APPENDIX F

RESPONSE TO COMMENTS RECEIVED ON THE DRAFT NEGATIVE DECLARATION

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TABLE OF CONTENTS

APPENDIX F – COMMENTS AND RESPONSES TO COMMENTS
ULTRAMAR, INC. WILMINGTON REFINERY

PROPOSED COGENERATION PROJECT FINAL NEGATIVE DECLARATION

APPENDIX F

FINAL NEGATIVE DECLARATION

ULTRAMAR INC. WILMINGTON REFINERY COGENERATION PROJECT

COMMENTS AND RESPONSES TO COMMENTS

INTRODUCTION

This Appendix, together with other portions of the Negative Declaration, constitutes the Final Negative Declaration (ND) for the proposed Ultramar Inc. Wilmington Refinery Cogeneration Project.

The Draft ND was circulated for a 30-day public review and comment period on April 12, 2013 and ending May 14, 2013. The public comment period was extended to June 4, 2013 at the request of Elizabeth Klebaner of Adams, Broadwell, Joseph and Cardozo. The Draft ND is available at the South Coast Air Quality Management District (SCAQMD), 21865 Copley Drive, Diamond Bar, California 91765-4182 or by phone at (909) 396-2039. The Draft ND can also be downloaded by contacting the SCAQMD's CEQA web pages at http://www.aqmd.gov/ceqa/nonaqmd.html.

The Draft ND contained a detailed Project description, an analysis of the environmental impacts of all environmental resources included on the CEQA checklist, including cumulative impacts, and other areas of discussion as required by CEQA. The discussion of the project-related environmental impacts included a detailed analysis of air quality, hazards and hazardous materials, and noise.

The SCAQMD received one email and two comment letters on the Draft ND during the public comment period. The comment letters and responses to the comments raised in those letters are provided in this appendix. The comments are bracketed and numbered. The related responses are identified with the corresponding number and are included following each comment letter.

Comment Letter	Commenter
1	California Department of Transportation
2	Ms. Joyce Dillard
3	Adams, Broadwell, Joseph and Cardozo

Comment Letter No. 1

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN, JR., Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
100 MAIN STREET, MS # 16
LOS ANGELES, CA 90012-3606
PHONE: (213) 897-9140
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Flex your power!
Be energy efficient!

April 24, 2013

Mr. James Koizumi
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

IGR/CEQA No. 130429AL-ND
Ultramar Inc. Wilmington Refinery-Proposed Cogeneration Project
Vic. LA-103 / PM 1.448
SCH #: 2012041014

Dear Ms. Swain:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project consists of the construction and operation of a photovoltaic (PV) solar energy farm. 1-1

There are approximately 44 construction workers during the construction. The project would generate a maximum of one additional delivery truck per day to deliver equipment to the site. These delivery trucks are expected to avoid peak hour traffic to minimize the delivery time. 1-2

In the project operation phase, an estimated increase of 16 truck trips per year (a maximum of one truck trip per day approximately every three weeks) to transport aqueous ammonia is expected. We concur that there is no significant traffic impact to the State facilities during the construction and in the operation phase.

Storm water run-off is a sensitive issue for Los Angeles and Ventura counties. Please be mindful that projects should be designed to discharge clean run-off water. Additionally, discharge of storm water run-off is not permitted onto State highway facilities without any storm water management plan. 1-3

Transportation of heavy construction equipment and/or materials, which requires the use of oversized-transport vehicles on State highways, will require a transportation permit from Caltrans. It is recommended that large size truck trips be limited to off-peak commute periods. 1-4

If you have any questions, please feel free to contact Alan Lin the project coordinator at (213) 897-8391 and refer to IGR/CEQA No. 130429AL.

Sincerely,

DIANNA WATSON
IGR/CEQA Branch Chief

cc: Scott Morgan, State Clearinghouse

Responses to Comment Letter No. 1

California Department of Transportation
April 24, 2013

Response 1-1

The SCAQMD notes that Caltrans has the technical expertise in highway and state route planning issues and notes the proposed Project is for the installation of a 35MW Cogen Unit as referenced in the subject line, not a solar energy farm.

Response 1-2

The comment notes and concurs with the conclusions in the ND that the proposed Project is not expected to result in significant adverse traffic impacts during construction or operation. This conclusion is discussed in the ND on pages 2-82 thought 2-84.

Response 1-3

As stated in section "Storm Water Drainage Systems on page 2-59 in this ND, storm water would be confined and managed on-site and sent to the on-site wastewater treatment system prior to discharge to the LACSD system. Therefore, no change in storm water runoff from the site is expected and the potential adverse impacts of the proposed Project on hydrology and water quality resources are expected to be less than significant.

