oil to the Santa Maria Pump Station, which would reduce impacts from current oil trucking to the Santa Maria Pump Station.
Katie Davis *Sierra Club SB*	• Climate change already effecting County with heat wave leading to fire. • State and local governments appose offshore oil. • SEIR should include robust analysis of climate change.
Tom Becker *Cars are Basic*	• County should facilitate repair and rebuild of Line 901 pipeline. • County should facilitate resumption and increase of oil drilling and production. • County should facilitate reopening of OCS leasing. • County should facilitate repair of LFC. • LFC needs to restart as soon as possible.
Blake Kopcho *Center for Biological Diversity*	• SEIR should acknowledge the proposed Project trucking route is dangerous. • SEIR baseline should be no production as is current situation. • SEIR should include impacts of resumption of production and impacts to marine life. • Project should be rejected.
Delia Ridge Creamer *Center for Biological Diversity*	• Trucking is dangerous and unacceptable and trucks spill oil all the time. • SEIR should include risk from oil spills and truck transportation of oil. • SEIR should include age of the oil platforms and impacts from restarting these aging facilities. • SEIR should consider all the impacts associated with the offshore platforms.
Kristen Miller *Goleta Chamber of Commerce*	• SEIR should acknowledge the positive impacts to the local economy from the Project and re-start of LFC. • The idle facilities create negative economic impacts to County. • SEIR should address economic impacts to County.
Richard Atmore *Coastal Energy Alliance*	• SEIR should acknowledge the positive impacts to the local economy from the Project and re-start of LFC. • Shutdown has lead to loss of jobs. • SEIR should include impacts for LFC employees to travel elsewhere for jobs and employment without approval of the Project. • Oil jobs are important and head of household type positions. • The trucking would be only a small part of the existing permit. • ExxonMobil is a big investor in renewable energy sources. • Producing local oil has lower environmental impacts. • Project in SBC have strict environmental regulations.

Table 1 Comments Received at the Scoping Meeting

Commenter	Summary of Comments
Joe Armendariz *SB Taxpayers Association*	• Supports renewable energy but must have balanced energy policy. • SEIR should be narrowly focused on just the trucking operations as a temporary operation. • Baseline should be pre-shutdown conditions. • SEIR should have robust discussion of Class IV, beneficial, impacts. • Noted significant economic benefits of the Project. • SEIR should include that the tax benefits are very significant for Fire, Police, and public schools.
Janet Blevins *SBC Action Network*	• County is already seeing the impacts of climate change with drought and other biological effects. • County needs more sustainable energy sources. • SEIR should include analysis of alternative energy sources. • Plugging and abandonment of wells may not adequately close wells. • SEIR should include the high danger of the Betteravia intersection in Santa Maria.
Ken Oplinger SB Chamber of Commerce	• Project provides for a healthy economy. • SEIR should focus on trucking and the Project only.
Bill Hickman *Surf Rider Foundation*	• SEIR should include analysis of solar and renewable energy sources. • The No Project Alternative should be robust and is the best option.
Cecilia Anne Spencer	• Registered nurse. • No comments on SEIR content or mitigation measures. • Apposed to trucking project
Henry Mooney	• SEIR should include analysis of renewable energy sources. • Project should include a sunset date for trucking independent of availability of pipeline. • Project will exceed existing SBCAPCD PTO emissions limits. • Emission credits are problematic in feasibility and implementation. • SEIR should include the potential for the platforms to be used as wind farms.
Kristen Mansell	• Project is dangerous due to risk from trucking and age of platforms. • SEIR should note trucking oil is highest risk of all oil transportation methods. • SEIR baseline should be no production as is current situation. • SSEIR needs to address impacts of platform restart. • All GHG emissions should be mitigated including drilling, processing, and downstream emissions associated with refining and consumption of end use fuels. • Acid well stimulation is dangerous.
Lucas Myer	• SEIR should include robust analysis of climate change.
Amanda Pantoja	• SEIR should include robust analysis of climate change. • SEIR should address oil spill risk and the associated impacts. • SBC and ExxonMobil have history of numerous oil spills.
Brian Rasnow	• Professor at Cal State Channel Islands. • SEIR should include the cost to the public from trucking accidents (i.e., indirect costs). These are typically underestimated. • SEIR should look at cost of emergency response. • SEIR should include GHG/fossil fuel combustion impacts. • SEIR baseline should include the Plains Pipeline spill.
Martha Sadler	• SEIR should include offsetting GHG impacts with wind turbine energy.
Lad Handelman	• Founder of Stop Oil Seeps. • Noted that trucks are used daily on County roads to deliver gasoline to gas stations used by the public and is much grater number of trucks that what is proposed for the Project. • SEIR should include economic benefits of the Project. • We all need to benefit of oil but do not want oil developed.
Maria Ornelas	• The SYU Project has proven to be a disaster.

Table 1 Comments Received at the Scoping Meeting

Commenter	Summary of Comments
	• SYU affects the health of the local people and the Santa Barbara channel. • A lot of the local tourism is to see the whales. • SEIR should include impacts to whales. • SEIR should include impacts to tourism.
Stan Roberts	• The deadline for scoping comments should be extended to July 20 to allow for full 30 days comment period from date of receipt of notice. • SEIR baseline should be no production as is current situation. • SEIR should include trucking impacts. • Oil transportation should be by pipeline. • SEIR should include the potential for the platforms to be used as desal plants or wind energy.
Alex Mooney	• SEIR should include robust analysis of climate change. • Noted County should transition to wind energy and that BOEM has determined offshore Santa Barbara as a prime location for wind energy. • Should cover the offshore oil platforms to wind farms.
Susan Chapin	• Works for Citizens for Responsible Oil and Gas. • Air emissions to not recognize County lines. • SEIR should include analysis of oil spills, cumulative impacts, and climate change and impacts of these on public health. • Need to address the cumulative effects of all the trucks on the roads.
Michal Lynch	• Was part of the women's march organization. • Existing SEIR is dated and science has changed since it was written. • SEIR should address the changes in science since the time of the old EIR. • Noted that oil has impacts on human rights.
Willie Galvan	• Noted importing oil from overseas puts United States Armed Forces at risk. • Need all the locally produced oil we can get to protect US troops.
Jack Liu	• Oil production involves toxic chemicals, impacts to air quality, and oil spill risks. • Project would produce NO_x and SO_2 emissions from burning crude • Spills will happen that cause land degradation. • Trucking of oil is inefficient and includes risk from truck accidents. • Renewable energy in Santa Barbara can provide 100,00 to 600,000 jobs. • Cars using oil and less efficient than electric cars. • Wind is cheapest method of generating electric power.
Sarah Freedman	• Local economy is driven by tourism. • Supports ban on new infrastructure for offshore oil. • Must value the local tourism jobs. • SEIR should acknowledge risks to tourism and the economies of the hotel, service, and nursing industries. • SEIR should include oil spill risk and air quality impacts.
Tony Perez	• Oil platforms can be utilized for wind farms and or desal plants.

Written Comments Received on the NOP

Table 2 summarizes the written comments that were received on the NOP. A total of 196 written letters were received on the NOP, of which 166 were general form letters submitted electronically to the County. Attachment C contains copies of all the written comments received on the NOP for the Project.

Table 2 Written Comments Received on the NOP

Commenter	Summary of Comments
Santa Barbara County Air Pollution Control District	• Project will need ATC from the APCD. • SEIR should contain an emission analysis for all emissions from the project. • SEIR should address attainment status and consistency with APCD Ozone Plan. • Evaluate increase in criteria pollutants from operation and construction. • Address asbestos reporting requirements for any demolition or renovation of existing structures. • Address GHG emissions/climate change and consistency with various state requirements.
Caltrans	• Traffic study should be based upon existing traffic volumes. • Any work in State Right-of-Way will require and encroachment permit from Caltrans.
US Fish and Wildlife	• Any impacts of project will be covered under the Oi & Gas General Conservation Plan (GCP).
Associated Builders and Contractors, Inc.	• Scope of SEIR should be limited to just the trucking operations.
Cars Are Basic	• Oil and gas infrastructure should be included in Trump Administration infrastructure bill. • Rebuilding and restart of Line 901/903 should be expedited. • Trucking of crude is an unattractive idea.
Center for Biological Diversity	• County must prepare a comprehensive SEIR. • Baseline should be post-shutdown levels of operation. • SEIR must evaluate the risk and impacts of accidents from trucks carrying crude oil. • SEIR must look at impacts from pool fires and impacts to environment. • Risk analysis should be based upon current information. • SEIR should address health risk from air pollutants associated with truck operations. • SEIR should address impacts to threatened and endangered species from a spill along the truck routes. • The SEIR must evaluate and mitigate GHG emissions, including all GHG emissions coveting drilling, production, transportation, refining and consuming of the oil. • SEIR must analyze impacts of restarting the SYU facilities include the platforms due to their age. • SEIR should address impacts of ship strikes on marine mammals due to increased boat traffic associated with restart of platforms. • SEIR should address the noise impacts on marine environment due to restart of the offshore platforms. • SEIR should address the impacts of well acidizing on the marine environment and public health. • The SEIR should consider impacts to cultural resources. • SEIR should analyze a reasonable range of alternatives and in particular the No Project Alternative, reduce number of trucks, limits on time of day and year oil can be transported,
Citizens Planning Association	• SEIR should address impacts of restart of SYU facilities. • SEIR should analyze the full life cycle impacts coving operations, trucking, refining, and consumption of oil. • SEIR should address impacts to air quality, climate change, risk of spills and accidents, and traffic.
Environmental Defense Center	• SEIR should address all impacts associated with restarting of the SYU project and the associated operations. • SEIR should address risk of truck accident and spills and gas releases. • Application covers the restart of the SYU operations and therefore they should be considered part of the impact analysis. • The 1983 EIR information needs to be updated as part of the SEIR including the Project, environmental setting and impacts. • The end date for trucking must be part of the SEIR project description. • Baseline should be the shutdown conditions which existed at the time the NOP was issued. • The SEIR must evaluate and mitigate GHG emissions, including all GHG emissions coveting drilling, production, transportation, refining and consuming of the oil.

Table 2 Written Comments Received on the NOP

Commenter	Summary of Comments
	• GHG mitigation must be feasible and enforceable. • SEIR should mitigate all GHG emissions not just those over 1,000 $MTCO_{2e}$/year. • SEIR should address route specific risk for truck accidents and spills. • SEIR should include list of historic oil truck spills in the County. • The DSEIR should disclose whether there is any oil spill response, containment, recovery, and cleanup equipment and personnel along the entirety of the proposed trucking route. • The SEIR should address damage to roads from heavy truck travel. • The SEIR should address consistency with County land use policies.
Heal the Bay	• Truck spills of oil and result in explosions, fires, injury, death, property destruction, and impacts to wildlife and vegetation. • Restart of SYU facilities would undermine investment California has made to enhance coastal ecosystems and economies. • Must focus on use of renewable resources.
League of Women Voters of Santa Barbara	• Baseline should be the current conditions. • SEIR should address the uniqueness for the truck routes in evaluating potential for accidents and spills. • SEIR should address climate change and provide full mitigation.
Environmental Groups	• SEIR should evaluate the risk of truck accidents and spills on the public and environment. • SEIR should look at light and noise impacts. • SEIR should address air pollution and climate change impacts from the proposed project. • SEIR should look at downstream GHG emissions.
WSPA	• Project is important for the County and for jobs that include the 300 jobs lost due to the shutdown. • Project will serve to reduce crude oil imports via tankers. • SEIR should look at the GHG and other impacts that would be offset by reduction in tinkered oil shipped to California.
John Douglas	• Should not produce oil. It should be left in ground.
BJ Fisher	• Project will cause impacts to roads and result in oil spills.
Stanley Fisher	• Project will cause impacts to roads and result in oil spills. • Oil will go to P66 refinery on the Mesa.
Alan Fletcher	• Can the SEIR look at the pipeline restart along with the truck as a comparison. • SEIR should look at daytime driving vs. nighttime driving in terms of accident risk. • Shifting crude outside of US to other countries may increase overall air pollution.
Gale Freeman	• Concerned about traffic safety for truck entering Highway 101 by Refugio Road. • Recommends a direct access to Highway 101 from LFC with an acceleration lane for north bound traffic. This would avoid having to use the frontage road.
Francesca Galt	• Trucking is a safety hazard. Trucking impacts air, water, traffic, and quality of life.
Jeff Kubran	• Trucking is a public safety hazard and oil spills can threaten a wide range of protected species. • Concerned about climate change with use of oil.
Alissa Maddren	• Concerned about truck accidents and resulting fire and explosions.
Henry N. Mooney	• SEIR should include analysis of renewable energy sources. • Project should include a sunset date for trucking independent of availability of pipeline. • Project will exceed existing SBCAPCD PTO emissions limits. • Emission credits are problematic in feasibility and implementation. • SEIR should include the potential for the platforms to be used as wind farms.
In Support of Oil and Gas	• New pipelines create jobs in manufacturing.
Thomas Pope	• Does not want the platforms restarted.

Table 2 Written Comments Received on the NOP

Commenter	Summary of Comments
Rosemary Remacle	• Concerned about truck accidents and resulting fire and explosions. Concerned about damage to roads from heavy trucks.
Cynthia Replogle	• Concerned about pollution and more traffic on roads. Concerned about global warming.
Rouvaishyana	• Concerned about oil spills from trucking. • Each truck should be equipped with an oil spill response kit to assure quick first response.
Mark Tautrim	• Concern about noise from jack brakes on trucks along Calle Real. • New on ramp to U.S. Highway 101 at Las Flores Canyon.
Charles Varni	• Project would put public at risk.
Cindy Vix	• Concerned about truck accidents and resulting fire and explosions. • Concerned about restart of drilling.
Patrick Williams	• Concerned about oil on beaches and use of green energy and impacts to health.
166 Individuals who Submitted Form Letters	• Trucking of oil is a public safety hazard. • Trucks spill hundreds of thousands of barrels per year. • Truck accidents increase in states were oil trucking has increased. • Spills near the Santa Barbara Channel threaten a wide range of federally protected species. • Platforms are old and should not be brought back in to service. • Both pipelines and trucking of oil are dangerous. • Trucking of oil will contribute to increase climate change.

Attachment A

Notice of Preparation (NOP)

(filed with the State Clearinghouse on June 18, 2018)

NOTICE OF PREPARATION

TO: State Clearinghouse
Governor's Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95812

FROM: Kathryn Lehr, Planner
Santa Barbara County
Planning & Development
123 East Anapamu Street
Santa Barbara, CA 93101

SUBJECT: Notice of Preparation of a Draft Supplement to an Environmental Impact Report (83-EIR-22)

PROJECT NAME: ExxonMobil Interim Trucking for SYU Phased Restart Project

PROJECT LOCATION: 12000 Calle Real Road, Santa Barbara, CA 93117

PROJECT CASE #: 17RVP-00000-00081

PROJECT APPLICANT: ExxonMobil Production Company

The County of Santa Barbara will be the Lead Agency and will prepare a Supplement to the Environmental Impact Report (SEIR) for the project identified above. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project.

The project description, location and the potential environmental effects are contained in the attached materials.

A Scoping Meeting has been scheduled for **July 11th at 6:00 pm**. For the convenience of property owners and residents in the project area, the scoping meeting will be held in the **Planning Commission Hearing Room, Engineering Building, 123 E. Anapamu Street, Santa Barbara, CA 93101.** The Scoping Meeting discussion will be limited to understanding the proposed project and associated environmental concerns, including potential mitigation measures and possible alternatives to the project. The attached project overview and scope of analysis identified by P&D staff will be used as a starting point for discussion during the scoping meeting, but other environmental concerns may be raised by the public at this meeting.

For current project information, the following page has been established on the County's website: http://sbcountyplanning.org/energy/projects/exxon.asp.

Due to the time limits mandated by State law, your response must be received at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to Kathryn Lehr, case planner, at the address shown above.

Date: June 15, 2018 Planner: Kathryn Lehr

Division: Planning and Development

Telephone: (805) 568-3560

cc: Clerk of the Board (please post for 30 days)

Encl: Project Overview and Scope of Analysis

PROJECT OVERVIEW AND SCOPE OF ANALYSIS

A. APPLICANT

Mr. Dan Steurer
ExxonMobil Production Company
12000 Calle Real
Goleta, CA 93117

B. LOCATION

The site for the Interim Trucking for Santa Ynez Unit (SYU) Phase Restart Project (Project) is located at ExxonMobil's existing, onshore Las Flores Canyon (LFC) Facility, approximately twelve (12) miles west of the City of Goleta and one (1) mile north of Highway 101. The LFC Facility was constructed in 1993 with the purpose of providing onshore processing facilities to support three offshore platforms, Heritage, Harmony and Hondo. These three platforms produce oil and gas from the (SYU located in the Pacific Outer Continental Shelf within federally regulated waters. The oil and gas are treated at the LFC. The Project proposes minor modifications to the existing LFC facilities to facilitate the transportation of produced crude oil via tanker truck. The application involves a 550-acre parcel, APN 081-220-014, at 12000 Calle Real in the Goleta Area.

Figures 1 shows where the Project site is located within Santa Barbara County. Figure 2 shows the location of the proposed truck loading facility within ExxonMobil's LFC Facility, as well as the location of the existing major facilities. The Project is located within the M-CR (Coastal Related Industry) zone district, the purpose of which is to "to provide areas that are appropriate for coastal-related industrial uses within the Inland area." No change in existing land use designation and/or zone district is proposed as part of the Project. Surrounding properties are zoned AG-II-100, AG-II-320 and REC and land uses include agriculture, commercial agriculture and recreation/open space, respectively. The Project site currently supports a variety of oil and gas processing facilities including, but not limited to, oil and gas treating, a gas plant, cogeneration facilities, crude storage tanks, a transportation terminal which connects to the Plains All American Pipeline Line 901 system (currently shut down), an electric substation and power cables connecting to the offshore platforms, office buildings (including operations and control rooms), and the onshore portions of oil and gas pipelines that link to three platforms: Hondo, Harmony and Heritage.

C. REQUEST/DESCRIPTION

Overview of the Project: ExxonMobil is proposing this Project to resume offshore oil and gas production at the SYU, conduct a phased restart of the LFC) Facility and initiate the interim trucking of limited crude oil production as an interim solution until a pipeline alternative becomes available to transport crude oil to a refinery destination. The project request is a revision to Development Plan 87-DP-32cz and will be evaluated under a SEIR. Trucking will occur seven days per week, 24-hours per day, with no more than 70 trucks leaving the facility within a 24-hours period to one or both of the two identified receiver sites located in Santa Maria and Maricopa. Figure 3 shows the location of the two proposed truck routes and receiver sites. The project will include minor modifications to the LFC facilities including the installation of four Lease Automatic Custody Transfer (LACT) Units, associated piping, electrical and communication connections, pipe and equipment supports, truck loading racks, operator shelter, paving of selected areas, and minor containment and drainage grading.

ExxonMobil

0 0.25 0.5 1
Miles

Source: GCS, NAD 83
Santa Barbara County,
California

Legend

▭ LFC Parcel

▭ Assessors Parcels

Figure 1 -Vicinity Map

Parcel Map
Las Flores Canyon Facility
Exxon Mobil

Figure 2 - Site Plan

Las Flores Canyon Facility

Prepared by:

ExxonMobil

N W E S

0 2 4 8 12 16 Miles

Figure 3 -

Crude Oil Truck Transportation Route -

Las Flores Canyon to Unloading Destinations

Prepared by:

InterAct

Background and Historic Operations:

In 1976, one platform (Hondo) was constructed along with an offshore storage and treatment (OS&T) vessel, where produced crude oil was loaded on to marine tankers. Hondo and the OS&T began operations in 1981. In April 1983 Exxon submitted an application to the Minerals Management Service (MMS) and the County of Santa Barbra for the construction and operation of up to three additional offshore platforms and either an offshore OS&T or an onshore processing facility in Las Flores Canyon and an associated marine terminal. Both of these options were evaluated in a combined Environmental Impact Statement/Report (EIS/EIR). In June 1984 a joint Final EIS/EIR (83-EIR-22) was released that analyzed the anticipated environmental impacts associated with the development of oil and gas resources within the project area for the offshore option, with the onshore option being addressed as an alternative. A variation of the proposed onshore project was approved by the Santa Barbara County Board of Supervisors in August 1984 but included a denial of the marine terminal portion of the Project.

In February 1986, Exxon submitted to the County a revised project description and impact analysis for the SYU Development Project that eliminated one of the offshore platforms, relocated another of the platforms, and had a number of changes to the onshore facilities proposed for Las Flores Canyon. The proposed project changes were considered substantial enough to warrant an SEIR pursuant to CEQA. The final SEIR was released in August 1986. In September 1986, the County Board of Supervisors approved the onshore project.

Construction of the onshore Las Flores Canyon components began in April 1988 and finished in May 1993, with production from platforms Harmony and Heritage starting later that year. Once the onshore facilities started up, the OS&T vessel was decommissioned and removed. Shortly thereafter, in 1991 and 1994 the Line 901 and 903 pipeline system, now owned by Plains, also became operational and transported produced crude from LFC Facility to refineries.

On May 19, 2015, Plains Line 901 pipeline ruptured and resulted in a shutdown of the pipeline system. Following the initial spill incident, ExxonMobil continued to produce oil until the two onsite storage tanks were filled, unaware of the duration of time it would take for physical repairs to be made to the Plains pipeline. The LFC Facility relies on Line 901 to transport its oil, therefore, the non-operation of Line 901 effectively resulted in a facility-wide shut-in. The pipeline has not returned to active service due to the need for Plains to undertake physical repairs to the damaged pipeline and respond to Federal regulatory requirements. In January of 2017, the County approved an Emergency Permit which allowed ExxonMobil to de-inventory approximately 425,000 barrels of product that had been stored in existing onsite storage tanks since May 2015. The de-inventory operations involved trucking the oil from the LFC facility. ExxonMobil's de-inventory program was completed in September of 2017 and all three platforms, as well as the LFC facilities, remain in a hydrocarbon-free preservation state.

On August 15, 2017, Plains submitted an application to Santa Barbara County for the replacement of their existing, and currently shut down, Lines 901 and 903. It is currently unknown how long it will take for the Plains application to be processed, undergo environmental review, and complete construction. ExxonMobil's request is for an interim trucking program that will be discontinued once a pipeline alternative becomes available.

Facility Modifications: All loading activities and truck loading improvements will be located within the confines of the LFC facility. Modifications to the LFC facilities will require new piping to extend from one of the existing crude oil storage tanks located within the Transportation Terminal (TT), to the Truck

Loading Area (TLA) that will house the truck loading rack. The new piping will be routed along pipe supports through an existing containment area. The truck loading rack will be constructed over the truck loading lanes within the TLA, similar to a bridge. Trucks will pull in underneath the loading rack into one of the four lanes and connect to the rack to be filled with oil. Truck loading operations will continue at all hours, and lighting will be required during nighttime loading. Lights will be attached to the rack and will be powered from LFC's electrical system. A small, temporary operator shelter will be installed at the site as well. The TLA is approximately 2.91-acres and the loading rack and associated lanes are anticipated to occupy 0.12-acre of that area.

To manage vapors displaced by loading operations, vapor recovery piping will also be installed and routed through the existing containment area to the crude storage tanks and connect into the existing LFC vapor recover system at the TT Vapor Recovery Compressors. If the recovery system increases vapor recovery efficiency, pressure controllers may be installed to maintain a 1-3" water column vacuum on the trucks during loading. Vapors from the TT Vapor Recovery Compressors will be routed to the Oil Treatment Plant (OTP) Vapor Recovery Compressors for processing before being subsequently utilized as fuel gas within the facility. No new processing facilities will be required for this project.

The project will not require removal of existing habitat or vegetation and no significant grading or topographic alternation will be needed. Site grading will consist of only the minimum amount of soil work needed to construct pipe supports and possibly containment berms, if needed. Once a pipeline alternative is available to transport product to market, interim trucking will cease and the installed piping and truck loading facilities at LFC will be removed from service, and isolated from the crude and vapor transport lines.

Construction and Operational Personnel: During normal operations ExxonMobil employed approximately 200 employees at the LFC to run the facility, including offshore and contract staff. In its current preserved state, approximately 60 employees remain onsite. The phased restart of facility will require 45-60 additional employees onsite, for a total of 105-120 onsite employees. Overall staffing, when accounting for rotations and offshore personnel, would be approximately 150 employees. Restart of the facility would not require more employees than prior normal operations.

Truck Transportation: Regional access to LFC is provided by El Capitan State Beach Road and Refugio Road which both have direct connections to Highway 101. Local access to LFC is provided by an existing frontage road (Calle Real) which runs parallel to Highway 101 and extends between El Capitan State Beach Road and Refugio Road. Access to the TLA is provided by existing interior facility roads. No new public or private roads are required. The interior road behind the crude oil storage tanks leading to the TLA may be improved or repaved prior to the start of trucking. The Applicant has committed to using only the Refugio Road ramps at Highway 101 for the oil trucks.

Each truck can transport approximately 120 to 160 barrels of product (equivalent to 5,040 to 6,720 gallons). Truck transportation will occur seven days per week, 24-hours per day, with no more than 70 trucks leaving the facility within a 24-hours period. The crude oil will be trucked from the LFC to one or both of the identified receiver sites; the Phillips 66 Santa Maria Pump Station located at 1580 East Battles Road, east of Santa Maria, or the Plains All American Pentland Pump Station located at 2311 Basic School Road in Maricopa.

Trucking from the LFC to the receiver site located in Santa Maria will include the use of the existing arterial roads and Highway 101. Trucking from the LFC to the receiver site located in Maricopa will include the use of the existing arterial roads, Highway 101 and State Route 166. All trucks entering and leaving the LFC facility would use the Refugio Road on and off-ramps at US 101. Trucks traveling to the Phillips 66 Terminal would exit US 101 at the Betteravia Road Interchange (I/C) and use Betteravia Road, Rosemary Road, and Battles Road to access the Phillips 66 Santa Maria Pump Station. Trucks traveling to the Plains Pentland Terminal would exit US 101 at the SR 166 IIC and use SR 166 to Basic School Road to access the Plains Pentland Terminal. After unloading at one of the two designated facilities, the trucks will return directly back to LFC to reload.

Construction and Facility Restart Schedule: Upon receipt of required permits, implementation of the Project would take approximately 6 to 9 months. Construction of the truck loading rack, facility modifications and facility restart could occur simultaneously such that operations would begin immediately upon completion of construction. Trucking operations would continue until an alternative pipeline option becomes available.

Spill Contingency Plan, Safety and Security: To continue compliance with existing regulations, appropriate safety programs would be updated and/or developed and implemented. The safety programs would include, but are not necessarily limited to, the modification of a Spill Prevention, Control, & Countermeasures Plan; a worker's safety program; an Emergency Response Plan; a plant safety program; facility standard operating procedures, and others. Additionally, the Project would require grading and building permits, Bureau of Safety and Environmental Enforcement (BSEE) oversight, and compliance with applicable regulations including Assembly Bill 1960 (spill prevention).

D. ISSUE AREAS

Each specified impact area warrants an objective and systematic discussion that identifies the baseline environmental setting; thresholds of significance; impacts and their severity; and, where the impact is potentially significant, the mitigation measures to avoid, reduce or eliminate the impact.

Existing Conditions

The Project site is within an existing oil and gas processing facility. As previously described, Exxon's LFC relies on the Plains Line 901 pipeline system for transportation of produced crude. The rupture and subsequent shut down of the pipeline system required ExxonMobil to curtail and eventually cease LFC operations. The Plains pipeline system has been prevented from returning to active service due to the need to complete physical repairs to the damaged pipeline and respond to Federal regulatory requirements. Although the LFC is currently in a state of preservation, the restart of the facility and platform operations remains under BSEE and County oversight and does not require any new permits from the County. The facility was permitted in 1986 and has been in continuous operation since its construction in the early 1990's, notwithstanding the pipeline incident. For purposes of CEQA review, the baseline conditions shall be considered the LFC at pre-shutdown production levels and related operations prior to the Line 901 incident and subsequent facility shut down. The SEIR's resource/issue area-specific baseline discussions will include descriptions of the Project area's transportation network, land use patterns and practices, as well as biological and cultural resources, and hydrology along the proposed trucking route.

Air Quality/Greenhouse Gases

The air quality/greenhouse gas (GHG) analyses will include criteria air pollutants, GHG emissions, odors, and consistency of the Project with the regional air quality management plan. The Applicant has prepared an Air Quality Analysis and associated materials for the proposed project. The Analysis includes information for both stationary and mobile emissions. The results of the Analysis indicate that the proposed project is expected to exceed the County of Santa Barbara's significance threshold for ROCs. The Applicant has proposed to purchase applicable SB County Emission Reduction Credits (ERCs) for the ROC emission increases.

According to the submitted calculations, the trucking portion of this project is anticipated to generate over 10,000 metric tonnes of CO_2 equivalent per year (MT CO_2e/year) under a worst-case scenario (trucking from LFC to the Pentland receiver site). The emissions would exceed the GHG thresholds established by the County Board of Supervisors approved Environmental Thresholds and Guidelines Manual (revised July 2015). The thresholds will include criteria pollutant quantitative thresholds and a bright-line GHG threshold of 1,000 metric tons of carbon dioxide equivalent per year. The potential for odor impacts will also be assessed. Potential mitigation may include the Applicant working with the County to develop and approve a traffic control plan to mitigate potential impacts.

Hazardous Materials/Risk of Upset

The main objectives of the Risk of Upset analysis are to disclose the following to the public and decision-makers: the potential for serious accidents, exposure to the public, the safety and environmental risks of spill events, and the mitigation measures that could reduce these risks. This analysis will consider the potential for risks using existing available information and Risk of Upset studies provided by the Applicant, including a Quantitative Risk Assessment (QRA) and Industrial Risk Analysis (IRA). The QRA was prepared in accordance with the requirements of Section 15 of the Santa Barbara County Planning and Development Department Environmental Thresholds and Guidelines Manual, which specifies thresholds for significant impacts to public safety. These thresholds focus on involuntary public exposure to acute risks (i.e., serious injury and fatality) that stem from certain types of activities with significant quantities of hazardous materials. The QRA estimates the potential public safety risks associated with the proposed crude oil (product) trucking activities. The IRA evaluates scenarios associated with the truck loading process within the LFC facility that could potentially lead to a loss of containment or a spill. The LFC facility is not accessible to the public; therefore, the potential for public exposure to any hazards that occur within the LFC facility boundaries associated with the truck loading activities is unlikely. The risk of upset analysis will also address potential impacts to biological and cultural resources along the transportation routes due to an oil spill.

Traffic/Transportation

The Traffic and Transportation analysis will focus on the contribution of new traffic volumes associated with the trucking activities. The Project would introduce a maximum of 70 trucks per 24-hour period from the LFC to one of the two identified receiver sites. To address the potential for traffic congestion, the assessment will rely on the traffic study prepared for the project, the truck routes, and will consider road conditions before and after the Project on study area roadways and intersections (i.e., conditions with and without proposed Project). If deemed necessary during this review process, an evaluation of the potential increase in damage to study area roadway segments will be conducted, along with the potential need for mitigation. As described in the Applicant's traffic study, the traffic analysis indicates that the Project would not generate any significant project-specific impacts at the study area roadways and most intersections. The Project would create significant impacts to the US 101 South Bound/Betteravia intersection, which currently operates at a Level of Service (LOS) of F during peak PM hours. Potential mitigation may include the Applicant working with the County to develop and approve a traffic control plan to mitigate potential impacts.

Land Use

The Project will be subject to the County's Inland and Coastal Zoning Ordinance standards as well as policies from the County's Comprehensive Plan, including the Coastal Land Use Plan. The Project is proposing the transportation of produced crude oil via tanker truck until a pipeline alternative is available. Policy consistency will be analyzed in detail in the Project staff report to be prepared for the decision makers. However, the SEIR will contain a preliminary list and analysis of applicable County ordinance standards and policies.

Project Alternatives

Alternatives will be designed to avoid and/or substantially reduce any impacts that cannot otherwise be mitigated to a level below significance. At this time, Air Quality/GHG, Hazardous Materials/Risk of Upset and Traffic/Transportation are considered the primary issue areas that may need to be addressed. This analysis will consider the No Project Alternative, Reduced Alternative(s), and other alternatives found to be appropriate through the CEQA process. The alternatives discussion will include an analysis of environmental impacts of each alternative considered, along with a comparative analysis (matrix) to distinguish the relative effects of each alternative and its relationship to Project objectives. The alternatives analysis will also identify the "environmentally superior alternative" from among the alternatives.

Attachment B

Scoping Meeting Materials

ExxonMobil Interim Trucking for SYU Phased Restart Project SIR Scoping Meeting

Planning Commission Hearing Room, Santa Barbara, July 11, 2018

Name	Affiliation	Phone	Email
Kirk Tiradeau	Exxonmobil	—	—
Brian Sinkbeil	ExxonMobil	—	—
Kim Jordan	Exxon Mobil	—	—
Jennifer Singer	Exxon Mobil	—	—
MICHAEL WOLF	AEGION	714 450 2845	MWOLF@AEGION.COM
Otis Dickinson	ExxonMobil	713-409-5313	—
Rose Teague	XOM		
STEVE ALSTON	XOM		
Patrick Surmeri	Self		
Justin Crowell	ExxonMobil	—	—
Casey Heichberger	Exxon mobil	—	—
Ernest Reveles	ExxonMobil		
Christina Hinson	ExxonMobil		
Lad Handelman	Self		
[illegible]	Vets Group	805-714-6015	[illegible]

ExxonMobil Interim Trucking for SYU Phased Restart Project SIR Scoping Meeting

Planning Commission Hearing Room, Santa Barbara, July 11, 2018

Name	Affiliation	Phone	Email
Aaron HAREL	EXXONMOBIL	—	—
Matt Foster	ExxonMobil	—	—
Edward Johnson	ExxonMobil	—	—
MERRICK MIRANDA	AEGION / BRINDERSON	—	—
Erik Baker	Brinderson	—	—
Jim Mize	Brinderson	—	—
Kevin Cook	Brinderson	—	—
Ben Wood	ExxonMobil		
Stan Roberts	Self	—	stanrroberts@hotmail.com
Phil Garcia	XOM		
TODD BRAND			
Paul GORTON	ExxonMobil	—	—
Ryan Dunehey	Exxonmobil	—	—
Robert Bueno	ExxonMobil	—	—
FELIX ESPARZA	SELF	—	—

1

ExxonMobil Interim Trucking for SYU Phased Restart Project SIR Scoping Meeting

Planning Commission Hearing Room, Santa Barbara, July 11, 2018

Name	Affiliation	Phone	Email
TED Roche	Aquos Corp		troche@aquossubsea.com
Mark Wiencke	Aqueos		mwiencke@aqueossubsea.c
Rick Rust	Aera Energy		rrust@aeraenergy.com
Brett Randall	ExxonMobil		brett.a.randall@exxonmobil.com
Dan Steuer	ExxonMobil		daniel.c.steuer@exxonmobil.com
Richard Atmore	CEA		rick@raatmore.com
TOM BECKER	CARS ARE BASIC		LESDEPLORABLEZ@gMAIL.com
STEVE GREIG	Plains All American		sagreig@paalp.com
John Hochhalter	Pacific Petroleum		Jho@PPCINC.BIZ
ROBERT MORABITO	Pacific Petroleum		HDS@PPCINC.BIZ
BRIAN MAR	Pacific Petroleum		B.MAR@PPCINC.BIZ
JOE DIAZ	Pacific Petroleum		J.DIAZ@PPCINC.BIZ
Jose Solorza	EXXON Mobil		
Cecilia Anne Spencer	Sierra Club, Green Peace Licensed Nurse		
TRAVIS J. RIVERA	SECORP INDUSTRIES		firefightertravis@hotmail.com

ExxonMobil Interim Trucking for SYU Phased Restart Project SIR Scoping Meeting

Planning Commission Hearing Room, Santa Barbara, July 11, 2018

Name	Affiliation	Phone	Email
Alena Simon	Food & water watch	612-986-4323	ASimon@Fwwatch.org
Amanda Pantoja	Food & Water Watch	323-330-7004	
Jack Liu	Individual	[redacted]	
Lucas Muer	350 SB	774 766 8218	lucasm9712@gmail.com
MARIAH CLEGG	UCSB, 350 SB, Bonfire Collective	[redacted] 603-391-2781	mclegg@umail.ucsb.edu
SYLVIA SULLIVAN	350, F+W WATCH	805-451-3195	sylvia805@cox.net
Carol Millar	350	805 722-2588	carol@maconstruction.us
Bill Hickman	Surfrider Foundation		bhickman@surfrider.org
Henry Mooney	Individual	805-836-4476	henryamooney@gmail.com
Jeff Kubran	none		~~jeffkubr~~ jkubran@hotmail.com
LLOYD DE ARMOND	N/A		

ExxonMobil Interim Trucking for SYU Phased Restart Project SIR Scoping Meeting

Planning Commission Hearing Room, Santa Barbara, July 11, 2018

Name	Affiliation	Phone	Email
Roseline Aka	food + water watch	916 386 1030	Roselineaka864@gmail-com
Linda Krop	EDC	805 963 1622	LKrop@EnvironmentalDefenseCenter.org
Jonathan Ullman	Sierra Club Los Padres Chapter	[redacted]	jonathan.Ullman@sierraclub.org
Sharon Broberg	slbr 350sb.org		slbroberg@gmail.com
Elaine Sears	350sb.org	455-5207	esears@sbch.org
Kristen Monsell	Center for Biological Diversity	510.844.7137	kmonsell@biologicaldiversity.org
DECOLONIZE			
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		DECOLONIZE	
			DECOLONIZE

Attachment C

Written Comments Received on the NOP

Governmental Agencies

Organizations

Individuals

Our Vision Clean Air
Santa Barbara County
Air Pollution Control District

July 12, 2018

Kathryn Lehr
Santa Barbara County
Planning and Development
123 E. Anapamu Street
Santa Barbara, CA 93101

Re: APCD Response to the Notice of Preparation of a Draft Supplement to the Environmental Impact Report for the ExxonMobil Interim Trucking for SYU Phased Restart Project, 17RVP-00000-00081

Dear Ms. Lehr:

The Santa Barbara County Air Pollution Control District (APCD) appreciates the opportunity to provide comments on the Notice of Preparation (NOP) of a Draft Supplement to the Environmental Impact Report (SEIR) for the ExxonMobil Interim Trucking for Santa Ynez Unit (SYU) Phased Restart Project. ExxonMobil Production Company is requesting approval for the construction and operation of a crude truck loading facility at Las Flores Canyon (LFC) to allow transfer of product from LFC to crude transport trucks for delivery to local markets. More specifically, the project would consist of the interim trucking of limited crude production from the LFC Facility until a pipeline alternative becomes available. The project proposes minor modifications to the existing LFC facilities to facilitate the transport of produced crude oil via tanker truck. The air pollutant emissions from the project include both stationary source emissions from the operation of the truck loading facilities at LFC and mobile source emissions from operation of the crude transport trucks delivering product to markets. Trucks will have 2017 or newer engines, and will travel to one or both of two designated off-site locations: Phillips 66 Santa Maria Terminal (in Santa Barbara County) and Plains Pentland Terminal (in Kern County). The subject property, a 550-acre parcel zoned M-CR and identified in the Assessor Parcel Map Book as APN 081-220-014, is located at 12000 Calle Real on the Gaviota Coast.

A new APCD Authority to Construct (ATC) permit will be required for the proposed project. The APCD is a responsible agency under the California Environmental Quality Act (CEQA) for this project, and will rely on the SEIR when issuing APCD permits. The SEIR should include the air pollutant emissions for all proposed equipment to avoid additional CEQA documentation requirements related to APCD permit issuance.

APCD staff reviewed the Initial Study and NOP of a Draft SEIR, and concurs that air quality and greenhouse gas impacts have the potential to be significant. APCD's guidance document, entitled *Scope and Content of Air Quality Sections in Environmental Documents* (updated June 2017), is available online at www.ourair.org/apcd/land-use/. This document should be referenced for general guidance in assessing air quality impacts in the Draft SEIR. A thorough emissions analysis should be performed on all relevant emission sources, using emission factors from the EPA document AP-42 "*Compilation of Air Pollutant Emission Factors*", the latest approved version of California Emission Estimator Model (CalEEMod), EMFAC, OFF-ROAD or other approved emission calculator tools. Project-specific information should be substituted for default values whenever possible. For more detailed guidance related to stationary source and industrial source impacts, please contact staff directly.

The SEIR should evaluate potential impacts related to the ExxonMobil Interim Trucking for SYU Phased Restart Project, including the following:

1. **Attainment Status and Consistency with the APCD Ozone Plan**. The APCD has posted the most up-to-date attainment status for the County on the APCD website www.ourair.org/air-quality-standards/ and the most recent Ozone Plan (previously known as the Clean Air Plan) was adopted October 2016 and is available at www.ourair.org/clean-air-plans/. The website should be consulted for the most up-to-date air quality information prior to the release of the Public Draft SEIR.

The 2016 Ozone Plan includes land use and population projections and on-road emissions forecasts provided by the California Air Resources Board (CARB) as a basis for vehicle emissions forecasting. The SEIR should examine whether the proposed project will be consistent with the growth assumptions in the 2016 Ozone Plan.

Stationary source projects will generally be considered consistent with the Air Quality Attainment Plan if they are consistent with APCD rules and regulations.

2. **Increase in Criteria Pollutant Emissions from Proposed Project.** The SEIR should present significance thresholds for ozone precursor emissions (reactive organic compounds [ROC], and oxides of nitrogen [NO_X]) and particulate matter and determine whether the proposed project will produce emissions in excess of Santa Barbara County's air quality thresholds.

The proposed project will involve air quality impacts associated with permitted stationary source equipment and motor vehicle trips from tanker trucks exporting crude oil.

Stationary source equipment emissions should be based on the "potential to emit" of the equipment. Motor vehicle trips will result in vehicle exhaust emissions and fugitive dust generation. Emissions should be calculated for trips both to and from the facility (i.e. round-trips), and should include both onsite and offsite travel. The air quality impact analysis for mobile source emissions should be based on project-specific information and supported by a traffic study whenever possible.

The SEIR should show the total proposed operational emissions from the proposed project compared to the project-specific thresholds of significance. If the proposed project exceeds the significance thresholds for air quality, the applicant should propose project design changes and/or mitigation measures that will avoid, reduce, or mitigate those impacts to levels that are less than significant. Section 6 of APCD's *Scope and Content* document offers ideas for air quality mitigation. However, project-specific measures should be developed that are pertinent to the specific project and are enforceable.

Please note that the *Project Overview and Scope of Analysis* enclosed with the NOP only states that ROC and GHG emissions from the project will exceed CEQA thresholds. The *Air Quality Analysis* and associated materials indicate that the proposed project is also expected to exceed the County of Santa

Barbara's significance threshold for NOx emissions from mobile sources based on the worst-case scenario that 68 trucks per day will travel to the Plains Pentland Truck Rack. This impact should be considered when evaluating the proposed project in the EIR.

3. Construction Impacts. The proposed project will involve minor modifications to the LFC facilities including the installation of four Lease Automatic Custody Transfer (LACT) units, associated piping, electrical and communication connections, pipe and equipment supports, truck loading racks, operator shelter, paving of selected areas, and minor containment and drainage grading. The SEIR should include a description and quantification of potential air quality impacts associated with construction activities for the proposed project. APCD's *Scope and Content* document, Section 6, presents recommended mitigation measures for fugitive dust and equipment exhaust emissions associated with construction projects. Construction mitigation measures should be enforced as conditions of approval for the project. The SEIR should include a Mitigation Monitoring and Reporting Plan that explicitly states the required mitigation and establishes a mechanism for enforcement.

4. Asbestos Reporting Requirements. If the project will involve any demolition or renovation of existing structures, the SEIR should include a discussion of how materials will be removed in compliance with APCD Rule 1001 – National Emission Standards for Hazardous Air Pollutants (NESHAP) – Asbestos. Advance notification to the District may be required before asbestos is disturbed and/or removed. For additional information regarding asbestos notification requirements, see www.ourair.org/asbestos/.

5. Global Climate Change/Greenhouse Gas Impacts. Greenhouse gas (GHG) emissions and global climate change impacts should be addressed in the CEQA document. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases. The EIR should include a quantification of GHG emissions from all project sources, direct and indirect, as applicable.

The SEIR should include a discussion of how the project is consistent with, and complies with, California's Assembly Bill (AB) 32, the California Global Warming Solutions Act, Climate Change Scoping Plan to reduce overall greenhouse gas emissions in California. This discussion should address the Mandatory Reporting Regulation, Cap and Trade regulation, and any other applicable programs related to AB 32. If climate change impacts are found to be significant and mitigation measures are applied, those measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments. The SEIR should include a Mitigation Monitoring and Reporting Plan that explicitly states the required mitigations and establishes a mechanism for enforcement.

The SEIR should examine how the project can be designed and operated to minimize GHG emissions. Some potential measures include, but are not limited to:

- Leak detection to reduce fugitive emissions
- Incorporate high efficiency process equipment
- Reduction in vehicle trips from haul vehicles
- Utilization of a truck fleet with the newest/cleanest possible vehicles
- Utilization of a truck fleet with alternatively fueled vehicles
- Consideration of onsite renewable energy generation

For guidance regarding greenhouse gas analysis for CEQA environmental documents, please refer to the *CAPCOA CEQA & Climate Change* document. CAPCOA has also published *Quantifying Greenhouse Gas Mitigation Measures*, an extensive sector-by-sector compendium of project-specific mitigation measures, including quantification methods to calculate GHG reductions. Both of these documents are available online at www.capcoa.org.

The APCD has identified some potential strategies for local GHG mitigation that could be implemented in Santa Barbara County. The APCD solicited feedback from the community on these strategies in a series of workshops. The strategies research by the APCD and the input received from the public has been summarized and posted on the APCD's website at www.ourair.org/ghgmitigation-sbc/.

We hope you find our comments useful. We look forward to reviewing the Draft SEIR. Please contact me at 961-8890 or by e-mail at BarhamC@sbcapcd.org if you have questions.

Sincerely,

Carly Barham

Carly Barham
Planning Division

cc: Michael Goldman, Manager, APCD Engineering Division
TEA Chron File

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
http://www.dot.ca.gov/dist05/

Making Conservation
a California Way of Life.

July 16, 2018

SB 101 PM 35.18
SCH#2018061035

Kathryn Lehr, Planner
Santa Barbara County
Planning and Development
123 East Anapamu Street
Santa Barbara, CA 93101

COMMENTS FOR THE NOTICE OF PREPARATION (NOP) FOR THE EXXONMOBIL INTERIM TRUCKING FOR SYU PHASED RESTART PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT (EIR)

Dear Ms. Lehr:

The California Department of Transportation (Caltrans) thanks you for the opportunity to review the NOP for the ExxonMobil Interim Trucking for SYU Phased Restart Project. Caltrans has reviewed the above referenced project and offers the following comments at this time.

1. The traffic study should include information on existing traffic volumes within the study area, including the State transportation system, and should be based on recent traffic volumes less than two years old. Counts older than two years cannot be used as a baseline. Additionally, the study should analyze ramp operations.

2. At any time during the environmental review and approval process, Caltrans retains the statutory right to request a formal scoping meeting to resolve any issues of concern. Such formal scoping meeting requests are allowed per the provisions of the California Public Resources Code Section 21083.9 [a] [1].

3. Any work within the State's right-of-way will require an encroachment permit from Caltrans, and must be done to our engineering and environmental standards, and at no cost to the State. The conditions of approval and the requirements for the encroachment permit are issued at the sole discretion of the Permits Office, and nothing in this letter shall be implied as limiting those future conditioned and requirements. For more information regarding the encroachment permit process, please visit our Encroachment Permit Website at: http://dot.ca.gov/dist05/permit/index.htm.

If you have any questions, or need further clarification on items discussed above, please contact me at (805) 549-3432 or Jenna.Schudson@dot.ca.gov.

Sincerely,

Jenna Schudson
Transportation Planner
Development Review Coordinator
District 5, LD-IGR South Branch

From: Dou-Shuan Yang <dou-shuan_yang@fws.gov>
Sent: Tuesday, July 10, 2018 12:38 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Cc: Rachel Henry <rachel_henry@fws.gov>
Subject: ExxonMobil Interim Trucking for SYU Phased Restart Project

Dear Ms. Lehr,

The Ventura Fish and Wildlife Office received the Notice of Prepartion of a Draft Supplement to an Environmental Impact Report for the ExxonMobil Interim Trucking for SYU Phased Restart Project. The applicant,ExxonMobil, has been supportive of the Oil & Gas General Conservation Plan (GCP) our office is putting together, and we plan to cover impacts from this project under this GCP.

Please let me or Rachel Henry (rachel_henry@fws.gov) know if you have any questions regarding this.

Thanks,
Dou

--

Dou-Shuan Yang, Ph.D.
Fish and Wildlife Biologist
South Coast Division
U.S. Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, CA 93003
Phone: 805-677-3302
Dou-Shuan_Yang@fws.gov

ABC
Associated Builders and Contractors, Inc.

Central California Chapter
P.O Box 80718 | 19466 Flightpath Way Bakersfield, CA 93380 Office: (661) 392-8729 Fax: (661) 392-9076

July 13, 2018

Kathryn Lehr, Planner
Santa Barbara County
Planning & Development
123 East Anapamu Street
Santa Barbara, CA 93101

RE: Exxon Mobil Interim Trucking for SYU Phased Restart Project--Scoping Comments

Dear Ms. Lehr:

Thank you for the opportunity to comment on the Notice of Preparation and Scoping Document for the Exxon Mobil Interim Trucking Santa Ynez Unit Phased Restart Project. We have reviewed your document and find the scope to be both extensive and adequate.

Your document clearly articulated the project site, the description of the project and the impacts to be analyzed. We would further urge you not to expand the scope of the analyses beyond the supplemental EIR as the site is existing. In addition, any attempt to broaden the scope or add additional analyses would be excessive and provide additional information that wouldn't be relevant to the project or its impacts.

Thank you in advance for allowing us to submit comment on this project. Please continue to provide us with information and updates as this project moves through the process.

Best regards,

Laura Barnes
Chapter President

From: Thomas Becker <lesdeplorable7@gmail.com>
Sent: Sunday, July 15, 2018 11:01 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Exxon Mobil Interim Trucking for SYU Phased Restart Project

Cars Are Basic (CAB), a public watchdog group based in Santa Barbara County, CA, is submitting this comment to the County Planning Department on the proposed Exxon Mobil Interim Trucking project.

CAB supports the development of oil and gas reserves located in the Outer Contentinal Shelf (OCS). To this end, we have submitted 3 comment letters to the Bureau of Ocean Energy Management (BOEM) supporting President Trump's America First Energy Policy, which includes a new 5-year leasing plan for the OCS.

Exxon Mobil is a major player in the OCS. This includes 3 platforms located off the coast of Santa Barbara County, CA. Exxon Mobil transported oil produced from those 3 platforms through the Plains All American line 901/903 pipeline. In May 2015, Line 901 ruptured. Both Line 901/903 have been shut down since the rupture.

Exxon wishes to now transport 10,000-12,000 barrels a day via truck from their Las Flores Canyon oil processing facility, to pumping stations located outside of Lines 901/903. This is a fraction of the capacity of the Line 901/903 pipeline, which can transport 300,000 barrels a day.

In our comment letters to the BOEM, CAB has called for the Trump Administration to include oil and gas infrastructure in the President's proposed 1-2 trillion dollar infrastructure plan. Currently, the President's infrastructure plan does not include any oil and gas infrastructure projects. We have called for a 100-200 million dollar federal government investment in oil and gas facitities located in Santa Barbara County, and at least 5 billion dollars nationwide.

When new oil and gas leases are awarded for OCS tracts located off of Santa Barbara County, the existing Exxon Mobil facilities in the county may very well be utilized to process the new oil production. This would include the Las Flores Canyon facility. Common sense would dictate that the Las Flores facility be rebuilt to prepare the facility to safely and cleanly handle the new production. This would include safety and environmental upgrades to the facility above and beyond what is required by law, statute or permit.

To be blunt, the idea of transporting 10,000-12,000 barrels of crude oil a day via truck is an unattractive idea that will garner little support, even from those people who support oil and gas production. CAB is suprised that Exxon Mobil did not stop and consider the terrible optics of the proposed trucking plan.

CAB's alternative to the trucking plan is this:

- Exxon Mobil ask the Trump Administration to include oil and gas infrastructure in the President's infrastructure plan.
- Expedite the rebuilding of the Line 901/903 pipeline, and increase the capacity to 500,000 barrels per day.
- Rebuild the Las Flores facility and production pipelines serving the facility during the time the Line 901/903 pipeline is being rebuilt.
- Exxon Mobil support the reopening of the OCS off the coast of California

to new leasing and production.

- Work with the Trump Administration to upgrade all oil and gas facilites with the latest safety and environmental equipment. This would include processing facilities, pipelines, production platforms, pumps and valves.

Thank You,

Tom Becker
Cars Are Basic
lesdeplorable7@gmail.com

Recd 7/11/18

3/8/18

Ryan Zinke

Secretary of the Interior

Dear Mr. Secretary,

Cars Are Basic (CAB) is submitting this letter to the BOEM as a public comment on the OCS leasing program.

CAB supports the development of oil and gas reserves located in the OCS. We know that developing those reserves will lead to lower fuel costs, an improved economy and enhanced national security.

Getting directly to the point, the oil and gas deposits located in the OCS belong to ALL THE PEOPLE of the United States, and WE THE PEOPLE have every right to have those resources safely extracted for our benefit. A plentiful supply of cheap gasoline, diesel fuel and jet fuel would be the single greatest boost to the U.S. economy. This must be a top consideration for BOEM when reviewing leasing options in the OCS.

Here in California, the state's economy is in a terrible position. Poverty is high, home ownership is low, and wealth is centered in a few small portions of the state, with a majority of the state's population having no access to that wealth. Developing the oil and gas resources located off the coast of California will propel millions of Californians into middle class prosperity. It would also send a clear message to those individuals who wish to shut down the production of fuels that our nation will require for decades to come.

For the past several years, CAB has attempted to engage with the governments of the State of California and Santa Barbara County on the issue of oil and gas development, including development in the OCS. We have submitted questions to those governments as part of public participation in EIR's and other documents. Both the State of California and the County of Santa Barbara have refused to answer questions that they are required by law to respond to. Two of those EIRs where state and local governments refused to answer questions were environmental documents required to obtain federal funding for transportation projects. This deliberate obstruction of public access to information and intentional destruction of open discussions is a common tactic of state and local governments. It is time for this behavior to end, and the issue of oil and gas development in the OCS should be the place where state and local governments in California are compelled to be responsive to the People.

Since the release of the BOEM's leasing plan for the OCS, several federal, state and local government officials around the country have threatened to sue BOEM over the proposed plan. One of those officials is the California State Attorney General. These threats were and are being made before all public comment, and participation in the review process has ended. Those threats are also being made while, at the same time, many of those very governments are refusing to answer questions put to them by the people in environmental documents, questions that those governments are required by law to answer. Members of the public, including CAB, have every right to a fair and properly conducted review process. Our rights are being damaged when state and local governments refuse to answer questions they are required to answer, obstruct the ability of the public to gather information on the issues at hand, then threaten to sue before the public has the opportunity to express their ideas on how the oil and gas reserves located in the OCS can be safely and economically extracted.

For over a year, CAB has been calling on the Trump Administration to include oil and gas facilities in the proposed infrastructure bill. President Trump has called for cooperation between the federal government and the private sector to rebuild and modernize the nation's infrastructure. In Santa Barbara County, CAB has been calling for a federal investment in the rebuilding of the damaged Plains All American line 901/903 pipeline. That pipeline transports oil extracted from federal leases located offshore of Santa Barbara County. We have suggested that $100-$200 million be invested by the federal government to upgrade the pipeline with all the safety and environmental protection features available. Nationally, we are suggesting at least $5 billion dollars be invested in oil and gas infrastructure that serves production from the OCS. BOEM should take the lead on this issue and submit a plan to President Trump to fund safety and environmental upgrades for existing and proposed oil and gas infrastructure located in or serving the OCS.

CAB is encouraging BOEM to conduct a hearing in Santa Barbara County to discuss leasing offshore of the county and the State of California. The current "hearings" being conducted by BOEM are woefully inadequate and are not much more than a traveling science fair. CAB believes BOEM should schedule a 3-day hearing, with 8-hours of questions and answers on each day. BOEM should invite staff from Santa Barbara County government, the California Coastal Commission and the California State Lands Commission to answer questions about their understanding of the issues and have them explain comments made by members of those bodies. BOEM should also invite the Governor and State Attorney General to answer questions. The People have every right to ask questions and get answers from their government, especially entities and officials who have threatened to sue BOEM over the proposed leasing plan. We the People have every right to have issues discussed and resolved during the review process, with the goal being the avoidance of having the issues entangled in the courts. The courts are not supposed to be used to slow down or stop projects. They are intended to be the last resort to resolve disputes. The current review process is the proper venue to resolve disputes, and government entities and officials who have expressed opposition to oil and gas development should be required to make a good faith effort to answer questions and resolve issues during the review process. If government entities and officials do not make a good faith effort to resolve the issues now, during the review process, CAB believes their standing and credibility in any court should be considered by those courts to be invalid.

In closing, CAB believes that it is in the best interest of the people of the United States to have the oil and gas reserves located in the OCS safely extracted. We hope to have BOEM conduct a meeting in Santa Barbara County during the public review process, and we wish to thank Secretary Zinke and President Trump for this opportunity to address this very important issue.

Sincerely,

Tom Becker

Cars Are Basic

lesdeplorable7@gmail.com

From: Thomas Becker <lesdeplorable7@gmail.com>
Sent: Saturday, March 23, 2019 9:34 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>; Williams, Das <DWilliams@countyofsb.org>; Hartmann, Joan <jHartmann@countyofsb.org>; Hart, Gregg <gHart@countyofsb.org>; Jean Yamamura <jean@independent.com>
Subject: Exxon/Mobil oil trucking project EIR

Kathryn,

It is my understanding that the draft EIR for the Exxon/Mobil oil trucking project may soon be released. I submitted a comment letter on the project scope in July, 2018. In my comment letter, I suggested that an alternative project to the trucking plan was the expedited rebuilding of the Plains 901/903 pipeline. I suggested that the pipeline be increased to 500,000 BPD.

At the time of my July, 2018 comment letter, I assumed that the Plains 901/903 pipeline was so extensively damaged that the repairing of the pipeline would require an EIR. However, just last month, I found out (from you) that repairing the existing pipeline would not require any " discretionary approvals", thereby eliminating the requirement for an EIR. If I had known that fact in July, 2018, I would have included an alternative to the trucking plan that called for the repairing of the existing 300,000 BPD pipeline. I am including that alternative now in this email.

Please consider this email as an addendum to my July, 2018 EIR scope letter/comment. This addendum is based on information that was given to me by County P&D AFTER I submitted my comment in July, 2018, information that was known to County P&D at the time public comment was solicited by P&D for the Exxon/Mobil oil trucking project EIR scope.

FYI, I reviewed the letter County P&D sent to the BOEM on March 8, 2018 regarding the new BOEM OCS 5-year plan. I suggest P&D review the section of the letter numbered "1", and specifically the sentence "Considering the amount of analyses conducted in the Santa Barbara region for existing development, the EIS could easily contain detailed analysis of this area and avoid general, vague analysis about the Program area as a whole". Of course, that "detailed analysis" P&D wishes BOEM to review would include truthful, complete and detailed analysis by P&D of public comments and questions submitted to P&D as part of the Exxon/Mobil oil trucking EIR as well as the Plains All American pipeline replacement EIR.

Thank You,

Tom Becker
Buellton, CA
lesdeplorable7@gmail.com

CENTER for BIOLOGICAL DIVERSITY
Because life is good.

Via Electronic and First Class Mail

July 16, 2018

Kathryn Lehr, Planner
Santa Barbara County
Planning & Development
123 East Anapamu Street
Santa Barbara, CA 93101
klehr@co.santa-barbara.ca.us

RE: Notice of Preparation of a Draft Supplement to an Environmental Impact Report (83-EIR22); ExxonMobil Trucking Permit Application, Project No. 17RVP-00000-00081

Dear Ms. Lehr,

The Center for Biological Diversity submits the following comments to the Santa Barbara County Planning and Development Commission (the "County") on ExxonMobil's Interim Trucking for SYU Phased Restart Project (the "Project"). ExxonMobil's proposal to put up to 70 trucks carrying nearly half-a-million-gallons of crude oil onto Santa Barbara rods *every day* so that it can restart its offshore oil and gas drilling operations is incredibly dangerous. Because of the extraordinary threat to public safety and the numerous harmful environmental impacts inherent in the Project, the County cannot lawfully grant ExxonMobil's oil truck permit.

As the County is well aware, California generally prohibits the trucking of oil drilled offshore. And it does so first good reason. The extraordinarily high rate of accidents makes trucking one of the worst forms of oil transport. Oil truck accidents cause fires and explosions, injure and kill people, and spill hundreds of thousands of gallons of crude oil a year onto roads and into waterways. These ultra-hazardous trucks simply do not belong in California's coastal environment.

If the County nevertheless moves forward with the permit application, it must prepare a comprehensive environmental impact report ("EIR") that adequately describes the environmental baseline; adequately discloses, analyzes, and mitigates the numerous significant impacts inherent in the proposal; and considers a reasonable range of alternatives. We believe that any reasonable evaluation will show that there is no way to adequately avoid the harm from the Project and the only safe, lawful course of action is to deny the permit.

I. The County Must Prepare a Comprehensive Environmental Impact Report

Given the inevitable, yet irreversible and devastating consequences of transporting crude oil by truck and the other harmful impacts of the Project described below, the County should reject ExxonMobil's permit application. If, however, the County decides to move forward with approval, it must prepare a full EIR pursuant to the California Environmental Quality Act ("CEQA"), Public Resources Code §§ 21000, *et. seq.*, and the CEQA Guidelines, title 14, California Code of Regulations, §§ 15000, *et seq*.

CEQA is a comprehensive statute designed to provide for the long-term protection of the environment. It seeks to accomplish this goal in two primary ways. First, CEQA is designed to inform decision-makers and the public about the potential significant environmental effects of a project. CEQA Guidelines § 15002(a)(1). Such disclosure ensures that "long term protection of the environment . . . shall be the guiding criterion in public decisions." Pub. Res. Code § 21001(d). Second, CEQA directs public agencies to avoid or reduce environmental damage whenever feasible by requiring changes in projects through the use of alternatives or mitigation measures. *See* CEQA Guidelines § 15002(a)(2), (3); *see also Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 564 (1990); *Laurel Heights Improvement Ass'n v. Regents of the University of California*, 47 Cal.3d 376, 400 (1988).

CEQA applies to all "discretionary projects proposed to be carried out or approved by public agencies." Pub. Res. Code § 21080(a). Before taking any action, a public agency must conduct a "preliminary review" to determine whether the action is a "project" subject to CEQA. *See Muzzy Ranch Co. v. Solano County Airport Land Use Comm'n*, 41 Cal. 4th 372, 380 (2007). A "project" is "the whole of an action" directly undertaken, supported or authorized by a public agency, "which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." Pub. Res. Code. § 21065. "[T]he term 'project' refers to the underlying activity and not the government approval process." *California Unions for Reliable Energy v. Mojave Desert Air Quality Mgmt. Dist.*, 178 Cal. App. 4th 1225, 1241 (2009).

Where, as here, there is a fair argument that the proposed project may have a significant effect on the environment, preparation of an EIR is required. Pub. Res. Code §§ 21100, 21151; CEQA Guidelines § 15064(a)(1); *No Oil, Inc. v. City of Los Angeles*, 13 Cal. 3d 68, 82 (1974); *Communities for a Better Env't v. South Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 319 (2010). This "fair argument" test "establishes a low threshold for initial preparation of an EIR, which reflects a preference for resolving doubts in favor of environmental review." *Architectural Heritage Ass'n v. County of Monterey*, 122 Cal. App. 4th 1095, 1110 (2004).

In its EIR, the County must properly define the environmental baseline; must evaluate and mitigate the substantial threats to public safety, public health, and the environment from trucking nearly half-a-million gallons of crude oil every day along windy coastal and mountainous highways; must evaluate and mitigate the dangers of bringing shuttered aging offshore drilling platforms back online; and must fully evaluate and mitigate all the greenhouse gases to be emitted as a result of the Project—from transporting the crude oil cargo to refining and burning that oil.

II. The County's EIR Must Properly Define the Environmental Baseline

To evaluate the environmental impacts of a proposed project, a lead agency must first determine the environmental setting, or baseline. CEQA Guidelines § 15125(a). Under CEQA, the baseline consists of "the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced." CEQA Guidelines § 15125(a).

The description of the project's baseline must ensure that the public has "an understanding of the significant effects of the proposed project and its alternatives." CEQA Guidelines § 15125(a). As such, the baseline is the actual physical conditions that exist at the site—not hypothetical conditions. *Communities for a Better Env't v. S. Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 315 (2010). Accurately determining the baseline environmental conditions is crucial to accurately evaluating a project's impact.

ExxonMobil's operations at both the LFC and its offshore drilling platforms are currently shut down and have been since just after the Plains All American Pipeline oil spill in May 2015. Yet the County has stated that it intends to define the environmental baseline as *pre*-shutdown production levels and related operations. Such conditions have not existed for over three years and are certainly not the conditions as they existed at the time the County circulated the Notice of Preparation for the Project. Defining the baseline in such a manner is improper and unlawfully inflates the Project setting to minimize the significant impacts from ExxonMobil's proposal.

III. The County's EIR Must Evaluate and Mitigate the Substantial Risks and Impacts of Accidents from Increased Truck Traffic Carrying Flammable Crude

The County's EIR must consider the substantial risks and impacts of accidents from increased oil tanker traffic. A 2018 report from the U.S. Department of Transportation found that in 2016, 4,213 large trucks were involved in fatal crashes, 55,633 large trucks were involved in injury crashes, and 99,911 were involved in towaway crashes.[1] The report notes that the number of fatal crashes involving large trucks or buses increased by 28 percent between 2009 and 2016.[2]

Motor vehicle accidents are the leading cause of death in the oil and gas industry.[3] And because these accidents occur on highways and roads shared by the general public, they represent a significant threat to public safety. According to a 2009 report by American Petroleum Institute, tanker trucks spill an average of 9,200 barrels of oil—or 386,400 gallons—per year.[4] Truck accidents carrying other hazardous liquids routinely occur every year as well. A 2004 federal study indicated that approximately 200 hazmat trucks are involved in fatal crashes annually and 5,000 hazmat trucks each year are involved in nonfatal crashes.[5] As the report states, "[a]lthough these numbers are small relative to the totals of almost 5,000 trucks involved in fatal crashes and 400,000 involved in nonfatal crashes annually, the potential for human injury

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[1] U.S. Department of Transportation, Large Truck and Bus Crash Facts 2016 (May 2018) at 3, 67, *available at* https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/safety/data-and-statistics/398686/ltbcf-2016-final-508c-may-2018.pdf.

[2] *Id.* at 3.

[3] Center for Disease Control and Prevention, Oil and Gas Extraction, Dec. 12, 2012, http://www.cdc.gov/niosh/programs/oilgas/projects html.

[4] API, *Analysis of U.S. Oil Spillage* (Aug. 2009), *available at* http://www.api.org/environment-health-and-safety/clean-water/oil-spill-prevention-and-response/~/media/93371EDFB94C4B4D9C6BBC766F0C4A40.ashx; *see also* Susan Christopherson and Kushan Dave, *A New Era of Crude Oil Transport: Risks and Impacts in the Great Lakes Basin*, CARDI Reports, Cornell University, Issue No. 15 (Nov. 2014).

[5] U.S. Dep't of Transportation, Crashes Involving Trucks Carrying Hazardous Materials, 2004, http://ntl.bts.gov/lib/51000/51300/51302/fmcsa-ri-04-024.pdf.

and property damage in hazmat crashes is much greater."[6] These accidents and spills can cause fires and explosions, increasing the risk of injuries and fatalities.

Additionally, a study by the Associated Press of six states where truck traffic has increased due to an increase in oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.[7] The study found that from 2009-2013, traffic fatalities in West Virginia's most heavily drilled counties rose 42 percent, while traffic deaths in the rest of the state declined 8 percent; in Pennsylvania, traffic fatalities in drilling counties rose by 4 percent, while they fell by 19 percent in the rest of the state; and in 21 Texas counties where drilling had recently expanded, deaths/100,000 people from traffic accidents rose an average of 18 percent, while they dropped by 20 percent for the rest of Texas.[8]

In California alone, from 1997 to 2004 there were 1,786 incidents involving trucks transporting oil—an average of 255 per year.[9] These incidents included 159 overturned trucks, 132 of which involved oil spills.[10] Some of these incidents were catastrophic. For example, in 2000, a double tank oil truck skidded across the road and into a ravine, killing the truck driver and spilling nearly 7,000 gallons into the environment. The spill covered over 20 miles, and caused extensive environmental damage, including destroyed vegetation and birds soaked in oil.[11] The more trucks there are carrying hazardous materials, the greater the chances of other similar incidents.

The EIR must disclose and analyze the possibility of accidents related to pool fires and accidents from other sources, such as wetlines. Tanker trucks are typically loaded through bottom lines, which do not drain completely into the tank because they are at the lowest point on the container. The structurally fragile bottom lines can contain 30-50 gallons of the oil, referred to as wetlines, which can contribute to an event leading to fire and explosion. Indeed, as the federal government has found, a spill of 50 gallons can create a fire over an area of up to 5,000 square feet, and if not extinguished immediately, can result in significant loss of life, or damage to property or the environment.[12] Even small spills can cause significant destruction—one spill from a wetline of just 13 gallons resulted in a fire that killed the driver of a passenger vehicle that had struck the wetline gear.[13]

The substantial risks from transporting hazardous materials by truck would be exacerbated given the routes ExxonMobil's trucks would take. Highway 101 is extremely

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[6] *Id.*

[7] Kevin Begos and Jonathan Fahey, AP Impact: Deadly Side of Fracking Boom, May 5, 2014, http://bigstory.ap.org/article/ap-impact-deadly-side-effect-fracking-boom-0.

[8] *Id.*

[9] Oil Spills from Trucks: Prevention, Preparedness, and Response, Roundtable of Pacific States/British Columbia Oil Spill Task Force, Summary Notes, Portland, Oregon (Mar. 24, 2005), at 6, *available at* http://oilspilltaskforce.org/docs/project_reports/TruckingSpillsRtSummaryNotes.pdf.

[10] *Id.*

[11] *Id.*

[12] Pipeline and Hazardous Material Safety Administration, *Wetlines: Awareness For Emergency Responders*, http://phmsa.dot.gov/pv_obj_cache/pv_obj_id_1A04D5D92488F88DFD949BCE252FDFE9AE8C0400/filename/wetlines_final.pdf.

[13] PHMSA, Safety Requirements for External Product Piping on Cargo Tanks Transporting Flammable Liquids,76 Fed. Reg. 4847, 4848 (Jan. 27, 2011).

windy—it is dangerous under the best of conditions. Likewise, Route 166 is also very dangerous, with few guardrails, few shoulders, steep hills, and one narrow lane in each direction for a long stretch of the highway. Indeed, ExxonMobil's own application states that the routes it is proposing to take already suffer from a higher rate of accidents than other roads in California.[14] Moreover, many of the trucks could travel through densely populated areas such as Santa Maria, increasing the risk of accidents, injury and property destruction in the event of a fiery spill. The trucks would also travel over county roads, the quality of which would degrade with heavy tanker trucks traveling over it every day.[15] This is a significant concern as many roads in Santa Barbara County are already in poor condition, increasing the risk of accidents.

The County's EIR must quantify, analyze, and mitigate the risk and number of accidents, injuries, deaths, fire damage anticipated under ExxonMobil's proposal. And it must do so using current information, not the decades-old information on which ExxonMobil's application is based.[16]

IV. The County's EIR Must Disclose, Analyze, and Mitigate the Public Health Impacts from Air Emissions from Heavy-Duty Diesel Trucks

In addition to increasing the risk of accidents, the trucks would emit harmful air pollution. The emissions from combusting the fuel used by heavy-duty trucks and vessels include several noxious pollutants such as particulate matter ("PM") and nitrous oxide, a precursor to PM. The effects associated with PM exposure are "premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease."[17] California has identified diesel PM as a toxic air contaminant and has estimated that 70 percent of the cancer risk from the air Californians breathe is attributable to diesel PM; the Environmental Protection Agency says that diesel PM is "likely to be a carcinogen."[18] The increase in PM that would result from the proposal is a significant concern as Santa Barbara County is already designated as non-attainment for state PM-10 standards.[19]

Moreover, diesel emissions of nitrogen oxides contribute to the formation of ground level ozone, which irritates the respiratory system, causing coughing, choking, and reduced lung capacity.[20] Ground level ozone pollution, formed when nitrogen oxides and hydrocarbon emissions combine in the presence of sunlight, presents a hazard for both healthy adults and

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[14] ExxonMobil Application, Revised Traffic and Circulation Study at 14-15.

[15] Dave Fehling, NPR, Roads Killed: Texas Adds Up Damage from Drilling, March 19, 2012, http://stateimpact.npr.org/texas/2012/03/19/roads-killed-texas-adds-up-damages-from-drilling/.

[16] *See, e.g.*, ExxonMobil Application, Quantitative Risk Analysis at 5, 8 (analyzing risk of accidents using study from 1993).

[17] EPA, Fine Particulate Matter National Ambient Air Quality Standards, 80 Fed. Reg. 15340, 15347 (Mar. 23, 2015).

[18] Union of Concerned Scientists, *California: Diesel Trucks, Air Pollution and Public Health*, http://www.ucsusa.org/clean_vehicles/why-clean-cars/air-pollution-and-health/trucks-buses-and-other-commercial-vehicles/diesel-trucks-air-pollution.html#.VXRuhc9Viko; Trade, Health and Environmental Impact Project, *Driving Harm: Health and Community Impacts of Living Near Truck Corridors* (Jan. 2012), http://hydra.usc.edu/scehsc/pdfs/Trucks%20issue%20brief.%20January%202012.pdf.

[19] 2040 Santa Barbara County Regional Transportation Plan, at 4.2-8.

[20] [20] Union of Concerned Scientists, *Diesel Engines and Public Health*, https://www.ucsusa.org/clean-vehicles/vehicles-air-pollution-and-human-health/diesel-engines#.W0ZGstVKjIU

individuals suffering from respiratory problems.[21] The County's EIR must properly consider, analyze, and mitigate these impacts.

V. The County's EIR Must Consider and Mitigate the Risks and Impacts to Threatened and Endangered Species Along the Trucking Route

In addition to posing a serious threat to public safety, authorizing trucks to transport thousands of gallons of crude oil would put a wide variety of wildlife at risk. As we know all-too-well following the Refugio oil spill caused by the rupture of the Plains All American Pipeline and the Deepwater Horizon tragedy, all types of wildlife are susceptible to the deadly effects of spilled oil, including mammals, birds, fish, insects, vegetation, and microorganisms. In addition, the effects of spilled oil on microorganisms, invertebrates, and algae tend to move up the food chain and affect other species. Oil spilled into rivers often collects along the banks, where the oil clings to plants and grasses. The animals that ingest these contaminated plants may also be affected. Rocks found in and around flowing water serve as homes for mosses, which are an important basic element in a freshwater habitat's food chain. Spilled oil can cover these rocks, killing the mosses and disrupting the local ecology.

The specific routes that Exxon wants its trucks to use also put several already-imperiled species at great risk from spills. The oil-truck routes pass through or near critical habitat for the threatened red-legged frog,[22] threatened and endangered steelhead populations,[23] and the endangered California tiger salamander,[24] as well as endangered plants, such as the La Graciosa thistle.[25] These species are at high risk of contamination following an oil-truck spill.

The routes pass over or near dozens of streams that are essential to the southern steelhead population, which is very susceptible to highly toxic crude oil products. The trucks would also pass through one of the last remaining islands of critical habitat for the Santa Barbara distinct population segment of the California tiger salamander. The U.S. Fish and Wildlife Service's 5-year review for this species specifically states that "sources of chemical pollution that may adversely affect Central California tiger salamanders include hydrocarbon and other contaminants from oil production ..." and that spilled oil can "negatively affect the food chain, with effects to algae growth and less prey species available, resulting in smaller salamander larvae."[26] This species, and the habitat and food chain it depends on, could be decimated by an oil truck accident.

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[21] *Id.*

[22] FWS, Critical Habitat for Red-Legged Frog, http://www.fws.gov/sacramento/es/Critical-Habitat/CA-Red-Legged-Frog/Previous/Documents/m21_crlf_stb4&5_fCH.pdf.

[23] NMFS, Critical Habitat, South-central California Coast Steelhead http://www.westcoast fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/steelhead/steelhead_sccc_ch.pdf; NMFS Critical Habitat, Southern California Coast steelhead, http://www.westcoast fisheries.noaa.gov/publications/frn/2005/70fr52488.pdf.

[24] FWS, Species Profile: California Tiger Salamander, http://ecos fws.gov/speciesProfile/profile/speciesProfile?spcode=D01T#crithab.

[25] FWS, Species Profile: La Graciosa thistle, http://ecos fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q0FE.

[26] FWS, California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-Year Review: Summary and Evaluation (Oct. 21, 2014), at 38, *available at* http://ecos fws.gov/docs/five_year_review/doc4466.pdf.

And, given the proximity of Highway 101 to the Pacific Ocean in places, it is possible that an oil spill could reach the ocean, further threatening sea birds, marine mammals, and other marine life, as described further below. The County's EIR must properly analyze and mitigate the risks to these imperiled species.

VI. The County's EIR Must Quantify, Analyze, and Mitigate the Substantial Greenhouse Gas Emissions from the Proposal

A. The Project Will Exacerbate the Harmful Impacts of Climate Change

Climate change, driven primarily by the combustion of fossil fuels, poses a severe and immediate threat to the health, welfare, ecosystems, and economy of the United States and the world. In recognition of these threats, the Paris Agreement codifies the international, scientific consensus that climate change is an "*urgent and potentially irreversible threat to human societies and the planet* and thus requires the widest possible cooperation by all countries." [27] Accordingly, the Paris Agreement commits all signatories to an articulated target to hold the long-term global average temperature "to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels."[28] Immediate and aggressive greenhouse gas emissions reductions are necessary to keep warming below a 1.5º or 2°C rise above pre-industrial levels.

A recent report from the California Air Resources Board notes that California is already experiencing the harmful impacts of climate change. These harmful impacts include: rising annual average temperatures in the State, including increases in daily minimum and maximum temperatures; more frequent extreme events, including wildfire and heat waves; declining spring runoff volumes as a result of a diminished snowpack; a declining number of "winter chill hours" – crucial for the production of high-value fruit and nut crops.[29] The report notes that these impacts "make an even more persuasive case for California's vulnerability to climate change" and the urgent need for the State to take action "to stave off the most severe impacts of climate change."[30]

The report further notes that Senate Bill 32 fully recognizes those impacts by establishing a target of a 40 percent reduction of greenhouse gases by 2030 to put California on the path to contain the rise in global temperatures to below 2°C.[31]

According to a large body of scientific research, holding temperature rise to "well below

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[27] Paris Agreement, Decision, Dec. 2015, Art. 4(3); Recitals. Although President Trump has announced his intent to withdraw the United States from the Paris Agreement, that process will take four years and could be overridden in the next presidential election. Moreover, the Paris Agreement represents the international consensus to address greenhouse gas emissions, and therefore remains a relevant consideration in determining the impacts of projects that will emit significant amounts of greenhouse gases.

[28] *Id.*, Art. 2 (emphasis added).

[29] California Air Resources Board, THE 2017 CLIMATE CHANGE SCOPING PLAN UPDATE THE PROPOSED STRATEGY FOR ACHIEVING CALIFORNIA'S 2030 GREENHOUSE GAS TARGET, Jan. 2017 at ES2, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

[30] *Id.*

[31] *Id*. The greenhouse gas targets established by California are not strong enough to meet the Paris Agreement.

2°C" requires that the vast majority of global and U.S. fossil fuels stay in the ground. The global carbon budget—the remaining amount of carbon that can be released into the atmosphere before we lose any reasonable chance of holding global temperature increases well below 2°C—is extremely limited and rapidly being consumed by continued fossil fuel use. For example, a recent study by Oil Change International entitled *The Sky's Limit*, shows that meeting the Paris climate goals requires a managed decline in *currently operating* fossil fuel production activities, such as coal, oil and gas extraction, transport and combustion.[32] Specifically:

- The potential carbon emissions from the oil, gas, and coal in the world's currently operating fields and mines would take us beyond 2°C of warming.
- The reserves in currently operating oil and gas fields alone, even with no coal, would take the world beyond 1.5°C.

The actions taken in California can impact oil consumption on a global scale. As the world's sixth-largest economy, California is uniquely positioned to lead the way on a future without fossil fuels.[33] For example, a recent study by the Stockholm Environment Institute confirmed that every barrel of California oil left in the ground will result in a net decrease of about half a barrel of oil consumption globally.[34] The County must consider how approving the Project will frustrate both the County's and the State of California's efforts to reduce greenhouse gas emissions.

B. The County Must Consider and Mitigate the Greenhouse Gas Emissions from Drilling for, Transporting, Refining, and Consuming the Oil

The County's EIR must consider *all* the greenhouse gas emissions from the Project. This includes the greenhouse gas emissions from the transport of the oil by the heavy-duty diesel trucks as well as the downstream greenhouse gas emissions from burning the crude oil cargo.

Climate change is a clear example of a cumulative effects problem, with emissions from numerous sources combining to create a significant environmental and public health issue. *See Kings County Farm Bureau v. City of Hanford* 221 Cal.App.3d 692, 720 (1990) ("Perhaps the best example [of a cumulative impact] is air pollution, where thousands of relatively small sources of pollution cause a serious environmental health problem."); *Los Angeles Unified School Dist. v. City of Los Angeles* 58 Cal.App.4th 1019, 1025 (1997) (impact sources may "appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact"). Therefore, any analysis of a Project's impact on climate change must take into account *all* potential sources of greenhouse gas emissions, no matter how small. Accounting for such emissions and incorporating them into the sum of emissions from the Project is necessary to adequately inform the public of the potential consequences of moving forward with a project.

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[32] Oil Change International, The Sky's Limit, Sept. 2016, http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf.

[33] Letter from 26 Scientists to Governor Brown, July 12, 2018, https://www.biologicaldiversity.org/programs/climate_law_institute/energy_and_global_warming/pdfs/18-07-12-Scientist-letter-to-Gov-Brown-calling-for-phase-out-of-oil-and-gas-production.pdf

[34] Stockholm Environment Institute, How limiting oil production could help California meet its climate goals, 2018, https://www.sei.org/wp-content/uploads/2018/03/sei-2018-db-california-oil2.pdf.

Under CEQA, the Commission must analyze the environmental impacts of a future action if "(1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." *Laurel Heights Improvement Ass'n of San Francisco v. Regents of University of Cal.*, 47 Cal. 3d 376, 396 (1998).

Here, refining and consumption of the oil to be extracted under ExxonMobil's proposal is certainly a reasonably foreseeable consequence of the Project. Indeed, the entire point of the project is to bring its offshore platforms back online so that ExxonMobil can get its product to market. The County must therefore consider and mitigate downstream greenhouse gas emissions.

VII. The County's EIR Must Consider the Numerous Harmful Impacts of Bringing Aging Oil and Gas Drilling Platforms Back Online

The County's EIR must consider and mitigate the numerous significant impacts from bringing ExxonMobil's aging offshore platforms back online. These impacts include oil spills, noise pollution, ship strikes, and harmful air and water pollution.

A. The EIR Must Consider the Risks and Impacts of Oil Spills and other Accidents

ExxonMobil's proposal would bring offshore oil and gas platforms that are decades-old back online and increase the risk of an oil spill. ExxonMobil's offshore platforms in the Santa Barbara Channel were installed in 1976 and 1989 and ExxonMobil began producing from these platforms in 1981 and 1993.[35] At the time the platforms were installed, ExxonMobil anticipated drilling from these platforms for 25-35 years,[36] meaning that the platforms and their associated infrastructure, including pipelines, are already beyond or approaching their expected lifespans.

1. *Reliance on aging infrastructure significantly increases the risk of oil spills.*

According to scientists, aging poses risks of corrosion, erosion, and fatigue stress to subsea pipelines.[37] Subsea pipeline corrosion appears to accelerate over time,[38] and can act synergistically with fatigue stress to increase the rate of crack propagation.[39] Marine environments are especially known to produce significant corrosion on steel surfaces, and when a steel structure is at or beyond its elastic limit, the rate of corrosion increases 10-15 percent.[40]

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[35] BOEM, Pacific OCS Region, https://www.boem.gov/pacific-ocs-map/.

[36] *See, e.g.*, Exxon Company, Development and Production Plan Santa Ynez Unit Development, Oct. 1982, at I-2, available at https://www.boem.gov/1982-10_Platforms_Harmony_Heritage_Hondo_Santa_Ynez_Unit_DPP/.

[37] Petroleum Safety Authority Norway. 2006. Material Risk – Ageing offshore installations. Prepared by Det Norske Veritas on request from Petroleum Safety Authority Norway. Available at http://www.psa.no/report-archive/category1033 html.

[38] Mohd, M.H. and J.K. Paik. 2013. Investigation of the corrosion progress characteristics offshore oil well tubes. Corrosion Science 67:130-141.

[39] PSA Norway 2006.

[40] Mohd, and Paik 2013; A. Igor, R.E. Melchers, Pitting corrosion in pipeline steel weld zones, Corros. Sci. 53 (12) (2011) 4026–4032; R.E. Melchers, M. Ahammed, R. Jeffrey, G. Simundic, Statistical characterization of surfaces of corroded, Mar. Struct. 23 (2010) 274–287.

One offshore pipeline study found that after 20 years the annual probability of pipeline failure increases rapidly, with values in the range of 0.1 to 1.0, which equates to a probability of failure of 10 percent *to 100 percent per year*.[41] Another study covering 1996-2010 found that accident incident rates, including spills, increased significantly with the age of infrastructure.[42]

The U.S. Department of Transportation itself found that offshore pipelines can be more vulnerable than onshore pipelines. They have a greater vulnerability to severe weather conditions than onshore pipelines, especially during hurricane events. And massive wave action can alter the pipeline stability, causing gradual displacement, especially in small diameter pipelines.[43] Offshore pipelines can also face more corrosion than onshore pipelines due to higher temperature and pressure conditions that occur during the laying of these pipelines.[44]

Consistent with these findings, a report published in 2010 found that the number of oil spills from offshore rigs and pipelines between 2000 and 2009 *more than quadrupled* the rate of spills in prior decades.[45] In particular, from the early 1970s through the 1990s, offshore rigs and pipelines averaged about four spills per year of at least 50 barrels (or 2,100 gallons). The average annual total skyrocketed to more than 17 from 2000 to 2009, and averaged 22 per year from 2005 to 2009 alone.[46] And the number of spills, as well as the quantity of spilled oil, grew significantly worse even when taking increased production in account.[47]

In addition, the age of the wells in the SYU also pose a risk of leakage. Studies have shown that 30 percent of offshore oil wells in the Gulf of Mexico experienced well casing damage in the first five years after drilling, and damage increased over time to 50 percent after 20 years.[48] This is a substantial concern for the SYU considering ExxonMobil has been drilling it for nearly 40 years.

2. *An Oil Spill Could Have Devastating Consequences*

Oil spills have a wide array of lethal and sublethal impacts on marine species, both

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[41] Bea, R., C. Smith, B. Smith, J. Rosenmoeller, T. Beuker, and B. Brown. 2002. Real-time Reliability Assessment & Management of Marine Pipelines. 21st International Conference on Offshore Mechanics & Arctic Engineering. ASME.

[42] Muehlenbachs, et al. 2013. The impact of water depth on safety and environmental performance in offshore oil and gas production. Energy Policy 55:699-705.

[43] U.S. Department of Transportation, Federal Highway Administration, Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: The Gulf Coast Study, Phase 2-Task 3:1: Screening for Vulnerability at 204 (June 2014).

[44] Keuter, J. (2014). In-line Inspection of Pipes Using Corrosion Resistant Alloys (CRA). Rosen Technology and Research Center GmbH, Rosen Group, Germany; Standard Oil Company (1981) Drilling fluid bypass for marine riser. U.S. Grant. US4291772 A.

[45] Alan Levin, *Oil Spills Escalated in this Decade*, USA Today, June 8, 2010, *available at* http://usatoday30.usatoday.com/news/nation/2010-06-07-oil-spill-mess_N htm.

[46] *Id.*

[47] *Id.*

[48] Vengosh, A. et al. 2014. A critical review of the risks to water resources from unconventional shale gas development and hydraulic fracturing in the United States. Environmental Science & Technology 48:8334-8348; Davies, R.J. et al. 2014. Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. Marine and Petroleum Geology 56:239-254.

immediate and long-term.[49] Direct impacts to wildlife from exposure to oil include behavioral alteration, suppressed growth, induced or inhibited enzyme systems, reduced immunity to disease and parasites, lesions, tainted flesh, and chronic mortality.[50] Oil destroys the water-proofing and insulating properties of feathers and fur of birds and mammals, respectively, thereby compromising their buoyancy and ability to thermoregulate.[51]

Marine mammals can be exposed to oil internally by inhaling volatile compounds at the surface, swallowing oil, consuming oil-contaminated prey, and externally by swimming in oil.[52] Exposure to toxic fumes from petroleum hydrocarbons during oil spills have been recently linked to mortality in cetaceans, even years after such accidents.[53] A recent scientific study determined that the Deepwater Horizon oil spill caused adrenal and lung lesions in bottlenose dolphins which led to an unusual mortality event in which dolphins died from 2010 to 2014.[54]

ESA-listed sea otters are particularly vulnerable to contamination from oil spills. When sea otters come into contact with oil, it causes their fur to mat, which prevents the fur from insulating their bodies. Without this natural protection from the cold water temperature, sea otters can quickly die from hypothermia. The toxicity of oil can also be harmful to sea otters, causing liver and kidney failure and damage to their lungs and eyes.[55]

In addition, oiled shores can affect nesting and foraging areas of birds. Oiled adults returning to a nest can contaminate their eggs and chicks with oil. Studies on the effects of oil on eggs have shown significant mortality and developmental defects in embryos.[56] Oiled birds are also at high risk of ingesting oil when they preen their feathers. Ingested oil can damage the gastrointestinal tract, evidenced by ulcers, diarrhea, and a decreased ability to absorb nutrients, and inhibit proper hormone function.[57] ESA-listed western snowy plovers and the California least tern are extremely sensitive to disturbances such as oil spills, especially during the nesting season.[58]

Exposure to crude oil also adversely affects fish at all stages.[59] Early life stages of fish are particularly sensitive to the effects of toxic oil components such as polycyclic aromatic

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[49] Peterson, C. H., S. D. Rice, J. W. Short, D. Esler, J. L. Bodkin, B. E. Ballachey, and D. B. Irons. 2003. Long-term ecosystem response to the Exxon Valdez oil spill. Science 302:2082-2086; Venn-Watson, S. *et al.* Adrenal Gland and Lung Lesions in Gulf of Mexico Common Bottlenose Dolphins (Tursiops truncatus) Found Dead following the Deepwater Horizon Oil Spill. *PLoS ONE* 10, e0126538 (2015).

[50] Holdway, D. A. 2002. The acute and chronic effects of wastes associated with offshore oil and gas production on temperate and tropical marine ecological processes. Marine Pollution Bulletin 44:185-203.

[51] Jenssen, B. M. 1994. Review Article: Effects of oil pollution, chemically treated oil, and cleaning on the thermal balance of birds. Environmental Pollution 86:207-215; Peterson et al. 2003.

[52] NOAA. 2010. Analysis of Hydrocarbons in Samples Provided from the Cruise of the R/V WEATHERBIRD II, May 23-26, 2010, National Oceanic and Atmospheric Administration, Silver Spring, Maryland, 20910.

[53] Venn-Watson et al. 2015.

[54] *Id.*

[55] USFWS, Southern Sea Otter (*Enhydra lutris nereis*) 5-Year Review: Summary and Evaluation, Sept. 15, 2015.

[56] Jenssen 1994.

[57] *Id.*

[58] *Id*.

[59] Carls, M. G., S. D. Rice, and J. E. Hose. 1999. Sensitivity of fish embryos to weathered crude oil: part I. Low-level exposure during incubation causes malformations, genetic damage, and mortality in larval pacific herring (Clupea pallasi). Environmental Toxicology and Chemistry 18:481-493; Bernanke, J., and H.-R. Kohler. 2009. The

hydrocarbons which can cause larval deformation and death. Adult fish exposed to oil can suffer from reduced growth, enlarged liver, changes in heart and respiration rates, fin erosion, and reproductive impairment.[60] Additionally, fish and sharks are at risk from lethal coating of their gills with oil, and declines in and contamination of their food sources. Exposure to crude oil has also been linked to long-term population effects in fish. A recent study based on 25 years of research demonstrated that embryonic salmon and herring exposed to very low levels of crude oil can develop heart defects that impede their later survival, indicating that the spill may have had much more widespread impacts than previously thought.[61]

Oil spills can also adversely affect public health. For example, the 50,000 people involved in cleanup efforts following the Deepwater Horizon disaster suffer from an increased risk of physical and psychological injury.[62] Gulf residents are still suffering from increased symptoms of depression, anxiety, mental illness, and posttraumatic stress.[63] And oil spills can close beaches and commercial and recreational fishing grounds, which can cause significant economic harm through lost revenue.

B. The EIR Must Consider the Risks and Impacts of Ship Strikes

Bringing ExxonMobil's offshore platforms back online will increase ship traffic due to the need to bring supplies to and from the platforms. Increased ship traffic increases the risk of deadly ship strikes of marine mammals and sea turtles. The County's EIR must consider and mitigate against these harms.

Ship strike-related mortality is a documented threat to endangered Pacific coast populations of fin, humpback, blue, sperm, and killer whales. Ship strikes are an increasing problem in California.[64] Between 2001 and 2010, nearly 50 large whales off the California coast were documented as having been struck by ships.[65] And a recent report cites collision with ships as a reason blue whales have not recovered.[66]

Ship strikes are also a problem for ESA-listed sea turtles. Like cetaceans, sea turtles cannot breathe under water and must regularly ascent to the surface for air, which makes them particularly vulnerable to boat and vessel strikes.[67] Commercial vessels are thus major hazards to

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impact of environmental chemicals on wildlife vertebrates. Reviews of Environmental Contamination and Toxicology 198:1-47.

[60] Bernanke and Kohler 2009, USFWS 2010.

[61] Incardona, et al. 2015. Very low embryonic crude oil exposures cause lasting cardiac defects in salmon and herring. Scientific Reports 5, Article number: 13499, doi:10.1038/srep13499.

[62] *See e.g.*, Oceana, Time For Action Six Years After Deepwater Horizon, Apr. 2016, http://usa.oceana.org/sites/default/files/deepwater_horizon_anniversary_report_updated_4-28.pdf.

[63] *Id.*

[64] Zito, Kelly (2010) Whale deaths blamed on busy ship traffic, krill. *San Francisco Chronicle,* Oct. 10.

[65] National Marine Fisheries Service. 2010. Large Whale Strandings Reported to California Marine Mammal Stranding Network (2001 - Present), NMFS Southwest Regional Office, California Marine Mammal Stranding Network Database.

[66] Virginia Morrell, Blue whales being struck by ships, Science Magazine, Jul. 23, 2014, http://www.sciencemag.org/news/2014/07/blue-whales-being-struck-ships.

[67] NOAA Fisheries, Understanding Vessel Strikes, June 25, 2017, https://www.fisheries noaa.gov/insight/understanding-vessel-strikes.

sea turtles, particularly in shipping lanes and during peak tourism months when recreational boaters congregate in coastal areas. Injuries from propellers include amputated flippers, fractured shells, brain injuries, and broken bones. These injuries, if they do not result in immediate death, can increase stress, which ultimately affect a sea turtle's ability to forage, migrate, escape from predators, and reproduce.

C. The EIR Must Consider the Risks and Impacts of Increased Noise Pollution

ExxonMobil's proposal will bring three offshore drilling platforms back online, thereby increasing the amount of noise in the marine environment through drilling activities and increased vessel traffic, and related activities. The County's EIR must disclose, analyze, and mitigate the impacts of noise pollution on the marine environment, and marine mammals in particular.

Anthropogenic noise pollution can mask marine mammal communications at almost all frequencies these mammals use.[68] "Masking" is a "reduction in an animal's ability to detect relevant sounds in the presence of other sounds."[69] Vessel noise can cover important frequencies these animals use for more complex communications. The National Marine Fisheries Service has recognized that this masking may affect marine mammal survival and reproduction by decreasing these animals' ability to "[a]ttract mates, [d]efend territories or resources, [e]stablish social relationships, [c]oordinate feeding, [i]nteract with parents, or offspring, [and] [a]void predators or threats."[70] Studies have also found that chronic exposure to boat traffic and noise can cause whales to reduce their time spent feeding.[71]

In addition to masking effects, marine mammals have displayed a suite of stress-related responses from increased ambient and local noise levels. For example, research reveals that chronic stress in North Atlantic right whales is associated with exposure to low frequency noise from ship traffic.[72] Specifically, "the adverse consequences of chronic stress often include long-term reductions in fertility and decreases in reproductive behavior; increased rates of miscarriages; increased vulnerability to diseases and parasites; muscle wasting; disruptions in carbohydrate metabolism; circulatory diseases; and permanent cognitive impairment."[73] These findings have lead researchers to conclude that "over the long term, chronic stress itself can reduce reproduction, negatively affect health, and even kill outright."[74] Additionally, in a noise exposure study using a captive beluga, increased levels of stress hormones were documented.[75]

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[68] *See, e.g.*, Hildebrand, J.A., *Impacts of Anthropogenic Sound, in* MARINE MAMMAL RESEARCH: CONSERVATION BEYOND CRISIS (Reynolds, J.E. III et al., eds. 2006); Weilgart, L., 2007, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 CANADIAN J. ZOOLOGY 1091-1116 (2007).

[69] OCEAN NOISE AND MARINE MAMMALS, at 96.

[70] Jason Gadamke, Ocean Sound & Ocean Noise: Increasing knowledge through research partnerships, May 2014.

[71] *See* Williams, R. D., et al., 2006, Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*), *Biological Conservation,* 133: 301-311.

[72] Rolland, R, S. Parks, K. Hunt, M. Castellote, P. Corkeron, D. Nowacek, S. Wasser, and S. Kraus. 2012. Evidence that ship noise increases stress in right whales. Proceedings of the Royal Society B. February 8, 2012.

[73] *Id.*

[74] *Id.*

[75] Romano, T.A. *et al.,* 2004, Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure, *Canadian Journal of Aquatic Science,* 61: 1124-1134.

Similar impacts would be expected for baleen and toothed whales in the vicinity of the SYU, including endangered blue whales, humpback whales, sperm whales, as well as dolphins, porpoises, and other animals. Stress due to noise can lead to long-term health problems, and may pose increased health risks for populations by weakening the immune system and potentially affecting fertility, growth rates, and mortality.[76]

D. The County's EIR Must Consider the Impacts of Acidizing from ExxonMobil's Offshore Platforms

ExxonMobil has previously used acidizing at its offshore platforms and has recently stated that it anticipates using these practices to bring its platforms back online.[77] The County's EIR must therefore disclose and analyze the impacts of acidizing on the marine environment and public health.

A recent study demonstrates that oil companies use dozens of extremely hazardous chemicals to acidize wells in California. Specifically, one study found that almost 200 different chemicals have been used and that at least 28 of these substances are F-graded hazardous chemicals—carcinogens, mutagens, reproductive toxins, developmental toxins, endocrine disruptors, or high acute toxicity chemicals.[78] Hydrofluoric acid, for example, has very high acute mammalian toxicity and neurotoxicity. The study notes that these chemicals can make up as much as 18 percent of the fluid used in these procedures.[79] Further, as much as 90,000 kg of these chemicals are used per treatment for matrix acidizing, and 50,000 kg used for well maintenance.[80] And the federal government allows ExxonMobil to dump the wastewater from acidizing into the Pacific Ocean, which can negatively impact marine life near these platforms.[81]

The County must also analyze the harmful air pollutants emitted during acidizing. Recent information indicates that acidizing releases toxic air pollutants. For example, one year after the South Coast Air Quality Management District began requiring the oil and gas industry to report the use of chemicals in certain well operations in the South Coast Air Basin, records show that oil companies used 44 different air toxic chemicals more than 5,000 times in Los Angeles and Orange counties in one year.[82] The known air toxics most frequently used by oil companies in the Los Angeles air basin include crystalline silica, hydrofluoric acid, and formaldehyde.[83] Formaldehyde harms the eyes and respiratory system and is classified as a cancer-causing substance by the International Agency for Research on Cancer and the California Air Resources

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[76] *Id.*

[77] *See, e.g.*, *Ctr. for Biological Div. v. Bureau of Ocean Energy Mgmt.*, No. 2:16-cv-08473, ECF Doc. No. 23-3 at 3

[78] Khadeeja Abdullah, Timothy Malloy, Michael K. Stenstrom & I. H. (Mel) Suffet. 2016. Toxicity of acidization fluids used in California oil exploration, Toxicological & Environmental Chemistry.

[79] *Id.*

[80] *Id.*

[81] *See, e.g.*, *id.* (noting that even the chemicals used in "routine" acidizing procedures can lead to a total accumulated load of hydrofluoric acid that is significant).

[82] An Analysis from the Center for Biological Diversity, Physicians for Social Responsibility – Los Angeles, Communities for a Better Environment, and the Center on Race, Poverty and the Environment et al. *Air Toxics One-Year Report: Oil Companies Used Millions of Pounds of Air-Polluting Chemicals in Los Angeles Basin Neighborhoods*, June 2014.

[83] *Id.*

Board.[84] Hydrofluoric acid is harmful to skin, eyes, and sensory organs, respiratory system, gastrointestinal system and liver, immune system, cardiovascular system, and blood.[85] Similarly, crystalline silica, classified a hazardous substance under the Occupational Safety and Health Act and the Comprehensive Environmental Response, Cleanup, and Liability Act, causes eye and skin burns, is harmful if swallowed, causes respiratory tract irritation, and is a cancer hazard.[86]

E. The County's EIR Must Adequately Consider or Mitigate Impacts to Cultural Resources

The County's EIR must adequately consider the direct, indirect, and cumulative impacts to cultural resources in and around the Santa Barbara Channel, and must adequately mitigate such impacts. Ocean waters in and around the Santa Barbara Channel protect ancient Chumash villages that lay under the ocean on the submerged lands of San Luis Obispo and Santa Barbara Counties.

The Channel Islands National Park was established "to protect nationally significant natural, scenic, wildlife, marine, ecological, archaeological, cultural, and scientific values of the Channel Islands,"[87] including "archaeological evidence of substantial populations of Native Americans."[88] And the Chumash Tribal Council has petitioned the federal government to designate additional areas in the Santa Barbara Channel as a National Marine Sanctuary because of its importance to Chumash heritage and culture.[89] The Channel is also home to resources of great cultural importance to the Chumash Peoples, including dolphins that are part of their creation story.[90] Impacts to such resources in the event of an oil spill or other accident could be severe.

VIII. The County's EIR Must Analyze a Reasonable Range of Alternatives, Including the No Project Alternative

The County's EIR must consider and analyze a reasonable range of feasible alternatives. Under CEQA, an EIR must "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." CEQA Guidelines, § 15126.6, subd. (a).

As courts have made clear, "[a] potential alternative should not be excluded from consideration merely because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" *Save Round Valley Alliance v. County of Inyo,* 157 Cal. App. 4th 1437, 1456-57 (2007) (quotations omitted). Although "an EIR need not consider every

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[84] *Id.*
[85] *Id.*
[86] 78 Fed. Reg. 56,274 (Sept. 12, 2013).
[87] 16 U.S.C. § 410ff.
[88] *Id.*
[89] National Marine Sanctuary Nomination, http://www nominate.noaa.gov/nominations/nomination_chumash_heritage.pdf
[90] Hadley Meares, A Maritime People: The Chumash Tribes of Santa Barbara Channel, KCET, July 16, 2015, https://www kcet.org/shows/california-coastal-trail/a-maritime-people-the-chumash-tribes-of-santa-barbara-channel.

conceivable alternative to a project, . . . it must consider a reasonable range of potentially feasible alternatives that will foster informed decision decision-making and public participation." CEQA Guidelines § 15126.6(a).

Here, the County's EIR must consider an alternative that includes reducing the total number of trucks ExxonMobil is permitted to use and restricting the times of day that ExxonMobil's trucks can transport oil. The County's EIR must also consider an alternative that restricts the times of year in which ExxonMobil can truck its oil to protect endangered species along the truck route and near offshore platforms, such as prohibiting trucking when endangered coastal steelhead are migrating near or along the truck route or when endangered blue whales come to the Channel during the summer months.

In addition to analyzing a range of reasonable alternatives, the EIR must also examine a no project alternative. "The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." CEQA Guidelines, § 15126.6, subd. (e)(1).) "The 'no project' analysis shall discuss the existing conditions … as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." CEQA Guidelines, § 15126.6, subd. (e)(2). Here, the County must consider the no project alternative of rejecting ExxonMobil's application to truck oil.

X. Conclusion

Exxon's proposal to transport over 470,000 gallons of crude oil on 70 trucks through Santa Barbara County every day must be rejected. These ultra-hazardous trucks do not belong in California's coastal environment—they are inherently dangerous, and carry significant risk of accidents, fiery explosions, injuries, deaths and environmental destruction. If the County nevertheless moves forward with the proposal, it must prepare a comprehensive EIR that properly defines the environmental baseline, and adequately considers and mitigates the numerous significant impacts of the project including the risk of truck accidents, the impact of bringing aging platforms back online, and the downstream greenhouse gas emissions that result from refining and consuming the crude oil cargo. But the only true way to is to prevent the numerous significant impacts from occurring is to reject the project.

Sincerely,

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Citizens Planning Association
of Santa Barbara County

July 17, 2018

Re: Notice of Preparation of a Draft Supplement to an Environmental Impact Report for the ExxonMobil Interim Trucking for SYU Phased Restart Project

Dear Staff:

In the months since the devastating Plains Oil Spill, the public has been made aware of the shortcomings which resulted in this spill, and we are greatly concerned about any re-start of operations.

ExxonMobil's plan to truck oil until the pipeline situation is corrected, which might take several years, needs extensive study before it is even considered viable.

Citizens Planning Association would like to request the following information be included in the DSEIR for this proposal.

The DSEIR should evaluate impacts from the proposed trucking as well as the restart of the Santa Ynez Unit.

The DSEIR should analyze the full life cycle impacts from the restart, processing, trucking, refining, and consumption of the oil and gas from the SYU.

In terms of trucking, the DSEIR should examine impacts related to air quality, climate change, risk of spills and accidents, and traffic.

We have read and agree with the detailed requests and rationale in the comment letter submitted by the Environmental Defense Center.

Respectfully submitted,
Marell Brooks, co-President,Citizens Planning Association

environmental
DEFENSE CENTER

July 16, 2018

Ms. Kathryn Lehr, Planner
Santa Barbara County
Planning & Development
123 East Anapamu Street
Santa Barbara, CA 93101

Re: Notice of Preparation of a Draft Supplement to an Environmental Impact Report for the ExxonMobil Interim Trucking for SYU Phased Restart Project

Dear Ms. Lehr:

Thank you for the opportunity to comment on the Notice of Preparation ("NOP") of a Draft Supplement to an Environmental Impact Report ("DSEIR") for the ExxonMobil Interim Trucking for SYU Phased Restart Project ("Project"). The following comments are submitted by the Environmental Defense Center ("EDC") on behalf of Get Oil Out! ("GOO!"). GOO! was formed in the wake of the 1969 Santa Barbara Oil Spill and continues to work to protect California from further oil and gas development and exploitation. EDC is a public interest environmental law firm that protects and enhances the local environment through education, advocacy, and legal action. GOO! and EDC seek to ensure that the DSEIR fully discloses the potential impacts of the proposed oil trucking and restart of the Santa Ynez Unit ("SYU").

The stated purpose of ExxonMobil's application is to allow the company to restart production from the SYU platforms, which have been shut down since the 2015 Refugio oil spill. If ExxonMobil is allowed to restart production, a whole host of activities – and related impacts – will ensue, starting with drilling and including extraction, production, transportation to shore, processing at Las Flores Canyon ("LFC"), transportation of crude oil to refineries and then to market, and ultimate consumption of the oil and gas. All of these activities and impacts must be analyzed and disclosed in the DSEIR.

The most significant concern we have regarding the trucking proposal is the risk of an oil spill or gas release. In addition, restarting the SYU will result in significant impacts to air and water quality, the climate, public health and safety, marine and terrestrial biological resources, and cultural resources. Allowing trucking would conflict with longstanding state and local policy regarding transportation of crude oil produced offshore California.

The following comments address the requirements necessary to ensure that the DSEIR fully informs the public and decision-makers regarding the potential impacts of the proposed Project.

I. PROJECT DESCRIPTION

ExxonMobil's application to the County describes the Project as allowing restart of SYU production. In fact, the name of the Project is "ExxonMobil Trucking *for SYU Restart Project*." The NOP properly identifies the purpose of the Project as allowing ExxonMobil to resume offshore oil and gas production at the SYU, and yet describes the *scope* of the DSEIR quite narrowly, i.e., only focused on the impacts from the proposed trucking operations. The DSEIR must include a complete Project Description so that all of the resulting impacts can be evaluated.

A. The Purpose of the Project is to Resume Production at the SYU.

The NOP states that the purpose of the Project is "*to resume offshore oil and gas production at the SYU, conduct a phased restart of the LFC Facility* and initiate the interim trucking of limited crude oil production as an interim solution until a pipeline alternative becomes available to transport crude oil to a refinery destination." (NOP at 1, emphasis added.) Accordingly, the DSEIR must include an analysis of the impacts associated with resumed offshore oil and gas production at the SYU and phased restart of the LFC, as well as impacts from trucking.

B. The Application Describes the Project as Including the Restart of SYU Production.

ExxonMobil's application describes the Project as "Initiate a phased restart of SYU production through use of interim trucking to transport SYU processed crude oil (product) from LFC to locations with existing unloading facilities until a pipeline transport option is available" and "Enable limited SYU production…" (Application Attachment A.3 – SYU Interim Trucking Description at pp. 3, 4.) The application further states, "As part of the interim trucking, SYU will begin production from the platforms and processing at the onshore facilities." (*Id.* at p. 7.) (See also Application Attachment A.4 – SYU LFC Interim Trucking Justification at p. 1 ("ExxonMobil Production Company…is submitting the LFC interim trucking application to allow production operations to re-start at the Santa Ynez Unit…") and p. 4 ("ExxonMobil plans to re-start the SYU facilities…").) Therefore, the DSEIR must analyze the impacts from "the whole of the action," including both trucking and restart of SYU production. CEQA Guidelines §§ 15003(h), 15378(a).

C. The DSEIR Must Update the Information in the 1983 EIR.

The NOP proposes to supplement the 1983 EIR for the SYU Project. Because that EIR is so old, it is important that the DSEIR provide complete and updated information regarding the Project, Environmental Setting, and Impacts.

D. The NOP Does Not Include an End Date.

ExxonMobil's application states that trucking would occur "for an extendable period of 7 years or until a pipeline alternative is available." (ExxonMobil Application, Attachment A.4 – SYU LFC Interim Trucking Justification, p. 4.) The NOP, however, simply states that "[t]rucking operations would continue until an alternative pipeline option becomes available." (NOP at 4.) This distinction is significant, and affects the impact analysis in the DSEIR. The Project Description in the DSEIR must be clear, stable, and accurate regarding the potential duration of the proposed Project. See, e.g., *County of Inyo v. City of Los* Angeles (1977) 71 Cal.App.3d 185, 193. The DSEIR should evaluate the reasonable worst-case scenario for the potential duration of trucking.

II. ENVIRONMENTAL SETTING

The NOP states that "the baseline conditions shall be considered at the LFC at pre-shutdown production levels and related operations prior to the Line 901 incident and subsequent facility shut down." (NOP at 4.)

According to CEQA, "[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project, *as they exist at the time the notice of preparation is published*….This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." CEQA Guidelines § 15125(a) (emphasis added). In *Communities for a Better Environment v. SCAQMD* (2010) 48 Cal.App.4th 310, 320-22, the court held that the baseline for a proposed modification of a petroleum refinery should have been based on actual existing conditions, not permitted capacity.[1] In *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 457, the California Supreme Court held that an agency may only deviate from using a baseline based on existing physical conditions if it can "justify its decision by showing an existing conditions analysis would be misleading or without informational value." In this case, it would be misleading to utilize a baseline that includes SYU production because such production cannot occur without approval of trucking.

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[1] See also *Citizens for East Shore Parks v. California State Lands Commission (Chevron)* (2012) 202 Cal.App.4th 549, 560, wherein the court held that it was appropriate for the State Lands Commission to use a baseline that included existing operations at a marine terminal because that was "'what was actually happening.'" In the instant case, the existing operations do not include production from the SYU.

SYU production ceased more than three years ago. Restart of production is part of the Proposed Project. Therefore, excluding impacts from the restart of SYU production will omit critical information and prejudice the ability of the public and decisionmakers to ascertain the true impacts of the proposed Project.

III. IMPACTS

The DSEIR must address the issues identified in the NOP, as well as impacts that may result from resumed SYU production. Because the stated purpose of the Project is to resume such production, the DSEIR must evaluate the full panoply of impacts that will result from such operations. The DSEIR should also disclose that in addition to conventional production, ExxonMobil has utilized well stimulation from the SYU platforms, and should analyze impacts associated with such practices.

A. Air Quality/Greenhouse Gases

In accordance with the comments above, the DSEIR should disclose emissions from the proposed trucking operations, as well as resumed SYU operations.

The DSEIR should also analyze the life cycle impacts of the Project, including impacts caused by refining, transporting, storing, and consuming the oil and gas produced and trucked from the SYU.

The NOP states that the proposed Project is expected to exceed the County's significance threshold for ROCs, and that ExxonMobil "has proposed to purchase applicable SB County Emission Reduction Credits (ERCs) for the ROC emission increases." (NOP at 5.) The DSEIR must identify the "applicable" ERCs to make sure that they are available, certain, and adequate.

Similarly, the DSEIR must identify and evaluate specific mitigation proposed for the greenhouse gas emissions from the Project. Any proposed mitigation must be certain, feasible, and enforceable. See, e.g., Pub. Res. Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(2); *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261-62.

We encourage the County to require mitigation for *all* greenhouse gas emissions. More and more scientific studies have noted that previous predictions are outdated and do not reflect current knowledge concerning the level of carbon in the atmosphere and potential for climate change impacts due to factors such as feedback loops, sea ice melt, etc.[2] These papers point out

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[2] Hanson J., et al. "Target atmospheric co2: where should humanity aim?" *Open Atmospheric Science Journal* 2 (2008): 217-231; Eby, M., Montenegro A., Zickfeld K., Archer D., Meissner K., & Weaver A. "Lifetime of anthropogenic climate change: millennial time scales of potential co2 and surface temperature perturbations." *Journal of Climate* 22, Special Collection (May 2008): 2501-2511; Matthews D., & Caldeira K.. "Stabilizing climate requires net zero emissions." *Geophysical Research Letters*, February 27, 2008: 1-5; Allison I., Bindoff N.L.,

that global greenhouse gas emissions have already reached a “tipping” point and that current emissions levels must be reduced. On September 23, 2016, Scripps Institution of Oceanography CO2 Program announced that the concentration of CO2 in the earth’s atmosphere surpassed 400 ppm.[3] In 2018 that level increased to 410 ppm.[4] Obviously, *any* increase in greenhouse gas emissions will exacerbate a problem that is already significant. Although the County adopted a CEQA threshold of 1,000 $MTCO_2e$/year in 2015, current climate predictions are more dire, and the global amount of emissions continues to increase. Therefore, all greenhouse emissions should be mitigated.

A zero emission threshold is supported by the California Air Pollution Control Officer’s Association (“CAPCOA”), which stated:

> The scientific community overwhelmingly agrees that the earth’s climate is becoming warmer, and that human activity is playing a role in climate change. Unlike other environmental impacts, climate change is a global phenomenon in that all GHG emissions generated throughout the earth contribute to it. Consequently, both large and small GHG generators cause the impact. While it may be true that many GHG sources are individually too small to make any noticeable difference to climate change, it is also true that the countless small sources around the globe combine to produce a very substantial portion of total GHG emissions.
>
> A zero threshold approach is based on a belief that, 1) all GHG emissions contribute to global climate change and could be considered significant, and 2) not controlling emissions from smaller sources would be neglecting a major portion of the GHG inventory.

Bindschadler R.A., Cox P.M., de Noblet N., England M.H., et al. (2009). *The Copenhagen Diagnosis.* The University of New South Wales Climate Change Research Centre (CCRC). Sydney: CCRC; Lowe A., Huntingford C., Raper S., Jones C., Liddicoat S., & Gohar L. “How difficult is it to recover from dangerous levels of global warming?” *Environmental Research Letters*, March 11, 2009; Zickfeld K., E. M. (2009). Setting cummulative emissions targets to reduce the risk of dangerous climate change. *National Academy of Sciences of the United States , 106* (38), 16129-16134; England M., Alexander S.G., & Pitman A.J. “Constraining future greenhoues gas emissions by a cummalative target.” *National Academy of Sciences of the United States of America* 106, no. 39 (September 2009): 16539-16540.

[3] Scripps Institution of Oceanography CO2 Program, *Note on Reaching the Annual Low Point.* September 23, 2016. Available at https://scripps.ucsd.edu/programs/keelingcurve/2016/09/23/note-on-reaching-the-annual-low-point/

[4] E&E News, “Atmospheric CO2 sets record high,” May 3, 2018, referencing statement from Scripps Institution of Oceanography confirming that CO2 levels measured at the Mauna Loa Atmospheric Observatory in Hawaii exceeded 410 parts per million for the first time in recorded history.

> CEQA explicitly gives lead agencies the authority to choose thresholds of significance. CEQA defers to lead agency discretion when choosing thresholds. Consequently, a zero emission threshold has merits.[5]

The State Lands Commission has used a zero emission threshold for greenhouse gas emissions in its environmental review for the Lease 421 Project and Ellwood Marine Terminal Project.[6] GOO! and EDC urge the County to utilize the same threshold in its review of this Project.

The DSEIR should also evaluate the cumulative impacts from these emissions on public health and the climate.

B. Hazardous Materials/Risk of Upset

Much of the proposed trucking route is similar to that of the Plains All-American pipeline that ruptured in 2015. The impacts of that spill resonate today, and restoration has not begun. Trucking creates an unacceptable risk of another spill. In fact, on December 15, 2017, an oil tanker truck tipped over and spilled its contents on Highway 101 near Santa Barbara. (See attached EdHat news report and chronology.) That spill, which occurred from a truck carrying 8,700 gallons, closed the highway for nineteen hours during an important evacuation from the Thomas Fire. The trucks proposed in this case would carry a similar amount (up to 7,720 gallons). (NOP at 3.) The 2017 accident occurred on a straight, wide highway.

The DSEIR should disclose the unique risks associated with the route proposed by ExxonMobil, including the curves and winds in the Gaviota area, as well as the narrow Highway 166. Much of this route is significantly more dangerous than the location of the December 2017 truck oil spill.

The DSEIR should provide a list of historic oil truck spills in the country.

The DSEIR should provide a reasonable worst-case scenario analysis of the potential impacts of an oil spill. These impacts include public exposure to toxic chemicals and other hazards; odors; harm to biological, cultural, and water resources; and traffic and safety.

One of the tragic lessons learned from the Refugio oil spill was the fact that there wasn't any equipment or personnel immediately on-scene, as there would have been if the spill had occurred at a discrete facility such as a processing plant or refinery. In addition, although the

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[5] CAPCOA, *CEQA and Climate Change*, p. 27. (January 2008)

[6] Venoco Revised PRC 421 Recommissioning Project Final Environmental Impact Report, California State Clearinghouse (SCH) No. 2005061013, CSLC EIR Number 732, January 2014; Venoco Ellwood Marine Terminal Lease Renewal Project Final Environmental Impact Report, California State Clearinghouse (SCH) No. 2004071075, CSLC EIR No. 743, April 30, 2009. This threshold was also used in the Commission's Draft EIR for Venoco's South Ellwood Full Field Development Project.

spill emanated onshore, it travelled more than a quarter mile to the beach and then the ocean, where it was virtually impossible to contain and cleanup. A truck spill raises similar challenges, in that the spill could occur anywhere along the route where there would not be any response equipment or personnel available to quickly contain and recover the spilled oil. The DSEIR should disclose whether there is any oil spill response, containment, recovery, and cleanup equipment and personnel along the entirety of the proposed trucking route.

C. Traffic/Transportation

As noted above, the oil truck spill in December 2017 caused not only impacts directly related to the spill, but it also caused the closure of Highway 101 and disrupted a fire evacuation. A spill on either Highway 101 or 166 would result in closure of the Highway, with no viable alternative route. Members of the public could become trapped on one side of the spill for a very long time or have to spend hours finding an alternative route which will quickly become congested.

The DSEIR should also analyze the damage to roads that will result from the increase in heavy truck traffic.

D. Land Use

The NOP points out that ExxonMobil's application must comply with the County's Comprehensive Plan, Coastal Land Use Plan, and both the Inland and Coastal Zoning Ordinances.

Section 35-154, subsection 5(i) of the County's Coastal Zoning Ordinance ("CZO") provides as follows:

> Permits for expanding, modifying, or constructing crude oil processing or related facilities shall be conditioned to require that all oil processed by the facility shall be transported from the facility and the County by pipeline as soon as the shipper's oil refining center of choice is served by pipeline.
> Transportation by a mode other than pipeline may be permitted only:
> 1) Within the limits of the permitted capacity of the alternative mode; and
> 2) When the environmental impacts of the alternative transportation mode are required to be mitigated to the maximum extent feasible; and
> 3) When the shipper has made a commitment to the use of a pipeline when operational to the shipper's refining center of choice; and
> 4) When the County has determined use of a pipeline is not feasible by making one of the following findings:
>
> > a) A pipeline to the shippers' refining center of choice has inadequate capacity or is unavailable within a reasonable period of time;
> > b) A refinery upset has occurred, which lasts less than two months, precludes the use of a pipeline to that refinery, and requires temporary

> transportation of oil to an alternative refining center not served by pipeline;
> c) The costs of transportation of oil by common carrier pipeline is unreasonable taking into account alternative transportation modes, economic costs, and environmental impacts; or
> d) An emergency, which may include a national state of emergency, has precluded use of a pipeline.
> A permit based on finding b. or d. may be granted by the Director of the Planning and Development Department and shall be subject to appeal to the Planning Commission. A permit based on findings a. and c. may be granted by the Board of Supervisors. All permits in this section are subject to appeal to the Coastal Commission.
> All permits for the use of a non-pipeline mode of transportation may specify the duration for such permitted use. Such permit may be extended upon a showing of good cause based upon a consideration of the findings listed above. A permit based on finding b. shall be granted for two months only. If refinery upset conditions continue beyond two months and the shipper wishes to continue use of a non-pipeline transportation mode, the shipper must seek a new or modified permit that is based on a consideration of finding a., c., or d. In all cases, the burden of proof as to pipeline unavailability or inadequate capacity, unreasonable tariffs, and the need for and use of other transportation systems shall be on the shipper.

Of particular relevance to ExxonMobil's application, the County must determine whether impacts are mitigated to the maximum extent feasible, and whether a pipeline will be unavailable within a reasonable period of time. Plains has already submitted an application to replace Lines 901 and 903, which could transport the same oil to the same destinations. The application was deemed complete on April 20, 2018, and will be subject to environmental review concurrent with ExxonMobil's trucking application. Therefore, it is feasible that both projects could reach County decision-makers within a reasonably similar period of time.

In addition to the CZO, the DSEIR must analyze the Project's consistency with County, Air Pollution Control District, State, and Federal policies, plans, and regulations protecting air and water quality, biological and cultural resources, and public health and safety.

IV. CONCLUSION

Oil trucking is not a preferred mode of transporting crude oil in Santa Barbara County, and poses unacceptable risks of spills that affect public health and safety, as well as harm to the unique environmental resources of the Gaviota Coast and inland areas. The DSEIR must thoroughly analyze all potential impacts from trucking as well as the SYU Phased Restart.

Thank you for your consideration of these comments.

Sincerely,

Linda Krop
Chief Counsel

cc: Get Oil Out!

Attachments:

EdHat news report re 2017 oil tanker truck spill

Highway 101 at Turnpike Now Open

Highway 101 at Turnpike Now Open
Code Red
Dec 16 2017 03:30 PM
byRoger
20 Comments
Reads 13871

(Photos: SBCFD)

Update by Edhat Staff
4:00 p.m., December 16, 2017

The number two and three lanes of Highway 101 northbound near the Turnpike exit are now open. The number one lane is expected to open shortly.

Update by California Highway Patrol
3:30 p.m., December 16, 2017

On December 15, 2017, at approximately 9:00 p.m., California Highway Patrol Officers responded to Highway 101 northbound and found a fully-loaded, duel semi-tanker truck and trailer on its side, leaking gasoline onto the roadway.

A blue 2001 Lincoln LS traveling on Highway 101 northbound in an unknown lane collided into the center median. The Lincoln then traveled across all lanes of traffic and collided with the tanker-truck located in the #3 lane. That collision caused the tanker-truck to overturn on its side blocking the right-hand shoulder, number two, and three lanes.

One person in the Lincoln had a minor injury and was treated on scene. The driver of the tanker-truck was not injured. Northbound lanes of Highway 101 near Turnpike are completely shut down for public safety.

Gasoline leaked onto the freeway and into a french drain in the center divider. Hazmat crews are on scene working to clean up gasoline spills on the freeway and in the surrounding dirt areas. Highway 101 northbound at Turnpike will be expected to open at 5:00 p.m. on Saturday. If it is safe to do so the California Highway Patrol will open freeway lanes as permitted.

Caltrans is repaving sections of the roadway where gasoline disintegrated the concrete. Traffic is currently being rerouted off Highway 101 onto surface streets and then back onto Highway 101 around Patterson and Fairview Avenues.

California Highway Patrol is investigating the cause of this incident and Hazmat teams will remain on scene until the clean-up is completed.

Update by Edhat Staff
12:30 p.m., December 16, 2017

Officials are reporting Highway 101 northbound at Turnpike will be expected to open at 4:00 p.m. on Saturday.

Caltrans is repaving sections of the roadway that where gasoline disintegrated the concrete.

Traffic is currently being rerouted off Highway 101 onto surface streets and then back onto Highway 101 around Patterson and Fairview Avenues.

Update by Edhat Staff
10:40 p.m., December 15, 2017

Highway 101 northbound is at a complete standstill as a tanker-truck carrying 8,700 gallons of fuel has flipped over near Turnpike after colliding with a sedan on Friday evening.

At 9:00 p.m., Santa Barbara County firefighters responded to the scene and found a fully-loaded, duel semi-tanker truck and trailer on its side, leaking gasoline onto the roadway. After a collision with a sedan, the tanker-truck landed on its side in the number two lane and right-hand shoulder, said Public Information Officer Mike Eliason.

The couple inside the sedan was not injured while the driver of the tanker-truck suffered minor injuries and was being treated on scene.

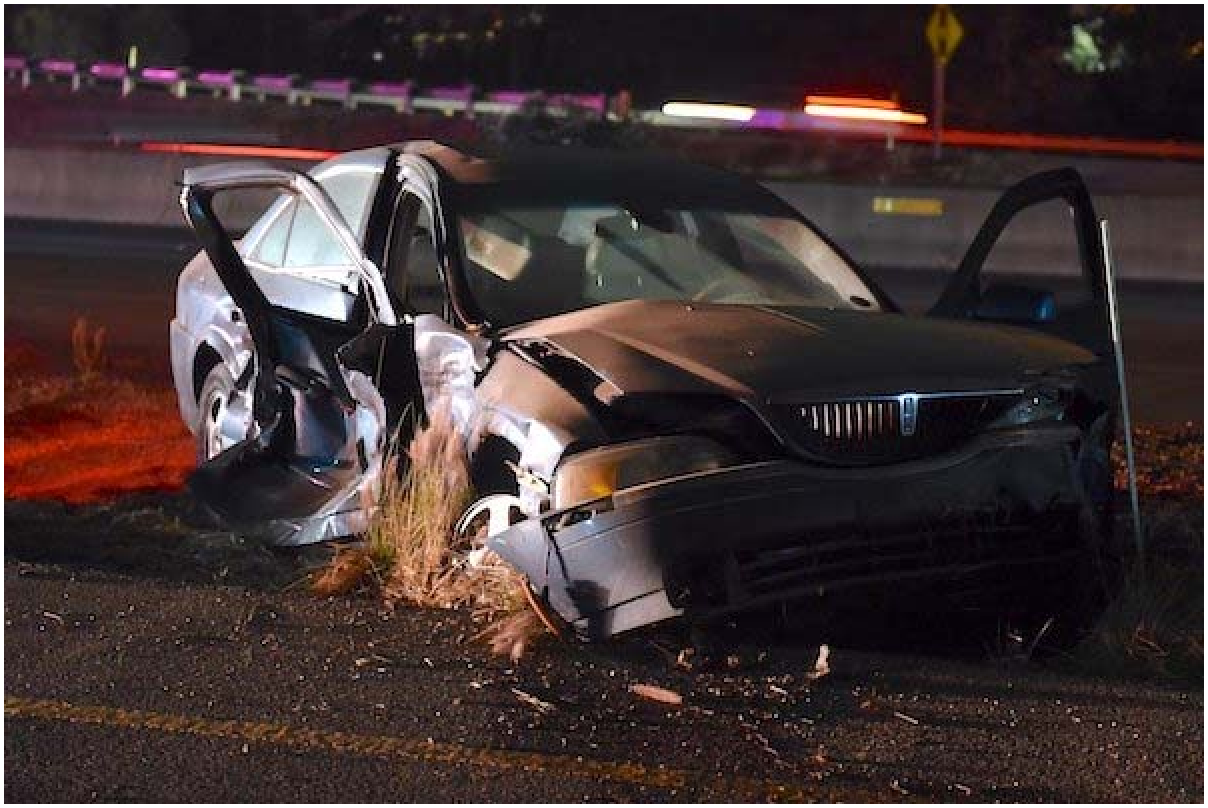
The northbound lanes of Highway 101 near Turnpike are completely shut down with traffic backed up. This area will be shut down for an extended period of time and motorists are encouraged to avoid the area, said Eliason.

The tanker-truck was carrying a total of 8,700 gallons of gasoline. The front trailer attached to the cab was carrying 3,900 gallons of gasoline that is now empty. The second trailer was carrying 4,800 gallons of gasoline and has the potential to lose about half that amount. Fire crews are estimating that 5,000 gallons of gasoline have spilled onto the roadway, said Eliason.

A french drain in the center divider caught some gasoline that had spilled. Hazmat crews are also working to clean up gasoline around the tanker and will clean the spills in the surrounding dirt areas.

The tanker-truck was en route from Long Beach and was scheduled to exit the freeway on Patterson Ave.

California Highway Patrol is investigating the cause of this incident and Hazmat teams will remain on scene for several hours.



Reported by Roger the Scanner Guy
9:07 p.m., December 15, 2017

Big Rig flipped over on Highway 101 Northbound at Turnpike.

CHP Reports

- 9:32 PM: Fluid leaking into drain at a fast pace
- 9:10 PM: Two vehicle traffic collision
- 9:06 PM: Hard lane closure, oil across all lanes
- 9:04 PM: All lanes blocked / Hazmat / Oil tanker on its side / Tanker itself leaking fuel
- 9:01 PM: Big rig on its side, debris all over the roadway
- 9:01 PM: Oil rig and several vehicles involved
- 9:00 PM: Big rig flipped over

Heal the Bay

1444 9th Street
Santa Monica, CA 90401

ph. 310-451-1500
fax 310-496-1902

info@healthebay.org
www.healthebay.org

Kathryn Lehr, Planner
Planning and Development Energy Division
123 E Anapamu Street
Santa Barbara, CA 93101

Sent via e-mail to: klehr@co.santa-barbara.ca.us

Re: Scoping comments opposing ExxonMobil's application to transport crude oil by tanker trucks [17RVP-00000-00081]

On behalf of Heal the Bay, an environmental nonprofit dedicated to making the coastal waters and watersheds of greater Los Angeles safe, healthy, and clean, we welcome the opportunity to submit these comments on the Notice of Preparation and Scoping Document (NOP) for the Draft Environmental Impact Report (DEIR) for ExxonMobil's application to truck crude oil. We ask you to consider the biological and water resource impacts to our waterways (rivers, streams, and ocean), as a separate issue area of concern in the DEIR, rather than the last thought in the list of concerns in the Hazardous Materials/Risk of Upset. We also ask you to consider including an "environmentally superior alternative" that will be taken into careful consideration to achieve similar energy goals using renewable energy sources.

It is dangerous to both the community and the environment to permit 70 tanker trucks holding nearly 500,000 gallons of crude oil to pass through Santa Barbara and San Luis Obispo County *daily*. Accidents can cause explosions, fires, injuries, deaths, property destruction, and can spill thousands of gallons of crude oil, potentially affecting the roads, vegetation, waterways, and wildlife. Moreover, restarting production at three previously offline offshore platforms would be taking steps backward in the progress made by the state of California.

In 1969, a well blowout off the Santa Barbara coastline pumped nearly 4 million gallons of crude oil into the Pacific and onto the beaches of Southern California. Since then, local lawmakers and Californians have worked tirelessly to prevent spills and leaks from ruining our environment and $18 billion coastal economy by rejecting any new oil and gas drilling leases offshore in state and federal waters**.**
More recently, a ruptured pipeline spewed over 100,000 gallons of crude oil onto the biologically diverse Santa Barbara coastline in 2015, just west of Refugio State Beach, with an estimated 21,000 gallons reaching the water. The Refugio spill killed hundreds of ocean creatures, closed popular beaches for weeks and shut down fisheries for 138 square miles, severely impacting the area's commercial and recreational anglers.[1]

Allowing ExxonMobil to truck crude oil and turn offshore platforms back online would undermine the deep investment that California has made to enhance our coastal ecosystems and economies. California has devoted extensive resources to improve water quality, restore wetlands, establish marine protected areas, and restore coastal habitat. Over the past few decades, the Santa Monica Bay has greatly rebounded from severely degraded water quality and declining marine life populations, due in large part

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[1] NOAA DARRP Refugio Beach Oil Spill Website: https://darrp.noaa.gov/oil-spills/refugio-beach-oil-spill

to the upgrade of sewage treatment practices, improved fisheries management, coastal and marine habitat restoration, and the designation of Santa Monica Bay as a National Estuary.[2] The success of Marine Protected Areas along California's coast proves that making smart investments that protect our environment can benefit fisheries and tourism, while preserving ecological habitats.[3] Allowing ExxonMobil to reactivate the offshore platforms by permitting the trucking of crude oil would encourage and support infrastructure that is likely to harm coastal resources significantly, thereby putting California's vibrant coastal environment and economy at risk. Plus, the permit would only increase our dependence on fossil fuels, which is in direct conflict with goals of the County of Santa Barbara of reduced greenhouse gas emissions.[4]

As you well know, the Santa Barbara area has suffered devastation caused by wildfires. The Whittier fire occurred very late during the year, in December of 2017, a time of year when rain rather than fire used to be the expected event, and caused great devastation in Santa Barbara and Ventura Counties. Under a changing climate, driven by greenhouse gas emissions from the burning of fossil fuels, we can expect wildfires to be of higher intensity, and frequency, and droughts that only exacerbate fires even more in a feedback loop. We must work together on implementing solutions focused on renewable energy, electric vehicles and recycled water to reverse this warming trend that we have observed since the 1970's.[5]

At a time when clean renewable energies, such as solar and wind, are steadily growing, it is inconsistent with industry trends and the best interest of Californians, to threaten our ocean environment and economy by allowing offshore rigs to be turned back online. We ask the County to carefully consider the possible harmful effects to our waterways, economy, and public safety in the DEIR, and to encourage the inclusion of an alternative that examines the use of renewable energy projects.

Thank you for the opportunity to provide comment.

Sincerely,

Nancy

Nancy Shrodes
Associate Director of Policy & Outreach

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[2] Urban Coast: State of the Bay (2015): http://www.santamonicabay.org/wp-content/uploads/2016/01/UrbanCoast_5.1_State-of-the-Bay-Report_revised_lower-res-1.pdf

[3] A Decade of Protection, 10 Years of Change at the Channel Islands: https://labs.eemb.ucsb.edu/caselle/jennifer/sites/labs.eemb.ucsb.edu.caselle.jennifer/files/pubs/ci_10-yr_brochure_web.pdf.

[4] County of Santa Barbara, Energy and Climate Action Plan, 2016 Progress Report: https://www.countyofsb.org/csd/asset.c/217

[5] Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (2018). Indicators of Climate Change in California.

LEAGUE OF WOMEN VOTERS®
OF SANTA BARBARA
328 East Carrillo Street, Suite A TEL (805) 965-2422 league@lwv.santabara.org
Santa Barbara, California 93101 www.lwvsantabarbara.org

July 12, 2018

Kathryn Lehr, Planner
Santa Barbara County
Planning and Development

The League of Women Voters of Santa Barbara offers a few comments on the scoping of the SEIR for the Exxon Mobil trucking proposal.

We believe the baseline should be the current conditions, as required by CEQA.
The situation that existed three years ago is not the situation we are experiencing now ; the round trips of seventy trucks per day will be added to today's traffic on the roads and the attendant emissions will be added to today's air quality, not that of three years ago.

In analyzing the impact of the inevitable spills from tanker truck accidents, the SEIR should recognize the specialness of the Gaviota coast. This is a stretch of land that has been evaluated as worthy of being a national seashore; a near pristine coastal landscape is a rare phenomenon in Southern California. A possible mitigation for the risk of spills here (and elsewhere along the route) would be to require that the trucks used must meet safety standards. We also noted that adding a large number of tanker trucks to this scenic stretch of highway has a visual impact that is negative (and undesirable for tourism).

The League asks that particular attention be given to contributions to climate change. Mitigations above and beyond the minimum should be encouraged. The League believes this is our most serious environmental (and otherwise) problem.

Lindsey Baker

Co-President for Program and Action

• Center for Biological Diversity • California Coastal Protection Network •
• California League of Conservation Voters • Citizens For Responsible Oil and Gas – CFROG • Clergy and Laity United for Economic Justice – CLUE •
• Coalition to Protect San Luis Obispo County • Defenders of Wildlife •
• Food & Water Watch • Friends of the Earth – US •
• Natural Resources Defense Council • Ocean Conservation Research •
• Pacific Environment • Save Our Shores • Sierra Club Los Padres Chapter •
• Surfrider Santa Barbara • Wishtoyo Chumash Foundation • 350 Santa Barbara •

July 16, 2018

Kathryn Lehr, Planner
Santa Barbara County
Planning & Development
123 East Anapamu Street
Santa Barbara, CA 93101
klehr@co.santa-barbara.ca.us

Re: Scoping comments opposing ExxonMobil's application to transport crude oil by tanker trucks [17RVP-00000-00081]

On behalf of the organizations listed below, we urge you to deny ExxonMobil's Permit Application for Crude Oil Trucking. Exxon's proposal to put *70 tanker trucks* carrying nearly *500,000 gallons of crude oil* onto Santa Barbara and San Luis Obispo County roads *every day* is negligent and dangerous. The extraordinarily high rate of accidents makes trucking an incredibly dangerous way to transport oil. These accidents cause fires, explosions, injuries, deaths, and property destruction and spill thousands of gallons of crude oil onto roads, vegetation and into waterways.

Allowing a massive fleet of oil trucks onto our coastal highways is an unreasonable risk that will add to the damage caused by the 2015 oil spill. The Plains All American Pipeline disaster dumped over 120,000 gallons into Santa Barbara County's coastal environment, killed an estimated 640 marine mammals and birds, and contaminated shorelines over 90 miles away. Exxon's proposal would make a horrendous situation worse by sending 70 oil tanker trucks each day to travel between 60 and 145 miles on Highway 101 and Highway 166. The route passes through populated areas on scenic coastal roads and then continues to a dangerous, two-lane mountain road.

Transporting crude oil by truck is a hazard to public safety, and the County must predict the number of traffic accidents and evaluate the resulting public danger and environmental damage of the trucking proposal. In California alone, from 1997 to 2004 there were 1,786 incidents involving oil-trucks—an average of 255 per year.[1] These incidents included 159

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[1] Oil Spills from Trucks: Prevention, Preparedness, and Response, Roundtable of Pacific States/British Columbia Oil Spill Task Force, Summary Notes, Portland, Oregon (Mar. 24, 2005), at 6, *available at* http://oilspilltaskforce.org/docs/project_reports/TruckingSpillsRtSummaryNotes.pdf.

overturned trucks, 132 of which involved oil spills.[2] According to a 2009 report by American Petroleum Institute, tanker trucks spill an average of 9,200 barrels of oil – or 386,400 gallons – per year.[3] These oil spills can cause fires and explosions, increasing the risk of injuries and fatalities.

Trucking oil will pollute the environment, and the County must provide a comprehensive analysis of the environmental impacts of the trucking permit. There are numerous sources of pollution from the proposed permit. The damage from inevitable oil spills must be considered, an oil spill from loading or traffic accidents could contaminate sensitive habitat, harm wildlife, and pollute river and ocean waters. Additionally, 24-hour per day light and noise pollution from the facilities and the trucks will disrupt and harass wildlife.

The trucking permit will contribute significantly to air pollution and climate change, and the County must provide a robust analysis of the air and greenhouse gas pollution from the proposal. The emissions from the tanker trucks must be quantified and corresponding air quality and health impacts must be disclosed. Both the greenhouse gas emissions from the vehicles and the downstream emissions from the crude oil cargo must be quantified and the concomitant environmental impacts disclosed. Exxon's offshore oil and gas platforms have been shut down since 2015, and the trucking permit would facilitate oil production that would significantly contribute to global warming and ocean acidification. The permit will deepen our dependence on fossil fuels, and it is inconsistent with Santa Barbara County's efforts to reduce greenhouse gas emissions.

In conclusion, we urge the County to reject Exxon's permit application because putting a massive fleet of trucks on the road carrying hundreds of thousands of gallons of oil is an unreasonable risk to public safety and the environment. To the extent that the County is taking the permit under consideration, it must provide a full disclosure of the climate, safety, and environmental damage that the oil trucking proposal entails. We believe that a comprehensive environmental review will reveal that there is no way to adequately avoid the harm from the proposal and that the only safe course of action is to deny the permit.

Sincerely,

Miyoko Sakashita
Oceans Program Director
Center for Biological Diversity

Susan Jordan
Executive Director
California Coastal Protection Network

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[2] *Id.*

[3] API, *Analysis of U.S. Oil Spillage* (Aug. 2009), *available at* http://www.api.org/environment-health-and-safety/clean-water/oil-spill-prevention-and-response/~/media/93371EDFB94C4B4D9C6BBC766F0C4A40.ashx.

Mike Young
Associate Director of Campaigns and Organizing
California League of Conservation Voters

Kimberly Rivers
Executive Director
Citizens For Responsible Oil and Gas – CFROG

Maureen Earls
Board Member
Clergy and Laity United for Economic Justice

Charles Varni
Co-Chair
Coalition to Protect San Luis Obispo County

Kim Delfino
California Program Director
Defenders of Wildlife

Alena Simon
Santa Barbara County Organizer
Food & Water Watch

Gary Hughes
Senior California Advocacy Campaigner
Friends of the Earth – US

Sandy Aylesworth
Oceans Advocate
Natural Resources Defense Council

Michael Stocker
Director
Ocean Conservation Research

Alex Levinson
Executive Director
Pacific Environment

Katherine O’Dea
Executive Director
Save Our Shores

Jim Hines
Chair
Sierra Club Los Padres Chapter

Emily Vizzo
Volunteer
Surfrider Santa Barbara

Mati Waiya
Executive Director
Wishtoyo Chumash Foundation

Sharon Broberg
Volunteer
350 Santa Barbara

July 16, 2018

Ms. Kathryn Lehr, Planner via email: klehr@co.santa-barbara.ca.us
Santa Barbara County
Planning and Development
123 East Anapamu Street
Santa Barbara, CA 93101

Re: Notice of Preparation of a Draft Supplement to an Environmental Impact Report (83-EIR22)
ExxonMobil Interim Trucking for SYU Phased Restart Project

Dear Ms. Lehr:

On behalf of the Western States Petroleum Association (WSPA), thank you for the opportunity to share our comments on the Notice of Preparation (NOP) for the Draft Supplement to an Environmental Impact Report (EIR) for the ExxonMobil Interim Trucking for the Santa Ynez Unit Phased Restart Project.

The plan to allow for interim trucking and the restart of the Santa Ynez Unit is a project that is important for both economic and environmental reasons to the citizens of Santa Barbara County and California, in particular to the 300 workers and their families that have been displaced during the shutdown of the ExxonMobil facilities. Given the focus of this letter is to provide input on what potential environmental impacts should be analyzed in the Draft Supplemental EIR, we offer the following comments:

California uses nearly two million barrels of oil each day and only produces around 30 percent of that. The other 70 percent (over one million barrels each day) must be imported from out of state, most of which is coming in overseas by tanker ship. Not approving this project and continuing to rely on imports actually increases environmental impacts and our carbon footprint. Santa Barbara County oil and gas producers abide by some of the most stringent regulations in the world. CEQA doesn't exist outside of California. When we rely heavily on foreign imports for our oil and gas needs, we're supporting countries that don't have the same stringent regulatory framework or uphold our values for the environment. Conversely, allowing for the resumption of this local energy production will allow for us to reduce our importing of oil not produced in the most stringent, environmentally safe and sound way, under responsible regulations.

Hence, the global impacts of foreign oil and gas production should be analyzed to truly understand the potential environmental impacts related to this project. To accomplish this, it is necessary to study a "reduced project alternative" and a "no project alternative" in the CEQA analysis. Should this project not go forward as proposed, the reality is the oil that won't be produced will still be imported into California from elsewhere and the environmental impacts of that certain consequence must be understood and compared by both the decision makers and the general public.

Of particular importance is the need to understand both impacts and mitigation options related to greenhouse gases (GHGs). As a global issue, the Draft Supplemental EIR must look at more than local GHG emissions and should include an analysis of the net global impacts the proposed project would have on GHG emissions by both any curtailment below full approval and for non-approval, effectively either partially or wholly perpetuating the import of foreign oil.

Factors to include in this part of the study should include:

- The net GHG impacts from importing crude from foreign sources that could otherwise be produced and then refined and used locally and regionally. This analysis should include a look at practices and procedures in areas such as transportation and production from foreign sources versus those same aspects under California and local laws and regulations. A life cycle analysis approach is necessary to realistically capture the actual carbon intensity comparisons and other impacts of both oil produced elsewhere in California and from foreign sources where California currently imports. The California Air Resources Board reports annually on the lifecycle carbon intensity of crude oils refined in California refineries. This data should provide the foundation for the crude lifecycle comparative analysis of SYU-produced crude oil versus imports. Link to CARB Crude Oil Lifecycle Report: https://www.arb.ca.gov/fuels/lcfs/crude-oil/crude-oil.htm

- While our industry members make every effort to manage, reduce and mitigate GHG emissions at our facilities and in our operations locally, regional, state and federal agencies recognize the need to reduce GHG emissions is a global issue to which jurisdictions can contribute to, but not solve alone. Requiring local mitigation of GHG emissions must be tempered / balanced by the realities of scale and the feasibility/limitations of local opportunities.

In conclusion, we believe the inclusion/consideration of these issues in the CEQA analysis for approval of a reduced project alternative and the denial (no project alternative) of the project is critical to a fair assessment by Santa Barbara County and it residents of the Santa Ynez Unit Phased Restart Project. Thank you for your consideration of our comments of the Draft Supplemental EIR. We look forward to a robust study and review of the proposed project.

Sincerely,

Robert W. Poole

Bob Poole
Director

From: John Douglas <jed805@gmail.com>
Sent: Wednesday, July 11, 2018 11:54 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Reject Exxon-Mobil petition

Kathryn Lehr
Santa Barbara County

Ms. Lehr:

I urge the Board of Supervisors to reject Exxon-Mobil's petition to truck oil through Santa Barbara County. We need to stop extracting oil and leave it in the ground, period.

Thanks for considering my concerns.

John E. Douglas
259 Loma Media Road
Santa Barbara, CA 93103

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John Enrico Douglas
(805) 284-2082
jed805@gmail.com

From: Perky Fisher <perk4me@me.com>
Sent: Wednesday, July 11, 2018 2:25 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Exxon Mobile Oil by trucking, just say NO!

Just read that Exon is at it again, now they want to truck oil on our busy roads, Betteravia for one. I guess they think time makes it OK and we will forgive all the damage they did last time.
No amount of time would make it safe. No amount of jobs is worth the danger of 142,00 gallons of crude on our beautiful beaches. No amount of time should let us forget the danger.
That was enough! Their greed knows no bounds.
Please put me down as a resounding no vote recommendation!

BJ Fisher,
1948 Eucalyptus Rd
Nipomo, Ca 93444
805-219-0242

From: STANLEY FISHER <silverfish13@me.com>
Sent: Wednesday, July 11, 2018 1:43 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Stop Exxon Mobile

Kathryn Lehr
1-805-568-3560
Thank you for publishing the Exxon Mobile effort to re-opening land and off-shore oil platforms in the SLO Tribune and providing your email so we can help dislodge and feed the permits required. I hope you get many phone calls or emails response to your effort.
We live in Nipomo on highway one next to the Phillips 66 plants and for now have successfully delayed crude by rail. It appears Phillips 66 is aggressively pursuing new options for their 60 year-old plant which is in disrepair as is their pipeline to Rodeo, CA running through many communities.
Thousands are against any addition of new oil wells or pipeline.
A truly dangerous option is to increase the transport of crude by trucking to the Phillips 66 plant in Nipomo.
We are against this option as it will create a huge environmental impact hazard as well as the public safety on our highways.
Please lodge my disapproval of any action to increase the production of oil on the central coast -on shore or offshore. Please do not allow additional oil transport by trucking to the Phillips 66 plant. Truck transporting is extremely dangerous to all those who live by the highways or drive on the highways.
Thank you for forwarding my message to the proper authorities.

Stanley Fisher
1948 Eucalyptus Road
Nipomo, CA 93444
Sent from my iPhone

From: Alan Fletcher <alanf@oilfld.com>
Sent: Thursday, July 19, 2018 1:04 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Exxon EIR

Kathryn,

I attended the Exxon EIR meeting recently, and I commend the county staff for what you have to deal with.

As a result of the presentation and some of the presenters, I did have some suggestions that I would like to offer. Not being intimately knowledgeable about EIR reports, I recognize that some or all of my comments may not be pertinent.

- Is approval of the new pipeline that has been proposed considered in the evaluation of this permit, based upon EIR comparisons? The two projects probably cannot be considered together, but I am sure that the pipeline project would mitigate a number of the problems that are under consideration that would result from approval of the increased trucking permit
- Is there any evaluation of traffic hazards that take into account daytime vs nighttime driving? Driving at night is more hazardous due to fatigue and reduced visibility.
- Can an EIR of this nature take into account environmental effects from outside our area? Studies have shown that a majority of our air pollution actually come from China, due to global prevailing wind patterns. If so, shifting crude processes from the tight controls of the US to another country without these controls may actually increase our air pollution. This is counter-intuitive, but seems worth looking into if appropriate.

Thank you for your time.

Alan D. Fletcher
President
alanf@oilfld.com

Oilfield Electric & Motor
1801 N Ventura Ave, Ventura, CA 93001

From: Gail Freeman <gailfreeman9@gmail.com>
Sent: Tuesday, October 30, 2018 10:44 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Acceleration Lane

Dear Kathryn,

This email is in response to the temporary trucking of oil from Las Flores Canyon.

Building an acceleration lane on the freeway at the bottom of Las Flores Canyon going North is a safer option than sending trucks up the frontage road. First, because they often don't completely stop at the Refugio Rd stop sign, and secondly they enter the freeway at the top of the on ramp at a very slow speed, where there are typically trucks parked on the shoulder, as well as a traffic trying to merge back down from 3 lanes to 2. You also possibly avoid an accident on the ramp if taken to fast that could impact Refugio creek if there was to be a spill.

Thank you for your consideration.

Sincerely, Leslie D Freeman

From: Francesca Galt <frangalt@cox.net>
Sent: Sunday, March 31, 2019 8:38 PM
To: sbcob <sbcob@co.santa-barbara.ca.us>
Subject: Exxon Mobil Plan

Dear Santa Barbara County Supervisors,

I urge you to deny the ExxonMobil plan to truck oil on our roads. It's obviously extremely dangerous to put these tankers where citizens drive and live nearby. This is something the vast population is against in Santa Barbara.

In places like North Dakota these tanker trucks destroy the air, water, traffic and any decent quality of life. They have an excuse because there's nothing else in those god forsaken towns. If you go there you can't wait to get out.

Please don't let a few folks who may profit from this disaster waiting to happen persuade your vote.

Santa Barbara County should know better.

Thank you for all the work you do on our behalf.

Sincerely,
Francesca Galt
980 Andante Rd Santa Barbara CA 93105
805 563 3872

From: jeffkubran@everyactioncustom.com <jeffkubran@everyactioncustom.com>
Sent: Monday, July 9, 2018 7:23 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jeff Kubran
Carpinteria, CA 93013
jeffkubran@gmail.com

From: alissa maddren <alissamaddren@gmail.com>
Sent: Wednesday, July 11, 2018 8:35 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Oil trucks

Hello Ms. Lehr,

I am a central coast resident and I am strongly opposed to ExxonMobil's plans to resume drilling and transport crude oil by trucks. These trucks will essentially be masssive bombs on wheels ready to explode in a collision. Our roads are already risky due to speeding and negligent drivers and it will only take one incident to cause a major catastrophe.

Thank you for your consideration.

Alissa Maddren
San Luis Obispo

Comment to Exxon and Government of Santa Barbara

Henry N. Mooney

July 11, 2018

Good evening ladies and gentlemen,

My name is Henry Mooney. A little about myself, I am a resident of Ojai, and have recently obtained a master's degree in sustainable development, with a focus in renewable energy development from Stellenbosch University in South Africa. For the past two years I have been studying utility-scale energy projects on the African continent, one that is historically known for colonial extractive industry practices, containing many countries that rely on raw resource exports as their main contribution to their national GDP. I think it is important to keep in mind that not all extractive industry practices are inherently bad. It depends on who is conducting them, what they are being used for, how they are being allocated, and the rate at which extraction takes place. Sustainable, then, would not be *no* extractive industry, but to extract and use natural resources at a rate at which the natural world may replenish itself. At the present, 97% of the world's leading scientists agree that we may be overdoing it. I say this because though I recognize my own bias as an environmentalist first, rather than creating a highly polarizing environment resultant in a time-consuming dispute, I would far rather this forum be a highly productive and collaborative process, at the end of which we arrive at the best solution with all perspectives weighed equally.

The project in discussion is for Exxon to update their Las Flores Canyon onshore processing facility in order to facilitate the trucking of oil from Las Flores Canyon to their distribution network. The reason for doing so is that their main pipeline for distribution, Plains Line 901, broke in the recent past. As many of you may remember, this was responsible for the Refugio Oil Spill in 2015. Now, Exxon needs a new way to distribute oil harvested from their three offshore units in Santa Barbara: Hondo, Heritage, and Harmony. The three platforms have not been in use since 2017. The project proposal is just to modify an existing facility, but I am here to further shed light on the fact that this project possesses significantly larger implications on revamping a part of the offshore oil industry in California, which poses significant risks related to human and environmental health, traffic, and oil spills.

As explicitly stated in the Notice of Preparation, Exxon will resume oil pipeline usage and eliminate the fleet of trucks once Line 901 or an alternative line is open again. The same Notice of Preparation states that it is unknown when that will be. Thus, by this logic, oil trucking 24/7, 7 days per week into and out of this facility could occur indefinitely. Our line of thinking is also subject to question if we choose to encourage industries to repeat their behaviors which have contributed to environmental disasters, armed conflict, economic volatility, and war. Oil spills have occurred in Santa Barbara alone in 1966, 1969, and 2015. The platforms themselves are from the 60s, and it is no mystery that equipment gets old or pressured by geological forces, contracted companies get rushed, and history is undoubtedly bound to repeat itself.

In 1987, Exxon U.S.A. produced a 356-page report on the history of development of these three platforms and the Las Flores Canyon Unit. The land for the onshore unit was purchased in 1968 from the Bureau of Land Management. Yet not a page of this document refers to anything regarding public engagement over ocean or land use (Exxon U.S.A. Unit Operator, 1987). Referring back to my own findings on African resource grabbing, I am curious to know which stakeholder and public consultation guidelines Exxon has been or is currently following with the development of this project, aside from this forum.

On page 122 of Santa Barbara County's Air Pollution Control District Permit to Operate, for this onshore Las Flores Canyon oil and gas plant, it clearly states that this Exxon onshore project would exceed the county's 25 tons per year threshold for reactive organic compounds, nitrogen oxides, sulfur oxides, PM10 and PM2.5 (SBCAPCD, 2018). Exxon has requested to purchase emissions reductions credits to make up for this. However, academic literature has made clear the multiplicity of problems with relying on voluntary carbon trading programs, namely that they rarely succeed in actually reducing the emissions produced. Voluntarily purchasing emissions reductions in another part of the globe was born out of the Kyoto Protocol in 1997, some would say the world's first United Nations summit on emissions reductions. However, voluntary emissions reduction programs like those sought for this project only work on the condition that the project at the other end actually takes a course of action to reduce emissions. If there are any political, corporate, financial, or temporal hindrances, the credits become worthless, supply exceeds demand, and no emissions are actually capped (Davies, 2007).

The Notice of Preparation also states the following:

> *"Alternatives will be designed to avoid and/or substantially reduce any impacts that cannot otherwise be mitigated to a level below significance."*

This is a highly subjective statement. It does not specify by whom, when, for how long, or what "substantially," "impacts," or "significance" means. I would like to know what alternatives are being considered, by whom they are being considered, and to remind those listening that saying "no" to this project proposal is still a completely valid alternative option. From my own research in Africa, it has been shown that high levels of interpretability in resource law or project guidelines are commonly correlated with conflict, project failure, or manipulative and predatory resource control.

That said, I would like to propose an alternative. As of last year, in response to President Trump's withdrawal from the Paris Agreements, the Santa Barbara City Council has committed to moving toward meeting 100% of its electricity demand with renewable sources (Yamamura and Hayden, 2017). My proposal for an alternative is the decommissioning of these three platforms for extractive industry, and instead transforming them into California's first offshore wind project. Several of the world's most successful key oil and gas players are already decommissioning oil and gas platforms in the North Sea between Scotland and Norway, and converting them to be used to implement offshore wind farms, as the technology becomes more financially viable and publicly supported. Statoil, Ørsted, and Shell have all committed to decommissioning oil platforms in the North Sea and converting them for offshore wind operations. A step in this direction would be to take after the world-renowned innovation strategies of Scandinavian countries in renewables development. I even attended the Offshore Energy Exhibition and Conference in Amsterdam in 2016, with lectures from the world's leading offshore energy industry professionals. According to the conference, North America and Europe will be the fastest-paced growth areas in offshore wind, with Bloomberg New Energy Finance's projections to support this idea (Gilpin, 2018). In fact, the Block Island Wind Farm in Rhode

Island just became the United States' first offshore wind farm last December. The transition is far simpler since the platforms are already out there, transmission cables are already laid, and the grid already connected.
And, Santa Barbara has the wind and ocean resources to make this financially viable. According to an article in the LA Times, it's estimated that nearly a terrawatt of electricity could be generated off the coast of California with wind energy, a whopping 13 times more capacity than all the land-based wind farms across the country generate (Nikolewski, 2018). 13 times more capacity than all the land-based wind farms across the country!

In fact, according to a report by the US Department of Energy, wind speeds at 90 meters above sea level directly over the Harmony, Heritage, and Hondo platforms average at about 8.5 to 9 meters per second, putting this patch of ocean among some of the highest average velocity winds in the state, and definitely Southern California (USDOE, 2018). The Federal Bureau of Ocean Energy Management has even identified this location as one of the six viable sites in California for offshore wind production on the basis of not only average wind velocity and water depth, but also lowest use conflict (Musial *et al.*, 2016). Santa Barbara aims to be 100% renewable by the year 2030, and according to a cost prediction model developed in the UK, this specific location (Channel Islands North) has the potential to drop down to a levelized cost of $97/MWh even without any subsidization by that same year. An endeavor such as this could not only prove profitable for Exxon, but could greatly expedite the rate at which Santa Barbara achieves its 100% renewable goal. Running calculations using the Bureau of Ocean Energy Management's estimated wind energy potential of this site compared to Santa Barbara County's energy demand, just 37 turbines would completely supply Santa Barbara County's energy demand even at just 60% availability.

Again, my background comes from studying conflict around utility-scale energy projects in Sub-Saharan Africa. I was also recently the keynote speaker on an internationally broadcast television program regarding energy and water governance. Conflict around ocean space transformation and stakeholders involved in multi-use sections of open water can be preemptively mitigated, a discussion in which I would love to engage at another time.

To recap:

- First, the encouragement of the re-booting of the same oil operations that resulted in the Refugio Oil Spill just three years ago must call into question our line of thinking and the degree to which we value the health of our coastal ecosystems, global environment, and our physical health.
- Second, the permission of Exxon's project proposal would not only re-spur a significant level of offshore oil drilling in Santa Barbara County, but could also produce a potentially large opportunity cost by not expediting the County of Santa Barbara in their goal of going 100% renewable by 2030.
- Finally, the introduction of offshore wind could potentially be groundbreaking as North America's first offshore wind farm on the West Coast, to diversify the economic portfolio of the county, state, and federal government's energy mix, eliminate the risk of oil spills from these platforms, and capitalize on Southern California's renewable resources while simultaneously achieving the City Council's promise to go 100% renewable by 2030.

Ladies and Gentlemen of the council, Exxon U.S.A., and audience, it is your responsibility to your constituents to hold Exxon, the government of Santa Barbara, and yourselves accountable for a sustainable future. In merely the short time I have been speaking, I hope I have provided influential thought and trust that you will all act responsibly.

Thank you.

References

Davies, N. (2007) *The inconvenient truth about the carbon offset industry*, *The Guardian*.

Exxon U.S.A. Unit Operator (1987) 'DEVELOPMENT AND PRODUCTION PLAN {CUMULATIVE UPDATES) SANTA YNEZ UNIT DEVELOPMENT'.

Gilpin, L. (2018) *Oil Giants See a Future in Offshore Wind Power. Their Suppliers Are Investing, Too.*, *Inside Climate News*.

Musial, W., Beiter, P., Tegen, S. and Smith, A. (2016) 'Potential Offshore Wind Energy Areas in California: An Assessment of Locations, Technology, and Costs', *BOEM*, p. US Bureau of Ocean Energy Management.

Nikolewski, R. (2018) 'Offshore wind farms are planned for California — but the Navy says no to large sections of the coast', *LA Times*.

SBCAPCD (2018) *PERMIT TO OPERATE 5651-R6 AND PART 70 OPERATING PERMIT 5651 EXXONMOBIL – SYU PROJECT LAS FLORES CANYON OIL & GAS PLANT*.

USDOE (2018) *Wind Energy in California*.

Yamamura, J. and Hayden, T. (2017) 'Santa Barbara Votes for 100 Percent Renewable Energy', *Santa Barbara Independent*.

-----Original Message-----
From: IsupportOILANDGAS OandGsupporter <oilandgaspays@everyactioncustom.com>
Sent: Friday, July 13, 2018 1:11 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - APPROVE

Dear Santa Barbara Planning and Development Commission,

New pipelines spur thousands of manufacturing jobs building pipe and components.

Sincerely,
IsupportOILANDGAS OandGsupporter
Schenectady, NY 12345
oilandgaspays@gmail.com

From: Thomas Pope <tlpopejr@aol.com>
Sent: Wednesday, July 11, 2018 9:40 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Exon oil platforms

Please prevent the Santa Barbara oil platforms from restarting. There will, inevitably, be a major oil spill, and it will impact the citizens and ocean of the Central Coast at a terrible cost.

Sent from my iPhone

From: Rosemary Remacle <rosemary@rosemaryremacle.com>
Sent: Wednesday, July 11, 2018 11:24 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: Exxon Mobil Oil trucks

Ms. Klehr,

I live within a mile or so of the Phillips 66 refinery on the Nipomo Mesa. I am very opposed to allowing the oil tankers to drive on County/State roads and highways. They pose a threat to our roadways (they are big and heavy) that would take taxpayer dollars to repair. They can be involved in accidents with dire results. They will contribute to air and noise pollution. Please just say “no” to Exxon. They can wait until the pipeline is restored to ship their oil to the Phillips refinery.

Thank you,
Rosemary Remacle
1091 Danni Court
Nipomo, CA 93444

From: Cynthia Replogle <cynthia.replogle@gmail.com>
Sent: Tuesday, October 23, 2018 8:20 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: No to Exxon's plans to reactivate offshore oil

SLO County does not want more pollution and more traffic on our roads, more dirty air and carcinogens. Big Oil is a dinosaur of the past and we cannot risk more harm to our environment through spills and global warming.

Best,
Cynthia Replogle
1501 24th St, Oceano, CA 93445

From: Rouvaishyana <rwhale1@charter.net>
Sent: Wednesday, July 11, 2018 8:13 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>; Rouvaishyana <rwhale1@charter.net>
Subject: Moving crude oil with trucks

Good morning Ms. Lehr,

I'm writing with input for tonight's meeting (7/11) on movement of oil with trucks through SB, SLO, and Kern counties.

Many of us in this area have strong environmental concerns, but we have to be realistic also. All or most of us use oil and oil products. Oil is going to be moved one way or another. The pipeline damaged in 2015 has not yet been repaired or replaced.

Oil spill response agencies provide fast and thorough service once on the scene of a spill, but often must be deployed from long distances from the scene of a truck spill. Simple prudence demands that oil tanker trucks carry at least a minimum of oil spill response equipment, just as they carry fire extinguishers, first aid kits, repair kits, and in many cases, tire chains for winter use. Trucking companies may counter that this is an additional expense and that they already carry the above equipment, some of it required by law or statute.

We need to consider the time leg if there is a truck collision and attendant oil spill on Hwy. 166 or a county back road, or for that matter on US-101. An oil spill team could take quite a while to reach the site. If each truck carries a small spill kit, the driver can begin a "first response" to his or her own spill. Yes, this will require additional equipment and training, but this is part of the price paid by companies engaged in businesses with risks. Every business has at least some risks. I think these measures will reduce spill risks, at least in part, and will provide a small backup plan to protect land and water in case of an unintended oil spill.

Please consider it.

Thank you,

Rouvaishyana

Los Osos, San Luis Obispo county

November 30, 2018

Mark Tautrim
Orella Ranch
12750 Calle Real
Goleta, CA 93117

Kathryn Lehr
Energy & Minerals Division
123 E. Anapamu Street, Third Floor,
Santa Barbara, CA 93101

Re: ExxonMobil Emergency Trucking Permit Application

Dear Ms. Lehr:

I previously wrote a letter to you on January 18, 2016 on this very subject.

I am restating a portion of what I included in that letter.

My property is in close proximity to the ExxonMobil Las Flores facility "Canyon". Because of the All American Pipeline spill in 2015 and the ensuing transportation of contaminated soil into the facility, my family and employees suffered harm not only from the oil spill itself but from that transportation. Hundreds of trucks passed in front of my property for months on end.

I realize that the proposed trucking of oil now will be in enclosed tanker trucks and the oil itself should not affect us; however, the actual trucking is with what I am concerned.

From my January 16, 2016 letter:

"The route of the trucks passed directly in front of our properties, along Calle Real. Besides the noise, dirt, exhaust and fumes we endured, many of the truck drivers used their Jake brakes (compression release engine brakes) in order to slow their vehicles. These types of brakes are very loud and can be very disturbing to people when heard over and over.

To help alleviate some of the above problems associated with the trucking of the stored oil, we are suggesting that the loaded trucks from the Canyon be given access to Highway 101 directly across from the entrance to the ExxonMobil facility. We realize this part of the 101 is a freeway and we are not suggesting an at-grade crossing. Only northbound trucks would use the "new" entrance to the freeway via a new at-grade acceleration lane. Stop signs would need to be installed at the Calle Real and the Canyon entrance. Empty trucks coming from the north would still use the Refugio exit and proceed to the facility via Calle Real.

By using this new entrance to the freeway, the trucks could reach highway speeds much more quickly than having to go up the very steep Refugio on-ramp to 101; one stop sign (at Refugio Road) would be bypassed; the use of Jake brakes would not be needed; fuel economy would be improved; and traffic along Calle Real would be cut in half since only empty trucks coming from the north would be using Calle Real."

The suggestion above still is applicable today.

Thank you for considering this proposal.

Mark Tautrim
Mark Tautrim

RECEIVED
DEC 03 2018
S B COUNTY
PLANNING & DEVELOPMENT

Caller Name	Organization	Comment	Date Received (may differ from sent)
Charles Varni (805) 459-6698	Co-chair for Coalition to Protect SLO County	Organization opposes ExxonMobil’s project. Not responsibility of County or obligation of public to put itself at risk because of Exxon’s decision and corrosion of pipeline. Do not approve application.	07/11/2018

From: Cindyvix <cindyvixslo@gmail.com>
Sent: Wednesday, July 11, 2018 6:24 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Cc: Cindy Vix <cindyvixslo@gmail.com>
Subject: Exxon Mobil

Dear Kathryn,

I am unable to attend the meeting on Wednesday, and I want to voice my deep concern and opposition to the proposal of off shore drilling to resume. Not only are the drilling sites old, but trucking the highly flammable crude oil is a dangerous threat to the Central Coast.

Thank you,
Cindy Vix
cindyvixslo@gmail.com

Sent from my iPhone

From: Patrick Williams <patrickwilliams326@gmail.com>
Sent: Thursday, October 25, 2018 6:16 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: ExxonMobil reopening offshore pumping

Oil is ruining this beautiful sea community. Have you seen Santa Barbara beaches lately, it is black grime washing ashore, people can't even get in the water. If you decide to take money over lives then this place will be one ugly smelly dump town. House prices will take a dive because who will want to live next to a blackened beach.

Already there are oil globs all over ventura and Oxnard beaches, children are walking on them and it's hard to wash it off. God forbid if they swallow a glob. This community should be touting green energy, solar, wind and wave power. We should be the leader of the world in green energy, brown water system and recycling. Not an oil community. Dont forget the abandoned platforms Exxon left here for us to foot the bill to tear down. They came, used abused and left wreckage for us to clean. Kathryn please dont sell out before our children health.

Thank you.

From: cybeleknowles@everyactioncustom.com <cybeleknowles@everyactioncustom.com>
Sent: Monday, July 02, 2018 2:49 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Cybele Knowles
Tucson, AZ 85716
cybeleknowles@gmail.com

From: soysegura@everyactioncustom.com <soysegura@everyactioncustom.com>
Sent: Monday, July 02, 2018 3:50 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Marta Segura
Los Angeles, CA 90043
soysegura@gmail.com

From: cybeleknowles@everyactioncustom.com <cybeleknowles@everyactioncustom.com>
Sent: Friday, June 29, 2018 10:52 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Cybele Knowles
Tucson, AZ 85716
cybeleknowles@gmail.com

From: b.kopcho@everyactioncustom.com <b.kopcho@everyactioncustom.com>
Sent: Monday, July 02, 2018 2:09 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Blake Kopcho
San Francisco, CA 94117
b.kopcho@gmail.com

From: katharinecarter11@everyactioncustom.com <katharinecarter11@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 8:00 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] NO TO ExxonMobil interim trucking application

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Katharine Carter
Santa Barbara, CA 93109
katharinecarter11@gmail.com

From: nature2design@everyactioncustom.com <nature2design@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:16 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] NO! NO! NO! ExxonMobil interim trucking application. OPPOSE

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Terre Dunivant
San Luis Obispo, CA 93401
nature2design@yahoo.com

From: connieandbobhannah@everyactioncustom.com
<connieandbobhannah@everyactioncustom.com>
Sent: Wednesday, July 4, 2018 4:51 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Connie Hannah
Goleta, CA 93117
connieandbobhannah@gmail.com

From: beadscapes@everyactioncustom.com <beadscapes@everyactioncustom.com>
Sent: Wednesday, July 4, 2018 3:42 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Shelly Skoog-Smith
Goleta, CA 93117
beadscapes@gmail.com

Sent: Wednesday, July 4, 2018 3:07 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Anna Kokotovic Phd
Goleta, CA 93117
anna48k@gmail.com

From: anna48k@everyactioncustom.com <anna48k@everyactioncustom.com>
Sent: Wednesday, July 4, 2018 3:02 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Anna Kokotovic Phd
Goleta, CA 93117
anna48k@gmail.com

Sent: Wednesday, July 4, 2018 10:38 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Grace Feldmann
Santa Barbara, CA 93105
morgainele@gmail.com

Sent: Tuesday, July 3, 2018 9:46 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Daniel Holland
Arroyo Grande, CA 93420
dth6@charter.net

From: andrewphilpot@everyactioncustom.com <andrewphilpot@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:26 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Andrew Philpot
Solvang, CA 93463
andrewphilpot@verizon.net

From: sbhearon@everyactioncustom.com <sbhearon@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:25 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Sarah Hearon
Santa Barbara, CA 93130
sbhearon@hotmail.com

From: marcismith0217@everyactioncustom.com <marcismith0217@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:18 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
marci Smith
Los Osos, CA 93402
marcismith0217@msn.com

From: dddollar@everyactioncustom.com <dddollar@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:03 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ellen Dollar
San Luis Obispo, CA 93401
dddollar@yahoo.com

From: murdock_ls@everyactioncustom.com <murdock_ls@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 8:59 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Lauren Murdock
Santa Barbara, CA 93110
murdock_ls@hotmail.com

From: gary_gall@everyactioncustom.com <gary_gall@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 8:33 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Gary Gall
Cambria, CA 93428
gary_gall@hotmail.com

From: ricocaravalho@everyactioncustom.com <ricocaravalho@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 8:06 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Rico Caravalho
Los Osos, CA 93402
ricocaravalho@gmail.com

From: beechcleener@everyactioncustom.com <beechcleener@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 7:56 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Martin Henderson
Goleta, CA 93117
beechcleener@gmail.com

From: sattvasu@everyactioncustom.com <sattvasu@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 7:27 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Su Wyatt FNP MSN
Goleta, CA 93117
sattvasu@gmail.com

From: ljpenrose@everyactioncustom.com <ljpenrose@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:59 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Linda Penrose
Morro Bay, CA 93442
ljpenrose@gmail.com

From: tikibirdgreen@everyactioncustom.com <tikibirdgreen@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
leslie spoon
Los Osos, CA 93402
tikibirdgreen@yahoo.com

From: janegranskog@everyactioncustom.com <janegranskog@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:19 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jane Granskog
Los Osos, CA 93402
janegranskog@att.net

From: drlewis@everyactioncustom.com <drlewis@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 5:56 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Cynthia Lewis
Templeton, CA 93465
drlewis@lewisassoc.com

From: aubinms@everyactioncustom.com <aubinms@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 4:55 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Martha Aubin
Santa Barbara, CA 93109
aubinms@gmail.com

From: avantkern1@everyactioncustom.com <avantkern1@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 12:58 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Patricia Avant-Kern
Los Osos, CA 93402
avantkern1@aol.com

From: dwightlowell@everyactioncustom.com <dwightlowell@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 11:35 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Dwight Lowell
Santa Barbara, CA 93108
dwightlowell@me.com

From: Misstp@everyactioncustom.com <Misstp@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 10:32 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Tatjana Patitz
Los Olivos, CA 93441
Misstp@mac.com

From: vsemonsen@everyactioncustom.com <vsemonsen@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 10:29 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Vincent Semonsen
Santa Barbara, CA 93101
vsemonsen@earthlink.net

From: sefriedline@everyactioncustom.com <sefriedline@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:58 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Skyler Friedline
Santa Barbara, CA 93111
sefriedline@gmail.com

From: csi@everyactioncustom.com <csi@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:38 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
David Broadwater
Atascadero, CA 93422
csi@thegrid.net

From: dhthegidget@everyactioncustom.com <dhthegidget@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 9:07 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

It's time to move forward to green or energy and move away from fossil fuels.

Sincerely,
Donna Hunt
Atascadero, CA 93422
dhthegidget@gmail.com

From: jw@everyactioncustom.com <jw@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 8:15 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
John Warner
Goleta, CA 93117
jw@sbnatives.com

From: cathmasi@everyactioncustom.com <cathmasi@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 7:47 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Catherine Masi
Santa Barbara, CA 93101
cathmasi@yahoo.com

From: teddyfan4ever@everyactioncustom.com <teddyfan4ever@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 7:15 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Kathleen M Devaney
Solvang, CA 93463
teddyfan4ever@msn.com

From: dbordegaray@everyactioncustom.com <dbordegaray@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 7:06 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Dana Bordegaray
Cayucos, CA 93430
dbordegaray@att.net

From: mbw565@everyactioncustom.com <mbw565@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:46 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Mary Wiener
Carpinteria, CA 93013
mbw565@gmail.com

From: ericsama2@everyactioncustom.com <ericsama2@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:27 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
eric weiss
Atascadero, CA 93422
ericsama2@sbcglobal.net

From: winamarieag@everyactioncustom.com <winamarieag@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:25 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Gina Mori
Arroyo Grande, CA 93420
winamarieag@aol.com

From: monarchsrule@everyactioncustom.com <monarchsrule@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:15 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Christina Lange
Santa Barbara, CA 93101
monarchsrule@yahoo.com

From: bodhababe@everyactioncustom.com <bodhababe@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 6:06 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ann Gould Massoubre
Los Osos, CA 93402
bodhababe@hotmail.com

From: jeremykeithneill@everyactioncustom.com <jeremykeithneill@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 4:43 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jeremy Neill
Goleta, CA 93117
jeremykeithneill@gmail.com

From: hslettel@everyactioncustom.com <hslettel@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 3:27 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Holly Sletteland
Templeton, CA 93465
hslettel@calpoly.edu

From: judithfalckmadsen@everyactioncustom.com <judithfalckmadsen@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 3:16 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Judith Falck-Madsen
Carpinteria, CA 93013
judithfalckmadsen@gmail.com

From: blairce@everyactioncustom.com <blairce@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 1:49 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Charles Blair
Lompoc, CA 93436
blairce@sbceo.org

From: bluesunflowersb@everyactioncustom.com <bluesunflowersb@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 1:37 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Lisa Ann Kelly Family
Santa Barbara, CA 93101
bluesunflowersb@gmail.com

From: bigsurunified@everyactioncustom.com <bigsurunified@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 1:32 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Susan Perry
Cambria, CA 93428
bigsurunified@gmail.com

From: im@everyactioncustom.com <im@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 1:29 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Cass Warner
Santa Barbara, CA 93101
im@warnersisters.com

From: mjf@everyactioncustom.com <mjf@everyactioncustom.com>
Sent: Tuesday, July 3, 2018 12:03 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Michael Frey
Santa Barbara, CA 93108
mjf@dslextreme.com

From: vicsiris1@everyactioncustom.com <vicsiris1@everyactioncustom.com>
Sent: Monday, July 2, 2018 11:35 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
V.S. Roberts
Grover Beach, CA 93483
vicsiris1@gmail.com

From: jane@everyactioncustom.com <jane@everyactioncustom.com>
Sent: Monday, July 2, 2018 11:02 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

Santa Barbara County MUST deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jane Engelsiepen
Carpinteria, CA 93013
jane@viewstudio.com

From: judysfinag@everyactioncustom.com <judysfinag@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:55 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Judy Fukunaga
Arroyo Grande, CA 93421
judysfinag@aol.com

From: carlos.arnold39@everyactioncustom.com <carlos.arnold39@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:35 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Carlos Arnold
Santa Maria, CA 93455
carlos.arnold39@gmail.com

From: noellemcgivern@everyactioncustom.com <noellemcgivern@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:35 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Noelle McGivern
Santa Barbara, CA 93110
noellemcgivern@yahoo.com

From: shellbeachgirl@everyactioncustom.com <shellbeachgirl@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:27 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Connie Wilkinson
Pismo Beach, CA 93449
shellbeachgirl@sbcglobal.net

From: dallen@everyactioncustom.com <dallen@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:18 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Dennis Allen
Santa Barbara, CA 93103
dallen@buildallen.com

From: dbordegaray@everyactioncustom.com <dbordegaray@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:16 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Dana Bordegaray
Cayucos, CA 93430
dbordegaray@att.net

From: tinsleyrc@everyactioncustom.com <tinsleyrc@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:08 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Rebecca Tinsley
Santa Barbara, CA 93108
tinsleyrc@aol.com

From: msladyjulia@everyactioncustom.com <msladyjulia@everyactioncustom.com>
Sent: Monday, July 2, 2018 10:00 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Julia Di Sieno
Solvang, CA 93463
msladyjulia@hotmail.com

From: jennieherrick@everyactioncustom.com <jennieherrick@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:50 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Genevieve Herrick
Santa Ynez, CA 93460
jennieherrick@gmail.com

From: dlpotc@everyactioncustom.com <dlpotc@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:48 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Terry S.C.
Santa Maria, CA 93455
dlpotc@gmail.com

From: missddh@everyactioncustom.com <missddh@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:38 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Diane Hilts
Santa Barbara, CA 93103
missddh@icloud.com

From: Artistsb2@everyactioncustom.com <Artistsb2@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:28 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
George Small
Santa Barbara, CA 93105
Artistsb2@gmail.com

From: swishner22@everyactioncustom.com <swishner22@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:25 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Susan Wishner
Nipomo, CA 93444
swishner22@yahoo.com

From: mettier.pam@everyactioncustom.com <mettier.pam@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:14 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
pam mettier
Cambria, CA 93428
mettier.pam@gmail.com

From: franshan42@everyactioncustom.com <franshan42@everyactioncustom.com>
Sent: Monday, July 2, 2018 9:01 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit. I do not want these trucks despoiling our ecosystem. We need to fund research into alternative forms of energy instead of dirty oil.

Sincerely,
Frances Marsh
Santa Barbara, CA 93108
franshan42@gmail.com

From: Genesslorien@everyactioncustom.com <Genesslorien@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:59 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Geness Lorien
Santa Barbara, CA 93101
Genesslorien@gmail.com

From: Nocona81@everyactioncustom.com <Nocona81@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:54 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Tara Gonzales
Atascadero, CA 93422
Nocona81@hotmail.com

From: johnaklucas@everyactioncustom.com <johnaklucas@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:51 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
John Lucas
Los Osos, CA 93402
johnaklucas@gmail.com

From: ingridbrewer8@everyactioncustom.com <ingridbrewer8@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:49 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ingrid Brewer
Santa Barbara, CA 93103
ingridbrewer8@gmail.com

From: celesteanacker@everyactioncustom.com <celesteanacker@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:49 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Celeste Anacker
Santa Barbara, CA 93105
celesteanacker@gmail.com

From: bkiku@everyactioncustom.com <bkiku@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:35 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kiku Bartschi
Santa Barbara, CA 93111
bkiku@hotmail.com

From: jack@everyactioncustom.com <jack@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:26 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jack Meyers
Cambria, CA 93428
jack@fourbostons.com

From: ferdy01@everyactioncustom.com <ferdy01@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:16 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Bill Greene
Pismo Beach, CA 93448
ferdy01@aol.com

From: raynjulie1048@everyactioncustom.com <raynjulie1048@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:14 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Julie Smith
Los Osos, CA 93402
raynjulie1048@sbcglobal.net

From: bobbiteubner@everyactioncustom.com <bobbiteubner@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:07 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Roberta Teubner
Atascadero, CA 93422
bobbiteubner@gmail.com

From: gpgreatglobe@everyactioncustom.com <gpgreatglobe@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:05 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
George Paul Backman
Santa Barbara, CA 93108
gpgreatglobe@gmail.com

From: jamaps@everyactioncustom.com <jamaps@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:04 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Arnold Schildhaus
Santa Barbara, CA 93110
jamaps@gmail.com

From: pasodave925@everyactioncustom.com <pasodave925@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:03 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
David Anderson
Paso Robles, CA 93446
pasodave925@gmail.com

From: Kmmk@everyactioncustom.com <Kmmk@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:01 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Kathy Kosinski
Goleta, CA 93117
Kmmk@cox.net

From: jchernow2@everyactioncustom.com <jchernow2@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:52 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Justin Chernow
Paso Robles, CA 93446
jchernow2@yahoo.com

From: rich.jo.dovgin@everyactioncustom.com <rich.jo.dovgin@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:48 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Richard Dovgin
Santa Barbara, CA 93105
rich.jo.dovgin@cox.net

From: marceauunlimited@everyactioncustom.com <marceauunlimited@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:41 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Paul Marceau
Santa Barbara, CA 93108
marceauunlimited@gmail.com

From: elizabethbettenhausen@everyactioncustom.com
<elizabethbettenhausen@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:39 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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Sincerely,
Elizabeth Bettenhausen
Cambria, CA 93428
elizabethbettenhausen@gmail.com

From: nydoc@everyactioncustom.com <nydoc@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:39 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Annette Grieco
Paso Robles, CA 93446
nydoc@tcsn.net

From: nanpage@everyactioncustom.com <nanpage@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Nancy Page
San Luis Obispo, CA 93405
nanpage@charter.net

From: wdkoch3@everyactioncustom.com <wdkoch3@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:32 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Walter Koch
Santa Barbara, CA 93105
wdkoch3@hotmail.com

From: nancyheck1@everyactioncustom.com <nancyheck1@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:25 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Nancy Heck
Santa Maria, CA 93454
nancyheck1@aol.com

From: morgainele@everyactioncustom.com <morgainele@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:22 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Grace Feldmann
Santa Barbara, CA 93105
morgainele@gmail.com

From: janettheplanetjanet@everyactioncustom.com <janettheplanetjanet@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:22 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Janet Lee Beatty
San Luis Obispo, CA 93401
janettheplanetjanet@aol.com

From: acusurfdoc@everyactioncustom.com <acusurfdoc@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:19 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ron Riskin
Santa Barbara, CA 93103
acusurfdoc@cox.net

From: firestone500@everyactioncustom.com <firestone500@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:13 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Santa Barbara has committed to using 100% renewable energy by 2030. We have adopted a Socially Responsible Investment Policy that weighs against investing city funds in oil projects.

Allowing this dangerous project to move forward would be against the spirit of what SB City Council has decided in these two instances, both in response to public demands.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Loren Mindell
Goleta, CA 93117
firestone500@gmail.com

From: wenertina@everyactioncustom.com <wenertina@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:08 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Tina Marie Wener
Morro Bay, CA 93442
wenertina@gmail.com

From: paulmshires@everyactioncustom.com <paulmshires@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:56 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Paul Shires
Arroyo Grande, CA 93420
paulmshires@gmail.com

From: Jenniferesahn@everyactioncustom.com <Jenniferesahn@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:55 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Jennifer Sahn
Santa Barbara, CA 93105
Jenniferesahn@gmail.com

From: ronit@everyactioncustom.com <ronit@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:54 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ronit Corry
Santa Barbara, CA 93101
ronit@worldshare.net

From: jkirk@everyactioncustom.com <jkirk@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:52 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
John Kirk
Santa Barbara, CA 93109
jkirk@geartrains.com

From: dallen@everyactioncustom.com <dallen@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:51 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Dennis Allen
Santa Barbara, CA 93103
dallen@buildallen.com

From: jasha@everyactioncustom.com <jasha@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:42 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jasha Stanberry
Santa Barbara, CA 93108
jasha@studioluminous.net

From: kintrublu@everyactioncustom.com <kintrublu@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:36 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kinsey Service
Goleta, CA 93117
kintrublu@cox.net

From: applebaum@everyactioncustom.com <applebaum@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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Sincerely,
Ted Applebaum
Santa Barbara, CA 93111
applebaum@cox.net

From: summer3347@everyactioncustom.com <summer3347@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jan Oldham
Santa Barbara, CA 93105
summer3347@aol.com

From: knotundn416@everyactioncustom.com <knotundn416@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
John McLaurin
Paso Robles, CA 93446
knotundn416@gmail.com

From: satchelljohn29@everyactioncustom.com <satchelljohn29@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:31 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
John Satchell
San Miguel, CA 93451
satchelljohn29@gmail.com

From: risingercat@everyactioncustom.com <risingercat@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:30 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Teresa Risinger
Santa Maria, CA 93455
risingercat@gmail.com

From: drderhammer@everyactioncustom.com <drderhammer@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:28 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Randy Derhammer
Paso Robles, CA 93446
drderhammer@sbcglobal.net

From: camillegilbert@everyactioncustom.com <camillegilbert@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:26 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Camille Gilbert
Santa Barbara, CA 93101
camillegilbert@aol.com

From: mcsherman@everyactioncustom.com <mcsherman@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:10 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Marcia Sherman
Santa Barbara, CA 93110
mcsherman@gmail.com

From: 474m.bay@everyactioncustom.com <474m.bay@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:59 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Gayle Harvey
Morro Bay, CA 93442
474m.bay@gmail.com

From: sonnieagomez@everyactioncustom.com <sonnieagomez@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:58 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Sonnie Gomez
Goleta, CA 93117
sonnieagomez@gmail.com

From: ecsb@everyactioncustom.com <ecsb@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:57 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Elizabeth Colon
Santa Barbara, CA 93105
ecsb@live.com

From: lbrophy26@everyactioncustom.com <lbrophy26@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:55 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Linda Brophy
Santa Barbara, CA 93105
lbrophy26@gmail.com

From: kathy@everyactioncustom.com <kathy@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:54 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kathy Reid
Atascadero, CA 93422
kathy@reidcm.com

From: katherinejohnson1@everyactioncustom.com <katherinejohnson1@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:51 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Katherine Johnson
Santa Barbara, CA 93110
katherinejohnson1@cox.net

From: kyle_schlopy@everyactioncustom.com <kyle_schlopy@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:48 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kyle Schlopy
Goleta, CA 93117
kyle_schlopy@me.com

From: roberta.cordero@everyactioncustom.com <roberta.cordero@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:46 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Roberta Cordero
Santa Barbara, CA 93105
roberta.cordero@gmail.com

From: eddysclub@everyactioncustom.com <eddysclub@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:45 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Melissa Eddy
Santa Barbara, CA 93105
eddysclub@gmail.com

From: ekaplan1995@everyactioncustom.com <ekaplan1995@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:44 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Emily Kaplan
Santa Barbara, CA 93110
ekaplan1995@gmail.com

From: jblack@everyactioncustom.com <jblack@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:43 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Josephine Black
Carpinteria, CA 93013
jblack@ilrc-trico.org

From: mpeck5@everyactioncustom.com <mpeck5@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:43 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Margaret Peck
Santa Barbara, CA 93160
mpeck5@cox.net

From: retrogirl1954@everyactioncustom.com <retrogirl1954@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:40 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Beth Anderson
Arroyo Grande, CA 93420
retrogirl1954@gmail.com

From: rich@everyactioncustom.com <rich@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:39 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

As a resident of Santa Barbara County for over 30 years, I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Rich Moser
Santa Barbara, CA 93111
rich@transcendentalastrology.com

From: huerhuero@everyactioncustom.com <huerhuero@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:39 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Geraldine May
Creston, CA 93432
huerhuero@aol.com

From: tristan.wells@everyactioncustom.com <tristan.wells@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:38 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Tristan Wells
Santa Barbara, CA 93109
tristan.wells@gmail.com

From: hgreenwa@everyactioncustom.com <hgreenwa@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:38 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Evelyn Greenwald
San Luis Obispo, CA 93401
hgreenwa@calpoly.edu

From: hiwandada@everyactioncustom.com <hiwandada@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:37 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Wanda Hendrix
Morro Bay, CA 93442
hiwandada@gmail.com

From: cambriawellness@everyactioncustom.com <cambriawellness@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:36 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Please protect our coastal community, marine ecosystems and climate by rejecting this permit!

Sincerely,
Jeannine Jacobs
Cambria, CA 93428
cambriawellness@gmail.com

From: sdwebb@everyactioncustom.com <sdwebb@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Don Webb
Santa Barbara, CA 93108
sdwebb@cox.net

From: morgainele@everyactioncustom.com <morgainele@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:31 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Grace Feldmann
Santa Barbara, CA 93105
morgainele@gmail.com

From: cmkr@everyactioncustom.com <cmkr@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:28 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Carol Reiche
Santa Barbara, CA 93108
cmkr@cox.net

From: MickeyPRowe@everyactioncustom.com <MickeyPRowe@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:27 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Mickey Rowe
Lompoc, CA 93436
MickeyPRowe@gmail.com

From: elgenasci@everyactioncustom.com <elgenasci@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:25 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Elaine Genasci
San Luis Obispo, CA 93405
elgenasci@gmail.com

From: moach831@everyactioncustom.com <moach831@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:24 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Michelle Kosinski
Goleta, CA 93117
moach831@cox.net

From: jeridanderson@everyactioncustom.com <jeridanderson@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:24 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jerid Anderson
Santa Maria, CA 93454
jeridanderson@gmail.com

From: anna48k@everyactioncustom.com <anna48k@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:24 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Anna Kokotovic Phd
Goleta, CA 93117
anna48k@gmail.com

From: boros1@everyactioncustom.com <boros1@everyactioncustom.com>
Sent: Monday, July 2, 2018 6:38 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose!!!!!!

Dear Santa Barbara Planning and Development Commission,

We cannot jeopardize our land and beaches that are crucial to our economic sustainability not to mention the vulnerable marine life that will be destroyed by even one spill.

m writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Barbara Boros
Santa Barbara, CA 93105
boros1@mac.com

From: debmiller91@everyactioncustom.com <debmiller91@everyactioncustom.com>
Sent: Wednesday, July 4, 2018 5:14 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Deborah Miller
Santa Barbara, CA 93108
debmiller91@gmail.com

From: staff@everyactioncustom.com <staff@everyactioncustom.com>
Sent: Monday, July 2, 2018 7:48 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - STRONGLY OPPOSE

Dear Santa Barbara Planning and Development Commission,

Exxon, Be Gone!

I'm writing to fervently urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
David Walker
Santa Barbara, CA 93105
staff@walkercreations.com

From: mleaston@everyactioncustom.com <mleaston@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:34 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Mary Louise Labadie
Nipomo, CA 93444
mleaston@charter.net

From: dmarquezlaw@everyactioncustom.com <dmarquezlaw@everyactioncustom.com>
Sent: Monday, July 2, 2018 8:49 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: Opposition to ExxonMobil interim trucking application

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Daniel Marquez
Torrance, CA 90504
dmarquezlaw@yahoo.com

From: swk9815chats@everyactioncustom.com <swk9815chats@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:33 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Scott Kirby
Lompoc, CA 93436
swk9815chats@socal.rr.com

From: bodhababe@everyactioncustom.com <bodhababe@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:24 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ann Gould Massoubre
Los Osos, CA 93402
bodhababe@hotmail.com

From: pauldramos@everyactioncustom.com <pauldramos@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:21 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Paul Ramos
Santa Ynez, CA 93460
pauldramos@gmail.com

From: Bc@everyactioncustom.com <Bc@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:21 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Bob Cunningham
Santa Barbara, CA 93101
Bc@arcadiastudio.com

From: soysegura@everyactioncustom.com <soysegura@everyactioncustom.com>
Sent: Monday, July 2, 2018 3:50 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Marta Segura
Los Angeles, CA 90043
soysegura@gmail.com

From: b.kopcho@everyactioncustom.com <b.kopcho@everyactioncustom.com>
Sent: Monday, July 2, 2018 2:09 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Blake Kopcho
San Francisco, CA 94117
b.kopcho@gmail.com

From: bullscs2@everyactioncustom.com <bullscs2@everyactioncustom.com>
Sent: Monday, July 2, 2018 5:51 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
David Bull
Lompoc, CA 93436
bullscs2@gmail.com

From: sheila.blake@everyactioncustom.com <sheila.blake@everyactioncustom.com>
Sent: Saturday, July 21, 2018 5:57 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Sheila Blake
Pismo Beach, CA 93449
sheila.blake@att.net

From: Laurel Ebert <laurelrebert@everyactioncustom.com>
Sent: Saturday, July 7, 2018 12:23 PM
To: Lehr, Kathryn klehr@co.santa-barbara.ca.us

Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application – Oppose

Dear Santa Barbara Planning and Development Commission,
I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Laurel Ebert
Santa Barbara, CA 93111
laurelrebert@gmail.com

From: Jennifer Hernandez cjdez89@everyactioncustom.com

Sent: Monday, July 9, 2018 5:20 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application – Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jennifer Hernandez
Santa Maria, CA 93458
cjdez89@gmail.com

From: Cybele Knowles cybeleknowles@everyactioncustom.com

Sent: Monday, July 9, 2018 8:03 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application – Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Cybele Knowles
Tucson, AZ 85716
cybeleknowles@gmail.com

From: cybeleknowles@everyactioncustom.com <cybeleknowles@everyactioncustom.com>
Sent: Monday, August 06, 2018 1:21 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Cybele Knowles
Tucson, AZ 85716
cybeleknowles@gmail.com

From: kenmeer@everyactioncustom.com <kenmeer@everyactioncustom.com>
Sent: Sunday, August 05, 2018 2:55 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Ken Meersand
Pismo Beach, CA 93448
kenmeer@yahoo.com

From: garrett.p.ahern@everyactioncustom.com <garrett.p.ahern@everyactioncustom.com>
Sent: Sunday, July 8, 2018 11:04 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Garrett Ahern
San Luis Obispo, CA 93405
garrett.p.ahern@gmail.com

From: mleesp@everyactioncustom.com <mleesp@everyactioncustom.com>
Sent: Saturday, July 7, 2018 4:36 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Michelle Sparks-Gillis
Solvang, CA 93463
mleesp@gmail.com

From: koleen@everyactioncustom.com <koleen@everyactioncustom.com>
Sent: Saturday, July 7, 2018 11:09 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

For the continuation of life on earth, for all. Please reconsider.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Koleen Wolfe
Summerland, CA 93067
koleen@westernalum.org

From: ChristinaHeon@everyactioncustom.com <ChristinaHeon@everyactioncustom.com>
Sent: Saturday, July 7, 2018 6:22 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Christina Heon
Arroyo Grande, CA 93420
ChristinaHeon@gmail.com

From: budunion4tuber@everyactioncustom.com <budunion4tuber@everyactioncustom.com>
Sent: Friday, July 6, 2018 10:20 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kathleen Fox
Grover Beach, CA 93433
budunion4tuber@gmail.com

From: kkr1510@everyactioncustom.com <kkr1510@everyactioncustom.com>
Sent: Friday, July 6, 2018 9:36 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kristie Ritter
Santa Barbara, CA 93110
kkr1510@me.com

From: auntiem@everyactioncustom.com <auntiem@everyactioncustom.com>
Sent: Thursday, July 5, 2018 7:39 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jerome Passman
Creston, CA 93432
auntiem@tcsn.net

From: noracnm@everyactioncustom.com <noracnm@everyactioncustom.com>
Sent: Thursday, July 5, 2018 7:19 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

As a native of Santa Barbara, I remember the 1969 oil spill well.

I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

Trucking oil is a public safety hazard. Tanker trucks spill hundreds of thousands of gallons of oil per year, and these spills can cause fires and explosions. An Associated Press study of six states where truck traffic has increased because of new oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.

Oil spills near the Santa Barbara Channel threaten a wide range of federally protected endangered species, including blue whales, sea otters and leatherback sea turtles. Spilled oil persists in the environment for years and can continue harming wildlife long after cleanup teams have finished their work.

Further, if Exxon is granted this permit, its three aging offshore platforms (Harmony, Heritage, and Hondo) will be brought back online for the first time since the Plains All American Pipeline spill in 2015. Allowing oil trucks to serve three decrepit offshore drilling platforms 24 hours a day is a recipe for environmental disaster.

We shouldn't have to choose between coastal oil pipelines and oil tanker trucks on coastal highways. Both are dangerous and neither belongs in a state that understands the threat fossil fuels pose to our oceans and coastal community. Continuing the expansion of oil transportation will only deepen the climate crisis, fueling hurricanes and forest fires and accelerating sea-level rise. We need to end dirty drilling off our coast, not invite a steady stream of tanker trucks onto our roadways.

Denying Exxon's permit is consistent with California's emergence as a champion against the Trump administration's plan to expand offshore oil development off the California coast.

I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Nora Lewis
Nipomo, CA 93444
noracnm@verizon.net

From: chevygirlluvsrnh@everyactioncustom.com <chevygirlluvsrnh@everyactioncustom.com>
Sent: Thursday, July 5, 2018 7:19 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I'm writing to urge Santa Barbara County to deny ExxonMobil's trucking permit application 17RVP-00000-00081.

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Sincerely,
Christina Whittemore
Oceano, CA 93445
chevygirlluvsrnh@gmail.com

From: msmarshmellow1@everyactioncustom.com <msmarshmellow1@everyactioncustom.com>
Sent: Thursday, July 5, 2018 3:07 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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Sincerely,
Marsha Lucero
Nipomo, CA 93444
msmarshmellow1@gmail.com

From: kellylcbaker@everyactioncustom.com <kellylcbaker@everyactioncustom.com>
Sent: Thursday, July 12, 2018 2:09 AM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: [DO NOT CLICK, Likely malicious content, contact your Departmental IT] RE: ExxonMobil interim trucking application - Oppose

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Kelly Baker
San Luis Obispo, CA 93405
kellylcbaker@gmail.com

From: cjdez89@everyactioncustom.com <cjdez89@everyactioncustom.com>
Sent: Monday, July 9, 2018 5:20 PM
To: Lehr, Kathryn <klehr@co.santa-barbara.ca.us>
Subject: RE: ExxonMobil interim trucking application - Oppose

Dear Santa Barbara Planning and Development Commission,

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I urge you to protect our coastal community, marine ecosystems and climate by rejecting this permit.

Sincerely,
Jennifer Hernandez
Santa Maria, CA 93458
cjdez89@gmail.com

Attachment D

State Clearinghouse NOP Form

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

Notice of Preparation

June 15, 2018

To: Reviewing Agencies

Re: ExxonMobil Interim Trucking for SYU Phased Restart Project
SCH# 2018061035

Attached for your review and comment is the Notice of Preparation (NOP) for the ExxonMobil Interim Trucking for SYU Phased Restart Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Kathryn Lehr
Santa Barbara County
123 E. Anapamu Street
Santa Barbara, CA 93101

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

RECEIVED
JUN 21 2018
S B COUNTY
PLANNING & DEVELOPMENT

Document Details Report
State Clearinghouse Data Base

SCH#	**2018061035**
Project Title	ExxonMobil Interim Trucking for SYU Phased Restart Project
Lead Agency	Santa Barbara County

Type **NOP** Notice of Preparation

Description ExxonMobil is proposing this project to resume offshore oil and has production at the SYU, conduct a phased restart of the LFC; Facility and initiate the interim trucking of limited crude oil production as an interim solution until a pipeline alternative becomes available to transport crude oil to a refinery destination. The project request is a revision to Development Plan 87-DP-32cz and will be evaluated under a SEIR. Trucking will occur seven days per week, 24 hours per day, with no more than 70 trucks leaving the facility within a 24-hour period to one or both of the two identified receiver sites located in Santa Maria and Maricopa. The project will include minor modifications to the LFC facilities including the installation of hour Lease Automatic Custody Transfer (LACT) Units, associated piping, electrical and communication connections, pipe and equipment supports, truck loading racks, operator shelter, paving of selected areas and minor containment and drainage grading.

Lead Agency Contact

Name Kathryn Lehr
Agency Santa Barbara County
Phone (805) 568-3560 ***Fax***
email
Address 123 E. Anapamu Street
City Santa Barbara ***State*** CA ***Zip*** 93101

Project Location

County Santa Barbara
City Santa Barbara
Region
Cross Streets 12000 Calle Real Rd
Lat / Long
Parcel No.
Township ***Range*** ***Section*** ***Base***

Proximity to:

Highways
Airports
Railways
Waterways
Schools
Land Use

Project Issues Air Quality; Other Issues; Toxic/Hazardous; Traffic/Circulation; Landuse

Reviewing Agencies Resources Agency; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 5; California Energy Commission; Native American Heritage Commission; California Highway Patrol; Caltrans, District 5; Air Resources Board, Major Industrial Projects; Regional Water Quality Control Board, Region 3

Date Received 06/15/2018 ***Start of Review*** 06/15/2018 ***End of Review*** 07/16/2018

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: Santa Barbara

SCH# 2018061035

Resources Agency

☒ **Resources Agency**
Nadell Gayou

- ☐ **Dept. of Boating & Waterways**
  Denise Peterson
- ☐ **California Coastal Commission**
  Allyson Hitt
- ☐ **Colorado River Board**
  Elsa Contreras
- ☐ **Dept. of Conservation**
  Crina Chan
- ☐ **Cal Fire**
  Dan Foster
- ☐ **Central Valley Flood Protection Board**
  James Herota
- ☐ **Office of Historic Preservation**
  Ron Parsons

☒ **Dept of Parks & Recreation**
Environmental Stewardship Section

- ☐ **S.F. Bay Conservation & Dev't. Comm.**
  Steve Goldbeck
- ☒ **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- ☐ **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- ☐ **Fish & Wildlife Region 1**
  Curt Babcock
- ☐ **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- ☐ **Fish & Wildlife Region 2**
  Jeff Drongesen
- ☐ **Fish & Wildlife Region 3**
  Craig Weightman
- ☐ **Fish & Wildlife Region 4**
  Julie Vance
- ☒ **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- ☐ **Dept. of Fish & Wildlife M**
  William Paznokas
  Marine Region

Other Departments

- ☐ **California Department of Education**
  Lesley Taylor
- ☐ **OES (Office of Emergency Services)**
  Monique Wilber
- ☐ **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- ☐ **Dept. of General Services**
  Cathy Buck
  Environmental Services Section
- ☐ **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- ☐ **Delta Protection Commission**
  Erik Vink
- ☐ **Delta Stewardship Council**
  Anthony Navasero
- ☒ **California Energy Commission**
  Eric Knight

☒ **Native American Heritage Comm.**
Debbie Treadway

- ☐ **Public Utilities Commission**
  Supervisor
- ☐ **Santa Monica Bay Restoration**
  Guangyu Wang
- ☐ **State Lands Commission**
  Jennifer Deleong
- ☐ **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- ☐ **Caltrans - Division of Aeronautics**
  Philip Crimmins
- ☐ **Caltrans – Planning HQ LD-IGR**
  Christian Bushong
- ☒ **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- ☐ **Caltrans, District 1**
  Rex Jackman
- ☐ **Caltrans, District 2**
  Marcelino Gonzalez
- ☐ **Caltrans, District 3**
  Susan Zanchi - North
- ☐ **Caltrans, District 4**
  Patricia Maurice
- ☒ **Caltrans, District 5**
  Larry Newland
- ☐ **Caltrans, District 6**
  Michael Navarro
- ☐ **Caltrans, District 7**
  Dianna Watson
- ☐ **Caltrans, District 8**
  Mark Roberts
- ☐ **Caltrans, District 9**
  Gayle Rosander
- ☐ **Caltrans, District 10**
  Tom Dumas
- ☐ **Caltrans, District 11**
  Jacob Armstrong
- ☐ **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- ☐ **Airport & Freight**
  Jack Wursten
  - ☐ **Transportation Projects**
    Nesamani Kalandiyur
  - ☒ **Industrial/Energy Projects**
    Mike Tollstrup
- ☐ **California Department of Resources, Recycling & Recovery**
  Kevin Taylor/Jeff Esquivel
- ☐ **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- ☐ **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- ☐ **State Water Resources Control Board**
  Div. Drinking Water #________
- ☐ **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- ☐ **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- ☐ **Dept. of Toxic Substances Control Reg. #________**
  CEQA Tracking Center
- ☐ **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- ☐ **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- ☒ **RWQCB 3**
  Central Coast Region (3)
- ☐ **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- ☐ **RWQCB 5S**
  Central Valley Region (5)
  - ☐ **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - ☐ **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- ☐ **RWQCB 6**
  Lahontan Region (6)
  - ☐ **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- ☐ **RWQCB 7**
  Colorado River Basin Region (7)
- ☐ **RWQCB 8**
  Santa Ana Region (8)
- ☐ **RWQCB 9**
  San Diego Region (9)

☐ **Other** ____________________
____
____

☐ ____________________
Conservancy

Last Updated 5/22/18

Appendix B

Air Quality and Greenhouse Gases Supporting Information

Appendix B – Air Quality and Greenhouse Gases Supporting Information

Section/Table **Page #**

Operational Emissions

Construction Emissions

Reduced Trucking Alternative

No Trucking During Rainy Day Periods Alternative

Trucking to Santa Maria Pump Station Only Alternative

ExxonMobil Interium Trucking for SYU Phased Restart

Table B-1 Combined Mobile and Stationary Source Summary

	Scenario 1: Phillips 66 Santa Maria Truck Rack	Scenario 2: Plains Pentland Truck Rack
NOx: Daily Significance Threshold Exceeded? (Threshold - 55 lb NOx/day)	**No**	**No**
NOx: Daily Mobile Significance Threshold Exceeded? (Threshold - 25 lb NOx/day)	**No**	**Yes**
NOx: Daily Stationary Source Emissions (NOx lb/day)	0	0
NOx: Daily Mobile Source Emissions (NOx lb/day)	20.50	48.95
NOx: Daily Stationary + Mobile Source Emissions (NOx lb/day)	20.50	48.95
ROC: Daily Significance Threshold Exceeded? (Threshold - 55 lb ROC/day)	**No**	**No**
ROC: Daily Stationary Source Emissions (ROC lb/day)	28.08	28.08
ROC: Daily Mobile Source Emissions (ROC lb/day)	0.47	0.97
ROC: Daily Stationary + Mobile Source Emissions (ROC lb/day)	28.54	29.04
PM: Daily Significance Threshold Exceeded? (Threshold - 80 lb PM/day)	**No**	**No**
PM: Daily Stationary Source Emissions (PM lb/day)	0.00	0.00
PM: Daily Mobile Source Emissions (PM lb/day)	13.88	46.22
PM: Daily Stationary + Mobile Source Emissions (PM lb/day)	13.88	46.22
GHG: Annual GHG Significance Threshold Exceeded? (Threshold 1,000 MT CO_2e/year)	**Yes**	**Yes**
GHG: Annual Stationary Source Emissions (MT CO_2e/year)	33.56	33.56
GHG: Annual Mobile Source Emissions (MT CO_2e/year)	3,537	8,875
GHG: Annual Stationary + Mobile Source Emissions (MT CO_2e/year)	3,571	8,908

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-2 Mobile Source to Santa Maria

Daily Emissions - Scenario 1															
		Number of Vehicles	**Trips per**	**Trip Length**	**Round Trip**	**Criteria Pollutant Emissions (Pounds/Day)**						**GHG Emissions (Pounds/Day)**			
Destination	**Road Type**		**Day**	**Round-Trip**	**Miles/Day**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	70	98.8	6,916	0.28	16.98	9.79	1.61	2.96	0.18	18,796.17	0.01	2.95	19,677
Travel Within Santa Barbara County - Collector Road	Collector	20	70	8.00	560	0.10	2.28	1.56	0.25	1.36	0.02	1,703.59	0.00	0.27	1,784
Travel Within Santa Barbara County - Local Road	Local	20	70	1.6	112	0.09	1.24	2.52	0.38	1.25	0.00	498.83	0.00	0.08	522
Total Travel Distance		20	70	108.4	7,588										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties						**0.5**	**20.5**	**13.9**	**2.2**	**5.6**	**0.2**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	**Trips per**	**Trip Length**	**Total Round**	**Criteria Pollutant Emissions (Tons/Yr)**						**GHG Emissions (Metric Tons/Yr)**			
Destination	**Road Type**		**Year**	**Round-Trip**	**Trip Miles**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	25,550	98.8	2,524,340	0.04	2.92	1.79	0.29	0.32	0.03	3,079.27	0.00	0.48	3,224
Travel Within Santa Barbara County - Collector road	Collector	20	25,550	8	204,400	0.00	0.24	0.29	0.04	0.03	0.00	249.42	0.00	0.04	261.1
Travel Within Santa Barbara County - Local Road	Local	20	25,550	1.6	40,880	0.00	0.05	0.46	0.07	0.01	0.00	49.95	0.00	0.01	52.3
Total Travel Distance		20	25,550	108.4	2,769,620	0.04	3.21	2.53	0.41	0.35	0.04	3,379	0	1	3,537

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)					**(Not Applicable)**				**3,536.9**
Significance Threshold: SB County Planning SBC APCD					(Not Applicable)				 1,000 10,000
Significant? (SBC P&D or SBC APCD)					**(Not Applicable)**				**Yes**

			Truck Capacity (bbl/truck)	**Crude Transported (bbl/year)**
Potential Maximum Volume Crude Transported to Markets:			160	4,088,000

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-2 Mobile Source to Santa Maria

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).														
						Emission Factors								
Exhaust Source	**Road Type**				**Units**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**
Running Exhaust	Freeway				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Major				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Collector				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Local				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Idle Exhaust	Freeway				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Major				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Collector				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Local				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):										
Variable	**Road Type**				**Reference**	**Symbol**	**Value**	**Unit**	**PM_{10}**	**$PM_{2.5}$**
PM_{10} particle size multiplier					CARB - 2018 EI	k	0.0022	lb/vmt		
$PM_{2.5}$ particle size multiplier					CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile
Road silt loading - Freeway	Freeway				CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04
Road silt loading - Major	Major				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Collector	Collector				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Local	Local				CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03
Average vehicle weight					CalTrans WIM Data	W	27	tons		
Paved Road Dust Entrainment										$Ef = k(sL)^{0.91} \times W^{1.02}$

Notes:

1. Trip distances assume:
   a. 54.3 miles from the ExxonMobil Las Flores Canyon facility to the Phillips 66 Santa Maria truck rack located at 1580 East Battles Road in Santa Maria.
2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.

4. EMFAC2017 criteria pollutant and GHG emission factors for T7 Tractor engines are derived from the California Air Resources Board's EMFAC2017 2018 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.2) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed September 10, 2018). Data reflects the use specific vehicle model years (2017, 2018, 2019) and aggregated vehicle speeds, grouped by Road Type)

   a. Vehicle Category based on EMFAC2011 vehicle definitions, applied the T7 Tractor vehicle type as directed by the SBC APCD.
   b. Criteria pollutant emission factors include total emissions for each pollutant. In addition to running exhaust emissions, emission factors include idle exhaust emissions. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.
   c. PM_{10} and $PM_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.

   d. Vehicle emissions based on the reported "emission rate" data for the specified vehicle category. This data is reported in terms of g/mile (running exhaust) and g/vehicle/day (idle exhaust). Note that emissions data for running exhaust is based on individual vehicle speeds, grouped by "Road Type". Idle Exhuast data is only reported by CARB for aggregated vehicle speeds, so each Road Type/Vehicle speed is assumed to have the same idle exhaust value.

5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.*
   Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018).
   https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
   Global warming potential for methane: 25
   Global warming potential for nitrous oxide: 298
   2,000 pounds/ton
   0.45359 kilograms/pound)
   1,000 kilograms/metric ton

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-3 Mobile Source to Pentland

Daily Emissions - Scenario 2															
		Number of Vehicles	**Trips per Day**	**Trip Length Round-Trip**	**Round Trip Miles/Day**	**Criteria Pollutant Emissions (Pounds/Day)**						**GHG Emissions (Pounds/Day)**			
Destination	**Road Type**					**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	68	108.8	7,398	0.30	18.10	10.47	1.73	3.08	0.19	20,093	0.01	3.16	21,035
Travel Within Santa Barbara County - Collector Road	Collector	20	68	7.4	503	0.10	2.14	1.41	0.22	1.35	0.01	1,551	0.00	0.24	1,624
Travel Within Santa Barbara County - Local Road	Local	20	68	1.6	109	0.09	1.23	2.45	0.37	1.25	0.00	490	0.00	0.08	513
Travel Outside Santa Barbara County - Major road	Major	20	68	161.4	10,975	0.40	26.37	30.66	4.83	3.97	0.28	29,712	0.02	4.67	31,104
Travel Outside Santa Barbara County - Local Road	Local	20	68	0.8	54	0.08	1.11	1.23	0.19	1.24	0.00	344	0.00	0.05	360
Total Travel Distance		20	68	280	19,040										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties (Max - Worst Case)						**0.97**	**48.95**	**46.22**	**7.34**	**10.89**	**0.49**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**Yes**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	**Trips per Year**	**Trip Length Round-Trip**	**Total Round Trip Miles**	**Criteria Pollutant Emissions (Tons)**						**GHG Emissions (Metric Tons)**			
Destination						**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	24,820	108.8	2,700,416	0.04	3.12	1.91	0.32	0.34	0.03	3,294.04	0.00	0.52	3,448.4
Travel Within Santa Barbara County - Local Road	Collector	20	24,820	7.4	183,668	0.00	0.21	0.26	0.04	0.02	0.00	224.13	0.00	0.04	234.6
Travel Within Santa Barbara County - Collector road	Local	20	24,820	1.6	39,712	0.00	0.05	0.45	0.07	0.01	0.00	48.53	0.00	0.01	50.8
Travel Outside Santa Barbara County - Major road	Major	20	24,820	161.4	4,005,948	0.06	4.64	5.60	0.88	0.50	0.05	4,886.53	0.00	0.77	5,115.5
Travel Outside Santa Barbara County - Local Road	Local	20	24,820	0.8	19,856	0.00	0.02	0.22	0.03	0.00	0.00	24.31	0.00	0.00	25.4
Total Travel Distance		**20**	**24,820**	**280**	**6,949,600**	**0.10**	**8.04**	**8.43**	**1.34**	**0.87**	**0.09**	**8,477.54**	**0.00**	**1.33**	**8,874.75**
Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)						**(Not Applicable)**									**8,874.7**
Significance Threshold:						(Not Applicable)									
SB County Planning															1,000
SBC APCD															10,000
Significant? (SBC P&D or SBC APCD)						**(Not Applicable)**									**Yes**

			Truck Capacity (bbl/truck)	**Crude Transported (bbl/year)**
Potential Maximum Volume Crude Transported to Markets:			160	3,971,200

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-3 Mobile Source to Pentland

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).														
						Emission Factors								
Exhaust Source	**Road Type**				**Units**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**
Running Exhaust	Freeway				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Major				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Collector				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Local				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Idle Exhaust	Freeway				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Major				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Collector				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Local				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):										
Variable	**Road Type**				**Reference**	**Symbol**	**Value**	**Unit**	**PM_{10}**	**$PM_{2.5}$**
PM_{10} particle size multiplier					CARB - 2018 EI	k	0.0022	lb/vmt		
$PM_{2.5}$ particle size multiplier					CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile
Road silt loading - Freeway	Freeway				CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04
Road silt loading - Major	Major				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Collector	Collector				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Local	Local				CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03
Average vehicle weight					CalTrans WIM Data	W	27	tons		
Paved Road Dust Entrainment										

$$Ef = k(sL)^{0.91} \times W^{1.02}$$

Notes:

1. Trip distances assume:
   a. 140 total miles (within Santa Barbara, San Luis Obispo, and Kern Counties) from the ExxonMobil Las Flores Canyon facility to the Plains Pentland truck rack located at 2311 Basic School Road in Maricopa.
2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.

4. EMFAC2017 criteria pollutant and GHG emission factors for T7 Tractor engines are derived from the California Air Resources Board's EMFAC2017 2018 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.2) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed September 10, 2018). Data reflects the use specific vehicle model years (2017, 2018, 2019) and aggregated vehicle speeds, grouped by Road Type)

   a. Vehicle Category based on EMFAC2011 vehicle definitions, applied the T7 Tractor vehicle type as directed by the SBC APCD.
   b. Criteria pollutant emission factors include total emissions for each pollutant. In addition to running exhaust emissions, emission factors include idle exhaust emissions. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.
   c. PM_{10} and $PM_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.

   d. Vehicle emissions based on the reported "emission rate" data for the specified vehicle category. This data is reported in terms of g/mile (running exhaust) and g/vehicle/day (idle exhaust). Note that emissions data for running exhaust is based on individual vehicle speeds, grouped by "Road Type". Idle Exhuast data is only reported by CARB for aggregated vehicle speeds, so each Road Type/Vehicle speed is assumed to have the same idle exhaust value.

5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.* Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018). https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
   Global warming potential for methane: 25
   Global warming potential for nitrous oxide: 298
   2,000 pounds/ton
   0.45359 kilograms/pound)
   1,000 kilograms/metric ton

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-4 Stationary Sources

Emission Source	Reactive Organic Compounds				GHG - CO$_2$e			
SUMMARY	lb/hr	lb/day	TPQ	Total Emissions (Tons/Yr)	lb/hr	lb/day	TPQ	Total Emissions (Metric Tons/Yr)
Fugitive Hydrocarbon Components	0.215	5.150	0.235	0.940	4.489	107.728	5.308	21.233
Crude Loading Activity - VRU	2.620	22.925	1.046	4.184	7.150	62.559	2.589	12.330
Total Increase:	**2.835**	**28.075**	**1.281**	**5.124**	**11.638**	**170.287**	**7.898**	**33.563**

Notes:

[1] Hourly and daily emissions assume the maximum loading rate proposed, 8 trucks/hour and 70 trucks/day.

[2] Fugitive Hydrocarbon components include piping components associated with crude loading activity and the LACT units.

[3] GHG emissions from fugitive components and crude loading operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.

Emission Source	lb/hr						lb/hr
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO$_2$e
Fugitive Hydrocarbon Components		0.21					4.49
Crude Loading Activity		2.62					7.15
Total Increase:	**0.00**	**2.83**	**0.00**	**0.00**	**0.00**	**0.00**	**11.64**

Emission Source	lb/day						lb/day
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO$_2$e
Fugitive Hydrocarbon Components		5.15					107.73
Crude Loading Activity		22.93					62.56
Total Increase:	**0.00**	**28.08**	**0.00**	**0.00**	**0.00**	**0.00**	**170.29**

Emission Source	TPQ						TPQ
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO$_2$e
Fugitive Hydrocarbon Components		0.23					5.31
Crude Loading Activity		1.05					2.59
Total Increase:	**0.00**	**1.28**	**0.00**	**0.00**	**0.00**	**0.00**	**7.90**

Emission Source	Total Tons/Yr						Total Tons/Yr
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO$_2$e
Fugitive Hydrocarbon Components		0.94					21.23
Crude Loading Activity - VRU		4.18					12.33
Total Increase:	**0.00**	**5.12**	**0.00**	**0.00**	**0.00**	**0.00**	**33.56**

Emission Offset Evaluation	TPQ					
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$
Total Emissions to Offset:	0.000	1.28				
Total ERCs Required at a 1.3:1 ratio (TPQ):	0.000	1.67				

ROC- TPY
6.66

Notes:

[1] Hourly and daily emissions assume the maximum loading rate proposed, 8 trucks/hour and 70 trucks/day.

[2] Fugitive Hydrocarbon components include piping components associated with crude loading activity and the LACT units.

[3] GHG emissions from fugitive components and crude loading operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.

[4] Source of Emission Reduction Credits will be determined during the course of the permit application review and approval. Offset ratio per APCD Rule 804 Section D.8.

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-5 Loading Rack Emissions

Product Loading Activity Emission Calculations

Scenario 1 and 2
ExxonMobil Production

Exxon - SYU, Las Flores Canyon

Reference: Loading Rack

Rack Type:	Enter X as Appropriate	S Factor
Submerged loading of a clean cargo tank		0.50
Submerged loading: Dedicated normal service	x	0.60
Submerged loading: Dedicated vapor balance service		1.00
Splash loading of a clean cargo tank		1.45
Splash loading: Dedicated normal service		1.45
Splash loading: Dedicated vapor balance service		1.00

Input data			Reference
S = Saturation Factor	**0.60**	See AP-42 Table 4.4-1	2
M = Molecular Weight	**50**	Crude Oil: Default = 50 lb/lb-mole	3
P = True Vapor Pressure (psia)	**1.650**	See AP-42 Table 12.3-5	1
T = Liquid Temperature ^{0}R	**560**	100 ^{0}F + 460 = ^{0}R	5
C = Storage Capacity (bbl)	**4,088,000**	171,696,000 gallons (42 gallons = 1 bbl)	1
A = Annual Production (bbl)	**4,088,000**	171,696,000 gallons (42 gallons = 1 bbl)	1
R = Max Loading Rate (bbl/hr)	**1280.00**	53,760 gallons (42 gallons = 1 bbl)	1
D = Max Daily Production (bbl)	**11,200**	470,400 gallons (42 gallons = 1 bbl)	
D2 = Average Daily Production (bbl)	**11,200**	470,400 gallons (42 gallons = 1 bbl)	
eff = Vapor Recovery Efficiency	**0.95**	Default = 0.95 (SBC APCD)	1
ROC/THC = Reactivity	**0.885**	Crude Oil: Default = 0.885	

L_{LTHC} = Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)/T = **1.1014** **lbTHC/1000 gal**

L_LROC= Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)*React/T = **0.9747** **lb ROC/1000 gal**

	ROC		THC	Estimated CH4, GHG
<u>Total Uncontrolled Hydrocarbon Losses:</u>				
Hourly THL_H = (R)(42 gal/bbl)(L_{LROC}/1000) =	**52.40**	**lbs/hr**	**59.21**	6.81
Max Daily THL_D = (D)(42 gal/bbl)(L_{LROC}/1000) =	**458.51**	**lbs/day**	**518.09**	59.58
Quarterly THL_Q = THLD(91)(1/2000) =	**20.92**	**TPQ**	**23.64**	2.72
Total Emissions THL_A = (A)(42 gal/bbl)(L_{LROC}/1000)(1/2000) =	**83.68**	**TPY**	**94.55**	10.87
<u>Total Controlled Hydrocarbon Losses:</u>				
Hourly THL_{HC} = (THL_H)(1-eff) =	**2.62**	lbs/hr	**2.96**	0.34
Max Daily THL_{DC} = (THL_D)(1-eff) =	**22.93**	lbs/day	**25.90**	2.98
Quarterly $THLQ_C$ = (THLQ)(1-eff) =	**1.05**	TPQ	**1.18**	0.14
Total Emissions THL_{AC} = (THL_A)(1-eff) =	**4.18**	TPY	**4.73**	0.54

Notes:

1. Data provided by the applicant
   C = Annual Transport Volume.
2. AP-42, (Chapter 5, 5th Edition, January 1995), Table 5.2-1
3. If not otherwise provided, crude oil is assumed to be 50 lb/lb-mole.
4. Vapor pressure as measured from LFC Crude.
5. R is calculated by adding 460 to ^{0}F.
6. A maximum of 70 trucks will be loaded per day; up to 8 per hour. Actual number of trucks/day may be less.
7. The maximum daily rate of 70 trucks was used to determine the maximum quarterly and annual emissions.
8. GHG emissions from loadng operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.
9. Applied SBC APCD determined truck loading efficiency of 95%;
10. Average Daily Production is assumed to be the same as the maximum daily potential production for purposes of defining a reasonable worst case scenario.

FUGITIVE HYDROCARBON EMISSION CALCULATIONS - CLP METHOD (Ver. 3.0)

Attachment:
Permit Number:
Facility:

Facility Information

Facility Type (Enter X Where Appropriate)

Production Field		Gas Processing Plant	x	Refinery		Offshore Platform	

Gas/Condensate Service Component

Component Type	*Component Count*	*THC Emission Factor (lb/day-clp)* [a]	*ROC/THC Ratio*	*Uncontrolled ROC Emission (lb/day)*	*Control Efficiency* [b,c]	*Controlled ROC Emission (lb/hr)*	*Controlled ROC Emission (lb/day)*	*Controlled ROC Emission (Tons/Qtr)*	*Controlled ROC Emission (Tons/Yr)*	*Controlled CH4 Emission (lbs/day)*	*Controlled CH4 Emission (Tons/Yr)*
Valves - Accessible/Inaccessible	0	1.058	0.38	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Unsafe	0	1.058	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Bellows	0	1.058	0.38	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Bellows / Background ppmv	0	1.058	0.38	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category A	0	1.058	0.38	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category B	0	1.058	0.38	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category C	0	1.058	0.38	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category D	0	1.058	0.38	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category E	0	1.058	0.38	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category F	58	1.058	0.38	23.32	0.90	0.10	2.33	0.11	0.43	3.80	0.69
Valves - Category G	0	1.058	0.38	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Accessible/Inaccessible	0	0.058	0.43	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Unsafe	0	0.058	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category A	0	0.058	0.43	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category B	0	0.058	0.43	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category C	0	0.058	0.43	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category D	0	0.058	0.43	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category E	0	0.058	0.43	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category F	285	0.058	0.43	7.11	0.90	0.03	0.71	0.03	0.13	0.94	0.17
Flanges/Connections - Category G	0	0.058	0.43	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Compressor Seals - To Atm	0	10.794	0.20	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Compressor Seals - To VRS	0	10.794	0.20	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
PSV - To Atm/Flare	0	9.947	0.07	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
PSV - To VRS	0	9.947	0.07	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seals - Single	0	3.300	0.79	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seals - Dual/Tandem	0	3.300	0.79	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Gas Condensate Subtotals	**343**			**30.43**		**0.13**	**3.04**	**0.14**	**0.56**	**4.75**	**0.87**

Oil Service Components

Component Type	*Component Count*	*THC Emission Factor (lb/day-clp)* [a]	*ROC/THC Ratio*	*Uncontrolled ROC Emission (lb/day)*	*Control Efficiency* [b,c]	*Controlled ROC Emission (lb/hr)*	*Controlled ROC Emission (lb/day)*	*Controlled ROC Emission (Tons/Qtr)*	*Controlled ROC Emission (Tons/Yr)*	*Controlled CH4 Emission (lbs/day)*	*Controlled CH4 Emission (Tons/Yr)*
Valves - Accessible/Inaccessible	0	0.012	0.85	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Unsafe	0	0.012	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Bellows	0	0.012	0.85	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Bellows / Background ppmv	0	0.012	0.85	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category A	0	0.012	0.85	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category B	0	0.012	0.85	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category C	0	0.012	0.85	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category D	0	0.012	0.85	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category E	0	0.012	0.85	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Category F	92	0.012	0.85	0.93	0.90	0.00	0.09	0.00	0.02	0.02	0.00
Valves - Category G	0	0.012	0.85	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Accessible/Inaccessible	0	0.005	0.85	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Unsafe	0	0.005	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category A	0	0.005	0.85	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category B	0	0.005	0.85	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category C	0	0.005	0.85	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category D	0	0.005	0.85	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category E	0	0.005	0.85	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category F	800	0.005	0.85	3.38	0.90	0.01	0.34	0.02	0.06	0.06	0.01
Flanges/Connections - Category G	0	0.005	0.85	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00
PSV - To Atm/Flare	0	1.740	0.85	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
PSV - To VRS	0	1.740	0.85	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Pump Seals - Single	9	1.100	0.85	8.38	0.80	0.07	1.68	0.08	0.31	0.30	0.06
Pump Seals - Dual/Tandem	0	1.100	0.85	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Oil Subtotals	901			12.70		0.09	2.11	0.10	0.38	0.38	0.07
Total	**1,244**			**43.12**		**0.21**	**5.15**	**0.23**	**0.94**	**5.13**	**0.94**

Notes:
a. District Policy and Procedure 6100.061.1998.
b. A 80% efficiency is assigned to fugitive components Rule 331 implementation.
c. Emission control efficiencies for each component type are identified in FHC Control Factors (Ver. 2.0).

Processed By: Date: Date:

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-7 Mobile Source to Pentland Mitigated with CNG Trucks

Daily Emissions - Scenario 2															
		Number of Vehicles	Trips per	Trip Length	Round Trip	Criteria Pollutant Emissions (Pounds/Day)						GHG Emissions (Pounds/Day)			
Destination	**Road Type**		**Day**	**Round-Trip**	**Miles/Day**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	68	108.8	7,398	1.38	3.15	11.46	2.73	1,839.61	0.23	24,041	0.13	0.11	24,078
Travel Within Santa Barbara County - Collector Road	Collector	20	68	7.4	503	0.09	0.94	1.47	0.29	126.03	0.02	1,790	0.06	0.04	1,803
Travel Within Santa Barbara County - Local Road	Local	20	68	1.6	109	0.02	0.82	2.47	0.38	28.02	0.00	517	0.05	0.04	529
Travel Outside Santa Barbara County - Major road	Major	20	68	161.4	10,975	2.05	4.30	32.13	6.32	2,728.50	0.34	35,583	0.17	0.15	35,632
Travel Outside Santa Barbara County - Local Road	Local	20	68	0.8	54	0.01	0.80	1.23	0.19	14.50	0.00	342	0.05	0.03	353
Total Travel Distance		20	68	280	19,040										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties (Max - Worst Case)						**3.56**	**10.01**	**48.77**	**9.91**	**4,736.65**	**0.59**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	Trips per	Trip Length	Total Round	Criteria Pollutant Emissions (Tons)						GHG Emissions (Metric Tons)			
Destination			**Year**	**Round-Trip**	**Trip Miles**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	24,820	108.8	2,700,416	0.25	0.43	2.09	0.50	335.55	0.04	3,952.76	0.01	0.01	3,957.0
Travel Within Santa Barbara County - Local Road	Collector	20	24,820	7.4	183,668	0.02	0.03	0.27	0.05	22.82	0.00	268.92	0.00	0.00	269.2
Travel Within Santa Barbara County - Collector road	Local	20	24,820	1.6	39,712	0.00	0.01	0.45	0.07	4.94	0.00	58.20	0.00	0.00	58.3
Travel Outside Santa Barbara County - Major road	Major	20	24,820	161.4	4,005,948	0.37	0.64	5.86	1.15	497.77	0.06	5,863.71	0.02	0.02	5,870.0
Travel Outside Santa Barbara County - Local Road	Local	20	24,820	0.8	19,856	0.00	0.00	0.22	0.04	2.47	0.00	29.14	0.00	0.00	29.2
Total Travel Distance		**20**	**24,820**	**280**	**6,949,600**	**0.65**	**1.12**	**8.90**	**1.81**	**863.55**	**0.11**	**10,172.73**	**0.04**	**0.03**	**10,183.58**

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)	**(Not Applicable)**	**10,183.6**
Significance Threshold:	(Not Applicable)	
SB County Planning		1,000
SBC APCD		10,000
Significant? (SBC P&D or SBC APCD)	**(Not Applicable)**	Yes

			Truck Capacity (bbl/truck)	Crude Transported (bbl/year)
Potential Maximum Volume Crude Transported to Markets:			160	3,971,200

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-7 Mobile Source to Pentland Mitigated with CNG Trucks

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).														
						Emission Factors								
Exhaust Source	**Road Type**				**Units**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**
Running Exhaust	aggregated				g/mile	0.0848	0.1455	0.0727	0.0727	112.7273	0.014	1463.7641	0.0051	0.0048
Running Exhaust	Freeway				lb/mile	1.9E-04	3.2E-04	1.6E-04	1.6E-04	2.5E-01	3.1E-05	3.2E+00	1.1E-05	1.1E-05
Running Exhaust	Major				lb/mile	1.9E-04	3.2E-04	1.6E-04	1.6E-04	2.5E-01	3.1E-05	3.2E+00	1.1E-05	1.1E-05
Running Exhaust	Collector				lb/mile	1.9E-04	3.2E-04	1.6E-04	1.6E-04	2.5E-01	3.1E-05	3.2E+00	1.1E-05	1.1E-05
Running Exhaust	Local				lb/mile	1.9E-04	3.2E-04	1.6E-04	1.6E-04	2.5E-01	3.1E-05	3.2E+00	1.1E-05	1.1E-05
Idle Exhaust	aggregated				g/vehicle/day	0.01650	17.72000	0.00638	0.00610	22.16000	0.00000	3768.00000	1.15800	0.76800
Idle Exhaust	Freeway				lb/vehicle/day	0.00004	0.03907	0.00001	0.00001	0.04885	0.00000	8.30688	0.00255	0.00169
Idle Exhaust	Major				lb/vehicle/day	0.00004	0.03907	0.00001	0.00001	0.04885	0.00000	8.30688	0.00255	0.00169
Idle Exhaust	Collector				lb/vehicle/day	0.00004	0.03907	0.00001	0.00001	0.04885	0.00000	8.30688	0.00255	0.00169
Idle Exhaust	Local				lb/vehicle/day	0.00004	0.03907	0.00001	0.00001	0.04885	0.00000	8.30688	0.00255	0.00169

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):											
Variable	**Road Type**				**Reference**	**Symbol**	**Value**	**Unit**	**PM_{10}**	**$PM_{2.5}$**	
PM_{10} particle size multiplier					CARB - 2018 EI	k	0.0022	lb/vmt			
$PM_{2.5}$ particle size multiplier					CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile	
Road silt loading - Freeway	Freeway				CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04	
Road silt loading - Major	Major				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04	
Road silt loading - Collector	Collector				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04	
Road silt loading - Local	Local				CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03	
Average vehicle weight					CalTrans WIM Data	W	27	tons			$Ef = k(sL)^{0.91} \times W^{1.02}$
Paved Road Dust Entrainment											

Notes:

1. Trip distances assume:
   a. 140 total miles (within Santa Barbara, San Luis Obispo, and Kern Counties) from the ExxonMobil Las Flores Canyon facility to the Plains Pentland truck rack located at 2311 Basic School Road in Maricopa.