Response 1-4

As stated in Table 1-1 on page 1-11 of this ND, oversized loads may require permits from Caltrans. Ultramar Inc. would obtain all necessary permits, should oversize equipment be required for the proposed Project.

Comment Letter No. 2

James Koizumi

From: Joyce Dillard [dillardjoyce@yahoo.com]
Sent: Tuesday, June 04, 2013 4:42 PM
To: James Koizumi
Subject: Comments to AQMD Ultramar Revised Draft ND due 6.4.2013

On page 2-62, you state:

9. e) and f) Flooding Hazards

The proposed Project involves the construction of a new unit within an existing Refinery and does not include the construction of any housing, nor would it require placing housing within a 100-year flood hazard area. The Refinery is currently located within a 100-year flood hazard area, so no new flood hazards would be created. Further because of its location surrounded by other structures, the Cogen Unit would not impede or redirect 100-year flood flows. The proposed Project is located within an existing Refinery and no new employees are required. Therefore, the proposed Project would not expose people to any new known flood-related hazards.

Comments:

The State is looking at 200-year flood hazard areas. Please account for any flooding under that scenario and its impacts. Though there is no housing, there may still be impacts, including economic and infrastructure concerns. 2-1

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

Responses to Comment Letter No. 2

Ms. Joyce Dillard
June 4, 2013

Response 2-1

As discussed in Section 9 e) and f), the 100-year flood impacts were found to be less than significant. The proposed Project does not place housing within a 100-year flood area. A 100-year flood is a flood of such magnitude that it would have a 1 percent probability of occurrence in a given year. A 200-year flood would have 0.5 percent probability of occurrence in a given year. A 200-year flood would result in a greater area affected by flooding. Because the Refinery is located in the 100-year flood plain, it would also be considered to be located within the 200-year floodplain. Therefore, there Refinery would be impacted by a 200-year flood. However, the proposed Project would not place any housing in a 100-year or 200-year flood area. Therefore, the further analysis of flooding impacts is not warranted.

Comment Letter No. 3

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June 4, 2013

By: Email and U.S. Mail

James Koizumi
South Coast AQMD
21865 Copley Drive
Diamond Bar, CA 91765-4182
jkoizumi@aqmd.gov

Re: Comments on the Initial Study and Draft Negative Declaration Prepared for the Ultramar Inc. Wilmington Refinery Cogeneration Project

Dear Mr. Koizumi:

We are writing on behalf of California Unions for Reliable Energy to provide comments on the Initial Study and Draft Negative Declaration ("IS/ND") prepared by the South Coast Air Quality Management District ("District") for the Wilmington Refinery Cogeneration Project, proposed by Ultramar, Inc. ("Applicant"). The Applicant proposes to install and operate a 35 MW Cogen Unit including a natural gas-fired turbine electric generator, a heat recovery steam generator equipped with a refinery fuel gas-fired duct burner for supplemental steam production, a selective catalytic reduction ("SCR") unit and catalyst, and an evaporative cooler and to construct a new control room, two new natural gas supply pipelines, one process water pipeline, one fuel gas pipeline, and piping to connect to an existing aqueous ammonia tank to supply ammonia to the SCR unit ("Project"). The steam needed to operate the Project would be provided primarily by existing refinery gas-fired boilers (86-B-9000, 86-B-9001, and 86-B-9002) with up to 10 percent of the steam provided by the adjacent Air Products Hydrogen Plant.[1] 3-1

According to the IS/ND, the purpose for the Project is to allow the Refinery to rely mainly on on-site power generation to supply the Refinery's electricity demand.[2] Currently, at least 70 percent of the electricity required to operate the

[1] IS/ND, at p. 1-7
[2] IS/ND, at p. 1-1

Refinery is supplied by the Los Angeles Department of Water and Power ("LADWP") and the remaining 30 percent is supplied by the adjacent Air Products Hydrogen Plant facility.[3] The Project would provide a substitute power source for most of the generation that is now delivered by LADWP.

3-1 cont.

The Project is proposed to be located within the existing Ultramar Wilmington Refinery, located at 2402 East Anaheim Street, in the Wilmington District of the City of Los Angeles. In addition to an Authority to Construct and Permit to Operate from the District, the Project requires a Coastal Development Permit from the California Coastal Commission.

We thank the District for extending the public comment period to enable our review of the documents referenced in the IS/ND. Based upon our review of the IS/ND and supporting documentation, we conclude that the IS/ND fails to comply with the California Environmental Quality Act ("CEQA").[4] In particular, the IS/ND does not provide a complete Project description and fails to set forth the environmental setting for hazards. As a result, the IS/ND fails to serve its basic purpose to inform the District and the public about the Project's environmental impacts. Additionally, as described in these comments, there is a fair argument based on substantial evidence that the Project will result in potentially significant impacts to air quality and worker safety due to worker exposure to on-site hazards in the Project site soils and the groundwater underlying the Project site. The District may not approve a permit for the Project until it prepares an Environmental Impact Report ("EIR") that adequately analyzes the Project's impacts, and incorporates all feasible mitigation measures to reduce impacts to a less than significant level.

3-2

We prepared these comments with the assistance of air quality expert Valorie Thompson Ph. D. and toxics and hydrology expert Matthew Hagemann P.G., C.Hg. Their technical comments and qualifications are attached hereto and submitted to the District on the IS/ND in addition to the comments in this letter. We request that the District address and respond to the comments of Dr. Thompson and Mr. Hagemann separately.

3-3

[3] *Ibid.*
[4] Pub. Resources Code, §§ 21000 et seq.

2899-009cv

I. STATEMENT OF INTEREST

CURE is a coalition of unions whose members help solve California's energy problems by building, maintaining, and operating conventional and renewable energy power plants. Poorly designed power plants may degrade the environment by reducing ambient air quality, releasing hazardous and toxic substances into soils, groundwater and surface waters, and causing noise and visual intrusion. Union members live and work in the vicinity of the Wilmington Refinery and have a direct interest in protecting the air, water, and soil resources on and around the Project site. Union members also have a direct interest in ensuring a safe workplace for workers during Project construction and operation. 3-4

Based on these concerns, CURE has a strong interest in ensuring projects comply with the CEQA, as well as applicable federal, state, and local regulations. While CURE recognizes the benefits of efficient power generation processes, it is also cognizant of the health and safety and environmental risks associated with intensive industrial processes involved in the Project.

II. THE PROJECT DESCRIPTION IN THE IS/ND IS INADEQUATE

The IS/ND does not meet CEQA's requirements because it fails to include a complete and accurate Project description, rendering the entire impact analysis inherently unreliable. An accurate and complete project description is necessary to perform an evaluation of the potential environmental effects of a proposed project.[5] The courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."[6] Only through an accurate view of the project may affected outsiders and public decision makers balance the proposal's benefit against its environmental costs.[7] The IS/ND fails to provide an accurate and complete Project description because it fails to set forth the Project's proposed limits on Project operating. 3-5

Although the IS/ND states that the Project would "limit the use" of the existing boilers,[8] the Project description fails to identify the proposed operational schedule for the boilers, or to state how operations would be "limited" as compared 3-6

[5] *See, e.g., Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376.
[6] *County of Inyo v. County of Los Angeles* (1977) 71 Cal.App.3d 185, 193.
[7] *Id.* at pp. 192-193.
[8] *See* IS/ND, at p. 1-1.

to existing conditions. Absent a description of the proposed operations for each of the three boilers, as well as the Cogen unit, the public must simply take the District at its word that permit conditions would limit Project emissions to a less than significant level.[9] This is insufficient under CEQA. The IS/ND must describe the Project under review. Further, as demonstrated by Dr. Thompson, the District's failure to specify the Project's operational schedule undermines the District's conclusion that the Project's air quality impacts are insignificant. Absent any enforceable limitation on Project operations, Project emissions will, contrary to the District's conclusions, exceed significance thresholds for volatile organic compounds ("VOC"), oxides of nitrogen ("NOx") and coarse particulate matter.[10]

Finally, the information that is provided in the IS/ND is inconsistent and inconclusive. While the Project description section of the IS/ND states that boiler 86-B-900 would operate infrequently, the operating scenarios analyzed in the IS/ND all assume that boiler 86-B-900 would be shut down during Project operation.[11] Although the IS/ND states that "[d]uring operation of the Cogen Unit ... boilers 86-B-9001 and 86-B-9002 ... would be required to operate at reduced loads," it does not identify any proposed quantitative operational limit or state whether the operational scenarios analyzed in the IS/ND reflect the proposed permit conditions.[12] The lack of a discernible operational schedule precludes the public and decisionmakers from assessing the Project's impacts on air quality. 3-6 cont.

The District should revise its analysis to include a clear and concrete operational schedule for the Project boilers and circulate the revised environmental document for public review and comment.