2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.
4. Emissions factor running based on Cummins CNG engine, as per AERA project EIR air appendices. Idle rates based on EMFAC2017 cng T6 solid waster trucks (the only cng category)
   a. PM_{10} and $PM_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.
5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.*
   Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018).
   https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
   Global warming potential for methane: 25
   Global warming potential for nitrous oxide: 298
   2,000 pounds/ton
   0.45359 kilograms/pound)
   1,000 kilograms/metric ton

ExxonMobil Interium Trucking for SYU Phased Restart

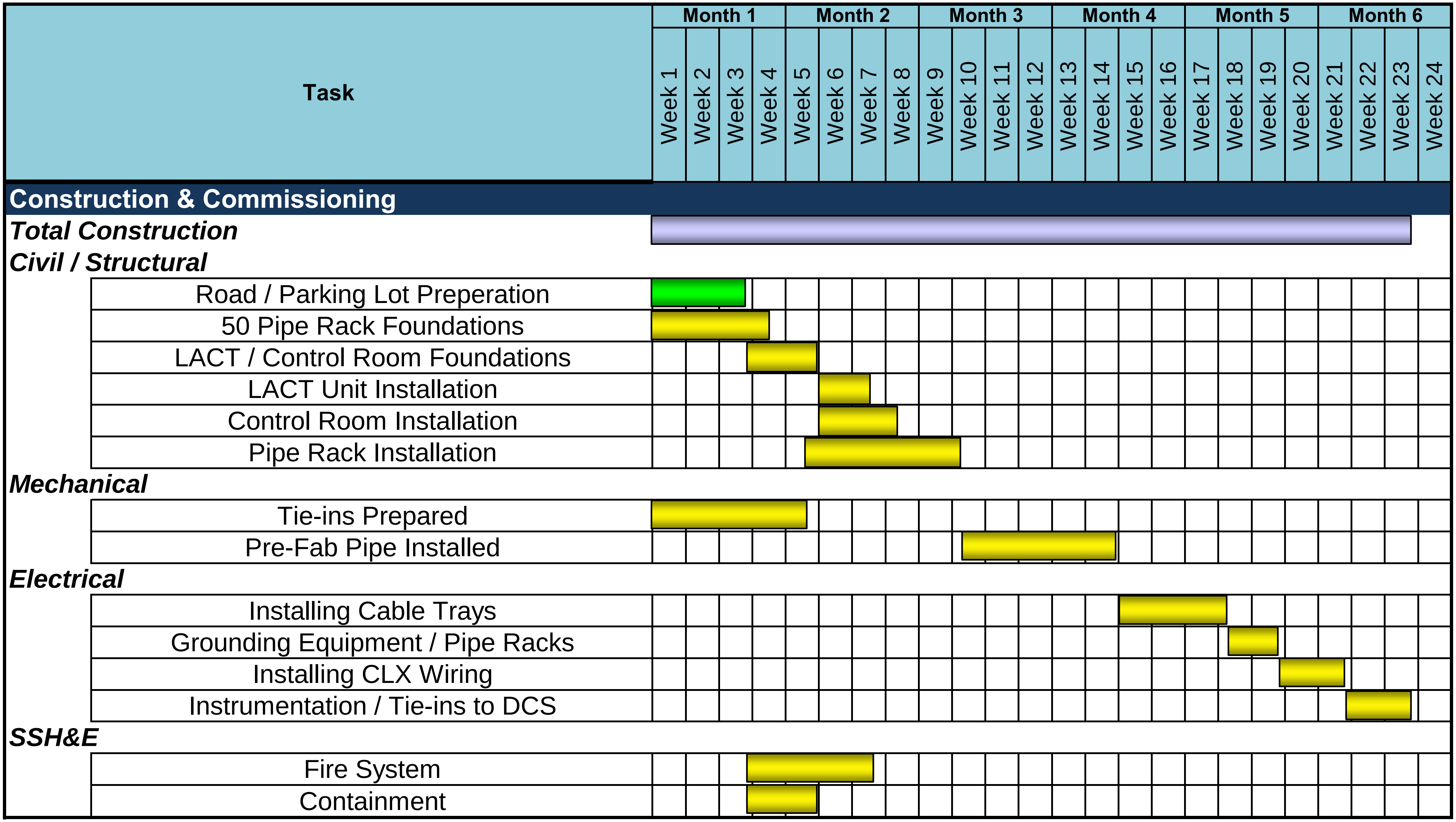
Table B-8 SYU Phased Restart and Operations Emissions Estimate, LFC Only

Facility	Permitted NOx, lb/day	Permitted ROC, lb/day	Baseline NOx, lb/day	Baseline ROC, lb/day	Baseline CO, lb/day	Baseline SOx, lb/day	Baseline PM10, lb/day	Baseline PM2.5, lb/day	Project Fraction	Project NOx, lb/day	Project ROC, lb/day	Project CO, lb/day	Project SOx, lb/day	Project PM10, lb/day	Project PM2.5, lb/day
COGEN	652.0	185.5	152.7	63.8	98.8	9.0	179.8	179.5	0.4	62.2	26.0	40.3	3.7	73.3	73.1
SGTP	33.4	1.1	54.9	15.3	86.7	19.2	17.1	16.5	0.4	22.4	6.2	35.3	7.8	7.0	6.7
TO	15.9	0.9	16.6	0.6	10.4	30.1	0.9	0.9	1.0	16.6	0.6	10.4	30.1	0.9	0.9
ICE	11.8	1.3	2.9	0.4	1.2	0.3	0.4	0.4	1.0	2.9	0.4	1.2	0.3	0.4	0.4
Crew boats	633.4	20.6	10.1	0.4	2.2	0.3	1.3	1.2	1.0	10.1	0.4	2.2	0.3	1.3	1.2
Supply Boats	298.6	20.2	4.6	0.2	0.8	0.1	0.6	0.5	1.0	4.6	0.2	0.8	0.1	0.6	0.5
Pigging	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Tanks	0.0	500.7	0.0	33.0	0.0	0.0	0.0	0.0	0.4	0.0	13.4	0.0	0.0	0.0	0.0
Fugitives	0.0	229.3	0.0	145.2	0.0	0.0	0.0	0.0	1.0	0.0	145.2	0.0	0.0	0.0	0.0
Solvent	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1645.1	967.5	241.8	259.0	200.1	59.0	200.1	199.0		118.8	192.5	90.1	42.2	83.4	82.9
LFC 3yr avg			242	259	169	59	200	199							
Percent of Permit			15%	27%											
Percent of Baseline										49%	74%	53%	72%	42%	42%

Permitted bpd	*100,000*
Baseline bpd	*27,000*
Project bpd	*11,000*

ExxonMobil Interium Trucking for SYU Phased
Restart Table B-9 Contruction Schedule

Estimated Construciton Schedule



ExxonMobil Interium Trucking for SYU Phased Restart
Table B-10 Annual Construction Emissions Summary

Total Construction Emissions.

Project Task	Project Component	Criteria Pollutant Emissions (Tons)						GHG Emissions (Metric Tons/Year)			
		NOx	ROG	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Road / Parking Lot Preparation	Off-road Diesel Construction Equipment	0.015	0.002	0.014	0.000	0.001	0.001	2	0.00	0.00	2
Road / Parking Lot Preparation	On-road Motor Vehicles	0.016	0.002	0.076	0.000	0.286	0.043	22	0.00	0.00	22
50 Pipe Rack Foundations	Off-road Diesel Construction Equipment	0.023	0.002	0.024	0.000	0.001	0.001	3	0.00	0.00	3
50 Pipe Rack Foundations	On-road Motor Vehicles	0.025	0.005	0.252	0.001	0.944	0.142	68	0.00	0.00	69
LACT / Control Room Foundations	Off-road Diesel Construction Equipment	0.012	0.001	0.012	0.000	0.001	0.001	2	0.00	0.00	2
LACT / Control Room Foundations	On-road Motor Vehicles	0.009	0.002	0.071	0.000	0.269	0.041	20	0.00	0.00	20
LACT Unit Installation	Off-road Diesel Construction Equipment	0.014	0.001	0.012	0.000	0.001	0.001	2	0.00	0.00	2
LACT Unit Installation	On-road Motor Vehicles	0.008	0.002	0.071	0.000	0.269	0.041	20	0.00	0.00	20
Control Room Installation	Off-road Diesel Construction Equipment	0.009	0.001	0.005	0.000	0.000	0.000	2	0.00	0.00	2
Control Room Installation	On-road Motor Vehicles	0.018	0.004	0.189	0.001	0.708	0.106	51	0.00	0.00	52
Pipe Rack Installation	Off-road Diesel Construction Equipment	0.059	0.007	0.033	0.000	0.003	0.003	6	0.00	0.00	6
Pipe Rack Installation	On-road Motor Vehicles	0.025	0.005	0.241	0.001	0.908	0.137	66	0.00	0.00	66
Tie-ins Prepared	Off-road Diesel Construction Equipment	0.056	0.007	0.042	0.000	0.003	0.003	6	0.00	0.00	6
Tie-ins Prepared	On-road Motor Vehicles	0.017	0.004	0.177	0.001	0.671	0.101	48	0.00	0.00	49
Pre-Fab Pipe Installed	Off-road Diesel Construction Equipment	0.048	0.004	0.022	0.000	0.002	0.002	4	0.00	0.00	4
Pre-Fab Pipe Installed	On-road Motor Vehicles	0.012	0.002	0.080	0.000	0.311	0.047	23	0.00	0.00	23
Installing Cable Trays	Off-road Diesel Construction Equipment	0.043	0.004	0.019	0.000	0.002	0.002	4	0.00	0.00	4
Installing Cable Trays	On-road Motor Vehicles	0.011	0.002	0.099	0.000	0.378	0.057	28	0.00	0.00	28
Grounding Equipment / Pipe Racks	Off-road Diesel Construction Equipment	0.009	0.001	0.009	0.000	0.001	0.001	1	0.00	0.00	1
Grounding Equipment / Pipe Racks	On-road Motor Vehicles	0.002	0.000	0.018	0.000	0.073	0.011	5	0.00	0.00	5
Installing CLX Wiring	Off-road Diesel Construction Equipment	0.002	0.000	0.001	0.000	0.000	0.000	0	0.00	0.00	0
Installing CLX Wiring	On-road Motor Vehicles	0.004	0.001	0.027	0.000	0.109	0.016	8	0.00	0.00	8
Instrumentation / Tie-ins to DCS	Off-road Diesel Construction Equipment	0.002	0.000	0.001	0.000	0.000	0.000	0	0.00	0.00	0
Instrumentation / Tie-ins to DCS	On-road Motor Vehicles	0.004	0.001	0.027	0.000	0.109	0.016	8	0.00	0.00	8
Fire System	Off-road Diesel Construction Equipment	0.018	0.002	0.019	0.000	0.001	0.001	2	0.00	0.00	2
Fire System	On-road Motor Vehicles	0.036	0.008	0.393	0.001	1.466	0.220	106	0.00	0.00	106
Containment	Off-road Diesel Construction Equipment	0.019	0.002	0.018	0.000	0.001	0.001	2	0.00	0.00	2
Containment	On-road Motor Vehicles	0.011	0.002	0.097	0.000	0.364	0.055	27	0.00	0.00	27
	Fugitive PM from Material Movement	-	-	-	-	0.099	0.054				
	Asphalt Paving Offgassing	-	0.001	-	-	-	-				
	Architectural Coating Offgassing	-	0.015	-	-	-	-				
	Total Construction Emissions	**0.529**	**0.087**	**2.052**	**0.006**	**6.982**	**1.103**	**534**	**0.018**	**0.016**	**540**
	Significance Threshold:	25.00	25.00	25.00	25.00	25.00	25.00				

Notes:
1. All construction emissions are conservatively assumed to occur within the same calendar year.
2. Project construction is expected to take between 3 and 6 months. A reasonable worst case construction period is expected to be 4.5 months.
3. Santa Barbara County has not developed significance thresholds for Construction related emissions. (p. 19 SBC Environmental Thresholds and Guidelines Manual, 2008).
4. Conversion factors:
Global warming potential for methane: 25
Global warming potential for nitrous oxide: 298

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-11 Annual Construction Onsite

								Emissions (Ton/Year)						Emissions (MT/year)			
Task	Category	Representative Equipment Model	Horsepower	Load Factor	Number of Units	Number of Days	Hours/Day	ROG	NOx	PM$_{10}$	PM$_{2\_5}$	CO	SOx	CO$_2$	CH$_4$	N$_2$O	CO$_2$e
Road / Parking Lot Preparation	Rollers	Smooth Drum Roller	63	0.38	1	5	10	0.00	0.01	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.59
Road / Parking Lot Preparation	Tractors/Loaders/Backhoes	Cat 950H Loader	196	0.37	1	2	10	0.00	0.01	0.00	0.00	0.01	0.00	0.70	0.00	0.00	0.72
Road / Parking Lot Preparation	Tractors/Loaders/Backhoes	Case 570 NXT	63	0.37	1	4	10	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.46
			Road / Parking Lot Preparation Phase Total:					**0.00**	**0.02**	**0.00**	**0.00**	**0.01**	**0.00**	**1.74**	**0.00**	**0.00**	**1.77**
50 Pipe Rack Foundations	Excavators	CAT 325 Excavator	153	0.38	1	7	10	0.00	0.01	0.00	0.00	0.01	0.00	1.96	0.00	0.00	2.00
50 Pipe Rack Foundations	Rubber Tired Loaders	Cat Skid Steer	83	0.36	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.15
50 Pipe Rack Foundations	Tractors/Loaders/Backhoes	Cat 950H Loader	196	0.37	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
50 Pipe Rack Foundations	Tractors/Loaders/Backhoes	Case 570 NXT	63	0.37	1	4	10	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.46
50 Pipe Rack Foundations	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.40
			50 Pipe Rack Foundations Phase Total:					**0.00**	**0.02**	**0.00**	**0.00**	**0.02**	**0.00**	**3.31**	**0.00**	**0.00**	**3.36**
LACT / Control Room Foundations	Air Compressors	Sullair 185 Air Comp	61	0.48	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17
LACT / Control Room Foundations	Tractors/Loaders/Backhoes	Cat 950H Loader	196	0.37	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
LACT / Control Room Foundations	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	5	10	0.00	0.01	0.00	0.00	0.01	0.00	0.99	0.00	0.00	1.01
			LACT / Control Room Foundations Phase Total:					**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**1.51**	**0.00**	**0.00**	**1.53**
LACT Unit Installation	Cranes	Cranes	240	0.29	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.34
LACT Unit Installation	Tractors/Loaders/Backhoes	Case 570 NXT	63	0.37	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.23
LACT Unit Installation	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	5	10	0.00	0.01	0.00	0.00	0.01	0.00	0.99	0.00	0.00	1.01
			LACT Unit Installation Phase Total:					**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**1.55**	**0.00**	**0.00**	**1.58**
Control Room Installation	Air Compressors	Sullair 185 Air Comp	61	0.48	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.34
Control Room Installation	Cranes	Cranes	240	0.29	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.34
Control Room Installation	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	4	10	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.39
Control Room Installation	Rubber Tired Loaders	Cat Skid Steer	83	0.36	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.29
Control Room Installation	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.40
			Control Room Installation Phase Total:					**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**1.74**	**0.00**	**0.00**	**1.76**
Pipe Rack Installation	Cranes	Cranes	240	0.29	1	10	10	0.00	0.04	0.00	0.00	0.01	0.00	3.36	0.00	0.00	3.42
Pipe Rack Installation	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	10	10	0.00	0.01	0.00	0.00	0.01	0.00	0.96	0.00	0.00	0.98
Pipe Rack Installation	Welders	Welders	46	0.45	2	5	10	0.00	0.01	0.00	0.00	0.01	0.00	1.18	0.00	0.00	1.19
			Pipe Rack Installation Phase Total:					**0.01**	**0.06**	**0.00**	**0.00**	**0.03**	**0.00**	**5.51**	**0.00**	**0.00**	**5.59**
Tie-ins Prepared	Cranes	Cranes	240	0.29	1	5	10	0.00	0.02	0.00	0.00	0.01	0.00	1.68	0.00	0.00	1.71
Tie-ins Prepared	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	10	10	0.00	0.01	0.00	0.00	0.01	0.00	0.96	0.00	0.00	0.98
Tie-ins Prepared	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	10	10	0.00	0.02	0.00	0.00	0.02	0.00	1.98	0.00	0.00	2.01
Tie-ins Prepared	Welders	Welders	46	0.45	2	5	10	0.00	0.01	0.00	0.00	0.01	0.00	1.18	0.00	0.00	1.19
			Tie-ins Prepared Phase Total:					**0.01**	**0.06**	**0.00**	**0.00**	**0.04**	**0.00**	**5.80**	**0.00**	**0.00**	**5.89**
Pre-Fab Pipe Installed	Cranes	Cranes	240	0.29	1	10	10	0.00	0.04	0.00	0.00	0.01	0.00	3.36	0.00	0.00	3.42
Pre-Fab Pipe Installed	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	10	10	0.00	0.01	0.00	0.00	0.01	0.00	0.96	0.00	0.00	0.98
			Pre-Fab Pipe Installed Phase Total:					**0.00**	**0.05**	**0.00**	**0.00**	**0.02**	**0.00**	**4.33**	**0.00**	**0.00**	**4.40**
Installing Cable Trays	Cranes	Cranes	240	0.29	1	10	10	0.00	0.04	0.00	0.00	0.01	0.00	3.36	0.00	0.00	3.42
Installing Cable Trays	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	5	10	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.49
			Installing Cable Trays Phase Total:					**0.00**	**0.04**	**0.00**	**0.00**	**0.02**	**0.00**	**3.85**	**0.00**	**0.00**	**3.91**
Grounding Equipment / Pipe Racks	Air Compressors	Sullair 185 Air Comp	61	0.48	1	1	10	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17
Grounding Equipment / Pipe Racks	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	5	10	0.00	0.01	0.00	0.00	0.01	0.00	0.99	0.00	0.00	1.01
			Grounding Equipment / Pipe Racks Phase Total:					**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**1.16**	**0.00**	**0.00**	**1.17**
Installing CLX Wiring	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.20
			Installing CLX Wiring Phase Total:					**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.19**	**0.00**	**0.00**	**0.20**
Instrumentation / Tie-ins to DCS	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.20
			Instrumentation / Tie-ins to DCS Phase Total:					**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.19**	**0.00**	**0.00**	**0.20**
Fire System	Air Compressors	Sullair 185 Air Comp	61	0.48	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.34
Fire System	Excavators	CAT 325 Excavator	153	0.38	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.57
Fire System	Forklifts	CAT TH360B Variable Reach Forklift	99.9	0.2	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.20
Fire System	Rubber Tired Dozers	CASE 650L DOZER	80	0.4	1	--	--	--	--	--	--	--	--	--	--	--	--
Fire System	Rubber Tired Loaders	Cat Skid Steer	83	0.36	1	--	--	--	--	--	--	--	--	--	--	--	--
Fire System	Tractors/Loaders/Backhoes	Cat 950H Loader	196	0.37	1	--	--	--	--	--	--	--	--	--	--	--	--
Fire System	Tractors/Loaders/Backhoes	Case 570 NXT	63	0.37	1	3	10	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.35
Fire System	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	5	10	0.00	0.01	0.00	0.00	0.01	0.00	0.99	0.00	0.00	1.01
			Fire System Phase Total:					**0.00**	**0.02**	**0.00**	**0.00**	**0.02**	**0.00**	**2.42**	**0.00**	**0.00**	**2.45**

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-11 Annual Construction Onsite

Task	Category	Representative Equipment Model	Horsepower	Load Factor	Number of Units	Number of Days	Hours/Day	Emissions (Ton/Year)						Emissions (MT/year)			
								ROG	NOx	PM_{10}	PM_{2_5}	CO	SOx	CO_2	CH_4	N_2O	CO_2e
Containment	Rubber Tired Loaders	Cat Skid Steer	83	0.36	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.29
Containment	Tractors/Loaders/Backhoes	Cat 950H Loader	196	0.37	1	4	10	0.00	0.01	0.00	0.00	0.01	0.00	1.41	0.00	0.00	1.43
Containment	Tractors/Loaders/Backhoes	Case 570 NXT	63	0.37	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.23
Containment	Tractors/Loaders/Backhoes	CAT 430 Backhoe	110	0.37	1	2	10	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.40
			Containment Phase Total:					**0.00**	**0.02**	**0.00**	**0.00**	**0.02**	**0.00**	**2.32**	**0.00**	**0.00**	**2.36**
			Total Construction Emissions					**0.03**	**0.33**	**0.02**	**0.02**	**0.23**	**0.00**	**35.60**	**0.01**	**0.00**	**36.17**

Notes:
1. Total emissions for the construction
2 Source for equipment horsepower per
3 Source for equipment Load Factors: Load
4. Source for emission factors: CalEEMod, Appendix D, Default Data Tables, October 2017. Based on Year: 2019
5. Conversion factors:
Global warming potential for methane: 25
Global warming potential for nitrous oxide: 298
2,000 pounds/ton
0.45359 kilograms/pound)
1,000 kilograms/metric ton
5 construction work days/week

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-12 Annual Construction OnRoad

Task	Category	Representative Equipment Model	Fuel	EMFAC 2011	Number of Vehicles	Total Project Trips	Trip Length One-Way	Round Trip Miles/Project	Emissions (Ton/Project)						Emissions (MT/year)			
									ROG	NOx	PM_{10}	PM_{2_5}	CO	SO_x	CO_2	CH_4	N_2O	CO_2e
Road / Parking Lot Preparation	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	10	300	23.5	7,050	0.00	0.01	0.27	0.04	0.07	0.00	19.50	0.00	0.00	19.66
Road / Parking Lot Preparation	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	60	23.5	1,410	0.00	0.00	0.01	0.00	0.00	0.00	0.82	0.00	0.00	0.86
Road / Parking Lot Preparation	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	23.5	–	--	--	--	--	--	--	--	--	--	0.00
Road / Parking Lot Preparation	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	20	23.5	470	0.00	0.01	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.91
Road / Parking Lot Preparation	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Road / Parking Lot Preparation	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Road / Parking Lot Preparation	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	15	23.5	353	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.68
				Road / Parking Lot Preparation Phase Total:					**0.00**	**0.02**	**0.29**	**0.04**	**0.08**	**0.00**	**21.84**	**0.00**	**0.00**	**22.10**
50 Pipe Rack Foundations	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	16	640	23.5	15,040	0.00	0.02	0.93	0.14	0.25	0.00	66.56	0.00	0.00	67.09
50 Pipe Rack Foundations	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	80	23.5	1,880	0.00	0.00	0.01	0.00	0.00	0.00	1.09	0.00	0.00	1.14
50 Pipe Rack Foundations	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	8	0	–	0.00	0.00	0.00	0.00	0.00	0.00	0.03	--	--	0.03
50 Pipe Rack Foundations	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
50 Pipe Rack Foundations	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	10	23.5	235	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.28
50 Pipe Rack Foundations	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
50 Pipe Rack Foundations	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	20	5	100	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.26
				50 Pipe Rack Foundations Phase Total:					**0.01**	**0.02**	**0.94**	**0.14**	**0.25**	**0.00**	**68.19**	**0.00**	**0.00**	**68.80**
LACT / Control Room Foundations	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	12	240	23.5	5,640	0.00	0.01	0.26	0.04	0.07	0.00	18.72	0.00	0.00	18.87
LACT / Control Room Foundations	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	40	23.5	940	0.00	0.00	0.01	0.00	0.00	0.00	0.55	0.00	0.00	0.57
LACT / Control Room Foundations	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	8	0	–	0.00	0.00	0.00	0.00	0.00	0.00	0.03	--	--	0.03
LACT / Control Room Foundations	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
LACT / Control Room Foundations	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	10	23.5	235	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.28
LACT / Control Room Foundations	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
LACT / Control Room Foundations	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	10	5	50	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.13
				LACT / Control Room Foundations Phase Total:					**0.00**	**0.01**	**0.27**	**0.04**	**0.07**	**0.00**	**19.69**	**0.00**	**0.00**	**19.88**
LACT Unit Installation	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	12	240	23.5	5,640	0.00	0.01	0.26	0.04	0.07	0.00	18.72	0.00	0.00	18.87
LACT Unit Installation	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	40	23.5	940	0.00	0.00	0.01	0.00	0.00	0.00	0.55	0.00	0.00	0.57
LACT Unit Installation	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	8	0	–	0.00	0.00	0.00	0.00	0.00	0.00	0.03	--	--	0.03
LACT Unit Installation	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
LACT Unit Installation	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	8	23.5	188	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.22
LACT Unit Installation	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
LACT Unit Installation	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	10	5	50	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.13
				LACT Unit Installation Phase Total:					**0.00**	**0.01**	**0.27**	**0.04**	**0.07**	**0.00**	**19.63**	**0.00**	**0.00**	**19.82**
Control Room Installation	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	16	480	23.5	11,280	0.00	0.02	0.70	0.10	0.19	0.00	49.92	0.00	0.00	50.32
Control Room Installation	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	60	23.5	1,410	0.00	0.00	0.01	0.00	0.00	0.00	0.82	0.00	0.00	0.86
Control Room Installation	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	8	0	–	0.00	0.00	0.00	0.00	0.00	0.00	0.03	--	--	0.03
Control Room Installation	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Control Room Installation	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	4	23.5	94	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
Control Room Installation	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Control Room Installation	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	15	5	75	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
				Control Room Installation Phase Total:					**0.00**	**0.02**	**0.71**	**0.11**	**0.19**	**0.00**	**51.06**	**0.00**	**0.00**	**51.51**
Pipe Rack Installation	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	14	700	23.5	16,450	0.00	0.02	0.89	0.13	0.24	0.00	63.70	0.00	0.00	64.21
Pipe Rack Installation	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	100	23.5	2,350	0.00	0.00	0.02	0.00	0.00	0.00	1.36	0.00	0.00	1.43
Pipe Rack Installation	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Pipe Rack Installation	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Pipe Rack Installation	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	8	23.5	188	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.22
Pipe Rack Installation	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	1	4	23.5	94	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.13
Pipe Rack Installation	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	25	5	125	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.32
				Pipe Rack Installation Phase Total:					**0.01**	**0.02**	**0.91**	**0.14**	**0.24**	**0.00**	**65.71**	**0.00**	**0.00**	**66.31**
Tie-ins Prepared	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	12	600	23.5	14,100	0.00	0.01	0.65	0.10	0.18	0.00	46.80	0.00	0.00	47.17
Tie-ins Prepared	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	100	23.5	2,350	0.00	0.00	0.02	0.00	0.00	0.00	1.36	0.00	0.00	1.43
Tie-ins Prepared	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Tie-ins Prepared	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Tie-ins Prepared	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Tie-ins Prepared	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Tie-ins Prepared	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	25	5	125	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.32
				Tie-ins Prepared Phase Total:					**0.00**	**0.02**	**0.67**	**0.10**	**0.18**	**0.00**	**48.47**	**0.00**	**0.00**	**48.92**

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-12 Annual Construction OnRoad

Task	Category	Representative Equipment Model	Fuel	EMFAC 2011	Number of Vehicles	Total Project Trips	Trip Length One-Way	Round Trip Miles/Project	Emissions (Ton/Project)						Emissions (MT/year)			
									ROG	NOx	PM_{10}	PM_{2_5}	CO	SO_x	CO_2	CH_4	N_2O	CO_2e
Pre-Fab Pipe Installed	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	8	400	23.5	9,400	0.00	0.01	0.29	0.04	0.08	0.00	20.80	0.00	0.00	20.97
Pre-Fab Pipe Installed	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	100	23.5	2,350	0.00	0.00	0.02	0.00	0.00	0.00	1.36	0.00	0.00	1.43
Pre-Fab Pipe Installed	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Pre-Fab Pipe Installed	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Pre-Fab Pipe Installed	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	20	23.5	470	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.00	0.00	0.56
Pre-Fab Pipe Installed	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	4	23.5	94	--	--	--	--	--	--	--	--	--	0.00
Pre-Fab Pipe Installed	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	25	5	125	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.32
				Pre-Fab Pipe Installed Phase Total:					**0.00**	**0.01**	**0.31**	**0.05**	**0.08**	**0.00**	**23.01**	**0.00**	**0.00**	**23.27**
Installing Cable Trays	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	10	400	23.5	9,400	0.00	0.01	0.36	0.05	0.10	0.00	26.00	0.00	0.00	26.21
Installing Cable Trays	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	80	23.5	1,880	0.00	0.00	0.01	0.00	0.00	0.00	1.09	0.00	0.00	1.14
Installing Cable Trays	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Installing Cable Trays	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Installing Cable Trays	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	8	23.5	188	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.22
Installing Cable Trays	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	1	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Installing Cable Trays	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	20	5	100	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.26
				Installing Cable Trays Phase Total:					**0.00**	**0.01**	**0.38**	**0.06**	**0.10**	**0.00**	**27.55**	**0.00**	**0.00**	**27.83**
Grounding Equipment / Pipe Racks	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	6	120	23.5	2,820	0.00	0.00	0.07	0.01	0.02	0.00	4.68	0.00	0.00	4.72
Grounding Equipment / Pipe Racks	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	40	23.5	940	0.00	0.00	0.01	0.00	0.00	0.00	0.55	0.00	0.00	0.57
Grounding Equipment / Pipe Racks	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Grounding Equipment / Pipe Racks	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Grounding Equipment / Pipe Racks	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Grounding Equipment / Pipe Racks	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Grounding Equipment / Pipe Racks	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	10	5	50	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.13
				Grounding Equipment / Pipe Racks Phase Total:					**0.00**	**0.00**	**0.07**	**0.01**	**0.02**	**0.00**	**5.35**	**0.00**	**0.00**	**5.42**
Installing CLX Wiring	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	6	180	23.5	4,230	0.00	0.00	0.10	0.01	0.03	0.00	7.02	0.00	0.00	7.08
Installing CLX Wiring	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	60	23.5	1,410	0.00	0.00	0.01	0.00	0.00	0.00	0.82	0.00	0.00	0.86
Installing CLX Wiring	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Installing CLX Wiring	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Installing CLX Wiring	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	4	23.5	94	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
Installing CLX Wiring	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Installing CLX Wiring	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	15	5	75	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
				Installing CLX Wiring Phase Total:					**0.00**	**0.00**	**0.11**	**0.02**	**0.03**	**0.00**	**8.13**	**0.00**	**0.00**	**8.24**
Instrumentation / Tie-ins to DCS	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	6	180	23.5	4,230	0.00	0.00	0.10	0.01	0.03	0.00	7.02	0.00	0.00	7.08
Instrumentation / Tie-ins to DCS	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	60	23.5	1,410	0.00	0.00	0.01	0.00	0.00	0.00	0.82	0.00	0.00	0.86
Instrumentation / Tie-ins to DCS	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Instrumentation / Tie-ins to DCS	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Instrumentation / Tie-ins to DCS	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	4	23.5	94	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
Instrumentation / Tie-ins to DCS	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Instrumentation / Tie-ins to DCS	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	15	5	75	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.19
				Instrumentation / Tie-ins to DCS Phase Total:					**0.00**	**0.00**	**0.11**	**0.02**	**0.03**	**0.00**	**8.13**	**0.00**	**0.00**	**8.24**
Fire System	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	20	800	23.5	18,800	0.01	0.03	1.45	0.22	0.39	0.00	104.00	0.00	0.00	104.83
Fire System	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	80	23.5	1,880	0.00	0.00	0.01	0.00	0.00	0.00	1.09	0.00	0.00	1.14
Fire System	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Fire System	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Fire System	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	8	23.5	188	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.22
Fire System	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Fire System	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	20	5	100	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.26
				Fire System Phase Total:					**0.01**	**0.04**	**1.47**	**0.22**	**0.39**	**0.00**	**105.55**	**0.00**	**0.00**	**106.45**
Containment	Passenger Car	Class 1 Light Duty Vehicle (< 8,500 lbs GVWR)	Gasoline	LDA - Gas	14	280	23.5	6,580	0.00	0.01	0.36	0.05	0.10	0.00	25.48	0.00	0.00	25.68
Containment	Pickup Truck	Class 1 Light Duty Trucks (< 6,000 lbs GVWR)	Diesel	LDT2 - DSL	2	40	23.5	940	0.00	0.00	0.01	0.00	0.00	0.00	0.55	0.00	0.00	0.57
Containment	Cement Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Containment	Dump Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Containment	Flatbed Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 IH	1	4	23.5	94	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
Containment	Welder Truck	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	Diesel	T6 ICH	--	0	0	–	--	--	--	--	--	--	--	--	--	0.00
Containment	Water Truck	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	Diesel	T7 Single - DSL	1	10	23.5	235	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.45
				Containment Phase Total:					**0.00**	**0.01**	**0.36**	**0.05**	**0.10**	**0.00**	**26.57**	**0.00**	**0.00**	**26.82**
				Total Construction Emissions					**0.04**	**0.20**	**6.87**	**1.03**	**1.82**	**0.01**	**498.88**	**0.01**	**0.02**	**503.61**

Notes:

1. Total emissions for the construction period are calculated by multiplying the total number of trips per project by the miles per trip and the associated emission factor, and divided by the appropriate conversion factors to convert pounds into tons (criteria pollutants) or metric tons (greenhouse gas emissions).
2. Source for engine emission factors: CARB EMFAC2014 Database - EMFAC2011 vehicle category, emission rate data.
3. Estimated number of trips, and miles per trip as noted in Table A-9 - On Road Project Phase Details.
4. Conversion factors:

Global warming potential for methane: 25
Global warming potential for nitrous oxide: 298
2,000 pounds/ton
0.45359 kilograms/pound)
1,000 kilograms/metric ton
20 week construction period

ExxonMobil Interium Trucking for SYU Phased Restart
Table B-13 Construction Offgassing

Asphault Paving

Reactive Organic Gases from Asphalt Pavement Offgassing.

	Paved	ROG Emission	ROG Emissions
Component	Acres	Factor	(Tons)
Access Road			
Total Emissions (Tons)	0.41 acres	2.62 lb/acre	0.001
Average Daily Emissions (Pounds/Day)			0.009

Notes:

1. It is assumed that this project will not include any paving activities.
2. Source for the ROG emission factor: CalEEMod User's Guide, Appendix A, Section 4.8 (Asphalt Paving Off-Gassing Emissions).
3. Average daily emissions are calculated by assuming a 24 week construction period, 5 construction days per week.
4. Conversion factors:
   2,000 pounds/ton
   43,560 square feet/acre
   5,280 feet/mile
   18,000 square feet
   24 week construction period
   5 construction work days/week

Architectural Coating Offgassing Emissions

Reactive Organic Gases from Architectural Coating Offgassing.

	Volume Coating	VOC	ROG Emission	ROG Emissions
Component	Applied	Coating Limit	Factor	(Tons)
Industrial Surfaces				
Total Emissions (Tons)	10 gallons	350 grams/liter	2920.59 lb/gallon	0.01
Average Daily Emissions (Pounds/Day)				0.24

Notes:

1. It is assumed that approximately 10 gallons of paint will be required to coats various surfaces installed during the project.
2. Source for VOC coating limit: Santa Barbara APCD Rule 323, assuming the use of a Fire Resistive Coating per Table 1 of Rule 323.
3. ROG emission factor calculated per CalEEMod User's Guide, Appendix A, Section 4.7 (Architectural Coatings):
   E_{FAC} = Coating VOC Limit (grams/liter) × 1/453.59 grams/pound × 3.785 liters/gallon × 1 gallon/180 sq. ft.
   E_{FAC} is multiplied by 1,000 to produce an emission factor in pounds per 1,000 square feet.
4. Average daily emissions are calculated by assuming a 24 week construction period, 5 construction days per week per week.
5. Conversion factors:
   2,000 pounds/ton
   24 week construction period
   5 construction work days/week

ExxonMobil Interium Trucking for SYU Phased Restart

Table B-14 Construction Material Movement Fugitive Dust

Fugitive Particulate Matter Emissions from Material Movement.

Material Movement	Emission Factor		Activity	Emissions (Tons)	
Component	PM_{10}	$PM_{2.5}$	Indicator	PM_{10}	$PM_{2.5}$
Grading	1.543 lb/mile	0.167 lb/mile	0.3 miles	0.00	0.00
Bulldozing	0.753 lb/hour	0.414 lb/hour	262 hours	0.10	0.05
Material Handling	1.17E-04 lb/ton	1.76E-05 lb/ton	874 tons	0.00	0.00
Demolition Debris Handling	1.12E-03 lb/ton	1.70E-04 lb/ton	0 tons	0.00	0.00
Total Emissions (Tons)				0.10	0.05
Average Daily Emissions (Pounds/Day)				1.65	0.90

Notes:

1. Total emissions for the construction period are calculated by multiplying the sum of the rail and non-rail activity data for each component by the applicable emission factor, and divided by the appropriate conversion factor to convert pounds into tons of fugitive particulate matter.
2. Average daily emissions are calculated by assuming a 24 week construction period, 5 construction days per week.
3. Conversion factors:
   2,000 pounds/ton
   24 week construction period
   5 construction work days/week

Material Movement Activity Indicators.

Activity/Construction Phase	Phase Description	Activity Indicator		
		Initial	**Target**	**Notes**
Grading				
	Road / Parking Lot Preparation	0.39 acres	0.27 miles	Assumed square footage for each pad to be graded for the parking lot, pipe rack, and LACT.
	50 Pipe Rack Foundations	0.02 acres	0.016 miles	
	LACT / Control Room Foundations	0.02 acres	0.016 miles	
Total Grading:		0.44 acres	0.30 miles	
Bulldozing				
	Road / Parking Lot Preparation		60 hours	Hours estimated based on construction schedule hours for dozers, loaders, and excavators
	50 Pipe Rack Foundations		142 hours	
	LACT / Control Room Foundations		60 hours	
Total Bulldozing:			262 hours	
Material Handling				
	Road / Parking Lot Preparation	782 tons earth	782 tons	Assumed square footage for each pad to be graded for the parking lot, pipe rack, and LACT.
	50 Pipe Rack Foundations	46 tons earth	46 tons	
	LACT / Control Room Foundations	46 tons earth	46 tons	
Total Material Handling:		874 tons	874 tons	
Demolition Debris Handling				
	Mechanical Dismemberment	0 square feet	0 tons	No demolition activities
	Demolition Debris Loading	0 square feet	0 tons	No demolition activities
Total Demolition Debris:		0 square feet	0 tons	

Notes:

1. Grading for the project is assumed to occur during the first three phases of the project. The area to be graded includes the parking lot, pipe rack, and LACT/Control Room.

2. Miles traveled for site grading is based on the analytical approach suggested in *California Emissions Estimator Model User's Guide* (Version 2011.1) (CalEEMod User's Guide), ENVIRON International Corporation (for South Coast Air Quality Management District), February 2011, Appendix A (Calculation Details for CalEEMod), Section 4.3 (Dust from Material Movement). Grading miles are calculated as As/Wb × 43,560 square feet/acre ÷ 5,280 ft/mile, where As = acres to be graded and Wb = blade width (feet), assumed in the CalEEMod Version 2011.1.1 program to be 12 feet (based on a Caterpillar 140 motor grader).
3. Bulldozer hours are estimated from the Interim Trucking Construction Schedule - includes excavators, dozers, and loaders. See the Table A-5 - Project Phases Off-Road.
5. Construction material handling is estimated based on the square footage to be disturbed as part of the grading activities, applying the 0.046 ton of construction debris per square foot, as defined by CalEEMod User's Guide, Appendix A.
6. Demolition Activities: This project does not involve the demolition of any structures or equipment. As such material movement associated with demolition is assumed to be zero.
7. Conversion factors:
   43,560 square feet/acre
   5,280 feet/mile
   12 feet grader blade width
   0.046 ton of construction debris per square foot (CalEEMod User's Guide, Appendix A)

Table B-14 Construction Material Movement Fugitive Dust

Grading Emission Factors.

Variable	Reference	Symbol	Value	Unit
PM_{10} particle size multiplier	EPA AP-42 Table 11.9-1	k	0.6	--
$PM_{2.5}$ particle size multiplier	EPA AP-42 Table 11.9-1	k	0.031	--
Mean vehicle speed	EPA AP-42 Table 11.9-1	S	7.1	miles/hour
Grading		PM_{10}:	1.543	lb/mile
		$PM_{2.5}$:	0.167	lb/mile

$$Ef_{PM_{10}} = k \times 0.051 \times (S)^{2.0}$$

$$Ef_{PM_{2.5}} = k \times 0.040 \times (S)^{2.5}$$

Source: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors* (AP-42), Section 11.9 Western Surface Coal Mining, Table 11.9-1. Per the CalEEMod User's Guide, Appendix A, Section 4.3, AP-42 default values are used for k and S.

Bulldozing Emission Factors

Variable	Reference	Symbol	Value	Unit
PM_{10} particle size multiplier	EPA AP-42 Table 11.9-1	k	0.75	--
$PM_{2.5}$ particle size multiplier	EPA AP-42 Table 11.9-1	k	0.105	--
Silt content (overburden)	EPA AP-42 Table 11.9-1	s	6.9	%
Moisture content (overburden)	EPA AP-42 Table 11.9-1	M	7.9	%
Bulldozing		PM_{10}:	0.753	lb/hour
		$PM_{2.5}$:	0.414	lb/hour

$$Ef_{PM_{10}} = k \times \frac{1.0 \times (s)^{1.5}}{(M)^{1.4}}$$

$$Ef_{PM_{2.5}} = k \times \frac{5.7 \times (s)^{1.2}}{(M)^{1.3}}$$

Source: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors* (AP-42), Section 11.9 Western Surface Coal Mining, Table 11.9-1. Per the CalEEMod User's Guide, Appendix A, Section 4.3, AP-42 default values are used for k and the AP-42 default values for overburden are used for s and M.

Material Handling (Truck Loading/Unloading) Emission Factors.

Variable	Reference	Symbol	Value	Unit
PM_{10} particle size multiplier	EPA AP-42 Table 13.2.4-1	k	0.35	--
$PM_{2.5}$ particle size multiplier	EPA AP-42 Table 13.2.4-1	k	0.053	--
Mean wind speed	CalEEMod 2011.1.1 default	U	6.04	miles/hour
Moisture content (cover)	EPA AP-42 Table 13.2.4-1	M	12	%
Material Handling		PM_{10}:	1.17E-04	lb/ton
		$PM_{2.5}$:	1.76E-05	lb/ton

$$Ef = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Source: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors* (AP-42), Section 13.2.4 Aggregate Handling And Storage Piles, Equation 1. Per the CalEEMod User's Guide, Appendix A, Section 4.3, AP-42 values are used for k and the AP-42 default value for municipal solid waste landfill cover is used for M. Per CalEEMod User's Guide, Appendix D (Default Data Tables), Table 1.1 (Weather Data), a mean wind speed of 2.7 meters/second (m/s) is used for Kern County. Conversion factors to convert 2.7 m/s to miles/hour:

1,609.3 meters/mile
60 seconds/minute
60 minutes/hour

Demolition Debris Handling (Mechanical Dismemberment/Truck Loading) Emission Factors.

Variable	Reference	Symbol	Value	Unit
PM_{10} particle size multiplier	EPA AP-42 Table 13.2.4-1	k	0.35	--
$PM_{2.5}$ particle size multiplier	EPA AP-42 Table 13.2.4-1	k	0.053	--
Mean wind speed	CalEEMod 2011.1.1 default	U	5.00	miles/hour
Moisture content	EPA AP-42 Table 13.2.4-1	M	2	%
Demolition Debris Handling		PM_{10}:	1.12E-03	lb/ton
		$PM_{2.5}$:	1.70E-04	lb/ton

$$Ef = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Source: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors* (AP-42), Section 13.2.4 Aggregate Handling And Storage Piles, Equation 1. The CalEEMod User's Guide, Appendix A, Section 4.4 recommends the AP-42 equation be used for mechanical dismemberment, using the default wind speed of 5 miles/hour and a moisture content of 2 percent. AP-42 Section 13.2.3 (Heavy Construction Operations) Table 13.2.3-1 (Recommended Emission Factors for Construction Operations) also recommends the emission equation from AP-42 Section 13.2.4 be used for loading of construction debris into trucks.

ExxonMobil Interium Trucking for SYU Phased Restart

Table B-15 Construction On-road Emission Factors

		EMFAC2011				Emission Factors									
	Vehicle Class	Categories		Units	Fuel	TOG	ROG	NOx	CO	PM10	PM2_5	SOx	CO2	CH4	N2O
Running	Class 5 Medium Duty Vehicles (16,001 - 19,500 LBS GVWR)	LHD2 - DSL		g/mile	Diesel	0.2050	0.1801	2.5646	0.8114	0.0315	0.0302	0.0062	652.4308	0.0084	0.1026
Idle	Class 5 Medium Duty Vehicles (16,001 - 19,500 LBS GVWR)	LHD2 - DSL		g/vehicle/day	Diesel	0.1250	0.1098	2.4766	0.9097	0.0282	0.0270	0.0021	224.284		
Running	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 IH		g/mile	Diesel	0.3803	0.3341	5.4098	0.8720	0.1491	0.1427	0.0104	1104.4851	0.0155	0.1736
Idle	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 IH		g/vehicle/day	Diesel	0.1885	0.1656	7.6603	2.0489	0.0484	0.0463	0.0064	675.7635		
Running	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 ICH		g/mile	Diesel	0.7396	0.6496	6.3953	1.2559	0.2027	0.1939	0.0121	1283.7124	0.0302	0.2018
Idle	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 ICH		g/vehicle/day	Diesel	0.2594	0.2279	7.5890	2.3911	0.0679	0.0650	0.0064	673.2631		
Running	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	T7 Single - DSL		g/mile	Diesel	0.5024	0.4413	8.7581	1.4204	0.1968	0.1883	0.0159	1681.252	0.020	0.264
Idle	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	T7 Single - DSL		g/vehicle/day	Diesel	2.5729	2.2601	29.7930	20.0165	0.1731	0.1656	0.0378	3999.769		
Running	Light Duty Trucks	LDT2 - DSL		g/mile	Diesel	0.0188	0.0165	0.0764	0.1273	0.0079	0.0076	0.0027	290.161	0.001	0.046
Idle	Light Duty Trucks	LDT2 - DSL		g/vehicle/day	Diesel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000		
Running	Light Duty Vehicles	LDA - Gas		g/mile	Gasoline	0.0271	0.0186	0.0795	0.9439	0.0015	0.0014	0.0027	276.5841	0.0044	0.0071
Idle	Light Duty Vehicles	LDA - Gas		g/vehicle/day	Gasoline	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		

		EMFAC2011				Emission Factors									
	Vehicle Class	Categories			Fuel	TOG	ROG	NOx	CO	PM10	PM2_5	SOx	CO2	CH4	N2O
Running	Class 5 Medium Duty Vehicles (16,001 - 19,500 LBS GVWR)	LHD2 - DSL	LHD2 - DSLRunning	lb/mile	Diesel	0.0005	0.0004	0.0057	0.0018	0.0078	0.0012	0.0000	1.4384	0.0000	0.0002
Idle	Class 5 Medium Duty Vehicles (16,001 - 19,500 LBS GVWR)	LHD2 - DSL	LHD2 - DSLIdle	lb/vehicle/day	Diesel	0.0003	0.0002	0.0055	0.0020	0.0001	0.0001	0.0000	0.4945	0.0000	0.0000
Running	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 IH	T6 IHRunning	lb/mile	Diesel	0.0008	0.0007	0.0119	0.0019	0.0080	0.0015	0.0000	2.4350	0.0000	0.0004
Idle	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 IH	T6 IHIdle	lb/vehicle/day	Diesel	0.0004	0.0004	0.0169	0.0045	0.0001	0.0001	0.0000	1.4898	0.0000	0.0000
Running	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 ICH	T6 ICHRunning	lb/mile	Diesel	0.0016	0.0014	0.0141	0.0028	0.0082	0.0016	0.0000	2.8301	0.0001	0.0004
Idle	Class 6 Medium-Heavy Duty Vehicles (>26,000 lbs. GVWR)	T6 ICH	T6 ICHIdle	lb/vehicle/day	Diesel	0.0006	0.0005	0.0167	0.0053	0.0001	0.0001	0.0000	1.4843	0.0000	0.0000
Running	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	T7 Single - DSL	T7 Single - DSLRunnin	lb/mile	Diesel	0.0011	0.0010	0.0193	0.0031	0.0081	0.0016	0.0000	3.7065	0.0000	0.0006
Idle	Class 8a and 8b Heavy-Duty Vehicles (>33,000 lbs. GVWR)	T7 Single - DSL	T7 Single - DSLIdle	lb/vehicle/day	Diesel	0.0057	0.0050	0.0657	0.0441	0.0004	0.0004	0.0001	8.8180	0.0000	0.0000
Running	Light Duty Trucks	LDT2 - DSL	LDT2 - DSLRunning	lb/mile	Diesel	0.0000	0.0000	0.0002	0.0003	0.0077	0.0012	0.0000	0.6397	0.0000	0.0001
Idle	Light Duty Trucks	LDT2 - DSL	LDT2 - DSLIdle	lb/vehicle/day	Diesel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Running	Light Duty Vehicles	LDA - Gas	LDA - GasRunning	lb/mile	Gasoline	0.0001	0.0000	0.0002	0.0021	0.0077	0.0012	0.0000	0.6098	0.0000	0.0000
Idle	Light Duty Vehicles	LDA - Gas	LDA - GasIdle	lb/vehicle/day	Gasoline	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

[1] EMFAC2017 criteria pollutant and CO_2 emission factors for on-road vehicles are derived from the California Air Resources Board's EMFAC2017 2019 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.7) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed Feb 20, 2019). Data reflects the use specific vehicle model years (2015 - 2019) and aggregated vehicle speeds)

2 California's Greenhouse Gas Inventory (10th Edition, last modified June 6, 2017), data for 2015, 1A3bii (Light-duty Trucks and SUVs), 1A3biii (Heavy-Duty Trucks and Buses) available at www.arb.ca.gov/cc/inventory/doc/doc_index.php (accessed June 28, 2018).

- a. Light Duty Trucks and SUVs - Diesel:
  - 0.0291 grams methane/gallon
  - 0.332 grams nitrous oxide/gallon
- b. Heavy Duty Trucks - Diesel:
  - 0.0900 grams methane/gallon
  - 0.332 grams nitrous oxide/gallon

3 Criteria pollutant emission factors include total emissions for each pollutant. In addition to exhaust emissions, ROG emission factors include emissions from diurnal, hot soak, running losses, and resting losses. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.

Conversion factors:
2000 pounds/ton
453.59 grams/pound

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):

Variable	Reference	Symbol	Value	Unit	PM_{10}	$PM_{2.5}$
PM_{10} particle size multiplier	CARB - 2018 EI	k	0.0022	lb/vmt		
$PM_{2.5}$ particle size multiplier	CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile
Road silt loading - Freeway	CARB - 2018 EI	sL	0.015	g/m^2	4.76E-04	7.14E-05
Road silt loading - Major	CARB - 2018 EI	sL	0.032	g/m^2	9.49E-04	1.42E-04
Road silt loading - Collector	CARB - 2018 EI	sL	0.032	g/m^2	9.49E-04	1.42E-04
Road silt loading - Local	CARB - 2018 EI	sL	0.320	g/m^2	7.71E-03	1.16E-03
Average vehicle weight	Average Project Vehicle Weight	W	9.45	tons		
Paved Road Dust Entrainment						

$$Ef = k(sL)^{0.91} \times W^{1.02}$$

Notes:

4 Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.*

Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018).
https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf

[5] Average vehicle weight based estimated based on anticipated vehicle types to be used by project.

6 Road silt loading factor assumed to be for "local" roads only, since construction activities will be within the LFC property boundary only.

ExxonMobil Interium Trucking for SYU Phased Restart

Table B-16 Construction Off-road Equipment Specifications and Emission Factors

	Horse-	Load	Emission Factors (grams/Horsepower-Hour)								
Category	power	Factor	ROG	CO	NOx	SOx	PM_{10}	PM_{2_5}	CO_2	CH_4	N_2O
Air Compressors	78	0.48	0.538	3.718	3.706	0.006	0.260	0.260	568.299	0.048	0.014
Cement and Mortar Mixers	9	0.56	0.661	3.469	4.142	0.008	0.162	0.162	568.299	0.059	0.014
Concrete/Industrial Saws	81	0.73	0.443	3.550	3.441	0.006	0.220	0.220	568.300	0.040	0.014
Cranes	231	0.29	0.427	1.941	5.084	0.005	0.216	0.198	483.462	0.153	0.014
Excavators	157	0.38	0.246	3.082	2.533	0.005	0.122	0.112	482.684	0.153	0.014
Forklifts	149	0.20	0.382	3.288	3.885	0.005	0.210	0.193	482.598	0.153	0.014
Generator Sets	84	0.74	0.405	3.396	3.446	0.006	0.206	0.206	568.299	0.036	0.014
Graders	187	0.41	0.360	1.359	4.887	0.005	0.156	0.144	486.329	0.154	0.014
Off-Highway Trucks (Haul)	381	0.38	0.263	1.483	2.669	0.005	0.097	0.089	485.383	0.154	0.014
Off-Highway Trucks (Water)	381	0.20	0.263	1.483	2.669	0.005	0.097	0.089	485.383	0.154	0.014
Pavers	130	0.42	0.299	3.013	3.245	0.005	0.159	0.146	483.394	0.153	0.014
Paving Equipment	132	0.36	0.254	3.011	2.692	0.005	0.134	0.123	481.225	0.152	0.014
Rollers	80	0.38	0.423	3.557	4.179	0.005	0.275	0.253	484.336	0.153	0.014
Rubber Tired Dozers	247	0.40	0.651	2.459	6.929	0.005	0.338	0.311	485.172	0.154	0.014
Rubber Tired Loaders	203	0.36	0.309	1.302	3.745	0.005	0.126	0.116	480.100	0.152	0.014
Scrapers	367	0.48	0.343	2.595	4.156	0.005	0.163	0.150	482.732	0.153	0.014
Tractors/Loaders/Backhoes	97	0.37	0.368	3.638	3.693	0.005	0.247	0.227	485.855	0.154	0.014
Welders	46	0.45	1.055	4.950	4.950	0.007	0.273	0.273	568.299	0.095	0.014

	Horse-	Load	Emission Factors (lb/Horsepower-Hour)								
Category	power	Factor	ROG	CO	NOx	SOx	PM_{10}	PM_{2_5}	CO_2	CH_4	N_2O
Air Compressors	78	0.48	0.001	0.008	0.008	0.000	0.001	0.001	1.253	0.000	0.000
Cement and Mortar Mixers	9	0.56	0.001	0.008	0.009	0.000	0.000	0.000	1.253	0.000	0.000
Concrete/Industrial Saws	81	0.73	0.001	0.008	0.008	0.000	0.000	0.000	1.253	0.000	0.000
Cranes	231	0.29	0.001	0.004	0.011	0.000	0.000	0.000	1.066	0.000	0.000
Excavators	157	0.38	0.001	0.007	0.006	0.000	0.000	0.000	1.064	0.000	0.000
Forklifts	149	0.20	0.001	0.007	0.009	0.000	0.000	0.000	1.064	0.000	0.000
Generator Sets	84	0.74	0.001	0.007	0.008	0.000	0.000	0.000	1.253	0.000	0.000
Graders	187	0.41	0.001	0.003	0.011	0.000	0.000	0.000	1.072	0.000	0.000
Off-Highway Trucks (Haul)	381	0.38	0.001	0.003	0.006	0.000	0.000	0.000	1.070	0.000	0.000
Off-Highway Trucks (Water)	381	0.20	0.001	0.003	0.006	0.000	0.000	0.000	1.070	0.000	0.000
Pavers	130	0.42	0.001	0.007	0.007	0.000	0.000	0.000	1.066	0.000	0.000
Paving Equipment	132	0.36	0.001	0.007	0.006	0.000	0.000	0.000	1.061	0.000	0.000
Rollers	80	0.38	0.001	0.008	0.009	0.000	0.001	0.001	1.068	0.000	0.000
Rubber Tired Dozers	247	0.40	0.001	0.005	0.015	0.000	0.001	0.001	1.070	0.000	0.000
Rubber Tired Loaders	203	0.36	0.001	0.003	0.008	0.000	0.000	0.000	1.058	0.000	0.000
Scrapers	367	0.48	0.001	0.006	0.009	0.000	0.000	0.000	1.064	0.000	0.000
Tractors/Loaders/Backhoes	97	0.37	0.001	0.008	0.008	0.000	0.001	0.001	1.071	0.000	0.000
Welders	46	0.45	0.002	0.011	0.011	0.000	0.001	0.001	1.253	0.000	0.000

Notes:

1. Source for emission factors: CalEEMod, Appendix D, Default Data Tables, October 2017. Based on Year: 2019

Reduced Trucking Alternative

Table B-17 Combined Mobile and Stationary Source Summary

	Scenario 1: Phillips 66 Santa Maria Truck Rack	Scenario 2: Plains Pentland Truck Rack
NOx: Daily Significance Threshold Exceeded? (Threshold - 55 lb NOx/day)	**No**	**No**
NOx: Daily Mobile Significance Threshold Exceeded? (Threshold - 25 lb NOx/day)	**No**	**Yes**
NOx: Daily Stationary Source Emissions (NOx lb/day)	0	0
NOx: Daily Mobile Source Emissions (NOx lb/day)	14.74	36.07
NOx: Daily Stationary + Mobile Source Emissions (NOx lb/day)	14.74	36.07
ROC: Daily Significance Threshold Exceeded? (Threshold - 55 lb ROC/day)	**No**	**No**
ROC: Daily Stationary Source Emissions (ROC lb/day)	21.53	21.53
ROC: Daily Mobile Source Emissions (ROC lb/day)	0.34	0.72
ROC: Daily Stationary + Mobile Source Emissions (ROC lb/day)	21.87	22.24
PM: Daily Significance Threshold Exceeded? (Threshold - 80 lb PM/day)	**No**	**No**
PM: Daily Stationary Source Emissions (PM lb/day)	0.00	0.00
PM: Daily Mobile Source Emissions (PM lb/day)	9.91	33.98
PM: Daily Stationary + Mobile Source Emissions (PM lb/day)	9.91	33.98
GHG: Annual GHG Significance Threshold Exceeded? (Threshold 1,000 MT CO$_2$e/year)	**Yes**	**Yes**
GHG: Annual Stationary Source Emissions (MT CO$_2$e/year)	30.04	30.04
GHG: Annual Mobile Source Emissions (MT CO$_2$e/year)	2,526	6,526
GHG: Annual Stationary + Mobile Source Emissions (MT CO$_2$e/year)	2,556	6,556

Reduced Trucking Alternative
Table B-18 Mobile Source to Santa Maria

Daily Emissions - Scenario 1															
		Number of Vehicles	Trips per	Trip Length	Round Trip	Criteria Pollutant Emissions (Pounds/Day)						GHG Emissions (Pounds/Day)			
Destination	Road Type		Day	Round-Trip	Miles/Day	ROG	NOx	PM_{10}	$PM_{2.5}$	CO	SO_2	CO_2	CH_4	N_2O	CO_2e
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	15	50	98.8	4,940	0.21	12.17	6.99	1.15	2.16	0.13	13,432.89	0.01	2.11	14,062
Travel Within Santa Barbara County - Collector Road	Collector	15	50	8.00	400	0.07	1.66	1.12	0.18	1.02	0.01	1,223.91	0.00	0.19	1,281
Travel Within Santa Barbara County - Local Road	Local	15	50	1.6	80	0.06	0.92	1.80	0.27	0.94	0.00	363.37	0.00	0.06	380
Total Travel Distance		15	50	108.4	5,420										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties						**0.3**	**14.7**	**9.9**	**1.6**	**4.1**	**0.1**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	Trips per	Trip Length	Total Round	Criteria Pollutant Emissions (Tons/Yr)						GHG Emissions (Metric Tons/Yr)			
Destination	Road Type		Year	Round-Trip	Trip Miles	ROG	NOx	PM_{10}	$PM_{2.5}$	CO	SO_2	CO_2	CH_4	N_2O	CO_2e
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	15	18,250	98.8	1,803,100	0.03	2.09	1.28	0.21	0.23	0.02	2,199.48	0.00	0.35	2,303
Travel Within Santa Barbara County - Collector road	Collector	15	18,250	8	146,000	0.00	0.17	0.20	0.03	0.02	0.00	178.16	0.00	0.03	186.5
Travel Within Santa Barbara County - Local Road	Local	15	18,250	1.6	29,200	0.00	0.03	0.33	0.05	0.00	0.00	35.69	0.00	0.01	37.4
Total Travel Distance		15	18,250	108.4	1,978,300	0.03	2.29	1.81	0.29	0.25	0.03	2,413	0	0	2,526

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)					**(Not Applicable)**				**2,526.4**
Significance Threshold: SB County Planning SBC APCD					(Not Applicable)				 1,000 10,000
Significant? (SBC P&D or SBC APCD)					**(Not Applicable)**				**Yes**

			Truck Capacity (bbl/truck)	Crude Transported (bbl/year)
Potential Maximum Volume Crude Transported to Markets:			160	2,920,000

Reduced Trucking Alternative

Table B-18 Mobile Source to Santa Maria-Reduced Trucking Alternative

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).														
						Emission Factors								
Exhaust Source	**Road Type**				**Units**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**
Running Exhaust	Freeway				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Major				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Collector				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Local				lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Idle Exhaust	Freeway				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Major				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Collector				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Local				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):										
Variable	**Road Type**				**Reference**	**Symbol**	**Value**	**Unit**	**PM_{10}**	**$PM_{2.5}$**
PM_{10} particle size multiplier					CARB - 2018 EI	k	0.0022	lb/vmt		
$PM_{2.5}$ particle size multiplier					CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile
Road silt loading - Freeway	Freeway				CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04
Road silt loading - Major	Major				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Collector	Collector				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Local	Local				CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03
Average vehicle weight					CalTrans WIM Data	W	27	tons		
Paved Road Dust Entrainment									$Ef = k(sL)^{0.91} \times W^{1.02}$	

Notes:

1. Trip distances assume:
    a. 54.3 miles from the ExxonMobil Las Flores Canyon facility to the Phillips 66 Santa Maria truck rack located at 1580 East Battles Road in Santa Maria.
2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.
4. EMFAC2017 criteria pollutant and GHG emission factors for T7 Tractor engines are derived from the California Air Resources Board's EMFAC2017 2018 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.2) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed September 10, 2018). Data reflects the use specific vehicle model years (2017, 2018, 2019) and aggregated vehicle speeds, grouped by Road Type)
    a. Vehicle Category based on EMFAC2011 vehicle definitions, applied the T7 Tractor vehicle type as directed by the SBC APCD.
    b. Criteria pollutant emission factors include total emissions for each pollutant. In addition to running exhaust emissions, emission factors include idle exhaust emissions. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.
    c. PM_{10} and $PM_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.
    d. Vehicle emissions based on the reported "emission rate" data for the specified vehicle category. This data is reported in terms of g/mile (running exhaust) and g/vehicle/day (idle exhaust). Note that emissions data for running exhaust is based on individual vehicle speeds, grouped by "Road Type". Idle Exhuast data is only reported by CARB for aggregated vehicle speeds, so each Road Type/Vehicle speed is assumed to have the same idle exhaust value.
5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.*
    Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018).
    https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
    Global warming potential for methane: 25
    Global warming potential for nitrous oxide: 298
    2,000 pounds/ton
    0.45359 kilograms/pound)
    1,000 kilograms/metric ton

Reduced Trucking Alternative
Table B-19 Mobile Source to Pentland

Daily Emissions - Scenario 2

Destination	Road Type	Number of Vehicles	Trips per Day	Trip Length Round-Trip	Round Trip Miles/Day	Criteria Pollutant Emissions (Pounds/Day)						GHG Emissions (Pounds/Day)			
						ROG	NOx	PM_{10}	$PM_{2.5}$	CO	SO_2	CO_2	CH_4	N_2O	CO_2e
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	15	50	108.8	5,440	0.22	13.32	7.70	1.27	2.28	0.14	14,777	0.01	2.32	15,470
Travel Within Santa Barbara County - Collector Road	Collector	15	50	7.4	370	0.07	1.59	1.03	0.16	1.01	0.01	1,143	0.00	0.18	1,197
Travel Within Santa Barbara County - Local Road	Local	15	50	1.6	80	0.06	0.92	1.80	0.27	0.94	0.00	363	0.00	0.06	380
Travel Outside Santa Barbara County - Major road	Major	15	50	161.4	8,070	0.30	19.41	22.55	3.55	2.94	0.21	21,850	0.01	3.43	22,874
Travel Outside Santa Barbara County - Local Road	Local	15	50	0.8	40	0.06	0.83	0.90	0.14	0.93	0.00	256	0.00	0.04	268
Total Travel Distance		15	50	280	14,000										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties (Max - Worst Case)						**0.72**	**36.07**	**33.98**	**5.40**	**8.10**	**0.36**	**(Not Applicable)**			

Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**Yes**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions

Destination		Number of Vehicles	Trips per Year	Trip Length Round-Trip	Total Round Trip Miles	Criteria Pollutant Emissions (Tons)						GHG Emissions (Metric Tons)			
						ROG	NOx	PM_{10}	$PM_{2.5}$	CO	SO_2	CO_2	CH_4	N_2O	CO_2e
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	15	18,250	108.8	1,985,600	0.03	2.30	1.40	0.23	0.25	0.03	2,422.09	0.00	0.38	2,535.6
Travel Within Santa Barbara County - Local Road	Collector	15	18,250	7.4	135,050	0.00	0.16	0.19	0.03	0.02	0.00	164.80	0.00	0.03	172.5
Travel Within Santa Barbara County - Collector road	Local	15	18,250	1.6	29,200	0.00	0.03	0.33	0.05	0.00	0.00	35.69	0.00	0.01	37.4
Travel Outside Santa Barbara County - Major road	Major	15	18,250	161.4	2,945,550	0.04	3.41	4.11	0.65	0.37	0.04	3,593.04	0.00	0.56	3,761.4
Travel Outside Santa Barbara County - Local Road	Local	15	18,250	0.8	14,600	0.00	0.02	0.16	0.02	0.00	0.00	17.88	0.00	0.00	18.7
Total Travel Distance		**15**	**18,250**	**280**	**5,110,000**	**0.07**	**5.91**	**6.20**	**0.98**	**0.64**	**0.06**	**6,233.49**	**0.00**	**0.98**	**6,525.55**

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)					**(Not Applicable)**				**6,525.6**
Significance Threshold:					(Not Applicable)				
SB County Planning									1,000
SBC APCD									10,000
Significant? (SBC P&D or SBC APCD)					**(Not Applicable)**				**Yes**

			Truck Capacity (bbl/truck)	Crude Transported (bbl/year)
Potential Maximum Volume Crude Transported to Markets:			160	2,920,000

Reduced Trucking Alternative
Table B-19 Mobile Source to Pentland

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).														
						Emission Factors								
Exhaust Source	**Road Type**				**Units**	**ROG**	**NOx**	**PM$_{10}$**	**PM$_{2.5}$**	**CO**	**SO$_2$**	**CO$_2$**	**CH$_4$**	**N$_2$O**
Running Exhaust	Freeway				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Major				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Collector				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Local				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Idle Exhaust	Freeway				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Major				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Collector				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Local				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):											
Variable	**Road Type**				**Reference**	**Symbol**	**Value**	**Unit**	**PM$_{10}$**	**PM$_{2.5}$**	
PM$_{10}$ particle size multiplier					CARB - 2018 EI	k	0.0022	lb/vmt			
PM$_{2.5}$ particle size multiplier					CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile	
Road silt loading - Freeway	Freeway				CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04	
Road silt loading - Major	Major				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04	
Road silt loading - Collector	Collector				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04	
Road silt loading - Local	Local				CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03	
Average vehicle weight					CalTrans WIM Data	W	27	tons			$Ef = k(sL)^{0.91} \times W^{1.02}$
Paved Road Dust Entrainment											

Notes:

1. Trip distances assume:
   a. 140 total miles (within Santa Barbara, San Luis Obispo, and Kern Counties) from the ExxonMobil Las Flores Canyon facility to the Plains Pentland truck rack located at 2311 Basic School Road in Maricopa.
2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.
4. EMFAC2017 criteria pollutant and GHG emission factors for T7 Tractor engines are derived from the California Air Resources Board's EMFAC2017 2018 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.2) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed September 10, 2018). Data reflects the use specific vehicle model years (2017, 2018, 2019) and aggregated vehicle speeds, grouped by Road Type)
   a. Vehicle Category based on EMFAC2011 vehicle definitions, applied the T7 Tractor vehicle type as directed by the SBC APCD.
   b. Criteria pollutant emission factors include total emissions for each pollutant. In addition to running exhaust emissions, emission factors include idle exhaust emissions. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.
   c. PM$_{10}$ and PM$_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.
   d. Vehicle emissions based on the reported "emission rate" data for the specified vehicle category. This data is reported in terms of g/mile (running exhaust) and g/vehicle/day (idle exhaust). Note that emissions data for running exhaust is based on individual vehicle speeds, grouped by "Road Type". Idle Exhuast data is only reported by CARB for aggregated vehicle speeds, so each Road Type/Vehicle speed is assumed to have the same idle exhaust value.
5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.* Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018). https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
   Global warming potential for methane: 25
   Global warming potential for nitrous oxide: 298
   2,000 pounds/ton
   0.45359 kilograms/pound)
   1,000 kilograms/metric ton

Reduced Trucking Alternative
Table B-20 Stationary Sources

Emission Source	Reactive Organic Compounds			
SUMMARY	lb/hr	lb/day	TPQ	Total Emissions (Tons/Yr)
Fugitive Hydrocarbon Components	0.215	5.150	0.235	0.940
Crude Loading Activity - VRU	2.620	16.375	0.747	2.988
Total Increase:	**2.835**	**21.525**	**0.982**	**3.928**

GHG - CO_2e			
lb/hr	lb/day	TPQ	Total Emissions (Metric Tons/Yr)
4.489	107.728	5.308	21.233
7.150	44.685	1.850	8.807
11.638	**152.413**	**7.158**	**30.040**

Notes:

[1] Hourly and daily emissions assume the maximum loading rate proposed, 8 trucks/hour and 70 trucks/day.

[2] Fugitive Hydrocarbon components include piping components associated with crude loading activity and the LACT units.

[3] GHG emissions from fugitive components and crude loading operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.

Emission Source	lb/hr					
	NO_x	ROC	CO	SO_x	PM	PM_{10}
Fugitive Hydrocarbon Components		0.21				
Crude Loading Activity		2.62				
Total Increase:	**0.00**	**2.83**	**0.00**	**0.00**	**0.00**	**0.00**

lb/hr
GHG - CO_2e
4.49
7.15
11.64

Emission Source	lb/day					
	NO_x	ROC	CO	SO_x	PM	PM_{10}
Fugitive Hydrocarbon Components		5.15				
Crude Loading Activity		16.38				
Total Increase:	**0.00**	**21.53**	**0.00**	**0.00**	**0.00**	**0.00**

lb/day
GHG - CO_2e
107.73
44.68
152.41

Emission Source	TPQ					
	NO_x	ROC	CO	SO_x	PM	PM_{10}
Fugitive Hydrocarbon Components		0.23				
Crude Loading Activity		0.75				
Total Increase:	**0.00**	**0.98**	**0.00**	**0.00**	**0.00**	**0.00**

TPQ
GHG - CO_2e
5.31
1.85
7.16

Emission Source	Total Tons/Yr					
	NO_x	ROC	CO	SO_x	PM	PM_{10}
Fugitive Hydrocarbon Components		0.94				
Crude Loading Activity - VRU		2.99				
Total Increase:	**0.00**	**3.93**	**0.00**	**0.00**	**0.00**	**0.00**

Total Tons/Yr
GHG - CO_2e
21.23
8.81
30.04

Emission Offset Evaluation	**TPQ**					
	NO_x	ROC	CO	SO_x	PM	PM_{10}
Total Emissions to Offset:	0.000	0.98				
Total ERCs Required at a 1.3:1 ratio (TPQ):	0.000	1.28				

ROC- TPY
5.11

Notes:

[1] Hourly and daily emissions assume the maximum loading rate proposed, 8 trucks/hour and 70 trucks/day.

[2] Fugitive Hydrocarbon components include piping components associated with crude loading activity and the LACT units.

[3] GHG emissions from fugitive components and crude loading operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.

[4] Source of Emission Reduction Credits will be determined during the course of the permit application review and approval. Offset ratio per APCD Rule 804 Section D.8.

Redcued Trucking Alternative Table
B-21 Loading Rack Emissions

Product Loading Activity Emission Calculations

Scenario 1 and 2
ExxonMobil Production

Exxon - SYU, Las Flores Canyon

Reference: Loading Rack

Rack Type:	Enter X as Appropriate	S Factor
Submerged loading of a clean cargo tank		0.50
Submerged loading: Dedicated normal service	x	0.60
Submerged loading: Dedicated vapor balance service		1.00
Splash loading of a clean cargo tank		1.45
Splash loading: Dedicated normal service		1.45
Splash loading: Dedicated vapor balance service		1.00

Input data			Reference
S = Saturation Factor	**0.60**	See AP-42 Table 4.4-1	2
M = Molecular Weight	**50**	Crude Oil: Default = 50 lb/lb-mole	3
P = True Vapor Pressure (psia)	**1.650**	See AP-42 Table 12.3-5	1
T = Liquid Temperature ^{o}R	**560**	100 ^{o}F + 460 = ^{o}R	5
C = Storage Capacity (bbl)	**2,920,000**	122,640,000 gallons (42 gallons = 1 bbl)	1
A = Annual Production (bbl)	**2,920,000**	122,640,000 gallons (42 gallons = 1 bbl)	1
R = Max Loading Rate (bbl/hr)	**1280.00**	53,760 gallons (42 gallons = 1 bbl)	1
D = Max Daily Production (bbl)	**8,000**	336,000 gallons (42 gallons = 1 bbl)	
D2 = Average Daily Production (bbl)	**8,000**	336,000 gallons (42 gallons = 1 bbl)	
eff = Vapor Recovery Efficiency	**0.95**	Default = 0.95 (SBC APCD)	1
ROC/THC = Reactivity	**0.885**	Crude Oil: Default = 0.885	

L_{LTHC} = Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)/T = **1.1014** **lbTHC/1000 gal**

L_{L}ROC= Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)*React/T = **0.9747** **lb ROC/1000 gal**

	ROC		**THC**	**Estimated CH4, GHG**
Total Uncontrolled Hydrocarbon Losses:				
Hourly THL_H = (R)(42 gal/bbl)(L_{LROC}/1000) =	**52.40**	**lbs/hr**	**59.21**	6.81
Max Daily THL_D = (D)(42 gal/bbl)(L_{LROC}/1000) =	**327.50**	**lbs/day**	**370.06**	42.56
Quarterly THL_Q = THLD(91)(1/2000) =	**14.94**	**TPQ**	**16.88**	1.94
Total Emissions THL_A = (A)(42 gal/bbl)(L_{LROC}/1000)(1/2000) =	**59.77**	**TPY**	**67.54**	7.77
Total Controlled Hydrocarbon Losses:				
Hourly THL_{HC} = (THL_H)(1-eff) =	**2.62**	lbs/hr	**2.96**	0.34
Max Daily THL_{DC} = (THL_D)(1-eff) =	**16.38**	lbs/day	**18.50**	2.13
Quarterly $THLQ_C$ = (THLQ)(1-eff) =	**0.75**	TPQ	**0.84**	0.10
Total Emissions THL_{AC} = (THL_A)(1-eff) =	**2.99**	TPY	**3.38**	0.39

Notes:

1. Data provided by the applicant
   C = Annual Transport Volume.
2. AP-42, (Chapter 5, 5th Edition, January 1995), Table 5.2-1
3. If not otherwise provided, crude oil is assumed to be 50 lb/lb-mole.
4. Vapor pressure as measured from LFC Crude.
5. R is calculated by adding 460 to ^{o}F.
6. A maximum of 70 trucks will be loaded per day; up to 8 per hour. Actual number of trucks/day may be less.
7. The maximum daily rate of 70 trucks was used to determine the maximum quarterly and annual emissions.
8. GHG emissions from loadng operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.
9. Applied SBC APCD determined truck loading efficiency of 95%;
10. Average Daily Production is assumed to be the same as the maximum daily potential production for purposes of defining a reasonable worst case scenario.

No Trucking During Rainy Periods Alternative

Table B-22 Combined Mobile and Stationary Source Summary

	Scenario 1: Phillips 66 Santa Maria Truck Rack	Scenario 2: Plains Pentland Truck Rack
NOx: Daily Significance Threshold Exceeded? (Threshold - 55 lb NOx/day)	**No**	**Yes**
NOx: Daily Mobile Significance Threshold Exceeded? (Threshold - 25 lb NOx/day)	**No**	**Yes**
NOx: Daily Stationary Source Emissions (NOx lb/day)	0	0
NOx: Daily Mobile Source Emissions (NOx lb/day)	22.50	55.43
NOx: Daily Stationary + Mobile Source Emissions (NOx lb/day)	22.50	55.43
ROC: Daily Significance Threshold Exceeded? (Threshold - 55 lb ROC/day)	**No**	**No**
ROC: Daily Stationary Source Emissions (ROC lb/day)	30.70	30.70
ROC: Daily Mobile Source Emissions (ROC lb/day)	0.49	1.05
ROC: Daily Stationary + Mobile Source Emissions (ROC lb/day)	31.19	31.74
PM: Daily Significance Threshold Exceeded? (Threshold - 80 lb PM/day)	**No**	**No**
PM: Daily Stationary Source Emissions (PM lb/day)	0.00	0.00
PM: Daily Mobile Source Emissions (PM lb/day)	15.46	53.01
PM: Daily Stationary + Mobile Source Emissions (PM lb/day)	15.46	53.01
GHG: Annual GHG Significance Threshold Exceeded? (Threshold 1,000 MT CO_2e/year)	**Yes**	**Yes**
GHG: Annual Stationary Source Emissions (MT CO_2e/year)	33.56	33.56
GHG: Annual Mobile Source Emissions (MT CO_2e/year)	3,537	8,875
GHG: Annual Stationary + Mobile Source Emissions (MT CO_2e/year)	3,571	8,908

No Trucking During Rainy Periods Alternative
Table B-23 Mobile Source to Santa Maria

Daily Emissions - Scenario 1															
		Number of Vehicles	**Trips per**	**Trip Length**	**Round Trip**	**Criteria Pollutant Emissions (Pounds/Day)**						**GHG Emissions (Pounds/Day)**			
Destination	**Road Type**		**Day**	**Round-Trip**	**Miles/Day**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	78	98.8	7,706	0.31	18.81	10.91	1.80	3.15	0.20	20,921.71	0.01	3.29	21,902
Travel Within Santa Barbara County - Collector Road	Collector	20	78	8.00	624	0.10	2.42	1.74	0.28	1.38	0.02	1,875.70	0.00	0.29	1,964
Travel Within Santa Barbara County - Local Road	Local	20	78	1.6	125	0.09	1.27	2.81	0.42	1.26	0.01	533.25	0.00	0.08	558
Total Travel Distance		20	78	108.4	8,455										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties						**0.5**	**22.5**	**15.5**	**2.5**	**5.8**	**0.2**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	**Trips per**	**Trip Length**	**Total Round**	**Criteria Pollutant Emissions (Tons/Yr)**						**GHG Emissions (Metric Tons/Yr)**			
Destination	**Road Type**		**Year**	**Round-Trip**	**Trip Miles**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	25,550	98.8	2,524,340	0.04	2.92	1.79	0.29	0.32	0.03	3,079.27	0.00	0.48	3,224
Travel Within Santa Barbara County - Collector road	Collector	20	25,550	8	204,400	0.00	0.24	0.29	0.04	0.03	0.00	249.42	0.00	0.04	261.1
Travel Within Santa Barbara County - Local Road	Local	20	25,550	1.6	40,880	0.00	0.05	0.46	0.07	0.01	0.00	49.95	0.00	0.01	52.3
Total Travel Distance		20	25,550	108.4	2,769,620	0.04	3.21	2.53	0.41	0.35	0.04	3,379	0	1	3,537

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)						**(Not Applicable)**									**3,536.9**
Significance Threshold:						(Not Applicable)									
SB County Planning															1,000
SBC APCD															10,000
Significant? (SBC P&D or SBC APCD)						**(Not Applicable)**									**Yes**

			Truck Capacity (bbl/truck)	**Crude Transported (bbl/year)**
Potential Maximum Volume Crude Transported to Markets:			160	4,088,000

No Trucking During Rainy Periods Alternative
Table B-23 Mobile Source to Santa Maria

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).											
			Emission Factors								
Exhaust Source	**Road Type**	**Units**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**
Running Exhaust	Freeway	lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Major	lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Collector	lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Local	lb/mile	0.0000	0.0023	0.0000	0.0000	0.0003	0.0000	2.6892	0.0000	0.0004
Idle Exhaust	Freeway	lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Major	lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Collector	lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Local	lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):							
Variable	**Road Type**	**Reference**	**Symbol**	**Value**	**Unit**	**PM_{10}**	**$PM_{2.5}$**
PM_{10} particle size multiplier		CARB - 2018 EI	k	0.0022	lb/vmt		
$PM_{2.5}$ particle size multiplier		CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile
Road silt loading - Freeway	Freeway	CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04
Road silt loading - Major	Major	CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Collector	Collector	CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Local	Local	CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03
Average vehicle weight		CalTrans WIM Data	W	27	tons		
Paved Road Dust Entrainment						$Ef = k(sL)^{0.91} \times W^{1.02}$	

Notes:

1. Trip distances assume:
    a. 54.3 miles from the ExxonMobil Las Flores Canyon facility to the Phillips 66 Santa Maria truck rack located at 1580 East Battles Road in Santa Maria.
2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.
4. EMFAC2017 criteria pollutant and GHG emission factors for T7 Tractor engines are derived from the California Air Resources Board's EMFAC2017 2018 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.2) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed September 10, 2018). Data reflects the use specific vehicle model years (2017, 2018, 2019) and aggregated vehicle speeds, grouped by Road Type)
    a. Vehicle Category based on EMFAC2011 vehicle definitions, applied the T7 Tractor vehicle type as directed by the SBC APCD.
    b. Criteria pollutant emission factors include total emissions for each pollutant. In addition to running exhaust emissions, emission factors include idle exhaust emissions. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.
    c. PM_{10} and $PM_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.
    d. Vehicle emissions based on the reported "emission rate" data for the specified vehicle category. This data is reported in terms of g/mile (running exhaust) and g/vehicle/day (idle exhaust). Note that emissions data for running exhaust is based on individual vehicle speeds, grouped by "Road Type". Idle Exhuast data is only reported by CARB for aggregated vehicle speeds, so each Road Type/Vehicle speed is assumed to have the same idle exhaust value.
5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.*
    Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018).
    https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
    Global warming potential for methane: 25
    Global warming potential for nitrous oxide: 298
    2,000 pounds/ton
    0.45359 kilograms/pound)
    1,000 kilograms/metric ton

No Trucking During Rainy Periods Alternative
Table B-24 Mobile Source to Pentland

Daily Emissions - Scenario 2															
		Number of Vehicles	**Trips per Day**	**Trip Length Round-Trip**	**Round Trip Miles/Day**	**Criteria Pollutant Emissions (Pounds/Day)**						**GHG Emissions (Pounds/Day)**			
Destination	**Road Type**					**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	78	108.8	8,486	0.33	20.62	12.01	1.98	3.35	0.22	23,019	0.02	3.62	24,098
Travel Within Santa Barbara County - Collector Road	Collector	20	78	7.4	577	0.10	2.31	1.61	0.25	1.37	0.02	1,750	0.00	0.28	1,832
Travel Within Santa Barbara County - Local Road	Local	20	78	1.6	125	0.09	1.27	2.81	0.42	1.26	0.01	533	0.00	0.08	558
Travel Outside Santa Barbara County - Major road	Major	20	78	161.4	12,589	0.45	30.11	35.17	5.54	4.38	0.32	34,053	0.02	5.35	35,648
Travel Outside Santa Barbara County - Local Road	Local	20	78	0.8	62	0.08	1.12	1.41	0.21	1.24	0.00	365	0.00	0.06	383
Total Travel Distance		20	78	280	21,840										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties (Max - Worst Case)						**1.05**	**55.43**	**53.01**	**8.42**	**11.59**	**0.56**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**Yes**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	**Trips per Year**	**Trip Length Round-Trip**	**Total Round Trip Miles**	**Criteria Pollutant Emissions (Tons)**						**GHG Emissions (Metric Tons)**			
Destination						**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	24,820	108.8	2,700,416	0.04	3.12	1.91	0.32	0.34	0.03	3,294.04	0.00	0.52	3,448.4
Travel Within Santa Barbara County - Local Road	Collector	20	24,820	7.4	183,668	0.00	0.21	0.26	0.04	0.02	0.00	224.13	0.00	0.04	234.6
Travel Within Santa Barbara County - Collector road	Local	20	24,820	1.6	39,712	0.00	0.05	0.45	0.07	0.01	0.00	48.53	0.00	0.01	50.8
Travel Outside Santa Barbara County - Major road	Major	20	24,820	161.4	4,005,948	0.06	4.64	5.60	0.88	0.50	0.05	4,886.53	0.00	0.77	5,115.5
Travel Outside Santa Barbara County - Local Road	Local	20	24,820	0.8	19,856	0.00	0.02	0.22	0.03	0.00	0.00	24.31	0.00	0.00	25.4
Total Travel Distance		**20**	**24,820**	**280**	**6,949,600**	**0.10**	**8.04**	**8.43**	**1.34**	**0.87**	**0.09**	**8,477.54**	**0.00**	**1.33**	**8,874.75**

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)						**(Not Applicable)**									**8,874.7**
Significance Threshold:						(Not Applicable)									
SB County Planning															1,000
SBC APCD															10,000
Significant? (SBC P&D or SBC APCD)						**(Not Applicable)**									**Yes**

			Truck Capacity (bbl/truck)	**Crude Transported (bbl/year)**
Potential Maximum Volume Crude Transported to Markets:			160	3,971,200

No Trucking During Rainy Periods Alternative
Table B-24 Mobile Source to Pentland

T7 Tractor Diesel Truck Emission Factors (EMFAC2017).														
						Emission Factors								
Exhaust Source	**Road Type**				**Units**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**
Running Exhaust	Freeway				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Major				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Collector				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Running Exhaust	Local				lb/mile	2.9E-05	0.0023	2.6E-05	2.5E-05	0.0003	0.0000	2.6892	0.0000	0.0004
Idle Exhaust	Freeway				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Major				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Collector				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016
Idle Exhaust	Local				lb/vehicle/day	0.0041	0.0490	0.0000	0.0000	0.0612	0.0001	9.8819	0.0002	0.0016

On-road Vehicle Paved Road Dust Entrainment Emission Factors (pounds/mile):										
Variable	**Road Type**				**Reference**	**Symbol**	**Value**	**Unit**	**PM_{10}**	**$PM_{2.5}$**
PM_{10} particle size multiplier					CARB - 2018 EI	k	0.0022	lb/vmt		
$PM_{2.5}$ particle size multiplier					CARB - 2018 EI	k	0.00033	lb/vmt	lb/mile	lb/mile
Road silt loading - Freeway	Freeway				CARB - 2018 EI	sL	0.015	g/m^2	1.39E-03	2.08E-04
Road silt loading - Major	Major				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Collector	Collector				CARB - 2018 EI	sL	0.032	g/m^2	2.77E-03	4.15E-04
Road silt loading - Local	Local				CARB - 2018 EI	sL	0.320	g/m^2	2.25E-02	3.37E-03
Average vehicle weight					CalTrans WIM Data	W	27	tons		
Paved Road Dust Entrainment										

$$Ef = k(sL)^{0.91} \times W^{1.02}$$

Notes:

1. Trip distances assume:
   a. 140 total miles (within Santa Barbara, San Luis Obispo, and Kern Counties) from the ExxonMobil Las Flores Canyon facility to the Plains Pentland truck rack located at 2311 Basic School Road in Maricopa.
2. Duration (days) is based on the total crude to be transported and the estimated number of truck trips per day, assuming each truck can carry up to: 160 bbl
3. Truck transportation is expected to occur from 2019 - 2022.

4. EMFAC2017 criteria pollutant and GHG emission factors for T7 Tractor engines are derived from the California Air Resources Board's EMFAC2017 2018 emission estimates for Santa Barbara County. Source: California Air Resources Board, EMFAC2017 Web Database (v1.0.2) (undated), emissions data option, available at www.arb.ca.gov/emfac/2017/ (accessed September 10, 2018). Data reflects the use specific vehicle model years (2017, 2018, 2019) and aggregated vehicle speeds, grouped by Road Type)

   a. Vehicle Category based on EMFAC2011 vehicle definitions, applied the T7 Tractor vehicle type as directed by the SBC APCD.
   b. Criteria pollutant emission factors include total emissions for each pollutant. In addition to running exhaust emissions, emission factors include idle exhaust emissions. PM10 and PM2.5 factors also include emissions from brake wear and tire wear.
   c. PM_{10} and $PM_{2.5}$ from on-road vehicle paved road dust entrainment emission factors are included in the total emissions for the each trip segmented as documented above.

   d. Vehicle emissions based on the reported "emission rate" data for the specified vehicle category. This data is reported in terms of g/mile (running exhaust) and g/vehicle/day (idle exhaust). Note that emissions data for running exhaust is based on individual vehicle speeds, grouped by "Road Type". Idle Exhuast data is only reported by CARB for aggregated vehicle speeds, so each Road Type/Vehicle speed is assumed to have the same idle exhaust value.

5. Fleet size of 20 is based on maximum number of daily trips, and estimated number of trucks to accommodate these trips. The Fleet size is applied in determining the idle exhaust portion of the total emissions.
6. Equation for calculating on-road vehicle paved road dust entrainment emissions: U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.1 Paved Roads, Equation 1.*
   Silt loading factors, particle size multipliers, and average vehicle weight as defined by CARB in Section 7.9 of the Emissions Inventory Guidance Document - Entrained Road Travel, Paved Road Dust (March 2018).
   https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf
7. Average vehicle weight based on weight in motion (WIM) monitoring stations installed by CalTrans throughout the state of California. Reviewed data from 2016 - 2018 to establish a reasonable average vehicle weight representative of major roadway sections. See PeMS System.
8. Conversion factors:
   Global warming potential for methane: 25
   Global warming potential for nitrous oxide: 298
   2,000 pounds/ton
   0.45359 kilograms/pound)
   1,000 kilograms/metric ton

No Trucking During Rainy Periods Alternative
Table B-25 Stationary Sources

Emission Source	Reactive Organic Compounds				GHG - CO_2e			
SUMMARY	lb/hr	lb/day	TPQ	Total Emissions (Tons/Yr)	lb/hr	lb/day	TPQ	Total Emissions (Metric Tons/Yr)
Fugitive Hydrocarbon Components	0.215	5.150	0.235	0.940	4.489	107.728	5.308	21.233
Crude Loading Activity - VRU	2.620	25.545	1.046	4.184	7.150	69.709	2.589	12.330
Total Increase:	**2.835**	**30.695**	**1.281**	**5.124**	**11.638**	**177.437**	**7.898**	**33.563**

Notes:

[1] Hourly and daily emissions assume the maximum loading rate proposed, 8 trucks/hour and 70 trucks/day.

[2] Fugitive Hydrocarbon components include piping components associated with crude loading activity and the LACT units.

[3] GHG emissions from fugitive components and crude loading operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.

Emission Source	lb/hr						lb/hr
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO_2e
Fugitive Hydrocarbon Components		0.21					4.49
Crude Loading Activity		2.62					7.15
Total Increase:	**0.00**	**2.83**	**0.00**	**0.00**	**0.00**	**0.00**	**11.64**

Emission Source	lb/day						lb/day
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO_2e
Fugitive Hydrocarbon Components		5.15					107.73
Crude Loading Activity		25.55					69.71
Total Increase:	**0.00**	**30.70**	**0.00**	**0.00**	**0.00**	**0.00**	**177.44**

Emission Source	TPQ						TPQ
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO_2e
Fugitive Hydrocarbon Components		0.23					5.31
Crude Loading Activity		1.05					2.59
Total Increase:	**0.00**	**1.28**	**0.00**	**0.00**	**0.00**	**0.00**	**7.90**

Emission Source	Total Tons/Yr						Total Tons/Yr
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$	GHG - CO_2e
Fugitive Hydrocarbon Components		0.94					21.23
Crude Loading Activity - VRU		4.18					12.33
Total Increase:	**0.00**	**5.12**	**0.00**	**0.00**	**0.00**	**0.00**	**33.56**

Emission Offset Evaluation	**TPQ**					
	NO$_x$	ROC	CO	SO$_x$	PM	PM$_{10}$
Total Emissions to Offset:	0.000	1.28				
Total ERCs Required at a 1.3:1 ratio (TPQ):	0.000	1.67				

ROC- TPY
6.66

Notes:

[1] Hourly and daily emissions assume the maximum loading rate proposed, 8 trucks/hour and 70 trucks/day.

[2] Fugitive Hydrocarbon components include piping components associated with crude loading activity and the LACT units.

[3] GHG emissions from fugitive components and crude loading operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.

[4] Source of Emission Reduction Credits will be determined during the course of the permit application review and approval. Offset ratio per APCD Rule 804 Section D.8.

No Trucking During Rainy Periods Alternative
Table B-26 Loading Rack Emissions

Product Loading Activity Emission Calculations

Scenario 1 and 2
ExxonMobil Production

Exxon - SYU, Las Flores Canyon

Reference: Loading Rack
Rack Type: Enter X as Appropriate

Rack Type	Enter X as Appropriate	S Factor
Submerged loading of a clean cargo tank		0.50
Submerged loading: Dedicated normal service	X	0.60
Submerged loading: Dedicated vapor balance service		1.00
Splash loading of a clean cargo tank		1.45
Splash loading: Dedicated normal service		1.45
Splash loading: Dedicated vapor balance service		1.00

Input data			Reference
S = Saturation Factor	**0.60**	See AP-42 Table 4.4-1	2
M = Molecular Weight	**50**	Crude Oil: Default = 50 lb/lb-mole	3
P = True Vapor Pressure (psia)	**1.650**	See AP-42 Table 12.3-5	1
T = Liquid Temperature ^{o}R	**560**	100 ^{o}F + 460 = ^{o}R	5
C = Storage Capacity (bbl)	**4,088,000**	171,696,000 gallons (42 gallons = 1 bbl)	1
A = Annual Production (bbl)	**4,088,000**	171,696,000 gallons (42 gallons = 1 bbl)	1
R = Max Loading Rate (bbl/hr)	**1280.00**	53,760 gallons (42 gallons = 1 bbl)	1
D = Max Daily Production (bbl)	**12,480**	524,160 gallons (42 gallons = 1 bbl)	
D2 = Average Daily Production (bbl)	**12,480**	524,160 gallons (42 gallons = 1 bbl)	
eff = Vapor Recovery Efficiency	**0.95**	Default = 0.95 (SBC APCD)	1
ROC/THC = Reactivity	**0.885**	Crude Oil: Default = 0.885	

L_{LTHC} = Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)/T = **1.1014** **lbTHC/1000 gal**

L_LROC= Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)*React/T = **0.9747** **lb ROC/1000 gal**

Total Uncontrolled Hydrocarbon Losses:

	ROC		THC	Estimated CH4, GHG
Hourly THL_H = (R)(42 gal/bbl)(L_{LROC}/1000) =	**52.40**	**lbs/hr**	**59.21**	6.81
Max Daily THL_D = (D)(42 gal/bbl)(L_{LROC}/1000) =	**510.91**	**lbs/day**	**577.30**	66.39
Quarterly THL_Q = THLD(91)(1/2000) =	**20.92**	**TPQ**	**23.64**	2.72
Total Emissions THL_A = (A)(42 gal/bbl)(L_{LROC}/1000)(1/2000) =	**83.68**	**TPY**	**94.55**	10.87

Total Controlled Hydrocarbon Losses:

	ROC		THC	Estimated CH4, GHG
Hourly THL_{HC} = (THL_H)(1-eff) =	**2.62**	lbs/hr	**2.96**	0.34
Max Daily THL_{DC} = (THL_D)(1-eff) =	**25.55**	lbs/day	**28.86**	3.32
Quarterly $THLQ_C$ = (THLQ)(1-eff) =	**1.05**	TPQ	**1.18**	0.14
Total Emissions THL_{AC} = (THL_A)(1-eff) =	**4.18**	TPY	**4.73**	0.54

Notes:

1. Data provided by the applicant
   C = Annual Transport Volume.
2. AP-42, (Chapter 5, 5th Edition, January 1995), Table 5.2-1
3. If not otherwise provided, crude oil is assumed to be 50 lb/lb-mole.
4. Vapor pressure as measured from LFC Crude.
5. R is calculated by adding 460 to ^{0}F.
6. A maximum of 70 trucks will be loaded per day; up to 8 per hour. Actual number of trucks/day may be less.
7. The maximum daily rate of 70 trucks was used to determine the maximum quarterly and annual emissions.
8. GHG emissions from loadng operations conservatively assume that the difference between the THC and ROC emissions represents methane emissions.
9. Applied SBC APCD determined truck loading efficiency of 95%;
10. Average Daily Production is assumed to be the same as the maximum daily potential production for purposes of defining a reasonable worst case scenario.

Santa Maria Pump Station Only Alternative
Table B-27 Mobile Source to Santa Maria

Daily Emissions - Scenario 1															
		Number of Vehicles	Trips per	Trip Length	Round Trip	Criteria Pollutant Emissions (Pounds/Day)						GHG Emissions (Pounds/Day)			
Destination	Road Type		Day	Round-Trip	Miles/Day	ROG	NOx	PM$_{10}$	PM$_{2.5}$	CO	SO$_2$	CO$_2$	CH$_4$	N$_2$O	CO$_2$e
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	70	98.8	6,916	0.28	16.98	9.79	1.61	2.96	0.18	18,796.17	0.01	2.95	19,677
Travel Within Santa Barbara County - Collector Road	Collector	20	70	8.00	560	0.10	2.28	1.56	0.25	1.36	0.02	1,703.59	0.00	0.27	1,784
Travel Within Santa Barbara County - Local Road	Local	20	70	1.6	112	0.09	1.24	2.52	0.38	1.25	0.00	498.83	0.00	0.08	522
Total Travel Distance		20	70	108.4	7,588										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties						**0.5**	**20.5**	**13.9**	**2.2**	**5.6**	**0.2**	**(Not Applicable)**			

Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	Trips per	Trip Length	Total Round	Criteria Pollutant Emissions (Tons/Yr)						GHG Emissions (Metric Tons/Yr)			
Destination	Road Type		Year	Round-Trip	Trip Miles	ROG	NOx	PM$_{10}$	PM$_{2.5}$	CO	SO$_2$	CO$_2$	CH$_4$	N$_2$O	CO$_2$e
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	25,550	98.8	2,524,340	0.04	2.92	1.79	0.29	0.32	0.03	3,079.27	0.00	0.48	3,224
Travel Within Santa Barbara County - Collector road	Collector	20	25,550	8	204,400	0.00	0.24	0.29	0.04	0.03	0.00	249.42	0.00	0.04	261.1
Travel Within Santa Barbara County - Local Road	Local	20	25,550	1.6	40,880	0.00	0.05	0.46	0.07	0.01	0.00	49.95	0.00	0.01	52.3
Total Travel Distance		20	25,550	108.4	2,769,620	0.04	3.21	2.53	0.41	0.35	0.04	3,379	0	1	3,537

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)					**(Not Applicable)**				**3,536.9**
Significance Threshold:					(Not Applicable)				
SB County Planning									1,000
SBC APCD									10,000
Significant? (SBC P&D or SBC APCD)					**(Not Applicable)**				**Yes**

			Truck Capacity (bbl/truck)	Crude Transported (bbl/year)
Potential Maximum Volume Crude Transported to Markets:			160	4,088,000

Trucking to Santa Maria Pump Station Only Alternative
Table B-28 Mobile Source to Santa Maria (78 trucks per day)

Daily Emissions - Scenario 1															
		Number of Vehicles	**Trips per**	**Trip Length**	**Round Trip**	**Criteria Pollutant Emissions (Pounds/Day)**						**GHG Emissions (Pounds/Day)**			
Destination	**Road Type**		**Day**	**Round-Trip**	**Miles/Day**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	78	98.8	7,706	0.31	18.81	10.91	1.80	3.15	0.20	20,921.71	0.01	3.29	21,902
Travel Within Santa Barbara County - Collector Road	Collector	20	78	8.00	624	0.10	2.42	1.74	0.28	1.38	0.02	1,875.70	0.00	0.29	1,964
Travel Within Santa Barbara County - Local Road	Local	20	78	1.6	125	0.09	1.27	2.81	0.42	1.26	0.01	533.25	0.00	0.08	558
Total Travel Distance		20	78	108.4	8,455										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties						**0.5**	**22.5**	**15.5**	**2.5**	**5.8**	**0.2**	**(Not Applicable)**			

Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	**Trips per**	**Trip Length**	**Total Round**	**Criteria Pollutant Emissions (Tons/Yr)**						**GHG Emissions (Metric Tons/Yr)**			
Destination	**Road Type**		**Year**	**Round-Trip**	**Trip Miles**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phillips 66 Santa Maria Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	25,550	98.8	2,524,340	0.04	2.92	1.79	0.29	0.32	0.03	3,079.27	0.00	0.48	3,224
Travel Within Santa Barbara County - Collector road	Collector	20	25,550	8	204,400	0.00	0.24	0.29	0.04	0.03	0.00	249.42	0.00	0.04	261.1
Travel Within Santa Barbara County - Local Road	Local	20	25,550	1.6	40,880	0.00	0.05	0.46	0.07	0.01	0.00	49.95	0.00	0.01	52.3
Total Travel Distance		20	25,550	108.4	2,769,620	0.04	3.21	2.53	0.41	0.35	0.04	3,379	0	1	3,537

Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)					**(Not Applicable)**				**3,536.9**
Significance Threshold:					(Not Applicable)				
SB County Planning									1,000
SBC APCD									10,000
Significant? (SBC P&D or SBC APCD)					**(Not Applicable)**				**Yes**

			Truck Capacity (bbl/truck)	**Crude Transported (bbl/year)**
Potential Maximum Volume Crude Transported to Markets:			160	4,088,000

Trucking to Santa Maria Pump Station Only Alternative
Table B-29 Mobile Source to Pentland (34 trucks per day)

Daily Emissions - Scenario 2															
		Number of Vehicles	**Trips per Day**	**Trip Length Round-Trip**	**Round Trip Miles/Day**	**Criteria Pollutant Emissions (Pounds/Day)**						**GHG Emissions (Pounds/Day)**			
Destination	**Road Type**					**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	10	34	108.8	3,699	0.15	9.05	5.23	0.86	1.54	0.09	10,047	0.01	1.58	10,517
Travel Within Santa Barbara County - Collector Road	Collector	10	34	7.4	252	0.05	1.07	0.70	0.11	0.68	0.01	775	0.00	0.12	812
Travel Within Santa Barbara County - Local Road	Local	10	34	1.6	54	0.04	0.62	1.23	0.19	0.63	0.00	245	0.00	0.04	257
Travel Outside Santa Barbara County - Major road	Major	10	34	161.4	5,488	0.20	13.19	15.33	2.42	1.99	0.14	14,856	0.01	2.34	15,552
Travel Outside Santa Barbara County - Local Road	Local	10	34	0.8	27	0.04	0.55	0.61	0.09	0.62	0.00	172	0.00	0.03	180
Total Travel Distance		10	34	280	9,520										
Criteria Pollutant Impacts - Total Travel Within SBC/SLO/Kern Counties (Max - Worst Case)						**0.48**	**24.48**	**23.11**	**3.67**	**5.45**	**0.25**	**(Not Applicable)**			
Significance Thresholds:															
SB County Planning						25	25	80	N/A	N/A	N/A	(Not Applicable)			
SBC APCD						25	25	N/A	N/A	N/A	N/A				
Significant?						**No**	**No**	**No**	**N/A**	**N/A**	**N/A**	**(Not Applicable)**			

Annual Emissions															
		Number of Vehicles	**Trips per Year**	**Trip Length Round-Trip**	**Total Round Trip Miles**	**Criteria Pollutant Emissions (Tons)**						**GHG Emissions (Metric Tons)**			
Destination						**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_2**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Plains Pentland Truck Rack:															
Travel Within Santa Barbara County - Freeway	Freeway	20	1,360	108.8	147,968	0.00	0.17	0.10	0.02	0.02	0.00	180.58	0.00	0.03	189.0
Travel Within Santa Barbara County - Local Road	Collector	20	1,360	7.4	10,064	0.00	0.01	0.01	0.00	0.00	0.00	12.37	0.00	0.00	12.9
Travel Within Santa Barbara County - Collector road	Local	20	1,360	1.6	2,176	0.00	0.00	0.02	0.00	0.00	0.00	2.74	0.00	0.00	2.9
Travel Outside Santa Barbara County - Major road	Major	20	1,360	161.4	219,504	0.00	0.25	0.31	0.05	0.03	0.00	267.84	0.00	0.04	280.4
Travel Outside Santa Barbara County - Local Road	Local	20	1,360	0.8	1,088	0.00	0.00	0.01	0.00	0.00	0.00	1.42	0.00	0.00	1.5
Total Travel Distance		**20**	**1,360**	**280**	**380,800**	**0.01**	**0.44**	**0.46**	**0.07**	**0.05**	**0.00**	**464.95**	**0.00**	**0.07**	**486.73**
Greenhouse Gase Impacts - Total Travel Distance (Max - Worst Case)						**(Not Applicable)**									**486.7**
Significance Threshold:						(Not Applicable)									
SB County Planning															1,000
SBC APCD															10,000
Significant? (SBC P&D or SBC APCD)						**(Not Applicable)**									**No**

			Truck Capacity (bbl/truck)	**Crude Transported (bbl/year)**
Potential Maximum Volume Crude Transported to Markets:			160	217,600

Truck Use on the Highways Cancer Risk Assessment

In order to satisfy the CEQA requirements for full disclosure, the EIR has included a screening analysis to address the potential for elevated cancer risks along the truck routes that would be used by the crude oil trucks in the project. The screening analysis is meant to estimate the cancer risks from truck travel along highways and follows the CAPCOA Guidance document on Health Risk Assessment for Proposed Land Use Documents (CAPCOA 2009). The guidance document related to screening allows for the use of screening tools, such as SCREEN3 or various spreadsheets.

The screening approach used in this analysis utilizes the AERMOD modeling program with 5 years of meteorological data from the Santa Maria area to estimate the average exposure to DPM along the roadways from the trucks associated with the project. The screening approach then utilizes the unit risk factor for DPM as detailed in OEHHA 2000 as a simple screening approach to estimating the cancer risks. The unit risk factor involves multiplying the long-term exposure concentration by the unit risk factor to arrive at the cancer risk per million. The unit risk factor is calculated as follows:

Item	Value
Breathing rate, L/kg-day	393
Inhale absorb rate factor	1
Exposure frequency, days/year	350
Exposure duration, years	70
Averaging time, days	25,550
Slope Factor for Diesel	1.1
Cancer risk x ug/m3	414.5

OEHHA 2000, Air Toxics Hot Spots Program Risk Assessment Guidelines Part IV Technical Support Document for Exposure Assessment and Stochastic Analysis, September 2000

The unit risk factor uses the 95% confidence level for the simulated lifetime as detailed by OEHHA 2000 table 3.21 in order to be conservative on the cancer risk levels. Although OEHHA has recently updated their cancer risk approach as incorporated into the HARP2 model, this approach in using the cancer unit risk factor allows for a screening of the potential cancer risks.

The AERMOD program was used to estimate the DPM concentrations at different distances from the high using a 50m grid with a 3000 meter line source configured with a width equal to the roadway lane width, following the guidance in EPA 2015 (*EPA Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas, Appendix J*) for release height and the initial vertical dimensions for trucks. The attachments shows the AERMOD input values. AERMOD was run for a location in Santa Maria and with flat terrain as a setup that would allow for application to a range of roadways.