III. THE IS/ND FAILS TO SET FORTH AN ENVIRONMENTAL SETTING FOR HAZARDS

An Initial Study must include a description of the project's environmental setting.[13] The description of the environmental setting constitutes the baseline physical conditions by which a lead agency may assess the significance of a project's impacts.[14] The CEQA Guidelines instruct that the Initial Study must "indicate that 3-7

[9] *See id.*
[10] *See* Letter from Valorie Thompson to Elizabeth Klebaner, May 9, 2013, at pp. 1-2, attached as Attachment 1 (hereafter "Thompson Comments").
[11] Compare IS/ND at p. 1-7 and p. 2-17, Table 2-4.
[12] *See ibid.*
[13] Cal. Code Regs., tit. 14, §15063 subd. (d)(2) (hereafter "CEQA Guidelines").
[14] CEQA Guidelines, §15125, subd. (a).

there is some evidence to support [its conclusions]."[15] An Initial Study and Negative Declaration must also "disclose the data or evidence upon which person(s) conducting the study relied. Mere conclusions simply provide no vehicle for judicial review."[16] In prior cases involving potential hazardous contamination at a project site, courts have upheld a lead agency's analysis where it was supported by some level of investigation, including geotechnical core samples or other subsurface investigation.[17] Here, the District failed to investigate existing conditions with respect to soil contamination and the IS/ND's description of the environmental setting for soil contaminants is inadequate because it is totally unsupported.

3-7 cont.

The IS/ND states that Project construction activities could uncover contaminated soils, given the heavily industrialized nature of the Project site, then dismisses the risk stating that "[c]urrently, there is no evidence that soil contamination is located within the areas proposed for soil disturbance."[18] Elsewhere, the IS/ND states that the presence of soil contamination on the Project site is currently unknown.[19] It is clear that the District has not conducted any investigation of the actual conditions at the Project site. Moreover, the District's conclusion that discovery of contamination is unlikely is contradicted by the IS/ND, which acknowledges the potential for soil contamination within the Wilmington Refinery boundaries due to past and ongoing oil refining, storage, and transportation activities.[20] In sum, the District lacks substantial evidence to conclude that the risks associated with potential contamination at the Project site are less than significant.

3-8

As described by Matthew Hagemann, the IS/ND's conclusion that contamination at the Project site is unlikely are contradicted by recent reports submitted by the Applicant to the Los Angeles Regional Water Quality Control Board ("Regional Board"). These reports are publicly available, readily available online, and confirm the presence of contamination adjacent to the Project site and within the Project construction impact area. The District should revise its analysis

[15] CEQA Guidelines, § 15063 subd. (d)(3).
[16] *Citizens Association for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 171.
[17] *See, e. g., City of Maywood v. Los Angeles Unified School District* (2012) 208 Cal.App.4th 362, 376; *id.* at 379; *Communities for a Better Environment v. South Coast Air Quality Management District* (2007) 71 Cal. Rptr. 3d 7 (superseded on other grounds by *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310).
[18] IS/ND, at p. 2-59
[19] *Id.* at p. 2-15.
[20] *See* IS/ND at p. 2-59.

to include a defensible description of the environmental setting, and circulate the revised environmental document for public review and comment. 3-8 cont.

IV. THE CUMULATIVE IMPACTS ANALYSIS IN THE IS/ND IS INADEQUATE

In addition to evaluating the direct and indirect impacts caused by a project, the lead agency is also required to determine whether a cumulative effect requires an EIR.[21] CEQA requires consideration of the incremental impacts caused by a project, together with other past, present, and reasonably probable future projects.[22]

> [T]he statutory injunction to assess "the incremental effects of an individual project ... in connection with the effects of *past projects*, the effects of other current projects, and the effects of probable future projects" (Pub. Resources Code, § 21083, subd. (b)(2), italics added) signifies an obligation to consider the present project in the context of a realistic historical account of relevant prior activities that have had significant environmental impacts.[23]

3-9

Thus, a legally adequate "cumulative impacts analysis" views a particular project over time and in conjunction with other related past, present, and reasonably foreseeable probable future projects whose impacts might compound or interrelate with those of the project at hand.[24] This analysis is particularly important when considering new power plant projects in Wilmington due to the already high concentration of refineries and other industrial facilities in this community.