Cancer risk curves as a function of the truck speed and the distance from the roadway were then generated based on the emission factors for a model year 2017 truck (as per the project proposal) at different speeds as generated from EMFAC2017. The trips are based on the project 70 round trips per day. The cancer risk as a function of distance is based on the DPM concentration at the midpoint of the 3000 meter line source in combination with the unit risk factor.

```
**AERMOD INPUT FILE CREATED BY HARP VERSION 17320
**DATE CREATED: 12/7/2018 2:25:48 PM
**
CO STARTING
   TITLEONE  Roadway Calcs
   TITLETWO
   MODELOPT BETA CONC FLAT LOWWIND1
   AVERTIME 1 PERIOD
   POLLUTID OTHER
   RUNORNOT RUN
   ERRORFIL "C:\HARP2\Projects\Roadway\ROADWAY\ROADWAY_AERMOD.ERR"
   LOW_WIND 1 1
CO FINISHED
**
**SOURCES
SO STARTING
**SOURCES LOCATIONS
   LOCATION 1 LINE  720000  3879750  720000  3882750  0
**SOURCES PARAMETERS
   SRCPARAM 1 0.00009 3.4 3.7 3.2
   SRCGROUP 1 1
SO FINISHED
**
**RECEPTORS
RE STARTING
**GRID RECEPTORS
   GRIDCART 1 STA
                    XYINC 718050 40 100 3879350 40 100
   GRIDCART 1 END
**
RE FINISHED
**
**MET PATHWAY
ME STARTING
ME SURFFILE "C:\HARP2\MET\SM_Airport.SFC"
ME PROFFILE "C:\HARP2\MET\SM_Airport.PFL"
ME SURFDATA 23273 2010
ME UAIRDATA 93214 2010
ME SITEDATA 0 2010
ME PROFBASE 79.6
ME FINISHED
**
**OUTPUT PATHWAY
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   PLOTFILE 1 1 1ST "C:\HARP2\Projects\Roadway\ROADWAY\plt\MAX1HR1.PLT" 31
   PLOTFILE PERIOD 1 "C:\HARP2\Projects\Roadway\ROADWAY\plt\PERIOD1.PLT" 32
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            6 Warning Message(s)
 A Total of            0 Informational Message(s)
```

```
   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
CO W200       6       TITLES: Missing Parameter(s). No Options Specified For         TITLETWO
CO W121       7       MODOPT: LowWind1 Beta Option specified on MODELOPT Keyword   Non-DFAULT
CO W112      12      LOW_WND: User-specified minimum Sigma-V on LOW_WIND Keyword       1.0000
CO W113      12      LOW_WND: User-specified minimum WindSpeed on LOW_WIND Keywd       1.0000
SO W390      20        LPARM: Aspect ratio (L/W) of LINE source greater than 100            1
ME W186      41       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50

***********************************
*** SETUP Finishes Successfully ***
***********************************

• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                ***        14:26:04
                                                                                                                PAGE   1
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                                           ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Assumes Receptors on FLAT Terrain.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

**Other Options Specified:
        LOWWIND1 - Use LowWind1 BETA option
                   with user-specified parameters
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      1 Source(s);       1 Source Group(s); and    1600 Receptor(s)
```

```
               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      1 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    79.60 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Detailed Error/Message File:   C:\HARP2\Projects\Roadway\ROADWAY\ROADWAY_AERMOD.ERR
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                       ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
                                                                                                                      PAGE   2
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods


                                                 *** LINE SOURCE DATA ***

              NUMBER EMISSION RATE     FIRST COORD        SECOND COORD     BASE    RELEASE    WIDTH    INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC        X       Y           X       Y      ELEV.    HEIGHT    OF LINE    SZ     SOURCE SCALAR VARY
    ID         CATS.   /METER**2)   (METERS) (METERS)   (METERS) (METERS) (METERS) (METERS)  (METERS) (METERS)             BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

1                0   0.90000E-04  720000.0 3879750.0  720000.0 3882750.0    79.6     3.40      3.70     3.20     NO
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                       ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
                                                                                                                      PAGE   3
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods


                                          *** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID                                              SOURCE IDs
-----------                                              ----------


 1          1           ,
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                       ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
```

```
                                                                                                                                   PAGE   4
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                                               *** GRIDDED RECEPTOR NETWORK SUMMARY ***

                                         *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                                 *** X-COORDINATES OF GRID ***
                                                           (METERS)

       718050.0,  718150.0,  718250.0,  718350.0,  718450.0,  718550.0,  718650.0,  718750.0,  718850.0,  718950.0,
       719050.0,  719150.0,  719250.0,  719350.0,  719450.0,  719550.0,  719650.0,  719750.0,  719850.0,  719950.0,
       720050.0,  720150.0,  720250.0,  720350.0,  720450.0,  720550.0,  720650.0,  720750.0,  720850.0,  720950.0,
       721050.0,  721150.0,  721250.0,  721350.0,  721450.0,  721550.0,  721650.0,  721750.0,  721850.0,  721950.0,


                                                 *** Y-COORDINATES OF GRID ***
                                                           (METERS)

      3879350.0, 3879450.0, 3879550.0, 3879650.0, 3879750.0, 3879850.0, 3879950.0, 3880050.0, 3880150.0, 3880250.0,
      3880350.0, 3880450.0, 3880550.0, 3880650.0, 3880750.0, 3880850.0, 3880950.0, 3881050.0, 3881150.0, 3881250.0,
      3881350.0, 3881450.0, 3881550.0, 3881650.0, 3881750.0, 3881850.0, 3881950.0, 3882050.0, 3882150.0, 3882250.0,
      3882350.0, 3882450.0, 3882550.0, 3882650.0, 3882750.0, 3882850.0, 3882950.0, 3883050.0, 3883150.0, 3883250.0,

• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                          ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                         ***        14:26:04
                                                                                                                          PAGE   5
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                                                   *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                     (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                         *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                                   (METERS/SEC)

                                                      1.54,   3.09,   5.14,   8.23,  10.80,
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                          ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                         ***        14:26:04
                                                                                                                          PAGE   6
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                                           *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   C:\HARP2\MET\SM_Airport.SFC                                                      Met Version:  14134
  Profile file:   C:\HARP2\MET\SM_Airport.PFL
```

```
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23273                Upper air station no.:    93214
                Name: UNKNOWN                                 Name: UNKNOWN
                Year:   2010                                  Year:   2010

First 24 hours of scalar data
YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
10 01 01   1 01 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.05   0.94   1.00    0.00    0.   10.0  278.8    2.0
10 01 01   1 02   -4.6  0.066 -9.000 -9.000 -999.   41.      5.7  0.05   0.94   1.00    1.76  178.   10.0  278.1    2.0
10 01 01   1 03   -3.9  0.061 -9.000 -9.000 -999.   36.      5.3  0.05   0.94   1.00    1.60  323.   10.0  278.8    2.0
10 01 01   1 04   -5.5  0.073 -9.000 -9.000 -999.   47.      6.4  0.06   0.94   1.00    1.89   99.   10.0  278.8    2.0
10 01 01   1 05   -6.2  0.077 -9.000 -9.000 -999.   51.      6.6  0.05   0.94   1.00    2.06  154.   10.0  279.2    2.0
10 01 01   1 06   -3.2  0.056 -9.000 -9.000 -999.   32.      4.9  0.06   0.94   1.00    1.45  100.   10.0  279.2    2.0
10 01 01   1 07   -3.9  0.062 -9.000 -9.000 -999.   37.      5.4  0.06   0.94   1.00    1.59  133.   10.0  278.8    2.0
10 01 01   1 08   -2.3  0.052 -9.000 -9.000 -999.   29.      5.6  0.06   0.94   0.64    1.35  124.   10.0  279.9    2.0
10 01 01   1 09    7.7  0.096  0.196  0.019   35.   72.    -10.5  0.05   0.94   0.36    1.03  171.   10.0  282.5    2.0
10 01 01   1 10   44.3  0.196  0.481  0.016   91.  209.    -15.5  0.06   0.94   0.26    2.06   69.   10.0  283.8    2.0
10 01 01   1 11   47.2  0.125  0.565  0.017  138.  107.     -3.7  0.06   0.94   0.23    1.11  136.   10.0  285.4    2.0
10 01 01   1 12   56.3  0.159  0.663  0.017  188.  152.     -6.5  0.02   0.94   0.22    1.89  247.   10.0  286.4    2.0
10 01 01   1 13   57.2  0.240  0.711  0.012  227.  282.    -21.9  0.05   0.94   0.22    2.71  323.   10.0  287.0    2.0
10 01 01   1 14   22.4  0.184  0.531  0.015  241.  190.    -25.0  0.05   0.94   0.22    2.10  302.   10.0  287.5    2.0
10 01 01   1 15   34.9  0.125  0.632  0.014  261.  107.     -5.0  0.05   0.94   0.25    1.19  329.   10.0  287.5    2.0
10 01 01   1 16   20.6  0.345  0.537  0.009  272.  485.   -179.7  0.05   0.94   0.33    4.38  304.   10.0  287.5    2.0
10 01 01   1 17   -5.2  0.080 -9.000 -9.000 -999.  186.      8.9  0.05   0.94   0.56    2.11  303.   10.0  285.9    2.0
10 01 01   1 18   -9.2  0.095 -9.000 -9.000 -999.   73.      8.3  0.05   0.94   1.00    2.49  305.   10.0  284.9    2.0
10 01 01   1 19  -11.5  0.104 -9.000 -9.000 -999.   81.      8.9  0.04   0.94   1.00    2.88  294.   10.0  284.2    2.0
10 01 01   1 20   -6.9  0.082 -9.000 -9.000 -999.   56.      7.1  0.05   0.94   1.00    2.15  321.   10.0  283.8    2.0
10 01 01   1 21  -10.3  0.100 -9.000 -9.000 -999.   76.      8.8  0.05   0.94   1.00    2.61  334.   10.0  283.1    2.0
10 01 01   1 22   -5.7  0.073 -9.000 -9.000 -999.   48.      6.3  0.04   0.94   1.00    2.03  294.   10.0  283.8    2.0
10 01 01   1 23   -2.7  0.050 -9.000 -9.000 -999.   27.      4.2  0.04   0.94   1.00    1.38  272.   10.0  280.9    2.0
10 01 01   1 24   -8.6  0.091 -9.000 -9.000 -999.   66.      8.0  0.05   0.94   1.00    2.40  300.   10.0  283.1    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
10 01 01 01   10.0 1 -999.  -99.00   278.8   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                ***        14:26:04
                                                                                                                PAGE   7
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                             *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: 1        ***
                                 INCLUDING SOURCE(S):     1            ,

                                  *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

   Y-COORD  |                                        X-COORD (METERS)
  (METERS)  |     718050.00    718150.00    718250.00    718350.00    718450.00    718550.00    718650.00    718750.00    718850.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.00 |       2.21550      2.34521      2.48348      2.63303      2.79268      2.96344      3.14672      3.34231      3.54877
 3883150.00 |       2.23842      2.37510      2.52217      2.68065      2.85300      3.03840      3.23817      3.45520      3.68936
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 3883050.00 |       2.25386      2.39639      2.55067      2.71787      2.90095      3.10001      3.31685      3.55341      3.81238
 3882950.00 |       2.26124      2.40892      2.56927      2.74394      2.93552      3.14613      3.37699      3.63137      3.91271
 3882850.00 |       2.26093      2.41235      2.57784      2.75895      2.95704      3.17659      3.41914      3.68771      3.98686
 3882750.00 |       2.25251      2.40713      2.57643      2.76251      2.96678      3.19270      3.44373      3.72308      4.03613
 3882650.00 |       2.23692      2.39397      2.56629      2.75587      2.96436      3.19561      3.45279      3.74037      4.06379
 3882550.00 |       2.21462      2.37312      2.54742      2.73973      2.95146      3.18664      3.44852      3.74190      4.07286
 3882450.00 |       2.18559      2.34531      2.52084      2.71450      2.92857      3.16648      3.43195      3.72913      4.06587
 3882350.00 |       2.15088      2.31047      2.48714      2.68140      2.89694      3.13652      3.40414      3.70459      4.04432
 3882250.00 |       2.11031      2.26997      2.44627      2.64118      2.85713      3.09768      3.36696      3.66959      4.01182
 3882150.00 |       2.06368      2.22321      2.39924      2.59368      2.80980      3.05110      3.32117      3.62482      3.96869
 3882050.00 |       2.01267      2.17138      2.34597      2.54035      2.75612      2.99726      3.26725      3.57128      3.91561
 3881950.00 |       1.95727      2.11366      2.28742      2.48065      2.69570      2.93549      3.20518      3.50921      3.85351
 3881850.00 |       1.89644      2.05157      2.22352      2.41412      2.62713      2.86575      3.13416      3.43811      3.78295
 3881750.00 |       1.83227      1.98382      2.15291      2.34196      2.55302      2.78982      3.05644      3.35861      3.70328
 3881650.00 |       1.76301      1.91203      2.07772      2.26284      2.47109      2.70510      2.97007      3.27124      3.61462
 3881550.00 |       1.69083      1.83487      1.99696      2.17882      2.38361      2.61482      2.87672      3.17496      3.51746
 3881450.00 |       1.61502      1.75431      1.91122      2.08854      2.28915      2.51627      2.77470      3.07036      3.41032
 3881350.00 |       1.53611      1.67032      1.82147      1.99324      2.18849      2.41078      2.66494      2.95725      3.29309
 3881250.00 |       1.45532      1.58354      1.72846      1.89384      2.08262      2.29874      2.54690      2.83409      3.16488
 3881150.00 |       1.37295      1.49454      1.63234      1.79039      1.97171      2.18038      2.42121      2.70095      3.02577
 3881050.00 |       1.28988      1.40423      1.53433      1.68422      1.85659      2.05618      2.28798      2.55810      2.87546
 3880950.00 |       1.20672      1.31312      1.43513      1.57562      1.73776      1.92658      2.14756      2.40682      2.71239
 3880850.00 |       1.12380      1.22228      1.33539      1.46565      1.61713      1.79396      2.00175      2.24713      2.53936
 3880750.00 |       1.04204      1.13236      1.23594      1.35592      1.49515      1.65877      1.85169      2.08099      2.35583
 3880650.00 |       0.96208      1.04396      1.13811      1.24698      1.37401      1.52301      1.69953      1.91053      2.16482
 3880550.00 |       0.88457      0.95811      1.04258      1.14026      1.25437      1.38827      1.54745      1.73814      1.96916
 3880450.00 |       0.81016      0.87548      0.95041      1.03699      1.13800      1.25658      1.39762      1.56672      1.77241
 3880350.00 |       0.73948      0.79686      0.86256      0.93826      1.02629      1.12971      1.25217      1.39934      1.57829
 3880250.00 |       0.67346      0.72332      0.78016      0.84547      0.92104      1.00947      1.11410      1.23917      1.39124
 3880150.00 |       0.61267      0.65551      0.70421      0.75975      0.82377      0.89823      0.98567      1.08988      1.21560
 3880050.00 |       0.55754      0.59426      0.63553      0.68230      0.73578      0.79752      0.86950      0.95442      1.05598
 3879950.00 |       0.50843      0.53963      0.57454      0.61370      0.65815      0.70892      0.76747      0.83563      0.91604
 3879850.00 |       0.46499      0.49164      0.52114      0.55404      0.59101      0.63277      0.68034      0.73486      0.79789
 3879750.00 |       0.42688      0.44975      0.47489      0.50273      0.53371      0.56828      0.60726      0.65126      0.70122
 3879650.00 |       0.39358      0.41342      0.43500      0.45885      0.48510      0.51427      0.54676      0.58292      0.62329
 3879550.00 |       0.36442      0.38183      0.40068      0.42137      0.44408      0.46913      0.49673      0.52718      0.56079
 3879450.00 |       0.33906      0.35449      0.37119      0.38946      0.40947      0.43137      0.45544      0.48171      0.51050
 3879350.00 |       0.31699      0.33083      0.34587      0.36228      0.38025      0.39962      0.42089      0.44408      0.46920
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                      ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
                                                                                                                      PAGE   8
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                          *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: 1        ***
                              INCLUDING SOURCE(S):     1           ,

                               *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                    ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

  Y-COORD   |                                        X-COORD (METERS)
  (METERS)  |     718950.00    719050.00    719150.00    719250.00    719350.00    719450.00    719550.00    719650.00    719750.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.00 |       3.76487      3.99084      4.21781      4.43871      4.63823      4.79239      4.86621      4.81062      4.57367
 3883150.00 |       3.94152      4.20987      4.49204      4.78703      5.07892      5.34982      5.55619      5.62977      5.47294
 3883050.00 |       4.09661      4.40668      4.74647      5.11253      5.50596      5.91422      6.31077      6.60920      6.67078
 3882950.00 |       4.22468      4.57230      4.96116      5.39745      5.88870      6.43752      7.04605      7.67851      8.19423
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 3882850.00 |      4.32211      4.70037      5.13034      5.62278      6.19467      6.86692      7.66833      8.64779      9.81177
 3882750.00 |      4.38968      4.79145      5.25103      5.78266      6.41042      7.16950      8.10589      9.29890     10.96729
 3882650.00 |      4.43036      4.84721      5.32790      5.88623      6.54809      7.35124      8.35681      9.64616     11.48436
 3882550.00 |      4.44773      4.87511      5.36914      5.94391      6.62603      7.45344      8.48918      9.81650     11.70001
 3882450.00 |      4.44666      4.88081      5.38394      5.97050      6.66393      7.50801      8.56108      9.91289     11.83281
 3882350.00 |      4.43000      4.87063      5.37991      5.97497      6.67747      7.53230      8.59827      9.97100     11.92099
 3882250.00 |      4.40108      4.84517      5.35927      5.96080      6.67210      7.53516      8.61492     10.01603     11.98159
 3882150.00 |      4.35993      4.80753      5.32569      5.93243      6.65303      7.52462      8.61761     10.03987     12.01310
 3882050.00 |      4.30891      4.75819      5.28075      5.89272      6.62102      7.50174      8.60805     10.04376     12.02717
 3881950.00 |      4.24782      4.69944      5.22575      5.84307      6.57929      7.47111      8.58459     10.03219     12.02234
 3881850.00 |      4.17690      4.63185      5.16171      5.78400      6.52584      7.42633      8.54971     10.00792     11.99729
 3881750.00 |      4.09786      4.55504      5.08744      5.71397      6.46150      7.37070      8.50361      9.96928     11.95279
 3881650.00 |      4.00992      4.46669      5.00096      5.63207      6.38650      7.30419      8.44345      9.91829     11.91055
 3881550.00 |      3.91102      4.36925      4.90541      5.53859      6.29811      7.22265      8.37010      9.85333     11.85716
 3881450.00 |      3.80289      4.26000      4.79637      5.43306      6.19537      7.12610      8.28269      9.77256     11.80062
 3881350.00 |      3.68350      4.13869      4.67492      5.31176      6.07922      7.01463      8.17933      9.67741     11.71939
 3881250.00 |      3.55163      4.00383      4.53823      5.17480      5.94389      6.88418      8.05842      9.56442     11.61909
 3881150.00 |      3.40671      3.85484      4.38552      5.02157      5.79006      6.73486      7.91501      9.43221     11.50038
 3881050.00 |      3.24828      3.68914      4.21525      4.84757      5.61503      6.56190      7.74827      9.27681     11.35849
 3880950.00 |      3.07488      3.50661      4.02481      4.65043      5.41533      6.36175      7.55407      9.09858     11.19430
 3880850.00 |      2.88756      3.30653      3.81294      4.42956      5.18802      6.13089      7.32695      8.88393     10.99786
 3880750.00 |      2.68681      3.08845      3.57814      4.18059      4.92739      5.86444      7.06055      8.62782     10.76448
 3880650.00 |      2.47371      2.85248      3.32016      3.90157      4.63056      5.55523      6.74755      8.32293     10.48633
 3880550.00 |      2.25212      2.60217      3.03936      3.59086      4.29275      5.19559      6.37656      7.95512     10.14616
 3880450.00 |      2.02564      2.34132      2.74013      3.25059      3.91150      4.77948      5.93526      7.50714      9.72309
 3880350.00 |      1.79925      2.07611      2.42875      2.88598      3.49015      4.30119      5.40950      6.95620      9.18459
 3880250.00 |      1.57867      1.81350      2.11413      2.50743      3.03555      3.76198      4.78876      6.27412      8.48561
 3880150.00 |      1.36981      1.56228      1.80801      2.13007      2.56602      3.17892      4.07348      5.43095      7.56912
 3880050.00 |      1.17904      1.33079      1.52275      1.77209      2.10854      2.58378      3.29425      4.42442      6.34864
 3879950.00 |      1.01167      1.12761      1.27110      1.45361      1.69415      2.02791      2.52376      3.32809      4.80123
 3879850.00 |      0.87152      0.95843      1.06261      1.19032      1.35175      1.56565      1.86533      2.32619      3.15300
 3879750.00 |      0.75817      0.82368      0.89960      0.98859      1.09561      1.22836      1.39736      1.62544      1.96574
 3879650.00 |      0.66848      0.71929      0.77638      0.84160      0.91679      1.00501      1.11076      1.24234      1.42126
 3879550.00 |      0.59788      0.63890      0.68440      0.73536      0.79249      0.85785      0.93583      1.03312      1.16297
 3879450.00 |      0.54190      0.57625      0.61412      0.65549      0.70226      0.75585      0.81970      0.89700      0.99185
 3879350.00 |      0.49660      0.52626      0.55827      0.59438      0.63428      0.68035      0.73358      0.79369      0.85945
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                    ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                   ***        14:26:04
                                                                                                                    PAGE   9
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: 1        ***
                                  INCLUDING SOURCE(S):     1           ,

                                   *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3                         **

   Y-COORD  |                                                X-COORD (METERS)
   (METERS) |     719850.00    719950.00    720050.00    720150.00    720250.00    720350.00    720450.00    720550.00    720650.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.00 |      4.14541      3.60302      3.09287      2.70678      2.42576      2.20452      2.01911      1.86353      1.72872
 3883150.00 |      4.99702      4.27517      3.56433      3.05054      2.69338      2.41957      2.19848      2.01494      1.86107
 3883050.00 |      6.24242      5.26873      4.20123      3.47887      3.01589      2.67349      2.40866      2.19642      2.01922
 3882950.00 |      8.15943      6.92166      5.11514      4.03836      3.42100      2.99125      2.67448      2.42281      2.21549
 3882850.00 |     10.99304     10.37838      6.53057      4.85554      3.98518      3.43640      3.03492      2.71786      2.46012
 3882750.00 |     13.46114     18.15290     10.55676      6.49816      4.99428      4.12859      3.54491      3.11124      2.77188
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   3882650.00 |      14.28838     20.03633     21.09330     10.14694      6.76276      5.18654      4.25885      3.62987      3.16911
   3882550.00 |      14.60530     20.60394     22.96185     12.75129      8.65486      6.45346      5.13265      4.26254      3.64599
   3882450.00 |      14.79096     20.94801     23.60318     13.87106      9.90574      7.54179      5.99356      4.92969      4.16554
   3882350.00 |      14.91658     21.15049     23.97979     14.41939     10.61637      8.29917      6.69330      5.53175      4.66832
   3882250.00 |      14.99890     21.26726     24.18138     14.72655     11.03651      8.79128      7.20419      6.01788      5.10678
   3882150.00 |      15.04845     21.46267     24.34540     14.91697     11.30071      9.11280      7.56271      6.38651      5.46345
   3882050.00 |      15.07498     21.64456     24.44154     15.04250     11.47156      9.32750      7.81186      6.65754      5.74124
   3881950.00 |      15.08578     21.70184     24.53655     15.12490     11.58980      9.47471      7.98723      6.85442      5.95196
   3881850.00 |      15.07872     21.93453     24.60532     15.17214     11.66167      9.57655      8.10903      6.99583      6.10822
   3881750.00 |      15.05717     22.11893     24.60760     15.18802     11.70973      9.64439      8.19380      7.09689      6.22320
   3881650.00 |      15.02542     22.26955     24.61544     15.18992     11.73811      9.68723      8.25121      7.16730      6.30556
   3881550.00 |      14.97856     22.41818     24.63988     15.19640     11.74659      9.70875      8.28648      7.21322      6.36227
   3881450.00 |      14.92189     22.19956     24.63692     15.18003     11.74050      9.71167      8.30353      7.24006      6.39802
   3881350.00 |      14.85353     21.68746     24.60931     15.15024     11.71985      9.70151      8.30450      7.25051      6.41731
   3881250.00 |      14.76247     21.54516     24.58991     15.09691     11.68507      9.67924      8.29165      7.24566      6.42135
   3881150.00 |      14.66386     21.41761     24.49151     15.03409     11.63577      9.64355      8.26377      7.22939      6.41343
   3881050.00 |      14.52584     21.30754     24.54948     14.96043     11.56824      9.59473      8.22443      7.19969      6.39308
   3880950.00 |      14.33578     21.17323     24.32061     14.87020     11.49339      9.53349      8.17368      7.15923      6.36295
   3880850.00 |      14.16896     20.99390     24.09373     14.76780     11.40423      9.45832      8.10963      7.10701      6.32258
   3880750.00 |      13.98875     20.80945     23.83141     14.64527     11.31421      9.36813      8.03355      7.04267      6.27117
   3880650.00 |      13.74970     20.61080     23.63713     14.50358     11.19959      9.26292      7.94336      6.96820      6.20950
   3880550.00 |      13.45106     20.29333     23.42972     14.33623     11.05121      9.13995      7.84062      6.88114      6.13651
   3880450.00 |      13.07915     19.98070     23.19780     14.13625     10.88558      8.99614      7.72120      6.77998      6.04970
   3880350.00 |      12.60382     19.59461     22.87010     13.90102     10.68350      8.82924      7.58398      6.66413      5.95032
   3880250.00 |      11.97427     19.09382     22.44461     13.61596     10.45415      8.63326      7.42576      6.53033      5.83611
   3880150.00 |      11.10219     18.31069     21.93749     13.26005     10.17347      8.41201      7.24143      6.37519      5.70195
   3880050.00 |       9.83004     17.34012     21.32323     12.81769      9.83772      8.14734      7.02164      6.18754      5.53896
   3879950.00 |       7.88823     15.68054     20.39669     12.24280      9.42177      7.81671      6.74473      5.95266      5.33861
   3879850.00 |       5.07384     12.15935     18.88363     11.43955      8.83286      7.35552      6.37296      5.64787      5.08486
   3879750.00 |       2.55774      4.18402     14.76601      9.75670      7.80866      6.64806      5.84782      5.24250      4.76168
   3879650.00 |       1.69861      2.23996      4.27164      6.07172      6.01821      5.57567      5.11537      4.70745      4.35230
   3879550.00 |       1.33857      1.64362      2.39040      3.43184      4.10166      4.28867      4.22415      4.05757      3.85975
   3879450.00 |       1.10564      1.30014      1.71406      2.28499      2.81988      3.17713      3.34353      3.37276      3.32224
   3879350.00 |       0.93677      1.07618      1.34623      1.70873      2.07696      2.39422      2.61962      2.74856      2.79938
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                          ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                         ***       14:26:04
                                                                                                                         PAGE  10
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                              *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: 1        ***
                                  INCLUDING SOURCE(S):     1           ,

                                   *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3                         **

    Y-COORD   |                                              X-COORD (METERS)
   (METERS)   |     720750.00    720850.00    720950.00    721050.00    721150.00    721250.00    721350.00    721450.00    721550.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

   3883250.00 |       1.61128      1.50766      1.41583      1.33319      1.25832      1.18980      1.12674      1.06865      1.01528
   3883150.00 |       1.72901      1.61320      1.51149      1.41970      1.33643      1.26012      1.19063      1.12714      1.06889
   3883050.00 |       1.86866      1.73792      1.62202      1.51869      1.42479      1.33981      1.26239      1.19193      1.12795
   3882950.00 |       2.03877      1.88546      1.75096      1.63187      1.52501      1.42906      1.34229      1.26375      1.19276
   3882850.00 |       2.24472      2.06047      1.90183      1.76234      1.63925      1.52954      1.43130      1.34339      1.26440
   3882750.00 |       2.49842      2.27194      2.08006      1.91447      1.77018      1.64357      1.53183      1.43247      1.34415
   3882650.00 |       2.81208      2.52648      2.29022      2.09128      1.92077      1.77351      1.64493      1.53231      1.43288
   3882550.00 |       3.18461      2.82437      2.53349      2.29391      2.09211      1.92013      1.77206      1.64367      1.53132
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 3882450.00 |      3.59599     3.15573     2.80506     2.51959     2.28231     2.08230     1.91230     1.76603     1.63890
 3882350.00 |      4.01206     3.50002     3.09190     2.76052     2.48639     2.25711     2.06353     1.89809     1.75511
 3882250.00 |      4.39616     3.83148     3.37631     3.00463     2.69671     2.43952     2.22230     2.03723     1.87783
 3882150.00 |      4.72663     4.13027     3.64245     3.23976     2.90380     2.62226     2.38363     2.17998     2.00447
 3882050.00 |      4.99747     4.38580     3.87884     3.45557     3.09953     2.79850     2.54186     2.32191     2.13164
 3881950.00 |      5.21186     4.59699     4.08130     3.64609     3.27689     2.96197     2.69194     2.45881     2.25609
 3881850.00 |      5.37846     4.76715     4.24959     3.80925     3.43313     3.10945     2.82969     2.58661     2.37398
 3881750.00 |      5.50440     4.90018     4.38654     3.94615     3.56734     3.23888     2.95323     2.70334     2.48324
 3881650.00 |      5.59763     5.00177     4.49440     4.05780     3.67997     3.35035     3.06151     2.80719     2.58205
 3881550.00 |      5.66391     5.07812     4.57836     4.14741     3.77240     3.44396     3.15414     2.89753     2.66938
 3881450.00 |      5.70995     5.13302     4.64166     4.21729     3.84671     3.52053     3.23182     2.97503     2.74557
 3881350.00 |      5.73786     5.17013     4.68698     4.26952     3.90416     3.58207     3.29515     3.03944     2.81034
 3881250.00 |      5.75090     5.19187     4.71695     4.30668     3.94674     3.62897     3.34547     3.09196     2.86445
 3881150.00 |      5.75155     5.20127     4.73390     4.33005     3.97597     3.66302     3.38339     3.13349     2.90840
 3881050.00 |      5.74072     5.19831     4.73880     4.34159     3.99338     3.68530     3.41087     3.16474     2.94316
 3880950.00 |      5.71929     5.18546     4.73266     4.34158     3.99998     3.69755     3.42830     3.18688     2.96899
 3880850.00 |      5.68853     5.16216     4.71633     4.33224     3.99693     3.70070     3.43681     3.20009     2.98624
 3880750.00 |      5.64726     5.12926     4.69101     4.31371     3.98513     3.69503     3.43714     3.20526     2.99550
 3880650.00 |      5.59567     5.08671     4.65606     4.28660     3.96512     3.68158     3.42899     3.20178     2.99606
 3880550.00 |      5.53356     5.03409     4.61273     4.25178     3.93693     3.65975     3.41253     3.19007     2.98861
 3880450.00 |      5.46055     4.97243     4.56088     4.20789     3.89988     3.62858     3.38673     3.16931     2.97224
 3880350.00 |      5.37614     4.90018     4.49831     4.15336     3.85249     3.58748     3.35150     3.13967     2.94780
 3880250.00 |      5.27804     4.81455     4.42283     4.08692     3.79399     3.53595     3.30677     3.10113     2.91541
 3880150.00 |      5.16104     4.71171     4.33187     4.00630     3.72289     3.47344     3.25217     3.05391     2.87458
 3880050.00 |      5.01867     4.58736     4.22248     3.91038     3.63861     3.39941     3.18738     2.99727     2.82516
 3879950.00 |      4.84516     4.43754     4.09251     3.79713     3.53940     3.31287     3.11149     2.93076     2.76738
 3879850.00 |      4.63204     4.25701     3.93814     3.66374     3.42378     3.21225     3.02365     2.85395     2.70008
 3879750.00 |      4.36817     4.03788     3.75395     3.50697     3.28897     3.09579     2.92231     2.76535     2.62267
 3879650.00 |      4.04319     3.77324     3.53498     3.32261     3.13274     2.96135     2.80593     2.66405     2.53394
 3879550.00 |      3.65785     3.46312     3.28030     3.11038     2.95344     2.80816     2.67380     2.54947     2.43396
 3879450.00 |      3.22922     3.11682     2.99549     2.87307     2.75283     2.63698     2.52666     2.42193     2.32274
 3879350.00 |      2.79531     2.75479     2.69314     2.61813     2.53594     2.45099     2.36622     2.28265     2.20117
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                      ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
                                                                                                                      PAGE  11
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                             *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: 1        ***
                                 INCLUDING SOURCE(S):     1           ,

                                  *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

   Y-COORD  |                                           X-COORD (METERS)
  (METERS)  |    721650.00    721750.00    721850.00    721950.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.00 |      0.96630     0.92089     0.87975     0.84179
 3883150.00 |      1.01546     0.96659     0.92215     0.88109
 3883050.00 |      1.06938     1.01625     0.96796     0.92352
 3882950.00 |      1.12852     1.07049     1.01759     0.96921
 3882850.00 |      1.19347     1.12965     1.07162     1.01873
 3882750.00 |      1.26532     1.19453     1.13055     1.07244
 3882650.00 |      1.34473     1.26600     1.19519     1.13102
 3882550.00 |      1.43215     1.34428     1.26563     1.19457
 3882450.00 |      1.52774     1.42932     1.34183     1.26308
 3882350.00 |      1.63038     1.52076     1.42339     1.33629
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 3882250.00 |       1.73910      1.61742      1.50963      1.41377
 3882150.00 |       1.85176      1.71803      1.59962      1.49451
 3882050.00 |       1.96590      1.82037      1.69181      1.57751
 3881950.00 |       2.07866      1.92244      1.78423      1.66139
 3881850.00 |       2.18702      2.02186      1.87509      1.74446
 3881750.00 |       2.28885      2.11615      1.96257      1.82546
 3881650.00 |       2.38206      2.20418      2.04500      1.90259
 3881550.00 |       2.46619      2.28424      2.12124      1.97498
 3881450.00 |       2.54032      2.35600      2.19069      2.04164
 3881350.00 |       2.60451      2.41943      2.25285      2.10202
 3881250.00 |       2.65942      2.47458      2.30772      2.15610
 3881150.00 |       2.70521      2.52142      2.35520      2.20344
 3881050.00 |       2.74260      2.56057      2.39510      2.24411
 3880950.00 |       2.77154      2.59182      2.42753      2.27751
 3880850.00 |       2.79200      2.61499      2.45272      2.30358
 3880750.00 |       2.80458      2.62989      2.46992      2.32287
 3880650.00 |       2.80857      2.63727      2.47978      2.33479
 3880550.00 |       2.80480      2.63660      2.48225      2.34032
 3880450.00 |       2.79283      2.62871      2.47810      2.33888
 3880350.00 |       2.77327      2.61371      2.46671      2.33120
 3880250.00 |       2.74611      2.59118      2.44879      2.31752
 3880150.00 |       2.71124      2.56187      2.42418      2.29732
 3880050.00 |       2.66869      2.52529      2.39335      2.27113
 3879950.00 |       2.61835      2.48162      2.35566      2.23895
 3879850.00 |       2.55966      2.43042      2.31113      2.20011
 3879750.00 |       2.49183      2.37091      2.25916      2.15492
 3879650.00 |       2.41410      2.30285      2.19936      2.10237
 3879550.00 |       2.32631      2.22585      2.13152      2.04257
 3879450.00 |       2.22863      2.13992      2.05567      1.97581
 3879350.00 |       2.12178      2.04587      1.97265      1.90222
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                  ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                  ***        14:26:04
                                                                                                                  PAGE  12
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                 INCLUDING SOURCE(S):     1           ,

                                  *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

 Y-COORD  |                                                   X-COORD (METERS)
 (METERS) |      718050.00               718150.00               718250.00               718350.00               718450.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

3883250.0 |     57.16215 (13111622)     58.06164 (13111622)     61.30955 (14013106)     64.48137 (14013106)     66.27555 (14013106)
3883150.0 |     57.20106 (13111622)     58.06245 (13111622)     60.03700 (14013106)     63.44199 (14013106)     66.27059 (14013106)
3883050.0 |     56.99614 (13111622)     58.08299 (13111622)     58.71851 (13111622)     62.38882 (14013106)     65.58377 (14013106)
3882950.0 |     56.96691 (13111622)     57.93542 (13111622)     58.66964 (13111622)     60.76362 (14013106)     64.41047 (14013106)
3882850.0 |     56.68910 (13111622)     57.94346 (13111622)     58.56634 (13111622)     59.56179 (13111622)     63.31083 (14013106)
3882750.0 |     56.51169 (13111622)     57.53578 (13111622)     58.56709 (13111622)     59.51057 (13111622)     61.64336 (14013106)
3882650.0 |     56.10573 (13111622)     57.27809 (13111622)     58.65010 (13111622)     59.55722 (13111622)     60.39003 (13111622)
3882550.0 |     54.94332 (13111622)     56.63266 (13111622)     58.01719 (13111622)     59.59577 (13111622)     60.51218 (13111622)
3882450.0 |     53.54897 (13111622)     56.13467 (13111622)     57.80889 (13111622)     59.07697 (13111622)     60.46256 (13111622)
3882350.0 |     51.67252 (13111622)     54.62375 (13111622)     56.97505 (13111622)     58.69793 (13111622)     60.13863 (13111622)
3882250.0 |     50.02763 (13040205)     52.68539 (13111622)     55.84436 (13111622)     57.95295 (13111622)     59.64304 (13111622)
3882150.0 |     49.98650 (13040205)     50.69611 (13040205)     54.10354 (13111622)     57.16035 (13111622)     59.70787 (13111622)
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3882050.0 |     49.55475 (13040205)     50.44430 (13040205)     51.52347 (13111622)     55.51191 (13111622)     58.49235 (13111622)
3881950.0 |     48.93596 (13040205)     50.05813 (13040205)     51.20828 (13040205)     52.86267 (13111622)     56.75477 (13111622)
3881850.0 |     48.52436 (14020201)     49.58102 (13040205)     50.81633 (13040205)     51.80024 (13040205)     54.55880 (13111622)
3881750.0 |     48.52959 (14020201)     49.22653 (14020201)     50.23523 (13040205)     51.37811 (13040205)     52.57662 (13040205)
3881650.0 |     48.23526 (14020201)     48.96228 (14020201)     49.68680 (14020201)     50.57817 (13040205)     52.15197 (13040205)
3881550.0 |     47.86625 (14020201)     48.75541 (14020201)     49.41387 (14020201)     50.24701 (14020201)     51.29427 (13040205)
3881450.0 |     47.18315 (12120507)     48.24902 (14020201)     49.19438 (14020201)     50.09832 (14020201)     50.70217 (14020201)
3881350.0 |     47.30229 (12120507)     47.59906 (12120507)     48.54821 (14020201)     49.68488 (14020201)     50.52192 (14020201)
3881250.0 |     47.16291 (12120507)     47.72516 (12120507)     48.02998 (12120507)     49.02308 (14020201)     50.22845 (14020201)
3881150.0 |     46.89723 (12120507)     47.43303 (12120507)     48.07667 (12120507)     48.38009 (12120507)     49.16283 (14020201)
3881050.0 |     46.04514 (12120507)     47.01836 (12120507)     47.81718 (12120507)     48.34908 (12120507)     48.72710 (12120507)
3880950.0 |     44.92729 (14031422)     45.88643 (12120507)     47.04373 (12120507)     47.98167 (12120507)     48.59936 (12120507)
3880850.0 |     44.71152 (14031422)     45.23602 (14031422)     45.74716 (14031422)     46.86033 (12120507)     48.07193 (12120507)
3880750.0 |     43.84548 (14031422)     44.71138 (14031422)     45.41515 (14031422)     46.01479 (14031422)     47.42202 (14042801)
3880650.0 |     43.41000 (10020206)     43.78969 (10020206)     44.45686 (14031422)     46.24191 (14042801)     48.36416 (14042801)
3880550.0 |     43.28410 (10020206)     43.73982 (10020206)     45.33368 (14042801)     46.93307 (14042801)     49.10443 (10021822)
3880450.0 |     42.85710 (10020206)     44.24461 (14042801)     45.93561 (14042801)     47.65564 (14042801)     50.13749 (10021822)
3880350.0 |     43.12579 (14042801)     45.08505 (14042801)     46.30373 (14042801)     48.82180 (10021822)     50.57141 (10021822)
3880250.0 |     43.88406 (14042801)     45.62204 (14042801)     47.56217 (10021822)     49.52605 (10021822)     52.61100 (13020303)
3880150.0 |     44.46964 (14042801)     46.18367 (10021822)     48.43745 (10021822)     50.01576 (10021822)     55.53041 (13020303)
3880050.0 |     44.99338 (10021822)     47.05146 (10021822)     48.68401 (10021822)     53.16704 (13020303)     57.72915 (13020303)
3879950.0 |     45.84948 (10021822)     47.96346 (10021822)     50.69309 (13020303)     55.43534 (13020303)     59.21416 (13020303)
3879850.0 |     46.35744 (10021822)     48.17186 (10021822)     53.05713 (13020303)     57.11716 (13020303)     60.22567 (13020303)
3879750.0 |     47.11344 (10021822)     50.72942 (13020303)     55.15765 (13020303)     58.69008 (13020303)     61.25230 (13020303)
3879650.0 |     48.92476 (13020303)     53.47991 (13020303)     56.90553 (13020303)     59.52984 (13020303)     61.93447 (13020303)
3879550.0 |     51.27001 (13020303)     55.06744 (13020303)     57.82731 (13020303)     60.16340 (13020303)     61.86318 (13020303)
3879450.0 |     53.08603 (13020303)     56.18872 (13020303)     58.33258 (13020303)     60.48684 (13020303)     62.30219 (13020303)
3879350.0 |     54.44985 (13020303)     56.78840 (13020303)     59.45651 (13020303)     60.81015 (13020303)     62.30879 (13020303)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                    ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                    ***        14:26:04
                                                                                                                     PAGE  13
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                            *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                INCLUDING SOURCE(S):     1           ,

                                 *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                      ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

 Y-COORD  |                                           X-COORD (METERS)
 (METERS) |       718550.00               718650.00               718750.00               718850.00               718950.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

3883250.0 |     68.67957 (14013106)     74.86672 (12121301)     83.93047 (12121301)     91.17948 (12121301)     96.08786 (12121301)
3883150.0 |     68.27254 (14013106)     71.49576 (12121301)     80.69285 (12121301)     89.37682 (12121301)     95.20520 (12121301)
3883050.0 |     67.94909 (14013106)     69.91835 (14013106)     78.24553 (12121301)     86.50495 (12121301)     94.20353 (12121301)
3882950.0 |     67.56796 (14013106)     69.75402 (14013106)     73.93448 (12121301)     84.58307 (12121301)     92.28201 (12121301)
3882850.0 |     66.65780 (14013106)     69.26439 (14013106)     70.78777 (14013106)     81.37560 (12121301)     89.88841 (12121301)
3882750.0 |     65.73655 (14013106)     68.95535 (14013106)     70.97133 (14013106)     77.22605 (12121301)     88.05066 (12121301)
3882650.0 |     64.10547 (14013106)     67.76035 (14013106)     70.70961 (14013106)     72.88123 (12121301)     84.54390 (12121301)
3882550.0 |     62.64615 (14013106)     66.79787 (14013106)     70.08098 (14013106)     72.08701 (14013106)     80.99208 (12121301)
3882450.0 |     61.30472 (13111622)     65.29843 (14013106)     68.85903 (14013106)     72.00062 (14013106)     75.94181 (12121301)
3882350.0 |     61.23025 (13111622)     63.08063 (14013106)     68.09149 (14013106)     70.99427 (14013106)     74.25221 (14013106)
3882250.0 |     61.04033 (13111622)     62.27567 (13111622)     66.05586 (14013106)     70.24177 (14013106)     73.51712 (14013106)
3882150.0 |     60.85528 (13111622)     61.84687 (13111622)     64.00565 (10082323)     68.94945 (14013106)     72.24816 (14013106)
3882050.0 |     60.64081 (13111622)     61.67965 (13111622)     63.04857 (13111622)     67.19791 (14013106)     71.61163 (14013106)
3881950.0 |     59.77267 (13111622)     61.68018 (13111622)     62.63920 (13111622)     64.63746 (10082323)     69.94477 (14013106)
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 3881850.0 |     58.15475 (13111622)     61.06227 (13111622)     62.40750 (13111622)     63.74268 (13111622)     68.19411 (14013106)
 3881750.0 |     55.95858 (13111622)     59.51164 (13111622)     61.90914 (13111622)     63.41985 (13111622)     65.86159 (10082323)
 3881650.0 |     53.28905 (13040205)     57.51909 (13111622)     60.94348 (13111622)     63.14300 (13111622)     64.80019 (13111622)
 3881550.0 |     52.93797 (13040205)     54.06989 (13111622)     59.02704 (13111622)     62.07968 (13111622)     64.03777 (13111622)
 3881450.0 |     51.99546 (13040205)     53.62346 (13040205)     55.99754 (13111622)     60.50155 (13111622)     63.49451 (13111622)
 3881350.0 |     51.21192 (14020201)     52.82321 (13040205)     54.25473 (13040205)     57.62910 (13111622)     62.14951 (13111622)
 3881250.0 |     51.02940 (14020201)     51.67413 (14020201)     53.55360 (13040205)     55.06357 (13040205)     59.43467 (13111622)
 3881150.0 |     50.40442 (14020201)     51.46893 (14020201)     52.14049 (14020201)     54.30770 (13040205)     55.80596 (11020322)
 3881050.0 |     49.41310 (14020201)     50.80687 (14020201)     51.97749 (14020201)     53.98509 (10021822)     56.95890 (10021822)
 3880950.0 |     49.03604 (12120507)     49.92829 (14042801)     52.20337 (10021822)     55.13580 (10021822)     60.70006 (13020303)
 3880850.0 |     48.81151 (12120507)     50.68241 (10021822)     53.47871 (10021822)     57.47123 (13020303)     63.86561 (13020303)
 3880750.0 |     49.29595 (14042801)     52.08495 (10021822)     54.71482 (10021822)     60.64024 (13020303)     65.70189 (13020303)
 3880650.0 |     50.57737 (10021822)     53.18671 (10021822)     57.77698 (13020303)     63.44890 (13020303)     66.96837 (13020303)
 3880550.0 |     51.57887 (10021822)     54.76291 (13020303)     60.58895 (13020303)     65.28344 (13020303)     68.06487 (13020303)
 3880450.0 |     52.25373 (10021822)     58.07668 (13020303)     62.61034 (13020303)     65.86536 (13020303)     68.37588 (13020303)
 3880350.0 |     55.46303 (13020303)     60.39749 (13020303)     63.88827 (13020303)     66.73689 (13020303)     68.94140 (13020303)
 3880250.0 |     58.05671 (13020303)     61.98116 (13020303)     64.98136 (13020303)     67.11884 (13020303)     68.78709 (13020303)
 3880150.0 |     59.90212 (13020303)     63.02933 (13020303)     65.67046 (13020303)     67.54152 (13020303)     69.18335 (13020303)
 3880050.0 |     61.20252 (13020303)     63.97624 (13020303)     65.79903 (13020303)     67.41466 (13020303)     69.26665 (12121620)
 3879950.0 |     62.29373 (13020303)     64.69184 (13020303)     66.07699 (13020303)     67.51596 (13020303)     69.63586 (13020303)
 3879850.0 |     62.73936 (13020303)     64.59818 (13020303)     66.46535 (13020303)     67.32977 (13020303)     71.93652 (13070302)
 3879750.0 |     63.07698 (13020303)     64.69938 (13020303)     66.09110 (13020303)     67.71392 (13020303)     74.17590 (13070302)
 3879650.0 |     63.40110 (13020303)     65.00920 (13020303)     66.58946 (13020303)     68.19195 (13020303)     76.51272 (13070302)
 3879550.0 |     63.44321 (13020303)     64.75093 (13020303)     65.94164 (13020303)     70.71200 (13070302)     78.62687 (13070302)
 3879450.0 |     63.77917 (13020303)     65.23365 (13020303)     66.40304 (13020303)     72.94790 (13070302)     80.42372 (13070302)
 3879350.0 |     63.48143 (13020303)     65.51815 (13020303)     67.25777 (13070302)     75.29189 (13070302)     81.83711 (13070302)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                   ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                 ***        14:26:04
                                                                                                                  PAGE  14
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                  INCLUDING SOURCE(S):     1           ,

                                   *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

  Y-COORD  |                                           X-COORD (METERS)
  (METERS) |       719050.00               719150.00               719250.00               719350.00               719450.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.0 |     99.64034 (12121301)    105.08407 (10021205)    114.78291 (10021205)    124.07358 (10050301)    140.29846 (12050705)
 3883150.0 |     99.24399 (12121301)    103.05826 (10021205)    112.82827 (10021205)    122.44848 (10050301)    137.54484 (12050705)
 3883050.0 |     98.67639 (12121301)    102.40141 (12121301)    111.15389 (10021205)    120.72073 (10050301)    135.86595 (12050705)
 3882950.0 |     97.63557 (12121301)    101.95609 (12121301)    110.05568 (10021205)    118.90068 (10021205)    132.61604 (12050705)
 3882850.0 |     97.29036 (12121301)    101.57097 (12121301)    107.54290 (10021205)    117.37689 (10021205)    129.91086 (10050301)
 3882750.0 |     95.58332 (12121301)    100.45750 (12121301)    105.10529 (10021205)    115.84434 (10021205)    127.68311 (10050301)
 3882650.0 |     93.01522 (12121301)     99.19905 (12121301)    103.04235 (12121301)    114.82449 (10021205)    125.28897 (10050301)
 3882550.0 |     91.59705 (12121301)     98.47243 (12121301)    103.51252 (12121301)    112.48192 (10021205)    123.05825 (10021205)
 3882450.0 |     87.80741 (12121301)     96.37199 (12121301)    102.47231 (12121301)    109.47640 (10021205)    121.89694 (10021205)
 3882350.0 |     84.44376 (12121301)     95.18690 (12121301)    100.74457 (12121301)    106.31186 (10021205)    120.07445 (10021205)
 3882250.0 |     79.24557 (12121301)     91.46566 (12121301)     99.56989 (12121301)    104.44632 (12121301)    117.43168 (10021205)
 3882150.0 |     75.57834 (14013106)     88.04397 (12121301)     97.33019 (12121301)    103.96247 (12121301)    114.87616 (10021205)
 3882050.0 |     74.54175 (14013106)     83.39015 (12121301)     95.35610 (12121301)    102.90467 (12121301)    111.06764 (10021205)
 3881950.0 |     74.01080 (14013106)     77.83530 (12121301)     92.48880 (12121301)    101.55285 (12121301)    107.34596 (10021205)
 3881850.0 |     72.86053 (14013106)     76.23668 (14013106)     87.54413 (12121301)     99.12872 (12121301)    106.64352 (12121301)
 3881750.0 |     71.31356 (14013106)     75.77117 (14013106)     81.76048 (12121301)     95.81740 (12121301)    103.97385 (12121301)
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 3881650.0 |     68.39123 (14013106)     74.28089 (14013106)     78.38356 (14013106)     91.22567 (12121301)    102.87353 (12121301)
 3881550.0 |     66.51604 (10082323)     72.21958 (14013106)     77.09384 (14013106)     86.14943 (12121301)    100.78114 (12121301)
 3881450.0 |     65.31408 (13111622)     68.85972 (10082323)     75.95407 (14013106)     80.08883 (10060306)     96.85799 (12121301)
 3881350.0 |     65.05984 (13111622)     66.72192 (10082323)     72.95901 (14013106)     78.28533 (14013106)     91.53123 (12121301)
 3881250.0 |     63.77161 (13111622)     65.88256 (13111622)     69.93543 (13020303)     77.21215 (14013106)     84.01819 (12121301)
 3881150.0 |     61.32980 (13111622)     67.08828 (13020303)     71.80361 (13020303)     74.94413 (12121620)     83.10793 (13070302)
 3881050.0 |     63.90877 (13020303)     69.28590 (13020303)     72.56637 (13020303)     76.20690 (12121620)     87.85054 (13070302)
 3880950.0 |     66.68066 (13020303)     70.64983 (13020303)     73.06122 (12121620)     77.51315 (13070302)     91.61505 (13070302)
 3880850.0 |     68.36534 (13020303)     71.09022 (13020303)     74.13575 (12121620)     82.52900 (13070302)     94.73611 (13070302)
 3880750.0 |     69.46806 (13020303)     71.61061 (13020303)     74.69735 (12121620)     86.18029 (13070302)     98.52405 (11022807)
 3880650.0 |     69.68534 (13020303)     71.98238 (12121620)     77.16088 (13070302)     88.89151 (13070302)    100.45767 (11022807)
 3880550.0 |     70.14419 (13020303)     72.25951 (12121620)     80.87001 (13070302)     91.55054 (11022807)    103.33509 (11051201)
 3880450.0 |     70.75217 (13020303)     73.16081 (12121620)     84.70237 (13070302)     94.19361 (11022807)    105.88958 (11051201)
 3880350.0 |     70.70680 (12121620)     76.35652 (13070302)     86.51682 (13070302)     96.89002 (11022807)    107.50182 (11051201)
 3880250.0 |     70.57493 (12121620)     79.86217 (13070302)     88.78728 (11022807)     99.26277 (11022807)    108.50391 (11051201)
 3880150.0 |     71.76696 (13070302)     82.59052 (13070302)     91.20208 (11022807)    101.17099 (11051201)    109.96045 (11051201)
 3880050.0 |     75.69089 (13070302)     84.20133 (13070302)     93.68536 (11022807)    102.59310 (11051201)    111.16746 (11051201)
 3879950.0 |     78.39651 (13070302)     86.54316 (11022807)     95.91556 (11022807)    104.27905 (11051201)    111.29677 (11051201)
 3879850.0 |     80.33821 (13070302)     89.06791 (11022807)     97.19887 (11022807)    105.62562 (11051201)    112.31118 (11051201)
 3879750.0 |     82.23845 (13070302)     90.41005 (11022807)     99.05302 (11051201)    106.38342 (11051201)    113.66302 (11051201)
 3879650.0 |     84.11247 (13070302)     91.95270 (11022807)    100.55110 (11051201)    107.11371 (11051201)    113.46607 (11051201)
 3879550.0 |     86.16515 (11022807)     93.51034 (11051201)    102.07590 (11051201)    108.80564 (11051201)    113.34124 (11051201)
 3879450.0 |     88.36180 (11022807)     95.76706 (11051201)    102.31359 (11051201)    108.72113 (11051201)    114.02526 (11051201)
 3879350.0 |     89.97923 (11022807)     96.98940 (11051201)    102.94643 (11051201)    109.20864 (11051201)    113.20514 (11051201)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                      ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                     ***        14:26:04
                                                                                                                      PAGE  15
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                            *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                INCLUDING SOURCE(S):     1           ,

                                 *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                      ** CONC OF OTHER    IN MICROGRAMS/M**3                         **

  Y-COORD  |                                        X-COORD (METERS)
  (METERS) |       719550.00               719650.00               719750.00               719850.00               719950.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.0 |    155.35799 (12050705)    173.79450 (13091123)    216.07394 (11100222)    284.76448 (11121303)    294.19306 (13013020)
 3883150.0 |    153.91288 (12050705)    173.93817 (13091123)    212.21116 (11100222)    287.38109 (11121303)    314.70105 (11121303)
 3883050.0 |    153.24472 (12050705)    169.50926 (13091123)    209.50513 (11100222)    285.75200 (11121303)    345.36886 (11121303)
 3882950.0 |    150.57462 (12050705)    166.83541 (13091123)    205.64393 (11100222)    280.44410 (11121303)    376.03482 (11121303)
 3882850.0 |    148.58001 (12050705)    164.70650 (12050705)    201.22259 (11100222)    275.41536 (11121303)    397.47217 (11121303)
 3882750.0 |    146.45637 (12050705)    163.09443 (12050705)    197.32863 (12101623)    269.15099 (11121303)    406.19341 (11121303)
 3882650.0 |    143.22305 (12050705)    161.80036 (12050705)    191.63609 (11100222)    262.51016 (11121303)    402.54142 (11121303)
 3882550.0 |    141.55488 (12050705)    160.01846 (12050705)    189.92963 (12101623)    257.68252 (11121303)    396.48414 (11121303)
 3882450.0 |    137.68433 (12050705)    158.85657 (12050705)    184.21263 (12101623)    249.45723 (11121303)    391.29004 (11121303)
 3882350.0 |    134.56844 (10050301)    155.53863 (12050705)    183.29195 (13091123)    242.76736 (11121303)    385.04292 (11121303)
 3882250.0 |    131.41355 (10050301)    152.52281 (12050705)    177.46749 (13091123)    236.13952 (11121303)    379.00594 (11121303)
 3882150.0 |    128.12965 (10050301)    150.88577 (12050705)    175.01944 (13091123)    231.17898 (11100222)    374.37949 (11121303)
 3882050.0 |    124.80512 (13111720)    147.00352 (12050705)    169.88072 (13091123)    226.06109 (11100222)    367.24031 (11121303)
 3881950.0 |    123.13288 (10021205)    142.87465 (12050705)    166.47479 (12050705)    220.62712 (11100222)    360.27182 (11121303)
 3881850.0 |    120.63021 (10021205)    138.31106 (12050705)    162.87971 (14042704)    214.35993 (11100222)    352.10712 (11121303)
 3881750.0 |    116.91331 (10021205)    133.99850 (10050301)    160.40843 (12050705)    208.25838 (11100222)    344.73516 (11121303)
 3881650.0 |    113.29527 (10021205)    130.06382 (10050301)    157.35645 (12050705)    201.08687 (11100222)    337.34041 (11121303)
 3881550.0 |    108.06667 (10021205)    126.26996 (10021205)    153.32035 (12050705)    194.29087 (12101623)    327.15742 (11121303)
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3881450.0 |     106.65158 (12121301)    122.60548 (10021205)    148.43766 (12050705)    188.40662 (13091123)    318.95302 (11121303)
3881350.0 |     104.91880 (12121301)    118.77854 (10021205)    142.55364 (12050705)    181.81837 (13091123)    309.00860 (11121303)
3881250.0 |     101.29845 (12121301)    114.31037 (10021205)    136.46782 (10050301)    174.83682 (13091123)    298.25984 (11121303)
3881150.0 |      97.74094 (11022807)    112.30514 (11051201)    131.41456 (10050301)    167.88977 (13090204)    286.84880 (11121303)
3881050.0 |     100.88654 (11022807)    114.39137 (11051201)    130.18969 (12021803)    166.97367 (11090702)    279.20681 (11090702)
3880950.0 |     104.98691 (11022807)    117.50638 (11051201)    132.44458 (11072004)    174.84615 (11090702)    286.32756 (11090702)
3880850.0 |     107.00129 (11051201)    119.35849 (11051201)    135.55628 (12020519)    181.98577 (11090702)    291.36469 (11090702)
3880750.0 |     110.82804 (11051201)    119.91135 (11051201)    141.40178 (12020519)    188.50548 (11090702)    296.32717 (11090702)
3880650.0 |     112.49260 (11051201)    119.94860 (11051201)    144.96799 (12020519)    195.78196 (11090702)    301.65915 (11090702)
3880550.0 |     113.73211 (11051201)    121.17424 (12021803)    148.98407 (12020519)    201.02736 (11090702)    307.04330 (11090702)
3880450.0 |     114.10014 (11051201)    123.12374 (12021803)    152.90193 (12020519)    207.26530 (11090702)    311.20514 (14010407)
3880350.0 |     115.09095 (11051201)    126.39008 (12020519)    156.06543 (12020519)    211.14741 (11090702)    315.75245 (14010407)
3880250.0 |     116.03934 (11051201)    131.30419 (12020519)    158.98933 (12020519)    217.94145 (11090702)    321.12198 (14010407)
3880150.0 |     116.65733 (11051201)    133.25273 (12020519)    162.38178 (12020519)    220.59922 (11090702)    326.47482 (14010407)
3880050.0 |     117.49948 (11051201)    138.08508 (12020519)    163.58916 (12020519)    224.86777 (11090702)    330.38936 (14010407)
3879950.0 |     117.55411 (11051201)    139.54280 (12020519)    166.95057 (12020519)    230.44504 (11090702)    333.75559 (14010407)
3879850.0 |     119.10212 (12020519)    144.07908 (12020519)    167.50609 (12020519)    231.67146 (11090702)    338.39861 (14010407)
3879750.0 |     121.32029 (12020519)    145.35453 (12020519)    172.30645 (11090702)    237.64209 (11090702)    343.04691 (14010407)
3879650.0 |     125.69241 (12020519)    149.15006 (12020519)    175.41200 (11090702)    240.89922 (11090702)    333.45323 (14010407)
3879550.0 |     127.54868 (12020519)    149.92625 (12020519)    178.98218 (11090702)    243.77742 (11090702)    317.53266 (14052706)
3879450.0 |     131.44221 (12020519)    153.17682 (12020519)    183.27159 (11090702)    244.77987 (11090702)    299.36710 (14052706)
3879350.0 |     134.26124 (12020519)    155.95511 (12020519)    186.48547 (11090702)    240.65817 (11090702)    281.60941 (14052706)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                 ***        12/07/18
*** AERMET - VERSION  14134 ***   ***                                                                ***        14:26:04
                                                                                                                PAGE  16
*** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                 INCLUDING SOURCE(S):     1           ,

                                  *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                         **

 Y-COORD  |                                         X-COORD (METERS)
 (METERS) |       720050.00               720150.00               720250.00               720350.00               720450.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

3883250.0 |     311.09403 (14082106)    283.68163 (12010206)    242.82873 (14012603)    191.89501 (14012603)    167.98683 (12121222)
3883150.0 |     329.81355 (14082106)    291.44020 (12010206)    239.50372 (14012603)    185.70974 (14012603)    167.14507 (12121222)
3883050.0 |     348.38255 (14082106)    291.19476 (12010206)    235.92314 (14012603)    180.22049 (14012603)    164.12404 (12121222)
3882950.0 |     375.92039 (10020805)    287.99094 (12010206)    230.83111 (14012603)    176.54008 (13111820)    163.52696 (12121222)
3882850.0 |     394.89229 (10020805)    284.52744 (12010206)    224.34411 (14012603)    175.23895 (12121222)    161.63948 (12121222)
3882750.0 |     401.11801 (10020805)    280.06459 (12010206)    220.80193 (14012603)    172.51352 (12121222)    158.51047 (12121222)
3882650.0 |     397.47844 (10020805)    275.45364 (12010206)    213.62781 (14012603)    172.45645 (12121222)    155.45624 (12121222)
3882550.0 |     391.50706 (10020805)    271.50200 (14012603)    209.55961 (14012603)    170.44696 (12121222)    153.54129 (12121222)
3882450.0 |     384.71591 (10020805)    266.22699 (14012603)    200.91668 (14012603)    168.37871 (12121222)    150.24463 (12121222)
3882350.0 |     379.66038 (10020805)    262.31035 (14012603)    195.52172 (14012603)    165.71724 (12121222)    145.42874 (12121222)
3882250.0 |     372.26287 (10020805)    257.35718 (14012603)    187.54713 (14012603)    163.62735 (12121222)    140.45237 (12121222)
3882150.0 |     364.83823 (10020805)    251.75464 (14012603)    181.74207 (13111820)    160.24260 (12121222)    135.29482 (12121222)
3882050.0 |     359.13936 (10020805)    245.43246 (14012603)    177.27084 (13111820)    157.12709 (12121222)    129.46993 (12121222)
3881950.0 |     351.66069 (10020805)    238.88524 (14012603)    174.64324 (12121222)    152.91521 (12121222)    125.38211 (12050624)
3881850.0 |     343.15854 (10020805)    232.35921 (14012603)    171.41331 (12121222)    147.95285 (12121222)    123.78421 (12050624)
3881750.0 |     335.23077 (10020805)    223.79694 (14012603)    168.68315 (12121222)    142.02238 (12121222)    121.57263 (12050624)
3881650.0 |     326.45133 (10020805)    217.87090 (14012603)    165.41962 (12121222)    135.76900 (12121222)    117.51770 (12050624)
3881550.0 |     318.87494 (12010206)    207.88939 (14012603)    161.46639 (12121222)    128.52347 (12031207)    114.52928 (12050624)
3881450.0 |     310.82385 (12010206)    198.32633 (14012603)    156.30586 (12121222)    124.93936 (12050624)    109.30247 (12050624)
3881350.0 |     301.97102 (12010206)    187.99527 (14012603)    150.50164 (12121222)    121.95339 (12050624)    103.23204 (14012422)
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 3881250.0 |     295.42238 (12010206)    180.61435 (12082305)    144.01004 (12121222)    118.47072 (12050624)     98.31986 (11121101)
 3881150.0 |     284.94405 (11070203)    186.55793 (12082305)    136.48960 (14022407)    112.66719 (12050624)     94.70334 (12092402)
 3881050.0 |     293.08162 (11070203)    192.20369 (12082305)    142.27355 (12082305)    114.99638 (12090424)     97.28659 (12092402)
 3880950.0 |     302.29498 (12092723)    195.67789 (12082305)    149.78440 (12082305)    119.64549 (12090424)     99.27731 (12092402)
 3880850.0 |     310.61444 (12092723)    200.21012 (12082305)    156.73043 (12082305)    123.51201 (12090424)    103.16837 (11090805)
 3880750.0 |     317.98680 (12092723)    204.13173 (10071924)    162.00214 (12082305)    127.03491 (12090424)    106.91324 (11090805)
 3880650.0 |     325.13332 (12092723)    209.93264 (10071924)    168.00561 (12082305)    129.59299 (14022407)    110.09265 (11090805)
 3880550.0 |     332.51474 (12092723)    215.91992 (10071924)    172.36061 (12082305)    132.26088 (14022407)    113.48343 (12090424)
 3880450.0 |     338.72801 (12092723)    221.08819 (10071924)    176.61927 (12082305)    137.00435 (12082305)    116.84565 (12090424)
 3880350.0 |     344.58017 (12092723)    225.92929 (10071924)    180.49180 (12082305)    142.80600 (12082305)    119.47289 (12090424)
 3880250.0 |     350.62281 (12092723)    230.61946 (10071924)    183.89543 (12082305)    148.20224 (12082305)    122.72762 (14022407)
 3880150.0 |     355.55796 (12092723)    235.15874 (10071924)    186.88574 (12082305)    153.00988 (12082305)    124.75842 (14022407)
 3880050.0 |     361.66221 (12092723)    238.84433 (10071924)    190.03262 (12082305)    156.98542 (12082305)    126.38384 (14022407)
 3879950.0 |     367.08661 (12092723)    242.44184 (10071924)    191.31373 (12082305)    161.26836 (12082305)    127.96227 (14022407)
 3879850.0 |     378.24339 (10071924)    245.64574 (10071924)    194.96647 (12082305)    165.24632 (12082305)    132.23700 (12082305)
 3879750.0 |     384.59303 (10071924)    249.71307 (10071924)    195.68818 (12082305)    167.68007 (12082305)    136.62588 (12082305)
 3879650.0 |     368.26108 (12092723)    251.48479 (10071924)    198.72517 (12082305)    171.22097 (12082305)    141.80364 (12082305)
 3879550.0 |     349.35559 (13092102)    255.48670 (10071924)    198.68438 (12082305)    173.40873 (12082305)    145.27850 (12082305)
 3879450.0 |     327.31138 (13092102)    256.87249 (10071924)    201.79643 (10071924)    176.58890 (12082305)    148.20343 (12082305)
 3879350.0 |     305.35344 (13092102)    253.45567 (11070203)    204.29778 (10071924)    178.04822 (12082305)    151.93662 (12082305)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                          ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                         ***        14:26:04
                                                                                                                          PAGE  17
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                 INCLUDING SOURCE(S):     1           ,

                                  *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

  Y-COORD  |                                         X-COORD (METERS)
  (METERS) |      720550.00               720650.00               720950.00 
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  Y-COORD  |                                         X-COORD (METERS)
  (METERS) |      720550.00               720650.00               720750.00               720850.00               720950.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.0 |     154.99313 (12121222)    136.42372 (12121222)    119.61734 (12050624)    113.73996 (12050624)    105.84108 (12050624)
 3883150.0 |     152.76161 (12121222)    133.47504 (12121222)    118.29575 (12050624)    111.95535 (12050624)    103.25691 (12050624)
 3883050.0 |     149.41741 (12121222)    128.96271 (12121222)    117.57042 (12050624)    109.98455 (12050624)    100.78272 (12050624)
 3882950.0 |     145.69267 (12121222)    124.40271 (12121222)    116.77946 (12050624)    107.76953 (12050624)     96.68512 (12050624)
 3882850.0 |     142.65828 (12121222)    121.43634 (12050624)    114.84655 (12050624)    105.55570 (12050624)     93.42773 (14012422)
 3882750.0 |     139.66191 (12121222)    120.63159 (12050624)    113.05487 (12050624)    102.23454 (12050624)     91.48633 (14012422)
 3882650.0 |     134.33869 (12121222)    119.83392 (12050624)    111.23350 (12050624)     98.76559 (12050624)     89.10266 (11121101)
 3882550.0 |     129.05267 (12121222)    118.77410 (12050624)    108.77331 (12050624)     95.45582 (14012422)     86.22592 (11121101)
 3882450.0 |     124.11883 (12050624)    117.00787 (12050624)    105.04530 (12050624)     92.74224 (14012422)     84.42658 (13083002)
 3882350.0 |     122.62522 (12050624)    114.39021 (12050624)    101.25794 (12050624)     90.00288 (13050201)     81.35090 (11121302)
 3882250.0 |     121.54723 (12050624)    111.40742 (12050624)     97.66127 (14012422)     87.77594 (13083002)     79.89608 (11020103)
 3882150.0 |     119.67130 (12050624)    107.64663 (12050624)     93.89728 (11121101)     84.43410 (13083002)     79.73921 (11020103)
 3882050.0 |     117.59010 (12050624)    103.39465 (12050624)     91.55629 (11121101)     82.49984 (11121302)     79.06631 (11020103)
 3881950.0 |     114.37741 (12050624)     99.33253 (14012422)     88.16879 (13083002)     80.89114 (11020103)     77.96491 (11020103)
 3881850.0 |     111.22696 (12050624)     95.41804 (14012422)     84.84313 (11121302)     79.94777 (11020103)     76.22072 (11020103)
 3881750.0 |     105.81028 (12050624)     92.98250 (11121101)     82.69407 (11020103)     79.38716 (11020103)     73.65797 (14013101)
 3881650.0 |     101.53284 (14012422)     89.33107 (13083002)     81.79419 (11020103)     77.50268 (11020103)     72.55643 (14013101)
 3881550.0 |      96.85445 (14012422)     85.01584 (13083002)     80.15654 (11020103)     74.39867 (11020103)     71.17396 (14013101)
 3881450.0 |      93.16943 (11121101)     83.17296 (11020103)     78.55133 (11020103)     73.30335 (14013101)     68.49830 (13031005)
 3881350.0 |      88.98989 (13083002)     81.52945 (11020103)     75.02070 (11020103)     71.01590 (14013101)     67.26176 (13031005)
 3881250.0 |      85.14911 (11121302)     79.79602 (11020103)     73.58902 (14013101)     68.25866 (13031005)     65.59236 (10121522)
 3881150.0 |      85.61602 (10091024)     81.51983 (10091024)     74.22106 (14081104)     69.02635 (14081104)     65.29114 (10121522)
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 3881050.0 |     86.17182 (10091024)     83.36816 (10091024)     77.83941 (10091024)     71.32926 (14081104)     66.48166 (10072822)
 3880950.0 |     88.94437 (12092402)     84.01349 (10091024)     79.82128 (10091024)     73.47060 (14081104)     68.37259 (14081104)
 3880850.0 |     91.66321 (12092402)     84.69068 (10091024)     81.73544 (10091024)     76.64974 (10091024)     70.79549 (14081104)
 3880750.0 |     94.03663 (12092402)     84.83236 (10091024)     82.43459 (10091024)     78.35737 (10091024)     72.23379 (14081104)
 3880650.0 |     94.77960 (12092402)     86.42174 (12092402)     83.09508 (10091024)     79.85389 (10091024)     75.04431 (10091024)
 3880550.0 |     96.56355 (11090805)     88.01013 (12092402)     83.93428 (10091024)     81.39853 (10091024)     77.30328 (10091024)
 3880450.0 |     99.98878 (11090805)     90.23356 (12092402)     84.02266 (10091024)     81.39813 (10091024)     78.92608 (10091024)
 3880350.0 |    102.85614 (11090805)     91.72846 (12092402)     84.26495 (12092402)     81.64848 (10091024)     79.23863 (10091024)
 3880250.0 |    105.82978 (12090424)     92.16685 (12092402)     85.16828 (12092402)     82.58691 (10091024)     80.42960 (10091024)
 3880150.0 |    108.96339 (12090424)     94.20421 (11090805)     86.89570 (12092402)     82.47987 (10091024)     80.74117 (10091024)
 3880050.0 |    111.28416 (12090424)     97.01729 (11090805)     88.56246 (12092402)     82.84730 (10091024)     81.28986 (10091024)
 3879950.0 |    113.60151 (12090424)     99.28805 (11090805)     89.61399 (12092402)     83.08373 (10091024)     80.99123 (10091024)
 3879850.0 |    116.08424 (12090424)    101.47584 (11090805)     89.80909 (12092402)     84.08042 (12092402)     81.35292 (10091024)
 3879750.0 |    118.23157 (12090424)    103.59612 (12090424)     91.16604 (11090805)     85.19697 (12092402)     81.26300 (10091024)
 3879650.0 |    119.03018 (14022407)    107.02808 (12090424)     93.35103 (11090805)     85.81813 (12092402)     81.41335 (10091024)
 3879550.0 |    120.72619 (14022407)    108.51417 (12090424)     95.67183 (11090805)     86.63195 (12092402)     81.53875 (10091024)
 3879450.0 |    122.25019 (14022407)    110.12129 (12090424)     97.16945 (11090805)     87.15606 (11090805)     81.93265 (12092402)
 3879350.0 |    123.84794 (14022407)    112.36834 (12090424)     99.91841 (12090424)     88.85319 (11090805)     82.75127 (12092402)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                      ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
                                                                                                                       PAGE  18
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                  INCLUDING SOURCE(S):     1           ,

                                   *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

  Y-COORD  |                                          X-COORD (METERS)
 (METERS)  |       721050.00               721150.00               721250.00               721350.00               721450.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.0 |     94.61010 (12050624)     86.25428 (13050201)     78.95533 (13083002)     75.32636 (11020103)     73.85618 (11020103)
 3883150.0 |     91.91819 (14012422)     84.16638 (13050201)     77.40526 (13083002)     75.26528 (11020103)     73.58096 (11020103)
 3883050.0 |     89.52493 (14012422)     82.15352 (11121101)     76.63545 (11020103)     75.31060 (11020103)     73.03477 (11020103)
 3882950.0 |     87.25110 (13050201)     80.09315 (13083002)     76.30312 (11020103)     74.41436 (11020103)     72.24038 (11020103)
 3882850.0 |     85.62454 (11121101)     77.78844 (11121302)     75.77382 (11020103)     73.85459 (11020103)     70.79379 (11020103)
 3882750.0 |     82.57621 (13083002)     77.84210 (11020103)     75.80764 (11020103)     73.59809 (11020103)     69.58402 (14013101)
 3882650.0 |     80.28633 (11121302)     77.42020 (11020103)     75.01057 (11020103)     71.80273 (11020103)     69.29111 (14013101)
 3882550.0 |     78.77232 (11020103)     76.92419 (11020103)     74.75088 (11020103)     70.40057 (14013101)     68.54148 (14013101)
 3882450.0 |     79.00280 (11020103)     76.21303 (11020103)     72.97182 (11020103)     70.25028 (14013101)     67.57377 (14013101)
 3882350.0 |     78.18810 (11020103)     75.62273 (11020103)     71.20829 (14013101)     69.57272 (14013101)     66.22580 (14013101)
 3882250.0 |     78.00334 (11020103)     73.97139 (11020103)     70.62076 (14013101)     67.97073 (14013101)     64.84570 (13031005)
 3882150.0 |     76.51835 (11020103)     72.50247 (14013101)     69.65983 (14013101)     66.28445 (14013101)     64.50659 (10121522)
 3882050.0 |     75.29879 (11020103)     71.49802 (14013101)     68.89946 (14013101)     65.70340 (13031005)     64.50916 (10121522)
 3881950.0 |     73.15005 (14013101)     70.25270 (14013101)     66.79726 (13031005)     65.00125 (10121522)     64.35340 (10121522)
 3881850.0 |     71.81777 (14013101)     68.67803 (14013101)     65.86094 (13031005)     64.79771 (10121522)     63.85720 (10121522)
 3881750.0 |     71.04528 (14013101)     66.79843 (13031005)     65.22691 (10121522)     64.68504 (10121522)     62.67156 (10121522)
 3881650.0 |     68.78531 (14013101)     65.86757 (13031005)     65.08754 (10121522)     63.43595 (10121522)     61.11889 (10121522)
 3881550.0 |     67.20761 (13031005)     65.31222 (10121522)     64.39213 (10121522)     61.71123 (10121522)     57.75948 (10121522)
 3881450.0 |     65.93071 (10121522)     64.78408 (10121522)     62.74910 (10121522)     58.86110 (10121522)     56.36099 (10022003)
 3881350.0 |     65.19833 (10121522)     63.56551 (10121522)     59.90979 (10121522)     57.29087 (10022003)     54.40616 (10022003)
 3881250.0 |     64.39382 (10121522)     60.91281 (10121522)     57.40326 (10022003)     54.83267 (10022003)     52.57198 (13022023)
 3881150.0 |     61.67782 (10121522)     57.93642 (10022003)     56.10453 (10031821)     54.18154 (10031821)     52.57847 (13022023)
 3881050.0 |     63.71434 (10072822)     59.46946 (10072822)     57.13382 (10092620)     55.05043 (10031821)     53.55167 (10031821)
 3880950.0 |     65.37676 (10072822)     62.24493 (10072822)     57.87750 (10092620)     56.05225 (10092620)     54.50379 (10031821)
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 3880850.0 |     65.94014 (10072822)     63.98196 (10072822)     60.63759 (10072822)     56.89929 (10092620)     54.90244 (10092620)
 3880750.0 |     67.97589 (14081104)     64.70853 (10072822)     62.62625 (10072822)     58.96659 (10072822)     56.27963 (10092620)
 3880650.0 |     69.44221 (14081104)     65.41431 (10072822)     63.81788 (10072822)     61.24599 (10072822)     57.41375 (10072822)
 3880550.0 |     71.02313 (10091024)     67.42839 (14081104)     64.38783 (10072822)     62.62350 (10072822)     59.68407 (10072822)
 3880450.0 |     73.62066 (10091024)     69.04749 (14081104)     64.76669 (14081104)     63.56661 (10072822)     61.26741 (10072822)
 3880350.0 |     75.58634 (10091024)     70.14096 (10091024)     66.49730 (14081104)     64.22920 (10072822)     62.34028 (10072822)
 3880250.0 |     77.11304 (10091024)     72.36689 (10091024)     67.85674 (14081104)     64.39065 (14081104)     63.17817 (10072822)
 3880150.0 |     78.46965 (10091024)     74.16900 (10091024)     68.86354 (10091024)     65.98731 (14081104)     63.31410 (10072822)
 3880050.0 |     78.39246 (10091024)     75.68547 (10091024)     71.29006 (10091024)     67.14087 (14081104)     63.76420 (14081104)
 3879950.0 |     79.24369 (10091024)     76.11155 (10091024)     72.85554 (10091024)     67.91048 (10091024)     64.85827 (14081104)
 3879850.0 |     78.84397 (10091024)     77.19676 (10091024)     74.19007 (10091024)     70.17828 (10091024)     66.19790 (14081104)
 3879750.0 |     79.59256 (10091024)     77.25915 (10091024)     75.01670 (10091024)     71.83547 (10091024)     67.00044 (10091024)
 3879650.0 |     79.35729 (10091024)     77.56232 (10091024)     75.74016 (10091024)     72.69227 (10091024)     68.85164 (10091024)
 3879550.0 |     79.51727 (10091024)     77.83942 (10091024)     76.07026 (10091024)     73.92560 (10091024)     70.64610 (10091024)
 3879450.0 |     79.86473 (10091024)     77.80589 (10091024)     76.28910 (10091024)     74.14981 (10091024)     71.28082 (10091024)
 3879350.0 |     80.23887 (10091024)     77.99531 (10091024)     76.31376 (10091024)     74.87228 (10091024)     72.40870 (10091024)
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                       ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                      ***        14:26:04
                                                                                                                       PAGE  19
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  1        ***
                                 INCLUDING SOURCE(S):     1           ,

                                  *** NETWORK ID: 1        ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

  Y-COORD  |                                            X-COORD (METERS)
  (METERS) |       721550.00               721650.00               721750.00               721850.00               721950.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 3883250.0 |     71.86044 (11020103)     68.92615 (11020103)     67.00638 (14013101)     64.73880 (14013101)     63.12221 (14013101)
 3883150.0 |     71.15350 (11020103)     67.88000 (11020103)     66.20251 (14013101)     64.76588 (14013101)     62.84858 (10121522)
 3883050.0 |     69.89098 (11020103)     67.56183 (14013101)     66.12626 (14013101)     63.68610 (14013101)     62.71979 (10121522)
 3882950.0 |     68.93526 (14013101)     67.02343 (14013101)     64.78702 (14013101)     62.98223 (10121522)     62.81161 (10121522)
 3882850.0 |     68.21155 (14013101)     66.37373 (14013101)     63.89750 (14013101)     62.93501 (10121522)     63.01219 (10121522)
 3882750.0 |     68.09122 (14013101)     65.80985 (14013101)     63.38246 (10121522)     63.12336 (10121522)     62.74117 (10121522)
 3882650.0 |     67.30948 (14013101)     64.16459 (14013101)     63.47760 (10121522)     63.18021 (10121522)     62.47563 (10121522)
 3882550.0 |     66.20426 (14013101)     63.98272 (10121522)     63.62333 (10121522)     62.94522 (10121522)     62.21331 (10121522)
 3882450.0 |     64.51504 (14013101)     63.77142 (10121522)     63.27869 (10121522)     62.73427 (10121522)     61.91970 (10121522)
 3882350.0 |     64.20221 (10121522)     63.82844 (10121522)     63.29010 (10121522)     62.26630 (10121522)     60.76855 (10121522)
 3882250.0 |     64.31268 (10121522)     63.85802 (10121522)     62.78626 (10121522)     61.29918 (10121522)     59.33337 (10121522)
 3882150.0 |     64.16178 (10121522)     63.31525 (10121522)     62.35042 (10121522)     60.18523 (10121522)     56.84473 (10121522)
 3882050.0 |     63.97790 (10121522)     62.63674 (10121522)     60.79170 (10121522)     57.79211 (10121522)     54.47735 (10022003)
 3881950.0 |     62.94246 (10121522)     61.71899 (10121522)     58.43147 (10121522)     55.20467 (10022003)     53.89940 (10022003)
 3881850.0 |     62.28360 (10121522)     59.31133 (10121522)     55.97201 (10022003)     54.47397 (10022003)     51.91173 (10022003)
 3881750.0 |     60.18826 (10121522)     56.22886 (10022003)     54.68608 (10022003)     52.41982 (10022003)     51.34194 (13022023)
 3881650.0 |     56.92013 (10121522)     55.05860 (10022003)     52.86503 (10022003)     51.56225 (13022023)     51.39021 (13022023)
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 3881450.0 |     53.88334 (10022003)     52.03246 (13022023)     51.82722 (13022023)     51.56011 (13022023)     51.22901 (13022023)
 3881350.0 |     52.18221 (13022023)     51.89553 (13022023)     51.67359 (13022023)     51.44655 (13022023)     51.02240 (13022023)
 3881250.0 |     52.20223 (13022023)     52.10137 (13022023)     51.57795 (13022023)     51.07793 (13022023)     50.22490 (13022023)
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 3881050.0 |     51.92512 (13022023)     51.13570 (13022023)     49.92508 (13022023)     47.73892 (13022023)     46.98165 (12052203)
 3880950.0 |     53.09813 (10031821)     50.62251 (10031821)     48.00966 (13092506)     47.37111 (12052203)     46.96256 (12052203)
 3880850.0 |     54.02753 (10031821)     52.55914 (10031821)     50.07023 (10031821)     47.43641 (12052203)     46.94819 (12052203)
 3880750.0 |     54.30084 (10031821)     52.91036 (10031821)     51.61901 (10031821)     49.50023 (10031821)     46.97941 (12052203)
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 3880650.0 |      54.84731 (10092620)     53.42620 (10031821)     52.32139 (10031821)     50.90232 (10031821)     48.89823 (10031821)
 3880550.0 |      55.83019 (10092620)     54.28208 (10092620)     52.73994 (10031821)     51.62395 (10031821)     50.17937 (10031821)
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 3879450.0 |      67.59572 (10091024)     64.23245 (14081104)     61.70367 (14081104)     60.34883 (10072822)     59.06128 (10072822)
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• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                      ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                     ***        14:26:04
                                                                                                                      PAGE  20
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                                                   *** THE SUMMARY OF MAXIMUM PERIOD ( 43824 HRS) RESULTS ***


                                               ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                                                                           NETWORK
GROUP ID                        AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

1         1ST HIGHEST VALUE IS      24.63988 AT (  720050.00,  3881550.00,    79.60,    79.60,    0.00)  GC  1
          2ND HIGHEST VALUE IS      24.63692 AT (  720050.00,  3881450.00,    79.60,    79.60,    0.00)  GC  1
          3RD HIGHEST VALUE IS      24.61544 AT (  720050.00,  3881650.00,    79.60,    79.60,    0.00)  GC  1
          4TH HIGHEST VALUE IS      24.60931 AT (  720050.00,  3881350.00,    79.60,    79.60,    0.00)  GC  1
          5TH HIGHEST VALUE IS      24.60760 AT (  720050.00,  3881750.00,    79.60,    79.60,    0.00)  GC  1
          6TH HIGHEST VALUE IS      24.60532 AT (  720050.00,  3881850.00,    79.60,    79.60,    0.00)  GC  1
          7TH HIGHEST VALUE IS      24.58991 AT (  720050.00,  3881250.00,    79.60,    79.60,    0.00)  GC  1
          8TH HIGHEST VALUE IS      24.54948 AT (  720050.00,  3881050.00,    79.60,    79.60,    0.00)  GC  1
          9TH HIGHEST VALUE IS      24.53655 AT (  720050.00,  3881950.00,    79.60,    79.60,    0.00)  GC  1
         10TH HIGHEST VALUE IS      24.49151 AT (  720050.00,  3881150.00,    79.60,    79.60,    0.00)  GC  1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                      ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                     ***        14:26:04
                                                                                                                      PAGE  21
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

                                                           *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                               ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                                  DATE                                                            NETWORK
GROUP ID                           AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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1        HIGH   1ST HIGH VALUE IS     406.19341  ON 11121303: AT (  719950.00,  3882750.00,    79.60,    79.60,    0.00)  GC  1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
• *** AERMOD - VERSION 16216r ***   ***  Roadway Calcs                                                             ***        12/07/18
 *** AERMET - VERSION  14134 ***   ***                                                                            ***        14:26:04
                                                                                                                             PAGE  22
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  BETA  RURAL  LW1w/Mods

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           6 Warning Message(s)
 A Total of        1705 Informational Message(s)

 A Total of       43824 Hours Were Processed

 A Total of         533 Calm Hours Identified

 A Total of        1172 Missing Hours Identified (  2.67 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W200       6       TITLES: Missing Parameter(s). No Options Specified For         TITLETWO
 CO W121       7       MODOPT: LowWind1 Beta Option specified on MODELOPT Keyword   Non-DFAULT
 CO W112      12      LOW_WND: User-specified minimum Sigma-V on LOW_WIND Keyword       1.0000
 CO W113      12      LOW_WND: User-specified minimum WindSpeed on LOW_WIND Keywd       1.0000
 SO W390      20        LPARM: Aspect ratio (L/W) of LINE source greater than 100            1
 ME W186      41       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50

    ************************************
    *** AERMOD Finishes Successfully ***
    ************************************
```

Estimated Fuel Use Calculations

Truck Fuel Use Estimates

Item	SMPS	Plains Pentland Terminal
Miles (Round Trip)	108	280
Round Trips per Day	70	68
Trips per year	25,550	24,820
Annual Miles	2,759,400	6,949,600
Gallons of Fuel per Year	389,288	980,428
Gallons of Fuelper Year with Mitigation	323,062	813,638
Gallons of Fuel per Day	1,067	2,686
Gallon of Fuel per Day with Mitigation	885	2,229

Fuel Use Estimates

Fuel Use Case	Fuel Use (mpg)
Base Fuel Use for HHD Trucks	6.5
Project Fuel Use for 2017 Trucks	7.1
Mitigated Fuel Use for Trucks	8.5

Fuel Reduction Measures	% Reduction
Newer Trucks	8.30%
Speed limiters	10.4%
Driver Training	3.1%
GPS	2.1%

Source: A Survey of Fuel Economy and Fuel Use by Heavy-Duty Truck Fleets. University of Mic

Estimated Fuel Use Calculations

Estimated Construction Fuel Use

Representative Equipment Model	Number of Units	Load Factor	Number of Days	Hours/Day	Fuel Use (gals/hr)	Fuel Use (gals)
Smooth Drum Roller	1	0.38	5	10	4.5	225
Cat 950H Loader	1	0.37	2	10	5.3	106
Case 570 NXT	1	0.37	4	10	3.2	128
CAT 325 Excavator	1	0.38	7	10	7.4	518
Cat Skid Steer	1	0.36	1	10	3.2	32
Cat 950H Loader	1	0.37	1	10	5.3	53
Case 570 NXT	1	0.37	4	10	3.2	128
CAT 430 Backhoe	1	0.37	2	10	6.0	120
Sullair 185 Air Comp	1	0.48	1	10	2.7	27
Cat 950H Loader	1	0.37	1	10	5.3	53
CAT 430 Backhoe	1	0.37	5	10	6.0	300
Cranes	1	0.29	1	10	5.5	55
Case 570 NXT	1	0.37	2	10	3.2	64
CAT 430 Backhoe	1	0.37	5	10	6.0	300
Sullair 185 Air Comp	1	0.48	2	10	2.7	54
Cranes	1	0.29	1	10	5.5	55
CAT TH360B Variable Reach Forklift	1	0.2	4	10	4.5	180
Cat Skid Steer	1	0.36	2	10	3.2	64
CAT 430 Backhoe	1	0.37	2	10	6.0	120
Cranes	1	0.29	10	10	5.5	550
CAT TH360B Variable Reach Forklift	1	0.2	10	10	4.5	450
Welders	2	0.45	5	10	2.0	200
Cranes	1	0.29	5	10	5.5	275
CAT TH360B Variable Reach Forklift	1	0.2	10	10	4.5	450
CAT 430 Backhoe	1	0.37	10	10	6.0	600
Welders	2	0.45	5	10	2.0	200
Cranes	1	0.29	10	10	5.5	550
CAT TH360B Variable Reach Forklift	1	0.2	10	10	4.5	450
Cranes	1	0.29	10	10	5.5	550
CAT TH360B Variable Reach Forklift	1	0.2	5	10	4.5	225
Sullair 185 Air Comp	1	0.48	1	10	2.7	27
CAT 430 Backhoe	1	0.37	5	10	6.0	300
CAT TH360B Variable Reach Forklift	1	0.2	2	10	4.5	90
CAT TH360B Variable Reach Forklift	1	0.2	2	10	4.5	90
Sullair 185 Air Comp	1	0.48	2	10	2.7	54
CAT 325 Excavator	1	0.38	2	10	7.4	148
CAT TH360B Variable Reach Forklift	1	0.2	2	10	4.5	90
CASE 650L DOZER	1	0.4	0	0	15.8	0
Cat Skid Steer	1	0.36	0	0	3.2	0
Cat 950H Loader	1	0.37	0	0	5.3	0
Case 570 NXT	1	0.37	3	10	3.2	96
CAT 430 Backhoe	1	0.37	5	10	6.0	300
Cat Skid Steer	1	0.36	2	10	3.2	64
Cat 950H Loader	1	0.37	4	10	5.3	212
Case 570 NXT	1	0.37	2	10	3.2	64
CAT 430 Backhoe	1	0.37	2	10	6.0	120
Total Fuel Use						**8,737**

Estimated Fuel Use Calculations

Construciton Equipment Fuel Use by Load Factor Range

Representative Equipment Model	Fuel Use (Gals/hr)			Load Factor
	Low	Medium	High	
Case 570 NXT	2.0	2.6	3.2	0.37
CASE 650L DOZER	8.9	12.1	15.8	0.4
CAT 325 Excavator	4.8	6.1	7.4	0.38
CAT 430 Backhoe	3.9	5.5	6.0	0.37
Cat 950H Loader	3.1	4.6	5.3	0.37
Cat Skid Steer	2.0	2.6	3.2	0.36
CAT TH360B Variable Reach Forklift	1.8	3.7	4.5	0.2
Cranes	2.4	4.5	5.5	0.29
Smooth Drum Roller	4.5	5.0	6.0	0.38
Sullair 185 Air Comp	2.7	2.7	2.7	0.48
Welders	2.0	2.0	2.0	0.45
Max Load Factor	0.4	0.6	1	

Source: Caterpillar Performance Handbook Edition 44

Welder based upon Bobcat Welder Series

Sullair 185 Air Comp based upon equipment handbook.

Appendix C

Risk of Upset Supporting Information

LAS FLORES CANYON
INTERIM TRUCKING PROJECT

TRANSPORTATION
QUANTITATIVE RISK ASSESSMENT

DECEMBER 2018

PREPARED FOR:

EXXONMOBIL

GOLETA, CALIFORNIA

PREPARED BY:

DIXON RISK CONSULTING

SOLVANG, CALIFORNIA

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EXECUTIVE SUMMARY

ExxonMobil Production Company (ExxonMobil) is requesting approval for Interim Trucking to transport Santa Ynez Unit (SYU) processed crude oil from the Las Flores Canyon (LFC) facility to market destinations. The facility is located at 12000 Calle Real, approximately twelve miles west of the city of Goleta.

Since 1993, the Plains All American Pipeline (PAAPL) Lines 901 and 903 have been the only means of transporting crude oil to markets from LFC. Operations at LFC have been temporarily suspended as a result of the PAAPL 901 pipeline incident in May 2015 and subsequent pipeline shutdown. ExxonMobil is seeking a permit to conduct interim crude oil trucking until a transport pipeline becomes available. This will enable limited production to resume at the Santa Ynez Unit.

This Transportation Quantitative Risk Assessment (TQRA) assesses the potential hazardous materials risks to the public from the proposed interim crude oil truck transportation. Limited crude oil production with a maximum of 70 crude oil truck loads per day have been assessed from LFC to two designated unloading stations; Phillips 66 Santa Maria Pump Station, and PAAPL Pentland Pump Station in Maricopa.

ExxonMobil propose to use contract carriers to haul the crude oil. Contractor selection and auditing procedures will ensure the contractor meets or exceeds all applicable health, safety, security, and environmental compliance standards. The Crude Oil Transportation Risk Management & Prevention Program (CO-TRMPP) has been developed to ensure that the interim trucking is conducted in a safe and efficient manner.

Route specific truck accident rates have been developed from an analysis of California accident data. Local influences on accident data associated with road access, road gradients, visibility and weather are therefore inherently included within these route specific accident rates.

The total public risks have been calculated for both proposed truck routes, and the highest risks per one kilometer (0.62 miles) road segment have been identified to assess the acceptability of potential serious injury and fatality risks.

The significance of risk has been assessed utilizing the Santa Barbara County (SBC) Risk Profile. The thresholds for acceptable risk to the public are defined by the SBC Risk Criteria in three zones; green, amber and red. The mitigated risks are within the following zones of acceptability for both proposed truck routes:

- Mitigated risk of serious injury profile is within the green “Insignificant Risk” zone for acceptability.
- Mitigated risk of fatality profile is within the green “Insignificant Risk” zone for acceptability.

1. INTRODUCTION

1.1 Background

ExxonMobil Production Company (ExxonMobil) is requesting approval for Interim Trucking to transport Santa Ynez Unit (SYU) processed crude oil from the Las Flores Canyon (LFC) facility to market destinations. The facility is located at 12000 Calle Real, approximately twelve miles west of the city of Goleta.

Since 1993, the Plains All American Pipeline (PAAPL) Lines 901 and 903 have been the only means of transporting crude oil to markets from LFC. Operations at LFC have been temporarily suspended as a result of the PAAPL 901 pipeline incident in May 2015 and subsequent pipeline shutdown. ExxonMobil is seeking a permit to conduct interim crude oil trucking until a transport pipeline becomes available. This will enable limited production to resume at the Santa Ynez Unit.

The proposed interim crude oil truck transportation is subject to discretionary land-use permits and environmental review by Santa Barbara County (SBC). This includes the analysis of potential public exposure to acute risks associated with significant quantities of hazardous materials. ExxonMobil has requested that Dixon Risk Consulting (DRC) conduct a Transportation Quantitative Risk Assessment (TQRA) to assess the significance of risks to the public associated with truck transportation of crude oil from LFC to proposed unloading facilities.

1.2 Scope of Work

This TQRA assesses the potential hazardous materials risks to the public from the proposed interim crude oil truck transportation. The following activities have been assessed:

- Limited crude oil production with a maximum of 70 crude oil truck loads per day, at 160 barrels per load. During operations, one or both locations may be utilized for crude oil delivery on any day, totaling 70 trucks a day.
- Transportation routes have been assessed from LFC to two designated unloading stations; Phillips 66 Santa Maria Pump Station, and PAAPL Pentland Pump Station in Maricopa.
- Route specific truck accidents rates on public roads have been utilized to calculate incident rates and societal risk.

The public risks of a hazardous material release have been assessed for the transportation of crude oil from LFC to the designated unloading facilities. The total public risks have been calculated for both truck routes. The highest risks per one kilometer (0.62 miles) road segment have been identified to assess the acceptability of potential serious injury and fatality risks.

The significance of risk has been assessed utilizing the Santa Barbara County (SBC) Risk Profile(24). The thresholds for acceptable risk of serious injury or fatality to the public are as defined by the SBC Risk Criteria. The County has published thresholds of acceptability in order to determine the significance of impacts in a consistent manner.

Within this report, an accident is defined as an event that occurs when a vehicle is involved in a collision. The terms accident, collision and crash have been used interchangeably. An incident is defined as a release of crude oil that may occur as a result of a tanker truck collision, or a truck failure of containment in transit.

1.3 Transportation Quantitative Risk Assessment Methodology

Transportation Quantitative Risk Assessment is an established methodology to quantify the risk of a potential incident by estimating the likelihood and consequence of the event. The risk of serious injury or fatality has been assessed using the following steps:

- Evaluation of proposed truck routes for road characteristics.
- Quantify traffic volumes along the proposed routes.
- Development of accident frequencies utilizing California accident data and published national accident data.
- Estimate the probability of release, size of release, and ignition.
- Determine the consequences and potential impact of a crude oil release.
- Combine the likelihood and consequences of a release to calculate the societal risk for the highest one kilometer segment, and present as a risk profile.
- Quantify mitigation measures to minimize the risk.
- Assess the significance of risk of serious injury or fatality against the SBC Risk Profile Criteria.

TQRA provides an estimate of the risks, which tends to err on the side of conservatism. The approach was to make reasonable assumptions on the likelihood and severity of an incident, and the potential impact of a hazardous material release. In the process of TQRA, numerous assumptions must be made based on best available information. Where appropriate, sources of these assumptions, estimates and reasoning have been described.

2. LAS FLORES CANYON CRUDE OIL TRANSPORTATION

2.1 Project Description

The Santa Ynez Unit facility is located in Las Flores Canyon, approximately twelve miles west of Goleta. The facility processes crude oil from the offshore platforms; Hondo, Harmony and Heritage, with an average density of about 19 degrees API gravity. Production is currently suspended as a result of the PAAPL 901 pipeline incident in May 2015, and subsequent pipeline shutdown.

Under the LFC Interim Trucking proposal, SYU will operate at a production level of approximately 10,000 to 12,000 barrels of oil per day. This will be transported to markets using no more than seventy crude transport truck trips per day.

Trucks will travel from LFC to one or both of two designated offsite locations; Phillips 66 Santa Maria Pump Station in Santa Barbara County, and Plains Pentland Pump Station in Kern County. These designated facilities are currently permitted to handle this type of crude transport truck unloading and have the equipment and capacity to accommodate the expected number of trucks for the LFC interim trucking.

Two transport truck scenarios have been assessed for the TQRA. In Scenario 1, all of the trucks will load product at LFC and travel to the Phillips 66 Pump Station in Santa Maria for unloading. In Scenario 2, all the trucks will load product at LFC and travel to the Pentland PAAPL Station in Maricopa for unloading. In actual operation, trucks could deliver product to one or the other or both of the two facilities on a given day. For risk calculation purposes, after unloading, it has been assumed the trucks return directly back to LFC to reload.

The following average daily laden truck traffic is proposed:

Scenario 1 to Phillips 66 Pump Station in Santa Maria

- Maximum number of trucks = 70 per day
- Maximum volume of product per truck = 160 barrels (bbls)
- Annual number of truck trips = 70 x 365 = 25,550
- Total distance to Phillips 66 = 54.3 miles

Scenario 2 to Pentland PAAPL Station in Maricopa

- Maximum number of trucks = 68 per day
- Maximum volume of product per truck = 160 barrels (bbls)
- Annual number of truck trips = 68 x 365 = 24,820
- Total distance to Pentland PAAPL = 140.0 miles

All trucks entering and leaving the LFC facility would use the Refugio Road junction for access to United States Highway (US) 101. Trucks will be routed northbound from LFC and utilize US 101 and State Route (SR) 166. The following roadways will be utilized:

Destination Facility	Facility Address	Roadways
Phillips 66 Santa Maria Pump Station	1580 East Battles Road, Santa Maria, CA 93454	- LFC facility interior road - Corral Canyon Road - Calle Real Road - Refugio Road - Highway US 101 to Santa Maria - E. Betteravia Road - Rosemary Road - E. Battles Road to Phillips 66
Plains All American Pipeline Pentland Pump Station	2311 Basic School Road, Maricopa, CA 93252	- LFC facility interior road - Corral Canyon Road - Calle Real Road - Refugio Road - Highway US 101 to Santa Maria - Highway SR 166 (Santa Maria to Maricopa) - Basic School Road to PAAPL

The location of the LFC facility and proposed trucking routes are shown on Figure 2.1, and described below in Section 2.3.

2.2 Truck Descriptions

Crude oil will be transported by selected contract carriers that meet or exceed all regulatory requirements and safety standards. Trucks will have 2017 or newer engines, and will incorporate safety controls and complete inspections and oversight prior to leaving LFC.

Crude oil will be transported by cargo trucks designed to comply with US Department of Transport (DOT) 406 or DOT 407 specifications in 160 barrel loads. These trucks are designed according to construction requirements for cargo tank motor vehicles specifications in the Code of Federal Regulations (CFR), 49 CFR 178.346 and 178.347. These regulations prescribe the requirements for packaging and containers used in the transportation of hazardous materials. DOT 406/407 tank trucks are constructed of stainless steel or aluminum steel. Typical design parameters are as follows:

DOT 406 Trucks

- Atmospheric pressure tank, Maximum Allowable Working Pressure (MAWP) = 3 psig
- Single shell with wall thickness 0.188 to 0.25 inches
- Oval shaped cross section
- Flat or nearly flat tank ends

DOT 407 Trucks

- Low pressure cargo tank, MAWP up to 40 psig
- May be double shell with insulation
- Circular cross section
- Rounded tank ends

The cargo tank may be divided into compartments by internal bulkheads, which reduces the movement of liquid during the road trip. The inlet/outlet valves are self-closing stop valves which are located within the tank to provide protection from damage in the event of a collision.

ExxonMobil propose to use contract carriers to haul the crude oil. Contractor selection and auditing procedures will ensure the contractor meets or exceeds all applicable health, safety, security, and environmental compliance standards. The Crude Oil Transportation Risk Management & Prevention Program (CO-TRMPP) has been developed to ensure that the interim trucking is conducted in a safe and efficient manner, including:

- LFC operations personnel will conduct a safety and operability inspection checklist of trucks prior to loading and prior to transport from LFC to verify proper operation and no leaks.
- During loading both the ExxonMobil operator and the truck driver will be in attendance at all times.
- As required by SBC regulations, the Lease Automatic Custody Transfer (LACT) unit will incorporate a grounding/overfill protection system. Truck loading will stop in the case of an interrupted ground or determination of high truck level.
- Trucks will be equipped with an operating speed monitoring system.
- An annual inspection of truck transport trailers will be conducted to verify all ports are sealing properly, and repair any leaking ports prior to use.

2.3 Truck Route Descriptions

The proposed truck routes were surveyed by driving the routes and completing a form to describe the type of road, distances, and road conditions that may impact the transportation risk. The routes were divided into segments with similar characteristics, for example; the number of lanes, divided/undivided road, number of interchanges, the density of housing/businesses, how traffic feeds onto the road, passing lanes, visibility and topography. The proposed transportation routes are described below, and the road segments to each proposed truck unloading station shown on Figure 2.1. Facility access roads from LFC to highway US 101, and roads to the designated pump stations are shown on Figures 2.2, 2.3 and 2.4.

Highways may be classified as a freeway or expressway, depending on the type of access controls. A freeway will have road access at designated locations with on and off ramps. An expressway will have intersections that are not controlled by an on or off-ramp. US 101 is a divided freeway. At some locations along US 101, the freeway designation is changed on some rural sections to allow access to properties. SR 166 is a 2-lane undivided arterial highway with no road access controls.

Truck route segments were classified according to the definitions described in Table 2.1, and listed in Tables 2.2 and 2.3.

Scenarios 1 and 2 – LFC to Santa Maria via Highway US 101

Both proposed truck routes use the same roads from LFC to Santa Maria via highway US 101. The route to Phillips 66 Terminal in Santa Maria exits the highway at the Betteravia Road junction. The route to Pentland PAAPL Terminal continues north through Santa Maria, and exits US 101 onto SR 166 east.

The route to Santa Maria is approximately 52.4 miles in length, and has been divided into 10 segments, designated A through J. Trucks will follow the main LFC plant road to the front gate on Calle Real. Calle Real from the LFC facility to US 101 is a rural 2-lane road. The road passes ranchland, and accesses the US 101 at Refugio State Beach area. All trucks entering and leaving the LFC facility will access US 101 at the Refugio Road junction, as shown on Figure 2.2.

Highway US 101 is a four-lane divided freeway in populated areas from Refugio Road junction to Betteravia Road junction. In some rural areas, the freeway designation is changed to allow access to properties and rural roads. The route initially travels west parallel to the Pacific Ocean, with state beaches to the south and primarily ranchland to the north of the road. At Gaviota, the road turns north over Gaviota State Park. The road passes a rest area, a short tunnel, and a winding section over the hills. North of the junction with State Route 1, the highway goes across gently rolling hills, past ranchland and scattered farms to the small town of Buellton. North of Buellton to Santa Maria, the highway passes through gently rolling hills, ranchland, vineyards, and the small town of Los Alamos. In Santa Maria, the road widens to a 6-lane divided highway.

Scenario 1 - Highway US 101 to Phillips 66 Terminal in Santa Maria

For scenario 1, trucks exit US 101 at Betteravia Road, and travel 1.9 miles to Phillips 66 Terminal. The total route from LFC is approximately 54.3 miles in length, and has been divided into 13 segments, designated A to M.

Betteravia Road east of US 101 is a 2-lane arterial road used for access to agricultural and oil production areas. For a short section, the road has four lanes to provide access to the truck stop and service stations. The truck route uses Betteravia Road for about 1.0 miles, then turns north onto Rosemary Road, then west onto Battles Road to the Phillips 66 Terminal. Rosemary Road and Battles Road are 2-lane collector roads that serve mostly agricultural and oil production areas. The route segments are defined in Table 2.1 and shown on Figures 2.1 and 2.3.

Scenario 2 - Highway US 101 to Pentland PAAPL Terminal in Maricopa

For scenario 2, trucks continue north on US 101 through Santa Maria and exit US 101 east onto SR 166. The total route from LFC to Pentland PAAPL Terminal in Maricopa is approximately 140.0 miles in length, and has been divided into a total of 20 segments, designated A to J and N to W.

State Route 166 is a 2-lane undivided arterial highway. The road passes across the Sierra Madre Mountains. The route is rural with some ranch and farm land in the Cuyama River Valley, and passes through the small rural town of New Cuyama. SR 166 combines with SR 33 for a 13.7 mile section up to the town of Maricopa, where the highways separate. As SR 166/SR 33 passes down the mountains into the San Joaquin Valley, the gradient is 4 to 7%, and slow truck passing lanes are provided. After Maricopa, SR 166 continues east through mainly flat land with oil development and rural areas to Basic School Road and the Pentland PAAPL Terminal. The route segments are defined in Tables 2.1 and 2.2, and shown on Figures 2.1 and 2.4.

2.4 Average Daily Traffic

Average annual daily traffic (AADT) is the primary measure used to evaluate traffic volumes for regional highways. Average daily traffic is measured by the California Department of Transportation(26) (CalTrans) on a sampling basis, and the numbers adjusted for total annual volumes divided by 365 days. These are published annually by CalTrans for vehicles and trucks. This data was obtained for the years 2012 through 2016, and used to calculate an average volume by route segment. The calculated average vehicle and truck AADTs are shown in Tables 3.2 and 3.3.

Potential traffic impacts on local roads associated with the Project have been assessed for existing and future traffic conditions in a separate study by Associated Transportation Engineers (ATE) January 2018(2). The traffic counts were used to estimate current accident rates for non-highway roads, and project future traffic with the addition of potential traffic due to the interim truck project as shown in Tables 3.2 and 3.3.

2.5 Population Densities

The public population primarily at risk from a crude oil release will be those involved in a vehicle collision, or a vehicle stopped on the road due to a collision. There is also the potential for public impact to those in buildings and outdoors in areas adjacent to the road.

The population density has been assessed along the proposed transportation routes by driving the routes and review of aerial photographs. The density has been assigned to a category for each road segment, based on population categories published in the ADL NGL report (1990)(1) and the TNO Green Book(7). These categories are described in Table 2.4, and have been assigned for each transportation road segment as shown in Tables 2.1 through 2.3.

The population present at night will not be the same as during the day for commercial or industrial areas. The population densities listed in Table 2.4 are day time averages, and have been adjusted for night time densities as listed below. The distribution of people indoors and outdoors also varies depending on the population category, and whether it is day or night. Population distributions have been estimated from those published in the TNO Green Book(7) as follows:

Day:	100% of population listed in Table 2.4
Night:	100% present in housing areas
	20% present in industrial areas
	5% present in commercial and agricultural areas

Day:	80% indoors, 20% outdoors in all areas except, 20% indoors, 80% outdoors in agricultural areas
Night:	95% indoors, 5% outdoors

Populations adjacent to the road will not be evenly distributed. Within an area that may be impacted by a hazardous material release, several people may be exposed, whereas other areas may be empty. To account for uneven distribution, residential densities have been grouped into three persons in close proximity, which is the average occupancy of a house. Industrial and commercial areas are assumed to have six people in close proximity.

The LFC facility is not accessible to the public; therefore, there is virtually no potential for public exposure to any hazards that occur within the LFC facility boundaries. The public population on-site is assumed to be zero.

2.6 Weather Data

In the event of a crude oil release during transportation, a flammable vapor cloud and/or fire may occur. To characterize these hazards, two meteorological conditions have been selected to represent worst case and more typical conditions. A worst case of "F" stability and 1.5 meters per second wind speed represents low wind speed during the night when flammable vapors may accumulate. A more typical case of "D" stability and 4 meters per second wind speed represents average weather conditions during the day and part of the night hours. Weather data from the Santa Maria airport station has been used to estimate the following:

Stability Class	Wind Speed	Percent Occurrence
F	1.5 m/s (3.5 mph)	35 %
D	4 m/s (9 mph)	65 %

Figure 2.1 Map of Truck Route Segments

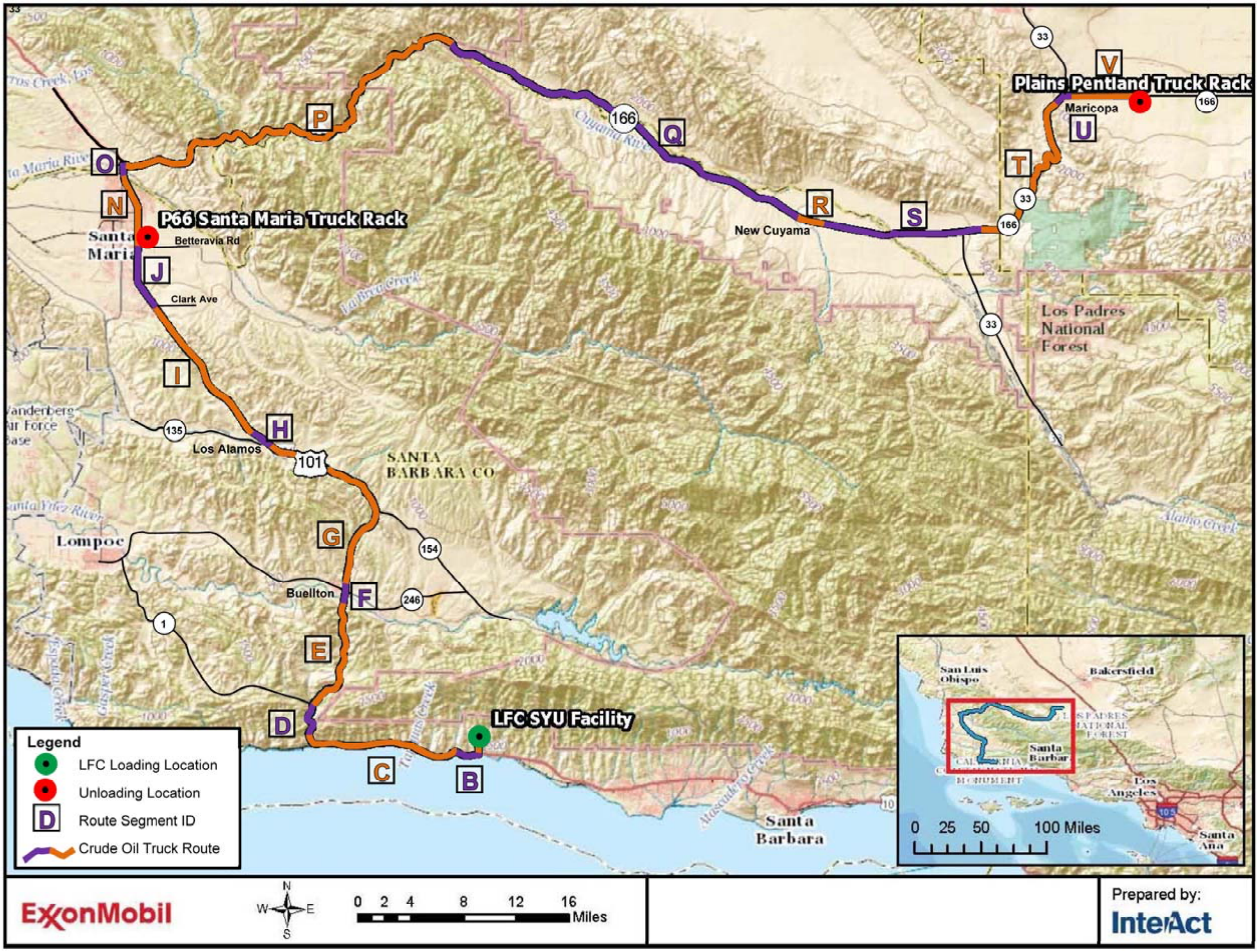


Figure 2.2 Map of Las Flores Canyon Access Road Segments

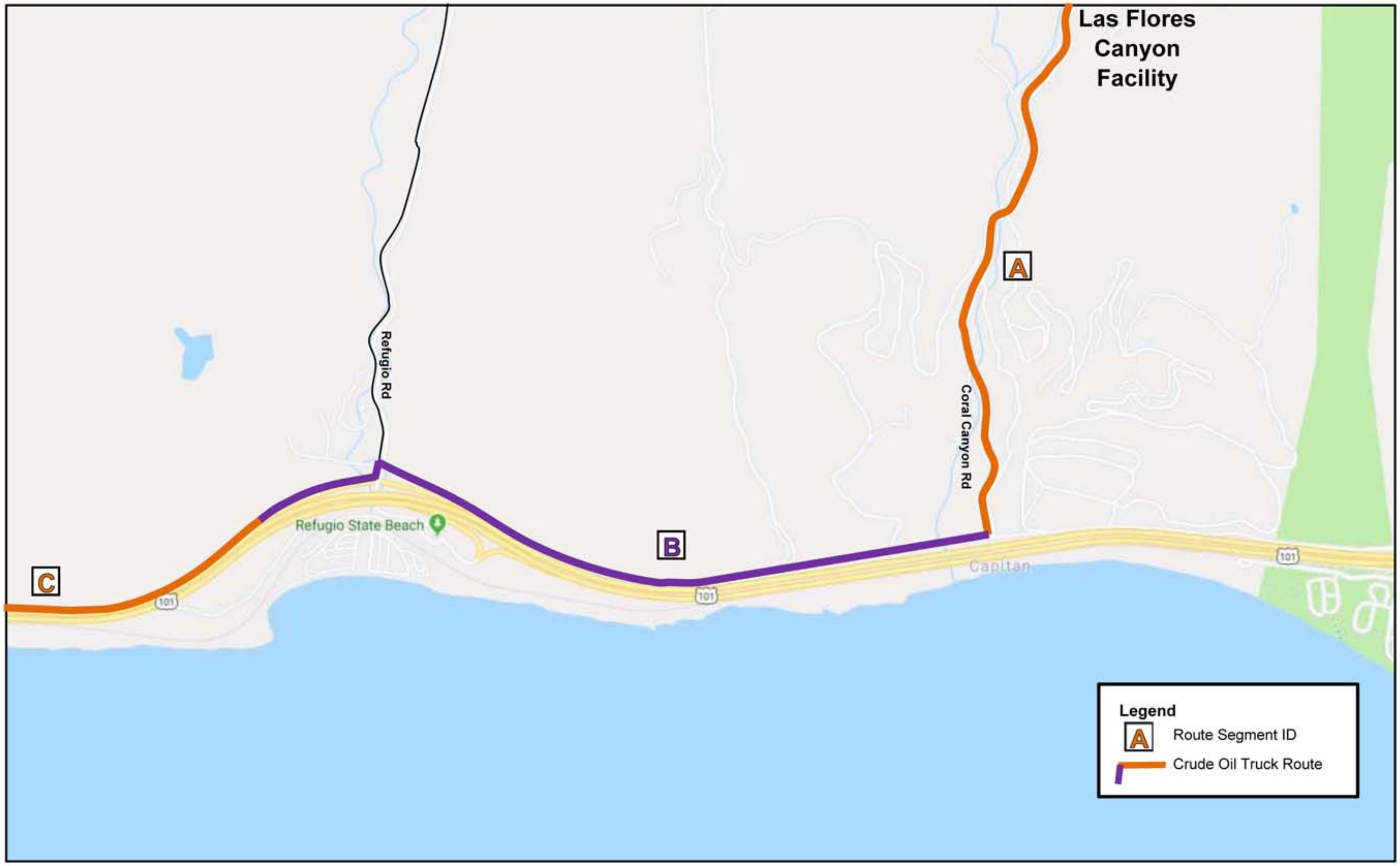


Figure 2.3 Map of Phillips 66 Terminal Access Road Segments

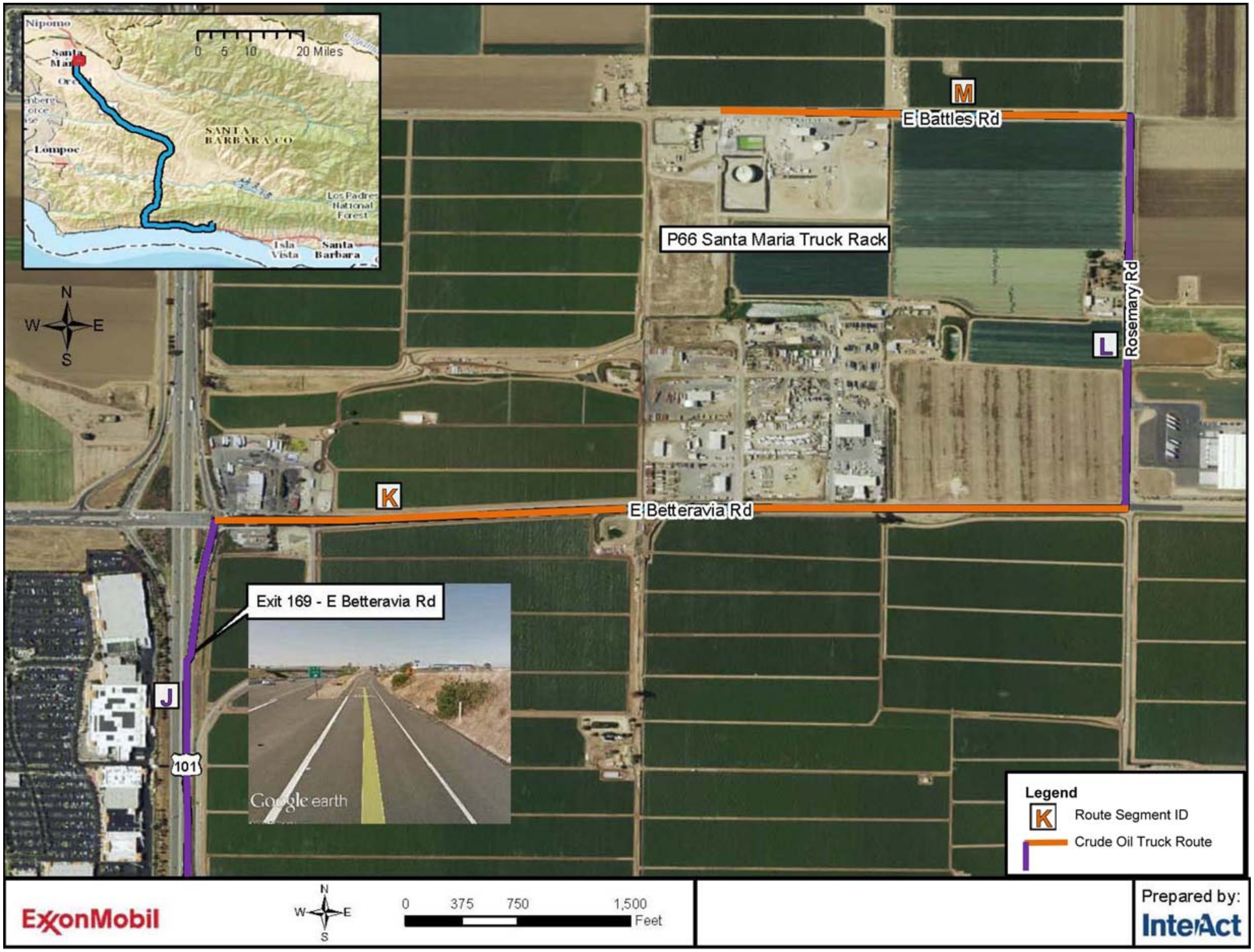


Figure 2.4 Map of Pentland PAAPL Terminal Access Road Segments

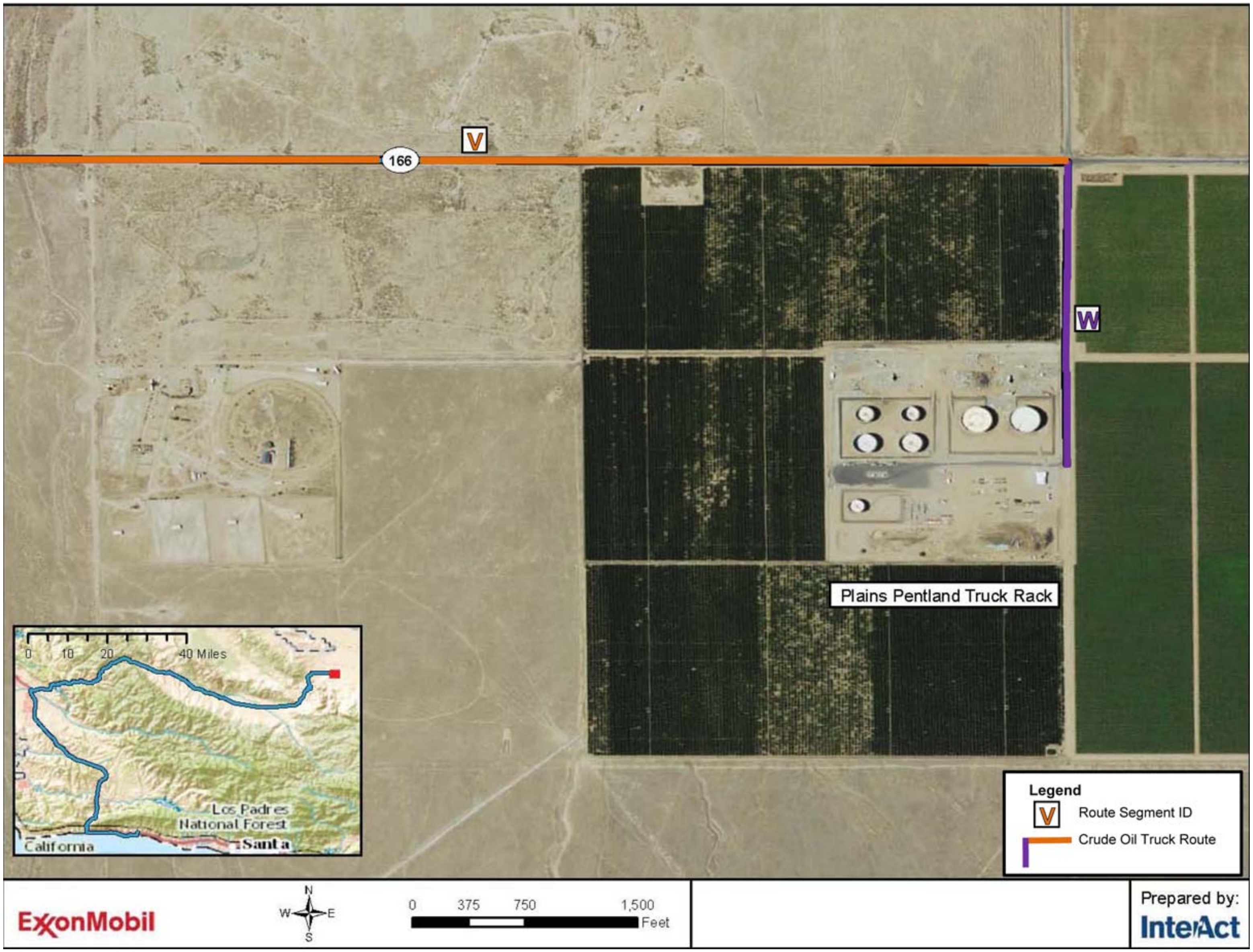


Table 2.1 Road Type Classifications

Road Type	ID	Description
Urban	U	Urbanized areas and small urban areas designated by the Bureau of the Census as having a population of five thousand (5,000) or more.
Rural	R	Rural areas comprise the areas outside the boundaries of small urban and urbanized areas.
Local	L	Local roads provide primary access to residential areas, businesses, farms, and other local areas. Posted speed limits are usually between 20 and 45 mph.
Collector	C	Collectors are major and minor roads that connect local roads and streets with arterials. Posted speed limits are usually between 35 and 55 mph.
Arterial	A	Arterials are major through roads that carry large volumes of traffic. Arterials are often divided into major and minor arterials.
Freeway	F	Limited access roads that provide largely uninterrupted travel, often using partial or full access control.
Divided Road	Di	Road with division barrier or separation between directions of travel.
Undivided Road	Un	Road without division barrier or separation between directions of travel.

Table 2.2 Route 1 – Road Segments from LFC to Phillips 66 Terminal in Santa Maria

ID	H'Way / Road	Section		Length (miles)	Lanes (both ways)	Road Type*	Population Category**	Population Density per mile^2	Description
		From	To						
A	Coral Canyon	LFC Loading Area	LFC Exit	0.8	2	RLUn	Non-public road	0	LFC internal road through rural canyon.
B	Calle Real	LFC Exit	Jct Refugio Rd / US 101 J-120	1.6	2	RCUn	Rural	20	Collector road to freeway junction. Access to ranches and beaches.
C	US 101	Jct Refugio Rd / US 101 J-120	Gaviota Rest Area	10.2	4	RFDi	Rural / Rec	30	Freeway parallel to the pacific ocean, with beaches / 25% recreation areas to the south and ranchland to the north.
D	US 101	Gaviota Rest Area	Jct US 101/SR 1, End State Park	2.1	4	RFDi	UnPop	2	Freeway across the hills of Gaviota State Park. Some steep sections and winding road.
E	US 101	Jct US 101/SR 1, End State Park	US 101 J-139, start Buellton	7.6	4	RFDi	Rural	20	Gently rolling hills, ranchland and scattered farms.
F	US 101	US 101 J-139, start Buellton	US 101 J-140B, end Buellton	1.1	4	UFDi	Mixed-L	1,000	Small town of Buellton, population approx 5,000. Mixed commercial and housing, with good setbacks from freeway.
G	US 101	US 101 J-140B, end Buellton	Start Los Alamos area	12.8	4	RFDi	Rural	20	Gently rolling hills, ranchland and vineyards.
H	US 101	Start Los Alamos area	End Los Alamos area	1.2	4	RFDi	Mixed-L	1,000	Los Alamos, small rural town of less than 2,000. Mixed commercial and housing adjacent to freeway.
I	US 101	End Los Alamos area	US 101 J-165 Clark Ave	10.6	4	RFDi	Rural	20	Gently rolling hills, ranchland and vineyards.

Table 2.2 Route 1 – Road Segments from LFC to Phillips 66 Terminal in Santa Maria

ID	H'Way / Road	Section		Length (miles)	Lanes (both ways)	Road Type*	Population Category**	Population Density per mile^2	Description
		From	To						
J	US 101	US 101 J-165 Clark Ave	US 101 J-169 / Betteravia Rd	4.4	4 / 6	UFDi	Mixed-M / Ag	2,100	Urban freeway through the town of Santa Maria. Mainly level, with good visibility. Mixed housing and commercial to west of freeway, agricultural to east.
K	Betteravia	US 101 J-169 / Betteravia Rd	Jct Betteravia / Rosemary	1.0	2	UCUn	Com-L / Ag	600	2-lane arterial road serves mainly agricultural areas. Short 4-lane section to the east of US 101 junction, provides access to truck stop and service stations.
L/M	Rosemary / Battles	Jct Betteravia / Rosemary	Rosemary Rd, Battles Rd and P66 Entrance	0.9	2	RCUn	Ag / Rural	110	Mainly agricultural area. Rosemary Rd is a 2-lane collector road. Battles Rd is a rural road with traffic mainly to the Phlilps 66 facility.
Route Length (miles)				**54.3**					

* Road Types defined in Table 2.1
** Population Density categories defined in Table 2.4

Table 2.3 Route 2 – Road Segments from LFC to Pentland PAAPL Terminal in Kern County

ID	H'Way / Road	Section		Length (miles)	Lanes (both ways)	Road Type*	Population Category**	Population Density per mile^2	Description
		From	To						
Segments A through J described in Route 1 Table 2.2.									
N	US 101	US 101 J-169 / Betteravia Rd	Start Santa Maria River Bridge	4.4	6	UFDi	Mixed-M	4,000	Urban freeway through the town of Santa Maria. Mainly level with good visibility. Mixed housing and commercial.
O	US 101	Start Santa Maria River Bridge	Jct US 101 / SR 166 East	0.8	6	UFDi	UnPop	2	6-lane divided highway bridge across the Santa Maria River area. Unpopulated canyon.
P	SR 166	Jct US 101 / SR 166 East	Start of Cuyama River Valley	28.3	2	RAUn	Rural / UnPop	11	Rural arterial highway across hills. Winding road, scattered ranches.
Q	SR 166	Start of Cuyama River Valley	Start of town New Cuyama	23.7	2	RAUn	Rural	20	Rural arterial highway through Cuyama River Valley. Farms and ranchland.
R	SR 166	Start of town New Cuyama	End of town New Cuyama	1.1	3	RAUn	Res-L	1,000	Small rural town of New Cuyama, population about 500, surrounded by farmland.
S	SR 166 / 33	End of town New Cuyama	End Cuyama Valley, start of hills	11.2	2	RAUn	Rural	20	Rural arterial highway through Cuyama River Valley. Farms and ranchland.
T	SR 166 / 33	End Cuyama Valley, start of hills	Start of town Maricopa	11.7	2/3/4	RAUn	UnPop	2	Rural arterial highway across hills. Winding road, with steep sections of 4 to 7% gradient. Mainly undeveloped.
U	SR 166 / 33	Start of town Maricopa	End of town Maricopa	1.3	2	RAUn	Res-M	3,000	Small rural town of Maricopa, population 1150. Speed limits 45 / 35 mph, junction with stop sign in town.
V	SR 166	End of town Maricopa	Jct SR 166 / Basic School	4.7	3	RAUn	Rural	20	Oil development, scattered homes and some farms.

Table 2.3 Route 2 – Road Segments from LFC to Pentland PAAPL Terminal in Kern County

ID	H'Way / Road	Section		Length (miles)	Lanes (both ways)	Road Type*	Population Category**	Population Density per mile^2	Description
		From	To						
W	Basic School Rd	Jct SR 166 / Basic School	Entrance to PAAPL facility	0.4	4	RAUn	Rural	20	Oil development and farm areas.
Route Length (miles)				**140.0**					

* Road Types defined in Table 2.1

** Population Density categories defined in Table 2.4

Table 2.4 Population Density Categories

Code / Category	Description	Population Density (per square mile)
Com-H - Commercial – High	Office buildings and shopping areas in a town center	10,000
Com-M Commercial – Medium	Office buildings and shopping areas with space surrounding the buildings	5,000
Com-L Commercial – Low	Scattered buildings	1,000
Res-H Residential – High	Busy residential area with a number of multi-family homes	10,000
Res-M Residential – Medium	Quiet residential, single family homes	3,000
Res-L Residential – Low	Scattered housing, semi-rural	1,000
Mixed-H Mixed Use - High	Mix of office buildings, commercial and multi-family homes	10,000
Mixed-M Mixed Use - Medium	Mix of office buildings, commercial and single family homes	4,000
Mixed-L Mixed Use - Low	Scattered buildings	1,000
Ind-M Industrial - Medium	One and two story buildings with industrial facilities surrounding offices	2,000
Ind-L Industrial - Low	Scattered industrial facilities with low density offices	1,000
Ag Agricultural	Cultivated Fields	200
Rec Recreation	Average beach and camp-site areas	100
Rural	Ranchland / Low density oil development	20
UnPop Unpopulated	Undeveloped land, forest or hills	2

3. ACCIDENT / INCIDENT FREQUENCY

The likelihoods of a truck accident have been calculated from published national and state data. Route specific accident rates have been developed where possible, and compared to state and national accident data. In the event of an accident and hazardous material release, a serious injury or fatality to the public may occur.

The terms “accident” and “crash” have been used interchangeably for a vehicle collision. The term “incident” has been used to describe a release of hazardous material, which may occur as the result of a vehicle collision, or a cargo containment failure.

Produced SYU crude oil is classified as hazardous materials (HM) according to the Code of Federal Regulations (49CFR). Hazardous materials are classified into 9 material classes as defined in Table 3.1. Crude oil is classified as a Class 3 Hazardous Material (HM-3), which includes flammable and combustible liquids. This classification system is used within the published incident databases described below.

3.1 Truck and Vehicle Accident Data

Truck accident rates are reported in published data as vehicle miles traveled and are typically quoted per million vehicle miles, or per 10^6 miles (MVMT). Reported accident rates range from 0.32 to 14 accidents per million vehicle miles(11)(20) depending on accident reporting threshold, road type, collision speed, and type of vehicle. Truck and vehicle accident rates are affected by specific road conditions, such as; traffic density, urban or rural routes, and divided or undivided highway. An assessment has been made of California accident data, national accident databases, and published accident rates, to develop route specific truck accident rates.

3.1.1 California Accident Data

Accidents that occur on California public roads are recorded by the California Highway Patrol (CHP) in the California Statewide Integrated Traffic Record System (SWITRS). The database serves as a means to collect and process data gathered from a collision scene, and is submitted by city and county jurisdictions. This includes data on the accident location, vehicle types, occupants, level of injury, number of injuries, and cause of the accident.

The SWITRS data is categorized by five levels of severity by the highest level of resulting injury:

- Fatality involved accident,
- Severe injury accident,
- Visible injury accident,
- Pain injury accident, and
- Property Damage Only (PDO) collisions.

Raw data was obtained for the five year period 2012 through 2016(4) in order to develop accident rates by road segment. Data from all of California was analyzed to obtain average state vehicle and truck accident data. This included over 2 million accident records, and over 100,000 truck accidents. Accident data from 3 counties, and 3 municipalities were extracted to identify accidents that occurred over the 5 year period on proposed truck routes. These accidents were then categorized by road segment to calculate the accident rate for vehicles and trucks by segment.

The accuracy of the data is subject to reporting levels of the law enforcement agencies supplying the collision reports. The accident reporting threshold used by the CHP is $500 property damage or personal injury. However, some municipalities follow different reporting thresholds, and may report only tow-away crashes, or crashes with damage of greater than $1,000. The CHP estimates that it receives collision reports from municipalities for approximately 100% of fatal accidents, 90% of injury accidents and 40% of property damage only accidents. A review of SWITRS data collection by the Highway Safety Information System (HSIS) office(21) found that accidents are mostly reported accurately by the Highway Patrol, which respond to freeway accidents (urban and rural), and rural roads outside municipalities. Some municipalities were not as consistent with accident reporting. Accidents occurring on route segments analyzed for this TQRA are primarily within the CHP jurisdiction, and are therefore likely to be reported accurately.

3.1.2 National Accident Data

The two primary Federal crash data sets are the Fatality Analysis Reporting System (FARS) and the General Estimates System (GES) databases. Trucks are identified in each but lack details on the type of truck and cargo.

The **Fatal Accident Reporting System (FARS)** is a census of all motor vehicles in fatal accidents on public roads in which at least one person has died. FARS is maintained by the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation (DOT) and the data is obtained from police reports, driver records, vehicle records, and death certificates. FARS is recognized by government agencies and analysts as the most reliable national crash database. A large truck is defined in FARS as a truck with a gross vehicle weight rating (GVWR) of more than 10,000 pounds.

The **Trucks Involved in Fatal Accidents (TIFA)** database is managed by the University of Michigan Transportation Research Institute (UMTRI). Large truck accident data is extracted from FARS, and supplemental data on the crashes are collected by a survey. The TIFA data collection protocol is based on a telephone survey of the motor carrier, driver, dispatcher, or safety director of the truck involved in the crash, as well as the reporting officer, and is considered highly reliable.

The **General Estimates System (GES)** is also maintained by the NHTSA, and is a nationally representative sample of police-reported fatal, injury, and property-damage-only crashes. The categories of injury, and property-damage-only crashes are the same as for the California SWITRS data. GES estimates are subject to sampling error for injury and PDO crashes, but provide data consistent with California data. National estimates of million vehicle miles travelled are also provided for vehicles and trucks. The GES definition of a large truck is the same as the FARS definition.

The **Motor Carrier Management Information System (MCMIS)** crash file is maintained by the Federal Motor Carrier Safety Administration (FMCSA), and submitted by the States from data extracted from police accident reports. A MCMIS reportable crash must involve a truck (a vehicle designed, used, or maintained primarily for carrying property that has at least two axles and six tires) or a bus. The crash must result in at least one fatality, or one injury which requires immediate attention at a medical facility, or one disabled vehicle that is towed from the scene. The MCMIS crash file is a useful source of information on hazardous materials transportation accidents, although not all data is accurately completed and the reporting criteria are different from the FARS, GES and California data. A review by the Hazardous Material Cooperative Research Program (HMCRP) in 2009(27) estimated the reporting rate was about 80%.

The **Hazardous Materials Incident Reporting System (HMIRS)** is maintained by the Pipeline and Hazardous Materials Safety Administration (PHMSA) of the DOT. All carriers of hazardous materials by road, rail, water, or air must fill out a DOT Form and submit it to PHMSA within 30 days of a reportable hazmat incident that results in a release of any quantity of hazardous material. The reportable incident could occur during loading/unloading, while in transit, or while in temporary storage when traveling between the hazmat shipment origin and its final destination. The database is a useful source of information on hazmat releases during transportation, and casualties resulting from exposure to the hazardous material. Prior to 1998, only interstate carriers were required to report hazardous material incidents, and few non-release reports are filed when there is damage to the hazmat container which does not result in a release. Incidents are self-reported by carriers, although PHMSA staff may contact the carrier and request clarification of the information they receive, and all injuries and fatalities are validated to determine if they were caused by a hazardous material release.

The definitions of injury and the level of reporting are not consistent between the state and various national databases, which may explain some inconsistencies in reported accident rates. However, a fatality accident is likely to be reported and is not subject to interpretation by the authority reporting on the accident.

3.1.3 Hazardous Materials Truck Accident Data

A study on the comparative risks of hazardous materials (HM) and non-HM transportation was conducted by Battelle for the FMCSA in 2001(11). The study calculated the risks associated with each category of hazardous material and analyzed data from the HMIRS database, and the MCMIS accident database. Events were analyzed that involved the transportation of hazardous materials that may or may not have resulted in the release of a hazardous material.

In the 2001 FMCSA study, truck accident rates were developed for HM and non-HM truck transportation. HM shipments constituted approximately 5% of the total truck mileage, and ranged in the type of materials carried from perfumes to explosives. HM Class 3 (HM-3) includes flammable and combustible materials, the bulk of which was gasoline transported in cargo tanks. SYU crude oil transported from the LFC will be HM Class 3 materials. It was reported in the 2001 FMCSA study that 52% of the HM vehicles carried Class 3 flammable and combustible liquids, and represented 56% of all of the impacts (1391 accidents). The accident rates were calculated as follows:

- Non-HM truck accident rate = 0.73 per million vehicle miles
- HM truck accident rate = 0.32 per million vehicle miles
- HM Class 3 cargo trucks = 0.5 per million vehicle miles

The truck accident rates quoted are for accidents included in the MCMIS database, which include fatalities, significant injuries and tow-away accidents. The resulting accident rates are therefore lower than those reported in the California SWITRS and GES databases that have different injury and property damage reporting levels. However, the FMCSA data indicates that trucks carrying hazardous materials have an average accident rate of less than half non-HM trucks, and Class 3 cargo trucks an average accident rate about 30% lower than non-HM trucks.

The average truck accident rates reported in the California SWITRS and GES databases do not account for the added safety of HM trucks as identified in the 2001 FMCSA study. The drivers of trucks carrying hazardous materials are required to have more training and experience than the average truck driver. Therefore, for the purpose of this study, average truck accident rates have been reduced by a factor of 30% to reflect the greater safety of HM Class 3 cargo truck drivers over non-HM truck drivers.

3.1.4 Truck Accident Data By Road Type

A study conducted by Harwood and Russell in 1992(20) calculated truck accident rates by road type. This study data has been widely used in literature and by analysts to conduct simplified assessments of hazardous material routes, because it provides truck accident data by road class. Harwood demonstrated that road type such as urban or rural, and divided or undivided highway, has a direct influence on the accident rate and severity of an accident. The high density of traffic in an urban area significantly increases the chance of a collision, whereas the accident rate is reduced by a divided, limited access freeway. Hazardous materials release probabilities were also found to be influenced by road type. Accidents that occurred at higher speed in rural areas were found to have a higher release probability due to the higher impact speed. The following accident rates and HazMat release probabilities were reported:

Area	Roadway	Truck Accident Rate per 10^6 vmt	HazMat Release Probability
Rural	Two-lane	2.19	0.086
Rural	Multilane, undivided	4.49	0.081
Rural	Multilane, divided	2.15	0.082
Rural	Freeway (limited access)	0.64	0.090
Urban	Two-lane	8.66	0.069
Urban	Multilane, undivided	13.92	0.055
Urban	Multilane, divided	12.47	0.062
Urban	Freeway (limited access)	2.18	0.062

Reference: Harwood and Russell (1992)(20)

3.2 Accident Fatality, Injury and Damage Rates

3.2.1 National Truck and Vehicle Accident Rates

Truck and vehicle accident data are collected nationally in the FARS and GES data, and reported annually by the FMCSA(15). The crash severity accident rates have been averaged for the five year period of analysis 2012 to 2016 as follows:

Vehicle Type Involved and Year of Data	Accident Rate per Million Vehicle Miles and % of Total			
	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Total
Trucks 2012 to 2016	0.014	0.312	1.142	1.47
Percent of Total	0.97%	21.3%	77.8%	
Vehicles 2012 to 2016	0.016	1.055	2.542	3.61
Percent of Total	0.46%	29.1%	70.4%	

The accident data shown above is for the number of vehicles involved. The overall truck accident rate is less than half of the rate for all vehicles. This is likely due to the greater training truck drivers receive, and that a larger percent of truck miles occur on highways or rural roads where the accident rate is lower.

The likelihood of a fatality is higher in a crash between a truck and a passenger vehicle than between two passenger vehicles, due to the difference in vehicle weight. However, due to the lower overall accident rate for trucks, the fatality rate for trucks and all vehicles per million vehicle miles has been calculated to be about the same at 0.014 and 0.016 per mvmt for trucks and vehicles respectively.

3.2.2 Reduction in Accident Rates Over 25 Years

Since the 1990's, vehicle and truck accident rates have been significantly reduced by improvements in roads, vehicles and driver awareness. National vehicle and truck accident rates have been published by the FMCSA(15) and show a significant reduction over the 25 year period, as illustrated in Figure 3.1 for fatal accidents. The following changes have been calculated:

Vehicle Type and Year of Data	Accident Rate per Million Vehicle Miles			
	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Total
Truck 1991	0.029	0.522	1.66	2.21
Truck 2016	0.015	0.381	1.35	1.74
% Reduction	- 50%	- 27%	- 19%	- 21%
All Vehicles 1991	0.025	1.649	3.26	4.94
All Vehicles 2016	0.017	1.267	2.81	4.09
% Reduction	- 35%	- 23%	- 14%	- 17%

For trucks there has been an overall accident rate reduction of 21% since 1991. For fatal crashes, there has been an accident rate reduction of 50%, greater than for all accident types, which may be due to improved passenger vehicle safety equipment.

3.3 California Route Specific Accident Data

Route specific accident rates have been developed by an analysis of five years of California data obtained from the CHP SWITRS database(4), for years 2012 to 2016. This accident data was categorized by road segment for the proposed truck routes from LFC. Local influences on accident data associated with road access, road gradients, visibility and weather are inherently included within these route specific accident rates. Accident rates have been calculated by route segment for vehicles and trucks as shown in Table 3.2 and 3.3.

Traffic volumes on local roads associated with the Project have been assessed for existing and future traffic conditions in the 2018 traffic study by ATE(2). There was insufficient accident data to calculate historical rates for access roads to the LFC site and the two proposed truck unloading terminals. Average vehicle and truck accident rates were therefore used for these segments.

There was insufficient data to develop statistically significant accident rates on short highway segments through small towns. Adjacent highway segments were therefore used to calculate average accident rates for these segments when the road conditions were similar.

Accident rates for HM Class 3 cargo trucks have been estimated by reducing the route specific average truck rates by 30%, as discussed in Section 3.1.3. The calculated vehicle and truck accident rates by route section are shown in Tables 3.2 and 3.3, and summarized as follows:

Scenario	**Description**	**Vehicle Accident Rate per 10^6 miles**	**HM Class 3 Truck Accident Rate per 10^6 miles**	**HM Class 3 Truck Accident Rate per laden trip**
1	LFC to Phillips 66 Santa Maria Pump Station via US 101	0.80	0.32	1.8×10^{-5}
2	LFC to PAAPL Pentland Pump Station via US 101 and SR 166	0.95	0.38	5.4×10^{-5}

3.4 Causes of Truck Collisions

A review has been conducted on the causes of truck collisions using published truck accident studies and collision data. This data has then been used to identify the types of accidents more likely to result in a hazardous material spill, identify potential mitigation measures, and quantify the benefit in terms of risk reduction.

California accident data includes vehicle information and the primary collision factor. Truck accident data, for the latest 5 years available, has been grouped into critical events for the years 2011 to 2015, as shown in Table 3.4.

The Large Truck Crash Causation Study (LTCCS)(17) was designed as a one-time study to analyze crash causes and contributing factors. The study was undertaken jointly by FMCSA and NHTSA, utilizing a representative sample of nearly 1,000 injury and fatal crashes involving large trucks that occurred between April 2001 and December 2003. The Report to Congress was published in 2006(17). The accidents selected were of a greater severity than other national crash databases, and included 23% fatality and 29% incapacitating injury severity levels. The LTCCS critical accident events have been compared to those reported in the California SWITRS data shown in Table 3.4 and summarized as follows:

Primary Collision Factor	**CA SWITRS Data 2011 to 2015**		**LTCCS**
	Injuries and Fatalities per year	**%**	**Serious Injury and Fatality %**
Truck Loss of Control	1067	19%	16%
Truck Out of Lane or Unsafe Move	654	12%	18%
Truck Improper Turning or Crossing Intersection	467	8%	6%
Other	280	5%	16%
Truck Driver Not Assigned Fault	3187	56%	45%
Total	5655	100%	100%

The primary collision factor due to truck driver action or inaction totals approximately 50% of injury or fatality collisions.

3.5 Accident Spill Probabilities

A public hazard may occur due to a vehicle collision that causes a rupture or leak of the tanker truck. The likelihood of a release has been calculated from a review of published reports and hazardous materials truck accident data.

The release probability, given an accident, is reported by Harwood(20) to be between 5% and 9%, depending on the speed of the accident. A review of transportation data by Arthur D. Little in 1990(1) reported a conditional probability of a large spill from a gasoline truck as 7%, given a reportable accident.

Five years of accident data (2012 to 2016) reported in the MCMIS database(15) have been analyzed for truck crashes involving hazardous material cargo. Hazardous materials are classified by cargo type, accident severity, and if a release occurred. Class 3 flammable and combustible liquids make up about 49% of the HM accidents and 54% of the HM release incidents. For HM Class 3 liquid cargo trucks, the following release probabilities have been calculated:

- Fatal accidents = 40% probability of release
- Serious injury or tow-away accidents = 15% probability of release

The MCMIS data includes injury and PDO accidents for only those accidents which require immediate medical attention or a tow-away. Less severe accidents, which are less likely to result in a release, are included in the California SWITRS data used for this TQRA. A comparison of accident reporting rates between databases found that only 36% of the accidents included in the GES and SWITRS data are included in the MCMIS hazardous materials data. A correction factor has been applied to estimate the following accident release probabilities for California reporting categories:

- Fatal accidents = 40% probability of release
- Injury or PDO reported accidents = 5% probability of release

The average spill probability for a reportable accident is lower than reported by Harwood(20) in 1992, and ADL(1) in 1990. The introduction of DOT 406/407 truck designs in 1993 have enhanced container integrity over the older MC 306/307 designs, and the use of truck roll stability systems may have also contributed to the reduced frequency of rollover events.

An analysis of the spill probability due to cargo tank rollovers was conducted by Battelle for the FMCSA 2005 study(14). It was found that cargo tanks are vulnerable to a spill on rollover. Spills were reported to occur in 66% of the rollovers, which makes rollover prevention an important factor in minimizing the risk of a hazardous material release.

An analysis has been conducted of hazardous material releases recorded in the HMIRS database for the years 1991 to 2015. Releases of hazardous material may be associated with a vehicle collision event, or a non-collision event. Non-collision releases were due to equipment failure, human error, or inadequate maintenance. Releases of less than 10% of the tank contents were categorized as “small”. The following in-transit crude oil releases were identified:

Release Type	**In-Transit Crude Oil Releases 1991 to 2015**					
	Number of Releases	**%**	**Small**	**Average Size S**	**Medium / Large**	**Average Size M/L**
Non-Collision	70	21%	64	1 bbl	6	86 bbl
Vehicle Collision	257	79%	122	4 bbl	135	109 bbl
Total	327	100%	186 (57%)	3 bbl	141 (43%)	108 bbl

As shown in the table above, non-collision events were identified as the cause of 21% of crude oil releases. These were primarily small releases due to overfilling, equipment failure, or failure to properly close valves/dome. Six larger non-collision releases occurred which were due to equipment failure in transit. Release sizes were categorized as being 43% medium/large, and 57% small.

A study of LPG road transportation by ADL in 1990(1) reported a similar release size distribution, with large spills occurring in 35 to 45% of releases. Non-collision release events were also estimated to occur in about 20% of releases for LPG transportation.

Based on the analysis of crude oil releases reported in the HMIRS database, the accident release probabilities have been increased by 20% to account for non-collision related releases in-transit. Representative spills sizes for all types of releases have been selected as:

- 40% large 160 barrels
- 60% small 16 barrels

3.6 Hazardous Material Ignition Probabilities

The HMIRS database has been analyzed to develop ignition probabilities for a release of crude oil. Gasoline has been included in the table below for comparison purposes. The following crude and gasoline releases and fires were identified over the twenty-five year period 1991 to 2015:

Release Material	**Release Size**	**Releases In-Transit 1991 to 2015**		
		Number of Releases	**Number of Fires**	**Ignition %**
Crude Oil	Small	186	3	2%
Crude Oil	Medium + Large	141	23	17%
Gasoline	Small	509	15	3%
Gasoline	Medium + Large	857	237	28%
Total		1693	278	16%

The ignition probability for a HM Class 3 release has been reported as 15% by the FMCSA(11). The source data was taken from spills reported in 1996, and is consistent with the average ignition probability identified above for 25 years of HMIRS data.

The probability of ignition is higher for larger spills due to the release being more likely to encounter an ignition source. A review of crude oil releases in the HMIRS database found only 3 out of 186 small releases had ignited. An ignition rate 2% ignition has been selected for a small crude oil release, and 20% ignition has been conservatively selected for a large crude oil release.

- 20% ignition large release
- 2% ignition small release

3.7 Exposure to a Hazardous Material Release

In a tanker truck collision, the primary cause of injury or fatality is due to the force of the collision, not a release of hazardous material. However, a single crash of a hazardous material truck in a crowded area has the potential for deaths and injuries beyond the vehicle occupants.

A release of any quantity of hazardous material must be reported to the PHMSA, and recorded in the HMIRS database. The report includes information on injuries and fatalities due to exposure to a hazardous material release. A search was performed of the HMIRS database to identify casualties due to exposure to crude oil and gasoline releases for the period 1991 to 2015:

Release Material	**Releases In-Transit 1991 to 2015**					
	Employee Casualty Incidents			**Public Casualty Incidents**		
	Fatality	**Serious Injury**	**Non-Hospital Injury**	**Fatality**	**Serious Injury**	**Non-Hospital Injury**
Crude Oil	4	2	0	1	1	0
Gasoline	106	43	12	12	7	10
Total Incidents	110	45	12	13	8	10
Total Casualties	111	46	13	26	12	13

All fatalities were due to vehicle occupants being trapped and exposed to fire. Public fatalities were associated with occupants of other vehicles involved in a collision, or occupants of a vehicle near the collision. For example, in 1993 an incident occurred when a gasoline truck was hit by a train, and 5 occupants of 3 other vehicles were killed in the fire.

The probability of public fatality due to a release and crude oil fire is 1 in 26 fires, or 4%. The probability of public fatality in a gasoline fire is 12 in 252 fires, or 5%. The probability of fatality in a gasoline fire is statistically more significant than the one crude oil incident, and the hazards of a fire are similar for each hazardous material. A 5% probability of fatality has therefore for assumed for crude oil.

There were fewer serious public injuries reported due to an in-transit hazardous material fire than fatalities. This may be due to under reporting of public injuries by the carrier companies submitting the reports. All fatalities are likely to be reported and investigated by PHMSA staff, but burn injuries may not have been reported if other trauma injuries also occurred.

Due to the likely underreporting of injuries, an assumption has been made that the injury rate is approximately twice that of the fatality rate. The probabilities of a public casualty incident have been estimated for a crude oil release as follows

♦ large ignited release:	5% fatality event	10% injury event
♦ small ignited release:	2% fatality event	5% injury event

The number fatalities that have occurred in a crude oil or gasoline truck fire ranged from 1 to 5, with an average of 2 public fatalities per incident. According to the DOT Bureau of Transportation Statistics, the average vehicle occupancy is 1.6 for all roads, and about 1.2 on highways. The distribution of public casualty numbers in each incident has been estimated as follows:

Number of Public Casualties per Incident	Probability
5	4%
4	6%
3	10%
2	20%
1	60%

3.8 Unladen Truck Trips

A laden truck has the potential to release up to 160 barrels of crude oil, which if ignited may result in casualties to on-road or off-road populations. There is also the potential for hazards associated with a small release from an unladen truck.

Unladen trucks typically contain small quantities of oil as residue in the tank, and within the loading lines and hoses underneath the truck. The product piping is known the “wetlines”, and may contain up to 50 gallons of oil. If these lines fail, or are impacted due to a vehicle collision, there may be a small release of crude oil. A review was conducted of historical failures associated with below tank product piping recorded in the PHMSA HMIRS database.

There were a total of 327 crude oil releases in transit recorded in the HMIRS database between 1991 and 2015. Approximately 60% (186 releases) were small releases with an average release size of 3 barrels (126 gallons), as described in Section 3.5 above. From incident descriptions, the following 28 small releases were identified as being associated with a wetline failure:

Wetline Release Cause 1991 to 2015	Number of Incidents	Number of Fires
Other vehicle impact with wetlines	8	0
Rollover event – due to collision or avoiding another vehicle	2	0
Rollover event – due to driver loss of control on a curve	2	0
Non-collision event – equipment failure (e.g. hose, fittings, tire burst or other equipment impacting wetlines)	16	0
Total	28	0

There have been no wetline incidents on crude oil trucks that resulted in fire, injury or fatality in the 25 year period reviewed. There is, however, a small public risk if a wetline release ignited after a vehicle collision. An ignition probability of 2% has been estimated for a small crude oil release, as discussed in Section 3.6. On average, there may be 1 ignited release for every 50 small crude oil releases.

A review was also conducted of the HMIRS database for small ignited releases from gasoline trucks that may be associated with a wetline release. The probability of ignition of a small gasoline release is higher than for a small crude oil release, and due to a greater number of gasoline trucks on the road, the number of historical incidents is higher. There were 509 small gasoline releases over the 25 year period. Of these, 2 were identified as being releases from wetlines during a vehicle collision that ignited causing public fatality.

Using the HMIRS gasoline wetline incident frequency, an estimate has been made of the likelihood of a crude oil wetline incident for the proposed LFC temporary trucking. On Route-1, a casualty associated with wetlines may occur approximately every 30,000 years. On Route-2, a casualty may occur approximately every 10,000 years.

A search was conducted of historical crude oil unladen incidents recorded in the HMIRS database. One of the 28 crude oil wetline release incidents occurred when the truck was empty on the return journey. In another 4 incidents, there was insufficient data in the report to determine if the truck was laden or unladen, and 23 incidents occurred when the truck was laden. The risks associated with the unladen truck trip are very low, and for the TQRA analysis, all historical release incidents have been assumed to occur when the truck is laden.

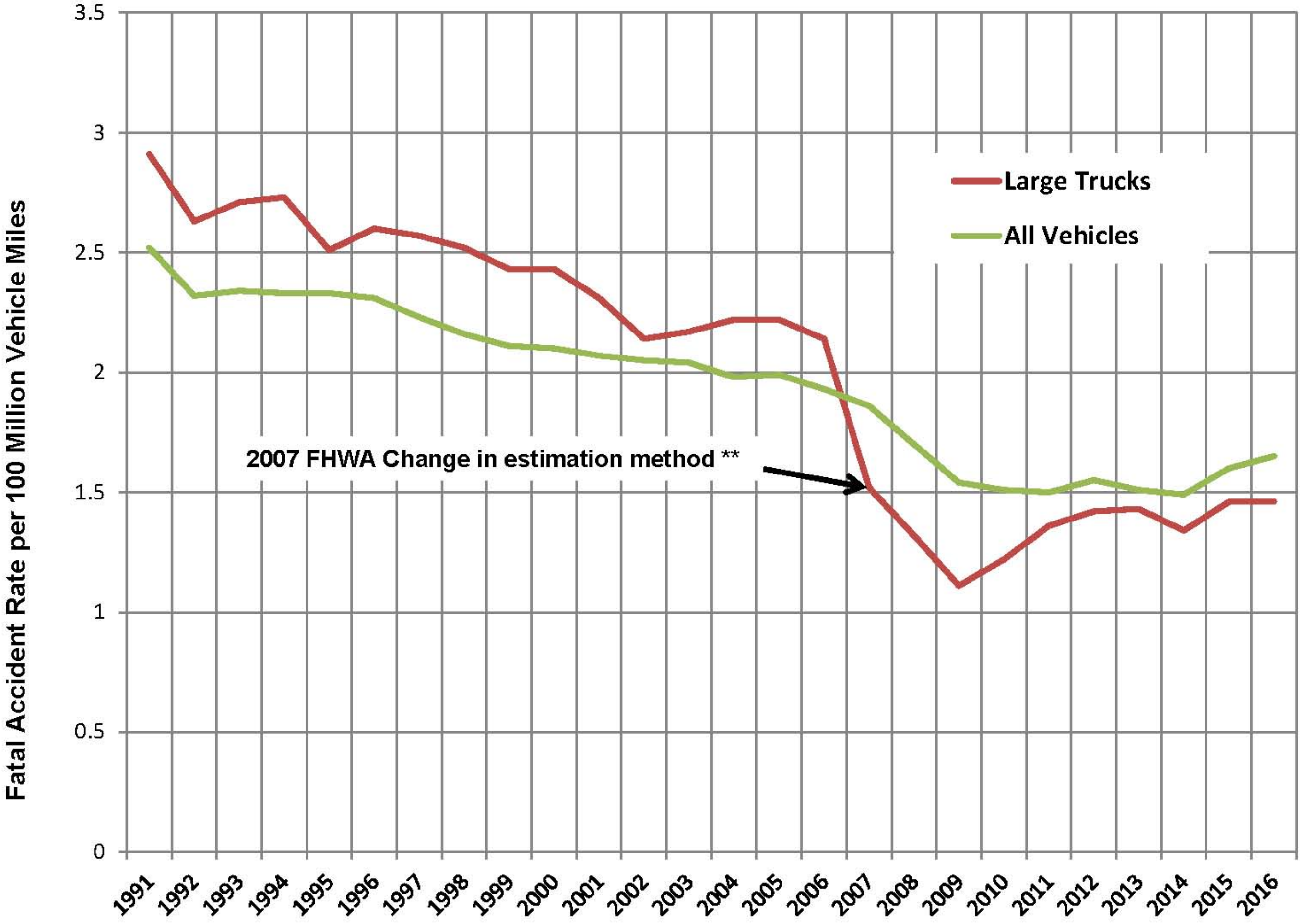
The assumption that all historical incidents occurred during the laden trip results in an overestimate in the likelihood of failure on the laden truck trip in order to include any risk associated with the unladen return journey.

Table 3.1 Hazardous Material Classifications

Hazardous Class Code	Description
Class 1	Explosives
Class 2	Gases
Class 3	Flammable and combustible liquids (includes crude oil, gasoline, diesel and petroleum distillates.
Class 4	Flammable solids, spontaneously combustible materials and dangerous when wet materials
Class 5	Oxidizers and organic peroxides
Class 6	Toxic (poison) materials and infectious substances
Class 7	Radioactive materials
Class 8	Corrosive materials
Class 9	Miscellaneous dangerous goods

Defined in Code of Federal Regulations (CFR) 49

Figure 3.1 Trends in Truck and Vehicle Fatal Accident Rates



The estimation of million vehicle miles traveled (mvmt) is done annually by the Federal Highway Administration (FHWA)(15) using the number of registered vehicles. This data is used together with the number of fatal crashes to estimate accident rates per mvmt for different types of vehicles.

** In 2007, the FHWA implemented an enhanced methodology for estimating vehicle miles traveled. This resulted in a 22% increase in the large truck vehicle miles estimate, and no significant change to the estimate of passenger vehicle miles. The apparent reduction in large truck accident rate from 2006 to 2007 is therefore due to the change in calculation method.

The truck accident rate reduction in 2009, is also an anomoly in the calculation method. The number of vehicle miles traveled is based on the number of large trucks registered. The financial crash in 2008/9 caused a significant reduction in commerce, and therefore the number of miles traveled per vehicle. This was not accounted for in the calculation of large truck vehicle miles.

Table 3.2 Route 1 - LFC to Phillips 66 in Santa Maria, Vehicle and Truck Accident Rates

ID	H'Way /Road	Section		Vehicle AADT	Truck AADT	% Trucks on Segment	Accident Rate per Vehicle Involved per 10^6 miles	Accident Rate per Truck Involved per 10^6 miles	HM Class 3 Truck Accident Rate per 10^6 miles
		From / To	Length (miles)						
A	Coral Canyon	LFC Loading Area to LFC Exit	0.8	400	140	35%	2.4 *	1.0 *	0.72 *
B	Calle Real	LFC Exit to Jct Refugio Rd / US 101	1.6	320	144	45%	2.4 *	1.0 *	0.72 *
C	US 101	Jct Refugio Rd / US 101 to Gaviota Rest Area	10.2	29,600	3,200	11%	0.7	0.53	0.37
D	US 101	Gaviota Rest Area to Jct US 101/SR 1	2.1	29,600	3,200	11%	3.1	1.12	0.79
E	US 101	Jct US 101/SR 1 to start Buellton	7.6	23,100	2,800	12%	1.2	0.50	0.35
F	US 101	Start Buellton to End Buellton	1.1	21,900	2,800	13%	0.9	0.58	0.24 **
G	US 101	End Buellton to Start Los Alamos area	12.8	27,800	3,300	12%	0.5	0.23	0.16
H	US 101	Start Los Alamos to End Los Alamos	1.2	29,510	3,600	12%	0.5	0.13	0.21 **
I	US 101	End Los Alamos to Jct US 101 / Clark Ave	10.6	28,600	3,500	12%	0.6	0.4	0.28
J	US 101	Jct US 101 / Clark Ave to Jct US 101 / Betteravia Rd	4.4	46,200	4,500	10%	0.7	0.38	0.27
K	Betteravia	Jct US 101 / Betteravia to Rosemary Rd	1.0	9,300	2,800	30%	2.4 *	1.0 *	0.72 *

Table 3.2 Route 1 - LFC to Phillips 66 in Santa Maria, Vehicle and Truck Accident Rates

ID	H'Way /Road	Section		Vehicle AADT	Truck AADT	% Trucks on Segment	Accident Rate per Vehicle Involved per 10^6 miles	Accident Rate per Truck Involved per 10^6 miles	HM Class 3 Truck Accident Rate per 10^6 miles
		From / To	Length (miles)						
L/M	Rosemary / Battles	Jct Betteravia / Rosemary to Battles Rd and P66 Entrance	0.9	1,260	410	32%	2.4 *	1.0 *	0.72 *
Total Route		LFC to P66 Santa Maria	**54.3**				**0.80**	**0.46**	**0.32**
Accident Rate per Trip									**1.8×10^{-5}**

AADT = Average Annual Daily Traffic on California Highways, published annually by CalTrans(26)
Truck and Vehicle Accident Rates calculated from 5 years of California accident data extracted by road section (2012 to 2016)(4)

* Average vehicle and truck accident rates used for these short segment due to no historical data not statistically significant.
** Short segment. Data not statistically significant. Adjacent highway segments used to calculate average accident rates.

Table 3.3 Route 2 - LFC to Pentland PAAPL in Maricopa, Vehicle and Truck Accident Rates

ID	H'Way /Road	Section		Vehicle AADT	Truck AADT	% Trucks on Segment	Accident Rate per Vehicle Involved per 10^6 miles	Accident Rate per Truck Involved per 10^6 miles	HM Class 3 Truck Accident Rate per 10^6 miles
		From / To	Length (miles)						
Accident rates for Segments A through J shown above in Table 3.2									
N	US 101	Jct US 101 / Betteravia to Start Santa Maria River Bridge	4.4	63,000	6,100	10%	1.6	0.92	0.64
O	US 101	Start Santa Maria River Bridge to Jct US 101 / SR 166 East	0.8	67,000	6,700	10%	1.4	0.92 **	0.64 **
P	SR 166	Jct US 101 / SR 166 to Start of Cuyama River Valley	28.3	3,100	860	27%	1.4	0.61	0.42
Q	SR 166	Start of Cuyama River Valley to New Cuyama	23.7	2,800	670	24%	0.8	0.43	0.3
R	SR 166	Start of New Cuyama to End town New Cuyama	1.1	3,000	670	22%	0.6	0.51	0.36 **
S	SR 166 / 33	End town New Cuyama to End Cuyama Valley, start of hills	11.2	3,100	680	22%	0.8	0.73	0.51
T	SR 166 / 33	Start of hills to Maricopa	11.7	3,600	930	26%	1.4	1.2	0.86
U	SR 166 / 33	Start of Maricopa to End of Maricopa	1.3	3,600	930	26%	0.4 ***	0.55 ***	0.38 ***
V	SR 166	End of Maricopa to Jct SR 166 / Basic School	4.7	2,800	830	30%	1.2	1.2	0.81

Table 3.3 Route 2 - LFC to Pentland PAAPL in Maricopa, Vehicle and Truck Accident Rates

ID	H'Way /Road	Section		Vehicle AADT	Truck AADT	% Trucks on Segment	Accident Rate per Vehicle Involved per 10^6 miles	Accident Rate per Truck Involved per 10^6 miles	HM Class 3 Truck Accident Rate per 10^6 miles
		From / To	Length (miles)						
W	Basic School Rd	Jct SR 166 / Basic School to PAAPL Entrance	0.4	450*	340*	75%	2.4 *	1.0 *	0.72 *
Total Route		LFC to PAAPL	**140.0**				**0.95**	**0.55**	**0.38**
Accident Rate per Trip									**5.4×10^{-5}**

AADT = Average Annual Daily Traffic on California Highways, published annually by CalTrans(26)
Truck and Vehicle Accident Rates calculated from 5 years of California accident data extracted by road section (2012 to 2016)(4)

* Average vehicle and truck accident rates for non-highways used on these segments.
** Short segment. Data not statistically significant. Adjacent highway segments used to calculate average accident rates.
*** No truck accidents and only 2 vehicle collisions were recorded in Maricopa during the 5 year period. An average truck accident rate has been assigned to account for possible underreporting.

Table 3.4 Truck Critical Accident Events

Primary Collision Factor	CA SWITRS Data 2011 to 2015				LTCCS
	Fatality Accidents per year	%	Injury Accidents per year	%	Serious Injury and Fatality %
Unsafe Speed	21.0	8.5	990	18.8	13.0
Driver Impairment	2.2	0.9	40	0.8	
Vehicle Failure (brakes, tires, etc.)	1.2	0.5	13	0.2	
Total Truck Loss of Control	**24.4**	**9.9**	**1043**	**19.8**	**15.6**
Unsafe Lane Change or Passing	5.0	2.0	378	7.2	
Following Too Closely	0.4	0.2	52	1.0	
Unsafe Move, Parking or Other Violation	6.8	2.7	211	4.0	
Total Truck Out of Lane or Unsafe Move	**12.2**	**4.9**	**641**	**12.2**	**17.7**
Total Truck Improper Turning or Crossing Intersection	**22.4**	**9.1**	**445**	**8.4**	**6**
Other Vehicle in Lane	6.0	2.4	218	4.1	12.8
Pedestrian	3.6	1.5	29	0.6	2.8
Unknown	0.6	0.2	22	0.4	
Total Other	**10.2**	**4.1**	**270**	**5.1**	**15.6**
Truck Driver Not At Fault	**192**	**74**	**2995**	**56**	**45.4**
Total	**261**	**100**	**5394**	**100**	**100**

LTCCS = Large Truck Crash Causation Study(17) by FMCSA and NHTSA, using national truck accident data from April 2001 to December 2003.

4. CONSEQUENCES OF RELEASE

In the event of a crude oil truck road incident, there is the potential for a hazardous material release and fire. The public population primarily at risk from a crude oil release will be those involved in the vehicle collision, or within a vehicle stopped on the road due to the collision. However, a single crash of a hazardous material truck in a crowded area has the potential for deaths and injuries beyond the vehicle occupants. There is the potential for public impact to those in buildings and outdoors along the transportation route.

The hazards of a crude oil release to public populations adjacent to the road are assessed in the following section. Crude oil is flammable and if a release is ignited, it will form a pool fire. If ignition is delayed, a flammable vapor cloud may initially develop, which if ignited, may result in a vapor cloud fire and/or pool fire. The likelihood of casualties to the public adjacent to the road is low because a crude oil pool fire takes time to develop, and those in the vicinity would normally have the ability to escape.

Potential vulnerabilities of the public adjacent to the road have been calculated by applying a probability that a person may suffer serious injury or fatality for a minimum defined exposure to fire.

4.1 Material Properties

Material properties of produced crude oil from the Santa Ynez Unit have been used to conduct hazard consequence modeling. A summary of the crude oil properties are shown in Table 4.1.

The crude oil has an average API gravity of about 19 degrees. It has been assumed that the crude oil is transported at 100°F. On release, light oil fractions in the crude oil will start to evaporate and may produce a vapor cloud. The vapor cloud will be flammable where the concentration is between the lower and upper flammable limits of 1.4% and 7.8%. On ignition of crude oil, the fire will burn with an orange flame and emit dense clouds of black smoke.

4.2 Flammable Release Events

A release of crude oil will result in a flammable cloud. The vapor cloud will then disperse to the lower flammable limit, and may ignite if a source of ignition is encountered.

A release of flammable liquid may result in one or more of several different hazards:

- Immediate ignition causing a pool fire.
- Pool evaporation and initial dispersion of a flammable vapor cloud, which on delayed ignition may result in:
  - vapor cloud fire and/or
  - liquid pool fire
- Release with no ignition

4.3 Consequence Modeling

The methodology for calculating the release rates and hazards of a potential release are described in the following section. Published formulas and publicly available dispersion models have been used for the analysis. These methodologies are expected to provide conservative results.

4.3.1 Pool Evaporation

On release, a liquid will spread to a minimum depth of 1 inch (2.5 centimeters) on a flat non-absorbing surface, such as a road surface. The pool is assumed to spread radially to the maximum area for evaporation. The evaporation rates for SYU crude oil have been calculated using the method as provided in the US Environmental Protection Agency (EPA) RMP Guidance(28) and the EPA Technical Guidance for Hazards Analysis(30).

4.3.2 Vapor Dispersion

A liquid pool is assumed to produce a continuous evaporating cloud. This cloud will disperse downwind to the Lower Flammability Limit (LFL), unless the cloud is ignited.

For flammable vapor dispersion, the EPA and National Oceanic and Atmospheric Administration ALOHA(29) model was used. This is a publicly available model and is widely used for estimating hazard release distances. The heavy gas model in ALOHA is based on a simplified form of the DEGADIS model developed by Spicer and Havens (1989).

4.3.3 Pool Fire Radiation Hazards

Liquid releases from a tank truck were modeled as a circular pool fire with a sooty flame. The soot absorbs radiation and obscures the flame, thereby reducing the thermal radiation. The pool fire model used is based on publicly available correlations described in the TNO Yellow Book(6).

4.4 Levels of Concern and Vulnerability Criteria

The following levels of concern have been selected as minimum exposure levels that may result in a serious injury or fatality. However, personnel exposed to a minimum level of concern are not necessarily seriously or fatally injured. Personnel may be sheltered within vehicles or buildings, or be able to find shelter from exposure. This is called the vulnerability, and is the probability that a person exposed within the distance to a level of concern will suffer a serious injury or fatality.

The thermal radiation exposures are also not at the same intensity within the distance to a level of concern. Closer to the fire, the vulnerability will be higher. Average vulnerabilities have been estimated within the distance to a level of concern.

Vapor Cloud Flash Fire Levels of Concern

A flammable release may be ignited on release or shortly after release if the concentration is within the flammable range between the Lower and Upper Flammability Limits (LFL and UFL). An unignited flammable vapor cloud will drift downwind and start to disperse. The calculated concentration levels are time-averaged. The concentration of vapor in air is not uniform and there will be areas where the concentration is higher or lower than the average.

The duration of a flash fire is short, and those outside the flash fire area are unlikely to be exposed to thermal radiation for sufficient time to cause serious injury. The area of the LFL cloud is assumed to be the hazard zone for potential fatality. The area of 1/2 LFL where a flame may ignite is assumed to be the hazard zone for serious injury.

The following average vulnerability levels have been applied, based on a review of incident reports and assumptions made in published QRA reports:

Severity Level	Flammable Range	Average Vulnerability of People In Buildings	Average Vulnerability of People Outdoors
Potential Fatality	Source to LFL	0.2	0.5
Serious Injury	Source to 1/2 LFL	0.2	0.5

Pool Fire Radiation Levels of Concern

Pool fires produce radiant heat, and the effects are dependent on the level of intensity and the duration of exposure. Thermal radiation levels of 5 kW/m^2 and 10 kW/m^2 correspond approximately to the minimum level for serious injury (second degree burns) and potential fatality.

A crude oil pool fire will typically develop slowly allowing personnel outside the burning area time for escape. Personnel are assumed to be fatalities if they are outside within the pool fire area.

The probability of fatality outdoors has been calculated as 1% for an exposure of 10 kW/m^2 for 30 seconds. This is based on the radiation probit equations published in the TNO Green Book(7). The fatality rate will decease within the distance from the pool fire boundary to the minimum fatality distance. An average vulnerability of 10% has been estimated within this area. The remaining outdoor population within this area may suffer serious injury. Additional serious injuries may also occur between the radiation levels of 10 kW/m^2 to 5 kW/m^2. An average serious injury vulnerability of 20% has been estimated from the pool fire boundary to 5 kW/m^2.

Personnel within buildings have protection from a pool fire and radiant heat. Within the pool fire area, a fatality rate of 50% has been assumed, and the remaining population may suffer serious injury. Buildings provided significant protection from radiant heat, and only those near open window or doors that are unable to escape may suffer casualties.

The following average pool fire vulnerabilities have been applied:

Severity Level	Thermal Radiation Range	Average Vulnerability of People In Buildings	Average Vulnerability of People Outdoors
Potential Fatality	Source to Pool Fire Boundary	0.5	1
Serious Injury	Source to Pool Fire Boundary	0.5	0
Potential Fatality	Pool Fire to 10 kW/m^2	0.01	0.1
Serious Injury	Pool Fire to 5 kW/m^2	0.05	0.2

4.5 Calculation of Hazard Distances

Hazard zones have been calculated to the selected levels of concern using the crude oil properties, release quantities, and typical weather conditions.

The following assumptions were made:

- Two representative weather conditions have been selected for performing the dispersion calculations under worst case and typical conditions; stability F with wind speed 1.5 m/s, and stability D with wind speed 4 m/s.
- Rural conditions have been applied for atmospheric dispersion of vapor clouds.
- Crude oil releases are assumed to spill onto a flat non-absorbing surface, and spread to a depth of 1 inch (2.5 centimeters).
- A vapor cloud is assumed to be fully developed to the maximum area before ignition.
- Pool fire hazard areas have been conservatively calculated using the maximum downwind hazard distance.
- No allowance was made for topography.

The calculated hazard distances and impact areas are shown in Tables 4.2 and 4.3, and consequence model input and output files attached in Appendix C.

4.6 Ignition Probability

A flammable release may ignite immediately resulting in a pool fire, or a flammable vapor cloud may form and disperse downwind. As the cloud encounters ignition sources such as vehicles on the highway, it may ignite causing a vapor cloud fire then pool fire. Historical data on the ignition of flammable releases due to cargo truck accidents have been reviewed to estimate the probability of ignition, as discussed in Section 3.6.

The following ignition probabilities have been estimated for large and small crude oil releases:

- 20% ignition large release
- 2% ignition small release

4.7 Release Event Trees

The likelihood that a tanker truck accident results in a large ignited pool fire has been calculated using event trees, as shown in Figure 4.1. The probabilities for each severity level have been calculated in Section 3 as follows:

Accident Severity	Fraction Occurrence	Release Probability
Fatal Accidents	0.01	0.4
Injury or PDO Accidents	0.99	0.05
All Accidents	1	0.054

The probabilities of the various outcomes of a truck accident are illustrated in Figure 4.1 as follows:

Large pool fire	0.0043 (0.43%)
Large unignited spill	0.0173 (1.73%)
Small pool fire	0.0006 (0.06%)
Small unignited spill	0.0318 (3.18%)
No release	0.946 (94.6%)

A large pool fire has the potential to cause injury or fatality if those involved in the accident, or public on an adjacent property, are unable to escape quickly. Fatalities and injuries may extend up to 180 or 240 feet respectively from the release source. Small pool fires are assumed to impact only those on the road.

An analysis of hazardous material releases has been conducted to estimate the probability of public casualties within vehicles on the road, as discussed in Section 3.7. The following casualty probabilities were developed for a crude oil release:

♦ large ignited release:	5% fatality event	10% injury event
♦ small ignited release:	2% fatality event	5% injury event

The number of off-road public casualties will depend on the speed of liquid release, the probability of immediate ignition, and the ability of people to escape. The following probabilities have been conservatively assumed from a review of HMIRS accident reports, where sufficient information is provided:

♦ Rapid liquid release	0.25 (25%)
♦ Immediate ignition	0.5 (50%)

The predicted number of off-road fire casualties has been estimated using the probability of a large pool fire, half the potential impact area (the other half impacting the road area), and the vulnerability criteria discussed in Section 4.4.

The hazard areas associated with a flammable vapor cloud are significantly smaller than the pool fire hazard areas, as shown in Tables 4.2 and 4.3. A vapor cloud may develop downwind of a release if ignition is delayed. In this case, downwind public persons near the release may be exposed to both a vapor cloud fire then pool fire radiation. There may be a small risk of additional casualties within this area. Conservative pool fire hazard areas have been applied to simplify the calculation process, and compensate for potential vapor cloud fire casualties.

Table 4.1 Crude Oil Properties

Property	Light Crude Oil
Average properties:	
LFL % mol	1.4
UFL % mol	7.8
TVP @ 100°F	1.65 psia
Specific Gravity 60/60	0.940
API Gravity	19
Transportation Temperature	100°F

Table 4.2 Flammable Vapor Dispersion

Release Source	Release Rate / Pool Evaporation Rate (lb/min)	Weather Conditions**	Distance to Flammable Concentration from Release (ft)		Flammable Hazard Areas (ft^2)	
			LFL	1/2 LFL	LFL	1/2 LFL
Large Crude Oil Truck Release – 160 bbls						
Crude Oil Release to pavement	100	F/1.5	105	150	5,900	12,000
	210	D/4	75	120	1,100	2,800
Small Crude Oil Truck Release – 16 bbls						
Crude Oil Release to pavement	10	F/1.5	36	42	680	920
	21	D/4	36	39	280	370

** Weather conditions D stability, 4 m/s wind (typical conditions during the day), and F stability 1.5 m/s wind (worst case weather conditions at night).

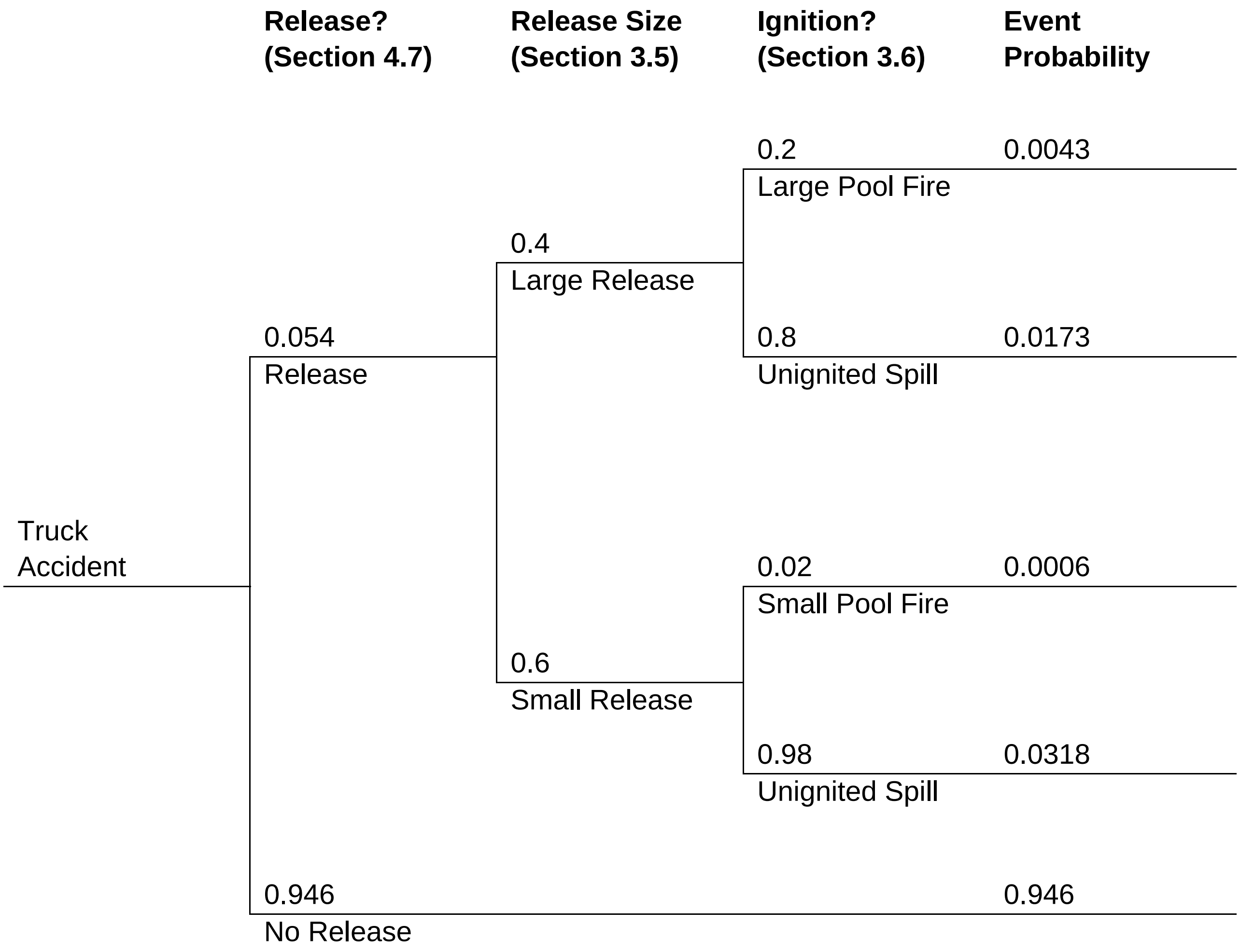
Table 4.3 Fire Radiation Hazards

Release Source	Pool Dimensions	Weather Conditions**	Hazard Distance from Release (ft)		Pool Fire and Radiation Hazard Areas (ft^2)		
			Fatality***	Injury***	Pool Fire	Fatality***	Injury***
Large Crude Oil Truck Release – 160 bbls							
Crude Release to Pavement	Average depth = 1 inch Average radius = 59 ft	F/1.5	110	160	11,000	38,000	80,000
		D/4	180	240	11,000	100.000	180,000
Small Crude Oil Truck Release – 16 bbls							
Crude Release to Pavement	Average depth = 1 inch Average radius = 19 ft	F/1.5	83	110	1,100	5,400	38,000
		D/4	110	130	1,100	38,000	53,000

** Weather conditions D stability, 4 m/s wind (typical conditions during the day), and F stability 1.5 m/s wind (worst case weather conditions at night).

*** Pool fire radiation hazards:
Potential fatality = 10 kW/m^2
Potential injury = 5 kW/m^2

Figure 4.1 Event Tree For Truck Accident Release



5. TRUCK HAZARD MITIGATION

The mitigation of hazards associated with truck transportation can be addressed using improved safety culture, driver selection and training, improved vehicle maintenance, and onboard safety systems (OBSS). Modern trucks often feature one or more OBSSs to help the driver mitigate or avoid a crash, and studies have been conducted to quantify the benefits.

Literature has been reviewed to assess the potential effectiveness of improved safety culture and onboard safety systems at reducing the likelihood of a crash and release of a hazardous material. This assessment has been used to quantify proposed mitigation measures for the interim crude oil transportation from LFC.

5.1 Safety Culture

Organizational and safety culture can play an important role in reducing accident rates. For example, an organization with a poor safety culture is more likely to utilize a young driver with little experience. Hazardous material carriers have lower accident rates than the average truck carrier. This is likely due to better safety culture of the hazardous material haulers, increased driver safety training, and the hiring of more experienced drivers. An accident reduction rate of 30% has been applied to the average truck rate for HM Class 3 truck carriers based on a study for the FMCSA, as discussed in Section 3.1.3.

Hazardous material regulations have specific training requirements for drivers transporting hazardous cargo. These include:

- The properties and hazards of the material transported.
- Loading and unloading of materials.
- Vehicle inspection before every trip as well as periodically while on the road.
- Use of vehicle controls and equipment, including operation of emergency equipment.
- Training in vehicle characteristics including those that affect vehicle stability, such as effects of braking and curves, effects of speed on vehicle control, and dangers associated with maneuvering through curves.
- Emergency response training.

Large truck carrier companies currently employ a range of safety programs. This has likely contributed to the steady reduction in truck crash rates. National vehicle and truck accident rates have been published by the FMCSA(15) over a 25 year period, which show a reduction in truck accident rates of about 20% overall, and a 50% reduction in fatality rate, as discussed in Section 3.2.2. This has been attributed to improvements in roads, vehicles and driver training.

5.2 Contractor Selection and Driver Training

Contractor selection and auditing procedures will be used by ExxonMobil to ensure contract carriers meet or exceed all applicable health, safety, security, and environmental compliance standards. Carriers will complete the “Crude Oil - Motor Carrier Safety Survey” prior to starting shipments, as described in the Crude Oil Transportation Risk Management and Prevention Program (CO-TRMPP).

Many of the factors that relate to driver risk, such as; age, experience, training, and driver fatigue, have been researched. The results are published in literature by the FMCSA, Transportation Research Board (TRB), Murray (2005)(22), Short (2007)(25), and numerous others.

Driver Experience

In the Large Truck Crash Causation Study (LTCCS 2005)(17), information was recorded on driver experience. This included the number of years driving a truck, the number of years driving the class of vehicle involved in the crash, and the date and type of driver training. Comparison data on the historical driver performance was used to estimate the value of hiring safe drivers.

Experience driving a large truck is clearly a factor in driver safety. In the LTCCS, driver performance was identified as the critical collision reason in nearly 50% of crashes. This included driver drowsiness, inattention, driving too fast for conditions, and failure to control vehicle. A well trained experienced driver would be expected to have better control of the vehicle in a hazardous situation.

The selection of experienced drivers with a good safety record will reduce the probability of a crash, and provide a reduction in the probability of a truck rollover and hazardous material spill in a collision event. Hazardous material driver training includes rollover prevention awareness. Data from the FMCSA 2007(10) rollover study indicates that driver error is a contributing factor in over 75% of rollovers. Drivers who are well trained and experienced are more likely to avoid sudden movements that may lead to rollovers, and control the load during turns. The FMCSA 2007(10) study found that drivers with less than 5 years’ experience were almost twice as likely to roll the truck in a serious crash, than more experienced drivers. The potential benefit of improved driver training on the likelihood of a crash and rollover was estimated to result in a risk reduction of up to 10% for less experienced drivers.

Driver Fatigue

Truck driver impairment due to drowsiness has been reported to be a contributing factor in approximately 30% of crashes. Truck drivers behind the wheel for more than eight hours are reported to be twice as likely to be involved in a crash(12).

Current FMCSA regulations specify Hours of Service (HOS) requirements to reduce the likelihood of driver fatigue. Since 2017, electronic logging devices have been required to monitor HOS. This is assumed to be incorporated within the crash data.

Employment Screening

An analysis by the FMCSA (2013)(18) found that motor carriers utilizing an employment screening program had a decline in crash rates by about 8%. Employment screening is likely to result in the selection of experienced drivers with a good safety record. The selection of a contractor with effective employment screening programs is likely to provide a minimum of an 8% reduction in crash rate.

Collision Risk Reduction for Contractor Selection and Driver Training

Contractor selection and auditing procedures are likely to ensure the carrier contractors exceed all applicable standards, and hire experienced drivers with a good safety record. The risk reduction has been estimated as:

- Collision risk reduction for contractor selection = 10%

5.3 Truck Speed Limiters

Speed limiting technology is a standard feature on new trucks. Speed limiters are devices that interact with a truck engine to prevent trucks from exceeding a pre-programmed maximum speed. Therefore, speed limiters cannot address speeding on roads with speed limits lower than the speed setting, nor ensure the speed limiter is appropriately set.

Traveling too fast for conditions is a major contributor to large truck crashes. The Large Truck Crash Causation Study(17) reported that unsafe truck speed was the critical factor in 13% of all large truck crashes. Truck collision factors for California crash data report unsafe truck speed in 19% of injury or fatality crashes (Table 3.4). However, only 10% all of the speeding events listed in the LTCCS occurred above posted speed limits. A study conducted by the National Highway Traffic Safety Administration (NHTSA) in 1987 found similar results, with only 6.6% of the truck unsafe speed collisions being above the posted speed limit. Most collision events occurred due to driving too fast for conditions.

Truck crash rates published in recent years will include trucks that have speed limiters installed, and the benefit will already be partially incorporated into the base crash rate. The risk reduction for ensuring the appropriate use of truck speed limiters has been estimated as:

- Collision risk reduction 10% of 19% speed initiating events = 1.9%

5.4 Truck Loading / Unloading Procedures

From a review of HMIRS hazardous release incident reports, approximately 20% of in-transit releases are due to non-collision events, as discussed in Section 3.5. About half of these were due to human error such as; overfilling the tank, or failure to properly close valves or secure equipment. The other half were due to equipment failure.

Hazardous material cargo drivers are required to have training for loading / unloading, and conducting a vehicle inspection before every trip. To reduce the likelihood of human error, LFC operations personnel will conduct a safety and operability inspection checklist of trucks prior to loading and prior to transport from LFC to verify proper operation and no leaks occur. During loading both the ExxonMobil operator and the truck driver will be in attendance at all times.

To minimize the risk of overfilling the truck tank, the LACT unit will incorporate a grounding/overfill protection system that will stop the loading process in the case of an interrupted ground or determination of high level.

The application of these safety measures is estimated to reduce the likelihood of human error by about 50% from the average HM cargo industry performance.

- Non-collision risk reduction: 50% due to human error failure x 50% reduction = 25%

5.5 Vehicle Inspection / Maintenance

From a review of HMIRS hazardous release incident reports, approximately 20% of in-transit releases are due to non-collision events, as discussed in Section 3.5. Approximately half of these were due to equipment failure.

Most carriers are reported to conduct vehicle maintenance every 30 to 90 days, and drivers are required to inspect their vehicle prior to every trip. The use of modern trucks with 2017 or newer diesel engines and regular maintenance will reduce the likelihood of equipment failure.

The use of new trucks with regular maintenance is estimated to reduce the likelihood of equipment failure by about 50% from the average HM cargo industry performance.

- Non-collision risk reduction: 50% due to equipment failures x 50% reduction = 25%

5.6 Summary of Potential Collision Reduction Systems

The following table summarizes the potential risk reduction of collision related events for each safety program or OBSS assessed.

Safety System	**Crashes Related to Safety System (%)**	**Effectiveness (%)**	**Crash Rate Reduction (%)**
Safety Culture	Risk reduction of 30% for a hazardous material truck incorporated into the HM-3 truck incident rate.		
Contractor Selection and Driver Training	100%	10%	10%
Truck Speed Limiters	19%	10%	1.9%
Total Collision Risk Reduction			**12%**

The following table summarizes the potential risk reduction of non-collision in-transit releases for each safety program:

Safety System	**Non-Collision Related Releases**(%)**	**Effectiveness (%)**	**Release Rate Reduction (%)**
Loading / Unloading Procedures and Overfill Protection	50%	50%	25%
Modern truck fleet with LFC Operations personnel inspection prior to and after loading	50%	50%	25%
Total Non-Collision Risk Reduction			**50%**

** Non-collision related releases account for an additional 20% of the total number of collision events.

6. TRANSPORTATION RISK

The risks associated with transporting LFC crude oil to market by truck have been calculated in terms of the public risk of serious injury or fatality due to exposure to a hazardous material. The acceptability of these risks has been evaluated against the Santa Barbara County societal risk criteria, with the selected mitigation measures applied.

6.1 Truck Routes

Risks have been calculated along transportation routes to two potential unloading terminals. The following transportation scenarios have been assessed:

Scenario 1 to Phillips 66 Pump Station in Santa Maria

- Maximum number of trucks = 70 per day
- Truck route north via US 101 to Santa Maria
- Total distance to Phillips 66 = 54.3 miles

Scenario 2 to Pentland PAAPL Pump Station in Maricopa

- Maximum number of trucks = 68 per day
- Truck route north via US 101 to Santa Maria, then east via SR 166 to Maricopa
- Total distance to Pentland PAAPL = 140.0 miles

Route specific truck accident rates have been developed from an analysis of California accident data. This accident data was categorized by road segment for the proposed crude oil truck routes. Local influences on accident data associated with road access, road gradients, visibility and weather are therefore inherently included within these route specific accident rates. The truck accident rates for each segment are shown in Tables 3.2 and 3.3. Accident rates for Hazardous Material Class 3 cargo trucks have been estimated by reducing the route specific average truck rates by 30% to account for the lower accident rates reported for hazardous material trucks.

The calculated vehicle and truck accident rates by route segment are shown in Tables 3.2 and 3.3, and summarized as follows

Scenario	**Description**	**Vehicle Accident Rate per 10^6 miles**	**HM Class 3 Truck Accident Rate per 10^6 miles**	**HM Class 3 Truck Accident Rate per laden trip**
1	LFC to Phillips 66 Santa Maria Pump Station via US 101	0.80	0.32	1.8×10^{-5}
2	LFC to PAAPL Pentland Pump Station via US 101 and SR 166	0.95	0.38	5.4×10^{-5}

6.2 Calculation of Societal Risks

Transportation risks have been calculated for the hazards associated with a crude oil release for both on and off-road public populations. The calculation of "Risk" is as follows:

Risk = Likelihood of hazardous event X Probability of serious injury or fatality

The likelihood of a hazardous event has been calculated by multiplying the frequency of release on each road segment, with the probability of the outcome being a fire. The probability of serious injury or fatality in the event of a fire, has been calculated separately for on and off-road populations, then combined to calculate the risk per road segment length. The on-road public risks are primarily to persons within vehicles involved in the accident. Both small and large pool fires may result in on-road casualties due to the close proximity of persons within vehicles and the possibility of being unable to escape. Off-road casualties will depend on the speed of liquid release, the probability of ignition and the ability of people to escape. Only large releases that escalate quickly are assumed to have the potential to impact offsite populations. The population densities along each road segment have been characterized as day or night, and the probability that persons will be within buildings or outside.

In the calculation of potential serious injury and fatality a minimum of one casualty has been assumed. The risk of casualty to less than one person makes no sense; therefore the frequency of impact has been adjusted.

The public risks due to a hazardous material release along the crude oil transportation routes have been calculated for each road segment per one-kilometer (0.62 miles) length, to identify the highest risk segment, and evaluate the risk against the SBC acceptability criteria, as described below. The risk profiles for serious injury and fatality for the proposed interim crude oil transportation are shown as F-N curves in Figures 6.1 and 6.2 for Route 1, and Figures 6.3 and 6.4 for Route 2.

6.3 SBC Societal Risk Criteria

Santa Barbara County requires an assessment of the significance of impacts to public safety associated with an application for a land-use permit. The safety thresholds are intended to measure the acceptability of involuntary public exposure to hazardous materials. Such activities include facilities that handle or transport hazardous materials.

A societal risk profile is required for gas and hazardous liquid pipelines, including oil if a significant risk is expected, and the transport of compressed natural gas or natural gas liquids(23). The risk profiles for acute risk from a crude oil release have been calculated to assess the level of risk as defined the SBC societal risk criteria.

The thresholds for risk acceptability of serious injury or fatality to the public are defined by the SBC societal risk criteria(24). These thresholds provide three zones of significance; green, amber and red, for determining the acceptability of involuntary public exposure to acute hazardous material risks resulting from new or modified developments. The same SBC risk criteria thresholds are applied to fixed facilities and to the highest risk one kilometer (0.62 miles) segment of a transportation route. This effectively makes the level of significant societal risk from a fixed facility equivalent to that of the highest one kilometer segment of road. This is the same approach used to assess acceptability of transportation societal risk as applied in several European countries, and adopted in other countries around the world. The level of significance selected by SBC is 10 times more stringent than the transportation societal risk criteria applied in the Dutch and Swiss criteria.

The three SBC risk criteria zones are defined as follows and shown on the societal risk profiles in Figures 6.1 through 6.8:

Green:	Less than significant impact to public safety and no mitigation (or additional mitigation) is required for purposes of compliance.
Amber:	Potentially significant public impact, which can be reduced or avoided by implementation of mitigation measures.
Red:	Significant public impact, which can be reduced by implementation of mitigation measures.

The Santa Barbara County definition of a “serious injury” is physical harm to a person that requires significant medical intervention.

6.4 Mitigation Measures

ExxonMobil propose to use contract carriers to haul the crude oil. Contractor selection and auditing procedures will ensure the contractor meets or exceeds all applicable health, safety, security, and environmental compliance standards. The Crude Oil Transportation Risk Management & Prevention Program (CO-TRMPP) has been developed to ensure that the interim trucking is conducted in a safe and efficient manner, including:

- LFC operation personnel will conduct a safety and operability inspection checklist of trucks prior to loading and prior to transport from LFC to verify proper operation and no leaks.
- During loading both the ExxonMobil operator and the truck driver will be in attendance at all times.
- As required by SBC regulations, LACT units will incorporate a grounding/overfill protection system. Truck loading will stop in the case of an interrupted ground or determination of high truck level.
- Trucks will be equipped with an operating speed monitoring system.
- An annual inspection of truck transport trailers will be conducted to verify all ports are sealing properly, and repair any leaking ports prior to use.

Proposed mitigation measures to reduce the likelihood of a hazardous material release have been assessed and quantified in Section 5, Truck Hazard Mitigation. The following risk reduction measures have been applied to the truck transportation incident rates to calculate mitigated societal risks.

Mitigation Measure	**Collision Risk Reduction (%)**	**Non-Collision Risk Reduction** (%)**
Contractor Selection and Driver Training	10%	
Truck Speed Limiters	2%	
Loading / Unloading Procedures and Overfill Protection		25%
Modern truck fleet with LFC Operations personnel inspection prior to and after loading		25%
Total	12%	50%

** Non-collision related releases account for an additional 20% of the total number of collision events.

6.5 Mitigated Societal Risk Profiles

The risks of serious injury and fatality to the public due to a crude oil truck transportation incident have been calculated. The mitigated risks of casualty were calculated for on and off-road populations by route segment, then the results combined by segment and total route. A summary of the average route incident rates, frequencies of release and frequencies of casualty for the two proposed routes are shown in Table 6.1.

The mitigated public risks have been calculated for each road segment per one kilometer (0.62 miles) length to identify the highest risk segments for each route, as described above in Section 6.2. The highest risk segments for each route have been identified as:

- Route 1 – Segment D on Highway US 101 across the hills of Gaviota State Park.
- Route 2 – Segment N on Highway US 101 north of Betteravia Road junction to the Santa Barbara County line.

The combined on and off-road casualties for these two segments are shown in Table 6.2. Detailed calculation tables for all segments are provided in Appendix B. The frequencies of one or more casualties for the highest risk one-kilometer segments are:

Route 1 – Segment D

- Frequency of one or more serious injuries = 5.6 x 10^{-6} per km-year
- Frequency of one or more fatalities = 2.8 x 10^{-6} per km-year

Route 2 – Segment N

- Frequency of one or more serious injuries = 6.2 x 10^{-6} per km-year
- Frequency of one or more fatalities = 3.7 x 10^{-6} per km-year

Societal risks are often presented as F-N curves, also called risk profiles. F-N curves are logarithmic plots of the cumulative frequency (F) of an event against the number (N) of one or more potential injuries or fatalities. Societal risk provides a measure of one or more public casualties along a transportation segment or fixed facility. The mitigated risk profiles for serious injury and fatality for the proposed interim crude oil transportation are shown as F-N curves in Figures 6.5 and 6.6 for Route 1, and Figures 6.7 and 6.8 for Route 2.

For the total transportation route lengths, off-road serious injury and fatality risks are about 5% of the total public casualty risks. The highway routes primarily pass through rural or undeveloped areas. Within residential areas, off-road public risk may be up to 50% of the total risk. The distribution of public risk on the highest risk road segments have been calculated as:

- Route 1 – Segment D off-road public casualty = 0.06%
- Route 2 – Segment N off-road public casualty = 40%

The Santa Barbara County societal risk profiles have been established to evaluate the acceptability of hazardous material facilities or activities for public risk of serious injury and fatality. Mitigated societal risk profiles for the highest risk transportation route segment are shown in Figures 6.5 through 6.8 against the SBC acceptability criteria. The mitigated truck transportation risks are within the following zones for acceptability:

Route 1 – Segment D

- Mitigated risk of serious injury profile is within the green “Insignificant Risk” zone for acceptability.
- Mitigated risk of fatality profile is within the green “Insignificant Risk” zone for acceptability.

Route 2 – Segment N

- Mitigated risk of serious injury profile is within the green “Insignificant Risk” zone for acceptability.
- Mitigated risk of fatality profile is within the green “Insignificant Risk” zone for acceptability.

Table 6.1 Hazardous Material Frequency of Release and Casualty

	Truck Route 1 to Phillips 66, Santa Maria	**Truck Route 2 to Pentland PAAPL Kern County**
Route Length	54.3 miles (87.4 km)	140.0 miles (225.3 km)
Mitigated Incident Rate per 10^6 miles**	0.32	0.38
Truck Incident Rate per trip***	1.7×10^{-5}	5.3×10^{-5}
Number of Daily Trips	70	68
Number of Annual Trips	25,550	24,820
Truck Incidents per year	0.44	1.3
Probability of Large Fire on Incident	0.0043	0.0043
Probability of Small Fire on Incident	0.00064	0.00064
Frequency of Large Fire per year	1.9×10^{-3} (1 in 530 years)	5.6×10^{-3} (1 in 180 years)
Frequency of Small Fire per year	2.8×10^{-4} (1 in 3,500 years)	8.4×10^{-4} (1 in 1,200 years)
Frequency of 1 or More Serious Injuries per year (total route)	2.1×10^{-4} (1 in 4,800 years)	6.2×10^{-4} (1 in 1,600 years)
Frequency of 1 or More Fatalities per year (total route)	1.1×10^{-4} (1 in 9,500 years)	3.2×10^{-4} (1 in 3,200 years)
Location of Public Casualties	5% Off-Road 95% On-Road	5% Off-Road 95% On-Road

** Truck Mitigated Incident Rate includes incidents due to truck collisions and non-collision containment failures. Mitigation measures have been applied to both collision and non-collision incident rates as described in Section 6.4

*** The risk of a small release associated with the unladen return trip has been included with the laden trip incident rate as described in Section 3.8.

Table 6.2 Casualty Frequencies for Mitigated F-N Societal Risk Profiles (highest 1-km Segments)

Route 1 to Phillips 66 Pump Station, Santa Maria – Road Segment D

Number of Serious Injuries	Frequency of Public Injuries per km-year	Frequency of N or More Public Injuries per km-year
5	2.3E-07	2.3E-07
4	3.4E-07	5.6E-07
3	5.6E-07	1.1E-06
2	1.1E-06	2.3E-06
1	3.4E-06	5.6E-06

Number of Fatalities	Frequency of Public Fatalities per km-year	Frequency of N or More Public Fatalities per km-year
5	1.1E-07	1.1E-07
4	1.7E-07	2.8E-07
3	2.8E-07	5.6E-07
2	5.6E-07	1.1E-06
1	1.7E-06	2.8E-06

Route 2 to Pentland PAAPL Pump Station, Kern County – Road Segment N

Number of Serious Injuries	Frequency of Public Injuries per km-year	Frequency of N or More Public Injuries per km-year
5	1.8E-07	1.8E-07
4	1.1E-06	1.3E-06
3	4.5E-07	1.7E-06
2	1.1E-06	2.8E-06
1	3.3E-06	6.2E-06

Number of Fatalities	Frequency of Public Fatalities per km-year	Frequency of N or More Public Fatalities per km-year
5	8.8E-08	8.8E-08
4	1.3E-07	2.2E-07
3	2.2E-07	4.4E-07
2	1.3E-06	1.7E-06
1	2.0E-06	3.7E-06

Figure 6.1 Route-1 Highest Non-Mitigated Risk Segment for HazMat Injury per One-Kilometer - SBC Risk Criteria

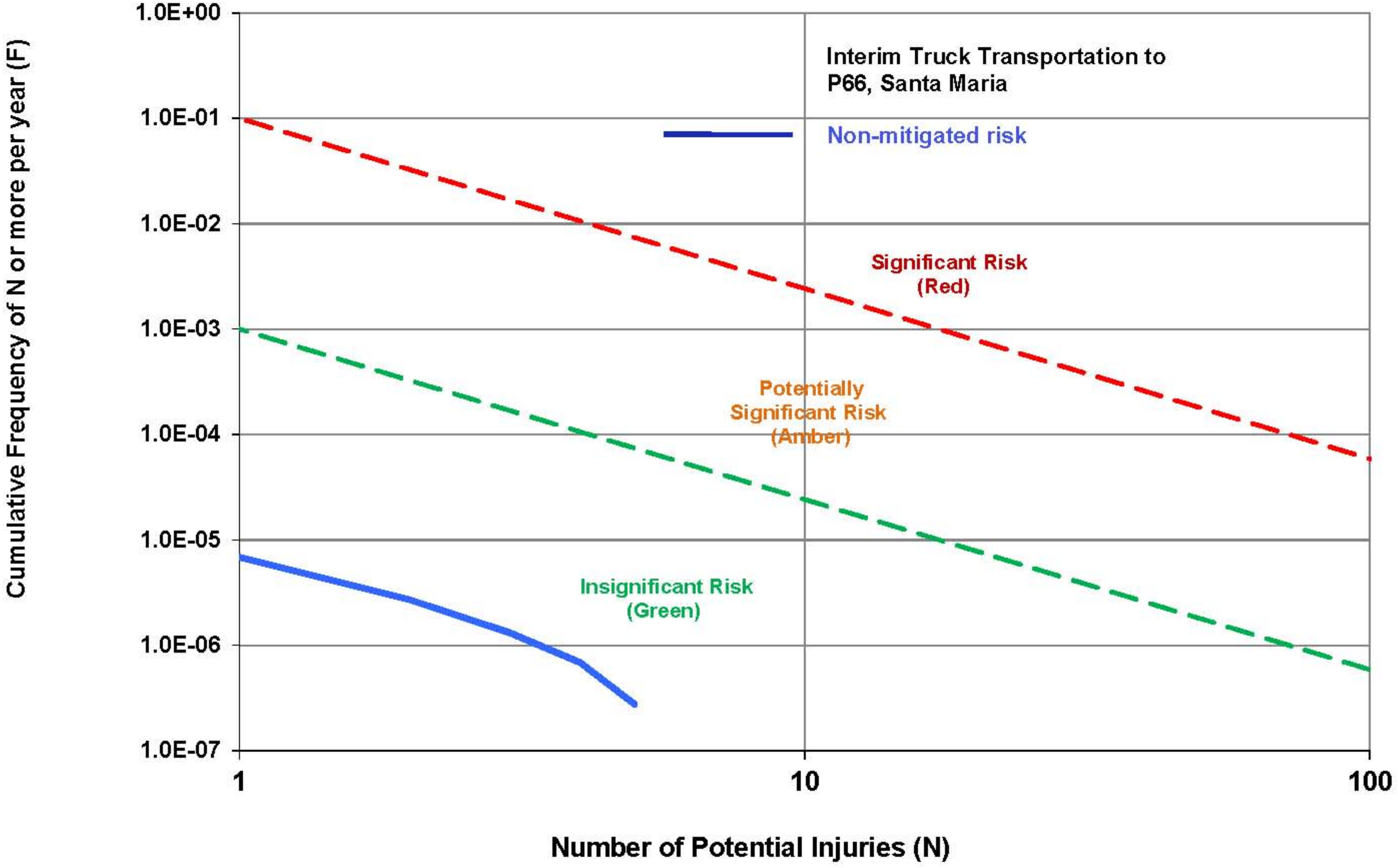


Figure 6.2 Route-1 Highest Non-Mitigated Risk Segment for HazMat Fatality per One-Kilometer - SBC Risk Criteria

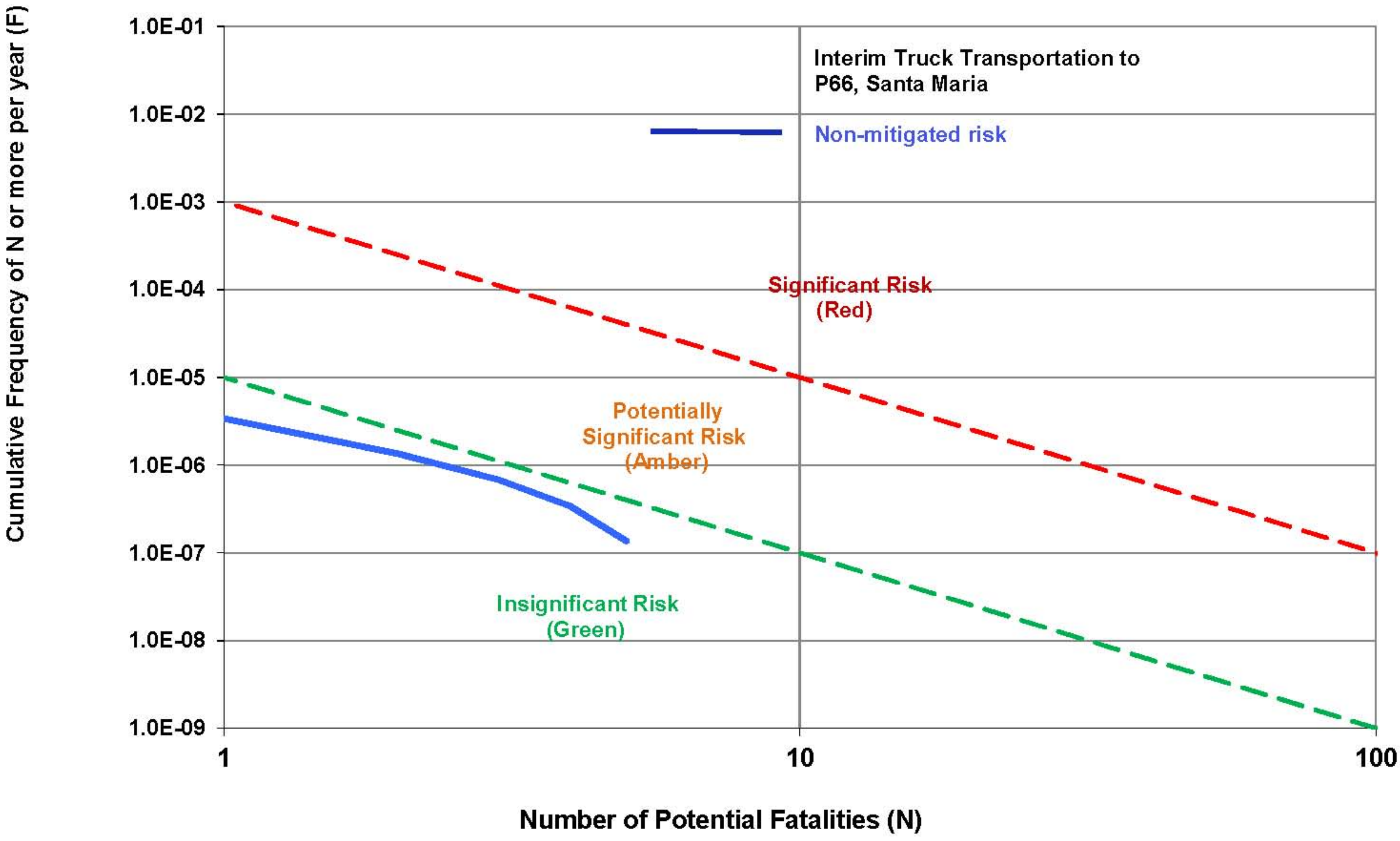


Figure 6.3 Route-2 Highest Non-Mitigated Risk Segment for HazMat Injury per One-Kilometer - SBC Risk Criteria

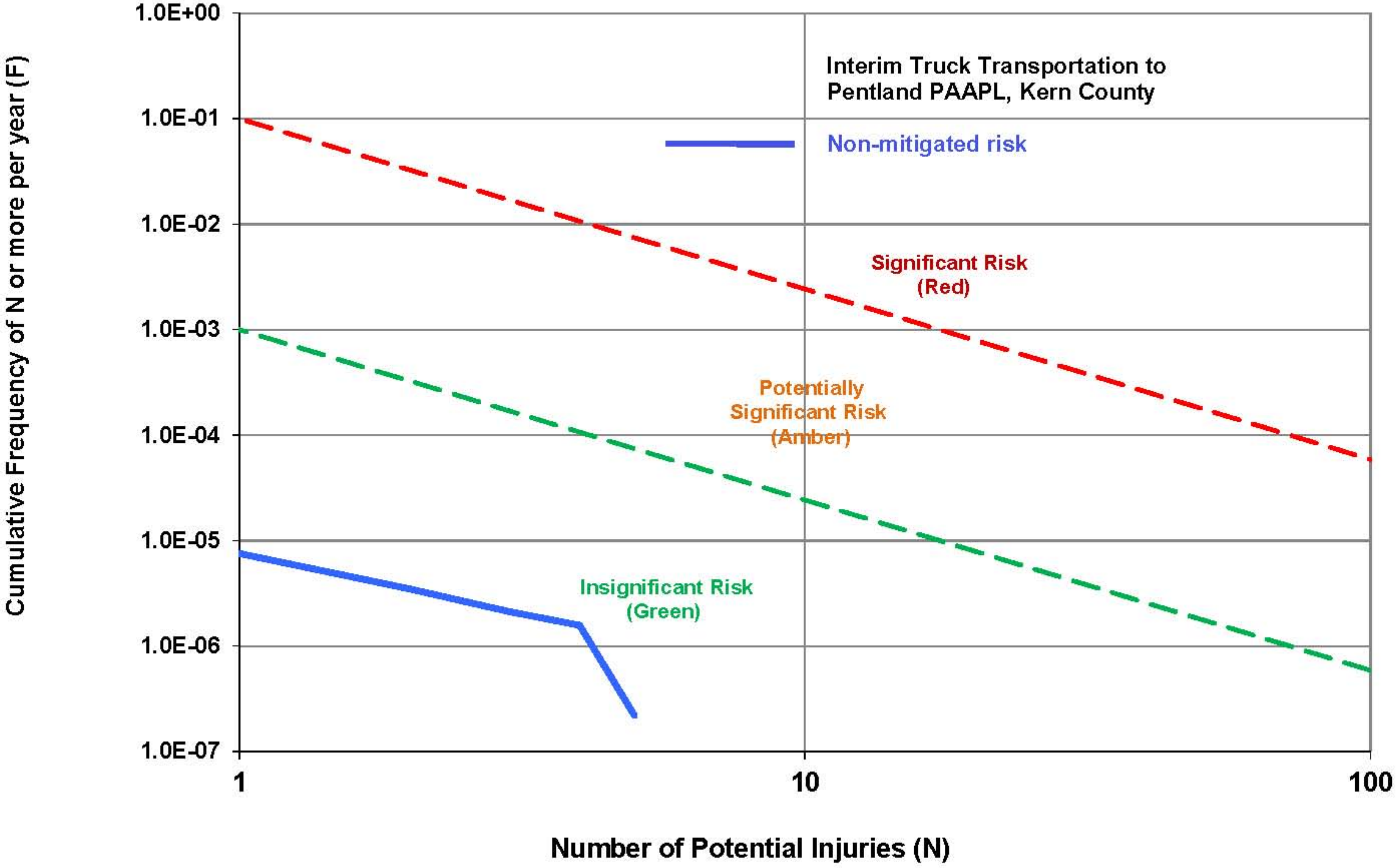


Figure 6.4 Route-2 Highest Non-Mitigated Risk Segment for HazMat Fatality per One-Kilometer - SBC Risk Criteria

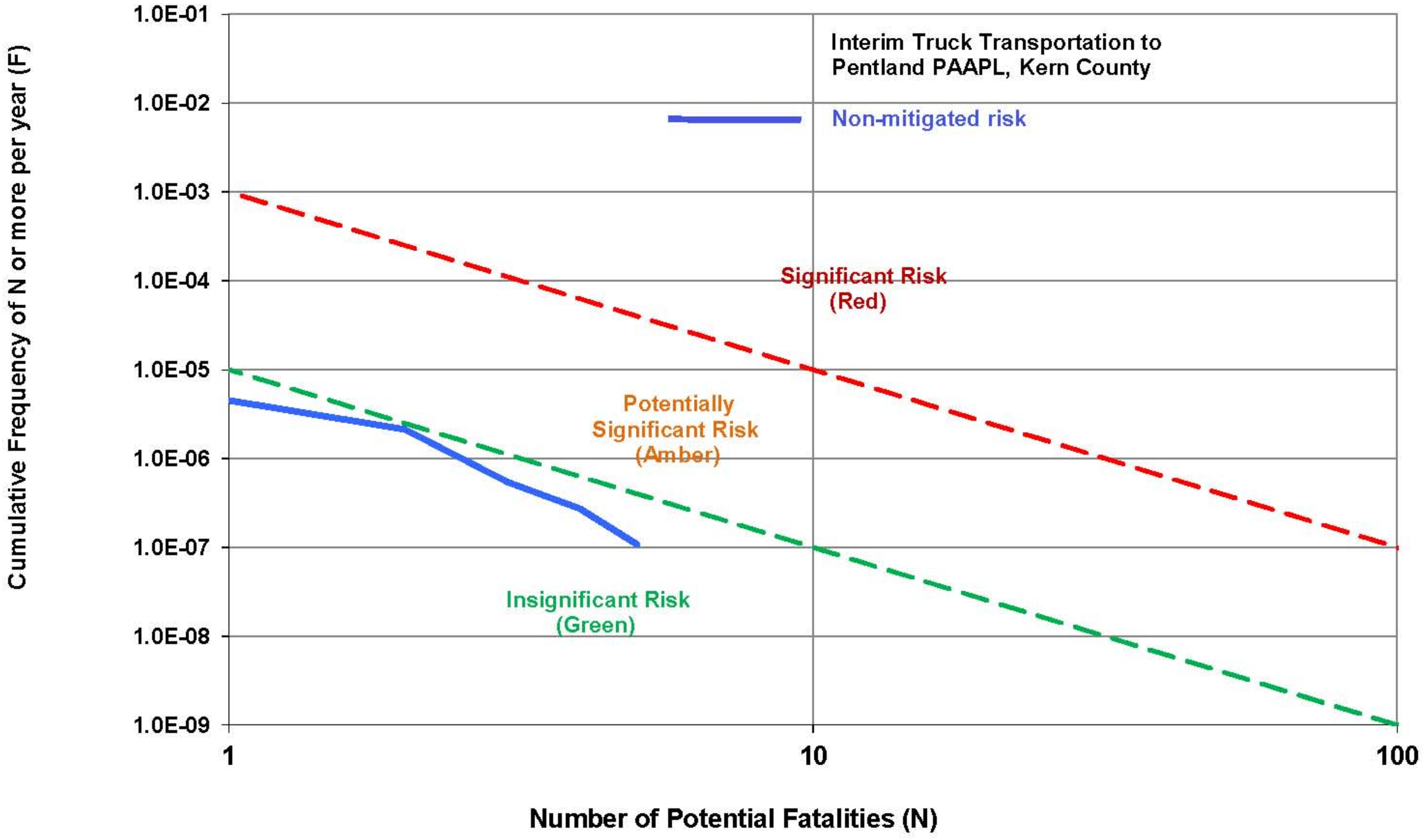


Figure 6.5 Route-1 Highest Mitigated Risk Segment for HazMat Injury per One-Kilometer - SBC Risk Criteria

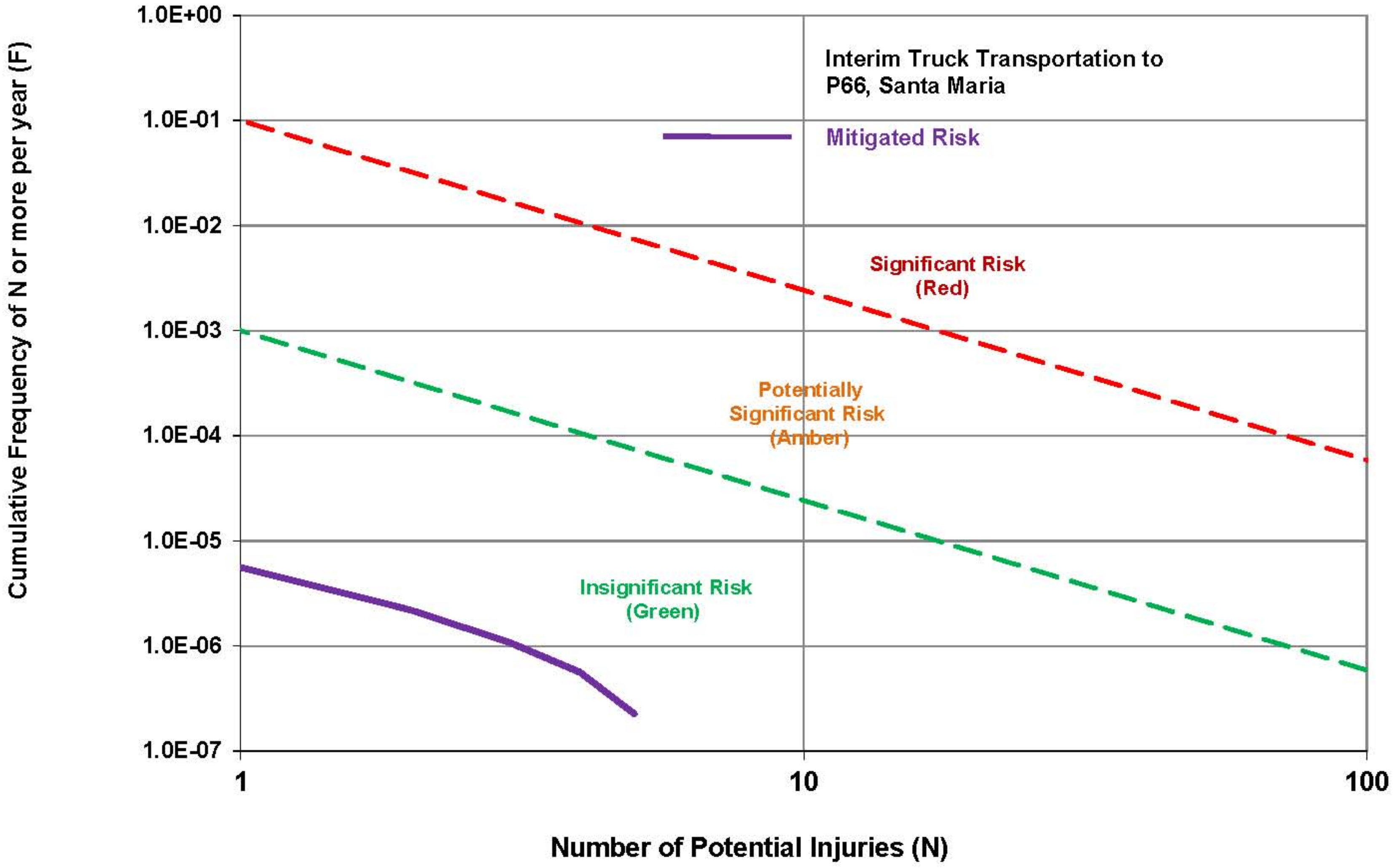


Figure 6.6 Route-1 Highest Mitigated Risk Segment for HazMat Fatality per One-Kilometer - SBC Risk Criteria

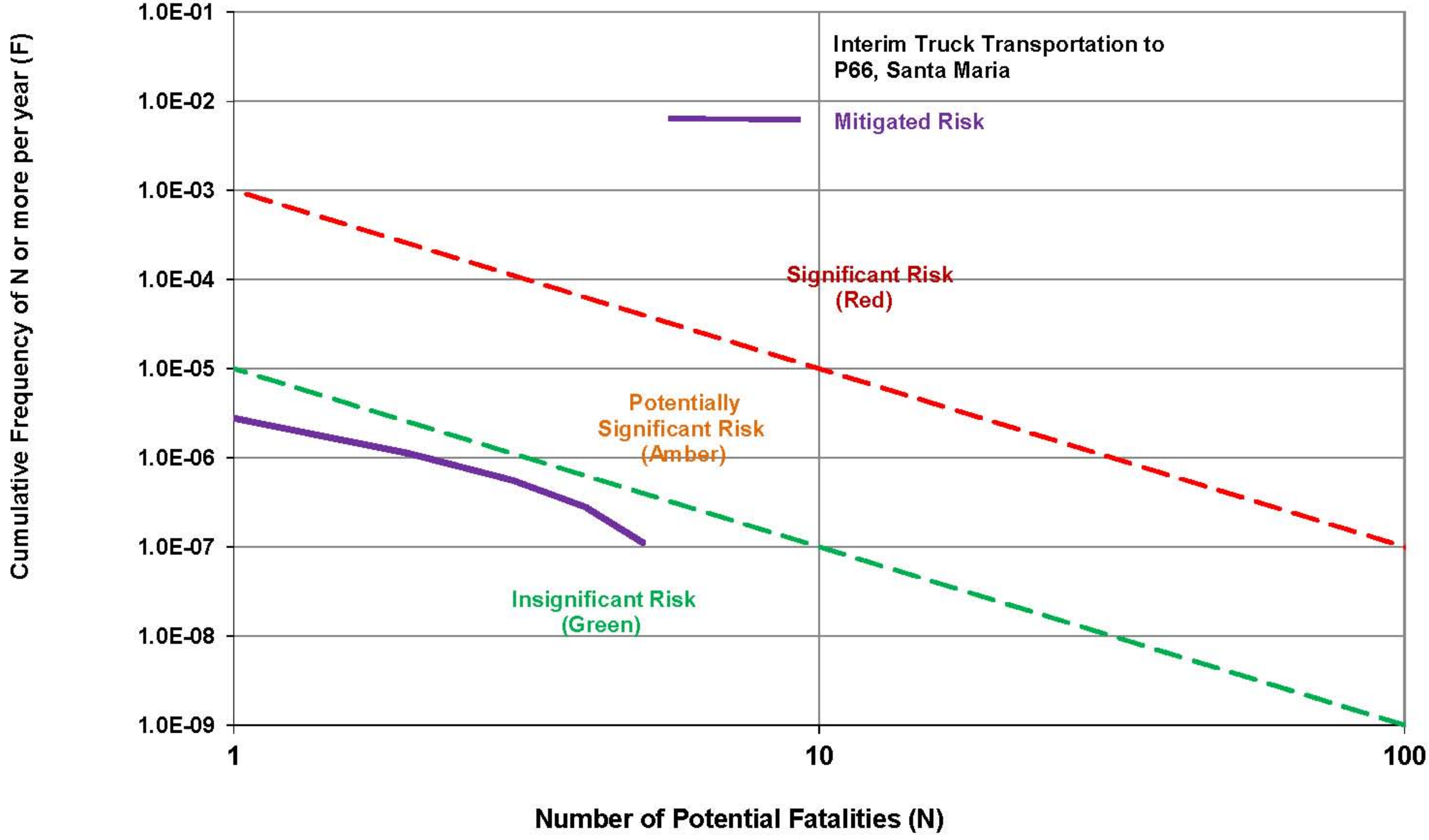


Figure 6.7 Route-2 Highest Mitigated Risk Segment for HazMat Injury per One-Kilometer - SBC Risk Criteria

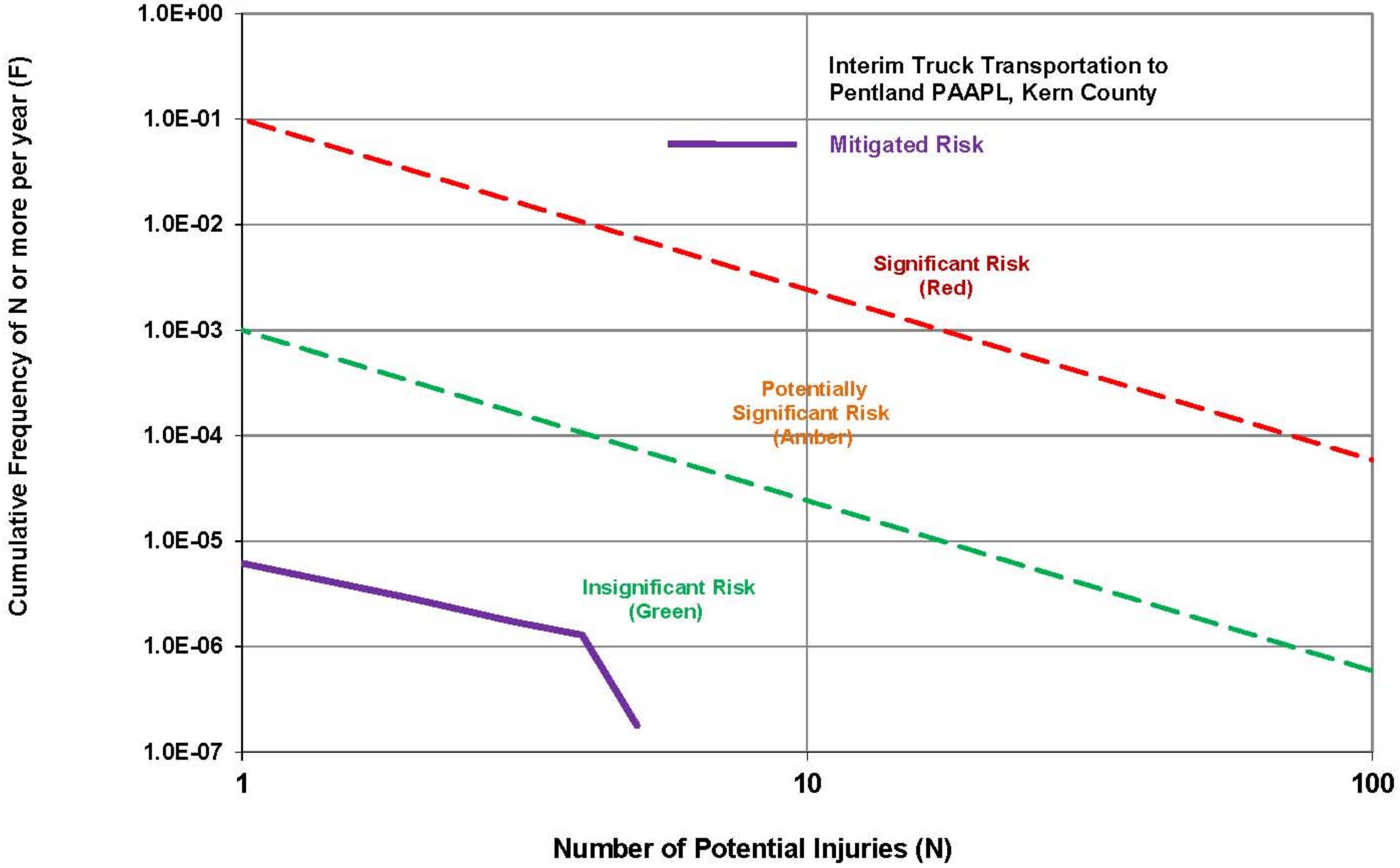
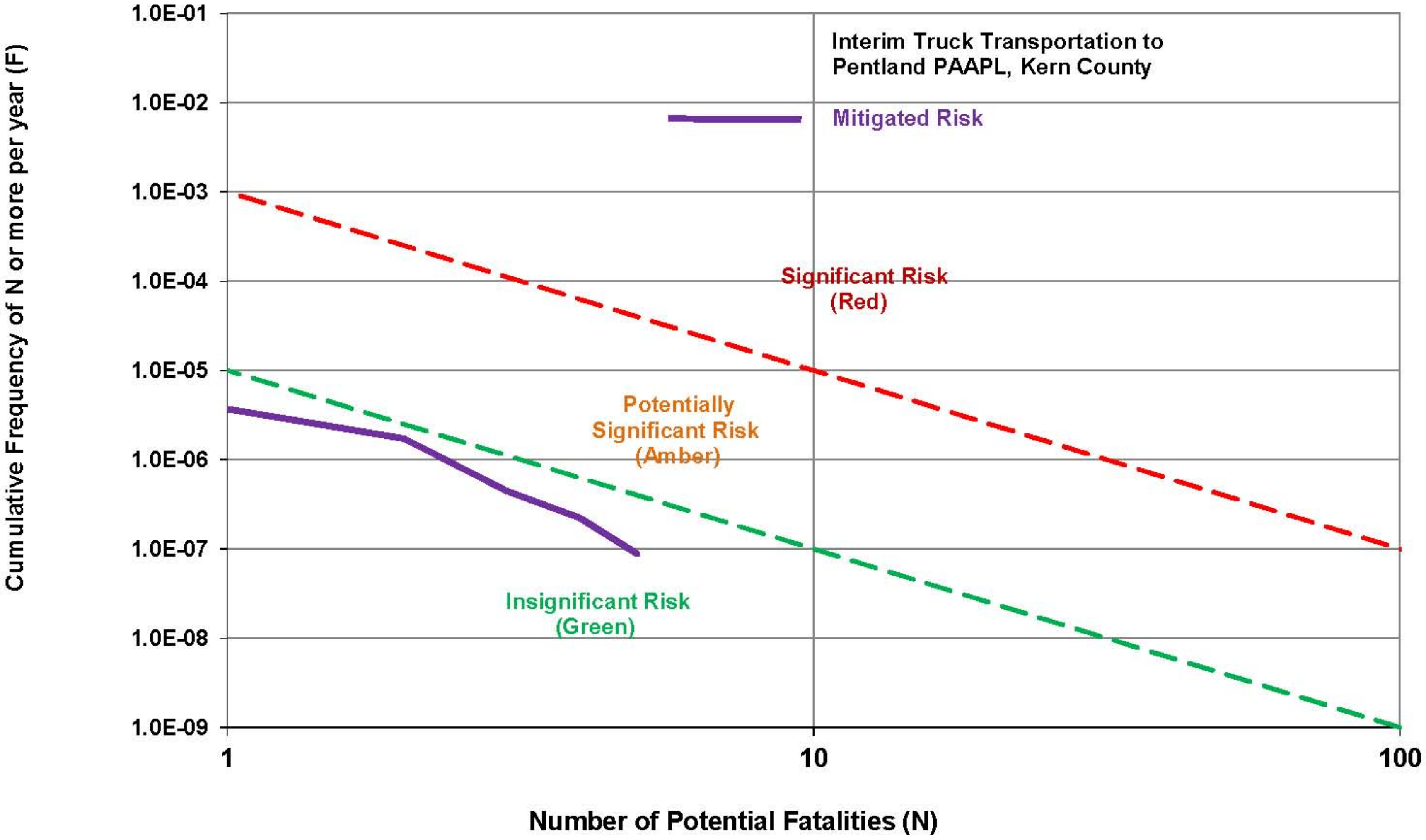


Figure 6.8 Route-2 Highest Mitigated Risk Segment for HazMat Fatality per One-Kilometer - SBC Risk Criteria



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APPENDIX A

ACRONYMS AND ABBREVIATIONS

A	Arterial
AADT	Average Annual Daily Traffic
ADL	Arthur D. Little
ALOHA	Areal Locations of Hazardous Atmospheres
API gravity	American Petroleum Institute gravity
ATE	Associated Transportation Engineers
bbl	barrel
BIT	Biennial Inspection of Terminals
BOPD	barrels oil per day
C	Collector
CA	California
Cal OSHA	California Occupational, Safety and Health Administration
CalTrans	California Department of Transportation
CHP	California Highway Patrol
CFR	Code of Federal Regulations
CO-TRMPP	Crude Oil Transportation Risk Management and Prevention Program
DEGADIS	Dense Gas Dispersion model
Di	Divided Road
DOT	U.S. Department of Transportation
DRC	Dixon Risk Consulting
EPA	US Environmental Protection Agency
ExxonMobil	ExxonMobil Production Company
F	Freeway
^{o}F	degree Fahrenheit
F-N	Cumulative Frequency-Number of 1 or more
FARS	Fatality Analysis Reporting System
FMCSA	Federal Motor Carrier Safety Administration
ft	feet / foot
GES	General Estimates System
GVWR	gross vehicle weight rating

HazMat	Hazardous Material
HM	Hazardous Material
HM-3	Hazardous Material Class 3
HMCRP	Hazardous Material Cooperative Research Program
HMIRS	Hazardous Materials Incident Reporting System
HOS	Hours of Service
HSIS	Highway Safety Information System
Hwy	Highway
IIHS	Insurance Institute of Highway Safety
km	kilometer
kW/m^2	kilowatts per meter squared
L	Local
LACT	Lease Automatic Custody Transfer
lb/min	pounds per minute
LFC	Las Flores Canyon
LFL	lower flammability limit
LPG	liquid petroleum gas
LTCCS	Large Truck Crash Causation Study
MAWP	Maximum Allowable Working Pressure
MCMIS	Motor Carrier Management Information System
mins	minutes
m/s	meters per second
mph	miles per hour
MVMT	Million Vehicle Miles Traveled
NHTSA	National Highway Traffic Safety Administration
NGL	natural gas liquids
OBSS	Onboard Safety Systems
PAAPL	Plains All American Pipeline
PDO	Property Damage Only
PHMSA	Pipeline and Hazardous Materials Safety Administration
psig	pounds per square inch gauge
R	Rural
RMP	Risk Management Program
SBC	Santa Barbara County
SR	State Route
SWITRS	California Statewide Integrated Traffic Record System

SYU	Santa Ynez Unit
TIFA	Trucks Involved in Fatal Accidents
TNO	Toegepast Natuurwetenschappelijk Onderzoek (The Netherlands Organization for Applied Scientific Research)
TQRA	Transportation Quantitative Risk Assessment
TRB	Transportation Research Board
TVU	True Vapor Pressure
U	Urban
UFL	upper flammability limit
UMTRI	University of Michigan Transportation Research Institute
Un	Undivided Road
VNTSC	Volpe National Transportation Systems Center

APPENDIX B

TQRA CALCULATION TABLES

Truck Transportation Data

Item	Number	Report Ref
Scenario 1 to Phillips 66 Pump Station in Santa Maria		
Number of Daily Trips	70	Section 2.1
Number of Annual of Trips	25,550	Section 2.1
Section ID's	A to M	Section 2.3
Scenario 2 to Pentland PAAPL Station in Maricopa		
Number of Daily Trips	68	Section 2.1
Number of Annual of Trips	24,820	Section 2.1
Section ID's	A to J and N to W	Section 2.3

The risk of public impact has been calculated separately for on-road and off-road populations due to different exposure risks and population densities for these two groups. The results of the on-road and off-road risks per 1-kilometer (0.62 miles) segment are then combined to calculate the societal risk profiles for serious injury and fatality.

Calculation of Release Frequencies by Road Segment

Section ID (Report Section 2)	**H'Way / Road**	**Section Length** miles	**HM-3 Truck Accident Rate** MVMT	**Accident Release Rate** per mile-trip	**Non-Collision Release Rate** per mile-trip	**Total Release Rate** per mile-trip	**Mitigated Accident Release Rate** per mile-trip	**Mitigated Non-Collision Rate** per mile-trip	**Total Mitigated Release Rate** per mile-trip
A	Coral Cny	0.8	0.72	3.9E-08	7.7E-09	4.6E-08	3.4E-08	3.9E-09	3.8E-08
B	Calle Real	1.6	0.72	3.9E-08	7.7E-09	4.6E-08	3.4E-08	3.9E-09	3.8E-08
C	101	10.2	0.37	2.0E-08	4.0E-09	2.4E-08	1.8E-08	2.0E-09	2.0E-08
D	101	2.1	0.79	4.2E-08	8.4E-09	5.1E-08	3.7E-08	4.2E-09	4.1E-08
E	101	7.6	0.35	1.9E-08	3.7E-09	2.2E-08	1.6E-08	1.9E-09	1.8E-08
F	101	1.1	0.24	1.3E-08	2.6E-09	1.6E-08	1.1E-08	1.3E-09	1.3E-08
G	101	12.8	0.16	8.8E-09	1.8E-09	1.1E-08	7.7E-09	8.8E-10	8.6E-09
H	101	1.2	0.21	1.1E-08	2.3E-09	1.4E-08	9.9E-09	1.1E-09	1.1E-08
I	101	10.6	0.28	1.5E-08	3.0E-09	1.8E-08	1.3E-08	1.5E-09	1.5E-08
J	101	4.4	0.27	1.4E-08	2.9E-09	1.7E-08	1.3E-08	1.4E-09	1.4E-08
K	Betteravia	1.0	0.72	3.9E-08	7.7E-09	4.6E-08	3.4E-08	3.9E-09	3.8E-08
L/M	Rose/Battl	0.9	0.72	3.9E-08	7.7E-09	4.6E-08	3.4E-08	3.9E-09	3.8E-08
N	101	4.4	0.64	3.4E-08	6.9E-09	4.1E-08	3.0E-08	3.4E-09	3.4E-08
O	101	0.8	0.64	3.4E-08	6.9E-09	4.1E-08	3.0E-08	3.4E-09	3.4E-08
P	166	28.3	0.42	2.3E-08	4.5E-09	2.7E-08	2.0E-08	2.3E-09	2.2E-08
Q	166	23.7	0.30	1.6E-08	3.2E-09	1.9E-08	1.4E-08	1.6E-09	1.6E-08
R	166	1.1	0.36	1.9E-08	3.8E-09	2.3E-08	1.7E-08	1.9E-09	1.9E-08
S	166/33	11.2	0.51	2.7E-08	5.5E-09	3.3E-08	2.4E-08	2.7E-09	2.7E-08
T	166/33	11.7	0.86	4.6E-08	9.2E-09	5.5E-08	4.0E-08	4.6E-09	4.5E-08
U	166/33	1.3	0.38	2.1E-08	4.1E-09	2.5E-08	1.8E-08	2.1E-09	2.0E-08
V	166	4.7	0.81	4.3E-08	8.6E-09	5.2E-08	3.8E-08	4.3E-09	4.2E-08
W	Basic Sch	0.4	0.72	3.9E-08	7.7E-09	4.6E-08	3.4E-08	3.9E-09	3.8E-08
Total	**Scenario 1**	**54.3**	**0.32**						
	Scenario 2	**140.0**	**0.38**						

HM-3 truck accident rate per MVMT		Tables 3.2 and 3.3
Probability of release on accident =	0.054	Section 3.5 / 4.7
Probability of release non- collision =	0.2 x accident rate	Section 3.5
Mitigated accident release rate =	0.88 x accident rate	Section 6.4
Mitigated non-collision release rate =	0.5 x non-collision rate	Section 6.4
Number of truck trips per year	Scenario 1 = 25550 Scenario 2 = 22820	Section 2.1

Calculation of Fire Frequencies by Road Segment

Section ID (Report Section 2)	**H'Way / Road**	**Section Length** kilometers	**Release Rate** per km-trip	**Mitigated Release Rate** per km-trip	**Mitigated Large Fire Freq** per km-year	**Mitigated Small Fire Freq** per km-year
A	Coral Cny	1.3	2.9E-08	2.4E-08	4.8E-05	7.2E-06
B	Calle Real	2.6	2.9E-08	2.4E-08	4.8E-05	7.2E-06
C	101	16.4	1.5E-08	1.2E-08	2.5E-05	3.7E-06
D	101	3.4	3.1E-08	2.6E-08	5.2E-05	7.9E-06
E	101	12.2	1.4E-08	1.1E-08	2.3E-05	3.5E-06
F	101	1.8	9.6E-09	7.9E-09	1.6E-05	2.4E-06
G	101	20.6	6.5E-09	5.3E-09	1.1E-05	1.6E-06
H	101	1.9	8.4E-09	6.9E-09	1.4E-05	2.1E-06
I	101	17.1	1.1E-08	9.2E-09	1.9E-05	2.8E-06
J	101	7.1	1.1E-08	8.7E-09	1.8E-05	2.7E-06
K	Betteravia	1.6	2.9E-08	2.4E-08	4.8E-05	7.2E-06
L/M	Rose/Battles	1.4	2.9E-08	2.4E-08	4.8E-05	7.2E-06
N	101	7.1	2.6E-08	2.1E-08	4.2E-05	6.2E-06
O	101	1.3	2.6E-08	2.1E-08	4.2E-05	6.2E-06
P	166	45.5	1.7E-08	1.4E-08	2.7E-05	4.1E-06
Q	166	38.1	1.2E-08	9.9E-09	2.0E-05	2.9E-06
R	166	1.8	1.4E-08	1.2E-08	2.3E-05	3.5E-06
S	166/33	18.0	2.0E-08	1.7E-08	3.3E-05	5.0E-06
T	166/33	18.8	3.4E-08	2.8E-08	5.5E-05	8.3E-06
U	166/33	2.1	1.5E-08	1.2E-08	2.5E-05	3.7E-06
V	166	7.6	3.2E-08	2.6E-08	5.2E-05	7.8E-06
W	Basic School	0.6	2.9E-08	2.4E-08	4.7E-05	7.0E-06
Total	**Scenario 1**	87.4				
	Scenario 2	225.3				

Conversion of miles to kilometers	miles x 1.6	
Probability of large fire on release	0.4 x 0.2 = 0.08	Section 3.5 and 3.6
Probability of small fire on release	0.6 x 0.02 = 0.012	Section 3.5 and 3.6
Number of truck trips per year	Scenario 1 = 25550 Scenario 2 = 22820	Section 2.1

Off-Road Population Impact Tables

Weather	ID	Probability	Report Ref
F Stability, 1.5 m/s wind, night	F/1.5/N	0.35	Section 2.6
D Stability, 4 m/s wind, night	D/4/N	0.15	Section 2.6
D Stability, 4 m/s wind, day	D/4/D	0.5	Section 2.6

Population Distribution by location – Fraction of Day Numbers (Section 2.5)

Population Type	Day	Day Inside	Day Outside	Night	Night Inside	Night Outside
Residential / Rural / Unpopulated	1	0.8	0.2	1	0.95	0.05
Commercial	1	0.8	0.2	0.05	0.0475	0.0025
Industrial	1	0.8	0.2	0.2	0.19	0.01
Agricultural	1	0.2	0.8	0.05	0.0475	0.0025
Mixed Residential / Commercial	1	0.8	0.2	0.525	0.4988	0.0263
Agricultural / Rural / Rec	1	0.2	0.8	0.1	0.095	0.005
Industrial-Low / Rural	1	0.8	0.2	0.2	0.19	0.01

Pool Fire Impact Areas (source Table 4.3)

Fire Hazard	Weather	Radius (ft)	Area $(ft)^2$	0.5 x Area $(ft)^2$	0.5 x Area minus PF $(ft)^2$
Pool fire (PF)		59	1.1 x 10^4	5.5 x 10^3	
Distance to 10 kW/m^2	F/1.5	110	3.8 x 10^4	1.9 x 10^4	1.4 x 10^4
Distance to 10 kW/m^2	D/4	180	1.0 x 105	5.1 x 10^4	4.5 x 10^4
Distance to 5 kW/m^2	F/1.5	160	8.0 x 10^4	4.0 x 10^4	3.5 x 10^4
Distance to 5 kW/m^2	D/4	240	1.8 x 10^5	9.1 x 10^4	8.5 x 10^4

50% of pool fire area impacts assumed to be off-road, 50% on-road.

Pool Fire Vulnerabilities (source Section 4.4)

Location	Within Pool Fire Area		Pool Fire to $10kW/m^2$	Pool Fire to $5kW/m^2$
	Fatal Prob	Injury Prob	Fatal Prob	Injury Prob
Outdoor	1	0	0.1	0.2
Indoor	0.5	0.5	0.01	0.05

Off-Road Public Population Distribution

Section ID (Section 2)	**Population Category** (Section 2)	**Population Density per mile^2** (Section 2)	**Population per Group** (Section 2)	**Group Density per ft^2** (Section 2)	**Weather / Day / Night**	**Outdoor Probability**	**Indoor Probability**
A	Non-Public	0	-	-	F/1.5/N	-	-
					D/4/N	-	-
					D/4/D	-	-
B	Rural	20	3	2.2E-06	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
C	Rural / Rec	30	3	3.2E-06	F/1.5/N	0.005	0.095
					D/4/N	0.005	0.095
					D/4/D	0.800	0.200
D	UnPop	2	1	7.2E-08	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
E	Rural	20	3	2.2E-06	F/1.5/N	0.005	0.095
					D/4/N	0.005	0.095
					D/4/D	0.800	0.200
F	Mix-L	1000	6	2.2E-04	F/1.5/N	0.026	0.499
					D/4/N	0.026	0.499
					D/4/D	0.200	0.800
G	Rural	20	3	2.2E-06	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
H	Mix-L	1000	6	2.2E-04	F/1.5/N	0.026	0.499
					D/4/N	0.026	0.499
					D/4/D	0.200	0.800
I	Rural	20	3	2.2E-06	F/1.5/N	0.005	0.095
					D/4/N	0.005	0.095
					D/4/D	0.800	0.200
J	Mix-M / Ag	2100	3	2.3E-04	F/1.5/N	0.026	0.499
					D/4/N	0.026	0.499
					D/4/D	0.200	0.800
K	Com-L / Ag	600	3	6.5E-05	F/1.5/N	0.010	0.190
					D/4/N	0.010	0.190
					D/4/D	0.010	0.800
L/M	Rural / Ag	110	3	1.2E-05	F/1.5/N	0.005	0.095
					D/4/N	0.005	0.095
					D/4/D	0.800	0.200

Section ID (Section 2)	**Population Category** (Section 2)	**Population Density per mile^2** (Section 2)	**Population per Group** (Section 2)	**Group Density per ft^2** (Section 2)	**Weather / Day / Night**	**Outdoor Probability**	**Indoor Probability**
N	Mix-M	4000	3	4.3E-04	F/1.5/N	0.026	0.499
					D/4/N	0.026	0.499
					D/4/D	0.200	0.800
O	UnPop	2	1	7.2E-08	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
P	Rur/UnPop	11	3	1.2E-06	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
Q	Rural	20	3	2.2E-06	F/1.5/N	0.005	0.095
					D/4/N	0.005	0.095
					D/4/D	0.800	0.200
R	Res-L	1000	3	1.1E-04	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
S	Rural	20	3	2.2E-06	F/1.5/N	0.005	0.095
					D/4/N	0.005	0.095
					D/4/D	0.800	0.200
T	UnPop	2	1	7.2E-08	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
U	Res-M	3000	3	3.2E-04	F/1.5/N	0.050	0.950
					D/4/N	0.050	0.950
					D/4/D	0.200	0.800
V	Rural	20	3	2.2E-06	F/1.5/N	0.010	0.190
					D/4/N	0.010	0.190
					D/4/D	0.010	0.800
W	Rural	20	3	2.2E-06	F/1.5/N	0.010	0.190
					D/4/N	0.010	0.190
					D/4/D	0.010	0.800

Group Density = Population density per mile^2 x population per group x 3.587 x 10^{-8}

Calculation of Off-Road Public Population Impacts

Section ID	**Mitigated Large Fire Freq** per km-year	**Weather / Day / Night**	**Prob of Weather/ Day / Night**	**Frequency of Casualty Event** per km-year	**Population Within Pool Fire Area**	**Population in Pool Fire Area to 10kw/m^2**	**Population in Pool Fire Area to 5kw/m^2**
A	4.8E-05	F/1.5/N	0.35	2.1E-06	0.000	0.00	0.00
		D/4/N	0.15	9.0E-07	0.000	0.00	0.00
		D/4/D	0.50	3.0E-06	0.000	0.00	0.00
B	4.8E-05	F/1.5/N	0.35	7.0E-07	0.012	0.03	0.07
		D/4/N	0.15	3.0E-07	0.012	0.10	0.18
		D/4/D	0.50	1.0E-06	0.012	0.10	0.18
C	2.5E-05	F/1.5/N	0.35	3.6E-07	0.018	0.04	0.11
		D/4/N	0.15	1.6E-07	0.018	0.15	0.27
		D/4/D	0.50	5.2E-07	0.018	0.15	0.27
D	5.2E-05	F/1.5/N	0.35	2.3E-06	0.0004	0.001	0.002
		D/4/N	0.15	9.8E-07	0.0004	0.003	0.006
		D/4/D	0.50	3.3E-06	0.0004	0.003	0.006
E	2.3E-05	F/1.5/N	0.35	3.4E-07	0.012	0.03	0.07
		D/4/N	0.15	1.5E-07	0.012	0.10	0.18
		D/4/D	0.50	4.8E-07	0.012	0.10	0.18
F	1.6E-05	F/1.5/N	0.35	1.2E-07	1.177	2.91	7.48
		D/4/N	0.15	5.0E-08	1.177	9.78	18.30
		D/4/D	0.50	1.7E-07	1.177	9.78	18.30
G	1.1E-05	F/1.5/N	0.35	1.6E-07	0.012	0.03	0.07
		D/4/N	0.15	6.8E-08	0.012	0.10	0.18
		D/4/D	0.50	2.3E-07	0.012	0.10	0.18
H	1.4E-05	F/1.5/N	0.35	1.0E-07	1.177	2.91	7.48
		D/4/N	0.15	4.4E-08	1.177	9.78	18.30
		D/4/D	0.50	1.5E-07	1.177	9.78	18.30
I	1.9E-05	F/1.5/N	0.35	2.7E-07	0.012	0.03	0.07
		D/4/N	0.15	1.2E-07	0.012	0.10	0.18
		D/4/D	0.50	3.9E-07	0.012	0.10	0.18
J	1.8E-05	F/1.5/N	0.35	2.6E-07	1.236	3.06	7.85
		D/4/N	0.15	1.1E-07	1.236	10.27	19.21
		D/4/D	0.50	3.7E-07	1.236	10.27	19.21
K	4.8E-05	F/1.5/N	0.35	7.0E-07	0.353	0.87	2.24
		D/4/N	0.15	3.0E-07	0.353	2.93	5.49
		D/4/D	0.50	1.0E-06	0.353	2.93	5.49
L/M	4.8E-05	F/1.5/N	0.35	7.0E-07	0.065	0.16	0.41
		D/4/N	0.15	3.0E-07	0.065	0.54	1.01
		D/4/D	0.50	1.0E-06	0.065	0.54	1.01

Section ID	Mitigated Large Fire Freq per km-year	Weather / Day / Night	Prob of Weather/ Day / Night	Frequency of Casualty Event per km-year	Population Within Pool Fire Area	Population in Pool Fire Area to 10kw/m^2	Population in Pool Fire Area to 5kw/m^2
N	4.2E-05	F/1.5/N	0.35	6.1E-07	2.354	5.83	14.96
		D/4/N	0.15	2.6E-07	2.354	19.55	36.59
		D/4/D	0.50	8.7E-07	2.354	19.55	36.59
O	4.2E-05	F/1.5/N	0.35	1.8E-06	0.0004	0.001	0.002
		D/4/N	0.15	7.8E-07	0.0004	0.003	0.006
		D/4/D	0.50	2.6E-06	0.0004	0.003	0.006
P	2.7E-05	F/1.5/N	0.35	4.0E-07	0.006	0.02	0.04
		D/4/N	0.15	1.7E-07	0.006	0.05	0.10
		D/4/D	0.50	5.7E-07	0.006	0.05	0.10
Q	2.0E-05	F/1.5/N	0.35	2.9E-07	0.012	0.03	0.07
		D/4/N	0.15	1.2E-07	0.012	0.10	0.18
		D/4/D	0.50	4.1E-07	0.012	0.10	0.18
R	2.3E-05	F/1.5/N	0.35	3.4E-07	0.588	1.46	3.74
		D/4/N	0.15	1.4E-07	0.588	4.89	9.15
		D/4/D	0.50	4.8E-07	0.588	4.89	9.15
S	3.3E-05	F/1.5/N	0.35	4.8E-07	0.012	0.03	0.07
		D/4/N	0.15	2.1E-07	0.012	0.10	0.18
		D/4/D	0.50	6.9E-07	0.012	0.10	0.18
T	5.5E-05	F/1.5/N	0.35	2.4E-06	0.0004	0.001	0.002
		D/4/N	0.15	1.0E-06	0.0004	0.003	0.006
		D/4/D	0.50	3.5E-06	0.0004	0.003	0.006
U	2.5E-05	F/1.5/N	0.35	3.6E-07	1.765	4.37	11.22
		D/4/N	0.15	1.6E-07	1.765	14.66	27.44
		D/4/D	0.50	5.2E-07	1.765	14.66	27.44
V	5.2E-05	F/1.5/N	0.35	7.6E-07	0.012	0.03	0.07
		D/4/N	0.15	3.3E-07	0.012	0.10	0.18
		D/4/D	0.50	1.1E-06	0.012	0.10	0.18
W	4.7E-06	F/1.5/N	0.35	6.8E-07	0.012	0.03	0.07
		D/4/N	0.15	2.9E-07	0.012	0.10	0.18
		D/4/D	0.50	9.8E-07	0.012	0.10	0.18

Calculation of Population Group Impact per year:

Frequency of large fire per km-year		by road segment above
X Probability of weather / time		Section 2.6
X Rapid release and immediate ignition	0.25 x 0.5 = 0.125	Section 4.7
/ Number in each group		Section 2

Calculation of Max Population Within Pool Fire Area:
Group Density per ft^2 x Off-Road Pool Fire Area ft^2

Calculation of Off-Road Public Fatality and Serious Injury Numbers

Section ID	Outdoor Fatality		Indoor Fatality		Total Fatality Number	Outdoor Injury		Indoor Injury		Total Serious Injury Number
	Within Pool Fire Area	Pool Fire to $10kw/m^2$	Within Pool Fire Area	Pool Fire to $10kw/m^2$		Within Pool Fire Area	Pool Fire to $5kw/m^2$	Within Pool Fire Area	Pool Fire to $5kw/m^2$	
A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
B	0.0006	0.0001	0.0056	0.0003	0.0066	0.0000	0.0007	0.0056	0.0036	0.0099
	0.0006	0.0005	0.0056	0.0009	0.0076	0.0000	0.0018	0.0056	0.0087	0.0161
	0.0024	0.0020	0.0047	0.0008	0.0098	0.0000	0.0073	0.0047	0.0073	0.0193
C	0.0001	0.0000	0.0008	0.0000	0.0010	0.0000	0.0001	0.0008	0.0005	0.0015
	0.0001	0.0001	0.0008	0.0001	0.0011	0.0000	0.0003	0.0008	0.0013	0.0024
	0.0141	0.0117	0.0018	0.0003	0.0279	0.0000	0.0439	0.0018	0.0027	0.0484
D	0.0000	0.0000	0.0002	0.0000	0.0002	0.0000	0.0000	0.0002	0.0001	0.0003
	0.0000	0.0000	0.0002	0.0000	0.0003	0.0000	0.0001	0.0002	0.0003	0.0005
	0.0001	0.0001	0.0002	0.0000	0.0003	0.0000	0.0002	0.0002	0.0002	0.0006
E	0.0001	0.0000	0.0006	0.0000	0.0007	0.0000	0.0001	0.0006	0.0004	0.0010
	0.0001	0.0000	0.0006	0.0001	0.0008	0.0000	0.0002	0.0006	0.0009	0.0016
	0.0094	0.0078	0.0012	0.0002	0.0186	0.0000	0.0293	0.0012	0.0018	0.0323
F	0.0309	0.0076	0.2935	0.0145	0.3465	0.0000	0.0393	0.2935	0.1865	0.5192
	0.0309	0.0257	0.2935	0.0488	0.3988	0.0000	0.0961	0.2935	0.4563	0.8458
	0.2354	0.1955	0.4707	0.0782	0.9798	0.0000	0.7318	0.4707	0.7318	1.9344
G	0.0006	0.0001	0.0056	0.0003	0.0066	0.0000	0.0007	0.0056	0.0036	0.0099
	0.0006	0.0005	0.0056	0.0009	0.0076	0.0000	0.0018	0.0056	0.0087	0.0161
	0.0024	0.0020	0.0047	0.0008	0.0098	0.0000	0.0073	0.0047	0.0073	0.0193
H	0.0309	0.0076	0.2935	0.0145	0.3465	0.0000	0.0393	0.2935	0.1865	0.5192
	0.0309	0.0257	0.2935	0.0488	0.3988	0.0000	0.0961	0.2935	0.4563	0.8458
	0.2354	0.1955	0.4707	0.0782	0.9798	0.0000	0.7318	0.4707	0.7318	1.9344

Section ID	Outdoor Fatality		Indoor Fatality		Total Fatality Number	Outdoor Injury		Indoor Injury		Total Serious Injury Number
	Within Pool Fire Area	Pool Fire to 10kw/m^2	Within Pool Fire Area	Pool Fire to 10kw/m^2		Within Pool Fire Area	Pool Fire to 5kw/m^2	Within Pool Fire Area	Pool Fire to 5kw/m^2	
I	0.0001	0.0000	0.0006	0.0000	0.0007	0.0000	0.0001	0.0006	0.0004	0.0010
	0.0001	0.0000	0.0006	0.0001	0.0008	0.0000	0.0002	0.0006	0.0009	0.0016
	0.0094	0.0078	0.0012	0.0002	0.0186	0.0000	0.0293	0.0012	0.0018	0.0323
J	0.0324	0.0080	0.3081	0.0153	0.3639	0.0000	0.0412	0.3081	0.1958	0.5452
	0.0324	0.0269	0.3081	0.0512	0.4187	0.0000	0.1009	0.3081	0.4791	0.8881
	0.2471	0.2053	0.4943	0.0821	1.0288	0.0000	0.7684	0.4943	0.7684	2.0311
K	0.0035	0.0009	0.0335	0.0017	0.0396	0.0000	0.0045	0.0335	0.0213	0.0593
	0.0035	0.0029	0.0335	0.0056	0.0456	0.0000	0.0110	0.0335	0.0521	0.0967
	0.0035	0.0029	0.1412	0.0235	0.1711	0.0000	0.0110	0.1412	0.2196	0.3717
L/M	0.0003	0.0001	0.0031	0.0002	0.0036	0.0000	0.0004	0.0031	0.0020	0.0054
	0.0003	0.0003	0.0031	0.0005	0.0042	0.0000	0.0010	0.0031	0.0048	0.0089
	0.0518	0.0430	0.0065	0.0011	0.1023	0.0000	0.1610	0.0065	0.0101	0.1775
N	0.0618	0.0153	0.5869	0.0291	0.6931	0.0000	0.0785	0.5869	0.3730	1.0384
	0.0618	0.0513	0.5869	0.0975	0.7976	0.0000	0.1921	0.5869	0.9125	1.6915
	0.4707	0.3911	0.9414	0.1564	1.9597	0.0000	1.4637	0.9414	1.4637	3.8688
O	0.0000	0.0000	0.0002	0.0000	0.0002	0.0000	0.0000	0.0002	0.0001	0.0003
	0.0000	0.0000	0.0002	0.0000	0.0003	0.0000	0.0001	0.0002	0.0003	0.0005
	0.0001	0.0001	0.0002	0.0000	0.0003	0.0000	0.0002	0.0002	0.0002	0.0006
P	0.0003	0.0001	0.0031	0.0002	0.0036	0.0000	0.0004	0.0031	0.0020	0.0054
	0.0003	0.0003	0.0031	0.0005	0.0042	0.0000	0.0010	0.0031	0.0048	0.0089
	0.0013	0.0011	0.0026	0.0004	0.0054	0.0000	0.0040	0.0026	0.0040	0.0106
Q	0.0001	0.0000	0.0006	0.0000	0.0007	0.0000	0.0001	0.0006	0.0004	0.0010
	0.0001	0.0000	0.0006	0.0001	0.0008	0.0000	0.0002	0.0006	0.0009	0.0016
	0.0094	0.0078	0.0012	0.0002	0.0186	0.0000	0.0293	0.0012	0.0018	0.0323

Section ID	Outdoor Fatality		Indoor Fatality		Total Fatality Number	Outdoor Injury		Indoor Injury		Total Serious Injury Number
	Within Pool Fire Area	Pool Fire to 10kw/m^2	Within Pool Fire Area	Pool Fire to 10kw/m^2		Within Pool Fire Area	Pool Fire to 5kw/m^2	Within Pool Fire Area	Pool Fire to 5kw/m^2	
R	0.0294	0.0073	0.2795	0.0138	0.3300	0.0000	0.0374	0.2795	0.1776	0.4945
	0.0294	0.0244	0.2795	0.0464	0.3798	0.0000	0.0915	0.2795	0.4345	0.8055
	0.1177	0.0978	0.2354	0.0391	0.4899	0.0000	0.3659	0.2354	0.3659	0.9672
S	0.0001	0.0000	0.0006	0.0000	0.0007	0.0000	0.0001	0.0006	0.0004	0.0010
	0.0001	0.0000	0.0006	0.0001	0.0008	0.0000	0.0002	0.0006	0.0009	0.0016
	0.0094	0.0078	0.0012	0.0002	0.0186	0.0000	0.0293	0.0012	0.0018	0.0323
T	0.0000	0.0000	0.0002	0.0000	0.0002	0.0000	0.0000	0.0002	0.0001	0.0003
	0.0000	0.0000	0.0002	0.0000	0.0003	0.0000	0.0001	0.0002	0.0003	0.0005
	0.0001	0.0001	0.0002	0.0000	0.0003	0.0000	0.0002	0.0002	0.0002	0.0006
U	0.0883	0.0219	0.8385	0.0415	0.9901	0.0000	0.1122	0.8385	0.5328	1.4834
	0.0883	0.0733	0.8385	0.1393	1.1394	0.0000	0.2744	0.8385	1.3036	2.4165
	0.3530	0.2933	0.7061	0.1173	1.4697	0.0000	1.0978	0.7061	1.0978	2.9016
V	0.0001	0.0000	0.0011	0.0001	0.0013	0.0000	0.0001	0.0011	0.0007	0.0020
	0.0001	0.0001	0.0011	0.0002	0.0015	0.0000	0.0004	0.0011	0.0017	0.0032
	0.0001	0.0001	0.0047	0.0008	0.0057	0.0000	0.0004	0.0047	0.0073	0.0124
W	0.0001	0.0000	0.0011	0.0001	0.0013	0.0000	0.0001	0.0011	0.0007	0.0020
	0.0001	0.0001	0.0011	0.0002	0.0015	0.0000	0.0004	0.0011	0.0017	0.0032
	0.0001	0.0001	0.0047	0.0008	0.0057	0.0000	0.0004	0.0047	0.0073	0.0124

Outdoor Casualty = Population Within Impact Area x Population Fraction Outdoors x Vulnerability
Indoor Casualty = Population Within Impact Area x Population Fraction Indoors x Vulnerability

Event Frequencies Adjusted for Minimum of One Public Casualty

Section ID	Frequency of Casualty Event (per km-year)	Fatality Number	Rounded Fatality Number (min of 1)	Adjusted Frequency of Fatality Event (per km-year)	Serious Injury Number	Rounded Injury Number (min of 1)	Adjusted Frequency of Injury Event (per km-year)
A	2.1E-06	0.0000	0	0.0E+00	0.0000	0	0.0E+00
	9.0E-07	0.0000	0	0.0E+00	0.0000	0	0.0E+00
	3.0E-06	0.0000	0	0.0E+00	0.0000	0	0.0E+00
B	7.0E-07	0.0066	1	4.6E-09	0.0099	1	7.0E-09
	3.0E-07	0.0076	1	2.3E-09	0.0161	1	4.9E-09
	1.0E-06	0.0098	1	9.8E-09	0.0193	1	1.9E-08
C	3.6E-07	0.0010	1	3.6E-10	0.0015	1	5.4E-10
	1.6E-07	0.0011	1	1.8E-10	0.0024	1	3.8E-10
	5.2E-07	0.0279	1	1.4E-08	0.0484	1	2.5E-08
D	2.3E-06	0.0002	1	5.0E-10	0.0003	1	7.6E-10
	9.8E-07	0.0003	1	2.5E-10	0.0005	1	5.3E-10
	3.3E-06	0.0003	1	1.1E-09	0.0006	1	2.1E-09
E	3.4E-07	0.0007	1	2.2E-10	0.0010	1	3.4E-10
	1.5E-07	0.0008	1	1.1E-10	0.0016	1	2.3E-10
	4.8E-07	0.0186	1	9.0E-09	0.0323	1	1.6E-08
F	1.2E-07	0.3465	1	4.1E-08	0.5192	1	6.1E-08
	5.0E-08	0.3988	1	2.0E-08	0.8458	1	4.3E-08
	1.7E-07	0.9798	1	1.6E-07	1.9344	2	1.6E-07
G	1.6E-07	0.0066	1	1.0E-09	0.0099	1	1.6E-09
	6.8E-08	0.0076	1	5.2E-10	0.0161	1	1.1E-09
	2.3E-07	0.0098	1	2.2E-09	0.0193	1	4.4E-09
H	1.0E-07	0.3465	1	3.5E-08	0.5192	1	5.3E-08
	4.4E-08	0.3988	1	1.8E-08	0.8458	1	3.7E-08
	1.5E-07	0.9798	1	1.4E-07	1.9344	2	1.4E-07
I	2.7E-07	0.0007	1	1.8E-10	0.0010	1	2.7E-10
	1.2E-07	0.0008	1	8.9E-11	0.0016	1	1.9E-10
	3.9E-07	0.0186	1	7.3E-09	0.0323	1	1.3E-08
J	2.6E-07	0.3639	1	9.5E-08	0.5452	1	1.4E-07
	1.1E-07	0.4187	1	4.7E-08	0.8881	1	9.9E-08
	3.7E-07	1.0288	1	3.8E-07	2.0311	2	3.8E-07
K	7.0E-07	0.0396	1	2.8E-08	0.0593	1	4.2E-08
	3.0E-07	0.0456	1	1.4E-08	0.0967	1	2.9E-08
	1.0E-06	0.1711	1	1.7E-07	0.3717	1	3.7E-07
L/M	7.0E-07	0.0036	1	2.6E-09	0.0054	1	3.8E-09
	3.0E-07	0.0042	1	1.3E-09	0.0089	1	2.7E-09
	1.0E-06	0.1023	1	1.0E-07	0.1775	1	1.8E-07

Section ID	Frequency of Casualty Event (per km-year)	Fatality Number	Rounded Fatality Number (min of 1)	Adjusted Frequency of Fatality Event (per km-year)	Serious Injury Number	Rounded Injury Number (min of 1)	Adjusted Frequency of Injury Event (per km-year)
N	6.1E-07	0.6931	1	4.2E-07	1.0384	1	6.3E-07
	2.6E-07	0.7976	1	2.1E-07	1.6915	2	2.2E-07
	8.7E-07	1.9597	2	8.5E-07	3.8688	4	8.4E-07
O	1.8E-06	0.0002	1	4.0E-10	0.0003	1	6.0E-10
	7.8E-07	0.0003	1	2.0E-10	0.0005	1	4.2E-10
	2.6E-06	0.0003	1	8.5E-10	0.0006	1	1.7E-09
P	4.0E-07	0.0036	1	1.5E-09	0.0054	1	2.2E-09
	1.7E-07	0.0042	1	7.2E-10	0.0089	1	1.5E-09
	5.7E-07	0.0054	1	3.1E-09	0.0106	1	6.1E-09
Q	2.9E-07	0.0007	1	1.9E-10	0.0010	1	2.8E-10
	1.2E-07	0.0008	1	9.3E-11	0.0016	1	2.0E-10
	4.1E-07	0.0186	1	7.6E-09	0.0323	1	1.3E-08
R	3.4E-07	0.3300	1	1.1E-07	0.4945	1	1.7E-07
	1.4E-07	0.3798	1	5.5E-08	0.8055	1	1.2E-07
	4.8E-07	0.4899	1	2.4E-07	0.9672	1	4.7E-07
S	4.8E-07	0.0007	1	3.2E-10	0.0010	1	4.8E-10
	2.1E-07	0.0008	1	1.6E-10	0.0016	1	3.3E-10
	6.9E-07	0.0186	1	1.3E-08	0.0323	1	2.2E-08
T	2.4E-06	0.0002	1	5.3E-10	0.0003	1	8.0E-10
	1.0E-06	0.0003	1	2.6E-10	0.0005	1	5.6E-10
	3.5E-06	0.0003	1	1.1E-09	0.0006	1	2.2E-09
U	3.6E-07	0.9901	1	3.6E-07	1.4834	1	5.4E-07
	1.6E-07	1.1394	1	1.8E-07	2.4165	2	1.9E-07
	5.2E-07	1.4697	1	7.6E-07	2.9016	3	5.0E-07
V	7.6E-07	0.0013	1	1.0E-09	0.0020	1	1.5E-09
	3.3E-07	0.0015	1	5.0E-10	0.0032	1	1.1E-09
	1.1E-06	0.0057	1	6.2E-09	0.0124	1	1.3E-08
W	6.8E-07	0.0013	1	9.0E-10	0.0020	1	1.4E-09
	2.9E-07	0.0015	1	4.4E-10	0.0032	1	9.4E-10
	9.8E-07	0.0057	1	5.6E-09	0.0124	1	1.2E-08

Sum of On-Road and Off-Road Public Casualties by Road Segment

Section ID (Report Section 2)	**Mitigated Large Fire Freq** per km-year	**Mitigated Small Fire Freq** per km-year	**Freq of On-Road Public Fatality** per km-year	**Freq of On-Road Public Injury** per km-year	**Freq of Off-Road Public Fatality** per km-year	**Freq of Off-Road Public Injury** per km-year	**Total Freq of Public Fatality** per km-year	**Total Freq of Public Injury** per km-year
A	4.8E-05	7.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
B	4.8E-05	7.2E-06	2.6E-06	5.2E-06	1.7E-08	3.1E-08	2.6E-06	5.2E-06
C	2.5E-05	3.7E-06	1.3E-06	2.7E-06	1.5E-08	2.6E-08	1.3E-06	2.7E-06
D	5.2E-05	7.9E-06	2.8E-06	5.6E-06	1.8E-09	3.4E-09	2.8E-06	5.6E-06
E	2.3E-05	3.5E-06	1.2E-06	2.5E-06	9.3E-09	1.6E-08	1.2E-06	2.5E-06
F	1.6E-05	2.4E-06	8.5E-07	1.7E-06	2.2E-07	2.7E-07	1.1E-06	2.0E-06
G	1.1E-05	1.6E-06	5.8E-07	1.2E-06	3.8E-09	7.1E-09	5.8E-07	1.2E-06
H	1.4E-05	2.1E-06	7.4E-07	1.5E-06	2.0E-07	2.3E-07	9.4E-07	1.7E-06
I	1.9E-05	2.8E-06	9.9E-07	2.0E-06	7.5E-09	1.3E-08	1.0E-06	2.0E-06
J	1.8E-05	2.7E-06	9.5E-07	1.9E-06	5.2E-07	6.2E-07	1.5E-06	2.5E-06
K	4.8E-05	7.2E-06	2.6E-06	5.2E-06	2.1E-07	4.4E-07	2.8E-06	5.6E-06
L/M	4.8E-05	7.2E-06	2.6E-06	5.2E-06	1.1E-07	1.8E-07	2.7E-06	5.4E-06
N	4.2E-05	6.2E-06	2.2E-06	4.5E-06	1.5E-06	1.7E-06	3.7E-06	6.2E-06
O	4.2E-05	6.2E-06	2.2E-06	4.5E-06	1.4E-09	2.7E-09	2.2E-06	4.5E-06
P	2.7E-05	4.1E-06	1.5E-06	3.0E-06	5.3E-09	9.8E-09	1.5E-06	3.0E-06
Q	2.0E-05	2.9E-06	1.0E-06	2.1E-06	7.9E-09	1.4E-08	1.0E-06	2.1E-06
R	2.3E-05	3.5E-06	1.2E-06	2.5E-06	4.0E-07	7.5E-07	1.6E-06	3.2E-06
S	3.3E-05	5.0E-06	1.8E-06	3.6E-06	1.3E-08	2.3E-08	1.8E-06	3.6E-06
T	5.5E-05	8.3E-06	2.9E-06	6.0E-06	1.9E-09	3.6E-09	2.9E-06	6.0E-06
U	2.5E-05	3.7E-06	1.3E-06	2.7E-06	1.3E-06	1.2E-06	2.6E-06	3.9E-06
V	5.2E-05	7.8E-06	2.8E-06	5.6E-06	7.7E-09	1.6E-08	2.8E-06	5.6E-06
W	4.7E-05	7.0E-06	2.5E-06	5.0E-06	6.9E-09	1.4E-08	2.5E-06	5.0E-06

Fire frequencies from table above

On-Road probabilities of public casualties

Large fire probability of public fatality =	0.05	Section 3.7
Small fire probability of public fatality =	0.02	Section 3.7
Large fire probability of public serious injury =	0.1	Section 3.7
Small fire probability of public serious injury =	0.05	Section 3.7
Off-Road frequency of public casualties =	Day + Night	Total 24 hr frequency

Route 1 - Calculation for Societal Risk on the Highest Risk 1-km Segment

On Route 1, the highest risk is segment D on Highway 101 across the hills of Gaviota State Park to the junction with State Route 1. This has been selected for the calculation of societal risk.

Segment D on-road frequency of casualty event:

Frequency of On-Road Public Fatality per km-year =	2.8E-06
Frequency of On-Road Public Injury per km-year =	5.6E-06

Number of Casualties per Event	Probability of Casualty Number (Section 3.7)	Frequency of On-Road Public Fatalities (per km-year)	Frequency of On-Road Public Serious Injury (per km-year)
5	0.04	1.1E-07	2.3E-07
4	0.06	1.7E-07	3.4E-07
3	0.1	2.8E-07	5.6E-07
2	0.2	5.6E-07	1.1E-06
1	0.6	1.7E-06	3.4E-06

Segment D off-road frequency of casualty event:

Segment ID	Fatality Number (min of 1)	Adjusted Frequency of Fatality Event (per km-year)	Serious Injury Number (min of 1)	Adjusted Frequency of Injury Event (per km-year)
D	5	-	5	-
	4	-	4	-
	3	-	3	-
	2	-	2	-
	1	1.8E-09	1	3.4E-09

Route 1 - Combined On and Off-Road Casualties for F-N Societal Profiles

Risk per highest 1-km Segment D

Number of Fatalities	Frequency of Public Fatalities per km-year	Frequency of N or More Public Fatalities per km-year
5	1.1E-07	1.1E-07
4	1.7E-07	2.8E-07
3	2.8E-07	5.6E-07
2	5.6E-07	1.1E-06
1	1.7E-06	2.8E-06

Number of Serious Injuries	Frequency of Public Injuries per km-year	Frequency of N or More Public Injuries per km-year
5	2.3E-07	2.3E-07
4	3.4E-07	5.6E-07
3	5.6E-07	1.1E-06
2	1.1E-06	2.3E-06
1	3.4E-06	5.6E-06

Route 2 - Calculation for Societal Risk on the Highest Risk 1-km Segment

On Route 2, the highest risk is segment N on Highway 101 between Betteravia Road and the Santa Maria River Bridge in Santa Maria. This has been selected for the calculation of societal risk.

Segment N on-road frequency of casualty event:

Frequency of On-Road Public Fatality per km-year =	2.2E-06
Frequency of On-Road Public Injury per km-year =	4.5E-06

Number of Casualties per Event	Probability of Casualty Number (Section 3.7)	Frequency of On-Road Public Fatalities (per km-year)	Frequency of On-Road Public Serious Injury (per km-year)
5	0.04	8.8E-08	1.8E-07
4	0.06	1.3E-07	2.7E-07
3	0.1	2.2E-07	4.5E-07
2	0.2	4.4E-07	8.9E-07
1	0.6	1.3E-06	2.7E-06

Segment N off-road frequency of casualty event:

Segment ID	Fatality Number (min of 1)	Adjusted Frequency of Fatality Event (per km-year)	Serious Injury Number (min of 1)	Adjusted Frequency of Injury Event (per km-year)
N	5	-	5	-
	4	-	4	8.4E-07
	3	-	3	-
	2	8.5E-07	2	2.2E-07
	1	6.3E-07	1	6.3E-07

Route 2 - Combined On and Off-Road Casualties for F-N Societal Profiles

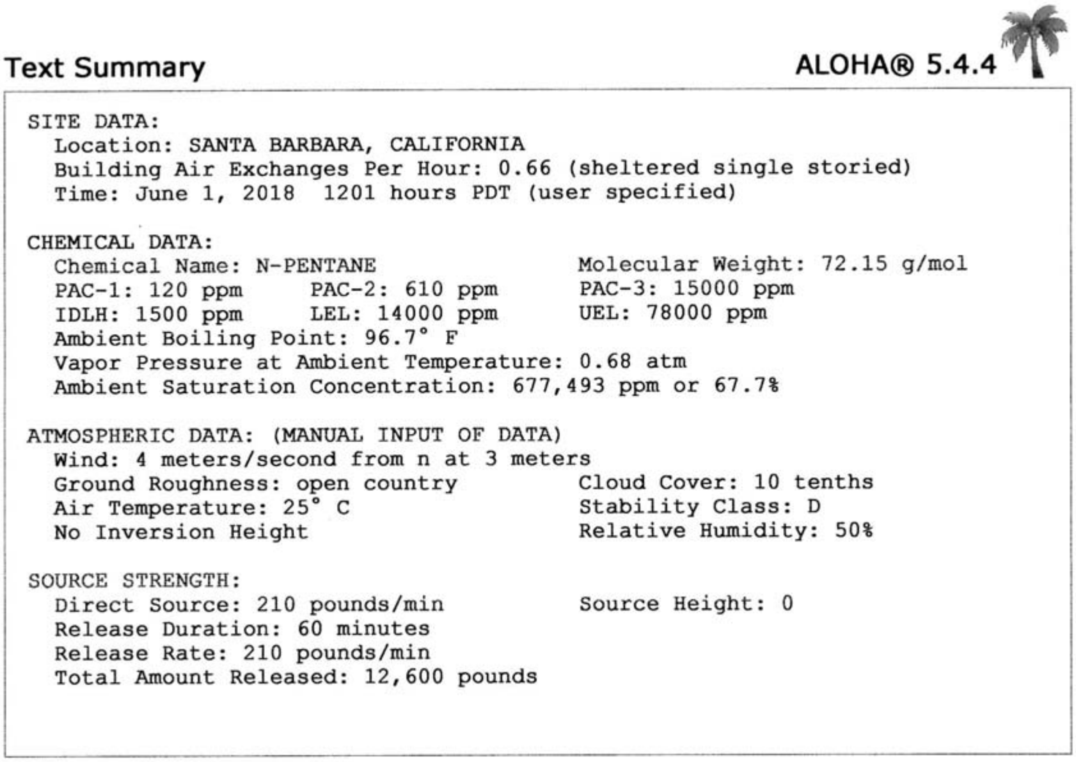
Risk per highest 1-km Segment N

Number of Fatalities	Frequency of Public Fatalities per km-year	Frequency of N or More Public Fatalities per km-year
5	8.8E-08	8.8E-08
4	1.3E-07	2.2E-07
3	2.2E-07	4.4E-07
2	1.3E-06	1.7E-06
1	2.0E-06	3.7E-06

Number of Serious Injuries	Frequency of Public Injuries per km-year	Frequency of N or More Public Injuries per km-year
5	1.8E-07	1.8E-07
4	1.1E-06	1.3E-06
3	4.5E-07	1.7E-06
2	1.1E-06	2.8E-06
1	3.3E-06	6.2E-06

APPENDIX C

CONSEQUENCE MODELING INPUT AND OUTPUT FILES



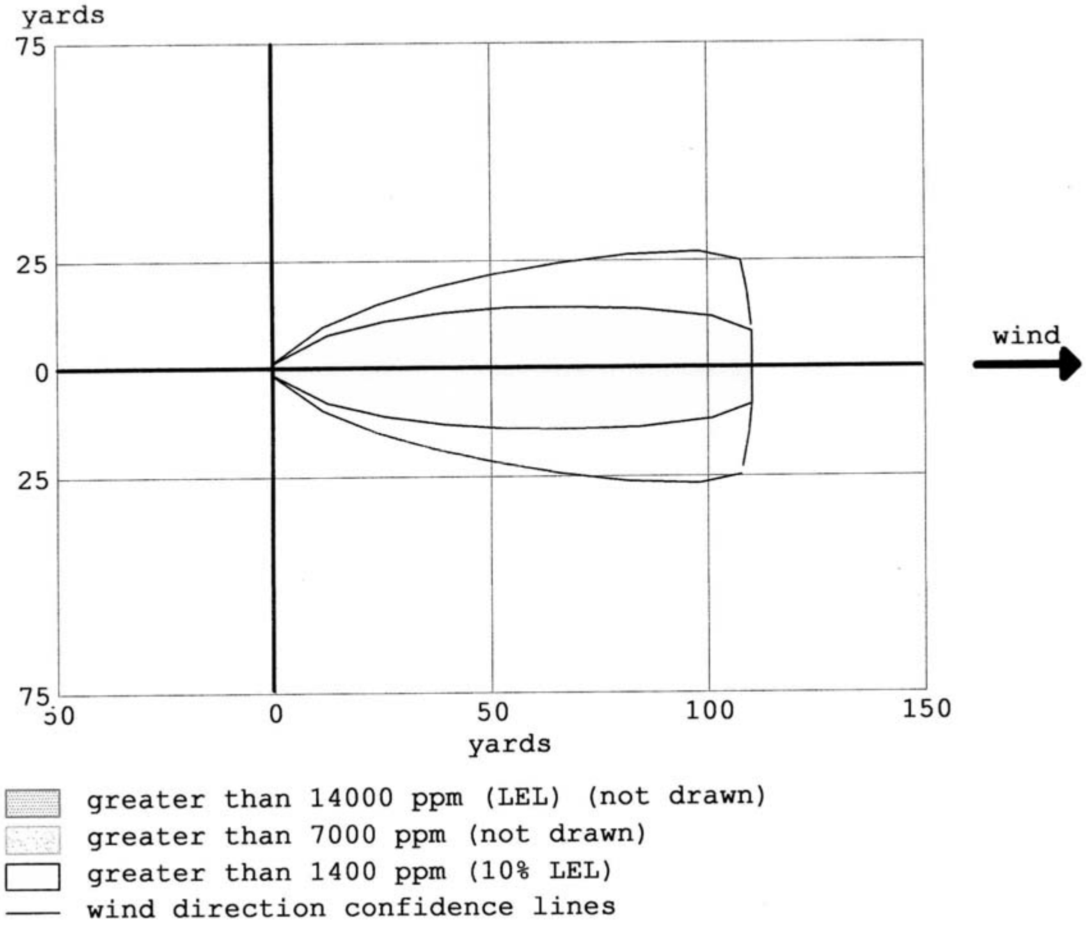
Text Summary **ALOHA® 5.4.4**

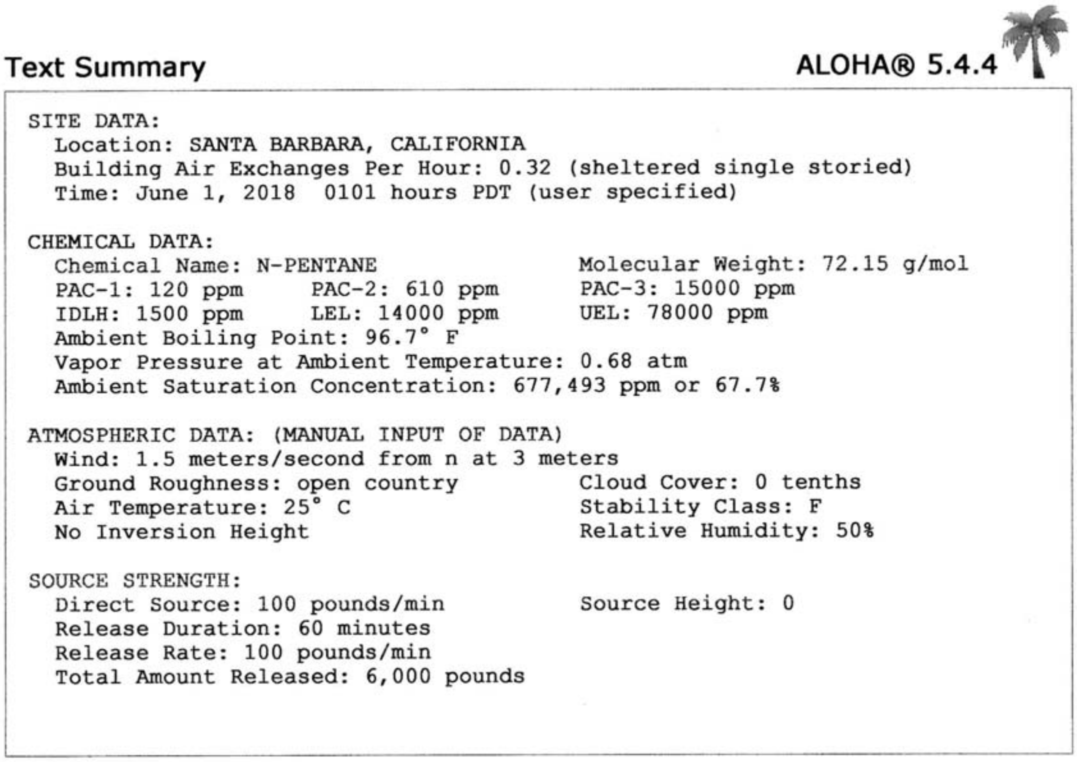
```
SITE DATA:
  Location: SANTA BARBARA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.66 (sheltered single storied)
  Time: June 1, 2018  1201 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: N-PENTANE               Molecular Weight: 72.15 g/mol
  PAC-1: 120 ppm     PAC-2: 610 ppm      PAC-3: 15000 ppm
  IDLH: 1500 ppm     LEL: 14000 ppm      UEL: 78000 ppm
  Ambient Boiling Point: 96.7° F
  Vapor Pressure at Ambient Temperature: 0.68 atm
  Ambient Saturation Concentration: 677,493 ppm or 67.7%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 4 meters/second from n at 3 meters
  Ground Roughness: open country         Cloud Cover: 10 tenths
  Air Temperature: 25° C                 Stability Class: D
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Direct Source: 210 pounds/min          Source Height: 0
  Release Duration: 60 minutes
  Release Rate: 210 pounds/min
  Total Amount Released: 12,600 pounds
```

Flammable Threat Zone

ALOHA® 5.4.4

```
Time: June 1, 2018  1201 hours PDT (user specified)

Chemical Name: N-PENTANE

Wind: 4 meters/second from n at 3 meters

THREAT ZONE:
  Threat Modeled: Flammable Area of Vapor Cloud
  Model Run: Heavy Gas
  Red   : 25 yards --- (14000 ppm = LEL)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 39 yards --- (7000 ppm)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Yellow: 111 yards --- (1400 ppm = 10% LEL)
```





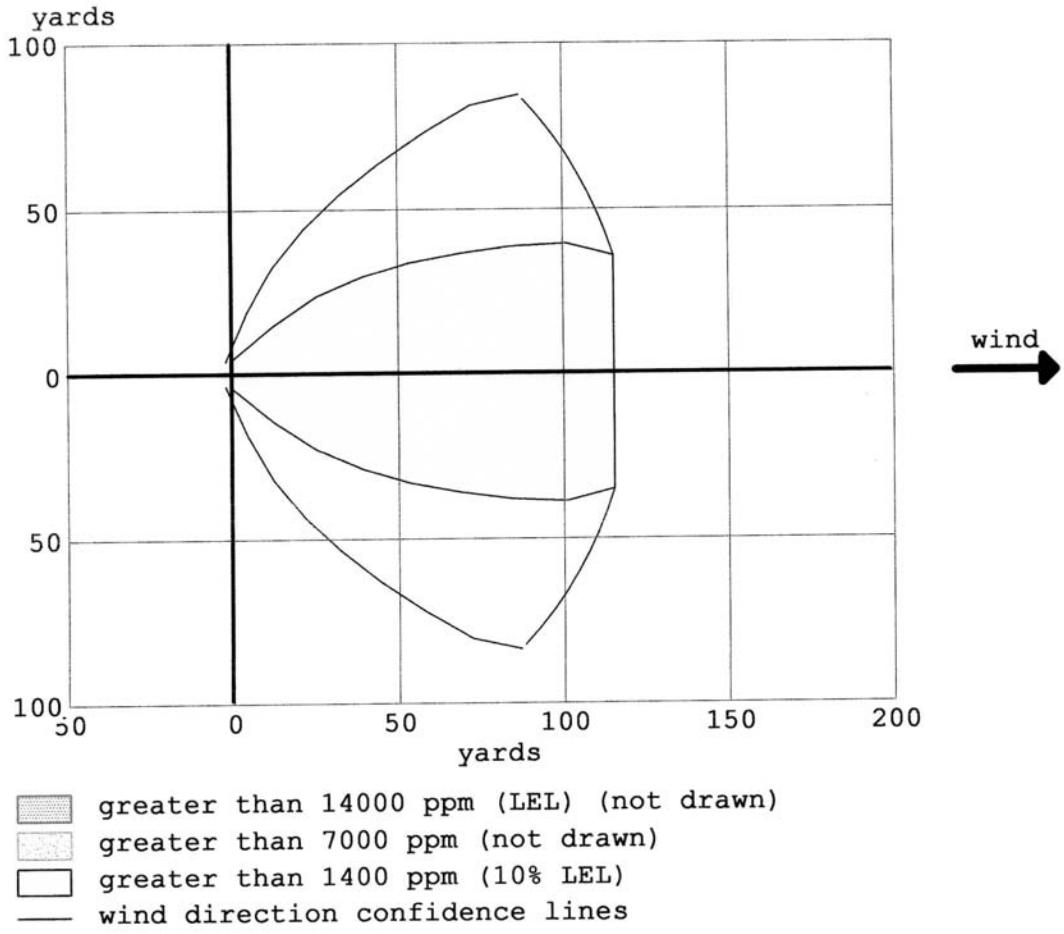
Text Summary **ALOHA® 5.4.4**

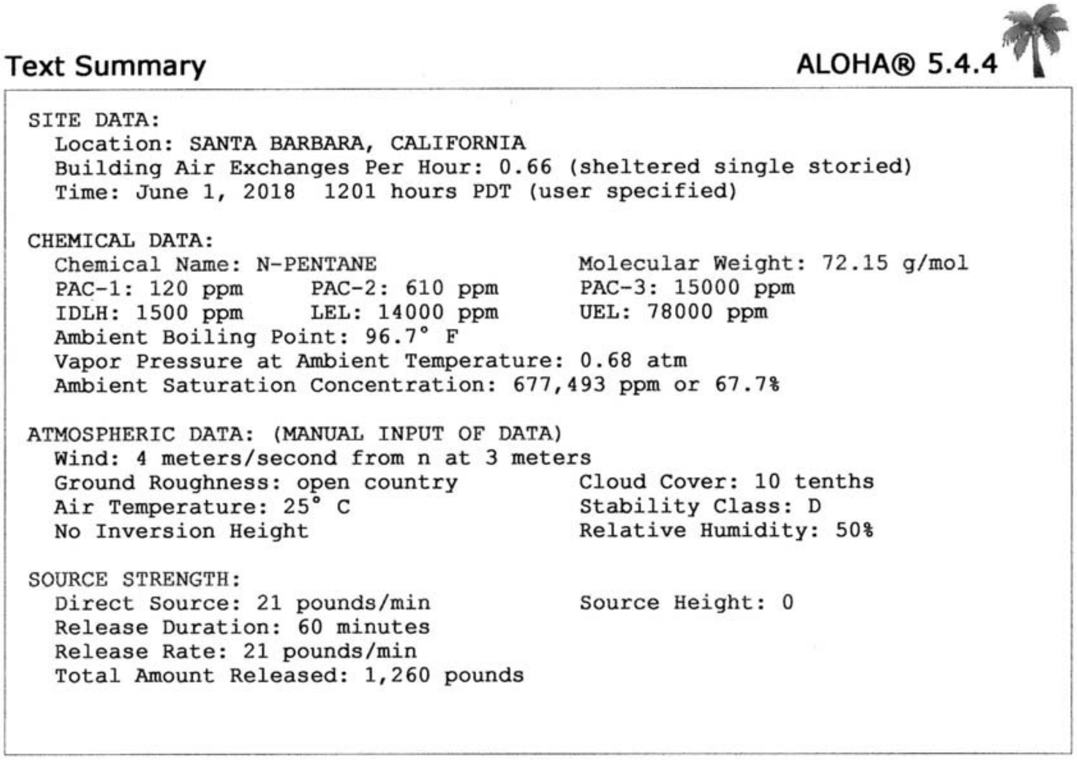
```
SITE DATA:
  Location: SANTA BARBARA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.32 (sheltered single storied)
  Time: June 1, 2018  0101 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: N-PENTANE               Molecular Weight: 72.15 g/mol
  PAC-1: 120 ppm     PAC-2: 610 ppm      PAC-3: 15000 ppm
  IDLH: 1500 ppm     LEL: 14000 ppm      UEL: 78000 ppm
  Ambient Boiling Point: 96.7° F
  Vapor Pressure at Ambient Temperature: 0.68 atm
  Ambient Saturation Concentration: 677,493 ppm or 67.7%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 1.5 meters/second from n at 3 meters
  Ground Roughness: open country         Cloud Cover: 0 tenths
  Air Temperature: 25° C                 Stability Class: F
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Direct Source: 100 pounds/min          Source Height: 0
  Release Duration: 60 minutes
  Release Rate: 100 pounds/min
  Total Amount Released: 6,000 pounds
```

Flammable Threat Zone

ALOHA® 5.4.4

```
Time: June 1, 2018  0101 hours PDT (user specified)

Chemical Name: N-PENTANE

Wind: 1.5 meters/second from n at 3 meters

THREAT ZONE: (HEAVY GAS SELECTED)
  Threat Modeled: Flammable Area of Vapor Cloud
  Model Run: Heavy Gas
  Red   : 35 yards --- (14000 ppm = LEL)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 50 yards --- (7000 ppm)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Yellow: 116 yards --- (1400 ppm = 10% LEL)
```





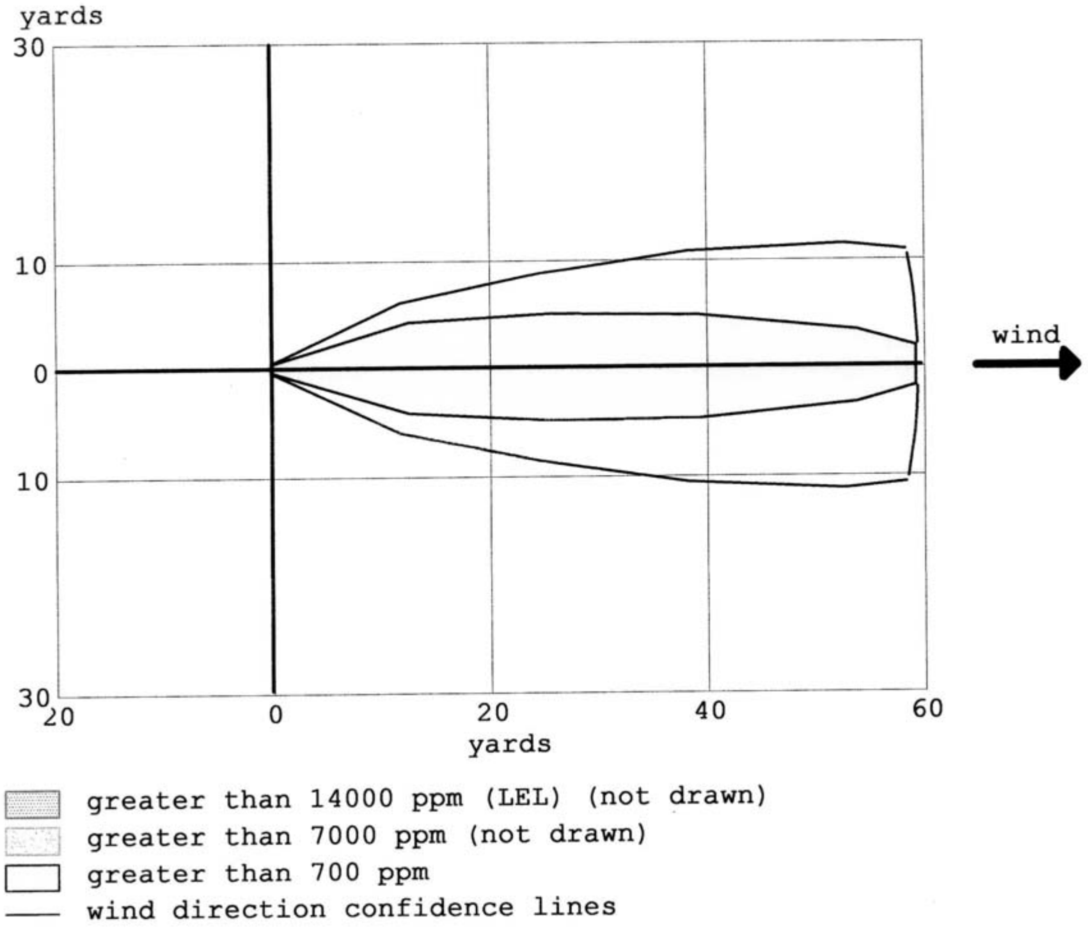
Text Summary **ALOHA® 5.4.4**

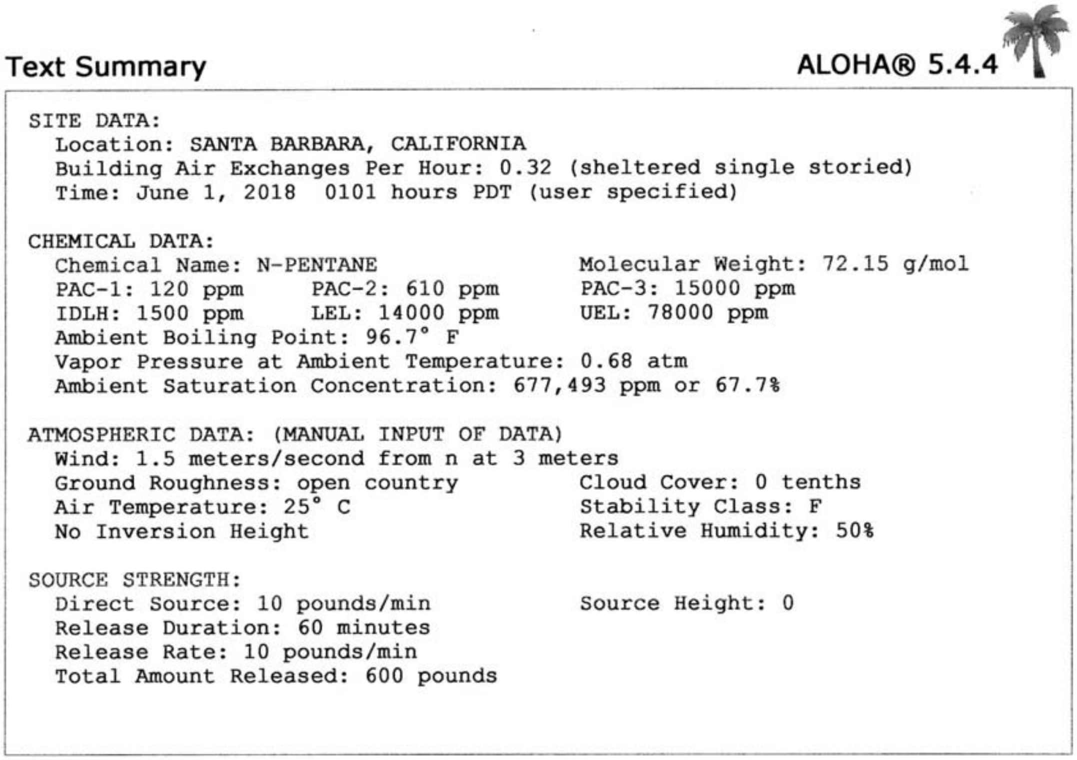
```
SITE DATA:
  Location: SANTA BARBARA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.66 (sheltered single storied)
  Time: June 1, 2018  1201 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: N-PENTANE                Molecular Weight: 72.15 g/mol
  PAC-1: 120 ppm     PAC-2: 610 ppm      PAC-3: 15000 ppm
  IDLH: 1500 ppm     LEL: 14000 ppm      UEL: 78000 ppm
  Ambient Boiling Point: 96.7° F
  Vapor Pressure at Ambient Temperature: 0.68 atm
  Ambient Saturation Concentration: 677,493 ppm or 67.7%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 4 meters/second from n at 3 meters
  Ground Roughness: open country          Cloud Cover: 10 tenths
  Air Temperature: 25° C                  Stability Class: D
  No Inversion Height                     Relative Humidity: 50%

SOURCE STRENGTH:
  Direct Source: 21 pounds/min            Source Height: 0
  Release Duration: 60 minutes
  Release Rate: 21 pounds/min
  Total Amount Released: 1,260 pounds
```

Flammable Threat Zone

ALOHA® 5.4.4

```
Time: June 1, 2018  1201 hours PDT (user specified)

Chemical Name: N-PENTANE

Wind: 4 meters/second from n at 3 meters

THREAT ZONE:
  Threat Modeled: Flammable Area of Vapor Cloud
  Model Run: Heavy Gas
  Red   : 12 yards --- (14000 ppm = LEL)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 13 yards --- (7000 ppm)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Yellow: 59 yards --- (700 ppm)
```





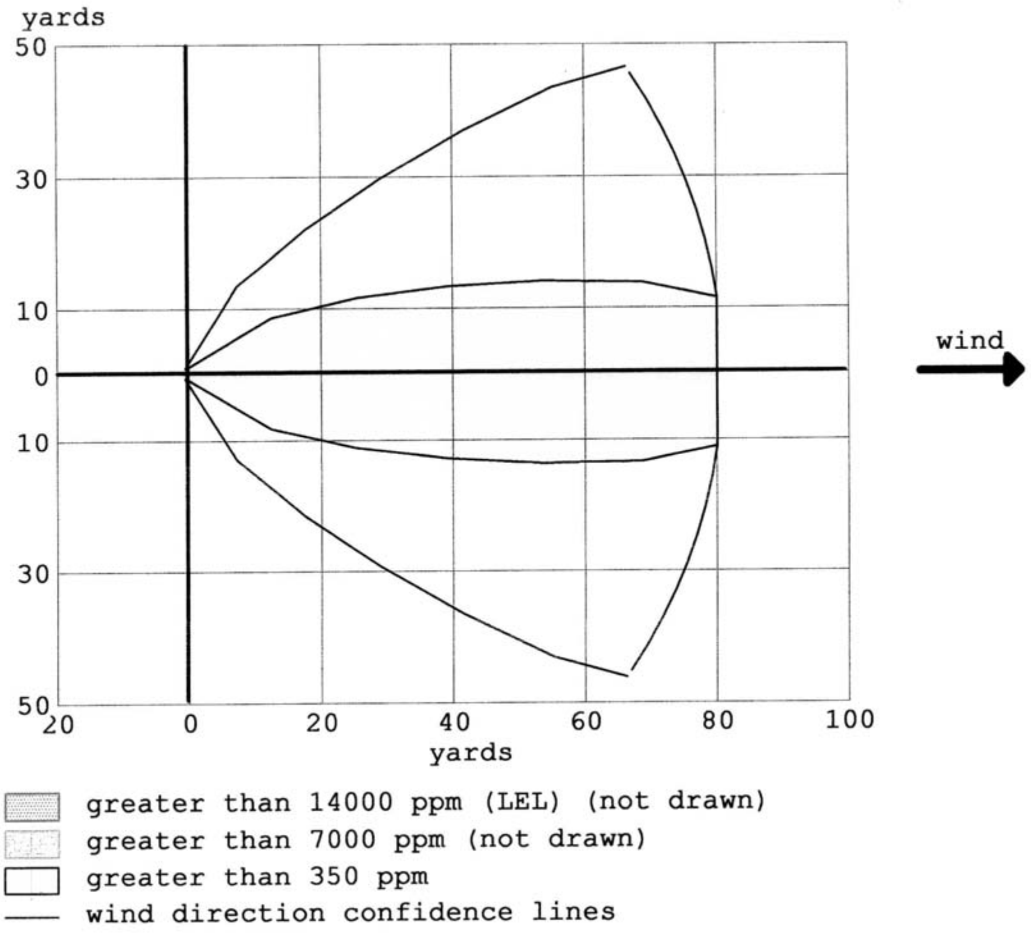
Text Summary ALOHA® 5.4.4

```
SITE DATA:
  Location: SANTA BARBARA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.32 (sheltered single storied)
  Time: June 1, 2018  0101 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: N-PENTANE                Molecular Weight: 72.15 g/mol
  PAC-1: 120 ppm     PAC-2: 610 ppm       PAC-3: 15000 ppm
  IDLH: 1500 ppm     LEL: 14000 ppm       UEL: 78000 ppm
  Ambient Boiling Point: 96.7° F
  Vapor Pressure at Ambient Temperature: 0.68 atm
  Ambient Saturation Concentration: 677,493 ppm or 67.7%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 1.5 meters/second from n at 3 meters
  Ground Roughness: open country          Cloud Cover: 0 tenths
  Air Temperature: 25° C                  Stability Class: F
  No Inversion Height                     Relative Humidity: 50%

SOURCE STRENGTH:
  Direct Source: 10 pounds/min            Source Height: 0
  Release Duration: 60 minutes
  Release Rate: 10 pounds/min
  Total Amount Released: 600 pounds
```

Flammable Threat Zone

ALOHA® 5.4.4

```
Time: June 1, 2018  0101 hours PDT (user specified)

Chemical Name: N-PENTANE

Wind: 1.5 meters/second from n at 3 meters

THREAT ZONE: (HEAVY GAS SELECTED)
  Threat Modeled: Flammable Area of Vapor Cloud
  Model Run: Heavy Gas
  Red   : 12 yards --- (14000 ppm = LEL)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 14 yards --- (7000 ppm)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Yellow: 80 yards --- (350 ppm)
```



TNO Yellow Book Calcs - Pool Fire on Land - Section 6.5.4
ExxonMobil LFC Crude Oil Truck Small Release

Input Values and Constants

	Crude Oil		
D	pool diameter	11.3 m	37.1 ft
MW	molecular weight	100 g/mol	
ρL	liquid density	940 kg/m3	
Tf	flame temperature	1300 C	1573.0 K
SEP	emissive power	140 kW/m2	
SEPsoot	soot emissive power	20 kW/m2	
ΔHc	heat of combustion	4.40E+07 J/kg	
mv	burn velocity	6.70E-05 m/s	
RH	relative humidity	0.5	

Wind Speeds

D/4	Typical D, Uw1	4 m/s
F/1.5	Night F, Uw2	1.5 m/s

Outputs
Uw1 Radiation Calcs

5 kw/m2	Downwind distance	40 m	131.2 ft
5 kw/m2	Upwind distance	14.6 m	47.9 ft
10 kw/m2	Downwind distance	32.6 m	107.0 ft
10 kw/m2	Upwind distance	10.3 m	33.8 ft

Uw2 Radiation Calcs

5 kw/m2	Downwind distance	34.6 m	113.5 ft
5 kw/m2	Upwind distance	22.9 m	75.1 ft
10 kw/m2	Downwind distance	25.4 m	83.3 ft
10 kw/m2	Upwind distance	14.7 m	48.2 ft

TNO Yellow Book Calcs - Pool Fire on Land - Section 6.5.4
ExxonMobil LFC Crude Oil Truck Large Release

Input Values and Constants

	Crude Oil		
D	pool diameter	35.7 m	117.1 ft
MW	molecular weight	100 g/mol	
ρL	liquid density	940 kg/m3	
Tf	flame temperature	1300 C	1573.0 K
SEP	emissive power	140 kW/m2	
SEPsoot	soot emissive power	20 kW/m2	
ΔHc	heat of combustion	4.40E+07 J/kg	
mv	burn velocity	6.70E-05 m/s	
RH	relative humidity	0.5	

Wind Speeds

D/4	Typical D, Uw1	4 m/s
F/1.5	Night F, Uw2	1.5 m/s

Outputs

Uw1 Radiation Calcs

5 kw/m2	Downwind distance	72.6 m	238.2 ft
5 kw/m2	Upwind distance	26.7 m	87.6 ft
10 kw/m2	Downwind distance	54.6 m	179.1 ft
10 kw/m2	Upwind distance	22.6 m	74.2 ft

Uw2 Radiation Calcs

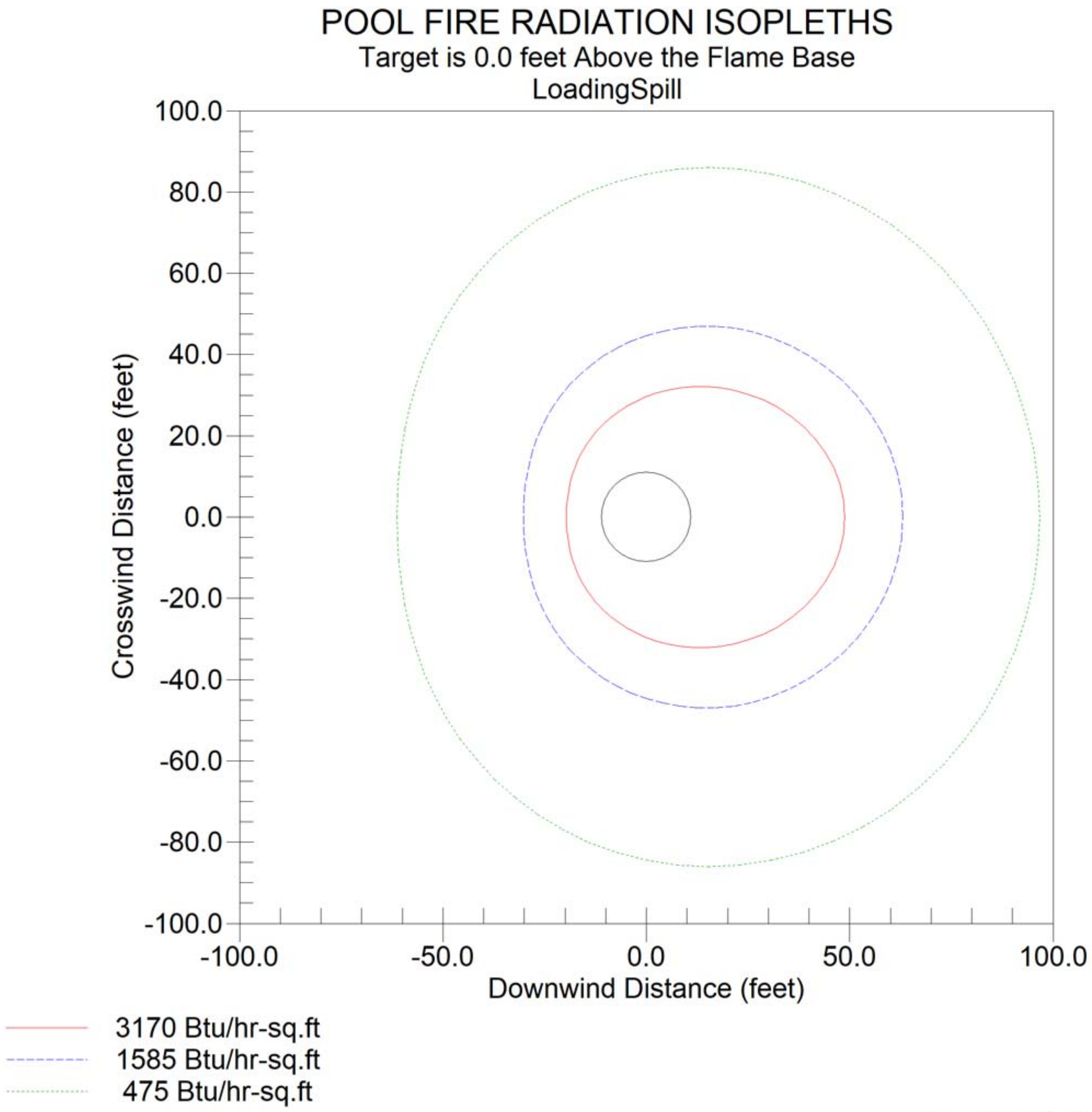
5 kw/m2	Downwind distance	49.2 m	161.4 ft
5 kw/m2	Upwind distance	43.9 m	144.0 ft
10 kw/m2	Downwind distance	34.3 m	112.5 ft
10 kw/m2	Upwind distance	29 m	95.1 ft

```
        +----------------------------------------------------------------+
        |                CANARY by Quest - Version 4.6.2                 |
        |                       CANARY Case Input                        |
        |                     Case Name - Loading                        |
        |                   Thu Jan  3 12:42:06 2019                     |
        |          Quest Consultants Inc., Norman, Oklahoma, USA         |
        |        www.questconsult.com      canary@questconsult.com       |
        |         telephone (405) 329-7475     fax (405) 329-7734        |
        +----------------------------------------------------------------+

        Title: LoadingSpill

Case Type           : Vapor Dispersion
Case Name           : Loading
User ID             :
Project Number      :
Type of Units       : English Units

  NOTES:

MATERIAL MENU
Materials Released  : Number  Formula   Name                         Fraction
Component  1        :     7 = C5H12     n-Pentane                    0.050000
Component  2        :     9 = C7H16     n-Heptane                    0.240000
Component  3        :    36 = C17H36    n-Heptadecane                0.710000
Component  4        :
Component  5        :
Component  6        :
Component  7        :
Component  8        :
Component  9        :
Component 10        :

Temperature         :       100.00 °F
Pressure            :        76.00 psia
The material is LIQUID

  NOTES:

ENVIRONMENT MENU
Wind speed                                      3.36 mph
Wind speed measurement height                   32.8 feet
Stability class <A-F>                              F
Relative humidity                                 70 %
Air temperature                                 80.3 °F
Spill surface temperature                       80.3 °F

Substrate name                            Low density concrete
  Substrate thermal conductivity              0.0546 Btu/hr-ft-F
  Substrate density                               34 lb/cu.ft
  Substrate heat Capacity                       0.30 Btu/lb-F
  Substrate delay time                             0 sec
Surrounding terrain                       Long grass or crops > 15 cm (6 in)

  NOTES:

Case continued on page 2.
```

```
        +-----------------------------------------------------------------+
        |                CANARY by Quest - Version 4.6.2                  |
        |                       CANARY Case Input                         |
        |                      Case Name - Loading                        |
        |                    Thu Jan  3 12:42:06 2019                     |
        +-----------------------------------------------------------------+

Page 2  Title: LoadingSpill


RELEASE MENU
Type of release: Unregulated, Continuous release
Release duration                                  30 min
Normal flow rate                               16.16 lb/sec
Duration of normal flow                            5 min
Volume of vessel                                0.00 cu.ft
Pipe inner diameter                             4.03 inches
Equivalent release diameter                     4.00 inches
Pipe length upstream of break                   50.0 feet
Height of release point                          0.0 feet
Angle of release from horizontal                 0.0 degrees

  NOTES:

IMPOUNDMENT MENU
Unconfined

  NOTES:

VDVE MENU
Vapor generation and dispersion - Flammable calculation
Concentration endpoint 1                         LFL mol%
Concentration endpoint 2                     1/2 LFL mol%
Concentration endpoint 3                    1/10 LFL mol%

Dispersion coefficient averaging time              1 min


  NOTES:
```

```
+----------------------------------------------------------------+
|                 CANARY by Quest - Version 4.6.2                |
|                Liquid Pool Vapor Generation Model              |
|                       Case Name - Loading                      |
|                     Thu Jan  3 12:42:06 2019                   |
|          Quest Consultants Inc., Norman, Oklahoma, USA         |
|         www.questconsult.com     canary@questconsult.com       |
|          telephone (405) 329-7475    fax (405) 329-7734        |
+----------------------------------------------------------------+

TITLE: LoadingSpill

         Time         Liquid        Pool/Dike      Vapor Rate
                     Remaining       Radius
         (sec)         (ft3)         (feet)         (lb/sec)

       0.00000        0.00000        0.00000        0.00000
       20.0000        6.84010        4.52690       0.368392E-01
       40.0000        13.6692        5.70210       0.558122E-01
       60.0000        20.4917        6.52559       0.711630E-01
       80.0000        27.3078        7.18045       0.845429E-01
       100.000        34.1186        7.73360       0.966242E-01
       120.000        40.9226        8.21654       0.107762
       140.000        47.7242        8.64829       0.118170
       160.000        54.5223        9.04035       0.127992
       180.000        61.3169        9.40092       0.137328
       200.000        68.1043        9.73556       0.146252
       220.000        74.8883        10.0482       0.154822
       240.000        81.6722        10.3425       0.163080
       260.000        88.4491        10.6207       0.171061
       280.000        95.2260        10.8852       0.178799
       300.000        101.996        11.1371       0.186317
       320.000        101.918        11.1342       0.183720
       340.000        101.840        11.1316       0.182097
       360.000        101.763        11.1286       0.180850
       380.000        101.689        11.1260       0.179844
       400.000        101.611        11.1230       0.179015
       420.000        101.537        11.1204       0.178325
       440.000        101.459        11.1175       0.177745
       715.000        100.435        11.0801       0.175193
       990.000        99.4179        11.0427       0.174128
       1265.00        98.4043        11.0049       0.173061
       1540.00        97.4014        10.9672       0.171998
       1815.00        96.4020        10.9298       0.170938
       2090.00        95.4096        10.8921       0.169882
       2365.00        94.4208        10.8543       0.168826
       2640.00        93.4391        10.8169       0.167774
       2915.00        92.4644        10.7792       0.166722
       3190.00        91.4968        10.7415       0.165675
       3465.00        90.5362        10.7037       0.164632
       3600.00        90.0665        10.6850       0.164117

Ending Message: Normal Ending
```

```
     +-----------------------------------------------------------------+
     |                CANARY by Quest - Version 4.6.2                  |
     |                   Pool Fire Radiation Model                     |
     |                   Case Name - LoadingPoolD                      |
     |                   Thu Jan  3 12:42:41 2019                      |
     |         Quest Consultants Inc., Norman, Oklahoma, USA           |
     |       www.questconsult.com      canary@questconsult.com         |
     |        telephone (405) 329-7475     fax (405) 329-7734          |
     +-----------------------------------------------------------------+

     Title: LoadingSpill

          Length of Flame            :  35.1  feet
          Flame Tilt from Vertical   :  42.1  degrees
          Target Elevation           :   0.0  feet
          Pool Elevation             :   0.0  feet
          Wind Speed                 :   8.9  mph
          Substrate                  : Land


  Downwind Distance       Flux to           Flux to         Maximum
 from Center of Pool  Vertical Target   Horizontal Target     Flux
       (feet)          (Btu/hr-sq.ft)     (Btu/hr-sq.ft)  (Btu/hr-sq.ft)
---------------------------------------------------------------------
        20.0              13484              18928           23240
        21.3              12397              17089           21112
        22.6              11470              15186           19031
        23.9              10641              13450           17150
        25.4               9882              11791           15384
        27.0               9170              10178           13700
        28.6               8456               8630           12083
        30.4               7672               7206           10525
        32.2               6845               5960            9076
        34.2               6037               4925            7791
        36.3               5288               4078            6678
        38.5               4628               3389            5736
        40.9               4056               2816            4938
        43.4               3567               2333            4262
        46.0               3135               1917            3674
        48.8               2748               1558            3159
        51.8               2401               1251            2707
        55.0               2085                991            2309
        58.4               1801                777            1961
        62.0               1548                604            1662
        65.7               1325                466            1404
        69.8               1130                358            1185
        74.0                962                274            1000
        78.6                818                210             844
        83.4                696                162             714
        88.5                592                124             605
        93.9                504                 96             513
        99.6                430                 74             436
       105.8                367                 58             371
       112.2                314                 45             317


  Downwind Distances to Endpoints:

        Distance          Maximum Flux
         (feet)          (Btu/hr-sq.ft)

          48.8               3170
          63.1               1585
          96.7                475
```



casename=LoadingPoolD

CANARY by Quest

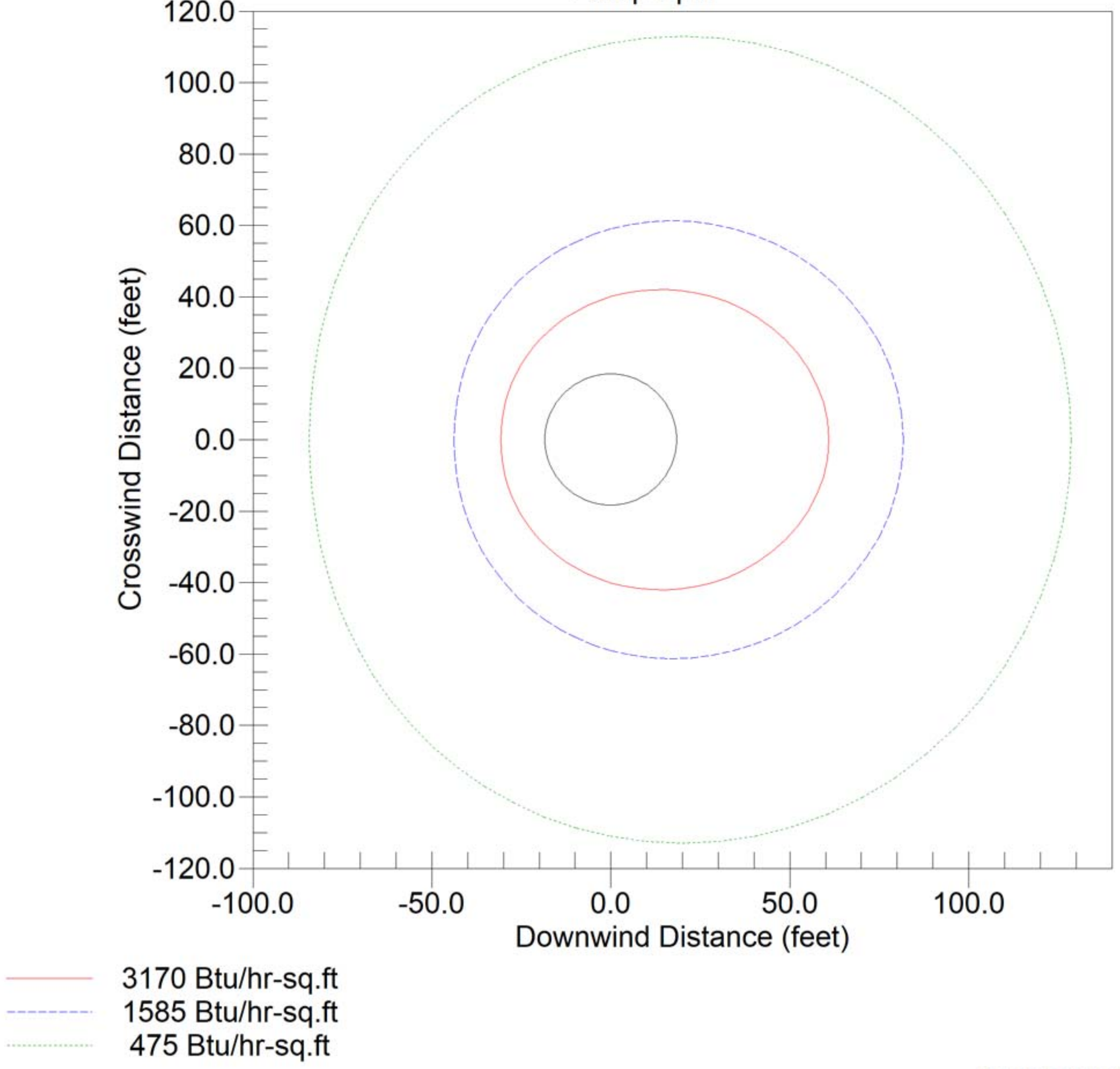
windspeed = 8.9 mph
Thu Jan 3 12:42:41 2019

```
        +-----------------------------------------------------------------+
        |                CANARY by Quest - Version 4.6.2                   |
        |                       CANARY Case Input                          |
        |                       Case Name - Pump                           |
        |                   Thu Jan  3 12:41:52 2019                       |
        |          Quest Consultants Inc., Norman, Oklahoma, USA           |
        |        www.questconsult.com      canary@questconsult.com         |
        |         telephone (405) 329-7475     fax (405) 329-7734          |
        +-----------------------------------------------------------------+

        Title: Pump Spill

Case Type           : Vapor Dispersion
Case Name           : Pump
User ID             :
Project Number      :
Type of Units       : English Units

  NOTES:

MATERIAL MENU
Materials Released  : Number  Formula   Name                        Fraction
Component  1        :     7 = C5H12     n-Pentane                   0.050000
Component  2        :     9 = C7H16     n-Heptane                   0.240000
Component  3        :    36 = C17H36    n-Heptadecane               0.710000
Component  4        :
Component  5        :
Component  6        :
Component  7        :
Component  8        :
Component  9        :
Component 10        :

Temperature         :       100.00 °F
Pressure            :        76.00 psia
The material is LIQUID

  NOTES:

ENVIRONMENT MENU
Wind speed                                      3.36 mph
Wind speed measurement height                   32.8 feet
Stability class <A-F>                              F
Relative humidity                                 70 %
Air temperature                                 80.3 °F
Spill surface temperature                       80.3 °F

Substrate name                            Low density concrete
  Substrate thermal conductivity              0.0546 Btu/hr-ft-F
  Substrate density                               34 lb/cu.ft
  Substrate heat Capacity                       0.30 Btu/lb-F
  Substrate delay time                             0 sec
Surrounding terrain                       Long grass or crops > 15 cm (6 in)

  NOTES:

Case continued on page 2.
```

```
        +-----------------------------------------------------------------+
        |                CANARY by Quest - Version 4.6.2                  |
        |                       CANARY Case Input                         |
        |                        Case Name - Pump                         |
        |                    Thu Jan  3 12:41:52 2019                     |
        +-----------------------------------------------------------------+

Page 2  Title: Pump Spill


RELEASE MENU
Type of release: Unregulated, Continuous release
Release duration                                   5 min
Normal flow rate                               62.15 lb/sec
Duration of normal flow                           30 min
Volume of vessel                                0.00 cu.ft
Pipe inner diameter                            10.02 inches
Equivalent release diameter                    10.00 inches
Pipe length upstream of break                  500.0 feet
Pipe length downstream of break                 0.0 feet
Height of release point                          0.0 feet
Angle of release from horizontal                 0.0 degrees

  NOTES:

IMPOUNDMENT MENU
Unconfined

  NOTES:

VDVE MENU
Vapor generation and dispersion - Flammable calculation
Concentration endpoint 1                         LFL mol%
Concentration endpoint 2                     1/2 LFL mol%
Concentration endpoint 3                    1/10 LFL mol%

Dispersion coefficient averaging time              1 min


  NOTES:
```

```
+----------------------------------------------------------------+
|                 CANARY by Quest - Version 4.6.2                |
|                Liquid Pool Vapor Generation Model              |
|                         Case Name - Pump                       |
|                     Thu Jan  3 12:41:52 2019                   |
|          Quest Consultants Inc., Norman, Oklahoma, USA         |
|         www.questconsult.com     canary@questconsult.com       |
|          telephone (405) 329-7475    fax (405) 329-7734        |
+----------------------------------------------------------------+

TITLE: Pump Spill

         Time         Liquid        Pool/Dike      Vapor Rate
                     Remaining       Radius
         (sec)         (ft3)         (feet)         (lb/sec)

       0.00000        0.00000        0.00000        0.00000
       20.0000        26.3165        7.37566       0.886743E-01
       40.0000        52.6083        9.29265       0.134425
       60.0000        78.8824        10.6362       0.171445
       80.0000        105.139        11.7051       0.203718
       100.000        131.385        12.6073       0.232874
       120.000        157.620        13.3953       0.259749
       140.000        183.845        14.0997       0.284859
       160.000        210.055        14.7398       0.308559
       180.000        236.259        15.3281       0.331090
       200.000        262.452        15.8743       0.352629
       220.000        288.637        16.3852       0.373309
       240.000        314.813        16.8658       0.393261
       260.000        340.981        17.3202       0.412529
       280.000        367.131        17.7520       0.431224
       300.000        393.299        18.1634       0.449390
       320.000        393.088        18.1604       0.443217
       340.000        392.911        18.1575       0.439381
       360.000        392.734        18.1549       0.436449
       380.000        392.558        18.1519       0.434090
       400.000        392.346        18.1489       0.432172
       420.000        392.169        18.1463       0.430563
       440.000        391.993        18.1434       0.429240
       715.000        389.521        18.1050       0.424015
       990.000        387.049        18.0666       0.422406
       1265.00        384.612        18.0282       0.420796
       1540.00        382.140        17.9902       0.419187
       1815.00        379.703        17.9518       0.417578
       2090.00        377.267        17.9137       0.415990
       2365.00        374.865        17.8753       0.414403
       2640.00        372.464        17.8369       0.412794
       2915.00        370.062        17.7986       0.411206
       3190.00        367.661        17.7605       0.409597
       3465.00        365.295        17.7218       0.408009
       3600.00        364.130        17.7028       0.407216

Ending Message: Normal Ending
```

```
        +-----------------------------------------------------------------+
        |                CANARY by Quest - Version 4.6.2                  |
        |                   Pool Fire Radiation Model                     |
        |                     Case Name - PumpPoolD                       |
        |                    Thu Jan  3 12:42:28 2019                     |
        |         Quest Consultants Inc., Norman, Oklahoma, USA           |
        |       www.questconsult.com      canary@questconsult.com         |
        |        telephone (405) 329-7475     fax (405) 329-7734          |
        +-----------------------------------------------------------------+

        Title: Pump Spill

             Length of Flame            :  51.0  feet
             Flame Tilt from Vertical   :  35.2  degrees
             Target Elevation           :   0.0  feet
             Pool Elevation             :   0.0  feet
             Wind Speed                 :   8.9  mph
             Substrate                  : Land


   Downwind Distance       Flux to            Flux to         Maximum
  from Center of Pool  Vertical Target   Horizontal Target     Flux
        (feet)          (Btu/hr-sq.ft)     (Btu/hr-sq.ft)  (Btu/hr-sq.ft)
---------------------------------------------------------------------
         31.9               12900              16630           21046
         33.7               11924              13788           18229
         35.5               11002              11011           15566
         37.5                9854               8526           13031
         39.5                8512               6564           10749
         41.7                7215               5160            8870
         43.9                6101               4190            7401
         46.4                5199               3504            6270
         48.9                4479               2994            5387
         51.6                3899               2589            4680
         54.4                3432               2255            4107
         57.4                3044               1963            3623
         60.5                2720               1706            3210
         63.8                2436               1472            2846
         67.3                2183               1260            2521
         71.0                1955               1068            2228
         74.9                1746                896            1963
         79.0                1554                744            1723
         83.3                1378                612            1508
         87.9                1217                499            1316
         92.7                1070                405            1144
         97.8                 939                326             994
        103.1                 821                262             862
        108.8                 716                210             746
        114.7                 624                168             646
        121.0                 543                134             560
        127.6                 473                107             485
        134.6                 412                 86             421
        142.0                 358                 69             365
        149.7                 312                 55             317


     Downwind Distances to Endpoints:

           Distance          Maximum Flux
            (feet)          (Btu/hr-sq.ft)

             60.9                3170
             81.8                1585
            128.6                 475
```



POOL FIRE RADIATION ISOPLETHS

Target is 0.0 feet Above the Flame Base

Pump Spill

casename=PumpPoolD

CANARY by Quest

windspeed = 8.9 mph
Thu Jan 3 12:42:28 2019

Modeling Results for SO_2 Emissions from Crude Oil Tanker Truck Fire

Burning of crude oil can produce emissions of toxic materials, particularly sulfur dioxide (SO_2). The extent to which a crude oil fire resulting from a truck accident will cause toxic impacts that can produce serious injuries or fatalities are discussed in this analysis.

MRS Environmental, Inc. conducted modeling to determine the potential impacts of SO_2 emissions from a crude oil fire. The analysis has included a blended crude with a 5.4% total sulfur content.

Sulfur from Crude Oil Fires

As the production, storage and transportation of crude oil occurs at an oil field, a fire involving a crude oil spill could generate impacts. The impacts of a crude oil fire in the TQRA were associated with thermal radiation from the fire. Additional impacts may occur due to sulfur dioxide (SO_2) in the smoke plume that is generated during combustion of the crude oil containing sulfur. This analysis examines the potential for impacts from SO_2 associated with a crude oil fire.

The smoke from a large crude oil fire includes carbon dioxide, water vapor, smoke particulate, carbon monoxide, hydrocarbons, sulfur compounds, oxides of nitrogen, and other aerosols and gases. The pollutant of greatest interest in assessing the potential health effects from exposure to the smoke is particulate because it has been shown (NIST 1997) to be the most likely combustion product to violate ambient air quality standards. Also, exposure to SO_2, which at certain concentrations can be acutely hazardous, can lead to serious injury or fatality.

There are three principle factors that determine the quantity of pollutants produced by a crude oil fire. These include the fire area, the average oil burning rate, and the average soot yield. The fire area is the area of the burning oil. The burning rate is the rate at which the oil mass is consumed by the fire, and the soot yield is the mass fraction of the oil that is converted to particulate matter instead of being combusted. Both the burning rate and soot yields are functions of the oil type and the burning conditions.

Historical experimental burns in Alaska and Canada have provided important empirical data for estimating crude oil fire plumes. These experiments were performed in the 1990s and multiple reports have been disseminated about the results. Measurements included burn rates for various types of oils, atmospheric measurements of particulates (total, less than 10 micrometers and less than 2.5 micrometers) as well as SO_2, NO_x and other combustion byproducts. In combination with burn rates, emission factors have also been developed for a range of pollutants, including SO_2 (NIST 1997).

SO_2 is produced during the burning of the crude oil as a function of the sulfur content of the crude oil. Emission factors developed as part of test burns indicate a range from 3 grams SO_2/kg of crude oil burned for lighter crudes with low sulfur content to 25 grams SO_2/kg for Alaska ANS crude oil, with sulfur content that ranges up to 2.6% with an average of 1.3 % between 1989 and 2010 according to ANS sampling data (Finga 2010).

SO_2 is a toxic material with ERPG levels of 25 ppm and 3 ppm (ERPG-3 and ERPG-2, respectively). A concern for areas near a crude oil fire is the potential for SO_2 levels to exceed those ERPG-2 and ERPG-3 levels that could cause serious injury or fatality as a result of exposure. Historical investigations of crude oil burns indicate that particulate levels have not exceeded 2,000 ug/m3 (NIST 1997), with other studies indicating a substantially lower impact, down to 100 ug/m3, (Evans 2003, NIST 2011). Corresponding SO_2 levels would therefore not be above 1 ppm based on the measurements of particulates and the ratio of the emission factors between particulates and SO_2 (a ratio of PM/SO_2 ranges from 1.4 – 150 depending on the crude type, with the 1.4 ratio being the equivalent of a 5.4% crude sulfur level). Note that the conversion of SO_2 from ug/m3 to ppm is 1 ppm = 2,620 ug/m3 as per CARB.

Modeling of crude oil fires has been conducted historically using specialized models, such as the ALOFT (NIST 2011) and Fire Dynamics Simulator (FDS) models as well as conventional dispersion models such as IST and AERMOD (Evans 2003). Dispersion models can estimate the downwind ground level pollutant impacts by incorporating the thermal induced buoyancy and plume rise along with meteorological components. Source terms have historically been developed for crude fires similar to the manner in which source terms are developed for flares using the flare model (Evans 2003, EPA 2016) where the height is determined by the heat release rate and the diameter is determined by the heat release rate in combination with the radiative heat loss fraction (EPA 2016). The flare model also assumes a release temperature of 1273 kelvin and a release velocity of 20 meters/second.

Historical test burns have indicated a range of values for burn rates, ranging from 0.019 to 0.056 kg/m2-s (Evans 2003, NIST 1997). Crude oil heating values have also been measured and estimated in the crude oil burn studies and generally range up to about 44 MJ/kg. Radiative heat loss fraction estimates have varied and are a function of a number of factors, including the extent to which the crude oil produces soot and the size of the burn area due to the fact that more heat is absorbed by the smoke plume if the burn area is larger. Modeling efforts by Evans (Evans 2003) utilized the flare model (EPA 2016) default radiative heat loss fraction of 0.55. However, other studies of crude oil burns have indicated that radiative heat loss fractions could be as low as 0.10 for crude oil for larger fires and crude fires involving a substantial amount of soot (Yang 1994, NIST 1997). Generally, the lower the radiative heat losses, the more thermal buoyancy the plume would generate as more heat would be absorbed by the plume, as opposed to being lost to radiation. The associated increase in thermal buoyancy would decrease nearby ground level pollutant concentrations by promoting mixing with ambient air and downwind transport. AERMOD modeling indicates that the ground level impacts would decrease with a decreasing radiative heat loss factor. Therefore, the default radiative heat loss factor 0f 0.55 was utilized in this analysis to be conservative.

In order to provide estimates of SO_2 ground level concentrations around crude oil fires to access potential impacts, the AERMOD model was run assuming a crude oil spill. The source terms and assumptions are listed below in Table 1. The AERMOD model was run to determine the peak 1-hour ground-level concentrations using the Santa Maria Airport meteorological data for the years 2010-2014. Calms were set to a default minimum wind speed of 0.5 m/s. The use of 5 years of actual meteorological data allows for an estimate of downwind impacts over a realistic and large range of wind and stability conditions. Attachment 1 provides the AERMOD modeling files.

Table 1 AERMOD and Modeling Inputs

Source Term	Value	Basis
Spilled area	about 1,394 m2 (150'x100')	Estimated area of the spills volume
Burn rate	0.056 kg/s/m2	Peak burn rate associated with 6 burns in the NIST 1997 study
Radiative heat loss fraction	0.55	Flare model default values, also used by Evans 2003, and the most conservative value
SO2 emission factor	104 g/kg	NIST 1997 for ANS crude emission factor of 25 g/kg with an average sulfur content of 1.3%; ratio to 5.4% sulfur content of the project crude.
AERMOD version	16216r	
Point source parameters	83.1 m height 1273 K temperature 20 m/s velocity 18.98 m diameter	Based on flare model (EPA 2016)
Receptor grid	Polar orientation	Flat terrain
Meteorological files	Santa Maria Airport 2010-2014	Calms set to 0.5 m/s
Averaging time	Peak 1 hour	

The results of the AERMOD modeling show that, in the area immediately around the crude oil fire at ground level, SO_2 (and the corresponding particulate levels) remain low as the thermal buoyancy produced by the burning crude oil lift the plume substantially. In this near-field area, thermal radiation is the primary issue of concern for serious injuries and fatalities. The peak ground level value for SO_2 is modeled to be 0.48 ppm at a distance of close to 3 km from the crude oil fire, as the plume has cooled and mixed with ambient air as it moves downwind. Figure 1 shows the maximum 1-hour concentrations around the crude oil fire location as produced by the AERMOD model and Santa Maria Airport meteorological dataset. Note that these maximum 1-hour concentrations do not occur simultaneously but are the highest levels that could occur if the crude oil fire were to occur at any hour during the 5-year meteorological dataset.

The analysis indicates that the peak ground level SO_2 concentration of 0.48 ppm is substantially below the levels that could cause serious injury or fatality (3-25 ppm). However, the levels may exceed those established by regulatory agencies for more chronic health effects, such as the California 1-hour standard for SO_2 of 0.25 ppm. The results of this modeling analysis show that SO_2 emissions from a crude oil fire would not change the risk profiles in the Crude Oil Transportation QRA.

The methodology and approach used in this analysis is supported by actual field testing results as well as EPA approved models and modeling methodology.

References

EPA 1974, Effective Stack Height and Plume Rise, Air Pollution Training Institute, SI:406

EPA 2004, Aermod: Description of Model Formulation, EPA-454/R-03-004, September 2004

EPA 2016 AERSCREEN User Guide EPA-454/B-16-004, December 2016

Evans 2003 In-Situ Burning of Oil Spills; Mesoscale Experiments

Finga 2010, Review of the North Slope Oil Properties Relevant to Environmental Assessment and Prediction, June 2010

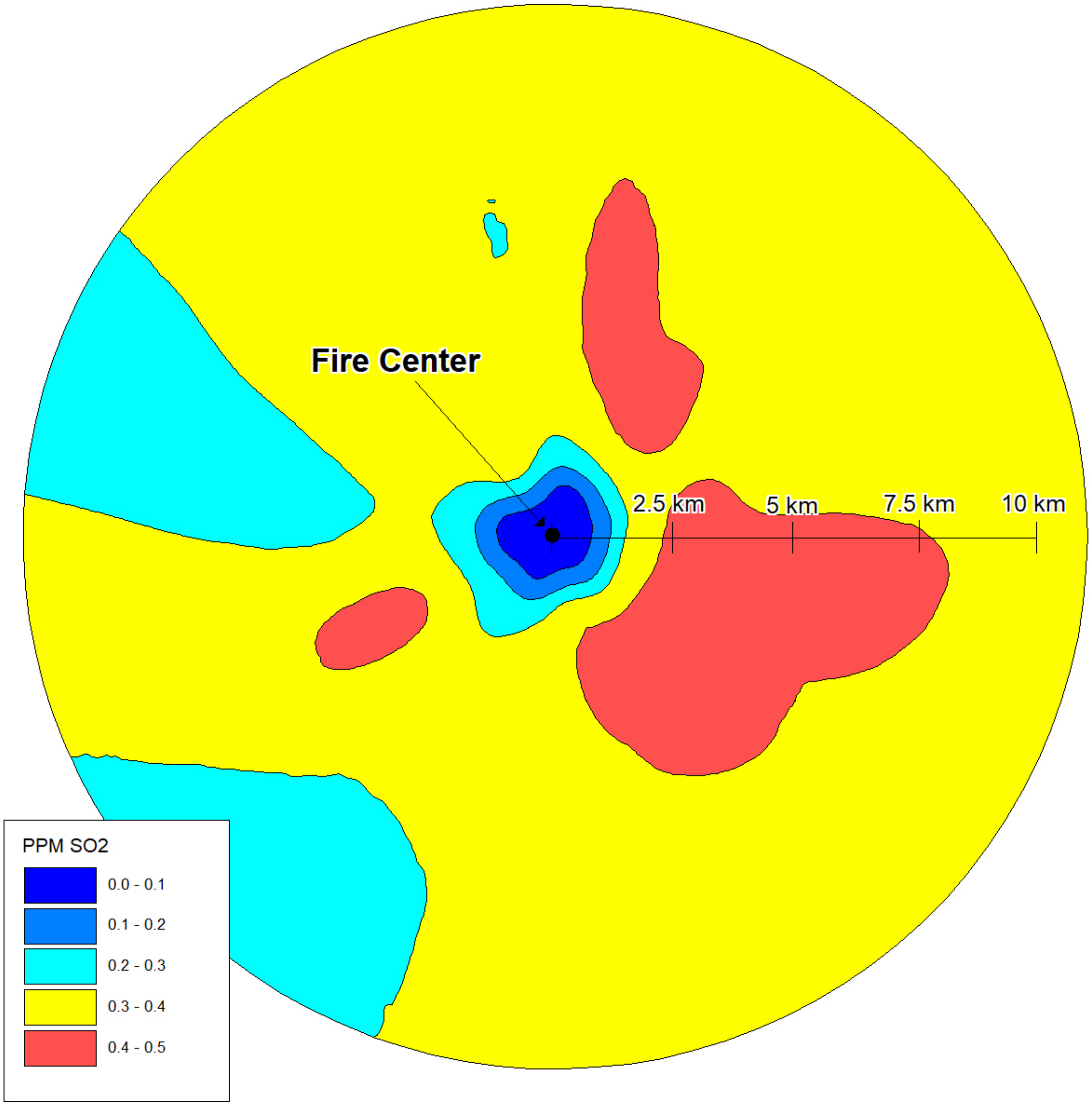
NIST 1997 Smoke Plume Trajectory from IN-Situ Burning of Crude Oil IN Alaska – Field Experiments and Modeling of Complex Terrain, (McGratten, Baum, Walton, Trelles), NISTIR 5958, January 1997

NIST 2011 Smoke Plume Trajectory from IN-Situ Burning of Crude Oil in Alaska Updated Simulation Results (National Institute of Standards and Technology, Walton, McGrattan), NIST Technical Note 1706, July 2011

Witlox Undated, Modelling of Phosphorus Fires with Hydrolysis in The Plume, DNV Technica, London, UK. Available online at: https://www.dnvgl.com/Images/Modelling%20of%20phosphorus_fires%20with%20hydrolysis%20in%20the%20plume_1998_Witlox_LPS_tcm8-13444.pdf

Yang 1994 Estimate of the Effect of Scale on Radiative Heat Loss Fraction and Combustion Efficiency (Yang, Hamins, Kashiwagi), July 1993

Figure 1 **Ground Level Peak 1-hour SO_2 Concentrations, PPM**



Note: crude sulfur at 5.4%, assumed complete conversion to SO_2.

Attachment 1 – AERMOD Modeling Files

```
                                                           AERMOD CRUDE FIRE
** FLARE DATA         Rate    Height        Heat  HeatLoss
**              0.1000E+01     0      3.2E+08     0.550

** BUILDING DATA   no buildings

** EMISSION RATE -  UNIT RATE OF 1 G/S

CO STARTING
   TITLEONE CRUDE FIRE, FLAT, NO DOWNWASH
   MODELOPT CONC FLAT
   AVERTIME 1
   POLLUTID OTHER
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION SOURCE POINT        0.0     0.0
**  rate(g/s)    height(m)    temp (K)    velocity (m/s)    diameter (m)
   SRCPARAM SOURCE   1.0  83.1   1273.000   20.000    18.98

   SRCGROUP  ALL

SO FINISHED

RE STARTING

** Polar receptors
   GRIDPOLR  POL1  STA
   GRIDPOLR  POL1  ORIG 0  0
   GRIDPOLR  POL1  DIST 10 50 100 250 500 750 1000 1500 2000 2500 3000 3500 4000 4500 5000 6000 7000 8000 10000
   GRIDPOLR  POL1  GDIR 36  10  10
   GRIDPOLR  POL1  END

RE FINISHED

ME STARTING
   SURFFILE  SM_airport.sfc
   PROFFILE  SM_airport.pfl
   SURFDATA  23273   2010
   UAIRDATA  93214   2010
   PROFBASE    79.6 METERS
ME FINISHED

OU STARTING
   RECTABLE 1  FIRST
   MAXTABLE  ALLAVE  50

   FILEFORM  EXP
   RANKFILE  1 10 CrudeFire.FIL
   PLOTFILE  1 ALL  FIRST  CrudeFire.PLT
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)
```

```
                                                          AERMOD CRUDE FIRE
   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186      67       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50

***********************************
*** SETUP Finishes Successfully ***
***********************************

• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                                 ***        03/08/18
*** AERMET - VERSION  14134 ***   ***                                                                        ***        11:02:47
                                                                                                                      PAGE   1
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                                           ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Assumes Receptors on FLAT Terrain.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates  1 Short Term Average(s) of:   1-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and     684 Receptor(s)

               with:      1 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
```

```
                                                          AERMOD CRUDE FIRE
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs External File(s) of Ranked Values (RANKFILE Keyword)

         NOTE: Option for EXPonential format used in formatted output result files (FILEFORM Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    79.60 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                            ***        03/08/18
*** AERMET - VERSION  14134 ***   ***                                                                          ***        11:02:47
                                                                                                                          PAGE   2
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL


                                                       *** POINT SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE     STACK   STACK    STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
  SOURCE        PART.  (GRAMS/SEC)     X        Y      ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
    ID          CATS.               (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)  (METERS)                      VARY BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

SOURCE           0   0.10000E+01       0.0       0.0    79.6    83.10  1273.00    20.00    18.98    NO      NO    NO
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                            ***        03/08/18
*** AERMET - VERSION  14134 ***   ***                                                                          ***        11:02:47
                                                                                                                          PAGE   3
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL


                                                 *** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID                                             SOURCE IDs
-----------                                             ----------


 ALL        SOURCE      ,
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                            ***        03/08/18
*** AERMET - VERSION  14134 ***   ***                                                                          ***        11:02:47
                                                                                                                          PAGE   4
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                                              *** GRIDDED RECEPTOR NETWORK SUMMARY ***

                                        *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR ***

                                                  *** ORIGIN FOR POLAR NETWORK ***
                               X-ORIG =      0.00 ;   Y-ORIG =       0.00  (METERS)

                                                  *** DISTANCE RANGES OF NETWORK ***
                                                            (METERS)

          10.0,      50.0,     100.0,     250.0,     500.0,     750.0,    1000.0,    1500.0,    2000.0,    2500.0,
        3000.0,    3500.0,    4000.0,    4500.0,    5000.0,    6000.0,    7000.0,    8000.0,   10000.0,
```

```
                                                         AERMOD CRUDE FIRE
                                        *** DIRECTION RADIALS OF NETWORK ***
                                                   (DEGREES)

             10.0,      20.0,      30.0,      40.0,      50.0,      60.0,      70.0,      80.0,      90.0,     100.0,
            110.0,     120.0,     130.0,     140.0,     150.0,     160.0,     170.0,     180.0,     190.0,     200.0,
            210.0,     220.0,     230.0,     240.0,     250.0,     260.0,     270.0,     280.0,     290.0,     300.0,
            310.0,     320.0,     330.0,     340.0,     350.0,     360.0,
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                   ***        03/08/18
 *** AERMET - VERSION  14134 ***   ***                                                                 ***        11:02:47
                                                                                                                  PAGE   5
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                           (1=YES; 0=NO)

              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
              1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.



                                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                            (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,  10.80,
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                   ***        03/08/18
 *** AERMET - VERSION  14134 ***   ***                                                                 ***        11:02:47
                                                                                                                  PAGE   6
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                                      *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   SM_airport.sfc                                                          Met Version:  14134
   Profile file:   SM_airport.pfl
   Surface format: FREE
   Profile format: FREE
   Surface station no.:    23273                Upper air station no.:    93214
                  Name: UNKNOWN                                  Name: UNKNOWN
                  Year:   2010                                   Year:   2010

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 10 01 01   1 01 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.05   0.94   1.00    0.00    0.   10.0  278.8    2.0
 10 01 01   1 02   -4.6  0.066 -9.000 -9.000 -999.   41.      5.7  0.05   0.94   1.00    1.76  178.   10.0  278.1    2.0
 10 01 01   1 03   -3.9  0.061 -9.000 -9.000 -999.   36.      5.3  0.05   0.94   1.00    1.60  323.   10.0  278.8    2.0
 10 01 01   1 04   -5.5  0.073 -9.000 -9.000 -999.   47.      6.4  0.06   0.94   1.00    1.89   99.   10.0  278.8    2.0
 10 01 01   1 05   -6.2  0.077 -9.000 -9.000 -999.   51.      6.6  0.05   0.94   1.00    2.06  154.   10.0  279.2    2.0
 10 01 01   1 06   -3.2  0.056 -9.000 -9.000 -999.   32.      4.9  0.06   0.94   1.00    1.45  100.   10.0  279.2    2.0
 10 01 01   1 07   -3.9  0.062 -9.000 -9.000 -999.   37.      5.4  0.06   0.94   1.00    1.59  133.   10.0  278.8    2.0
 10 01 01   1 08   -2.3  0.052 -9.000 -9.000 -999.   29.      5.6  0.06   0.94   0.64    1.35  124.   10.0  279.9    2.0
 10 01 01   1 09    7.7  0.096  0.196  0.019   35.   72.    -10.5  0.05   0.94   0.36    1.03  171.   10.0  282.5    2.0
 10 01 01   1 10   44.3  0.196  0.481  0.016   91.  209.    -15.5  0.06   0.94   0.26    2.06   69.   10.0  283.8    2.0
 10 01 01   1 11   47.2  0.125  0.565  0.017  138.  107.     -3.7  0.06   0.94   0.23    1.11  136.   10.0  285.4    2.0
 10 01 01   1 12   56.3  0.159  0.663  0.017  188.  152.     -6.5  0.02   0.94   0.22    1.89  247.   10.0  286.4    2.0
```

```
                                                          AERMOD CRUDE FIRE
10 01 01    1 13   57.2  0.240  0.711  0.012  227.  282.    -21.9 0.05   0.94   0.22    2.71  323.   10.0  287.0    2.0
10 01 01    1 14   22.4  0.184  0.531  0.015  241.  190.    -25.0 0.05   0.94   0.22    2.10  302.   10.0  287.5    2.0
10 01 01    1 15   34.9  0.125  0.632  0.014  261.  107.     -5.0 0.05   0.94   0.25    1.19  329.   10.0  287.5    2.0
10 01 01    1 16   20.6  0.345  0.537  0.009  272.  485.   -179.7 0.05   0.94   0.33    4.38  304.   10.0  287.5    2.0
10 01 01    1 17   -5.2  0.080 -9.000 -9.000 -999.  186.      8.9 0.05   0.94   0.56    2.11  303.   10.0  285.9    2.0
10 01 01    1 18   -9.2  0.095 -9.000 -9.000 -999.   73.      8.3 0.05   0.94   1.00    2.49  305.   10.0  284.9    2.0
10 01 01    1 19  -11.5  0.104 -9.000 -9.000 -999.   81.      8.9 0.04   0.94   1.00    2.88  294.   10.0  284.2    2.0
10 01 01    1 20   -6.9  0.082 -9.000 -9.000 -999.   56.      7.1 0.05   0.94   1.00    2.15  321.   10.0  283.8    2.0
10 01 01    1 21  -10.3  0.100 -9.000 -9.000 -999.   76.      8.8 0.05   0.94   1.00    2.61  334.   10.0  283.1    2.0
10 01 01    1 22   -5.7  0.073 -9.000 -9.000 -999.   48.      6.3 0.04   0.94   1.00    2.03  294.   10.0  283.8    2.0
10 01 01    1 23   -2.7  0.050 -9.000 -9.000 -999.   27.      4.2 0.04   0.94   1.00    1.38  272.   10.0  280.9    2.0
10 01 01    1 24   -8.6  0.091 -9.000 -9.000 -999.   66.      8.0 0.05   0.94   1.00    2.40  300.   10.0  283.1    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
10 01 01 01   10.0 1 -999.  -99.00   278.8   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                          ***        03/08/18
*** AERMET - VERSION  14134 ***   ***                                                                        ***        11:02:47
                                                                                                                     PAGE   7
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     SOURCE      ,

                                  *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                         **

DIRECTION |                                            DISTANCE (METERS)
(DEGREES) |        10.00                  50.00                  100.00                 250.00                 500.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

     10.0 |      0.04123 (14022209)      0.00876 (14022209)      0.00570 (12090102)      0.00452 (12062501)      0.00644 (14022714)
     20.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00572 (12090102)      0.00458 (12090102)      0.00611 (10062708)
     30.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00572 (13083002)      0.00457 (13083002)      0.00685 (10062708)
     40.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00570 (10101322)      0.00450 (10092207)      0.00796 (14051413)
     50.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00572 (10101322)      0.00458 (10101322)      0.01158 (14051413)
     60.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00571 (10101322)      0.00453 (12100901)      0.01153 (14051412)
     70.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00565 (10101322)      0.00453 (12092004)      0.01311 (14051412)
     80.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00566 (11041904)      0.00449 (12092004)      0.01187 (14051312)
     90.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00570 (11041904)      0.00534 (14043012)      0.01187 (14051312)
    100.0 |      0.04123 (14022209)      0.00877 (14022209)      0.00571 (13083005)      0.00702 (14043012)      0.01237 (14100313)
    110.0 |      0.04123 (14022209)      0.00876 (14022209)      0.00572 (13083005)      0.00816 (14043012)      0.01219 (14043012)
    120.0 |      0.04123 (14022209)      0.00876 (14022209)      0.00569 (13083005)      0.00856 (14043012)      0.01430 (14100213)
    130.0 |      0.04123 (14022209)      0.00876 (14022209)      0.00567 (10091024)      0.00816 (14043012)      0.01547 (14100513)
    140.0 |      0.04123 (14022209)      0.00876 (14022209)      0.00572 (10091024)      0.00702 (14043012)      0.01414 (14100513)
    150.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00573 (10091024)      0.00653 (14100515)      0.01223 (14043013)
    160.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00571 (10091024)      0.00668 (14100515)      0.01096 (14100515)
    170.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00571 (12082305)      0.00610 (14100515)      0.01055 (14060808)
    180.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00568 (12082305)      0.00504 (14043011)      0.00876 (14060808)
    190.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00562 (12082305)      0.00517 (14043011)      0.00712 (14043011)
    200.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00560 (13020303)      0.00486 (14043011)      0.00667 (14043011)
    210.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00565 (13020303)      0.00451 (13020303)      0.00717 (14102612)
    220.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00566 (13020303)      0.00455 (13020303)      0.00771 (10071110)
    230.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00563 (13020303)      0.00440 (14042801)      0.00793 (10071110)
    240.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00556 (13020303)      0.00447 (14072903)      0.00710 (10071110)
    250.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00556 (13090505)      0.00447 (14072903)      0.00559 (10071110)
    260.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00562 (13090505)      0.00445 (13090505)      0.00573 (14051708)
    270.0 |      0.04058 (14022209)      0.00812 (14022209)      0.00564 (13090505)      0.00455 (13090505)      0.00581 (14051708)
```

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                                                           AERMOD CRUDE FIRE
     280.0 |       0.04058 (14022209)      0.00812 (14022209)      0.00563 (11101524)      0.00453 (11101524)      0.00513 (14051708)
     290.0 |       0.04058 (14022209)      0.00812 (14022209)      0.00563 (11101524)      0.00453 (11101524)      0.00462 (14070708)
     300.0 |       0.04058 (14022209)      0.00812 (14022209)      0.00566 (13111804)      0.00448 (12120507)      0.00715 (14070708)
     310.0 |       0.04058 (14022209)      0.00812 (14022209)      0.00571 (13111804)      0.00454 (13111804)      0.01033 (14070708)
     320.0 |       0.04058 (14022209)      0.00812 (14022209)      0.00571 (13111804)      0.00456 (13111804)      0.01301 (14070708)
     330.0 |       0.04058 (14022209)      0.00812 (14022209)      0.00567 (13111804)      0.00453 (10060306)      0.01406 (14070708)
     340.0 |       0.04123 (14022209)      0.00876 (14022209)      0.00560 (13111804)      0.00446 (13051524)      0.01301 (14070708)
     350.0 |       0.04123 (14022209)      0.00876 (14022209)      0.00558 (12062501)      0.00442 (13051524)      0.01033 (14070708)
     360.0 |       0.04123 (14022209)      0.00876 (14022209)      0.00564 (12090102)      0.00452 (12062501)      0.00715 (14070708)
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                         ***         03/08/18
 *** AERMET - VERSION  14134 ***   ***                                                                       ***        11:02:47
                                                                                                                        PAGE   8
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                              *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     SOURCE      ,

                                   *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR ***

                                        ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

 DIRECTION |                                             DISTANCE (METERS)
 (DEGREES) |         750.00                  1000.00                 1500.00                 2000.00                 2500.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |       0.01372 (11072009)      0.02869 (11072009)      0.06807 (11072009)      0.09777 (11072009)      0.11921 (12071008)
      20.0 |       0.01445 (13061608)      0.03263 (13061608)      0.07899 (13061608)      0.11034 (13061608)      0.12257 (13061608)
      30.0 |       0.01679 (10062708)      0.03436 (10062708)      0.08121 (10062708)      0.11809 (10062708)      0.13586 (10062708)
      40.0 |       0.01636 (12092610)      0.03558 (12061209)      0.08916 (12061209)      0.12263 (12061209)      0.14047 (11062309)
      50.0 |       0.02337 (14091009)      0.04626 (14091009)      0.08905 (14091009)      0.11919 (12061209)      0.13058 (12061209)
      60.0 |       0.02715 (14091009)      0.05391 (14091009)      0.10264 (14091009)      0.12281 (14091009)      0.12422 (14091009)
      70.0 |       0.02547 (14091009)      0.05052 (14091009)      0.09664 (14091009)      0.11614 (14070209)      0.12610 (14070209)
      80.0 |       0.02012 (14080109)      0.04424 (14080109)      0.08844 (12092010)      0.12355 (12092010)      0.13685 (12092010)
      90.0 |       0.02792 (14080109)      0.06070 (14080109)      0.11126 (14080109)      0.12639 (14080109)      0.13788 (13060810)
     100.0 |       0.03007 (14080109)      0.06513 (14080109)      0.11832 (14080109)      0.13374 (14080109)      0.13534 (14060908)
     110.0 |       0.02527 (14080109)      0.05517 (14080109)      0.10231 (14080109)      0.12555 (10080310)      0.13068 (10080310)
     120.0 |       0.02737 (14063010)      0.06180 (14063010)      0.11048 (14063010)      0.12935 (12071109)      0.14700 (12071109)
     130.0 |       0.02525 (14063010)      0.05736 (14063010)      0.10364 (14063010)      0.12935 (12071109)      0.14700 (12071109)
     140.0 |       0.02359 (14063009)      0.04627 (14063009)      0.09373 (14063009)      0.12009 (14063009)      0.14494 (14080208)
     150.0 |       0.03273 (14060808)      0.06528 (14060808)      0.10576 (14060808)      0.13176 (10081709)      0.14323 (10081709)
     160.0 |       0.03960 (14060808)      0.07774 (14060808)      0.12265 (14060808)      0.13546 (10081709)      0.14714 (10081709)
     170.0 |       0.03960 (14060808)      0.07774 (14060808)      0.12265 (14060808)      0.13007 (14060808)      0.12498 (14060808)
     180.0 |       0.03273 (14060808)      0.06528 (14060808)      0.10576 (14060808)      0.11348 (14060808)      0.12031 (12091910)
     190.0 |       0.02219 (14060808)      0.04525 (14060808)      0.07685 (14060808)      0.10790 (14070408)      0.12169 (14070408)
     200.0 |       0.01544 (10071110)      0.03099 (10071110)      0.06739 (14070408)      0.09672 (14070408)      0.10953 (14070408)
     210.0 |       0.02132 (10071110)      0.04237 (10071110)      0.07293 (10071110)      0.08111 (10071110)      0.09398 (13102311)
     220.0 |       0.02548 (10071110)      0.05007 (10071110)      0.08384 (10071110)      0.09181 (10071110)      0.09705 (11082309)
     230.0 |       0.02624 (10071110)      0.05145 (10071110)      0.08574 (10071110)      0.09365 (10071110)      0.10531 (12080410)
     240.0 |       0.02331 (10071110)      0.04609 (10071110)      0.07827 (10071110)      0.10465 (14063008)      0.13276 (14063008)
     250.0 |       0.01786 (10071110)      0.03603 (11083110)      0.06888 (11083110)      0.09874 (14063008)      0.12533 (14063008)
     260.0 |       0.01370 (14051708)      0.03054 (11083110)      0.06459 (14051708)      0.09274 (14051708)      0.10523 (14051708)
     270.0 |       0.01395 (14051708)      0.02825 (14051708)      0.06581 (14051708)      0.09438 (14051708)      0.10699 (14051708)
     280.0 |       0.01186 (14051708)      0.02370 (14051708)      0.05545 (14051708)      0.08038 (14051708)      0.09181 (14051708)
     290.0 |       0.01261 (14070708)      0.02932 (14061009)      0.06759 (11122711)      0.09582 (11122711)      0.10710 (11122711)
     300.0 |       0.02091 (14070708)      0.03947 (14070708)      0.06797 (10080610)      0.09373 (11122711)      0.10482 (11122711)
     310.0 |       0.03155 (14070708)      0.05910 (14070708)      0.09453 (14070708)      0.10140 (14070708)      0.10904 (14080908)
     320.0 |       0.04040 (14070708)      0.07465 (14070708)      0.11560 (14070708)      0.12187 (14070708)      0.11575 (14070708)
     330.0 |       0.04382 (14070708)      0.08049 (14070708)      0.12320 (14070708)      0.12915 (14070708)      0.12230 (14070708)
     340.0 |       0.04040 (14070708)      0.07465 (14070708)      0.11560 (14070708)      0.12187 (14070708)      0.11575 (14070708)
     350.0 |       0.03155 (14070708)      0.05910 (14070708)      0.09453 (14070708)      0.10363 (12082310)      0.11013 (12082310)
     360.0 |       0.02091 (14070708)      0.03947 (14070708)      0.06653 (14090909)      0.08881 (11072009)      0.10117 (11072009)
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                         ***         03/08/18
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                                                          AERMOD CRUDE FIRE
*** AERMET - VERSION  14134 ***   ***                                                                      ***        11:02:47
                                                                                                                      PAGE   9
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     SOURCE      ,

                                  *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

DIRECTION |                                                  DISTANCE (METERS)
(DEGREES) |         3000.00                 3500.00                 4000.00                 4500.00                 5000.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

     10.0 |      0.13316 (12071008)      0.13779 (12071008)      0.13797 (14070707)      0.14795 (14070707)      0.15310 (14070707)
     20.0 |      0.12800 (12071008)      0.13242 (12071008)      0.13181 (12071008)      0.12927 (14062208)      0.13029 (14070707)
     30.0 |      0.14066 (10062708)      0.13895 (10062708)      0.13426 (10062708)      0.12825 (10062708)      0.12172 (10062708)
     40.0 |      0.14580 (11062309)      0.14454 (11062309)      0.14023 (11062309)      0.13448 (11062309)      0.12810 (11062309)
     50.0 |      0.13142 (12061209)      0.12771 (12061209)      0.12199 (12061209)      0.12108 (12090209)      0.12429 (10061508)
     60.0 |      0.11940 (12092610)      0.12060 (13081810)      0.11968 (10071009)      0.11766 (10071009)      0.11577 (13080107)
     70.0 |      0.13166 (10071609)      0.13224 (10071609)      0.12944 (10071609)      0.12497 (10071609)      0.11967 (10071609)
     80.0 |      0.13799 (12092010)      0.13374 (12092010)      0.12724 (12092010)      0.12077 (10071609)      0.11597 (12072409)
     90.0 |      0.14065 (13060810)      0.13730 (13060810)      0.13128 (13060810)      0.13320 (12071108)      0.14076 (12071108)
    100.0 |      0.13526 (13071909)      0.13486 (13071909)      0.13514 (10090509)      0.14070 (10090509)      0.14241 (10090509)
    110.0 |      0.13492 (12043010)      0.14267 (12043010)      0.14632 (11082909)      0.14607 (11082909)      0.14473 (12043009)
    120.0 |      0.15049 (12071109)      0.14738 (12071109)      0.14133 (12071109)      0.13404 (12071109)      0.12670 (12043009)
    130.0 |      0.15049 (12071109)      0.14738 (12071109)      0.14133 (12071109)      0.13513 (12080209)      0.12823 (12080209)
    140.0 |      0.15507 (14080208)      0.15645 (14080208)      0.15359 (14080208)      0.14867 (14080208)      0.14280 (14080208)
    150.0 |      0.15006 (14080208)      0.15132 (14080208)      0.14845 (14080208)      0.14361 (14080208)      0.13785 (14080208)
    160.0 |      0.14650 (10081709)      0.14071 (10081709)      0.13291 (10081709)      0.12450 (10081709)      0.11660 (14090609)
    170.0 |      0.12216 (10070410)      0.12733 (10070410)      0.12753 (10070410)      0.12513 (10082709)      0.12618 (10082709)
    180.0 |      0.12067 (12091910)      0.11703 (12091910)      0.11159 (12091910)      0.11362 (10082709)      0.11437 (10082709)
    190.0 |      0.12387 (14070408)      0.12059 (14070408)      0.11712 (10062809)      0.11740 (10062809)      0.11556 (10062809)
    200.0 |      0.11168 (14070408)      0.10878 (14070408)      0.10799 (11082210)      0.10911 (11082210)      0.10831 (11082210)
    210.0 |      0.10628 (13102311)      0.11114 (13102311)      0.11169 (13102311)      0.10995 (13102311)      0.10699 (13102311)
    220.0 |      0.10707 (11082309)      0.10979 (11082309)      0.10860 (13102311)      0.10687 (13102311)      0.10395 (13102311)
    230.0 |      0.11683 (12080410)      0.12057 (12080410)      0.12013 (12080410)      0.11751 (12080410)      0.11371 (12080410)
    240.0 |      0.14637 (14063008)      0.15045 (14063008)      0.14933 (14063008)      0.14551 (14063008)      0.14030 (14063008)
    250.0 |      0.13817 (14063008)      0.14193 (14063008)      0.14071 (14063008)      0.13694 (14063008)      0.13186 (14063008)
    260.0 |      0.10743 (14051708)      0.10469 (14051708)      0.10359 (13042311)      0.10439 (13042311)      0.10469 (14080207)
    270.0 |      0.10919 (14051708)      0.10639 (14051708)      0.10142 (14051708)      0.09559 (14051708)      0.08952 (14051708)
    280.0 |      0.09402 (14051708)      0.09170 (14051708)      0.08741 (14051708)      0.08233 (14051708)      0.07704 (14051708)
    290.0 |      0.10920 (11122711)      0.10723 (11122711)      0.10339 (11122711)      0.09868 (11122711)      0.09360 (11122711)
    300.0 |      0.11110 (14062008)      0.11459 (14080908)      0.11485 (14080908)      0.11365 (13082408)      0.11214 (13082408)
    310.0 |      0.12308 (14080908)      0.12838 (14080908)      0.12886 (14080908)      0.12682 (14080908)      0.12349 (14080908)
    320.0 |      0.12293 (13081709)      0.12364 (13081709)      0.12070 (13081709)      0.12467 (13080309)      0.12587 (13080309)
    330.0 |      0.11237 (13081709)      0.11302 (13081709)      0.11422 (13080309)      0.11837 (13080309)      0.11942 (13080309)
    340.0 |      0.10709 (12082310)      0.10831 (14070109)      0.10774 (14070109)      0.10554 (14070109)      0.10247 (14070109)
    350.0 |      0.10953 (12082310)      0.10597 (12082310)      0.10099 (12082310)      0.09515 (12082310)      0.09009 (12082310)
    360.0 |      0.10379 (11072009)      0.10695 (14060907)      0.10813 (14060907)      0.10671 (14060907)      0.10386 (14060907)
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                       ***        03/08/18
*** AERMET - VERSION  14134 ***   ***                                                                      ***        11:02:47
                                                                                                                      PAGE  10
*** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     SOURCE      ,

                                  *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR ***

                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **
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                                          AERMOD CRUDE FIRE

DIRECTION |                                              DISTANCE (METERS)
(DEGREES) |         6000.00                 7000.00                 8000.00                10000.00
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

     10.0 |      0.15450 (14070707)      0.14985 (14070707)      0.14266 (14070707)      0.12618 (14070707)
     20.0 |      0.13071 (14070707)      0.12604 (14070707)      0.11932 (14070707)      0.10566 (12051008)
     30.0 |      0.11250 (14062208)      0.10375 (14062208)      0.09541 (13072808)      0.09484 (11082908)
     40.0 |      0.11508 (11062309)      0.10635 (10062408)      0.10745 (10062408)      0.10199 (10062408)
     50.0 |      0.12495 (10061508)      0.12100 (10061508)      0.11516 (10061508)      0.10191 (13060807)
     60.0 |      0.11962 (13080107)      0.11769 (13080107)      0.11311 (13080107)      0.10119 (13080107)
     70.0 |      0.11649 (11072309)      0.11119 (11072309)      0.11231 (13071408)      0.11119 (13071408)
     80.0 |      0.11416 (12072409)      0.10953 (13060809)      0.10785 (13060809)      0.09907 (13060809)
     90.0 |      0.14581 (12071108)      0.14354 (12071108)      0.13794 (12071108)      0.12334 (12071108)
    100.0 |      0.13944 (10090509)      0.13246 (10090509)      0.12404 (10090509)      0.11671 (10082608)
    110.0 |      0.14134 (12043009)      0.13421 (12043009)      0.12578 (12043009)      0.10884 (12043009)
    120.0 |      0.12314 (12043009)      0.11925 (14081007)      0.11581 (14081007)      0.11526 (11082708)
    130.0 |      0.12962 (10090409)      0.12969 (10090508)      0.12897 (10090508)      0.12024 (10090508)
    140.0 |      0.13020 (14080208)      0.11979 (12092709)      0.11427 (12092709)      0.10452 (10090308)
    150.0 |      0.12556 (14080208)      0.11340 (14080208)      0.10616 (10081909)      0.11191 (14060807)
    160.0 |      0.11559 (10081909)      0.11193 (10081909)      0.10616 (10081909)      0.09297 (10081909)
    170.0 |      0.12292 (10082709)      0.11625 (10082709)      0.11316 (12062008)      0.10675 (12062008)
    180.0 |      0.11132 (11092410)      0.10711 (11092410)      0.10130 (11092410)      0.08864 (11092410)
    190.0 |      0.10874 (10062809)      0.10032 (10062809)      0.10106 (13051308)      0.11008 (13051308)
    200.0 |      0.10389 (11082210)      0.09800 (11082210)      0.09147 (11082210)      0.09991 (10081908)
    210.0 |      0.09945 (13102311)      0.09262 (11082210)      0.08650 (11082210)      0.08630 (13061607)
    220.0 |      0.09654 (13102311)      0.08950 (10101511)      0.08367 (10101511)      0.07339 (10101511)
    230.0 |      0.10460 (12080410)      0.09512 (12080410)      0.08612 (12080410)      0.07211 (12080410)
    240.0 |      0.12827 (14063008)      0.11613 (14063008)      0.10561 (10101510)      0.08862 (10101510)
    250.0 |      0.12023 (14063008)      0.10857 (14063008)      0.09869 (14080207)      0.09290 (14080207)
    260.0 |      0.12489 (14080207)      0.13388 (14080207)      0.13598 (14080207)      0.13046 (14080207)
    270.0 |      0.08055 (11100109)      0.08638 (12060107)      0.09116 (12071408)      0.09426 (12071408)
    280.0 |      0.07722 (13101208)      0.08119 (11070308)      0.08152 (12082008)      0.09825 (12091408)
    290.0 |      0.08326 (11122711)      0.08400 (11070308)      0.08412 (11070308)      0.07720 (11070308)
    300.0 |      0.10875 (12072509)      0.10496 (12072509)      0.09964 (12072509)      0.08794 (12072509)
    310.0 |      0.11517 (14080908)      0.10618 (14080908)      0.09745 (14080908)      0.10029 (11070307)
    320.0 |      0.12292 (13080309)      0.11666 (13080309)      0.10925 (13080309)      0.12660 (10101408)
    330.0 |      0.11640 (13080309)      0.11027 (13080309)      0.10308 (13080309)      0.08875 (13080309)
    340.0 |      0.10422 (14080108)      0.10791 (14080108)      0.10662 (14080108)      0.10146 (13042907)
    350.0 |      0.08601 (12103110)      0.08662 (14080108)      0.09197 (13071008)      0.09891 (13071008)
    360.0 |      0.10384 (13081808)      0.10025 (13081808)      0.09646 (12070708)      0.09601 (12070708)
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                        ***        03/08/18
 *** AERMET - VERSION  14134 ***   ***                                                                       ***        11:02:47
                                                                                                                        PAGE  11
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                                             *** THE MAXIMUM   50   1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                                 INCLUDING SOURCE(S):     SOURCE      ,

                                                       ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

 RANK        CONC    (YYMMDDHH) AT      RECEPTOR (XR,YR) OF TYPE    RANK        CONC    (YYMMDDHH) AT      RECEPTOR (XR,YR) OF TYPE
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
    1.       0.15645 (14080208) AT (   2249.76,   -2681.16)  GP       26.       0.14581 (12071108) AT (   6000.00,       0.00)  GP
    2.       0.15507 (14080208) AT (   1928.36,   -2298.13)  GP       27.       0.14580 (11062309) AT (   1928.36,    2298.13)  GP
    3.       0.15450 (14070707) AT (   1041.89,    5908.85)  GP       28.       0.14579 (12080209) AT (   2681.16,   -2249.76)  GP
    4.       0.15359 (14080208) AT (   2571.15,   -3064.18)  GP       29.       0.14551 (14063008) AT (  -3897.11,   -2250.00)  GP
    5.       0.15310 (14070707) AT (    868.24,    4924.04)  GP       30.       0.14494 (14080208) AT (   1606.97,   -1915.11)  GP
    6.       0.15132 (14080208) AT (   1750.00,   -3031.09)  GP       31.       0.14473 (12043009) AT (   4698.46,   -1710.10)  GP
    7.       0.15049 (12071109) AT (   2298.13,   -1928.36)  GP       32.       0.14454 (11062309) AT (   2249.76,    2681.16)  GP
    8.       0.15049 (12071109) AT (   2598.08,   -1500.00)  GP       33.       0.14440 (12043010) AT (   3758.77,   -1368.08)  GP
    9.       0.15045 (14063008) AT (  -3031.09,   -1750.00)  GP       34.       0.14361 (14080208) AT (   2250.00,   -3897.11)  GP
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   10.       0.15006 (14080208) AT (   1500.00,   -2598.08)  GP       35.       0.14354 (12071108) AT (   7000.00,       0.00)  GP
   11.       0.14985 (14070707) AT (   1215.54,    6893.65)  GP       36.       0.14340 (11082909) AT (   4698.46,   -1710.10)  GP
   12.       0.14933 (14063008) AT (  -3464.10,   -2000.00)  GP       37.       0.14338 (12043009) AT (   4228.62,   -1539.09)  GP
   13.       0.14867 (14080208) AT (   2892.54,   -3447.20)  GP       38.       0.14323 (10081709) AT (   1250.00,   -2165.06)  GP
   14.       0.14845 (14080208) AT (   2000.00,   -3464.10)  GP       39.       0.14285 (12043010) AT (   4228.62,   -1539.09)  GP
   15.       0.14795 (14070707) AT (    781.42,    4431.63)  GP       40.       0.14280 (14080208) AT (   3213.94,   -3830.22)  GP
   16.       0.14738 (12071109) AT (   3031.09,   -1750.00)  GP       41.       0.14267 (12043010) AT (   3288.92,   -1197.07)  GP
   17.       0.14738 (12071109) AT (   2681.16,   -2249.76)  GP       42.       0.14266 (14070707) AT (   1389.19,    7878.46)  GP
   18.       0.14714 (10081709) AT (    855.05,   -2349.23)  GP       43.       0.14264 (10081709) AT (   1500.00,   -2598.08)  GP
   19.       0.14700 (12071109) AT (   1915.11,   -1606.97)  GP       44.       0.14241 (10090509) AT (   4924.04,    -868.24)  GP
   20.       0.14700 (12071109) AT (   2165.06,   -1250.00)  GP       45.       0.14231 (11082909) AT (   3288.92,   -1197.07)  GP
   21.       0.14650 (10081709) AT (   1026.06,   -2819.08)  GP       46.       0.14193 (14063008) AT (  -3288.92,   -1197.07)  GP
   22.       0.14648 (12080209) AT (   2298.13,   -1928.36)  GP       47.       0.14134 (12043009) AT (   5638.16,   -2052.12)  GP
   23.       0.14637 (14063008) AT (  -2598.08,   -1500.00)  GP       48.       0.14133 (12071109) AT (   3064.18,   -2571.15)  GP
   24.       0.14632 (11082909) AT (   3758.77,   -1368.08)  GP       49.       0.14133 (12071109) AT (   3464.10,   -2000.00)  GP
   25.       0.14607 (11082909) AT (   4228.62,   -1539.09)  GP       50.       0.14132 (12080209) AT (   3064.18,   -2571.15)  GP

  *** RECEPTOR TYPES:  GC = GRIDCART
                       GP = GRIDPOLR
                       DC = DISCCART
                       DP = DISCPOLR
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                     ***        03/08/18
 *** AERMET - VERSION  14134 ***   ***                                                                  ***        11:02:47
                                                                                                                  PAGE  12
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

                                                         *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                                 ** CONC OF OTHER    IN MICROGRAMS/M**3                         **

                                                       DATE                                                                NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.15645  ON 14080208: AT (    2249.76,    -2681.16,    79.60,    79.60,    0.00)  GP  POL1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
• *** AERMOD - VERSION 16216r ***   *** CRUDE FIRE, FLAT, NO DOWNWASH                                     ***        03/08/18
 *** AERMET - VERSION  14134 ***   ***                                                                  ***        11:02:47
                                                                                                                  PAGE  13
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           1 Warning Message(s)
 A Total of        1705 Informational Message(s)

 A Total of       43824 Hours Were Processed

 A Total of         533 Calm Hours Identified

 A Total of        1172 Missing Hours Identified (  2.67 Percent)
```

```
   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186      67       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

Cumulative Oil Trucking FN Calculations

Cumlative Risk Calcuations for ExxonMobil Trucks to Plains Pentland Terminal
Peak one-kilometer-year risk for strech of Highway 101 between Beteravia Road and State Route 166 East

Table 1 - Plains Pentland Terminal (Segment N-Betteravia Road Interchange to State Route 166 Interchange)

# of Fatalities/ Serious Injuries	Proposed Project		With Mitigation	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	4.51E-06	7.55E-06	3.70E-06	6.20E-06
2	2.12E-06	3.49E-06	1.70E-06	2.80E-06
3	5.40E-07	2.12E-06	4.40E-07	1.70E-06
4	2.70E-07	1.57E-06	2.20E-07	1.30E-06
5	1.08E-07	2.19E-07	8.80E-08	1.80E-07

From ExxonMobil Interim Trucking TQRA.

Table 3 - Aera TQRA (Segment B1-Betteravia Road Interchange to State Route 166 Interchange)

# of Fatalities/ Serious Injuries	Proposed Project		With Mitigation	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	8.30E-06	1.40E-05	5.60E-06	9.60E-06
2	3.80E-06	6.50E-06	2.60E-06	4.40E-06
3	1.00E-06	3.90E-06	7.00E-07	2.60E-06
4	5.20E-07	2.90E-06	3.50E-07	1.90E-06
5	2.10E-07	4.30E-07	1.40E-07	2.80E-07

From Aera East Cat Canyon TQRA for with mitigation.

Proposed Project estimated from change in incident rate due to mitigation measures.

Cumulative Oil Trucking FN Calculations

Table 4 - Peak Year of Overlapping Trucks by Project

Project	# Trucks per day	# Trucks per Year
ExxonMobil	70	25,550
Aera	53	19,345
ERG	15	5,475
PetroRock	3	1,095

Data from Cumulative Project Laden Truck Analysis.

Table 5 - Cumulative Risk for Highway 101 Betteravia Interchange to State Route 166 East Interchange (Unmitigated)

# of Fatalities/ Serious Injuries	ExxonMobil		Aera		ERG		PetroRock		Total Cumulative Risk	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	4.51E-06	7.55E-06	3.79E-06	6.40E-06	1.07E-06	1.81E-06	2.15E-07	3.62E-07	9.59E-06	1.61E-05
2	2.12E-06	3.49E-06	1.74E-06	2.97E-06	4.91E-07	8.41E-07	9.83E-08	1.68E-07	4.45E-06	7.47E-06
3	5.40E-07	2.12E-06	4.57E-07	1.78E-06	1.29E-07	5.04E-07	2.59E-08	1.01E-07	1.15E-06	4.51E-06
4	2.70E-07	1.57E-06	2.38E-07	1.33E-06	6.72E-08	3.75E-07	1.34E-08	7.50E-08	5.88E-07	3.35E-06
5	1.08E-07	2.19E-07	9.59E-08	1.96E-07	2.72E-08	5.56E-08	5.43E-09	1.11E-08	2.37E-07	4.82E-07

ExxonMobil Risk number from TQRA.

Aera, ERG, and PetroRock risk numbers based upon Aera TQRA numbers prorated by number of trucks per day.

Cumulative Oil Trucking FN Calculations

Table 6 - Cumulative Risk for Highway 101 Betteravia Interchange to State Route 166 East Interchange (Mitigated)

	ExxonMobil		Aera		ERG		PetroRock		Total Cumulative Risk	
# of Fatalities/ Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	3.70E-06	6.20E-06	2.56E-06	4.39E-06	7.24E-07	1.24E-06	1.45E-07	2.48E-07	7.13E-06	1.21E-05
2	1.70E-06	2.80E-06	1.19E-06	2.01E-06	3.36E-07	5.69E-07	6.72E-08	1.14E-07	3.29E-06	5.49E-06
3	4.40E-07	1.70E-06	3.20E-07	1.19E-06	9.05E-08	3.36E-07	1.81E-08	6.72E-08	8.68E-07	3.29E-06
4	2.20E-07	1.30E-06	1.60E-07	8.68E-07	4.53E-08	2.46E-07	9.05E-09	4.91E-08	4.34E-07	2.46E-06
5	8.80E-08	1.80E-07	6.40E-08	1.28E-07	1.81E-08	3.62E-08	3.62E-09	7.24E-09	1.74E-07	3.51E-07

ExxonMobil Risk number from TQRA.

Aera, ERG, and PetroRock risk numbers based upon Aera TQRA numbers prorated by number of trucks per day.

Cumlative Risk Calcuations for ExxonMobil Trucks to SMPS
Peak one-kilometer-year risk for strech of Highway 101 between Clark Road and Beteravia Road

Table 8 - SMPS (Segment J-Clark Road to Betteravia Road)

Segment	Total Frequency per km-year		Ratio	
	Fatality	Injury	Fatality	Injury
Segment J-Clark Road to Betteravia Road	1.50E-06	2.50E-06	41%	40%
Segment N-Betteravia Road Interchange to State Route 166 Interchange	3.70E-06	6.20E-06		

# of Fatalities/ Serious Injuries	Proposed Project		With Mitigation	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	1.83E-06	3.04E-06	1.50E-06	2.50E-06
2	8.59E-07	1.41E-06	6.89E-07	1.13E-06
3	2.19E-07	8.55E-07	1.78E-07	6.85E-07
4	1.09E-07	6.33E-07	8.92E-08	5.24E-07
5	4.38E-08	8.83E-08	3.57E-08	7.26E-08

Calculated from ExxonMobil Interim Trucking TQRA based upon ratio of total frequency per kilometer-year for fatality and injury by segment.

Table 9 - Aera (Segment J-Clark Road to Betteravia Road)

Segment	Total Frequency per km-year		Ratio	
	Fatality	Injury	Fatality	Injury
Segment L1-Clark Road to Betteravia Road	1.70E-06	2.90E-06	30%	30%
Segment B1-Betteravia Road Interchange to State Route 166 Interchange	5.60E-06	9.60E-06		

# of Fatalities/ Serious Injuries	Proposed Project		With Mitigation	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	2.52E-06	4.23E-06	1.69E-06	2.90E-06
2	1.15E-06	1.96E-06	7.85E-07	1.33E-06
3	3.04E-07	1.18E-06	2.11E-07	7.85E-07
4	1.58E-07	8.76E-07	1.06E-07	5.74E-07
5	6.38E-08	1.30E-07	4.23E-08	8.46E-08

From Aera East Cat Canyon TQRA for with mitigation.

Proposed Project estimated from change in incident rate due to mitigation measures.

Calculated from Aera Trucking TQRA based upon ratio of total frequency per kilometer-year for fatality and injury by segment.

Table 10 - Cumulative Risk for Clark Road to Betteravia Road (Unmitigated)

# of Fatalities/ Serious Injuries	ExxonMobil		Aera		ERG		PetroRock		Total Cumulative Risk	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	1.83E-06	3.04E-06	1.15E-06	1.93E-06	3.26E-07	5.47E-07	6.52E-08	1.09E-07	3.37E-06	5.63E-06
2	8.59E-07	1.41E-06	5.27E-07	8.97E-07	1.49E-07	2.54E-07	2.98E-08	5.08E-08	1.57E-06	2.61E-06
3	2.19E-07	8.55E-07	1.39E-07	5.38E-07	3.93E-08	1.52E-07	7.85E-09	3.05E-08	4.05E-07	1.58E-06
4	1.09E-07	6.33E-07	7.21E-08	4.00E-07	2.04E-08	1.13E-07	4.08E-09	2.27E-08	2.06E-07	1.17E-06
5	4.38E-08	8.83E-08	2.91E-08	5.93E-08	8.24E-09	1.68E-08	1.65E-09	3.36E-09	8.28E-08	1.68E-07

ExxonMobil Risk number from TQRA.

Aera, ERG, and PetroRock risk numbers based upon Aera TQRA numbers prorated by number of trucks per day.

Table 11 - Cumulative Risk for Clark Road to Betteravia Road (Mitigated)

# of Fatalities/ Serious Injuries	ExxonMobil		Aera		ERG		PetroRock		Total Cumulative Risk	
	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries	Frequency of N or More Fatalities	Frequency of N or More Serious Injuries
1	1.50E-06	2.50E-06	7.73E-07	1.33E-06	2.19E-07	3.75E-07	4.38E-08	7.50E-08	2.54E-06	4.28E-06
2	6.89E-07	1.13E-06	3.59E-07	6.07E-07	1.02E-07	1.72E-07	2.03E-08	3.44E-08	1.17E-06	1.94E-06
3	1.78E-07	6.85E-07	9.66E-08	3.59E-07	2.73E-08	1.02E-07	5.47E-09	2.03E-08	3.08E-07	1.17E-06
4	8.92E-08	5.24E-07	4.83E-08	2.62E-07	1.37E-08	7.42E-08	2.73E-09	1.48E-08	1.54E-07	8.75E-07
5	3.57E-08	7.26E-08	1.93E-08	3.86E-08	5.47E-09	1.09E-08	1.09E-09	2.19E-09	6.16E-08	1.24E-07

ExxonMobil Risk number from TQRA.

Aera, ERG, and PetroRock risk numbers based upon Aera TQRA numbers prorated by number of trucks per day.

ATTACHMENT C.4

SYU LFC INTERIM TRUCKING

CRUDE OIL TRANSPORTATION RISK MANAGEMENT AND PREVENTION PROGRAM (CO-TRMPP)

1.0 Introduction and Objective

ExxonMobil's Santa Ynez Unit Facility (SYU) finalized permitted and construction and began operations in 1993. Since that time, all crude oil export has occurred via the Plains All American Pipeline Line 901 and 903 (PAAPL) which is connected to the LFC facilities at the LFC Transportation Terminal. In May 2015, the PAAPL Line 901 pipeline experienced an incident where a failure resulted in the shutdown of both Line 901 and 903 that SYU utilized to transport crude to refineries.

ExxonMobil is submitting the SYU LFC Interim Trucking application to allow production operations to re-start at the Santa Ynez Unit following shutdown of the PAAPL pipeline and subsequent preservation of the SYU facilities. The application requests operation of interim trucking until a pipeline alternative is available. The interim trucking facilities would be located in Las Flores Canyon (LFC) approximately twelve (12) miles west of Goleta and consist of the activities described in Attachment A.3 Description..

All highway transportation from LFC will be limited to State Highway 101; no truck traffic will be directed through State Highway 154. Transportation in urban areas will be limited to the extent feasible.

Truck loading and transportation operations would occur seven days a week, 24-hours per day except as noted below. After unloading at one of the designated facilities, the trucks could return directly back to LFC to reload or they could be reassigned to other operations.

This Crude Oil Transportation Risk Management and Prevention Program (CO-TRMPP) has been developed to ensure that the interim trucking is conducted in a safe and efficient manner.

2.0 Elements of the CO-TRMPP

The CO-TRMPP shall apply to any and all highway shipments of product from ExxonMobil's SYU facility in Las Flores Canyon to the regional receiving locations as part of the LFC interim trucking.

Product carriers shall be required to complete the "Crude Oil - Motor Carrier Safety Survey" (Exhibit A) prior to starting shipments from LFC. LFC Operations personnel will verify that each carrier meets or exceeds the safety standards. LFC Operations personnel will also conduct a safety and operability inspection (checklist) of trucks prior to loading and prior to transport from LFC. Any truck that receives an unsatisfactory inspection will no longer be permitted to transport product until the issue has been corrected.

LFC Operations has also developed a procedure for the trucks to follow during the truck loading. If, based on ExxonMobil operator observations, the carrier's actual performance in loading at LFC is inconsistent with the Safety Survey, safety inspection, or the procedure, ExxonMobil will re-evaluate the carrier's ability to safely load and haul product. If the issues cannot be resolved to demonstrate the carrier's ability to safely load and haul product, use of that carrier will be discontinued until they successfully satisfy ExxonMobil's requirements.

There are no specific, pre-established criteria for terminating use of a carrier insofar as there are potentially many different situations in which ExxonMobil may decide to take such action. For the most part, this decision will be based on operational and technical judgment made by LFC operating and engineering personnel after reviewing the facts of the situation at that time. In general, any human or mechanical issues that pose the potential to compromise safe operations will be cause for discontinuing use of any carrier until such issues are resolved to ExxonMobil's satisfaction.

An ExxonMobil operator will be present during the loading activities. The operators will be trained prior to commencing loading operations and what to inspect using the developed procedure and checklist. The operator will advise his or her supervisor if there is an issue with the truck or driver. If an issue is observed prior to loading, the truck will not be loaded and the carrier's dispatcher will be notified to correct the issue before the truck will be loaded or to send another truck. If an issue is discovered after a truck is loaded (e.g., overload, leak), the driver will be instructed not to leave LFC until the issue is corrected.

In addition to the ExxonMobil LFC company compliance plans, the selected carrier will have compliance plans in place to respond to accidents and other incidents such as listed below:

- Emergency Action Plan
- Spill Prevention Emergency Response Containment Plan
- Incident Investigation and Reporting Policy
- Incident Reporting Flow Chart

ExxonMobil will include provisions in its contracts with each carrier to require a number of safety and operational requirements. The requirements are included in the Crude Truck Loading Procedure and the LFC Site Specific Safety Training for All Truck Drivers.

A number of the safety and operational requirements are summarized below (Reference Crude Transport Truck Driver Training):

Required Pre-Mobilization Training Requirements

- Carrier(s) Driver Orientation and Passport Safety Training
- ExxonMobil Las Flores Canyon Site Specific Training
- LFC Crude Transport Truck Driver Training

Required Clothing and PPE for Drivers in LFC:

- Compliance with Facial Hair Policy
- FRCs (Coveralls or Long Sleeve Shirt and Long Paints)
- Sturdy Steel-Toed Work Boots
- Safety Glasses/Goggles, Impact Resistant Gloves, and Hardhat
- Personal H_2S Monitor
- Earplugs

Reminders:

- Smoking not allowed when within LFC
- Zero tolerance for Alcohol / Drugs / Firearms – Do not bring on site; Subject to random search
- No liquids (e.g., water, coffee, etc.) allowed to be poured on the ground when within LFC

Truck Restrictions:

- Truck equipped with operating speed monitoring system
- Truck trailer empty when arriving at LFC per contract
  - Trailers used for The LFC interim trucking exclusively dedicated to crude oil transportation service
  - Trailer empty prior to loading
- Truck/Trailer placards in accordance with DOT regulations
- Crude Oil Safety Data Sheet (SDS) in Truck
- Crude Transport Truck Driver Training document in Truck
- Maximum Truck/Trailer height cannot exceed 13.5 feet
- Maximum Truck/Trailer weight with full load cannot exceed 80,000 pound limit

Truck Route Restrictions

- Routes to and from LFC restricted
  - Use of Hwy 101 El Capitan Beach exit not allowed
- Truck operations to occur 24-Hours per day, 7 days per week
  - Exception: All trucks involved in the LFC interim trucking will observe a curfew when travelling on Calle Real if deemed appropriate. Truck traffic will not travel on Calle Real between El Capitan exit and Refugio exit during the hours of 7:45 am to 8:30 am and 2:55 pm to 3:40 pm. This restriction only applies when the school is in regular operation and students are being bussed.

Driving in LFC

- Protected species known to be on site
  - Do not approach, harass or intentionally harm any wildlife
- Watch for wildlife on and adjacent to road: Avoid where safe to do so; All wildlife is protected on site. Includes deer, rabbits, foxes, bobcats, frogs, turtles, etc.
- Report observations of injured, dead or potentially dangerous wildlife to ExxonMobil representative
- Truck speed limit within LFC is 15 MPH – no exceptions
- Watch for oncoming traffic. Some areas of the road are narrow and have blind curves
- Watch for directional signs to Weigh Area, Holding Area, and Loading Area

- Drivers to have an operating cell phone; Phone use prohibited within LFC facility (includes driving, waiting or loading)

EXHIBIT A - Crude Oil - Motor Carrier Safety Survey

EXHIBIT A
Crude Oil- Motor Carrier Safety Survey
Santa Ynez Unit Facility

General Information

Interview Location ______________________________

Carrier Personnel Interviewed ______________________________

Date of Interview ______________________________

Equipment: No. of tractors owned by Company/Operator ______________

Replacement Policy for Tractors ______________

No. of trailers/tanks owned by Company/Operator ______________

Replacement Policy for Tanks/Trailers ______________

No. of Drivers ______________

Company Safety Indicators

a. DOT reportable accident rate per million vehicle miles: ______________

b. Insurance premium cost per one hundred dollars of gross receipts: ______________

c. Insurance Carriers ______________________________

d. Liability Limits ______________________________

e. Deductible ______________________________

f. Does your insurance extend to subhaulers? ______________

g. Current Bureau of Motor Carrier Safety (BMCS) rating ______________

h. Date of last BMCS Safety Survey ______________

i. Type of BMCS Violations Recorded ______________

j. Citations/fines, if any, by Department of Transportation during past 3 years.

____

____

Company Drivers

a. Minimum Years Driving Experience ______________________________

b. Physical Examination Required? _________________________________

c. Number of Moving Violations permitted ___________________________

d. Number of reportable accidents permitted __________________________

Driver Training

a. Length of New Driver Training ____

b. Frequency of Existing Driver Training _________________________________

c. Type of Training Used (Circle those that apply): Lecture Video Literature

d. Training Administered by: Company Staff Driver/trainer Professional Firm

e. Records of training maintained for each driver?

f. Training Topics Covered	Yes	No
1. Speeding Policy	____________	_____________
2. Alcohol/narcotics/ drug abuse	____________	_____________
3. Hazardous Materials	____________	_____________
4. Placarding	____________	_____________
5. Emergency Procedures	____________	_____________
6. Emergency Communications	____________	_____________
7. Rail/highway crossing procedures	____________	_____________
8. Vehicle Inspections	____________	_____________
9. Drivers Logs	____________	_____________
10. Loading/bracing/blocking	____________	_____________
11. Site Safety Rule Policy	____________	_____________
12. Bulk Truck Specifics		
i. Loading/Unloading	____________	_____________
ii. Equipment Operation	____________	_____________
iii. Equipment Inspection	____________	_____________
iv. Emergency Response	____________	_____________

Driver Management

a. Do you have a speed limit policy? If so, summarize.

____

____

b. Do you have automated speed controls on trucks? If so, summarize.

____

____

c. Do you use remote electronic monitoring of driver performance? If so, summarize.

____

____

d. Are drivers required to report traffic violations? If so, summarize.

____

____

e. Do you have policies for logging violations? If so, summarize.

____

____

f. Do you have a method to allow for address public complaints? If so, summarize.

____

____

g. Are passengers allowed in the truck cab? If so, summarize.

____

____

h. Do you perform regular driver performance reviews, including safety compliance?

____

____

i. Do you employ a full-time safety coordinator and or team?

____

____

Vehicle Inspections & Maintenance

a. Do you drivers conduct pre-trip inspections? If so, are records kept?

____

____

b. Do you drivers conduct post-trip inspections? If so, are records kept?

____

____

c. Are vehicle inspections and maintenance performed at an in-house facility or an outside professional repair facility?

____

____

d. At what frequency are the following tractor items proactively inspected/replaced?

1. Steering Controls ____________________
2. Brakes ____________________
3. Safety/Emergency Equipment ____________________
4. Lights ____________________
5. Windshield Glass ____________________
6. Engine Hoses ____________________
7. Fluid Levels ____________________
8. Tires ____________________
9. Couplings/Air Hose Condition ____________________
10. Fifth Wheel Lube/Locking ____________________
11. Undercarriage ____________________

e. Where and how often are visual inspections of tank trailers performed?

____

f. Where and how often are hydrostatic tests of tank trailers performed?

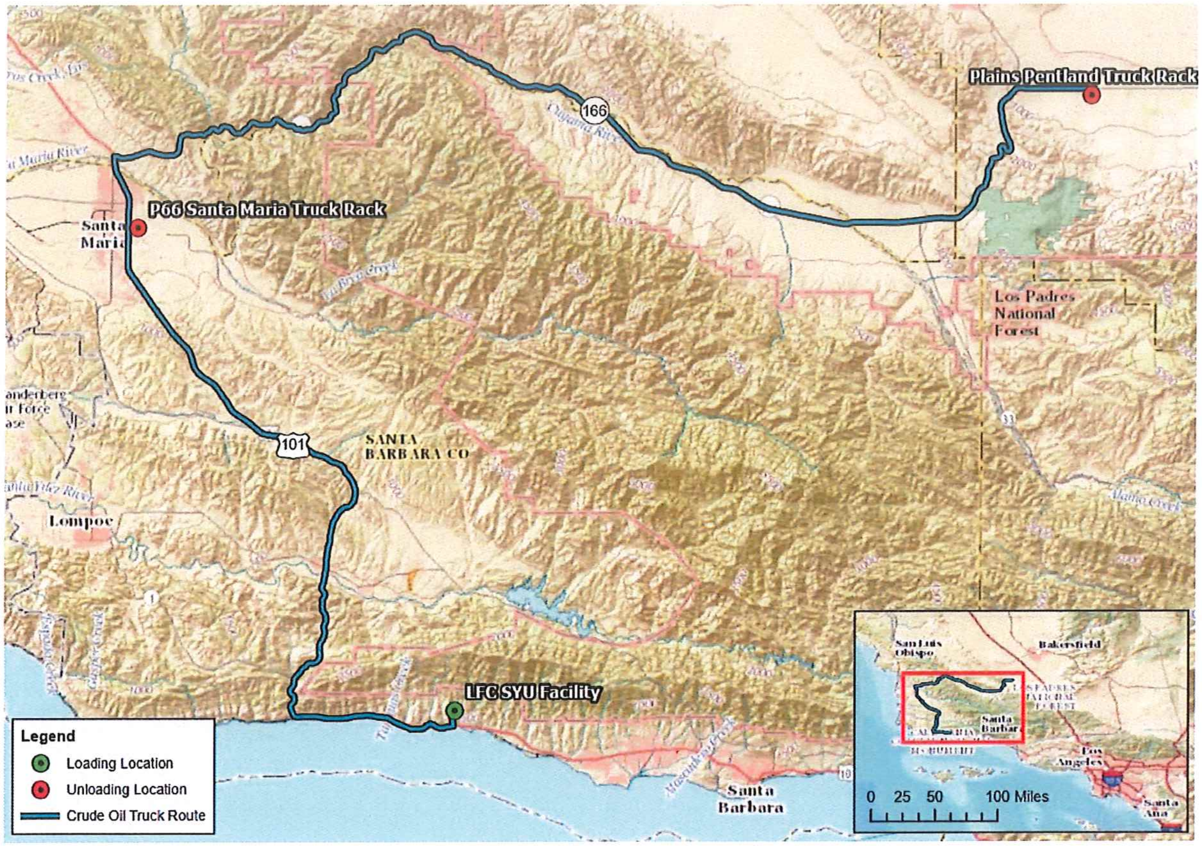
____

Appendix D

Traffic and Circulation Study

EXXONMOBIL INTERIM TRUCKING PERMIT PROJECT
SANTA BARBARA COUNTY, CALIFORNIA

FINAL TRAFFIC AND CIRCULATION STUDY



February 19, 2019 **ATE #17092**

Prepared for:

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Since 1978

Richard L. Pool, P.E.
Scott A. Schell, AICP, PTP

February 19, 2019 17092R05

Michelle Pasini
InterAct PMTI
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Ventura, CA 93003

FINAL TRAFFIC AND CIRCULATION STUDY FOR THE EXXONMOBIL INTERIM TRUCKING PERMIT PROJECT, COUNTY OF SANTA BARBARA

Associated Transportation Engineers (ATE) prepared a traffic and circulation study in January 2018 for the ExxonMobil Interim Trucking Permit Project. That study was reviewed and commented upon by County and Caltrans staffs as part of the processing for the Administrative Draft EIR and that report was revised accordingly.

The following study includes revisions to address the County/Caltrans comments. It is understood that this traffic study will be incorporated into the Public Draft EIR being prepared for the project.

Associated Transportation Engineers

Scott A. Schell, AICP, PTP
Principal Transportation Planner

CONTENTS

TABLES

FIGURES

INTRODUCTION

The following study contains an analysis of potential traffic and circulation impacts associated with the ExxonMobil Interim Trucking Permit (the "Project"). The report provides information relative to Baseline traffic conditions (Year 2018) within the Project study area and evaluates potential traffic impacts associated with the Project using Santa Barbara County, Caltrans, and Kern County impact criteria.

PROJECT DESCRIPTION

ExxonMobil is requesting an Interim Trucking Permit to truck processed crude from the Santa Ynez Unit (SYU) facility located in Las Flores Canyon (LFC) to markets until a transport pipeline becomes available. Because of the Plains 901 pipeline incident in May 2015, the pipeline was shut down and eliminated the only transportation option for transport of processed crude from the SYU facility to markets. The interim trucking program would cease once a pipeline is available for crude transportation from the LFC site to markets.

The interim trucking permit is proposed to allow transport of crude product via trucks from the LFC site located adjacent to US 101 about 12 miles west of the City of Goleta to: 1) the Phillips 66 Santa Maria Terminal near Santa Maria in Santa Barbara County or 2) to the Plains Pentland Terminal in Kern County. Figure 1 illustrates the locations of the LFC site, the Phillips 66 site, and the Plains Pentland Terminal site. Figure 1 also shows the proposed truck routes.

The maximum number of loaded trucks would be limited to 70 per day. Truck transportation would occur seven days a week and 24-hours per day. All trucks entering and leaving the LFC facility would use the Refugio Road ramps at US 101. Trucks traveling to the Phillips 66 Terminal would exit US 101 at the Betteravia Road Interchange (I/C) and use Betteravia Road, Rosemary Road, and Battles Road to access the Phillips 66 Terminal. Trucks traveling to the Plains Pentland Terminal would exit US 101 at the SR 166 I/C and use SR 166 to Basic School Road to access the Plains Pentland Terminal.

TRAFFIC STUDY METHODOLOGIES

The following section reviews the key elements and methodologies used in the traffic and circulation study.

Traffic Scenarios

The traffic study assesses potential impacts generated by the Project for two options. Each option generates the same level of traffic on a daily basis (maximum number of trucks would be limited to 70 per day). Option 1 evaluates potential impacts assuming transport of crude product to the Phillips 66 Terminal in Santa Maria (see Figure 1). Option 2 evaluates potential impacts assuming transport of crude to the Plains Pentland Terminal in Kern County (see Figure 1).

ExxonMobil

N W E S

0 2 4 8 12 16 Miles

Crude Oil Truck Transportation Route - Las Flores Canyon to Unloading Destinations

Prepared by: InterAct

ASSOCIATED
TRANSPORTATION
ENGINEERS

PROJECT SITE LOCATIONS / PROPOSED TRUCK ROUTES

FIGURE 1

EKM - ATE#17092

Study Facilities

The traffic study assesses potential impacts for the key roadway segments and intersections along the two truck routes. Table 1 lists the key roadway segments and intersections evaluated in the traffic study.

Table 1
Key Roadways and Intersections

Roadway Segments	Intersections
Option 1 – Truck to Phillips 66 Terminal	
Calle Real – east of Refugio Rd I/C	US 101 NB Ramps/Refugio Rd
US 101 – Refugio Rd I/C to Betteravia Rd I/C	US 101 SB Ramps/Refugio Rd
Betteravia Rd – east of US 101 I/C	US 101 NB Ramps/Betteravia Rd
Rosemary Rd – north of Betteravia Rd	US 101 SB Ramps/Betteravia Rd
Battles Rd – east of Rosemary Rd	
Option 2 – Truck to Plains Pentland Terminal	US 101 NB Ramps/Refugio Road
Calle Real – east of Refugio Rd I/C	US 101 SB Ramps/Refugio Road
US 101 – Refugio Rd I/C to SR 166 I/C	US 101 NB Ramps/SR 166
SR 166 – US 101 I/C to Basic School Rd	US 101 SB Ramps/SR 166
Basic School Rd – north of Plains Site	SR 166/Basic School Road

Level of Service Definitions and Evaluation Methods

Levels of Service (LOS) A through F are used to rate traffic operations, with LOS A indicating free flow operations and LOS F indicating congested operations (more detailed descriptions are included in the Technical Appendix for reference). Levels of service for Santa Barbara County and Kern County roads were evaluated using standard engineering roadway design capacities. Levels of service for the US 101 and SR 166 highway segments, as well as the intersections along the routes, were evaluated using the Caltrans recommended methods outlined in the Highway Capacity Manual.[1]

Baseline Traffic Volumes

The January 2018 traffic study used traffic counts for US 101 and SR 166 that were published by Caltrans in 2015 and 2016 (which are the most current data published by Caltrans). Upon review of the January 2018 study, Caltrans made the comment that counts that are more than 2 years old should be updated. The 2015/2016 counts used in the January 2018 traffic study were therefore increased to represent Year 2018 baseline conditions for assessing potential traffic impacts.

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[1] Highway Capacity Manual, Transportation Research Board, 2016.

For US 101, Caltrans historical count data shows that volumes on US 101 between the US 101/Refugio Road I/C and US 101/SR 166 I/C have grown at a rate of about 0.7% per year over the past 10 years. To be conservative, the 2015/2016 volumes were factored up to 2018 baseline conditions using a 1% per year growth factor.

For SR 166, Caltrans historical count data shows that volumes on SR 166 between the US 101/SR 166 I/C and Basic School Road have grown at a rate of about 7% per year over the past 10 years. The 2015/2016 volumes were factor up to 2018 baseline conditions using a 7% per year growth factor.

The traffic counts for most of the surfaces streets and intersections used in the January 2018 study were collected in November 2017 and are therefore representative of baseline conditions for assessing potential impacts to those facilities – with one exception. The traffic counts for the US 101/Betteravia Road I/C were collected in August 2016 and are about two years old. Further, there has been a significant amount of development within the Enos Ranchos Specific Plan area since the time of those counts. The Enos Ranchos Specific Plan area is a large area located just west of the US 101/Betteravia Road I/C. About 50% of the Specific Plan area has been developed since 2016 and development of the area continues. To be conservative, the Year 2018 baseline traffic volumes used in the following impact analysis assume 100% development of the Enos Ranchos Specific Plan.

Finally, the applicant indicated that there were about 100 employees working on the site prior to the pipeline shutdown. Staffing levels have been reduced to 60 employees working on the site during the shutdown period. Traffic generated by the 40 additional employees prior to shutdown (80 ADT, 9 AM peak hour trips and 18 PM peak hour trips) were therefore included in the baseline traffic since the baseline for the Project represents operations prior to the pipeline shutdown.

THRESHOLDS OF SIGNIFICANCE

Santa Barbara County

Most of the roadway segments along the Option 1 and Option 2 truck routes are within Santa Barbara County. Santa Barbara County considers LOS C as the minimum acceptable operating standard for the roadways and intersections. The County's thresholds of significance for traffic impacts were used to assess the Project's potential to generate traffic impacts to County facilities. The Santa Barbara County thresholds are listed below.

A. The addition of project traffic to an intersection increases the volume-to-capacity (V/C) ratio by the value provide below or sends at least 5, 10 or 15 trips to an intersection operating at LOS F, E, or D.

Intersection Level of Service (Including Project)	Increase in V/C or Trips Greater Than
LOS A	0.20
LOS B	0.15
LOS C	0.10
LOS D	15 Trips
LOS E	10 Trips
LOS F	5 Trips

B. Project access to a major road or arterial road would require a driveway that would create an unsafe situation or a new traffic signal or major revisions to an existing traffic signal.

C. Project adds traffic to a roadway that has design features (e.g., narrow width, road-side ditches, sharp curves, poor sight distance, inadequate pavement structure) or receives use which would be incompatible with substantial increases in traffic (e.g., rural roads with use by farm equipment, livestock, horseback riding, or residential roads with heavy pedestrian or recreational uses, etc.) that would become potential safety problems with the addition of project traffic or cumulative traffic. Exceedance of the roadways designated Circulation Element Capacity may indicate the potential for the occurrence of the above impacts.

The roadway impact threshold defines a significant roadway impact if a project would increase traffic volumes by more than 1.0 percent (either project-specific or project contribution to cumulative impacts) on a roadway that currently exceeds its Acceptable Capacity or is forecast to exceed its Acceptable Capacity under cumulative conditions.

D. Project traffic would utilize a substantial portion of an intersection's capacity where the intersection is currently operating at an acceptable level of service (A-C) but with cumulative traffic would degrade to or approach LOS D (V/C 0.81) or lower. Substantial is defined as a minimum change of 0.03 for intersections which would operate from 0.80 to 0.85, and a change of 0.02 for intersections which would operate from 0.86 to 0.90, and a change of 0.01 for intersections operating at anything lower.

Kern County

Basic School Road is located in Kern County. According to the Kern County Circulation Element of the General Plan, "All roads shall maintain Level of Service D or better as required by the County General Plan. If traffic resulting from a project exceeds current volume-to-capacity projections, mitigation is required if development causes roadways to fall below LOS D."

Caltrans

US 101 and SR 166 are State facilities that fall under the jurisdiction of Caltrans. The Caltrans minimum standard for traffic operations is the cusp of LOS C/LOS D (LOS C or better is considered acceptable), with mitigation required for operations at LOS D, E and F.

PROJECT IMPACTS – OPTION 1 – TRUCK TO PHILLIPS 66 TERMINAL

Existing Street Network

The street network that serves Option 1 includes State highways and County roads. The following text provides a brief description of the street network for Option 1.

US 101 is a north-south freeway that traverses Santa Barbara County and beyond. US 101 contains 2 lanes in each direction between the Refugio Road I/C near the LFC site and the Santa Maria Way I/C in Santa Maria. US 101 contains 3 lanes in each direction between the Santa Maria Way I/C and the Betteravia Road I/C in Santa Maria.

Betteravia Road is a 4-lane arterial road between US 101 and Nicholson Avenue just east of US 101; and is a 2-lane arterial road between Nicholson Avenue and Rosemary Road. The 4-lane segment east of US 101 serves a truck stop and service stations. The 2-lane segment to the east serves mostly agricultural uses.

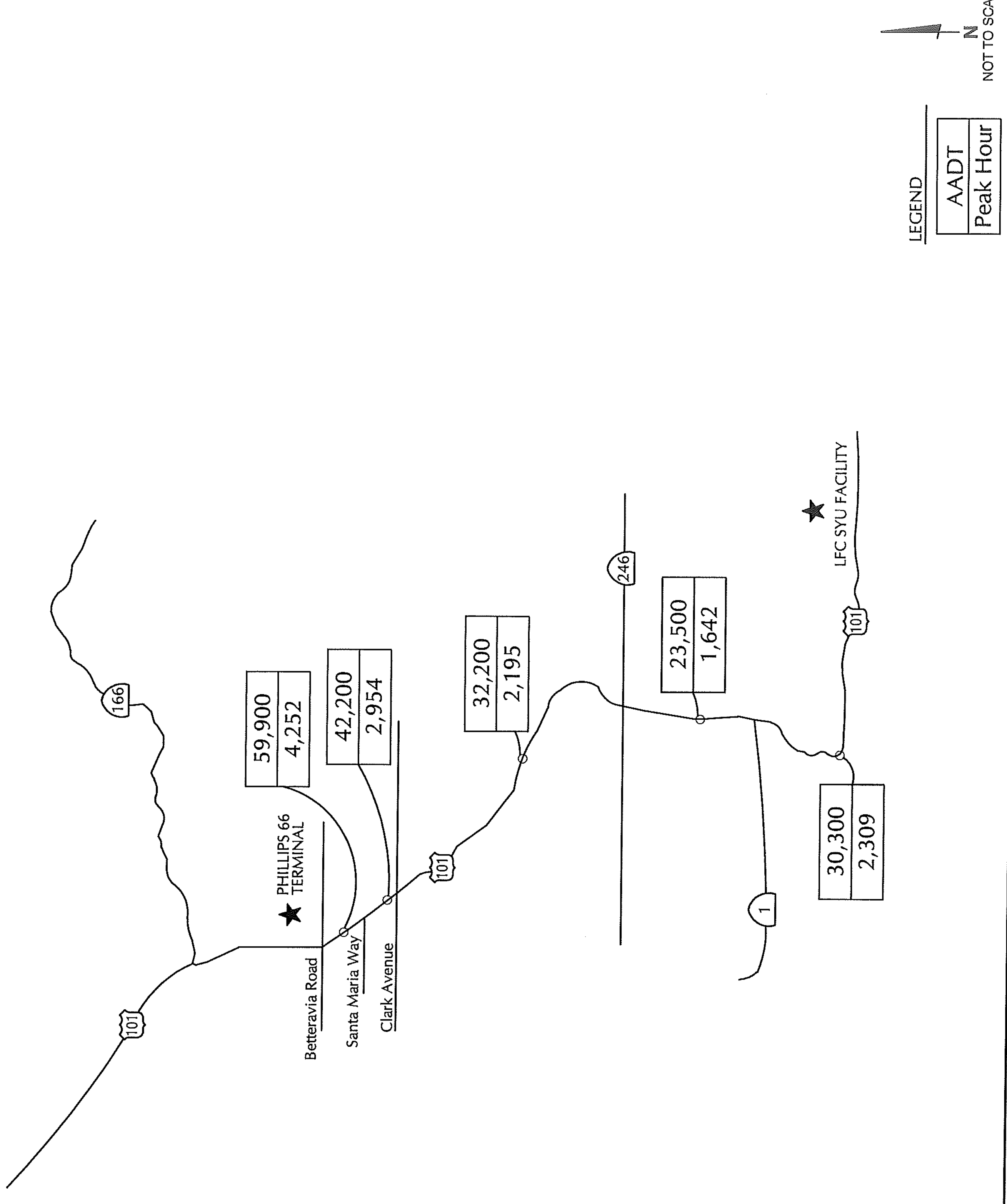
Rosemary Road is a 2-lane collector road that extends north of Betteravia Road that serves mostly agricultural uses.

Battles Road is a 2-lane collector road that extends west of Rosemary Road that serves mostly agricultural uses. The Phillips 66 Terminal is located on Battles Road.

Baseline Traffic Operations

Figures 2a and 2b present the Baseline traffic volumes for the key roadway segments and intersections along the Option 1 truck route. Baseline traffic volumes and levels of service for the key roadways and intersections along the Option 1 trucking route are presented below.

US 101. Table 2 lists the Baseline (2018) traffic volumes and levels of service for the US 101 segments along the Option 1 truck route. Levels of service were calculated for the peak hour period using the operations methods outlined in the Highway Capacity Manual. As shown in Table 2, the US 101 segments along the Option 1 truck route currently operate at LOS A or LOS B, which meet the Caltrans and County LOS C standard.

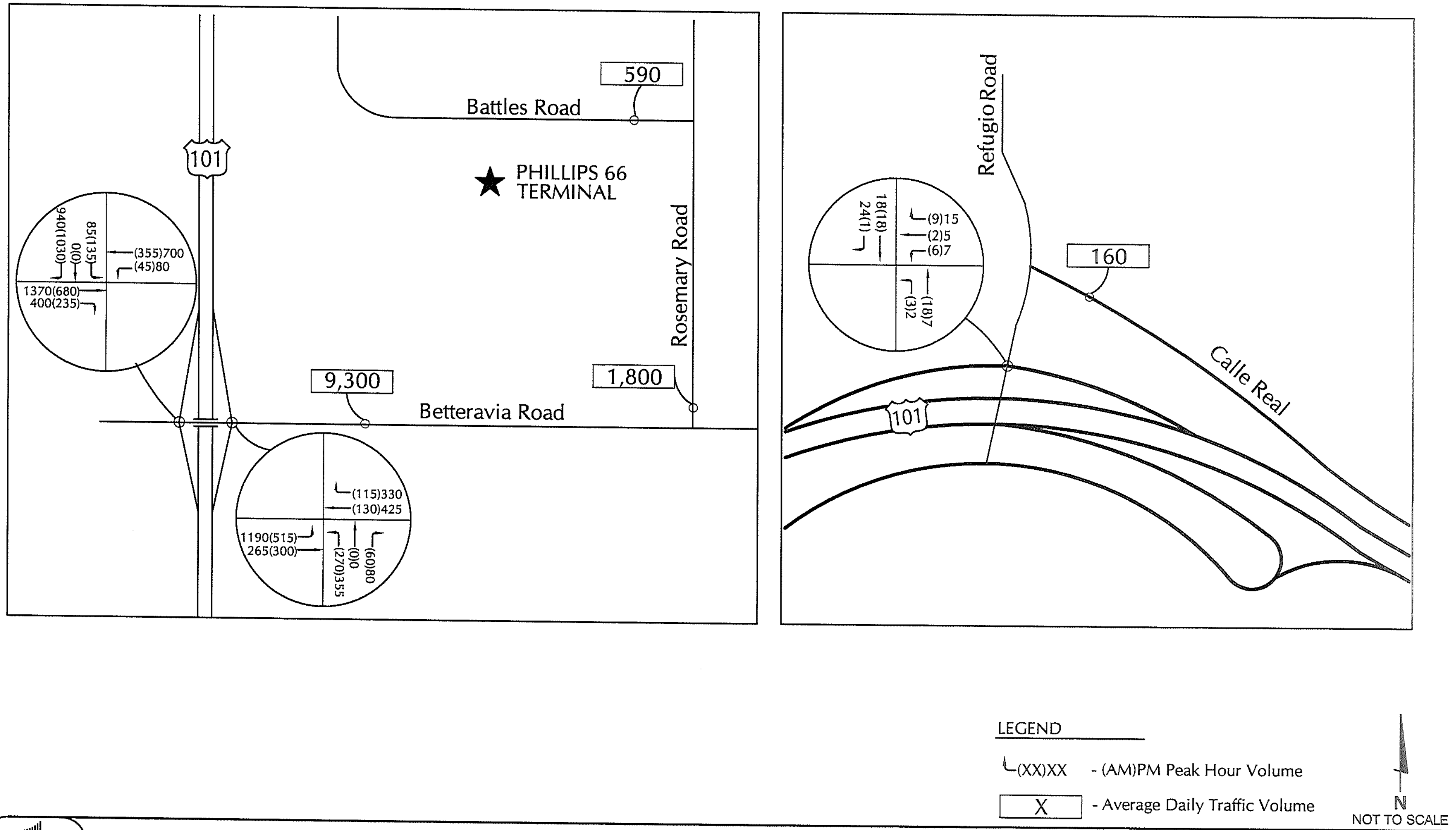


BASELINE TRAFFIC VOLUMES - TRUCK ROUTE OPTION 1

FIGURE 2a

EKM - ATE#17092

ASSOCIATED TRANSPORTATION ENGINEERS



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BASELINE TRAFFIC VOLUMES - TRUCK ROUTE OPTION 1

FIGURE 2b

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Table 2
Baseline Operations – US 101 – Option 1

US 101 Segment	Traffic Volumes			Highway Characteristics			Density / LOS(c)	
	AADT(a)	Peak Hour(b)						
		Northbound	Southbound	# Lanes	Terrain	Area	Northbound	Southbound
Refugio Road I/C to SR 1 I/C	30,300	1,560	749	4	Rolling	Rural	14.1/LOS B	6.7/LOS A
SR 1 I/C to SR 246 I/C	23,500	987	655	4	Rolling	Rural	9.5/LOS A	6.3/LOS A
SR 246 I/C to Clark Avenue I/C	32,200	1,208	987	4	Rolling	Rural	11.1/LOS B	9.1/LOS A
Clark Avenue I/C to Santa Maria Way I/C	42,200	1,591	1,363	4	Flat	Urban	13.2/LOS B	11.3 LOS B
Santa Maria Way I/C to Betteravia Road I/C	59,900	2,295	1,957	6	Flat	Urban	13.6/LOS B	11.6/LOS B

(a) AADT = Average Annual Daily Traffic volume.
(b) Peak Hour = Highest 1-hour period during the 24-hour period.
(c) LOS based on density. Density = passenger cars per mile per lane.

County Roadways. Table 3 lists the roadway classifications, capacities, average daily traffic volumes, and levels of service for the County roadways along the Option 1 truck route. As shown, the County roadway segments along the Option 1 truck route currently operate at LOS A, which indicate very good operations and meet the County's LOS C standard.

Table 3
Baseline Operations – County Roadways – Option 1

County Roadway Segment	Classification	Average Daily Traffic		LOS
		Capacity	Volume	
Calle Real – east of Refugio Rd I/C	2-Lane Collector	11,800	160	LOS A
Betteravia Rd – east of US 101 I/C	4-Lane Arterial	39,900	9,300	LOS A
Rosemary Rd – north of Betteravia Rd	2-Lane Collector	11,800	1,800	LOS A
Battles Rd – east of Rosemary Rd	2-Lane Collector	11,800	590	LOS A

LOS based on standard engineering roadway design capacities.

Intersections. Table 4 presents the Baseline AM and PM peak hour levels of service for the key intersections along the Option 1 truck route. Levels of service were calculated using the operations method outlined in the Highway Capacity Manual. As shown, most of the key intersections along the Option 1 truck route currently operate at LOS C or better during the AM and PM peak hours, which meet the Caltrans and County LOS C standard. The US 101 SB Ramps/Betteravia Road intersection currently operates at LOS D during the AM peak hour and LOS F during the PM peak hour, which exceed the LOS C standard. It is noted that Caltrans, in cooperation with the City of Santa Maria, is studying an operational improvement project to address this existing deficiency (see Mitigation Measures for more details).

Table 4
Baseline Operations – Intersections – Option 1

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS(a)	Delay	LOS(a)
US 101 NB/Refugio Road	1-Way Stop				
NB Left Turn		7.3 Sec.	LOS A	7.4 Sec.	LOS A
WB Left+Thru+Right		8.7 Sec.	LOS A	8.9 Sec.	LOS A
Intersection Average:		*8.5 Sec.*	*LOS A*	*8.8 Sec.*	*LOS A*
US 101 SB/Refugio Road	Free Flow	0.0 Sec.	LOS A	0.0 Sec.	LOS A
US 101 NB/Betteravia Road(b)	Signal	17.1 Sec.	LOS B	16.9 Sec.	LOS B
US 101 SB/Betteravia Road(b)	Signal	**48.5 Sec.**	**LOS D**	**>80.0 Sec.**	**LOS F**

(a) LOS based on average delay per vehicle in seconds.

(b) LOS assumes 100% development of Enos Ranchos Specific Plan.

Bolded values exceed LOS C standards.

Project Trip Generation

Trip generation estimates were calculated for the Project based on operational information provided by the applicant. The applicant has indicated that 70 trucks per day will occur as a result of the interim trucking permit, which equates to about 3 trucks per hour (70 trucks per day / 24 hours = 3 trucks per hour). Table 5 shows the trip generation forecasts for the Project.

Table 5
Project Trip Generation

Component	Number Per Day	Trip Generation				
		ADT	AM Peak		PM Peak	
			In	Out	In	Out
Trucks(a)	70	140	3	3	3	3

(a) ADT assumes 1 inbound + 1 outbound trip per truck. AM and PM peak hour trip generation assumes an average of 3 trucks inbound and 3 trucks outbound per hour.

As shown in Table 5, the Project is forecast to generate 140 average daily trips, with 6 trips occurring during the AM peak hour (3 inbound + 3 outbound) and 6 trips occurring during the PM peak hour (3 inbound + 3 outbound).

As required by County and Caltrans policies, the following impact analysis focuses on potential impacts during weekday AM and PM peak commuter periods since traffic volumes are highest during these periods. Trucks are larger and accelerate more slowly than passenger cars and thus have a greater effect on traffic flow than passenger cars. As recommended in the Highway Capacity Manual, each truck trip was converted to "Passenger Car Equivalents" (PCEs) for the impact analysis. Pursuant to the Highway Capacity Manual, each truck trip was converted to 2 PCEs for areas with flat terrain and 3 PCEs for areas with rolling terrain.

Baseline + Project Impacts – US 101

Table 6 lists the Baseline (2018) levels of service for the US 101 segments along the Option 1 truck route, the number of truck trips added to each segment (in PCEs), and the significance of Project-added traffic based on the County and Caltrans LOS C standard. As shown, the minor amount of Project traffic (6 to 9 northbound PCEs per hour + 6 to 9 southbound PCEs per hour) would not significantly impact the segments of US 101 between the LFC site and the Phillips 66 terminal.

Table 6
Baseline + Project Impacts – US 101 – Option 1

US 101 Segment	Baseline LOS		Project Added PCEs(a)		Significant Impact?
	Northbound	Southbound	Northbound	Southbound	
Refugio Road I/C to SR 1 I/C(b)	LOS B	LOS A	9	9	NO
SR 1 I/C to SR 246 I/C(b)	LOS A	LOS A	9	9	NO
SR 246 I/C to Clark Avenue I/C(b)	LOS B	LOS A	9	9	NO
Clark Avenue I/C to Santa Maria Way I/C(c)	LOS B	LOS B	6	6	NO
Santa Maria Way I/C to Betteravia Road I/C(c)	LOS B	LOS B	6	6	NO

(a) Project Added PCEs: 2 PCEs per truck for flat terrain; 3 PCEs per truck for rolling terrain.
(b) Rolling terrain.
(c) Flat terrain.

Baseline + Project Impacts – County Roadways

Table 7 lists the Baseline traffic volumes and levels of service for the County roadway segments along the Option 1 truck route, the number of trips added to each segment by the Project, and the significance of Project-added traffic based on the County's LOS C standard. As shown in Table 7, traffic generated by the Project would not significantly impact the County roadway segments between the LFC site and the Phillips 66 terminal.

Table 7
Baseline + Project Impacts – County Roadways – Option 1

County Roadway Segment	Baseline ADT/LOS	Project Added PCEs(a)	Baseline + Project ADT/LOS	Significant Impact?
Calle Real – east of Refugio Rd I/C	160/LOS A	280	440/LOS A	NO
Betteravia Rd – east of US 101 I/C	9,300/LOS A	280	9,580/LOS A	NO
Rosemary Rd – north of Betteravia Rd	1,800/LOS A	280	2,080/LOS A	NO
Battles Rd – east of Rosemary Rd	590/LOS A	280	870/LOS A	NO

(a) Project Added PCEs: 2 PCEs per truck trip (flat terrain).

Baseline + Project Impacts – Intersections

Tables 8 and 9 compare the Baseline and Baseline + Project levels of service for the key intersections along the Option 1 truck route; along with the number of trips (PCEs) added to each intersection by the Project and the significance of Project-added traffic based on the LOS C standard.

Table 8
Baseline + Project Impacts – Intersections – AM Peak Hour – Option 1

	Delay / LOS		Project Added	
Intersection	**Baseline**	**Baseline + Project**	**PCEs(a)**	**Significant Impact?**
US 101 NB/Refugio Road			12	NO
NB Left Turn	7.3 Sec./LOS A	7.3 Sec./LOS A		
WB Left+Thru+Right	8.7 Sec./LOS A	8.8 Sec./LOS A		
Intersection Average	*8.5 Sec./LOS A*	*8.6 Sec./LOS A*		
US 101 SB/Refugio Road	0.0 Sec./LOS A	0.0 Sec./LOS A	6	NO
US 101 NB/Betteravia Road	18.1 Sec./LOS B	18.2 Sec./LOS B	12	NO
US 101 SB/Betteravia Road	**53.1 Sec./LOS D**	**53.2 Sec./LOS D**	6	NO

(a) Project Added PCEs: 2 PCEs per truck (flat terrain).
Bolded values exceed LOS C standards.

As shown in Table 8, Project traffic would not significantly impact the key intersections between the LFC site and the Phillips 66 terminal during the AM peak hour period. The US 101 SB Ramps/Betteravia Road intersection currently operates at LOS D during the AM peak hour and would operate at LOS D with Project traffic, which exceed the LOS C standard. The Project would add 6 trips to the intersection (3 trucks = 6 PCEs) during the AM peak hour, which is less than the County's significant impact threshold (impact threshold = 15 or more trips for intersections forecast to operate at LOS D).

Table 9
Baseline + Project Impacts – Intersections – PM Peak Hour – Option 1

Intersection	Delay / LOS		Project Added	
	Baseline	Baseline + Project	PCEs(a)	Significant Impact?
US 101 NB/Refugio Road NB Left Turn WB Left+Thru+Right *Intersection Average*	 7.4 Sec./LOS A 8.9 Sec./LOS A *8.8 Sec./LOS A*	 7.4 Sec./LOS A 8.9 Sec./LOS A *8.8 Sec./LOS A*	12	NO
US 101 SB/Refugio Road	0.0 Sec./LOS A	0.0 Sec./LOS A	6	NO
US 101 NB/Betteravia Road	16.9 Sec./LOS B	17.0 Sec./LOS B	12	NO
US 101 SB/Betteravia Road	**>80 Sec./LOS F**	**>80 Sec./LOS F**	**6**	**YES**

(a) Project Added PCEs: 2 PCEs per truck (flat terrain).
Bolded values exceed LOS C standards.

As shown in Table 9, Project traffic would not significantly impact most of the key intersections between the LFC site and the Phillips 66 terminal during the PM peak hour period. The US 101 SB Ramps/Betteravia Road intersection currently operates at LOS F during the PM peak hour and would operate at LOS F with Project traffic, which exceeds the LOS C standard. The Project would add 6 trips to the intersection (3 trucks = 6 PCEs) during the PM peak hour, which exceeds the County's significant impact threshold (impact threshold = more than 5 trips for intersections forecast to operate at LOS F). The Mitigation Measures section of this report outlines measures required to mitigate this potential impact.

Phillips 66 Terminal Capacity

The Phillips 66 station operates 24 hours/day, 7 days/week, including holidays and weekends. Peak hours at the station are from 7 AM to 4 PM daily and there is lighting for truck unloading at night. Phillips 66 has indicated that the station handled about 100 trucks per day before the pipeline shutdown and the station currently handles about 130 trucks per day. The facility is not limited by permits to a specific number of trucks it can receive. The single storage tank is limited to 21,859 barrels/day (approximately 145 truckloads/day) of oil throughput by the Santa Barbara County Air Pollution District (APCD) permit to operate. If the current 130 truck/day throughput is sustained, an additional 15 trucks/day could be accommodated under the existing APCD permit. Because the station is limited to a certain throughput (with or without the proposed Project), the Project would not change the potential traffic volumes to/from the station.

There are 5 truck unloading lanes within the Phillips 66 station, which typically accommodate inbound truck traffic throughout the day. However, queueing of trucks sometimes occurs on Battles Road for short periods when there are surges of inbound trucks adjacent to the station's entry point. Since the station is limited to a certain throughput (with or without the proposed Project), the Project would not change the potential for trucks queueing along Battles Road adjacent to the station's entry. Although unrelated to the Project, Phillips 66 is requesting a permit to add an additional lane to receive trucks to increase the on-site truck capacity and reduce the potential for queueing on Battle Road.

Battles Road is about 24 feet wide and paved between Rosemary Road and the Phillips 66 station; and a dirt road west of the Phillips 66 station. The segment between Rosemary Road and the Phillips 66 station is mostly used by traffic to/from the Phillips 66 station, with some minor use of the road for access to the adjacent agricultural lands. Traffic volumes between Rosemary Road and the Phillips 66 station are low – about 590 vehicles per day. The road is flat and straight, which provides good sight distances for road users. Given the existing conditions, trucks queued on Battles Road waiting to enter the station are safely passed by vehicles that maneuver around truck queues.

Accident Analysis

Accident histories were evaluated to determine the relative safety of the highway facilities along the proposed haul routes. Accident data was obtained from Caltrans for the most currently available three-year period, which is from January 1, 2015 through December 31, 2017 (see Caltrans accident data in the Technical Appendix).

It is important to note that Caltrans uses accident data as a screening tool to identify potential safety problems. The rate of accidents was calculated for each facility and then compared to California statewide averages for similar facilities to identify potential safety issues. By nature, accident rates experienced on a facility are often higher than the statewide average rate for similar facilities since the statewide averages are comprised of lower-than-average rates + higher-than-average rates (lower + higher = average). If the accident rate experienced on a facility is higher than the statewide average, the Caltrans significance test is performed to determine if the number of accidents that occurred on the facility is statistically significant. If the number of accidents experienced is statistically significant, more detailed safety investigations are performed by Caltrans to determine if there are accident patterns that can be corrected by changing design features of the facility (e.g. widen traffic lanes, widen roadway shoulders, change roadway curvatures, add signs, install traffic signals, etc.).

The following tables list the accident rates for the State facilities along the Option 1 truck route. The text following each table discusses the rate of accidents for each facility and the need for detailed safety investigations to identify correctable accident patterns.

Table 10
Accident Rates
US 101 – Refugio Rd I/C to Betteravia I/C

US 101 Segment	Accident Rate(a)	Statewide Average Rate(b)
Refugio Rd I/C to SR 246 I/C	0.67 per mvm	0.53 per mvm
SR 246 I/C to Clark Ave I/C	0.29 per mvm	0.51 per mvm
Clark Ave I/C to Betteravia Rd I/C	0.36 per mvm	0.43 per mvm

(a) Actual rate of accidents per million vehicle miles.
(b) California statewide average rate for similar facilities.

As shown in Table 10, the rate of accidents on US 101 between the Refugio Road I/C and the SR 246 I/C in Buellton is slightly higher than the California statewide average for similar facilities (Accident Rate = 0.67; Statewide Avenue Rate = 0.53). This segment of US 101 currently carries about 2,242 vehicles per hour during the peak hour period. The Project would add 6 trucks per hour to this segment during the peak hour period (3 northbound + 3 southbound). This traffic addition equates to an increase of about 3/10th of 1%, which is considered an insignificant impact.

The Caltrans significance test was performed to determine if the number of accidents that occurred on US 101 between the Refugio Road I/C and the SR 246 I/C in Buellton is significant (a worksheet showing the Caltrans formula and the significance test is included in the Technical Appendix). The results show that the number of accidents required to be statistically significant is 361 accidents within the 3-year period. The number of accidents that occurred during the 3-year period was 395, which is statistically significant. Further investigation of the accident history by Caltrans is warranted since the number of accidents that occurred is more than the Caltrans criteria for significance (see Mitigation Measures).

Table 11
Accident Rates
US 101/Refugio Road I/C

Ramp	Accident Rate(a)	Statewide Average Rate(b)
US 101 NB On-Ramp	3.85 per mv	0.50 per mv
US 101 NB Off-Ramp	0.00 per mv	0.98 per mv
US 101 SB On-Ramp	0.00 per mv	0.43 per mv
US 101 SB Off-Ramp	0.00 per mv	1.48 per mv

(a) Actual rate of accidents per million vehicles.
(b) California statewide average rate for similar facilities.

As shown in Table 11, the US 101 northbound on-ramp at the Refugio Road I/C has an accident rate of 3.85 accidents per million vehicles and the statewide average is 0.50 accidents per million vehicles. There was 1 accident on this ramp during the 3-year period. The Caltrans significance test shows that the number of accidents required to be statistically significant is 2 accidents within the 3-year period. Thus, the number of accidents that occurred is not statistically significant.

Table 12
Accident Rates
US 101/Betteravia Road I/C

Ramp	Accident Rate(a)	Statewide Average Rate(b)
US 101 NB On-Ramp	0.55 per mv	0.60 per mv
US 101 NB Off-Ramp	0.76 per mv	0.92 per mv
US 101 SB On-Ramp	0.42 per mv	0.60 per mv
US 101 SB Off-Ramp	2.55 per mv	0.92 per mv

(a) Actual rate of accidents per million vehicles.
(b) California statewide average rate for similar facilities.

As shown in Table 12, the rate of accidents on the US 101 ramps at the Betteravia Road I/C are lower than the California statewide averages for similar facilities – except for the US 101 southbound off-ramp. The Project would not add traffic to the US 101 southbound off-ramp.

The US 101 southbound off-ramp has an accident rate of 2.55 accidents per million vehicles and the statewide average is 0.92 accidents per million vehicles. The number of accidents required to be statistically significant is 21 accidents within the 3-year period. The number of accidents that occurred during the 3-year period was 28, which is statistically significant. Further investigation by Caltrans is warranted since the number of accidents that occurred is more than the Caltrans criteria for significance.

PROJECT IMPACTS – OPTION 2 – TRUCK TO PLAINS PENTLAND TERMINAL

Existing Street Network

The street network that serves Option 2 includes State highways and County roads. The following text provides a brief description of the street network for Option 2.

US 101 is a north-south freeway that traverses Santa Barbara County and beyond. US 101 contains 2 lanes in each direction between the Refugio Road I/C near the LFC site and the Santa Maria Way I/C in Santa Maria. US 101 contains 3 lanes in each direction between the Santa Maria Way I/C and the SR 166 I/C in San Luis Obispo County.

SR 166 is a 2-lane highway that extends between US 101 in San Luis Obispo County and I5 in Kern County.

Basic School Road is a 2-lane collector road that extends north and south of SR 166 in Kern County. The Plains Pentland Terminal is located on Basic School Road just south of SR 166.

Baseline Traffic Operations

Figures 3a and 3b present the Baseline traffic volumes for the key roadway segments and intersections along the Option 2 truck route. Baseline traffic volumes and levels of service for the key roadways and intersections along the Option 2 trucking route are presented below.

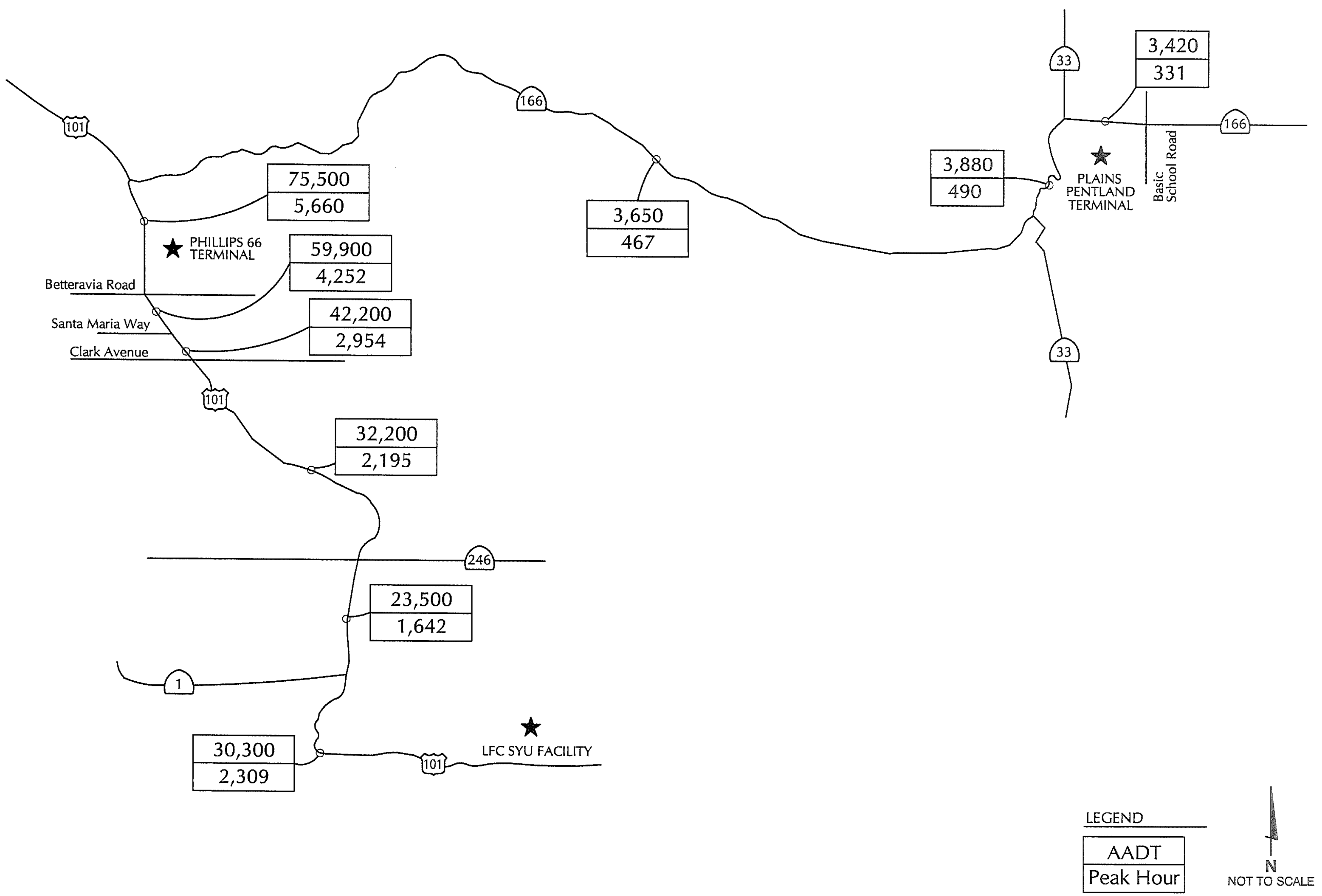
US 101. Table 13 lists the Baseline (2018) traffic volumes and levels of service for the US 101 segments along the Option 2 truck route. As shown, the US 101 segments along the Option 2 truck route currently operate at LOS A or LOS B, which meet the County and Caltrans LOS C standard.

Table 13
Baseline Operations – US 101 – Option 2

	Traffic Volumes			Highway Characteristics			Density / LOS(c)	
		Peak Hour(b)						
US 101 Segment	**AADT(a)**	**Northbound**	**Southbound**	**# Lanes**	**Terrain**	**Area**	**Northbound**	**Southbound**
Refugio Road I/C to SR 1 I/C	30,300	1,560	749	4	Rolling	Rural	14.1/LOS B	6.7/LOS A
SR 1 I/C to SR 246 I/C	23,500	987	655	4	Rolling	Rural	9.5/LOS A	6.3/LOS A
SR 246 I/C to Clark Avenue I/C	32,200	1,208	987	4	Rolling	Rural	11.1/LOS B	9.1/LOS A
Clark Avenue I/C to Santa Maria Way I/C	42,200	1,591	1,363	4	Flat	Urban	13.2/LOS B	11.3 LOS B
Santa Maria Way I/C to Betteravia Road I/C	59,900	2,295	1,957	6	Flat	Urban	13.6/LOS B	11.6/LOS B
Betteravia Road I/C to SR 166 I/C	75,500	2,892	2,768	6	Flat	Urban	16.8/LOS B	16.1/LOS B

(a) AADT = Average Annual Daily Traffic volume.
(b) Peak Hour = Highest 1-hour period during the 24-hour period.
(c) LOS based on density. Density = passenger cars per mile per lane.

SR 166. Table 14 lists the Baseline traffic volumes and levels of service for the SR 166 segments along the Option 2 truck route. SR 166 is a two-lane highway between US 101 and Basic School Road. Levels of service were calculated for SR 166 using the two-lane highway operations methods outlined in the Highway Capacity Manual. Levels of service for two-lane highways are based on average travel speed and percent-time-spent-following (ability to pass). As shown in Table 14, the SR 166 segments along the Option 2 truck route currently operate at LOS B or LOS C, which meet the Caltrans LOS C standard.

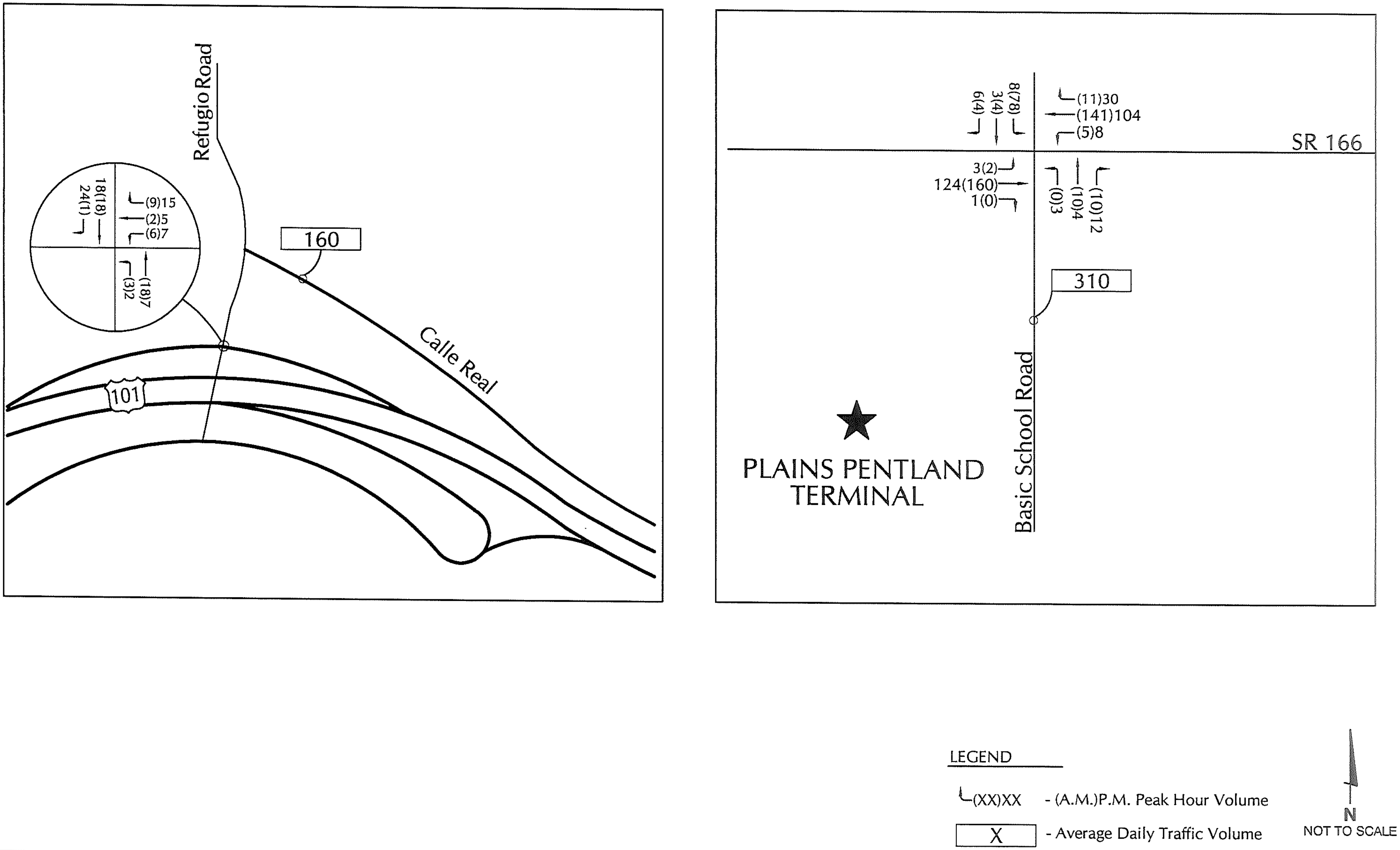


ASSOCIATED TRANSPORTATION ENGINEERS

BASELINE TRAFFIC VOLUMES - TRUCK ROUTE OPTION 2

FIGURE 3a

EKM - ATE#17092



Associated
Transportation
Engineers

BASELINE TRAFFIC VOLUMES - TRUCK ROUTE OPTION 2

FIGURE 3b

EKM - ATE#17092

Table 14
Baseline Operations – SR 166 – Option 2

	Traffic Volumes		Highway Characteristics		LOS(a)		
Highway Segment	AADT	Peak Hour	# Lanes	Terrain	ATS	PTSF	LOS
US 101 I/C to SR 33 South Junction	3,650	467	2	Rolling	47.6 MPH	59.1%	LOS C
SR 33 South Junction to SR 33 North Junction	3,880	490	2	Rolling	47.4 MPH	60.6%	LOS C
SR 33 North Junction to Basic School Road	3,420	331	2	Flat	50.6 MPH	45.4%	LOS B

(a) LOS based on ATS (average travel speed) and PTSF (percent-time-spent-following).

County Roadways. Table 15 lists the roadway classifications, capacities, daily traffic volumes, and levels of service for the County roadways along the Option 2 truck route. As shown, the County roadway segments along the Option 2 truck route currently operate at LOS A, which indicates very good operations and meet the LOS C standard.

Table 15
Baseline Operations – County Roadways – Option 2

		Average Daily Traffic		
County Roadway Segment	Classification	Capacity	Volume	LOS
Calle Real – east of Refugio Rd I/C	2-Lane Collector	11,800	160	LOS A
Basic School Rd – south of SR 166	2-Lane Collector	11,800	310	LOS A

LOS based on standard engineering roadway design capacities.

Intersections. Table 16 presents the Baseline AM and PM peak hour levels of service for the key intersections along the Option 2 truck route. As shown, all of the key intersections along the Option 2 truck route currently operate at LOS C or better during the AM and PM peak hours which meet the County and Caltrans LOS C standard.

Table 16
Baseline Operations – Intersections – Option 2

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
US 101 NB/Refugio Road					
NB Left Turn	1-Way Stop	7.3 Sec.	LOS A	7.4 Sec.	LOS A
WB Left+Thru+Right		8.7 Sec.	LOS A	8.9 Sec.	LOS A
Intersection Average:		*8.5 Sec.*	*LOS A*	*8.8 Sec.*	*LOS A*
US 101 SB/Refugio Road	Free Flow	0.0 Sec.	LOS A	0.0 Sec.	LOS A
US 101 NB/SR 166	All-Way Stop	11.3 Sec.	LOS B	23.6 Sec.	LOS C
US 101 SB/SR 166					
WB Left Turn	1-Way Stop	9.5 Sec.	LOS A	9.4 Sec.	LOS A
SB Left+Thru+Right		17.4 Sec.	LOS C	26.1 Sec.	LOS D
Intersection Average:		*7.9 Sec.*	*LOS A*	*13.9 Sec.*	*LOS B*
SR 166/Basic School Road					
EB Left Turn	2-Way Stop	7.5 Sec.	LOS A	7.7 Sec.	LOS A
WB Left Turn		7.7 Sec.	LOS A	7.6 Sec.	LOS A
NB Left+Thru+Right		10.5 Sec.	LOS B	10.1 Sec.	LOS B
SB Left+Thru+Right		12.5 Sec.	LOS B	10.9 Sec.	LOS B
Intersection Average:		*11.9 Sec.*	*LOS B*	*9.8 Sec.*	*LOS A*

LOS based on average delay per vehicle in seconds.

Project Trip Generation

The trip generation estimates for Option 1 and 2 are identical (see Table 5). The Project is forecast to generate 140 average daily trips, with 6 trips occurring during the AM peak hour (3 inbound + 3 outbound) and 6 trips occurring during the PM peak hour (3 inbound + 3 outbound).

Baseline + Project Impacts – US 101

Table 17 lists the Baseline levels of service for the US 101 segments along the Option 2 truck route, the number of truck trips added to each segment (in PCEs), and the significance of project-added traffic based on the County and Caltrans LOS C standards. As shown, the minor amount of Project traffic (6 to 9 northbound PCEs per hour + 6 to 9 southbound PCEs per hour) would not significantly impact the segments of US 101 between the LFC site in Santa Barbara County and the US 101/SR 166 I/C in San Luis Obispo County.

Table 17
Baseline + Project Impacts – US 101 – Option 2

US 101 Segment	Baseline LOS		Project Added PCEs(a)		Significant Impact?
	Northbound	Southbound	Northbound	Southbound	
Refugio Road I/C to SR 1 I/C(b)	LOS B	LOS A	9	9	NO
SR 1 I/C to SR 246 I/C(b)	LOS A	LOS A	9	9	NO
SR 246 I/C to Clark Avenue I/C(b)	LOS B	LOS A	9	9	NO
Clark Avenue I/C to Santa Maria Way I/C(c)	LOS B	LOS B	6	6	NO
Santa Maria Way I/C to Betteravia Road I/C(c)	LOS B	LOS B	6	6	NO
Betteravia Road I/C to SR 166 I/C(c)	LOS B	LOS B	6	6	NO

(a) Project Added PCEs: 2 PCEs per truck for flat terrain; 3 PCEs per truck for rolling terrain.
(b) Rolling terrain.
(c) Flat terrain.

Baseline + Project Impacts – SR 166

Table 18 lists the Baseline levels of service for the SR 166 segments along the Option 2 truck route, the number of truck trips added to each segment (in PCEs), and the significance of project-added traffic based on the LOS C standard.

Table 18
Baseline + Project Impacts – SR 166 – Option 2

Highway Segment	Baseline LOS	Project Added PCEs	Significant Impact?
US 101 I/C to SR 33 South Junction(b)	LOS C	18	NO
SR 33 South Junction to SR 33 North Junction(b)	LOS C	18	NO
SR 33 North Junction to Basic School Road(c)	LOS B	12	NO

(a) Project Added PCEs: 2 PCEs per truck for flat terrain; 3 PCEs per truck for rolling terrain.
(b) Rolling terrain.
(c) Flat terrain.

As shown, the minor amount of Project traffic (12 to 18 PCEs) would not significantly impact the segments of SR 166 between the US 101/SR 166 I/C in San Luis Obispo County and Basic School Road in Kern County.

Baseline + Project Impacts – County Roadways

Table 19 lists the Baseline traffic volumes and levels of service for the County roadway segments along the Option 2 truck route, the number of trips added to each segment by the Project, and the significance of project-added traffic based on County LOS C standards. As shown, traffic generated by the Project would not significantly impact the County roadway segments between the LFC site and the Plains Pentland terminal.

Table 19
Baseline + Project Impacts – County Roadways – Option 2

County Roadway Segment	Baseline ADT/LOS	Project Added PCEs(a)	Baseline + Project ADT/LOS	Significant Impact?
Calle Real – east of Refugio Rd I/C	160/LOS A	280	440/LOS A	NO
Basic School Rd – south of SR 166	310/LOS A	280	590/LOS A	NO

(a) Project Added PCEs: 2 PCEs per truck trip (flat terrain).

Baseline + Project Impacts – Intersections

Tables 20 and 21 present the Baseline and Baseline + Project levels of service for the key intersections along the Option 2 truck route, the number of trips added to each intersection by the Project, and the significance of project-added traffic based on the Caltrans and County LOS C standard. As shown, the minor amount of peak hour traffic generated by the Project would not significantly impact the key intersections between the LFC site and the Plains Pentland terminal.

Table 20
Baseline + Project Impacts – Intersections – AM Peak Hour – Option 2

Intersection	Delay / LOS		Project Added	
	Baseline	Baseline + Project	PCEs(a)	Significant Impact?
US 101 NB/Refugio Road			12	NO
NB Left Turn	7.3 Sec./LOS A	7.3 Sec./LOS A		
WB Left+Thru+Right	8.7 Sec./LOS A	8.8 Sec./LOS A		
Intersection Average:	*8.5 Sec.*/LOS A	*8.6 Sec./LOS A*		
US 101 SB/Refugio Road	0.0 Sec./LOS A	0.0 Sec./LOS A	6	NO
US 101 NB/SR 166	11.3 Sec./LOS B	11.4 Sec./LOS B	12	NO
US 101 SB/SR 166			6	NO
WB Left Turn	9.5 Sec./LOS A	9.6 Sec./LOS A		
SB Left+Thru+Right	17.4 Sec./LOS C	17.7 Sec./LOS C		
Intersection Average:	*7.9 Sec.*/LOS A	*8.0 Sec.*/LOS A		
SR 166/Basic School Road			12	NO
EB Left Turn	7.5 Sec./LOS A	7.5 Sec./LOS A		
WB Left Turn	7.7 Sec./LOS A	7.7 Sec./LOS A		
NB Left+Thru+Right	10.5 Sec./LOS B	10.8 Sec./LOS B		
SB Left+Thru+Right	12.5 Sec./LOS B	12.6 Sec./LOS B		
Intersection Average:	*11.9 Sec.*/LOS B	*11.9 Sec.*/LOS B		

(a) Project Added PCEs assumes 2 PCEs per trucks (flat terrain).

Table 21
Baseline + Project Impacts – Intersections – PM Peak Hour – Option 2

Intersection	Delay / LOS		Project Added	
	Baseline	Baseline + Project	PCEs(a)	Significant Impact?
US 101 NB/Refugio Road			12	NO
NB Left Turn	7.4 Sec./LOS A	7.4 Sec./LOS A		
WB Left+Thru+Right	8.9 Sec./LOS A	8.9 Sec./LOS A		
Intersection Average:	*8.8 Sec.*/LOS A	*8.8 Sec./LOS A*		
US 101 SB/Refugio Road	0.0 Sec./LOS A	0.0 Sec./LOS A	6	NO
US 101 NB/SR 166	23.6 Sec./LOS C	23.8 Sec./LOS C	12	NO
US 101 SB/SR 166			6	NO
WB Left Turn	9.4 Sec./LOS A	9.5 Sec./LOS A		
SB Left+Thru+Right	26.1 Sec./LOS D	26.6 Sec./LOS D		
Intersection Average:	*13.9 Sec.*/LOS B	*14.0 Sec.*/LOS B		
SR 166/Basic School Road			12	NO
EB Left Turn	7.7 Sec./LOS A	7.7 Sec./LOS A		
WB Left Turn	7.6 Sec./LOS A	7.6 Sec./LOS A		
NB Left+Thru+Right	10.1 Sec./LOS B	10.6 Sec./LOS B		
SB Left+Thru+Right	10.9 Sec./LOS B	10.9 Sec./LOS B		
Intersection Average:	*9.8 Sec.*/LOS A	*10.0 Sec.*/LOS A		

(a) Project Added PCEs assumes 2 PCEs per trucks (flat terrain).

Plains Pentland Terminal Capacity

The Plains Pentland station operates 24 hours/day, 7 days/week, including holidays and weekends. Peak hours at the station are from 7 AM to 4 PM daily and there is lighting for truck unloading at night. The facility currently handles approximately 100 trucks/day and is permitted to handle up to 210 trucks/day. Thus, the Plains Pentland station has the capacity to accommodate the 70 trucks per day from the LFC site.

Accident Analysis

The following tables list the accident rates for the State facilities along the Option 2 truck route for the three-year period from January 1, 2015 through December 31, 2017. The text following each table discuss the rate of accidents for each facility and the need for detailed safety investigations to identify correctable accident patterns.

Table 22
Accident Rates
US 101 – Refugio Rd I/C to SR 166 I/C

US 101 Segment	Accident Rate(a)	Statewide Average Rate(b)
Refugio Rd I/C to SR 246 I/C	0.67 per mvm	0.53 per mvm
SR 246 I/C to Clark Ave I/C	0.29 per mvm	0.51 per mvm
Clark Ave I/C to Betteravia Rd I/C	0.36 per mvm	0.43 per mvm
Betteravia Rd I/C to SB/SLO County Line(c)	0.71 per mvm	0.55 per mvm
SB/SLO County Line to SR 166 I/C(c)	0.83 per mvm	0.51 per mvm

(a) Actual rate of accidents per million vehicle miles.
(b) California statewide average rate for similar facilities.
(c) Caltrans accident data is segregated by county. Thus, two segments listed for US 101 between Betteravia Road I/C and SR 166 I/C.

As shown in Table 22, the rate of accidents on US 101 between the Refugio Road I/C and the SR 246 I/C in Buellton is slightly higher than the California statewide average for similar facilities (Accident Rate = 0.67; Statewide Avenue Rate = 0.53). This segment currently carries about 2,242 vehicles per hour during the peak hour period. The Project would add 6 trucks per hour to this segment during the peak hour period (3 northbound + 3 southbound). This traffic addition equates to an increase of about 3/10th of 1%, which is considered an insignificant impact. The Caltrans significance test shows that the number of accidents required to be statistically significant is 361 accidents within the 3-year period and the number that occurred was 395, which is statistically significant and will require further investigation by Caltrans.

Table 22 also shows that the rate of accidents on the US 101 segments between the Betteravia Road I/C and the SR 166 I/C are also higher than the California statewide average for similar facilities (see Table 22). This segment currently carries about 5,660 vehicles per hour during the peak hour period. The Project would add 6 trucks per hour to this segment during the peak hour period (3 northbound + 3 southbound). This traffic addition equates to an increase of about 1/10th of 1%, which is considered an insignificant impact. The Caltrans significance test shows that the number of accidents on the segment between the Betteravia Road I/C and the Santa Barbara County-San Luis Obispo County line is statistically significant (222 accidents occurred and 208 accidents or more meet significance test) and the number of accidents on the short segment between the Santa Barbara County-San Luis Obispo County line and SR 166 I/C (0.8 miles) is statistically significant (53 accidents occurred and 48 accidents or more meet significance test). Thus, further investigation by Caltrans will occur (see Mitigation Measures).

Table 23
Accident Rates
SR 166-SR 33 – US 101 I/C to Basic School Road

SR 166-SR 33 Segment(a)	Accident Rate(b)	Statewide Average Rate(c)
SR 166 - US 101 I/C to SR 33 South Junction	0.82 per mvm	0.70 per mvm
SR 33 – SR 166 South Junction to SLO/Kern County Line	1.07 per mvm	0.68 per mvm
SR 33 - SLO/Kern County Line to SR 166 North Junction	0.83 per mvm	0.98 per mvm
SR 166 – SR 33 North Junction to Basic School Road	0.80 per mvm	0.76 per mvm

(a) Caltrans accident data is segregated by county and route number. Thus, four segments listed for SR 166 between US 101 I/C and Basic School Road.
(b) Actual rate of accidents per million vehicle miles.
(c) California statewide average rate for similar facilities.

As shown in Table 23, the rate of accidents on SR 166 between the US 101 I/C and the SR 33 South Junction is slightly higher than the California statewide average for similar facilities (Accident Rate = 0.82; Statewide Avenue Rate = 0.70). The Caltrans significance test shows that the number of accidents required to be statistically significant is 175 accidents within the 3-year period and the number that occurred was 167 accidents, which is statistically insignificant.

Table 23 also shows that the rate of accidents on SR 33 between the SR 166 South Junction and the SLO Kern County line is higher than the California statewide average for similar facilities (Accident Rate = 1.07; Statewide Avenue Rate = 0.68). The Caltrans significance test shows that the number of accidents required to be statistically significant is 14 accidents within the 3-year period and the number that occurred was 10 accidents, which is statistically insignificant.

Table 23 also shows that the rate of accidents on SR 166 between the SR 33 North Junction and Basic School Road is slightly higher than the California statewide average for similar facilities (Accident Rate = 0.80; Statewide Avenue Rate = 0.76). The Caltrans significance test shows that the number of accidents required to be statistically significant is 23 accidents within the 3-year period and the number that occurred was 13 accidents, which is statistically insignificant.

Table 24
Accident Rates
US 101/Refugio Road I/C

Ramp	Accident Rate(a)	Statewide Average Rate(b)
US 101 NB On-Ramp	3.85 per mv	0.50 per mv
US 101 NB Off-Ramp	0.00 per mv	0.98 per mv
US 101 SB On-Ramp	0.00 per mv	0.43 per mv
US 101 SB Off-Ramp	0.00 per mv	1.48 per mv

(a) Actual rate of accidents per million vehicles.
(b) California statewide average rate for similar facilities.

As shown in Table 24, the rate of accidents on the US 101 northbound on-ramp at the US 101/Refugio Road I/C is higher than the California statewide average for similar facilities (Accident Rate = 3.85; Statewide Avenue Rate = 0.50). The Caltrans significance test shows that the number of accidents required to be statistically significant is 2 accidents within the 3-year period and the number that occurred was 1 accidents, which is statistically insignificant.

Table 25
Accident Rates
US 101/SR 166 I/C

Ramp	Accident Rate(a)	Statewide Average Rate(b)
US 101 NB On-Ramp	0.00 per mv	0.47 per mv
US 101 NB Off-Ramp	0.00 per mv	0.68 per mv
US 101 SB On-Ramp	0.67 per mv	0.60 per mv
US 101 SB Off-Ramp	0.88 per mv	0.92 per mv

(a) Actual rate of accidents per million vehicles.
(b) California statewide average rate for similar facilities.

As shown in Table 25, the accident rate on the US 101 southbound on-ramp at the US 101/SR 166 I/C is slightly higher than the California statewide average for similar facilities (Accident Rate = 0.67; Statewide Avenue Rate = 0.60). The Caltrans significance test shows that the number of accidents required to be statistically significant is 11 accidents within the 3-year period and the number that occurred was 5 accidents, which is statistically insignificant.

Table 26
Accident Rates
SR 166/Basic School Road Intersection

Intersection	Accident Rate(a)	Statewide Average Rate(b)
SR 166/Basis School Road	0.53 per mv	0.16 per mv

(a) Actual rate of accidents per million vehicles.
(b) California statewide average rate for similar facilities.

As shown in Table 26, the rate of accidents at the SR 166/Basic School Road intersection is higher than the California statewide average for similar intersections (Accident Rate = 0.53; Statewide Avenue Rate = 0.16). The Caltrans significance test shows that the number of accidents required to be statistically significant is 4 accidents within the 3-year period and the number that occurred was 2 accidents, which is statistically insignificant.

POTENTIAL CONSTRUCTON IMPACTS

The applicant has indicated that 6 to 7 weeks of construction activity would be required on the LFC site prior to commencement of the trucking operation. The construction workforce estimate includes up to 30 workers during the construction period and up to 12 deliveries per day. Table 27 shows the trip generation estimates for the construction period assuming the peak number of workers and deliveries.

Table 27
Project Construction – Trip Generation Forecasts – Peak Day

Component	Number Per Day	Shift	Trip Generation				
			ADT	AM Peak		PM Peak	
				In	Out	In	Out
Employee Trips(a)	30	6:00 AM-4:00 PM	60	0	0	0	30
Deliveries & Miscellaneous Trips(b)	12	NA	24	1	1	1	1
Totals			**84**	**1**	**1**	**1**	**31**

(a) ADT assumes 2 ADT per employee vehicle. Peak hour trips based on employee shifts (6:00 AM to 4:00 PM)

(b) Deliveries & Miscellaneous Trips assumes one inbound + one outbound trip per delivery. AM and PM peak hour trip generation assumes 10% of trips during each peak hour.

As shown in Table 27, peak construction traffic is forecast at 84 ADT, with 2 trips occurring during the AM peak hour (1 inbound + 1 outbound) and 32 trips occurring during the PM peak hour (1 inbound + 31 outbound). As shown in Table 2, US 101 currently operates at LOS A-B adjacent to the US 101/Refugio Road I/C during the peak hour periods. Construction traffic added to US 101 (2 AM trips and 32 PM trips) would not degrade levels of service and therefore not impact operations on US 101. Similarly, the US 101/Refugio Road I/C currently operates at LOS A during peak hours (see Table 4). Construction traffic added to US 101/Refugio Road I/C during the AM and PM peak hours would not degrade levels of service and therefore not impact operations at the interchange.

CUMULATIVE ANALYSIS

Full Restart Preparations for Pipeline Readiness

The applicant has indicated that there will be some preparation work on the Project site for the restart of the pipeline operation and that the preparation work would overlap with the interim trucking operation. The preparation work will require 15 additional employees during the peak phase of the work effort. Table 28 shows the trip generation estimates for the workers and deliveries required during the peak phase of the site preparation work for the pipeline restart.

Table 28
Trip Generation – Full Restart Preparations for Pipeline Readiness

Component	Number Per Day	Shift	Trip Generation				
			ADT	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Employees(a)							
Dayshift	9	6:00 AM-6:00 PM	18	0	0	0	0
Dayshift	4	7:30 AM-4:30 PM	8	4	0	0	4
Nightshift	2	6:00 PM-6:00 AM	4	0	0	2	0
Subtotals	15		30	4	0	2	4
Trucks(b)	4	NA	8	1	0	0	1
Totals			**38**	**5**	**0**	**2**	**5**

(a) ADT = 1 inbound + 1 outbound trip per employee. AM and PM peak hour trips based on employee arrivals/departures during the 7-9 AM and 4-6 PM peak commuter periods.
(b) ADT assumes 1 inbound + 1 outbound trip per truck. AM and PM peak hour trip generation assumes 10% of average daily trips during each peak hour.

As shown, the site preparation work would generate 38 ADT, with 5 trips occurring during the AM peak hour and 7 trips occurring during the PM peak hour.

This traffic would use the segment of Calle Real adjacent to the site as well as the US 101/Refugio Road I/C. The analysis prepared for the Project (both Options) found that the segment of Calle Real adjacent to the site would carry low volumes (440 ADT) and operate at LOS A with Baseline + Project traffic. The cumulative traffic volumes (Baseline + Project + Full Restart Preparations for Pipeline Readiness) are forecast at 478 ADT and the roadway is forecast to operate at LOS A, which meets the County's LOS C standard.

Similarly, the analysis prepared for the Project (both Options) found that the US 101/Refugio Road I/C is forecast to operate at LOS A during the AM and PM peak hour periods with Baseline + Project traffic. The US 101/Refugio Road I/C would also operate at LOS A during the AM and PM peak hour periods with the minor amount of additional traffic generated by the site preparation work (5 AM trips and 7 PM trips), which meets the adopted LOS C standard.

US 101/Betteravia Road I/C

As noted, the baseline traffic forecasts for the US 101/Betteravia Road I/C includes the future traffic that will be generated by full development of the Enos Ranchos Specific Plan, which encompasses a large area located just west of the US 101/Betteravia Road I/C. The following analysis evaluates potential cumulative impacts at the US 101/Betteravia Road I/C assuming development of all of the approved and pending projects located in the Santa Maria area. The approved and pending projects were incorporated into the Santa Maria Traffic Model to forecast cumulative conditions. Project traffic was then added to the cumulative traffic forecasts to evaluate potential cumulative impacts. Table 29 present the Cumulative and Cumulative + Project levels of service, the V/C increases attributed to the Project (Option 1), and the significance of Project traffic based on the County's cumulative impact thresholds.

Table 29
Cumulative Impacts – US 101/Betteravia Road I/C – Option 1

Intersection	Delay / LOS		Project Added	
	Cumulative	Cumulative + Project	V/C(a)	Significant Impact?
AM PEAK HOUR				
US 101 NB/Betteravia Road	16.6 Sec./LOS B	15.2 Sec./LOS B	0.00	NO
US 101 SB/Betteravia Road	**50.9 Sec./LOS D**	**52.2 Sec./LOS D**	0.00	NO
PM PEAK HOUR				
US 101 NB/Betteravia Road	19.8 Sec./LOS B	19.9 Sec./LOS B	0.00	NO
US 101 SB/Betteravia Road	**>80 Sec./LOS F**	**>80 Sec./LOS F**	0.00	NO

(a) Project Added V/C increase based on 2 PCEs per truck (flat terrain).
Bolded values exceed LOS C standards.

As shown in Table 29, the US 101 SB/Betteravia Road intersection is forecast to operate at LOS D during the AM peak hour with Cumulative and Cumulative + Project traffic. The Project (Option 1) would increase the V/C ratio by 0.00, which is less than the County's cumulative impact threshold (threshold = 0.03 for intersections that are forecast at LOS D with cumulative traffic). Similarly, the US 101 SB/Betteravia Road intersection is forecast to operate at LOS F during the PM peak hour with Cumulative and Cumulative + Project traffic. The Project (Option 1) would increase the V/C ratio by 0.00, which is less than the County's cumulative impact threshold (threshold = 0.01 for intersections that are forecast at LOS F with cumulative traffic). The analysis shows that the Project (Option 1) would not significantly impact at the interchange under cumulative conditions.

MITIGATION MEASURES

Option 1 – Truck to Phillips 66 Terminal

The impact analysis found that the Option 1 truck route has the potential to significantly impact the US 101 SB Ramps/Betteravia Road intersection during the PM peak hour period. The intersection currently operates at LOS F during the PM peak hour and the Project would add 6 trips to the intersection during the PM peak hour (3 trucks = 6 PCEs), which exceeds the County's 5-trip threshold for intersections operating at LOS F. The following measure would mitigate this potential impact.

Limit Trucks During PM Peak Hour. Limiting trucks to/from the Phillips 66 site to 2 trucks per hour (2 trucks = 4 PCEs) during the PM peak commuter period (4-6 PM) would mitigate this impact by reducing the Project's traffic additions to less than 5 trips during the PM peak hour (2 trucks = 4 PCEs), which is below the County's 5-trip threshold for intersections that operate at LOS F. This limitation would be required during the period prior to implementation of improvements that are planned by Caltrans and the City of Santa Maria, as described below.

Caltrans, in cooperation with the City of Santa Maria, is currently studying an operational improvement project to address the existing deficiency at the US 101/Betteravia Road I/C. The operational improvements include widening the US 101 SB Off-Ramp to provide a second right-turn lane and installing two new eastbound thru lanes on Betteravia Road at the US 101 SB Ramps/Betteravia Road intersection. The traffic analysis prepared for the operational improvement project shows that the US 101 SB Ramps/Betteravia Road intersection is forecast to operate at LOS B during the PM peak hour with the improvements, which would mitigate the Project's potential impact during the PM peak period. City of Santa Maria staff indicated that the improvement project is currently out to bid and the improvement will be completed in 2019.

Option 2 – Truck to Plains Pentland Terminal

The impact analysis found that the Option 2 truck route would not generate significant impacts based on adopted thresholds. Mitigation measures are therefore not required.

Advisory Mitigation Measure – Option 1 & Option 2

The following facilities have accident rates that are above the statewide average during the 3-year period analyzed in the traffic study (January 1, 2015-December 31, 2017) and the number of accidents that occurred during the 3-year period is statistically significant.

- US 101 – Refugio Road I/C to SR 246 I/C
- US 101 – Betteravia Road I/C to SR 166 I/C
- US 101 SB Off-Ramp @ US 101/Betteravia Road I/C

The impact analysis found that the minor amount of Project traffic would not significantly impacts these facilities. Nonetheless, it is recommended that Caltrans be notified of these locations where the accident rates are above the statewide average and the number of accidents is statistically significant. Caltrans continually monitors accidents and accident rates on the State Highway system to identify accident patterns that that can be corrected by changing design features of the facility (e.g. widen traffic lanes, widen roadway shoulders, change roadway curvatures, add signs, install traffic signals, etc.). It is recommended that the County provide the enclosed accident analyses to Caltrans to assist with their accident monitoring and analyses.

PROJECT ALTERNATIVE

The preceding analysis is based on a maximum of 70 truck trips per day with 3 trucks per hour during the AM and PM peak commuter periods (AM peak commuter period = 7-9 AM; PM peak commuter period = 4-6 PM). The applicant has indicated that production may fluctuate and the number of trucks per hour may also fluctuate. Although the 70 truck trips per day is the maximum per day anticipated for the program, the applicant has indicated a desire to occasionally generate up to 7 trucks per hour due to fluctuations in production.

For the Option 1 truck route, 7 trucks per hour (14 PCEs in flat terrain and 21 PCEs in rolling terrain) would not significantly impact most of the roadways and intersections along the route since most of those facilities are forecast to operate at LOS C or better.

The US 101 SB Ramps/Betteravia Road intersection is forecast to operate at LOS D during the AM peak period and LOS F during the PM peak period. The 14 PCEs added to the intersection during the AM peak period would be considered an insignificant impact since it is less than the County's 15-trip threshold for intersections operating at LOS D. The 14 PCEs added to the intersection during the PM peak period would be considered a potentially significant impact since it would exceed the County's 5-trip threshold for intersections operating at LOS F. The mitigation listed for Option 1 would be required to mitigate this potential impact (limit trucks to 2 per hour during the 4-6 PM peak commuter period prior to implementation of the Caltrans/City of Santa Maria improvements that are planned for construction in 2019).

For the Option 2 truck route, generating 7 trucks per hour (14 PCEs in flat terrain and 21 PCEs in rolling terrain) would not significantly impact any of the roadways and intersections along the route since all of the facilities are forecast to operate at LOS C or better.

• • •

STUDY PARTICIPANTS AND REFERENCES

Associated Transportation Engineers

Scott A. Schell, AICP, PTP, Principal Transportation Planner
Richard L. Pool, PE, Principal Engineer
Dan Dawson, Supervising Transportation Planner
Erica Monson, Transportation Planner I

References

Congestion Management Program, Santa Barbara County Association of Governments, 2016.

Guide for the Preparation of Traffic Impact Studies, Caltrans, December 2002.

Highway Capacity Manual, Transportation Research Board, 2016.

http://traffic-counts.dot.ca.gov/2015all, 2015 Traffic Volumes Book, Caltrans, 2017.

TECHNICAL APPENDIX

CONTENTS:

LEVEL OF SERVICE DEFINITIONS

The ability of a roadway system to carry traffic is most often expressed in terms of "Levels of Service" (LOS). LOS A through F are used, with LOS A indicating very good operations and LOS F indicating poor operations. More complete level of service definitions for intersections are listed Table A.

Table A
Level of Service Definitions

	Delay Range(a)		
LOS	**Signalized Intersections**	**Unsignalized Intersections**	**Definition**
A	0.0 – 10.0	0.0 – 10.0	Conditions of free unobstructed flow, no delays and all signal phases sufficient in duration to clear all approaching vehicles.
B	10.1 – 20.0	10.1 – 15.0	Conditions of stable flow, very little delay, a few phases are unable to handle all approaching vehicles.
C	20.1 – 35.0	15.1 – 25.0	Conditions of stable flow, delays are low to moderate, full use of peak direction signal phases is experienced.
D	35.1 – 55.0	25.1 – 35.0	Conditions approaching unstable flow, delays are moderate to heavy, significant signal time deficiencies are experienced for short durations during the peak traffic period.
E	55.0 – 80.0	35.0 – 50.0	Conditions of unstable flow, delays are significant, signal phase timing is generally insufficient, congestion exists for extended duration throughout the peak period.
F	> 80.0	>50.0	Conditions of forced flow, travel speeds are low and volumes are well above capacity. This condition is often caused when vehicles released by an upstream signal are unable to proceed because of back-ups from a downstream signal.

(a) Average delay per vehicle in seconds. Source: Highway Capacity Manual.

STANDARD ENGINEERING ROADWAY DESIGN CAPACITIES

Roadway Type	# Lanes	LOS A		LOS B		LOS C		LOS D		LOS E	
		Low	High	Low	High	Low	High	Low	High	Low	High
Arterial	2 Lanes	8,100	12,000	9,400	14,000	10,800	16,000	12,100	18,000	13,500	20,000
Arterial	4 Lanes	16,100	23,900	18,900	27,900	21,600	31,900	24,300	35,900	27,000	39,900
Major	2 Lanes	6,500	9,600	7,500	11,200	8,600	12,800	9,700	14,400	10,800	16,000
Major	4 Lanes	12,900	19,200	15,100	22,300	17,200	25,500	19,400	28,700	21,600	31,900
Collector	2 Lanes	4,600	7,100	5,400	8,200	6,200	9,400	6,900	10,600	7,700	11,800

The roadway capacities listed above are "rule of thumb." Some factors which affect these capacities are intersections (numbers and configuration), degrees of access control, roadway grades, design geometries (horizontal and vertical alignment standards), sight distance, level of truck and bus traffic and level of pedestrian and bicycle traffic.

TRAFFIC COUNT DATA

US 101 TRAFFIC VOLUMES
Source: SBCAG (2014) & Caltrans (2015)

2014 SBCAG(a)

US 101 Segment	2014 AADT	NB	SB	Total	Lanes	PHF	Terrain	% Trucks	% Bus	%RV	Base FFS	Lane Width	Shoulder Width	Int Density
El Cap-SR 1	29,500	1,520	730	2,250	4	0.88	Rolling	9%	1%	1%	75 MPH	12 Feet	6 Feet	0.13
Santa Rosa-SR 246	22,600	950	630	1,580	4	0.88	Rolling	12%	1%	1%	75 MPH	12 Feet	6 Feet	0.50
SR 154-SR 135	30,700	1,150	940	2,090	4	0.88	Rolling	10%	1%	1%	75 MPH	12 Feet	6 Feet	0.24
Clark-SM Way	40,600	1,530	1,310	2,840	4	0.90	Flat	7%	1%	1%	75 MPH	12 Feet	6 Feet	1.00
SM Way-Betteravia	47,800	1,830	1,560	3,390	6	0.90	Flat	7%	1%	1%	70 MPH	12 Feet	6 Feet	1.00
Betteravia-SR 166	67,100	2,570	2,460	5,030	6	0.90	Flat	5%	1%	1%	70 MPH	12 Feet	6 Feet	1.00

2015 Caltrans(b)

US 101 Segment	2015 AADT	NB	SB	Total	Lanes	PHF	Terrain	% Trucks	% Bus	%RV	Base FFS	Lane Width	Shoulder Width	Int Density
El Cap-SR 1	29,400	1,515	727	2,242	4	0.88	Rolling	9%	1%	1%	75 MPH	12 Feet	6 Feet	0.13
SR 1-SR 246	22,800	958	636	1,594	4	0.88	Rolling	12%	1%	1%	75 MPH	12 Feet	6 Feet	0.50
SR 246-Clark	31,300	1,173	958	2,131	4	0.88	Rolling	10%	1%	1%	75 MPH	12 Feet	6 Feet	0.24
Clark-SM Way	41,000	1,545	1,323	2,868	4	0.90	Flat	7%	1%	1%	75 MPH	12 Feet	6 Feet	1.00
SM Way-Betteravia	58,200	2,228	1,900	4,128	6	0.90	Flat	7%	1%	1%	70 MPH	12 Feet	6 Feet	1.00
Betteravia-SR 166	73,300	2,808	2,687	5,495	6	0.90	Flat	5%	1%	1%	70 MPH	12 Feet	6 Feet	1.00

(a) 2014 PM peak hour data only.

(b) 2015 AADT data from Caltrans. Other flows/attributes taken from SBCAG model.

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2015 Traffic Volumes (for ALL vehicles on CA State Highways)

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Dist	Rte	CO	Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
05	101	SB	26.907	HOLLISTER AVENUE	3900	40000	35000	3900	37000	30800
05	101	SB	33.852	EL CAPITAN BEACH STATE PARK	3900	37000	30300	3900	32000	29400
05	101	SB	R 48.847	LAS CRUCES, JCT. RTE. 1 NORTHWEST	2800	32000	29200	2900	27000	23500
05	101	SB	R 56.463	SANTA ROSA ROAD	2900	27000	23500	2900	26000	22800
05	101	SB	R 57.117	BUELLTON, JCT. RTE. 246	2900	26000	22800	2600	25000	22000
05	101	SB	R 57.552	NORTH BUELLTON	2600	25000	22000	2700	28000	24600
05	101	SB	62.671	ZACA, JCT. RTE. 154 EAST	2700	28000	24600	3300	34000	31300
05	101	SB	70.921	LOS ALAMOS, JCT. RTE. 135 NORTHWEST	3300	34000	31300	3300	34000	29500
05	101	SB	82.183	SANTA MARIA, CLARK AVENUE	3300	34000	30400	4000	45000	41000
05	101	SB	84.336	SOUTH SANTA MARIA	5100	56000	52100	6100	66000	58200
05	101	SB	86.588	BETTERAVIA ROAD	6100	66000	58200	6800	76000	69100
05	101	SB	87.603	EAST STOWELL ROAD	6800	76000	69100	7300	80000	73300
05	101	SB	88.601	SANTA MARIA, JCT. RTE. 166 WEST	7300	80000	73300	6800	74000	68800
05	101	SB	89.693	SANTA MARIA, DONOVAN ROAD	6800	74000	68800	6400	69000	64400
05	101	SB	90.749	JCT. RTE. 135 SOUTH	6400	69000	64400	6700	76000	69400

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Dist	Rte	CO	Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
05	101	SB	87.603	EAST STOWELL ROAD	6800	76000	69100	7300	80000	73300
05	101	SB	88.601	SANTA MARIA, JCT. RTE. 166 WEST	7300	80000	73300	6800	74000	68800
05	101	SB	89.693	SANTA MARIA, DONOVAN ROAD	6800	74000	68800	6400	69000	64400
05	101	SB	90.749	JCT. RTE. 135 SOUTH	6400	69000	64400	6700	76000	69400
05	101	SB	90.988	SANTA BARBARA/SAN LUIS OBISPO COUNTY LINE	6700	76000	69400			
05	101	SLO	0	SANTA BARBARA/SAN LUIS OBISPO COUNTY LINE				6500	76000	69400
05	101	SLO	.813	JCT. RTE. 166 EAST	6500	76000	69400	5800	66000	58900
05	101	SLO	4.851	TEFFT STREET	5800	66000	58900	6100	66000	60800
05	101	SLO	7.851	LOS BERROS ROAD	6100	67000	61200	6100	66000	60500
05	101	SLO	12.521	ARROYO GRANDE, BRIDGE STREET	6100	66000	60500	5800	60000	54400
05	101	SLO	13.173	ARROYO GRANDE, JCT. RTE. 227 NORTH	6100	62000	57100	6500	65000	59600
05	101	SLO	13.747	ARROYO GRANDE, BRISCO ROAD	6500	65000	59600	7000	67000	62300
05	101	SLO	14.613	PISMO BEACH, OAK PARK ROAD	7100	67000	62300	7500	72000	65500
05	101	SLO	15.579	PISMO BEACH, PISMO OAKS	8200	72000	65500	10000	89000	80900
05	101	SLO	16.398	PISMO BEACH, SOUTH PISMO BEACH	9100	86000	78800	7000	67000	64400

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Dist	Rte	CO	Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
05	166	SB	8.927	SANTA MARIA, JCT. RTE. 101	2300	26000	23500	370	3450	2900
05	166	SLO	13.511	SUEY ROAD	350	2300	2150	380	4000	3800
05	166	SB	R 24.1	TEPESQUET ROAD	380	4700	4000	450	4100	3450
05	166	SLO	R 51.09	SAN LUIS OBISPO/SANTA BARBARA COUNTY LINE	390	3000	2550			
05	166	SB	R 51.09	SAN LUIS OBISPO/SANTA BARBARA COUNTY LINE				390	3000	2550
05	166	SB	64.3	PERKINS ROAD	350	3000	2550	480	3800	2950
05	166	SB	66.58	BELL ROAD	510	4000	3350	370	2200	1900
05	166	SB	R 70.141	SANTA BARBARA/SAN LUIS OBISPO COUNTY LINE	380	3700	3050			
05	166	SLO	R 70.141	SANTA BARBARA/SAN LUIS OBISPO COUNTY LINE				310	3600	3100
05	166	SLO	74.718	MARICOPA, JCT. RTE. 33	280	4600	3950			
05	166	SLO	74.719	BREAK IN ROUTE						
06	166	KER	.01	MARICOPA, JCT. RTE. 33				280	3250	2950
06	166	KER	2.96	PENTLAND ROAD	280	3250	2950	280	3100	2800
06	166	KER	14.86	OLD RIVER ROAD	1150	6900	5700	620	3900	3100
06	166	KER	22.797	JCT. RTE. 5	690	4500	3300	660	3850	2700

Prepared by NDS/ATD

VOLUME

Calle Real E/O Refugio Rd

Day: Thursday
Date: 11/16/2017

City: Goleta
Project #: CA17_8109_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	51	65	116

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0		12:00			0		2		2	
00:15			0		0		0		12:15			0		1		1	
00:30			0		0		0		12:30			1		2		3	
00:45			0		0		0		12:45			1	2	3	8	4	10
01:00			0		0		0		13:00			0		1		1	
01:15			0		0		0		13:15			1		0		1	
01:30			0		0		0		13:30			0		1		1	
01:45			0		0		0		13:45			1	2	0	2	1	4
02:00			0		0		0		14:00			0		0		0	
02:15			0		0		0		14:15			1		0		1	
02:30			0		0		0		14:30			2		1		3	
02:45			0		0		0		14:45			1	4	0	1	1	5
03:00			0		0		0		15:00			0		2		2	
03:15			0		0		0		15:15			0		2		2	
03:30			0		0		0		15:30			2		3		5	
03:45			0		0		0		15:45			0	2	1	8	1	10
04:00			0		0		0		16:00			0		5		5	
04:15			0		0		0		16:15			0		1		1	
04:30			0		0		0		16:30			0		7		7	
04:45			0		0		0		16:45			1	1	1	14	2	15
05:00			3		0		3		17:00			0		0		0	
05:15			4		0		4		17:15			1		2		3	
05:30			6		1		7		17:30			0		8		8	
05:45			1	14	0	1	1	15	17:45			0	1	1	11	1	12
06:00			0		0		0		18:00			0		0		0	
06:15			1		0		1		18:15			0		0		0	
06:30			1		0		1		18:30			0		0		0	
06:45			2	4	3	3	5	7	18:45			0		0		0	
07:00			1		1		2		19:00			0		0		0	
07:15			1		0		1		19:15			0		2		2	
07:30			1		0		1		19:30			0		0		0	
07:45			2	5	0	1	2	6	19:45			0		1	3	1	3
08:00			2		0		2		20:00			0		0		0	
08:15			1		1		2		20:15			0		0		0	
08:30			0		0		0		20:30			0		0		0	
08:45			0	3	1	2	1	5	20:45			0		0		0	
09:00			0		0		0		21:00			0		1		1	
09:15			2		1		3		21:15			0		0		0	
09:30			1		0		1		21:30			0		0		0	
09:45			1	4	1	2	2	6	21:45			0		0	1	0	1
10:00			2		0		2		22:00			0		0		0	
10:15			1		1		2		22:15			0		0		0	
10:30			0		1		1		22:30			0		0		0	
10:45			4	7	2	4	6	11	22:45			0		0		0	
11:00			0		0		0		23:00			0		0		0	
11:15			1		1		2		23:15			0		1		1	
11:30			0		1		1		23:30			0		0		0	
11:45			1	2	1	3	2	5	23:45			0		0	1	0	1
TOTALS				39		16		55	TOTALS				12		49		61
SPLIT %				70.9%		29.1%		47.4%	SPLIT %				19.7%		80.3%		52.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	51	65	116

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour			05:00	11:45	05:00	PM Peak Hour			13:45	15:45	16:00
AM Pk Volume			14	6	15	PM Pk Volume			4	14	15
Pk Hr Factor			0.583	0.750	0.536	Pk Hr Factor			0.500	0.500	0.536
7 - 9 Volume	0	0	8	3	11	4 - 6 Volume	0	0	2	25	27
7 - 9 Peak Hour			07:15	08:00	07:30	4 - 6 Peak Hour			16:30	16:00	16:00
7 - 9 Pk Volume	0	0	6	2	7	4 - 6 Pk Volume	0	0	2	14	15
Pk Hr Factor	0.000	0.000	0.750	0.500	0.875	Pk Hr Factor	0.000	0.000	0.500	0.500	0.536

Prepared by NDS/ATD

VOLUME

Rosemary Rd N/O Betteravia Rd

Day: Thursday
Date: 11/16/2017

City: Santa Maria
Project #: CA17_8109_002

DAILY TOTALS	NB	SB	EB	WB	Total
	998	790	0	0	1,788

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	1		3				4		12:00	19		17				36	
00:15	2		4				6		12:15	6		14				20	
00:30	1		2				3		12:30	24		13				37	
00:45	0	4	2	11			2	15	12:45	20	69	11	55			31	124
01:00	4		1				5		13:00	17		18				35	
01:15	3		1				4		13:15	17		18				35	
01:30	1		0				1		13:30	17		9				26	
01:45	0	8	2	4			2	12	13:45	22	73	12	57			34	130
02:00	1		3				4		14:00	16		12				28	
02:15	1		1				2		14:15	34		15				49	
02:30	1		1				2		14:30	21		9				30	
02:45	2	5	0	5			2	10	14:45	18	89	15	51			33	140
03:00	1		0				1		15:00	38		25				63	
03:15	0		2				2		15:15	43		15				58	
03:30	1		0				1		15:30	32		15				47	
03:45	1	3	2	4			3	7	15:45	16	129	15	70			31	199
04:00	0		3				3		16:00	29		17				46	
04:15	0		6				6		16:15	35		13				48	
04:30	5		5				10		16:30	25		15				40	
04:45	2	7	4	18			6	25	16:45	26	115	16	61			42	176
05:00	1		2				3		17:00	19		17				36	
05:15	4		6				10		17:15	18		15				33	
05:30	4		13				17		17:30	8		7				15	
05:45	7	16	15	36			22	52	17:45	11	56	9	48			20	104
06:00	6		21				27		18:00	8		6				14	
06:15	10		22				32		18:15	14		6				20	
06:30	14		15				29		18:30	5		7				12	
06:45	12	42	12	70			24	112	18:45	12	39	5	24			17	63
07:00	9		13				22		19:00	3		5				8	
07:15	9		17				26		19:15	3		6				9	
07:30	10		11				21		19:30	9		2				11	
07:45	11	39	17	58			28	97	19:45	7	22	3	16			10	38
08:00	9		12				21		20:00	5		6				11	
08:15	12		13				25		20:15	8		3				11	
08:30	13		11				24		20:30	7		2				9	
08:45	11	45	10	46			21	91	20:45	4	24	4	15			8	39
09:00	19		15				34		21:00	2		4				6	
09:15	9		7				16		21:15	4		2				6	
09:30	8		4				12		21:30	2		2				4	
09:45	13	49	15	41			28	90	21:45	3	11	5	13			8	24
10:00	17		8				25		22:00	3		5				8	
10:15	10		6				16		22:15	3		2				5	
10:30	11		8				19		22:30	2		6				8	
10:45	18	56	6	28			24	84	22:45	3	11	2	15			5	26
11:00	21		7				28		23:00	1		3				4	
11:15	17		8				25		23:15	0		3				3	
11:30	24		10				34		23:30	2		2				4	
11:45	17	79	9	34			26	113	23:45	4	7	2	10			6	17
TOTALS		353		355				708	TOTALS		645		435				1080
SPLIT %		49.9%		50.1%				39.6%	SPLIT %		59.7%		40.3%				60.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	998	790	0	0	1,788

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	10:45	05:45			11:15	PM Peak Hour	14:45	14:45			14:45
AM Pk Volume	80	73			121	PM Pk Volume	131	70			201
Pk Hr Factor	0.833	0.830			0.840	Pk Hr Factor	0.762	0.700			0.798
7 - 9 Volume	84	104	0	0	188	4 - 6 Volume	171	109	0	0	280
7 - 9 Peak Hour	07:45	07:00			07:45	4 - 6 Peak Hour	16:00	16:30			16:00
7 - 9 Pk Volume	45	58	0	0	98	4 - 6 Pk Volume	115	63	0	0	176
Pk Hr Factor	0.865	0.853	0.000	0.000	0.875	Pk Hr Factor	0.821	0.926	0.000	0.000	0.917

Prepared by NDS/ATD

VOLUME

Battles Rd W/O Rosemary Rd

Day: Thursday
Date: 11/16/2017

City: Santa Maria
Project #: CA17_8109_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	307	279	586

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		1		4		12:00			11		7		18	
00:15			1		2		3		12:15			2		5		7	
00:30			2		1		3		12:30			3		2		5	
00:45			4	10	0	4	4	14	12:45			4	20	2	16	6	36
01:00			1		3		4		13:00			9		8		17	
01:15			2		1		3		13:15			6		7		13	
01:30			2		1		3		13:30			1		2		3	
01:45			1	6	1	6	2	12	13:45			4	20	4	21	8	41
02:00			3		1		4		14:00			4		4		8	
02:15			1		1		2		14:15			6		7		13	
02:30			1		2		3		14:30			5		9		14	
02:45			0	5	3	7	3	12	14:45			7	22	3	23	10	45
03:00			1		1		2		15:00			10		10		20	
03:15			1		1		2		15:15			3		4		7	
03:30			0		2		2		15:30			8		4		12	
03:45			3	5	2	6	5	11	15:45			10	31	4	22	14	53
04:00			3		1		4		16:00			5		2		7	
04:15			2		0		2		16:15			4		9		13	
04:30			1		5		6		16:30			3		3		6	
04:45			3	9	5	11	8	20	16:45			2	14	2	16	4	30
05:00			1		2		3		17:00			13		0		13	
05:15			2		2		4		17:15			11		2		13	
05:30			2		2		4		17:30			0		0		0	
05:45			3	8	3	9	6	17	17:45			4	28	2	4	6	32
06:00			1		6		7		18:00			1		1		2	
06:15			2		6		8		18:15			2		1		3	
06:30			3		7		10		18:30			3		0		3	
06:45			2	8	5	24	7	32	18:45			2	8	2	4	4	12
07:00			2		3		5		19:00			2		0		2	
07:15			2		3		5		19:15			3		0		3	
07:30			3		6		9		19:30			1		1		2	
07:45			8	15	2	14	10	29	19:45			1	7	0	1	1	8
08:00			2		3		5		20:00			0		1		1	
08:15			4		4		8		20:15			2		6		8	
08:30			6		0		6		20:30			1		2		3	
08:45			3	15	2	9	5	24	20:45			0	3	3	12	3	15
09:00			7		7		14		21:00			1		3		4	
09:15			1		2		3		21:15			2		0		2	
09:30			2		2		4		21:30			2		1		3	
09:45			4	14	3	14	7	28	21:45			0	5	2	6	2	11
10:00			5		4		9		22:00			3		4		7	
10:15			3		4		7		22:15			3		2		5	
10:30			5		7		12		22:30			1		3		4	
10:45			5	18	5	20	10	38	22:45			1	8	1	10	2	18
11:00			6		3		9		23:00			1		1		2	
11:15			10		3		13		23:15			2		0		2	
11:30			4		4		8		23:30			2		2		4	
11:45			2	22	3	13	5	35	23:45			1	6	4	7	5	13
TOTALS				135		137		272	TOTALS				172		142		314
SPLIT %				49.6%		50.4%		46.4%	SPLIT %				54.8%		45.2%		53.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	307	279	586

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:15	06:00	10:30	PM Peak Hour			15:00	14:15	14:15
AM Pk Volume			27	24	44	PM Pk Volume			31	29	57
Pk Hr Factor			0.614	0.857	0.846	Pk Hr Factor			0.775	0.725	0.713
7 - 9 Volume	0	0	30	23	53	4 - 6 Volume	0	0	42	20	62
7 - 9 Peak Hour			07:45	07:30	07:30	4 - 6 Peak Hour			16:30	16:00	16:15
7 - 9 Pk Volume	0	0	20	15	32	4 - 6 Pk Volume	0	0	29	16	36
Pk Hr Factor	0.000	0.000	0.625	0.625	0.800	Pk Hr Factor	0.000	0.000	0.558	0.444	0.692

Prepared by National Data & Surveying Services

Refugio Rd & US 101 NB Ramps

Peak Hour Turning Movement Count

ID: 17-08108-001
City: Santa Maria

Day: Thursday
Date: 11/16/2017

PEAK HOURS		COUNT PERIODS
08:00 AM - 09:00 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:00 PM - 05:00 PM	PM	04:00 PM - 06:00 PM

Refugio Rd

SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	1	18	0	0	22
NOON	0	0	0	0	0
PM	19	18	0	0	17
	0	1	0	0	

US 101 NB Ramps

EASTBOUND

	AM	NOON	PM	
⇦	6	0	26	
↶	0	0	0	0
↱	0	0	0	0
→	0	0	0	0
↴	0	0	0	0

US 101 NB Ramps

WESTBOUND

		PM	NOON	AM
0	↰	15	0	9
1	←	5	0	2
0	↲	7	0	6
0	↷	0	0	0
	⇨	0	0	0

CONTROL

1-Way Stop(WB)

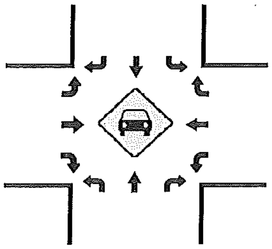
	AM	NOON	PM
TEV	52	0	68
PHF	0.81		0.65

NORTHBOUND

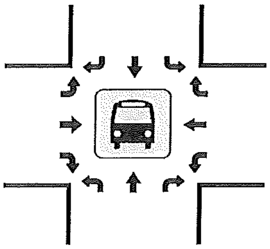
Refugio Rd

	⇩	↶	↰	↑	↱
		0	0	1	0
PM	25	0	2	2	0
NOON	0	0	0	0	0
AM	24	0	3	13	0

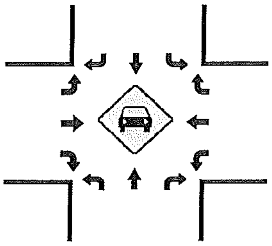
Total Vehicles (AM)



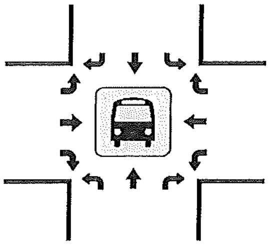
Total Vehicles (AM)



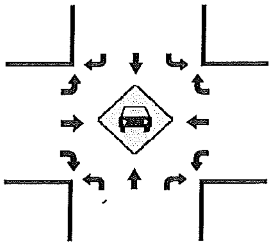
Total Vehicles (NOON)



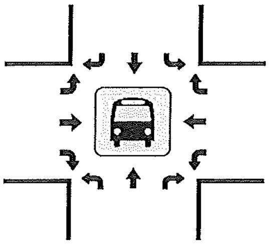
Total Vehicles (NOON)



Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)

	PM	NOON	AM	AM	NOON	PM
North crosswalk	0	0	0	0	0	0
South crosswalk	0	0	0	0	0	0

	PM	NOON	AM	AM	NOON	PM
West crosswalk	0	0	0	0	0	0
East crosswalk	0	0	0	0	0	0

	PM	NOON	AM
NW	0	0	0
NE	0	0	0
SW	0	0	0
SE	0	0	0

Prepared by National Data & Surveying Services

Basic School Rd & SR 166

Peak Hour Turning Movement Count

ID: 17-08108-004
City: Bakersfield

Day: Thursday
Date: 11/16/2017

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

Basic School Rd

SOUTHBOUND

	↲	↓	↳	↺	⇧
AM	4	4	78	0	23
NOON	0	0	0	0	0
PM	6	3	8	0	37
	0	1	0	0	

SR 166

EASTBOUND

	AM	NOON	PM	
⇦	108	0	150	
↺	0	0	0	0
↗	2	0	3	0
→	160	0	124	1
↘	0	0	1	0

CONTROL

2-Way Stop(NB/SB)

	AM	NOON	PM
TEV	388	0	343
PHF	0.83		0.72

SR 166

WESTBOUND

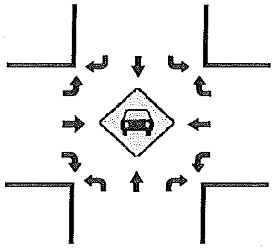
		PM	NOON	AM
0	↰	30	0	11
1	←	141	0	104
0	↙	8	0	5
0	↺	0	0	0
	⇨	144	0	248

Basic School Rd

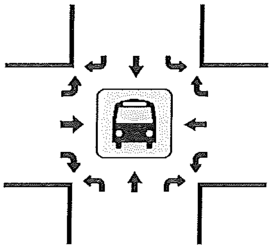
NORTHBOUND

	⇩	↺	↰	↑	↱
		0	0	1	0
PM	12	0	3	4	12
NOON	0	0	0	0	0
AM	9	0	0	10	10

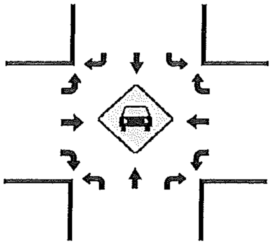
Total Vehicles (AM)



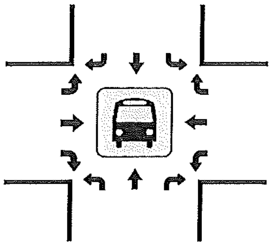
Total Vehicles (AM)



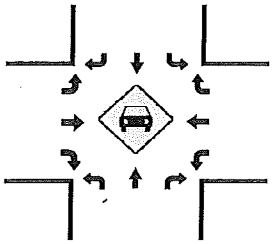
Total Vehicles (NOON)



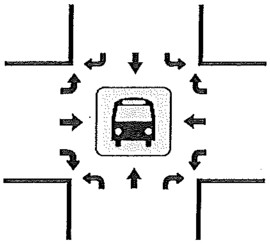
Total Vehicles (NOON)



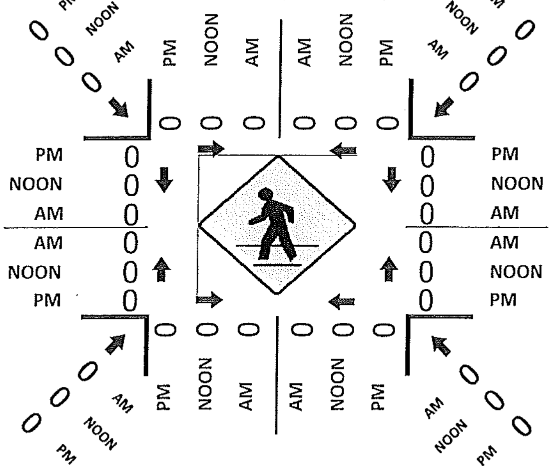
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

US 101 NB Ramps & Cuyama Lane/Hwy (Off ramp)

Peak Hour Turning Movement Count

ID: 17-08108-002
City: Santa Maria

Day: Thursday
Date: 11/16/2017

	PEAK HOURS	COUNT PERIODS
AM	07:00 AM - 08:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

US 101 NB Ramps

SOUTHBOUND

	↲	↓	↳	U	⇧
AM	0	0	0	0	80
NOON	0	0	0	0	0
PM	0	0	0	0	67
Lanes	0	0	0	0	

Cuyama Lane/Hwy (Off ramp)

EASTBOUND

	AM	NOON	PM	Lanes
⇦	464	0	717	
U	0	0	0	0
↱	48	0	22	0
→	29	0	60	1
↴	0	0	0	0

CONTROL

3-Way Stop(NB/EB/WB)

	AM	NOON	PM
TEV	745	0	1104
PHF	0.93		0.96

Cuyama Lane/Hwy (Off ramp)

WESTBOUND

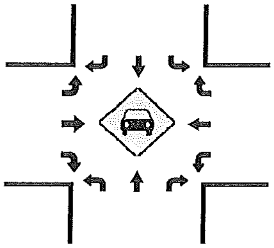
Lanes		PM	NOON	AM
0	↰	41	0	31
1	←	237	0	233
0	↲	0	0	0
0	U	0	0	0
	⇨	320	0	201

NORTHBOUND

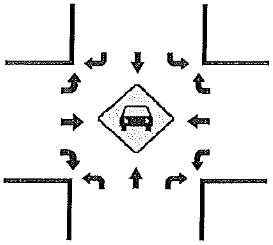
US 101 NB Ramps

	⇩	U	↰	↑	↱
Lanes		0	0.5	0.5	1
PM	0	0	480	4	260
NOON	0	0	0	0	0
AM	0	0	231	1	172

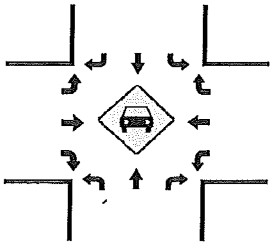
Total Vehicles (AM)



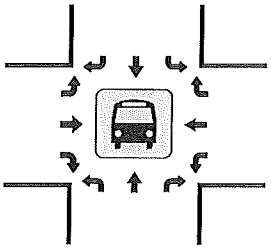
Total Vehicles (NOON)



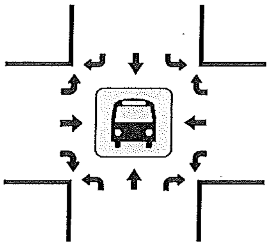
Total Vehicles (PM)



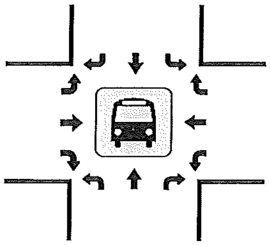
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



Pedestrians (Crosswalks)

Crosswalk	PM	NOON	AM	AM	NOON	PM
North	0	0	0	0	0	0
West	0	0	0	0	0	0
East	0	0	0	0	0	0
South	0	0	0	0	0	0

Corner	PM	NOON	AM
Northwest	0	0	0
Northeast	0	0	0
Southwest	0	0	0
Southeast	0	0	0

Prepared by National Data & Surveying Services

US 101 SB Ramps & Cuyama Lane/Hwy (Off ramp)

Peak Hour Turning Movement Count

ID: 17-08108-003
City: Santa Maria

Day: Thursday
Date: 11/16/2017

PEAK HOURS		COUNT PERIODS
07:15 AM - 08:15 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:30 PM - 05:30 PM	PM	04:00 PM - 06:00 PM

US 101 SB Ramps
SOUTHBOUND

	↲	↓	↳	U	⇧
AM	19	1	22	0	0
NOON	0	0	0	0	0
PM	38	1	43	0	0
Lanes	0	1	0	0	

Cuyama Lane/Hwy (Off ramp)
EASTBOUND

	AM	NOON	PM	
⇦	247	0	530	
U	0	0	0	0
↰	0	0	0	0
→	55	0	38	1
↴	372	0	423	0

Cuyama Lane/Hwy (Off ramp)
WESTBOUND

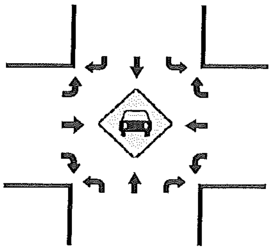
		PM	NOON	AM
0	↰	0	0	0
1	←	492	0	228
0	↙	220	0	236
0	U	0	0	0
	⇨	81	0	77

CONTROL			
1-Way Stop(SB)			
TEV	933 AM	0 NOON	1255 PM
PHF	0.88		0.93

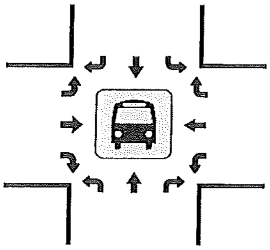
NORTHBOUND
US 101 SB Ramps

	⇩	U	↰	↑	↱
Lanes		0	0	0	0
PM	644	0	0	0	0
NOON	0	0	0	0	0
AM	609	0	0	0	0

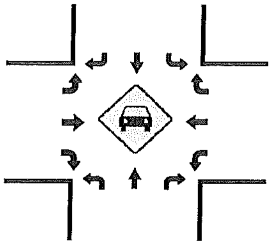
Total Vehicles (AM)



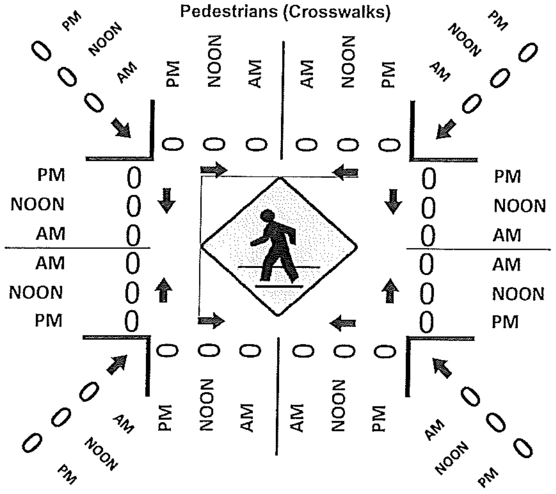
Total Vehicles (AM)



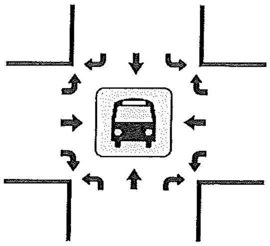
Total Vehicles (NOON)



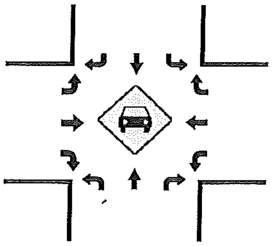
Pedestrians (Crosswalks)



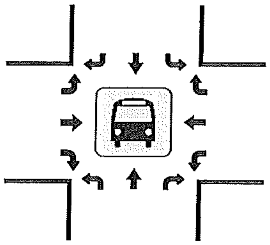
Total Vehicles (NOON)



Total Vehicles (PM)



Total Vehicles (PM)



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Associated Transportation Engineers
100 N. Hope Avenue, Suite 4
Santa Barabara, CA 93110

LOCATION Betteravia Rd @ US 101 SB Ramps

LATITUDE 34.923604°

COUNTY Santa Barabara

LONGITUDE -120.418975°

COLLECTION DATE Wednesday, August 17, 2016

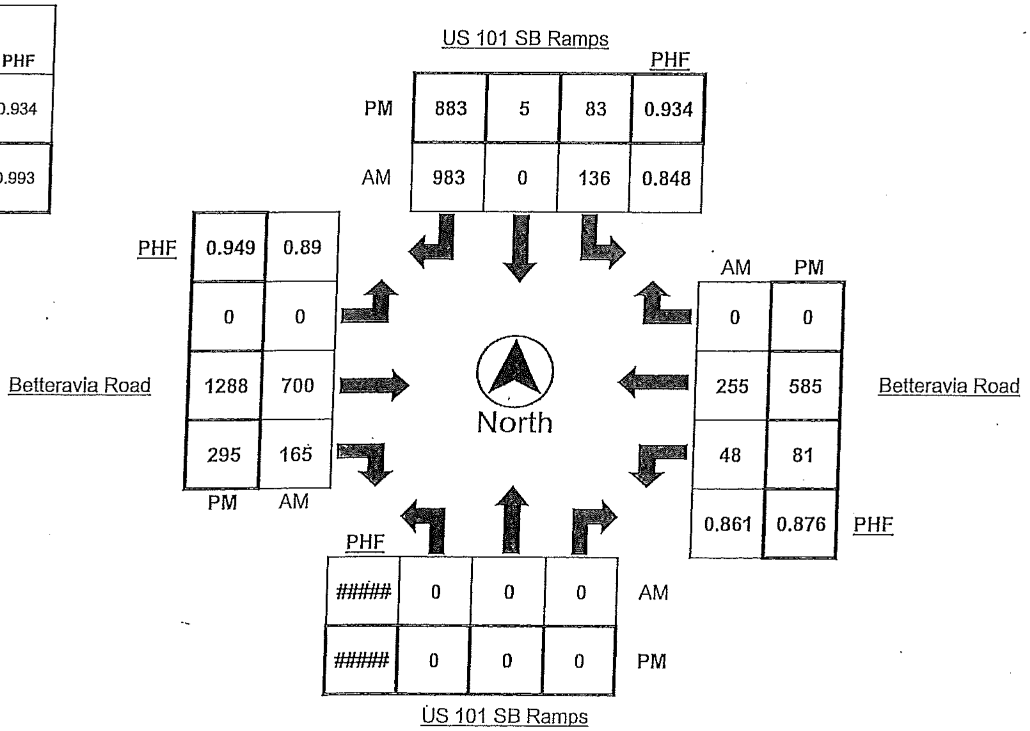
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR
7:00 AM - 7:15 AM	0	0	0	0	37	3	192	23	0	185	35	9	8	59	0	0
7:15 AM - 7:30 AM	0	0	0	0	30	0	242	25	0	160	43	7	8	61	0	0
7:30 AM - 7:45 AM	0	0	0	0	33	0	297	27	0	167	43	8	7	65	0	0
7:45 AM - 8:00 AM	0	0	0	0	40	0	252	28	0	173	36	5	18	70	0	0
8:00 AM - 8:15 AM	0	0	0	0	33	0	192	28	0	200	43	2	15	59	0	0
8:15 AM - 8:30 AM	0	0	0	0	37	0	194	35	0	152	51	5	14	72	0	0
8:30 AM - 8:45 AM	0	0	0	0	36	0	205	35	0	182	46	16	13	58	0	0
8:45 AM - 9:00 AM	0	0	0	0	39	0	138	38	0	174	37	5	7	59	0	0
TOTAL	0	0	0	0	285	3	1712	239	0	1393	334	57	90	503	0	0

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR
4:00 PM - 4:15 PM	0	0	0	0	30	0	198	22	0	296	52	9	5	120	0	0
4:15 PM - 4:30 PM	0	0	0	0	20	0	221	25	0	288	59	13	14	126	0	0
4:30 PM - 4:45 PM	0	0	0	0	23	0	236	21	0	301	54	6	26	153	0	0
4:45 PM - 5:00 PM	0	0	0	0	24	2	222	31	0	322	80	19	23	135	0	0
5:00 PM - 5:15 PM	0	0	0	0	19	3	182	11	0	339	78	22	15	175	0	0
5:15 PM - 5:30 PM	0	0	0	0	17	0	243	26	0	326	83	15	17	122	0	0
5:30 PM - 5:45 PM	0	0	0	0	17	0	210	21	0	276	68	6	8	116	0	0
5:45 PM - 6:00 PM	0	0	0	0	19	0	205	22	0	252	58	9	9	80	0	0
TOTAL	0	0	0	0	169	5	1717	179	0	2400	532	99	117	1027	0	0

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR
7:15 AM - 8:15 AM	0	0	0	0	136	0	983	108	0	700	165	22	48	255	0	0
4:30 PM - 5:30 PM	0	0	0	0	83	5	883	89	0	1288	295	62	81	585	0	0

	PHF
AM	0.934
PM	0.993



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Associated Transportation Engineers
100 N. Hope Avenue, Suite 4
Santa Barbara, CA 93110

LOCATION Betteravia Rd @ US 101 NB Ramps

COUNTY Santa Barbara

COLLECTION DATE Tuesday, September 13, 2016

LATITUDE 34.923560°

LONGITUDE -120.417314°

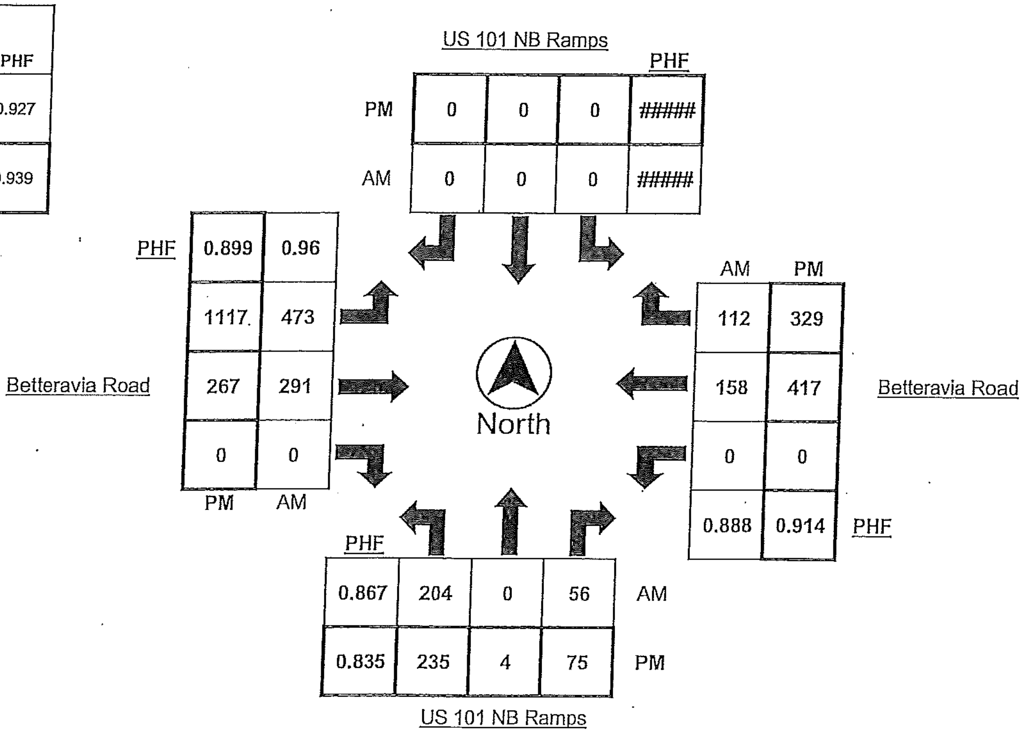
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR
7:00 AM - 7:15 AM	22	0	22	17	0	0	0	0	127	71	0	0	0	37	17	15
7:15 AM - 7:30 AM	27	0	15	10	0	0	0	0	146	71	0	0	0	44	28	12
7:30 AM - 7:45 AM	40	0	14	14	0	0	0	0	136	71	0	0	0	28	36	18
7:45 AM - 8:00 AM	45	0	21	11	0	0	0	0	127	62	0	0	0	49	29	17
8:00 AM - 8:15 AM	44	0	18	12	0	0	0	0	100	77	0	0	0	27	26	14
8:15 AM - 8:30 AM	43	0	12	8	0	0	0	0	136	57	0	0	0	47	29	17
8:30 AM - 8:45 AM	54	0	14	9	0	0	0	0	118	77	0	0	0	40	26	12
8:45 AM - 9:00 AM	63	0	12	8	0	0	0	0	119	80	0	0	0	44	31	15
TOTAL	338	0	128	89	0	0	0	0	1009	566	0	0	0	316	222	120

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR
4:00 PM - 4:15 PM	74	0	21	15	0	0	0	0	239	73	0	0	0	75	30	17
4:15 PM - 4:30 PM	72	0	18	10	0	0	0	0	219	75	0	0	0	98	48	19
4:30 PM - 4:45 PM	65	3	26	13	0	0	0	0	244	71	0	0	0	107	84	43
4:45 PM - 5:00 PM	60	0	14	7	0	0	0	0	247	70	0	0	0	86	71	27
5:00 PM - 5:15 PM	60	1	23	16	0	0	0	0	311	56	0	0	0	104	90	30
5:15 PM - 5:30 PM	50	0	12	10	0	0	0	0	315	70	0	0	0	120	84	34
5:30 PM - 5:45 PM	34	0	15	8	0	0	0	0	253	66	0	0	0	95	52	21
5:45 PM - 6:00 PM	32	1	13	6	0	0	0	0	215	71	0	0	0	70	43	22
TOTAL	447	5	142	85	0	0	0	0	2043	552	0	0	0	755	502	213

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR	Left	Thru	Right	RTOR
8:00 AM - 9:00 AM	204	0	56	37	0	0	0	0	473	291	0	0	0	158	112	58
4:30 PM - 5:30 PM	235	4	75	46	0	0	0	0	1117	267	0	0	0	417	329	134

	PHF
AM	0.927
PM	0.939



LEVEL OF SERVICE CALCULATION WORKSHEETS

HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 NORTHBOUND - BASELINE - RUFUGIO TO SR 1		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	0.13
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	74.4
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1560	Heavy Vehicle Adjustment Factor (f_{HV})	0.847
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	1046
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44
Passenger Car Equivalent (E_T)	3.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	74.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	14.1
Total Ramp Density Adjustment	0.6	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	74.4		

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SEGMENT 1 - EXISTING NB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/8/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 SOUTHBOUND - BASELINE - RUFUGIO TO SR 1		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	0.13
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	74.4
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	749	Heavy Vehicle Adjustment Factor (f_{HV})	0.847
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	502
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.21
Passenger Car Equivalent (E_T)	3.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	74.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	6.7
Total Ramp Density Adjustment	0.6	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	74.4		

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SEGMENT 1 - EXISTING SB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 NORTHBOUND - BASELINE - SR 1 TO SR 246		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.2
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	987	Heavy Vehicle Adjustment Factor (f_{HV})	0.806
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	696
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.29
Passenger Car Equivalent (E_T)	3.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	9.5
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.2		

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SEGMENT 2 - EXISTING NB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 SOUTHBOUND - BASELINE - SR 1 TO SR 246		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.2
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	655	Heavy Vehicle Adjustment Factor (f_{HV})	0.806
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	462
Total Trucks, %	12.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.19
Passenger Car Equivalent (E_T)	3.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	6.3
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.2		

HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 NORTHBOUND - BASELINE - SR 246 TO CLARK		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	0.24
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	74.0
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1208	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	824
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.34
Passenger Car Equivalent (E_T)	3.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	74.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.1
Total Ramp Density Adjustment	1.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	74.0		

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SEGMENT 3 - EXISTING NB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 SOUTHBOUND - BASELINE - SR 246 TO CLARK		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	0.24
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	74.0
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	987	Heavy Vehicle Adjustment Factor (f_{HV})	0.833
Peak Hour Factor	0.88	Flow Rate (V_p), pc/h/ln	673
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.28
Passenger Car Equivalent (E_T)	3.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	74.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	9.1
Total Ramp Density Adjustment	1.0	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	74.0		

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SEGMENT 3 - EXISTING SB.xuf

HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 NORTHBOUND - BASELINE - CLARK TO SM WAY		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	71.8
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1591	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	946
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.39
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	71.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.2
Total Ramp Density Adjustment	3.2	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	71.8		

HCS™ Freeways Version 7.5
SEGMENT 4 - EXISTING NB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 SOUTHBOUND - EXISTING - CLARK TO SM WAY		

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.0	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	71.8
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1363	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	810
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (cadj), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.34
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	71.8
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	11.3
Total Ramp Density Adjustment	3.2	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFSadj), mi/h	71.8		

HCS™ Freeways Version 7.5
SEGMENT 4 - EXISTING SB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 NORTHBOUND - BASELINE - SM WAY TO BETTERAVIA		

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	66.8
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2295	Heavy Vehicle Adjustment Factor (f_{HV})	0.935
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	909
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2368
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2368
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.38
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.6
Total Ramp Density Adjustment	3.2	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	66.8		

HCS™ Freeways Version 7.5
SEGMENT 5 - EXISTING NB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 SOUTHBOUND - BASELINE - SM WAY TO BETTERAVIA		

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	66.8
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1957	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	775
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2368
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (cadj), pc/h/ln	2368
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.33
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	11.6
Total Ramp Density Adjustment	3.2	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFSadj), mi/h	66.8		

HCS™ Freeways Version 7.5
SEGMENT 5 - EXISTING SB.xuf
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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 NORTHBOUND - BASELINE - BETTERAVIA TO SR 166		

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	66.8
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2892	Heavy Vehicle Adjustment Factor (f_{HV})	0.952
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1125
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2368
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2368
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.8
Total Ramp Density Adjustment	3.2	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	66.8		

HCS™ Freeways Version 7.5
SEGMENT 6 - EXISTING NB.xuf

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HCS7 Basic Freeway Report

Project Information

Analyst	DLD	Date	8/9/18
Agency	ATE	Analysis Year	2018
Jurisdiction	SB COUNTY	Time Period Analyzed	PM PEAK
Project Description	US 101 SOUTHBOUND - BASELINE - BETTERAVIA TO SR 166		

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	66.8
Right-Side Lateral Clearance, ft	6		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2768	Heavy Vehicle Adjustment Factor (f_{HV})	0.952
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1077
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2368
Single-Unit Trucks (SUT), %	-	Adjusted Cpacity (c_{adj}), pc/h/ln	2368
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.1
Total Ramp Density Adjustment	3.2	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	66.8		

HCS™ Freeways Version 7.5
SEGMENT 6 - EXISTING SB.xuf

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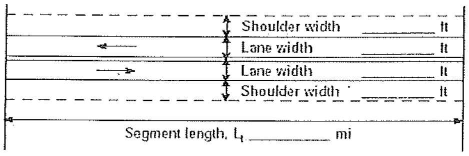
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*DLD*	Highway / Direction of Travel	*SR 166*
Agency or Company	*ATE*	From/To	*US 101 to SR 33 South Junction*
Date Performed	*8/9/18*	Jurisdiction	*CALTRANS*
Analysis Time Period	*PM PEAK HOUR*	Analysis Year	*2018*

Project Description: *BASELINE CONDITIONS*

Input Data



Analysis direction vol., V_d *280*veh/h
Opposing direction vol., V_o *187*veh/h
Shoulder width ft *6.0*
Lane Width ft *12.0*
Segment Length mi *70.0*


Show North Arrow

☑ Class I highway ☐ Class II highway ☐ Class III highway

Terrain ☐ Level ☑ Rolling
Grade Length mi Up/down
Peak-hour factor, PHF *0.88*
No-passing zone *20%*
% Trucks and Buses , P_T *10 %*
% Recreational vehicles, P_R *4%*
Access points *mi* *1/mi*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	*2.1*	*2.3*
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	*1.1*	*1.1*
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.898*	*0.882*
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	*0.84*	*0.76*
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS}{}^* f_{HV,ATS})$	*422*	*317*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	*55.0 mi/h*
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	*0.0 mi/h*
Total demand flow rate, both directions, *v*		Adj. for access points[4], f_A (Exhibit 15-8)	*0.3 mi/h*
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	*54.8 mi/h*
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	*1.4 mi/h*	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	*47.6 mi/h*
		Percent free flow speed, PFFS	*87.0 %*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	*1.6*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.943*	*0.935*
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	*0.86*	*0.81*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}{}^* f_{g,PTSF})$	*392*	*281*
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	*39.5*	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	*33.7*	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}{}^*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	*59.1*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	*C*
Volume to capacity ratio, *v/c*	*0.19*
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	*1644*
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	*1700*
Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*87.0*

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*318.2*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*5.57*
Bicycle level of service (Exhibit 15-4)	*F*

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

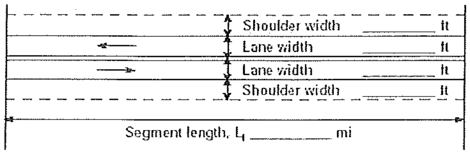
HCS™ TwoLane Version 7.5 Generated: 8/9/2018 11:03 AM

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 166
Agency or Company	ATE	From/To	SR 33 South - SR 33 North
Date Performed	8/9/18	Jurisdiction	CALTRANS
Analysis Time Period	PM PEAK HOUR	Analysis Year	2018

Project Description: BASELINE CONDITIONS

Input Data



Analysis direction vol., V_d 294veh/h

Opposing direction vol., V_o 196veh/h

Shoulder width ft 6.0

Lane Width ft 12.0

Segment Length mi 15.0

☑ Class I highway ☐ Class II highway ☐ Class III highway

Terrain ☐ Level ☑ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF 0.88

No-passing zone 20%

% Trucks and Buses , P_T 10 %

% Recreational vehicles, P_R 4%

Access points *mi* 1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	2.1	2.3
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.898	0.882
Grade adjustment factor¹, $f_{g,ATS}$ (Exhibit 15-9)	0.85	0.77
Demand flow rate², v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	438	328

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed⁴, BFFS	55.0 mi/h
Mean speed of sample³, S_{FM}		Adj. for lane and shoulder width,⁴ f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for access points⁴, f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, FFS=S_{FM}+0.00776(*v*/ $f_{HV,ATS}$)		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	54.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.4 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	47.4 mi/h
		Percent free flow speed, PFFS	86.7 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.6	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.943	0.935
Grade adjustment factor¹, $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	0.87	0.81
Directional flow rate², v_i(pc/h) $v_i=V_i/(PHF^* f_{HV,PTSF}{}^* f_{g,PTSF})$	407	294
Base percent time-spent-following⁴, $BPTSF_d(\%)=100(1-e^{av_d^b})$	41.7	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	32.5	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	60.6	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, *v/c*	0.20
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1644
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	86.7

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	334.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.59
Bicycle level of service (Exhibit 15-4)	F

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

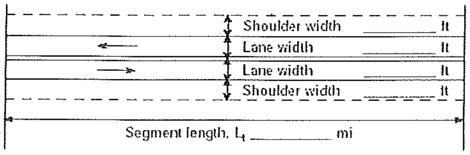
HCS™ TwoLane Version 7.5 Generated: 8/9/2018 11:08 AM

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 166
Agency or Company	ATE	From/To	East of SR 33 North Junction
Date Performed	8/9/18	Jurisdiction	CALTRANS
Analysis Time Period	PM PEAK HOUR	Analysis Year	2018

Project Description: BASELINE CONDITIONS

Input Data



Analysis direction vol., V_d	199veh/h
Opposing direction vol., V_o	132veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	5.0

☑ Class I highway ☐ Class II highway ☐ Class III highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	20%
% Trucks and Buses , P_T	10 %
% Recreational vehicles, P_R	4%
Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.5	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/\ (1+\ P_T(E_T\text{-}1)+P_R(E_R\text{-}1)\ )$	0.952	0.935
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i\ /\ (PHF^*\ f_{g,ATS}\ ^*\ f_{HV,ATS})$	238	160

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	55.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/\ f_{HV,ATS}\ )$		Free-flow speed, FFS $(FSS=BFFS\text{-}f_{LS}\text{-}f_A)$	54.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.1 mi/h	Average travel speed, $ATS_d=FFS\text{-}0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	50.6 mi/h
		Percent free flow speed, PFFS	92.4 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/\ (1+\ P_T(E_T\text{-}1)+P_R(E_R\text{-}1)\ )$	0.990	0.990
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}{}^*\ f_{g,PTSF})$	228	152
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1\text{-}e^{av_d^b})$	24.1	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	35.5	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}\ ^*(v_{d,PTSF}\ /\ v_{d,PTSF}+v_{o,PTSF})$	45.4	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	B
Volume to capacity ratio, v/c	0.13
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1700
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	92.4

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	226.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.39
Bicycle level of service (Exhibit 15-4)	E

Notes

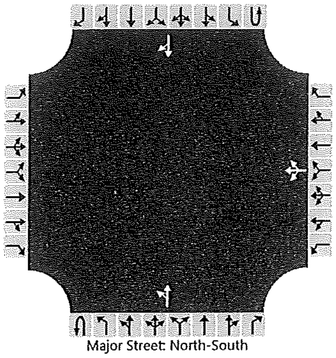
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS™ TwoLane Version 7.5 Generated: 8/9/2018 11:10 AM

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 NB/REFUGIO ROAD
Agency/Co.	ATE	Jurisdiction	SB COUNTY
Date Performed	10/25/18	East/West Street	US 101 NB RAMP
Analysis Year	2018	North/South Street	REFUGIO ROAD
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	BASELINE CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LTR			LT						TR
Volume (veh/h)						6	2	9		3	18				18	1
Percent Heavy Vehicles (%)						3	3	3		3						
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	Eastbound U	Eastbound L	Eastbound T	Eastbound R	Westbound U	Westbound L	Westbound T	Westbound R	Northbound U	Northbound L	Northbound T	Northbound R	Southbound U	Southbound L	Southbound T	Southbound R
Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.43	6.53	6.23		4.13						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.53	4.03	3.33		2.23						

Delay, Queue Length, and Level of Service

	Eastbound U	Eastbound L	Eastbound T	Eastbound R	Westbound U	Westbound L	Westbound T	Westbound R	Northbound U	Northbound L	Northbound T	Northbound R	Southbound U	Southbound L	Southbound T	Southbound R
Flow Rate, v (veh/h)							21			4						
Capacity, c (veh/h)							985			1583						
v/c Ratio							0.02			0.00						
95% Queue Length, Q_{95} (veh)							0.1			0.0						
Control Delay (s/veh)							8.7			7.3						
Level of Service (LOS)							A			A						
Approach Delay (s/veh)					8.7				1.1							
Approach LOS					A											

HCS™ TWSC Version 7.5
US 101 NB & REFUGIO RD AM PEAK BASELINE.xtw

Generated: 10/25/2018 11:12:18 AM

AWD = 8.5 SEC = LOS A

HCS7 Two-Way Stop-Control Report

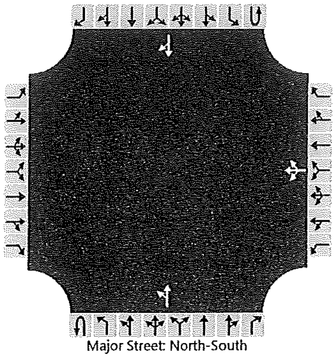
General Information

Analyst	DLD
Agency/Co.	ATE
Date Performed	10/25/18
Analysis Year	2018
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	BASELINE + PROJECT

Site Information

Intersection	US 101 NB/REFUGIO ROAD
Jurisdiction	SB COUNTY
East/West Street	US 101 NB RAMP
North/South Street	REFUGIO ROAD
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LTR			LT						TR
Volume (veh/h)						6	2	9		3	24				18	7
Percent Heavy Vehicles (%)						3	3	3		3						
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.43	6.53	6.23		4.13						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.53	4.03	3.33		2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							21			4						
Capacity, c (veh/h)							973			1573						
v/c Ratio							0.02			0.00						
95% Queue Length, Q_{95} (veh)							0.1			0.0						
Control Delay (s/veh)							8.8			7.3						
Level of Service (LOS)							A			A						
Approach Delay (s/veh)					8.8				0.8							
Approach LOS					A											

AWD = 8.6 SEC = LOS A

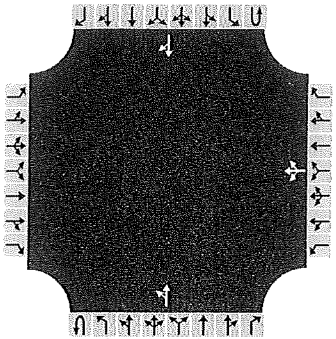
HCS7 Two-Way Stop-Control Report

General Information

Site Information

Analyst	DLD	Intersection	US 101 NB/REFUGIO ROAD
Agency/Co.	ATE	Jurisdiction	SB COUNTY
Date Performed	10/25/18	East/West Street	US 101 NB RAMP
Analysis Year	2018	North/South Street	REFUGIO ROAD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.65
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	BASELINE CONDITIONS		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LTR			LT						TR
Volume (veh/h)						7	5	15		2	7				18	24
Percent Heavy Vehicles (%)						3	3	3		3						
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.43	6.53	6.23		4.13						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.53	4.03	3.33		2.23						

Delay, Queue Length, and Level of Service

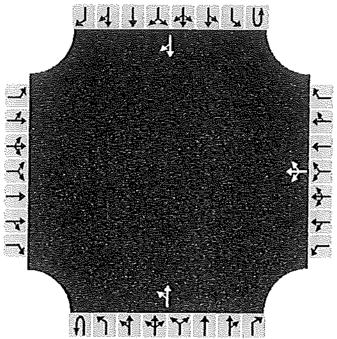
Flow Rate, v (veh/h)							42			3						
Capacity, c (veh/h)							974			1529						
v/c Ratio							0.04			0.00						
95% Queue Length, Q_{95} (veh)							0.1			0.0						
Control Delay (s/veh)							8.9			7.4						
Level of Service (LOS)							A			A						
Approach Delay (s/veh)					8.9				1.6							
Approach LOS					A											

AWD = 8.8 SEC = LOS A

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 NB/REFUGIO ROAD
Agency/Co.	ATE	Jurisdiction	SB COUNTY
Date Performed	10/25/18	East/West Street	US 101 NB RAMP
Analysis Year	2018	North/South Street	REFUGIO ROAD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.65
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	BASELINE + PROJECT		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LTR			LT						TR
Volume (veh/h)						7	5	15		2	13				18	30
Percent Heavy Vehicles (%)						3	3	3		3						
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.43	6.53	6.23		4.13						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.53	4.03	3.33		2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							42			3						
Capacity, c (veh/h)							958			1517						
v/c Ratio							0.04			0.00						
95% Queue Length, Q_{95} (veh)							0.1			0.0						
Control Delay (s/veh)							8.9			7.4						
Level of Service (LOS)							A			A						
Approach Delay (s/veh)					8.9				1.0							
Approach LOS					A											

HCS™ TWSC Version 7.5 Generated: 10/25/2018 11:15:15 AM

US 101 NB & REFUGIO RD PM PEAK BASELINE + PROJECT.xtw

AWD= 8.8 SEC = LOS A

2: US 101 SB & Betteravia
AM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰↑	↱
Traffic Volume (vph)	0	680	235	45	355	0	0	0	0	135	0	1030
Future Volume (vph)	0	680	235	45	355	0	0	0	0	135	0	1030
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.67	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250									261
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	723	250	48	378	0	0	0	0	72	72	1096
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	35.0					45.0	45.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		32.6	32.6	10.0	31.0					33.9	32.8	51.0
Actuated g/C Ratio		0.36	0.36	0.11	0.34					0.38	0.36	0.57
v/c Ratio		0.82	0.35	0.25	0.32					0.12	0.12	1.11
Control Delay		38.0	4.8	57.5	9.5					14.8	14.6	82.9
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		38.0	4.8	57.5	9.5					14.8	14.6	82.9
LOS		D	A	E	A					B	B	F
Approach Delay		29.5			14.9						75.0	
Approach LOS		C			B						E	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 70 (78%), Referenced to phase 4:EBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 48.5 Intersection LOS: D

Intersection Capacity Utilization 80.3% ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

2: US 101 SB & Betteravia
AM Peak Hour

Baseline + Project

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱
Traffic Volume (vph)	0	680	235	51	355	0	0	0	0	135	0	1030
Future Volume (vph)	0	680	235	51	355	0	0	0	0	135	0	1030
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.67	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			250									261
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	723	250	54	378	0	0	0	0	144	0	1096
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	723	250	54	378	0	0	0	0	72	72	1096
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	35.0					45.0	45.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		32.6	32.6	10.0	31.0					33.9	32.8	51.0
Actuated g/C Ratio		0.36	0.36	0.11	0.34					0.38	0.36	0.57
v/c Ratio		0.82	0.35	0.28	0.32					0.12	0.12	1.11
Control Delay		38.0	4.8	57.7	9.6					14.8	14.6	82.9
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		38.0	4.8	57.7	9.6					14.8	14.6	82.9
LOS		D	A	E	A					B	B	F
Approach Delay		29.5			15.6						75.0	
Approach LOS		C			B						E	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 70 (78%), Referenced to phase 4:EBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 80.3%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

2: US 101 SB & Betteravia
AM Peak Hour

Cumulative

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	⬑	↱
Traffic Volume (vph)	0	690	260	50	395	0	0	0	0	140	0	1035
Future Volume (vph)	0	690	260	50	395	0	0	0	0	140	0	1035
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.67	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			277									210
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	734	277	53	420	0	0	0	0	74	75	1101
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	34.0					46.0	46.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		31.6	31.6	10.0	30.0					34.7	33.6	52.0
Actuated g/C Ratio		0.35	0.35	0.11	0.33					0.39	0.37	0.58
v/c Ratio		0.86	0.39	0.28	0.37					0.12	0.12	1.13
Control Delay		42.1	5.0	58.1	9.8					14.3	14.1	88.7
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		42.1	5.0	58.1	9.8					14.3	14.1	88.7
LOS		D	A	E	A					B	B	F
Approach Delay		31.9			15.2						79.8	
Approach LOS		C			B						E	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 72 (80%), Referenced to phase 4:EBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 50.9 Intersection LOS: D

Intersection Capacity Utilization 81.7% ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

2: US 101 SB & Betteravia
AM Peak Hour

Cumulative + Project

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰↑	↱
Traffic Volume (vph)	0	690	260	56	395	0	0	0	0	140	0	1035
Future Volume (vph)	0	690	260	56	395	0	0	0	0	140	0	1035
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.67	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2425	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			277									210
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	734	277	60	420	0	0	0	0	74	75	1101
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	34.0					46.0	46.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		28.8	28.8	10.0	30.0					34.7	33.6	52.0
Actuated g/C Ratio		0.32	0.32	0.11	0.33					0.39	0.37	0.58
v/c Ratio		0.95	0.41	0.31	0.37					0.12	0.12	1.13
Control Delay		49.5	4.1	30.3	9.9					14.3	14.1	88.7
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		49.5	4.1	30.3	9.9					14.3	14.1	88.7
LOS		D	A	C	A					B	B	F
Approach Delay		37.0			12.4						79.8	
Approach LOS		D			B						E	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 79 (88%), Referenced to phase 4:EBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 52.2 Intersection LOS: D

Intersection Capacity Utilization 81.7% ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱			
Traffic Volume (vph)	515	300	0	0	130	115	270	0	60	0	0	0
Future Volume (vph)	515	300	0	0	130	115	270	0	60	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						124			65			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	554	323	0	0	140	124	145	145	65	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	41.0	62.0			21.0	21.0	28.0	28.0	28.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	20.6	58.0			33.4	33.4	24.0	24.0	24.0			
Actuated g/C Ratio	0.23	0.64			0.37	0.37	0.27	0.27	0.27			
v/c Ratio	0.73	0.15			0.11	0.19	0.33	0.33	0.14			
Control Delay	19.8	6.8			20.1	5.1	29.2	29.2	7.8			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	19.8	6.8			20.1	5.1	29.2	29.2	7.8			
LOS	B	A			C	A	C	C	A			
Approach Delay		15.0			13.1			25.3				
Approach LOS		B			B			C				

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 17.1	Intersection LOS: B
Intersection Capacity Utilization 80.3%	ICU Level of Service D
Analysis Period (min) 15	

3: US 101 NB & Betteravia
AM Peak Hour

Baseline + Project

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱			
Traffic Volume (vph)	515	300	0	0	136	115	270	0	66	0	0	0
Future Volume (vph)	515	300	0	0	136	115	270	0	66	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						124			71			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	554	323	0	0	146	124	290	0	71	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	554	323	0	0	146	124	145	145	71	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	41.0	62.0			21.0	21.0	28.0	28.0	28.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	20.6	58.0			33.4	33.4	24.0	24.0	24.0			
Actuated g/C Ratio	0.23	0.64			0.37	0.37	0.27	0.27	0.27			
v/c Ratio	0.73	0.15			0.11	0.19	0.33	0.33	0.15			
Control Delay	19.8	6.8			20.2	5.1	29.2	29.2	7.5			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	19.8	6.8			20.2	5.1	29.2	29.2	7.5			
LOS	B	A			C	A	C	C	A			
Approach Delay		15.0			13.3			24.9				
Approach LOS		B			B			C				

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 17.1	Intersection LOS: B
Intersection Capacity Utilization 80.3%	ICU Level of Service D
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱			
Traffic Volume (vph)	530	305	0	0	140	120	305	0	75	0	0	0
Future Volume (vph)	530	305	0	0	140	120	305	0	75	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						129			81			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	570	328	0	0	151	129	164	164	81	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	40.0	60.0			20.0	20.0	30.0	30.0	30.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	21.1	56.0			30.9	30.9	26.0	26.0	26.0			
Actuated g/C Ratio	0.23	0.62			0.34	0.34	0.29	0.29	0.29			
v/c Ratio	0.73	0.15			0.13	0.21	0.35	0.35	0.16			
Control Delay	18.6	6.0			22.1	5.6	27.9	27.9	6.7			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	18.6	6.0			22.1	5.6	27.9	27.9	6.7			
LOS	B	A			C	A	C	C	A			
Approach Delay		14.0			14.5			23.7				
Approach LOS		B			B			C				

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.6 Intersection LOS: B

Intersection Capacity Utilization 81.7% ICU Level of Service D

Analysis Period (min) 15

3: US 101 NB & Betteravia
AM Peak Hour

Cumulative + Project

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱			
Traffic Volume (vph)	530	311	0	0	140	120	305	0	81	0	0	0
Future Volume (vph)	530	311	0	0	140	120	305	0	81	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						129			87			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	570	334	0	0	151	129	164	164	87	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	40.0	60.0			20.0	20.0	30.0	30.0	30.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	21.1	56.0			30.9	30.9	26.0	26.0	26.0			
Actuated g/C Ratio	0.23	0.62			0.34	0.34	0.29	0.29	0.29			
v/c Ratio	0.73	0.16			0.13	0.21	0.35	0.35	0.17			
Control Delay	17.3	2.1			22.1	5.6	27.9	27.9	6.6			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	17.3	2.1			22.1	5.6	27.9	27.9	6.6			
LOS	B	A			C	A	C	C	A			
Approach Delay		11.7			14.5			23.4				
Approach LOS		B			B			C				

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.2 Intersection LOS: B

Intersection Capacity Utilization 81.7% ICU Level of Service D

Analysis Period (min) 15

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱
Traffic Volume (vph)	0	1370	400	80	700	0	0	0	0	85	0	940
Future Volume (vph)	0	1370	400	80	700	0	0	0	0	85	0	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.58	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			285									185
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1384	404	81	707	0	0	0	0	43	43	949
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	51.0					29.0	29.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		45.8	45.8	10.0	47.0					17.4	15.0	35.0
Actuated g/C Ratio		0.51	0.51	0.11	0.52					0.19	0.17	0.39
v/c Ratio		1.30	0.44	0.42	0.39					0.14	0.16	1.33
Control Delay		164.7	6.2	36.4	10.6					26.8	25.8	182.8
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		164.7	6.2	36.4	10.6					26.8	25.8	182.8
LOS		F	A	D	B					C	C	F
Approach Delay		128.9			13.3						169.8	
Approach LOS		F			B						F	

Intersection Summary

Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 84 (93%), Referenced to phase 4:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33

Intersection Signal Delay: 115.4	Intersection LOS: F
Intersection Capacity Utilization 84.2%	ICU Level of Service E

Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱
Traffic Volume (vph)	0	1370	400	86	700	0	0	0	0	85	0	940
Future Volume (vph)	0	1370	400	86	700	0	0	0	0	85	0	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.58	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			285									185
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1384	404	87	707	0	0	0	0	43	43	949
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	51.0					29.0	29.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		45.8	45.8	10.0	47.0					17.4	15.0	35.0
Actuated g/C Ratio		0.51	0.51	0.11	0.52					0.19	0.17	0.39
v/c Ratio		1.30	0.44	0.46	0.39					0.14	0.16	1.33
Control Delay		164.7	6.2	36.9	10.7					26.8	25.8	182.8
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		164.7	6.2	36.9	10.7					26.8	25.8	182.8
LOS		F	A	D	B					C	C	F
Approach Delay		128.9			13.5						169.8	
Approach LOS		F			B						F	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 84 (93%), Referenced to phase 4:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 115.3 Intersection LOS: F
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15
* User Entered Value

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱
Traffic Volume (vph)	0	1425	515	85	795	0	0	0	0	90	0	955
Future Volume (vph)	0	1425	515	85	795	0	0	0	0	90	0	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.58	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			361									150
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1439	520	86	803	0	0	0	0	45	46	965
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	52.0					28.0	28.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		46.8	46.8	10.0	48.0					16.8	14.4	34.0
Actuated g/C Ratio		0.52	0.52	0.11	0.53					0.19	0.16	0.38
v/c Ratio		1.32	0.53	0.45	0.44					0.15	0.18	1.43
Control Delay		173.8	6.9	37.2	10.3					27.8	26.9	226.0
Queue Delay		0.1	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		173.8	6.9	37.2	10.3					27.8	26.9	226.0
LOS		F	A	D	B					C	C	F
Approach Delay		129.5			12.9						208.9	
Approach LOS		F			B						F	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 83 (92%), Referenced to phase 4:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.43
Intersection Signal Delay: 124.4 Intersection LOS: F
Intersection Capacity Utilization 87.8% ICU Level of Service E
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰↑	↱
Traffic Volume (vph)	0	1425	515	91	795	0	0	0	0	90	0	955
Future Volume (vph)	0	1425	515	91	795	0	0	0	0	90	0	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		0	0		0	335		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	*0.58	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	2099	1538	1719	3438	0	0	0	0	1633	1633	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			361									150
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		967			480			569			488	
Travel Time (s)		14.7			7.3			12.9			11.1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1439	520	92	803	0	0	0	0	45	46	965
Turn Type		NA	Perm	Prot	NA					Prot	NA	custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Total Split (s)				14.0	52.0					28.0	28.0	
Total Lost Time (s)				4.0	4.0					4.0	4.0	
Act Effct Green (s)		46.8	46.8	10.0	48.0					16.8	14.4	34.0
Actuated g/C Ratio		0.52	0.52	0.11	0.53					0.19	0.16	0.38
v/c Ratio		1.32	0.53	0.48	0.44					0.15	0.18	1.43
Control Delay		173.8	6.9	37.9	10.3					27.8	26.9	226.0
Queue Delay		0.1	0.0	0.0	0.0					0.0	0.0	0.0
Total Delay		173.8	6.9	37.9	10.3					27.8	26.9	226.0
LOS		F	A	D	B					C	C	F
Approach Delay		129.5			13.1						208.9	
Approach LOS		F			B						F	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 83 (92%), Referenced to phase 4:EBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.43
Intersection Signal Delay: 124.3 Intersection LOS: F
Intersection Capacity Utilization 87.8% ICU Level of Service E
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱			
Traffic Volume (vph)	1190	265	0	0	425	330	355	0	80	0	0	0
Future Volume (vph)	1190	265	0	0	425	330	355	0	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						328			85			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	1266	282	0	0	452	351	189	189	85	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	48.0	69.0			21.0	21.0	21.0	21.0	21.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	40.3	65.0			20.7	20.7	17.0	17.0	17.0			
Actuated g/C Ratio	0.45	0.72			0.23	0.23	0.19	0.19	0.19			
v/c Ratio	0.85	0.11			0.57	0.58	0.61	0.61	0.24			
Control Delay	7.2	0.5			35.1	9.3	43.1	43.1	9.3			
Queue Delay	1.7	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	8.9	0.5			35.1	9.3	43.1	43.1	9.3			
LOS	A	A			D	A	D	D	A			
Approach Delay		7.4			23.8			36.9				
Approach LOS		A			C			D				

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 16.9 Intersection LOS: B
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱			
Traffic Volume (vph)	1190	265	0	0	431	330	355	0	86	0	0	0
Future Volume (vph)	1190	265	0	0	431	330	355	0	86	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						328			91			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	1266	282	0	0	459	351	189	189	91	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	48.0	69.0			21.0	21.0	21.0	21.0	21.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	40.3	65.0			20.7	20.7	17.0	17.0	17.0			
Actuated g/C Ratio	0.45	0.72			0.23	0.23	0.19	0.19	0.19			
v/c Ratio	0.85	0.11			0.58	0.58	0.61	0.61	0.25			
Control Delay	7.2	0.5			35.2	9.3	43.1	43.1	9.1			
Queue Delay	1.7	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	8.9	0.5			35.2	9.3	43.1	43.1	9.1			
LOS	A	A			D	A	D	D	A			
Approach Delay		7.4			24.0			36.5				
Approach LOS		A			C			D				

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.0	Intersection LOS: B
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

3: US 101 NB & Betteravia
PM Peak Hour

Cumulative

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱			
Traffic Volume (vph)	1240	270	0	0	435	335	440	0	85	0	0	0
Future Volume (vph)	1240	270	0	0	435	335	440	0	85	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						352			90			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	1319	287	0	0	463	356	234	234	90	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	47.0	67.0			20.0	20.0	23.0	23.0	23.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	40.6	63.0			18.4	18.4	19.0	19.0	19.0			
Actuated g/C Ratio	0.45	0.70			0.20	0.20	0.21	0.21	0.21			
v/c Ratio	0.88	0.12			0.66	0.60	0.68	0.68	0.23			
Control Delay	7.8	0.5			39.0	8.8	44.1	44.1	8.4			
Queue Delay	4.7	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	12.5	0.5			39.0	8.8	44.1	44.1	8.4			
LOS	B	A			D	A	D	D	A			
Approach Delay		10.3			25.9			38.3				
Approach LOS		B			C			D				

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 87.8%	ICU Level of Service E
Analysis Period (min) 15	

3: US 101 NB & Betteravia
PM Peak Hour

Cumulative + Project

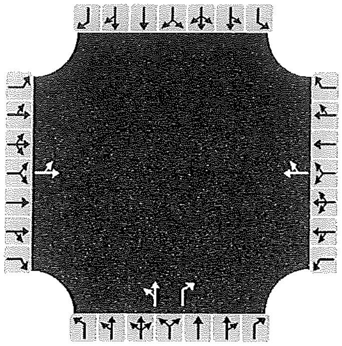
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱			
Traffic Volume (vph)	1240	270	0	0	441	335	440	0	91	0	0	0
Future Volume (vph)	1240	270	0	0	441	335	440	0	91	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	380		0	0		250	0		165	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3335	3438	0	0	3438	1538	1633	1633	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						352			97			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			540			561			479	
Travel Time (s)		6.9			8.2			12.8			10.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	1319	287	0	0	469	356	234	234	97	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Total Split (s)	47.0	67.0			20.0	20.0	23.0	23.0	23.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Act Effct Green (s)	40.6	63.0			18.4	18.4	19.0	19.0	19.0			
Actuated g/C Ratio	0.45	0.70			0.20	0.20	0.21	0.21	0.21			
v/c Ratio	0.88	0.12			0.67	0.60	0.68	0.68	0.24			
Control Delay	7.8	0.5			39.3	8.8	44.1	44.1	8.3			
Queue Delay	4.7	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	12.5	0.5			39.3	8.8	44.1	44.1	8.3			
LOS	B	A			D	A	D	D	A			
Approach Delay		10.3			26.2			37.9				
Approach LOS		B			C			D				

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 4:EBT and 7:EBL, Start of Green, Master Intersection	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 87.8%	ICU Level of Service E
Analysis Period (min) 15	

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 NB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 NB RAMP
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.93
Time Analyzed	AM PEAK HOUR		
Project Description	BASELINE CONDITIONS		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	48	29			233	31	231	1	172			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR			LT	R				
Flow Rate, v (veh/h)	83			284			249	185				
Percent Heavy Vehicles	6			6			6	6				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20	3.20				
Initial Degree of Utilization, x	0.074			0.252			0.222	0.164				
Final Departure Headway, hd (s)	5.64			5.14			6.09	4.88				
Final Degree of Utilization, x	0.130			0.405			0.422	0.251				
Move-Up Time, m (s)	2.0			2.0			2.3	2.3				
Service Time, ts (s)	3.64			3.14			3.79	2.58				

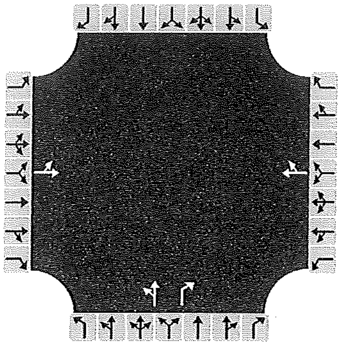
Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	83			284			249	185				
Capacity	638			700			591	737				
95% Queue Length, Q_{95} (veh)	0.4			2.0			2.1	1.0				
Control Delay (s/veh)	9.5			11.6			13.2	9.2				
Level of Service, LOS	A			B			B	A				
Approach Delay (s/veh)	9.5			11.6			11.5					
Approach LOS	A			B			B					
Intersection Delay, s/veh | LOS	11.3						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 NB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 NB RAMP
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.93
Time Analyzed	AM PEAK HOUR		
Project Description	BASELINE + PROJECT CONDITIONS		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	48	29			239	31	231	1	178			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR			LT	R				
Flow Rate, v (veh/h)	83			290			249	191				
Percent Heavy Vehicles	6			6			6	6				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20	3.20				
Initial Degree of Utilization, x	0.074			0.258			0.222	0.170				
Final Departure Headway, hd (s)	5.67			5.16			6.11	4.90				
Final Degree of Utilization, x	0.130			0.416			0.423	0.261				
Move-Up Time, m (s)	2.0			2.0			2.3	2.3				
Service Time, ts (s)	3.67			3.16			3.81	2.60				

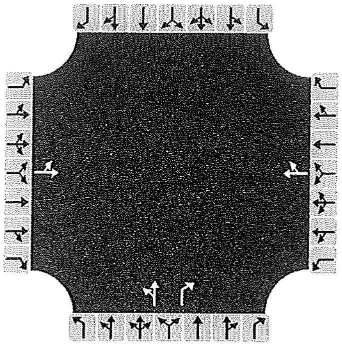
Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	83			290			249	191				
Capacity	635			698			589	734				
95% Queue Length, Q_{95} (veh)	0.4			2.1			2.1	1.0				
Control Delay (s/veh)	9.5			11.8			13.2	9.3				
Level of Service, LOS	A			B			B	A				
Approach Delay (s/veh)	9.5			11.8			11.5					
Approach LOS	A			B			B					
Intersection Delay, s/veh | LOS	11.4						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 NB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 NB RAMP
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.96
Time Analyzed	PM PEAK HOUR		
Project Description	BASELINE CONDITIONS		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	22	60			237	41	480	4	260			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR			LT	R				
Flow Rate, v (veh/h)	85			290			504	271				
Percent Heavy Vehicles	6			6			6	6				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20	3.20				
Initial Degree of Utilization, x	0.076			0.257			0.448	0.241				
Final Departure Headway, hd (s)	6.42			5.86			6.26	5.05				
Final Degree of Utilization, x	0.152			0.472			0.876	0.380				
Move-Up Time, m (s)	2.0			2.0			2.3	2.3				
Service Time, ts (s)	4.42			3.86			3.96	2.75				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	85			290			504	271				
Capacity	561			614			575	712				
95% Queue Length, Q_{95} (veh)	0.5			2.5			10.0	1.8				
Control Delay (s/veh)	10.6			14.0			38.1	10.8				
Level of Service, LOS	B			B			E	B				
Approach Delay (s/veh)	10.6			14.0			28.6					
Approach LOS	B			B			D					
Intersection Delay, s/veh | LOS	23.6						C					

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US 101 NB & SR 166 PM PEAK.xaw

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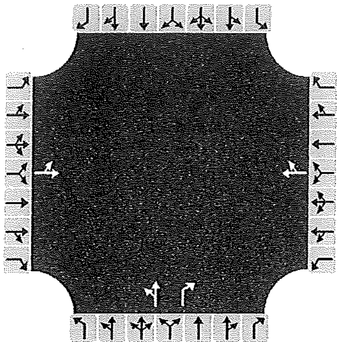
HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 NB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 NB RAMP
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.96
Time Analyzed	PM PEAK HOUR		
Project Description	BASELINE + PROJECT CONDITIONS		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	22	60			243	41	480	4	266			
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR			LT	R				
Flow Rate, v (veh/h)	85			296			504	277				
Percent Heavy Vehicles	6			6			6	6				

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20	3.20				
Initial Degree of Utilization, x	0.076			0.263			0.448	0.246				
Final Departure Headway, hd (s)	6.44			5.87			6.28	5.07				
Final Degree of Utilization, x	0.153			0.483			0.879	0.391				
Move-Up Time, m (s)	2.0			2.0			2.3	2.3				
Service Time, ts (s)	4.44			3.87			3.98	2.77				

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	85			296			504	277				
Capacity	559			613			573	709				
95% Queue Length, Q_{95} (veh)	0.5			2.6			10.1	1.9				
Control Delay (s/veh)	10.6			14.2			38.6	11.0				
Level of Service, LOS	B			B			E	B				
Approach Delay (s/veh)	10.6			14.2			28.8					
Approach LOS	B			B			D					
Intersection Delay, s/veh | LOS	23.8						C					

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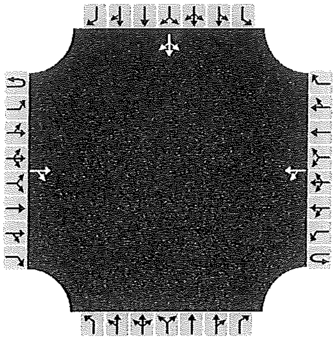
US 101 NB & SR 166 PM PEAK EXISTING + PROJECT.xaw

HCS7 Two-Way Stop-Control Report

General Information / Site Information

General Information		Site Information	
Analyst	DLD	Intersection	US 101 SB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 SB RAMP
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	0.88
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE CONDITIONS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration				TR		LT									LTR	
Volume (veh/h)			55	372		236	228							22	1	19
Percent Heavy Vehicles (%)						6								6	6	6
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Approach	Eastbound				Westbound				Northbound				Southbound			
Base Critical Headway (sec)						4.1								7.1	6.5	6.2
Critical Headway (sec)						4.16								6.46	6.56	6.26
Base Follow-Up Headway (sec)						2.2								3.5	4.0	3.3
Follow-Up Headway (sec)						2.25								3.55	4.05	3.35

Delay, Queue Length, and Level of Service

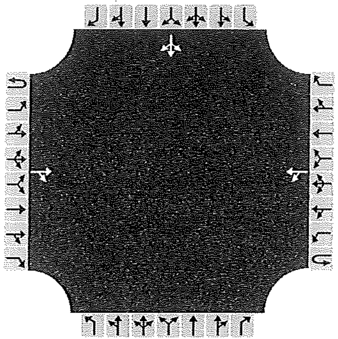
Approach	Eastbound				Westbound				Northbound				Southbound			
Flow Rate, v (veh/h)						268									48	
Capacity, c (veh/h)						1059									337	
v/c Ratio						0.25									0.14	
95% Queue Length, Q_{95} (veh)						1.0									0.5	
Control Delay (s/veh)						9.5									17.4	
Level of Service (LOS)						A									C	
Approach Delay (s/veh)					6.2								17.4			
Approach LOS													C			

AWD= 7.9 SEC = LOS A

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 SB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 SB RAMP
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	0.88
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE + PROJECT CONDITIONS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration				TR		LT									LTR	
Volume (veh/h)			55	372		242	228							22	1	19
Percent Heavy Vehicles (%)						6								6	6	6
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1								7.1	6.5	6.2
Critical Headway (sec)						4.16								6.46	6.56	6.26
Base Follow-Up Headway (sec)						2.2								3.5	4.0	3.3
Follow-Up Headway (sec)						2.25								3.55	4.05	3.35

Delay, Queue Length, and Level of Service

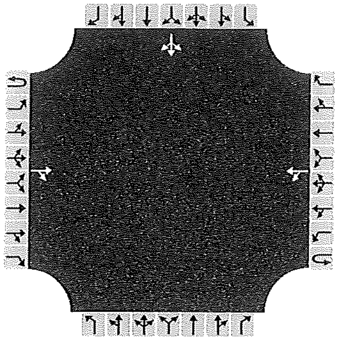
Flow Rate, v (veh/h)						275									48	
Capacity, c (veh/h)						1059									331	
v/c Ratio						0.26									0.14	
95% Queue Length, Q_{95} (veh)						1.0									0.5	
Control Delay (s/veh)						9.6									17.7	
Level of Service (LOS)						A									C	
Approach Delay (s/veh)					6.3								17.7			
Approach LOS													C			

AWD = 8.0 SEC = LOS A

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 SB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 SB RAMP
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE CONDITIONS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration				TR		LT									LTR	
Volume (veh/h)			38	423		220	492							43	1	38
Percent Heavy Vehicles (%)						6								6	6	6
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1								7.1	6.5	6.2
Critical Headway (sec)						4.16								6.46	6.56	6.26
Base Follow-Up Headway (sec)						2.2								3.5	4.0	3.3
Follow-Up Headway (sec)						2.25								3.55	4.05	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						237									88	
Capacity, c (veh/h)						1049									257	
v/c Ratio						0.23									0.34	
95% Queue Length, Q_{95} (veh)						0.9									1.5	
Control Delay (s/veh)						9.4									26.1	
Level of Service (LOS)						A									D	
Approach Delay (s/veh)					5.0								26.1			
Approach LOS													D			

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US 101 SB & SR 166 PM PEAK.xtw

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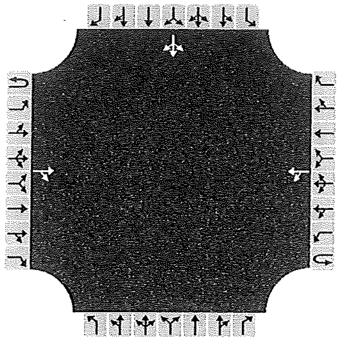
AWD = 13.9 SEC = LOS B

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	US 101 SB/SR 166
Agency/Co.	ATE	Jurisdiction	SLO COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	US 101 SB RAMP
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE + PROJECT CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration				TR		LT									LTR	
Volume (veh/h)			38	423		226	492							43	1	38
Percent Heavy Vehicles (%)						6								6	6	6
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1								7.1	6.5	6.2
Critical Headway (sec)						4.16								6.46	6.56	6.26
Base Follow-Up Headway (sec)						2.2								3.5	4.0	3.3
Follow-Up Headway (sec)						2.25								3.55	4.05	3.35

Delay, Queue Length, and Level of Service

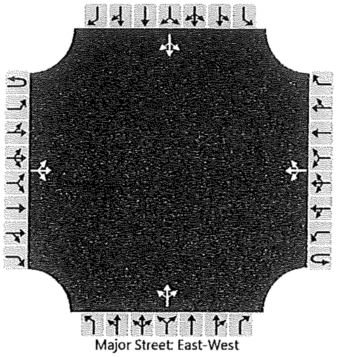
Flow Rate, v (veh/h)						243									88	
Capacity, c (veh/h)						1049									254	
v/c Ratio						0.23									0.35	
95% Queue Length, Q_{95} (veh)						0.9									1.5	
Control Delay (s/veh)						9.5									26.6	
Level of Service (LOS)						A									D	
Approach Delay (s/veh)					5.1								26.6			
Approach LOS													D			

AWD = 14.0 SEC = LOS B

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	SR 166/BASIC SCHOOL ROAD
Agency/Co.	ATE	Jurisdiction	KERN COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	BASIC SCHOOL ROAD
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	160	0		5	104	11		0	10	10		78	4	4
Percent Heavy Vehicles (%)		6				6				6	6	6		6	6	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	Eastbound				Westbound				Northbound				Southbound			
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.16				7.16	6.56	6.26		7.16	6.56	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.25				3.55	4.05	3.35		3.55	4.05	3.35

Delay, Queue Length, and Level of Service

	Eastbound				Westbound				Northbound				Southbound			
Flow Rate, v (veh/h)		2				6					24				104	
Capacity, c (veh/h)		1423				1359					676				583	
v/c Ratio		0.00				0.00					0.04				0.18	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1				0.6	
Control Delay (s/veh)		7.5		0.0		7.7		0.0			10.5				12.5	
Level of Service (LOS)		A		A		A		A			B				B	
Approach Delay (s/veh)	0.1				0.4				10.5				12.5			
Approach LOS									B				B			

HCS™ TWSC Version 7.5
SR 166 & BASIC SCHOOL ROAD AM PEAK.xtw

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AWD = 11.9 SEC = LOS B

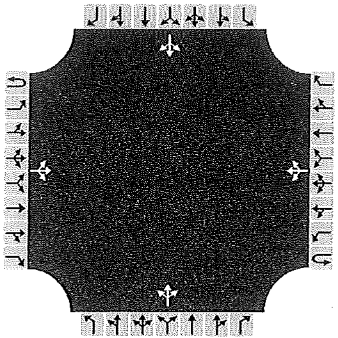
HCS7 Two-Way Stop-Control Report

General Information

Site Information

Analyst	DLD	Intersection	SR 166/BASIC SCHOOL ROAD
Agency/Co.	ATE	Jurisdiction	KERN COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	BASIC SCHOOL ROAD
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE + PROJECT CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	160	6		5	104	11		6	10	10		78	4	4
Percent Heavy Vehicles (%)		6				6				6	6	6		6	6	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.16				7.16	6.56	6.26		7.16	6.56	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.25				3.55	4.05	3.35		3.55	4.05	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2				6					31				104	
Capacity, c (veh/h)		1423				1351					651				580	
v/c Ratio		0.00				0.00					0.05				0.18	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.6	
Control Delay (s/veh)		7.5		0.0		7.7		0.0			10.8				12.6	
Level of Service (LOS)		A		A		A		A			B				B	
Approach Delay (s/veh)	0.1				0.4				10.8				12.6			
Approach LOS									B				B			

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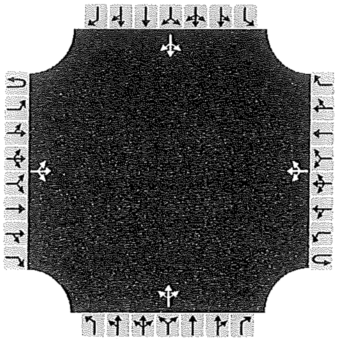
AWD = 11.9 SEC = LOS B

SR 166 & BASIC SCHOOL ROAD AM PEAK EXISING + PROJECT.xtw

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	SR 166/BASIC SCHOOL ROAD
Agency/Co.	ATE	Jurisdiction	KERN COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	BASIC SCHOOL ROAD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		3	124	1		8	141	30		3	4	12		8	3	6
Percent Heavy Vehicles (%)		6				6				6	6	6		6	6	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.16				7.16	6.56	6.26		7.16	6.56	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.25				3.55	4.05	3.35		3.55	4.05	3.35

Delay, Queue Length, and Level of Service

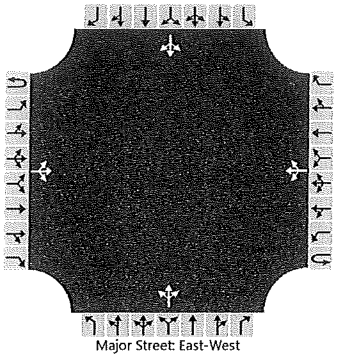
Flow Rate, v (veh/h)		4				10					23				20	
Capacity, c (veh/h)		1344				1409					724				633	
v/c Ratio		0.00				0.01					0.03				0.03	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1				0.1	
Control Delay (s/veh)		7.7		0.0		7.6		0.1			10.1				10.9	
Level of Service (LOS)		A		A		A		A			B				B	
Approach Delay (s/veh)	0.2				0.4				10.1				10.9			
Approach LOS									B				B			

AWD = 9.8 SEC = LOS A

HCS7 Two-Way Stop-Control Report

General Information		**Site Information**	
Analyst	DLD	Intersection	SR 166/BASIC SCHOOL ROAD
Agency/Co.	ATE	Jurisdiction	KERN COUNTY
Date Performed	8/9/18	East/West Street	SR 166
Analysis Year	2018	North/South Street	BASIC SCHOOL ROAD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BASELINE + PROJECT CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		3	124	7		8	141	30		9	4	12		8	3	6
Percent Heavy Vehicles (%)		6				6				6	6	6		6	6	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.16				7.16	6.56	6.26		7.16	6.56	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.25				3.55	4.05	3.35		3.55	4.05	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				10					30				20	
Capacity, c (veh/h)		1344				1400					676				630	
v/c Ratio		0.00				0.01					0.04				0.03	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1				0.1	
Control Delay (s/veh)		7.7		0.0		7.6		0.1			10.6				10.9	
Level of Service (LOS)		A		A		A		A			B				B	
Approach Delay (s/veh)	0.2				0.4				10.6				10.9			
Approach LOS									B				B			

AWD = 10.0 SEC = LOS A

ACCIDENT DATA

OTM22130

Table B - Selective Accident Rate Calculation

Policy controlling the use of Traffic Accident Surveillance and Analysis System (TASAS) - Transportation Systems Network (TSN) Reports

1. TASAS - TSN has officially replaced the TASAS - "Legacy" database.
2. Reports from TSN are to be used and interpreted by the California Department of Transportation (Caltrans) officials or authorized representative.
3. Electronic versions of these reports may be emailed between Caltrans' employees only using the State computer system.
4. The contents of these reports shall be considered confidential and may be privileged pursuant to 23 U.S.C. Section 409, and are for the sole use of the intended recipient(s). Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message. Do not print, copy or forward.

OTM22130

Table B - Selective Accident Rate Calculation

Report Parameters-

Event ID: 4038859
Request Name: sb-slo-kern-101-166-33
Ref Date: 08/27/2018

Request- & Line	LOC	DIR	LSC	Route/Location	Begin Date	End Date	Rate Type	Out Seq	Override Rates			Override ADT		Req. Type	Com- bine?	Excl Ramp?
									Rate	Inj%	Fat%	Main	Cross			
1 5	H	T	I	05 SB 101 R036.619 - 05 SB 101 R057.117	01-JAN-15	31-DEC-17	N	L						N	N	Y
1 6	H	T	I	05 SB 101 R057.117 - 05 SB 101 082.183	01-JAN-15	31-DEC-17	N	L						N	N	Y
1 7	H	T	I	05 SB 101 082.183 - 05 SB 101 086.588	01-JAN-15	31-DEC-17	N	L						N	N	Y
1 8	H	T	I	05 SB 101 086.588 - 05 SB 101 090.988	01-JAN-15	31-DEC-17	N	L						N	N	Y
1 9	H	T	I	05 SLO 101 000.000 - 05 SLO 101 000.813	01-JAN-15	31-DEC-17	N	L						N	N	Y

Event Log:

```
Job id is : 43400 Accidents Table  B Request sb-slo-kern-101-166-33 Submitted by  T5ETOYAM
05 SB 101  R 36.619 - 05 SB 101  R 57.117 01/01/2015 TO 12/31/2017
05 SB 101  R 57.117 - 05 SB 101 82.183 01/01/2015 TO 12/31/2017
05 SB 101 82.183 - 05 SB 101 86.588 01/01/2015 TO 12/31/2017
05 SB 101 86.588 - 05 SB 101 90.988 01/01/2015 TO 12/31/2017
05 SLO 101 0 - 05 SLO 101 .813 01/01/2015 TO 12/31/2017
```

California Department of Transportation
Table B - Selective Accident Rate Calculation

		No. of Accidents / Significance										Accident Rates					
												Actual			Average		
Location Description	Rate Group (RUS)	Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Pers Kld Inj	ADT Main X-St	Total MV+ or MVM	Fat	F+I	Tot	Fat	F+I	Tot
05 SB 101 R036.619 - 05 SB 101 R057.116 0001-0005 2015-01-01 2017-12-31	**20.319** MI H *36 mo.* R	395	4	113	117	124	202	164	4 160	26.6	591.61	0.007	.20	.67	0.009	.20	.53
05 SB 101 R057.117 - 05 SB 101 082.182 0001-0006 2015-01-01 2017-12-31	**24.983** MI H *36 mo.* NA	233	6	80	86	87	15	99	7 114	29.2	799.54	0.007	.11	.29	0.009	.19	.51
05 SB 101 082.183 - 05 SB 101 086.587 0001-0007 2015-01-01 2017-12-31	**4.405** MI H *36 mo.* S	89	1	28	29	49	10	34	1 34	50.8	245.25	0.004	.12	.36	0.004	.14	.43
05 SB 101 086.588 - 05 SB 101 090.987 0001-0008 2015-01-01 2017-12-31	**4.40** MI H *36 mo.* NA	222	0	63	63	148	18	91	0 81	65.3	314.90	0.000	.20	.71	0.004	.18	.55
05 SLO 101 000.000 - 05 SLO 101 000.812 0001-0009 2015-01-01 2017-12-31	**.813** MI H *36 mo.* NA	53	1	18	19	34	16	19	2 25	71.6	63.80	0.016	.30	.83	0.005	.17	.51

Accident Rates expressed as: **# of accidents / Million vehicle miles**

+ denotes that **Million Vehicles** (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

OTM22130

Table B - Selective Accident Rate Calculation

Policy controlling the use of Traffic Accident Surveillance and Analysis System (TASAS) - Transportation Systems Network (TSN) Reports

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OTM22130

Table B - Selective Accident Rate Calculation

Report Parameters-

Event ID: 4038869
Request Name: sb-slo-kern-101-166-33
Ref Date: 08/27/2018

Request- & Line	L O C	D I R	L S C	Route/Location	Begin Date	End Date	Rate Type	Out Seq	Override Rates Rate	Override Rates Inj%	Override Rates Fat%	Override ADT Main	Override ADT Cross	Req. Type	Com- bine?	Excl Ramp?
3 5	R	T	I	05 SB 101 086.470 - 05 SB 101 086.471	01-JAN-15	31-DEC-17	N	L						N	N	N
3 6	R	T	I	05 SB 101 086.690 - 05 SB 101 086.691	01-JAN-15	31-DEC-17	N	L						N	N	N
3 7	R	T	I	05 SB 101 086.450 - 05 SB 101 086.451	01-JAN-15	31-DEC-17	N	L						N	N	N
3 8	R	T	I	05 SB 101 086.700 - 05 SB 101 086.701	01-JAN-15	31-DEC-17	N	L						N	N	N
4 5	R	T	I	05 SB 101 088.490 - 05 SB 101 088.491	01-JAN-15	31-DEC-17	N	L						N	N	N
4 6	R	T	I	05 SB 101 088.780 - 05 SB 101 088.781	01-JAN-15	31-DEC-17	N	L						N	N	N
4 7	R	T	I	05 SB 101 088.468 - 05 SB 101 088.469	01-JAN-15	31-DEC-17	N	L						N	N	N
4 8	R	T	I	05 SB 101 088.772 - 05 SB 101 088.773	01-JAN-15	31-DEC-17	N	L						N	N	N
6 7	R	T	I	05 SLO 101 000.680 - 05 SLO 101 000.681	01-JAN-15	31-DEC-17	N	L						N	N	N
6 8	R	T	I	05 SLO 101 001.002 - 05 SLO 101 001.003	01-JAN-15	31-DEC-17	N	L						N	N	N
6 9	R	T	I	05 SLO 101 000.670 - 05 SLO 101 000.671	01-JAN-15	31-DEC-17	N	L						N	N	N
6 10	R	T	I	05 SLO 101 000.980 - 05 SLO 101 000.981	01-JAN-15	31-DEC-17	N	L						N	N	N
8 1	I	T	I	06 KER 166 004.980 - 06 KER 166 004.981	01-JAN-15	31-DEC-17	N	L						N	N	N

Event Log:

Job id is : 43409 Accidents Table B Request sb-slo-kern-101-166-33 Submitted by T5ETOYAM
05 SLO 101 .68 - 05 SLO 101 .681 01/01/2015 TO 12/31/2017
05 SLO 101 1.002 - 05 SLO 101 1.003 01/01/2015 TO 12/31/2017
05 SLO 101 .67 - 05 SLO 101 .671 01/01/2015 TO 12/31/2017
05 SLO 101 .98 - 05 SLO 101 .981 01/01/2015 TO 12/31/2017
05 SB 101 88.49 - 05 SB 101 88.491 01/01/2015 TO 12/31/2017
05 SB 101 88.78 - 05 SB 101 88.781 01/01/2015 TO 12/31/2017
05 SB 101 88.468 - 05 SB 101 88.469 01/01/2015 TO 12/31/2017
05 SB 101 88.772 - 05 SB 101 88.773 01/01/2015 TO 12/31/2017

06 KER 166 4.98 - 06 KER 166 4.981 01/01/2015 TO 12/31/2017
05 SB 101 86.47 - 05 SB 101 86.471 01/01/2015 TO 12/31/2017
05 SB 101 86.69 - 05 SB 101 86.691 01/01/2015 TO 12/31/2017
05 SB 101 86.45 - 05 SB 101 86.451 01/01/2015 TO 12/31/2017
05 SB 101 86.7 - 05 SB 101 86.701 01/01/2015 TO 12/31/2017

California Department of Transportation

Table B - Selective Accident Rate Calculation

Location Description		Rate Group (RUS)	No. of Accidents / Significance Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Pers Kld Inj	ADT Main X-St	Total MV+ or MVM	Accident Rates Actual Fat	Actual F+I	Actual Tot	Average Fat	Average F+I	Average Tot
05 SB 101 086.470 101/NB OFF TO BETTERAVIA RD 0003-0005 2015-01-01 2017-12-31	36 mo.	R 10 U	4	0	0	0	4	1	0	0 0	4.8 .0	5.28 +	0.000	.00	.76	0.004	.32	.92
05 SB 101 086.690 101/NB ON FROM BETTERAVIA R 0003-0006 2015-01-01 2017-12-31	36 mo.	R 12 U	6	0	1	1	6	1	1	0 1	10.0 .0	10.93 +	0.000	.09	.55	0.002	.21	.60
05 SB 101 086.450 101/SB ON FROM BETTERAVIA R 0003-0007 2015-01-01 2017-12-31	36 mo.	R 12 U	2	0	1	1	2	0	1	0 1	4.3 .0	4.75 +	0.000	.21	.42	0.002	.21	.60
05 SB 101 086.700 101/SB OFF TO BETTERAVIA RD 0003-0008 2015-01-01 2017-12-31	36 mo.	R 10 U	28	0	5	5	26	2	4	0 5	10.0 .0	10.97 +	0.000	.46	2.55	0.004	.32	.92
05 SB 101 088.490 101/NB OFF TO RTE 166 MAIN 0004-0005 2015-01-01 2017-12-31	36 mo.	R 10 U	7	0	0	0	5	0	3	0 0	8.0 .0	8.81 +	0.000	.00	.79	0.004	.32	.92
05 SB 101 088.780 101/NB ON FROM RTE 166 MAIN 0004-0006 2015-01-01 2017-12-31	36 mo.	R 12 U	12	0	3	3	10	3	5	0 5	5.5 .0	6.00 +	0.000	.50	2.00	0.002	.21	.60
05 SB 101 088.468 101/SB ON FR RTE 166/MAIN 0004-0007 2015-01-01 2017-12-31	36 mo.	R 28 U	1	0	0	0	1	0	0	0 0	7.6 .0	8.28 +	0.000	.00	.12	0.001	.14	.48
05 SB 101 088.772 101/166/E MAIN ST, SB OFF 0004-0008 2015-01-01 2017-12-31	36 mo.	R 54 U	4	0	1	1	3	0	0	0 1	6.3 .0	6.92 +	0.000	.14	.58	0.003	.24	.68
05 SLO 101 000.680 101/NB OFF TO N JCT 166 0006-0007 2015-01-01 2017-12-31	36 mo.	R 54 U	0	0	0	0	0	0	0	0 0	6.2 .0	6.83 +	0.000	.00	.00	0.003	.24	.68
05 SLO 101 001.002 101/NB ON FR RTE 166 0006-0008 2015-01-01 2017-12-31	36 mo.	R 56 U	0	0	0	0	0	0	0	0 0	.8 .0	.88 +	0.000	.00	.00	0.002	.16	.47
05 SLO 101 000.670 101/SB ON FROM N JCT 166 0006-0009 2015-01-01 2017-12-31	36 mo.	R 12 U	5	0	2	2	1	0	2	0 2	6.8 .0	7.42 +	0.000	.27	.67	0.002	.21	.60
05 SLO 101 000.980 101/SB OFF TO N JCT 166 0006-0010 2015-01-01 2017-12-31	36 mo.	R 10 U	1	0	1	1	1	0	0	0 1	1.0 .0	1.14 +	0.000	.88	.88	0.004	.32	.92

Accident Rates expressed as: **# of accidents / Million vehicle miles**

+ denotes that **Million Vehicles** (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

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OTM22130

Table B - Selective Accident Rate Calculation

Policy controlling the use of Traffic Accident Surveillance and Analysis System (TASAS) - Transportation Systems Network (TSN) Reports

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California Department of Transportation

Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	No. of Accidents / Significance							Pers Kld Inj	ADT Main X-St	Total MV+ or MVM	Accident Rates					
												Actual			Average		
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark				Fat	F+I	Tot	Fat	F+I	Tot
06 KER 166 004.980 BASIC SCHOOL ROAD, 0008-0001 2015-01-01 2017-12-31 *36 mo.*	I 17 R	2	0	1	1	1	0	1	0 5	3.3 .1	3.75 +	0.000	.27	.53	0.003	.07	.16

Accident Rates expressed as: **# of accidents / Million vehicle miles**

+ denotes that **Million Vehicles** (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

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Table B - Selective Accident Rate Calculation

Report Parameters-

Event ID: 4038875
Request Name: sb-slo-kern-101-166-33
Ref Date: 08/27/2018

Request- & Line	L O C	D I R	L S C	Route/Location	Begin Date	End Date	Rate Type	Out Seq	Override Rates			Override ADT		Req. Type	Com-bine?	Excl Ramp?
									Rate	Inj%	Fat%	Main	Cross			
2 5	H	T	I	05 SLO 166 008.927 - 05 SLO 166 074.628	01-JAN-15	31-DEC-17	N	L						N	N	Y
2 6	H	T	I	05 SLO 033 002.691 - 05 SLO 033 004.951	01-JAN-15	31-DEC-17	N	L						N	N	Y
2 7	H	T	I	06 KER 033 000.000 - 06 KER 033 R011.555	01-JAN-15	31-DEC-17	N	L						N	N	Y
2 8	H	T	I	06 KER 166 000.010 - 06 KER 166 004.980	01-JAN-15	31-DEC-17	N	L						N	N	Y

Event Log:

```
Job id is : 43414 Accidents Table  B Request sb-slo-kern-101-166-33 Submitted by  T5ETOYAM
05 SLO 166 8.927 - 05 SLO 166 74.628 01/01/2015 TO 12/31/2017
05 SLO 033 2.691 - 05 SLO 033 4.951 01/01/2015 TO 12/31/2017
06 KER 033 0 - 06 KER 033  R 11.555 01/01/2015 TO 12/31/2017
06 KER 166 .01 - 06 KER 166 4.98 01/01/2015 TO 12/31/2017
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California Department of Transportation
Table B - Selective Accident Rate Calculation

Page# 1
Event ID: 4038875

Location Description	Rate Group (RUS)	No. of Accidents / Significance							Pers Kld Inj	ADT Main X-St	Total MV+ or MVM	Accident Rates					
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark				Actual Fat	Actual F+I	Actual Tot	Average Fat	Average F+I	Average Tot
05 SLO 166 008.927 - 05 SLO 166 074.627 0002-0005 2015-01-01 2017-12-31	**62.165 MI** H *36 mo.* R	167	10	71	81	57	15	74	13 119	3.0	204.40	0.049	.40	.82	0.019	.30	.70
05 SLO 033 002.691 - 05 SLO 033 004.950 0002-0006 2015-01-01 2017-12-31	**2.233 MI** H *36 mo.* R	10	1	3	4	6	0	4	1 4	3.8	9.38	0.107	.43	1.07	0.021	.30	.68
06 KER 033 000.000 - 06 KER 033 R011.554 0002-0007 2015-01-01 2017-12-31	**11.555 MI** H *36 mo.* NA	40	3	15	18	22	6	17	3 26	3.8	48.12	0.062	.37	.83	0.022	.44	.98
06 KER 166 000.010 - 06 KER 166 004.979 0002-0008 2015-01-01 2017-12-31	**4.970 MI** H *36 mo.* NA	13	1	8	9	5	1	3	1 13	3.0	16.34	0.061	.55	.80	0.017	.33	.76

Accident Rates expressed as: **# of accidents / Million vehicle miles**

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For Ramps RUS only considers R(Rural) U(Urban)

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California Department of Transportation

OTM22130

Table B - Selective Accident Rate Calculation

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OTM22130

Table B - Selective Accident Rate Calculation

Report Parameters-

Event ID: 4039386
Request Name: CPRA SB 101 Refugio Ramps ATE
Ref Date: 08/29/2018

Request- & Line	L O C	D I R	L S C	Route/Location	Begin Date	End Date	Rate Type	Out Seq	Override Rates			Override ADT		Req. Type	Com-bine?	Excl Ramp?
									Rate	Inj%	Fat%	Main	Cross			
1 1	R	T	I	05 SB 101 R036.243 - 05 SB 101 R036.889	01-JAN-15	31-DEC-17	N	L						N	N	N

Event Log:

Job id is : 43693 Accidents Table B Request CPRA SB 101 Refugio Ramps ATE Submitted by T5SCADEN
05 SB 101 R 36.243 - 05 SB 101 R 36.889 01/01/2015 TO 12/31/2017

California Department of Transportation

Table B - Selective Accident Rate Calculation

Location Description		Rate Group (RUS)	No. of Accidents / Significance Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Pers Kld Inj	ADT Main X-St	Total MV+ or MVM	Accident Rates Actual Fat	Actual F+I	Actual Tot	Average Fat	Average F+I	Average Tot
05 SB 101 R036.243 101/SB ON FR REFUGIO 0001-0001 2015-01-01 2017-12-31	*36 mo.*	R 19 R	0	0	0	0	0	0	0	0 0	.3 .0	.35 +	0.000	.00	.00	0.006	.17	.43
05 SB 101 R036.380 101/NB OFF TO REFUGIO 0001-0001 2015-01-01 2017-12-31	*36 mo.*	R 09 R	0	0	0	0	0	0	0	0 0	.3 .0	.29 +	0.000	.00	.00	0.010	.33	.98
05 SB 101 R036.513 101/SB OFF TO REFUGIO 0001-0001 2015-01-01 2017-12-31	*36 mo.*	R 21 R	0	0	0	0	0	0	0	0 0	.2 .0	.23 +	0.000	.00	.00	0.007	.51	1.48
05 SB 101 R036.888 101/NB ON FR REFUGIO 0001-0001 2015-01-01 2017-12-31	*36 mo.*	R 11 R	1	0	1	1	1	0	0	0 1	.2 .0	.26 +	0.000	3.85	3.85	0.005	.17	.50

Accident Rates expressed as: **# of accidents / Million vehicle miles**

+ denotes that **Million Vehicles** (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \quad \text{x} \quad \text{Time} \quad \text{x} \quad \text{Rate Expected} \quad \text{x} \quad \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \quad \text{x (Number Expected}^{1/2})) \quad + \quad 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - US 101 - REFUGIO RD I/C TO SR 246 I/C (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{26600 \text{ x} \quad 1095 \text{ x} \quad 0.53 \quad \text{x} \quad 20.32}{1000000} = \quad 313.686$$

Number Significant = 360.639

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \times (\text{Number Expected}^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - US 101 SB OFF-RAMP FROM BETTERAVIA RD (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{10970 \times 1095 \times 0.92 \times 1}{1000000} = 11.0512$$

Number Significant = 20.9437

DEFINITIONS

Number Expected =

$$\frac{\text{ADT} \quad \text{x} \quad \text{Time} \quad \text{x} \quad \text{Rate Expected} \quad \text{x} \quad \text{Length}}{1000000}$$

Number Significant = $\text{Number Expected} + (2.576 \ \text{x} \ (\text{Number Expected})^{1/2})) \quad + \quad 1.329$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - US 101 - BETTERAVIA RD I/C TO SB/SLO COUNTY LINE (January 1, 2015 through December 31, 2017)

Number Expected =

$$\frac{65300 \ \text{x} \quad 1095 \ \text{x} \quad 0.55 \quad \text{x} \quad 4.4}{1000000} = 173.038$$

Number Significant = 208.253

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \times (\text{Number Expected})^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - US 101 - SB/SLO COUNTY LINE TO SR 166 I/C (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{71600 \times 1095 \times 0.51 \times 0.813}{1000000} = 32.5078$$

Number Significant = 48.524

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \times (\text{Number Expected})^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - SR 166 - US 101 TO SR 33 SOUTH JUNCTION (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{3000 \times 1095 \times 0.7 \times 62.165}{1000000} = 142.948$$

Number Significant = 175.076

DEFINITIONS

Number Expected =

$$\frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

Number Significant =

$$\text{Number Expected} + (2.576 \times (\text{Number Expected})^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - SR 33 - SR 166 SOUTH JUNCTION to KERN COUNTY LINE (January 1, 2015 through December 31, 2017)

Number Expected =

$$\frac{3800 \times 1095 \times 0.68 \times 2.233}{1000000} = 6.31823$$

Number Significant = 14.1223

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \times (\text{Number Expected})^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - SR 33 - SR 166 NORTH JUNCTION to BASIC SCHOOL ROAD (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{3000 \times 1095 \times 0.76 \times 4.97}{1000000} = 12.4081$$

Number Significant = 22.8111

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \times (\text{Number Expected})^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - US 101 SB ON-RAMP AT SR 166 I/C (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{6800 \times 1095 \times 0.6 \times 1}{1000000} = 4.4676$$

Number Significant = 11.2414

DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \times \text{Time} \times \text{Rate Expected} \times \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \times (\text{Number Expected})^{1/2})) + 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - SR 166/BASIC SCHOOL ROAD INTERSECTION (January 1, 2015 through December 31, 2015)

$$\text{Number Expected} = \frac{3400 \times 1095 \times 0.16 \times 1}{1000000} = 0.59568$$

Number Significant = 3.91284

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DEFINITIONS

$$\text{Number Expected} = \frac{\text{ADT} \quad \text{x} \quad \text{Time} \quad \text{x} \quad \text{Rate Expected} \quad \text{x} \quad \text{Length}}{1000000}$$

$$\text{Number Significant} = \text{Number Expected} + (2.576 \quad \text{x (Number Expected)}^{1/2})) \quad + \quad 1.329$$

NOTES: Number Significant using 99.5% confidence level.

For intersections, use annual number of entering vehicles in place of ADT and delete length. The NR is the same as for roadway segments.

CALCULATIONS - US 101 NB ON-RAMP FROM REFUGIO RD (January 1, 2015 through December 31, 2017)

$$\text{Number Expected} = \frac{200 \text{ x} \quad 1095 \text{ x} \quad 0.5 \quad \text{x} \quad 1}{1000000} = \quad 0.1095$$

Number Significant = 2.29092

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑	↱	↰	↑↑					↰	↰↑	↱↱
Volume (vph)	0	1370	400	86	700	0	0	0	0	85	0	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		*0.58	1.00	1.00	0.95					0.95	0.95	0.88
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4198	1538	1719	3438					1633	1633	2707
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4198	1538	1719	3438					1633	1633	2707
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1384	404	87	707	0	0	0	0	86	0	949
RTOR Reduction (vph)	0	0	207	0	0	0	0	0	0	0	0	163
Lane Group Flow (vph)	0	1384	197	87	707	0	0	0	0	43	43	786
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Actuated Green, G (s)		43.8	43.8	7.6	45.4					26.6	26.6	36.6
Effective Green, g (s)		43.8	43.8	7.6	45.4					26.6	26.6	36.6
Actuated g/C Ratio		0.49	0.49	0.08	0.50					0.30	0.30	0.41
Clearance Time (s)				4.0	4.0					4.0	4.0	
Vehicle Extension (s)				3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		2043	748	145	1734					483	483	1101
v/s Ratio Prot		c0.33		c0.05	0.21					0.03	0.03	c0.29
v/s Ratio Perm			0.13									
v/c Ratio		0.68	0.26	0.60	0.41					0.09	0.09	0.71
Uniform Delay, d1		17.7	13.6	39.7	13.9					22.9	22.9	22.3
Progression Factor		0.59	0.09	0.73	0.78					1.00	1.00	1.00
Incremental Delay, d2		0.7	0.2	5.3	0.1					0.1	0.1	2.2
Delay (s)		11.1	1.4	34.4	11.0					23.0	23.0	24.5
Level of Service		B	A	C	B					C	C	C
Approach Delay (s)		8.9			13.6			0.0			24.4	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2: Betteravia & US 101 SB
PM Peak Hour

Cumulative + Project with Planned Improvements

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑	↱	↰	↑↑					↰	↰↑	↱↱
Volume (vph)	0	1425	515	91	795	0	0	0	0	90	0	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		*0.58	1.00	1.00	0.95					0.95	0.95	0.88
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4198	1538	1719	3438					1633	1633	2707
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4198	1538	1719	3438					1633	1633	2707
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1439	520	92	803	0	0	0	0	91	0	965
RTOR Reduction (vph)	0	0	258	0	0	0	0	0	0	0	0	132
Lane Group Flow (vph)	0	1439	262	92	803	0	0	0	0	45	46	833
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		4 12		3	8					1	6	6 12
Permitted Phases			4 12									6
Actuated Green, G (s)		45.4	45.4	6.4	45.8					26.2	26.2	36.2
Effective Green, g (s)		45.4	45.4	6.4	45.8					26.2	26.2	36.2
Actuated g/C Ratio		0.50	0.50	0.07	0.51					0.29	0.29	0.40
Clearance Time (s)				4.0	4.0					4.0	4.0	
Vehicle Extension (s)				3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		2118	776	122	1750					475	475	1089
v/s Ratio Prot		c0.34		c0.05	0.23					0.03	0.03	c0.31
v/s Ratio Perm			0.17									
v/c Ratio		0.68	0.34	0.75	0.46					0.09	0.10	0.77
Uniform Delay, d1		16.8	13.3	41.0	14.2					23.3	23.3	23.2
Progression Factor		0.61	0.10	0.79	0.79					1.00	1.00	1.00
Incremental Delay, d2		0.7	0.2	17.4	0.1					0.1	0.1	3.3
Delay (s)		11.0	1.6	49.9	11.3					23.3	23.4	26.5
Level of Service		B	A	D	B					C	C	C
Approach Delay (s)		8.5			15.3			0.0			26.2	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group