The cumulative impacts analysis provided in the IS/ND is inadequate because the District constrained its analysis to existing emissions sources within the Refinery, but failed to consider the Project's impacts together with past, present, 3-10

[21] *See* CEQA Guidelines, § 15063 subd. (b)(1).
[22] CEQA Guidelines, § 15064(h)(1); *see also* 15355, subd. (b) ["The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."]; see also *Los Angeles Unified School Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1024-1025.
[23] *Environmental Protection Information Center v. California Dept. of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 524, italics in original.
[24] *See* CEQA Guidelines, § 15355(b) ["Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time"]; *see also Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 117 (superseded on other grounds).

and reasonably foreseeable future projects.[25] As described by Dr. Thompson there are no less than 79 facilities within one mile of the Refinery, including other oil refineries, which would contribute to the Project's emissions of pollutants.[26] Reasonably foreseeable future projects in the vicinity of the Project include the Conoco Phillips Ultra Low Sulfur Diesel Project,[27] located approximately 1000 feet from the Project, the Southern California International Gateway Project,[28] the Berths 212-224 Container Terminal Improvements Project,[29] and the Ponte Vista Project.[30]

3-10 cont.

In *Communities for a Better Environment v. South Coast Air Quality Management District*, the Second Appellate District of the California Court of Appeal set aside a Negative Declaration prepared by the District. There, the Court found that the District failed entirely to consider the project's cumulative impacts, among other errors in the District's CEQA analysis.[31] The District's consideration of cumulative impacts in this case again contradicts CEQA's plain requirement that past, present, and reasonably foreseeable future projects must be accounted for in assessing a project's cumulative environmental effects.

3-11

The District's failure to include facilities outside of the Refinery's boundary is also inconsistent with the District's prior CEQA documents prepared for other projects at the Ultramar Wilmington Refinery. In an EIR prepared for the Ultramar Wilmington Refinery Reformulated Fuels Program in 1994 ("1994 EIR"), the District considered the cumulative impacts of toxic air contaminants from the project, together with nearby ARCO, Unocal, Texaco, and the Ultramar projects.[32] The 1994 EIR also identified projects that were reasonably foreseeable at that time, including planned improvements at the Ports of Long Beach and Los Angeles, pipeline projects, and projects proposed by the Alameda Corridor Transportation Authority.[33]

3-12

In the 1994 EIR, the District first concluded that the project's individual emissions of toxic air contaminants would increase cancer risk above baseline and

[25] *See* IS/ND, at pp. 2-21-22.
[26] *See* Thompson Comments, at p. 4 and listing of those facilities, attached as Attachment 1.
[27] http://www.aqmd.gov/ceqa/documents/2013/nonaqmd/ConocoPhillipsNOP_3_23_12.pdf.
[28] http://www.portoflosangeles.org/EIR/SCIG/FEIR/feir_scig.asp.
[29] http://www.portoflosangeles.org/NOP/YTI/nop_yti asp.
[30] http://planning.lacity.org/eir/PonteVistaProj2/DEIR/DEIR%20Ponte%20Vista%20Project.html.
[31] *See Communities for a Better Environment v. South Coast Air Quality Management District* (2007) 103 Cal.App.4th 98, 117 (superseded on other grounds).
[32] *See* South Coast AQMD, Ultramar Inc. Wilmington Refinery Reformulated Fuels program Vol. 1 Draft Subsequent EIR (1994), at p. 1-15, attached as Attachment 2.
[33] *Id.* at p. 6-1, attached as Attachment 2.

2899-009cv

analyzed the worst-case for the maximum exposed individual worker ("MEIW") and the maximum exposed individual resident ("MEIR").[34] Although the District concluded that the project's individual cancer burden would be less than significant, the District identified a cancer risk level in excess of regulatory thresholds immediately north of the Refinery when it considered cumulative impacts on air quality:

> The 1x10^{-6} isopleths for the ARCO, Unocal, Texaco and Ultramar refineries have the potential to overlap and the cumulative impacts associated with these refineries were evaluated. The area identified as exceeding the 10 x10^{-6} cancer risk level is located immediately north of the Ultramar refinery.[35]

3-12 cont.

Similarly, in an EIR prepared in December 2004 for the Ultramar Wilmington Refinery Alkylation Improvement Project, the District analyzed the project's cumulative impacts by considering projects that would occur within the same timeframe and within a one-mile radius of the Refinery.[36] These included improvements to the Ports of Long Beach and Los Angeles, the Alameda Corridor Transportation Authority projects, and reformulated fuels modifications planned by other petroleum refineries in the South Coast Air Basin.[37] Among the local refineries considered by the District in its cumulative impact analysis were the Conoco Philips refinery, the Exxon-Mobil refinery, the Shell refinery, and the British Petroleum refinery.[38] All but one of these facilities is located within three miles of the Project.[39] As in the 1994 EIR, the District's 2004 analysis considered the overlap of toxic air contaminant emissions from the Refinery and other refineries in the project vicinity.[40]

3-13

The District's failure to consider the Project's impacts together with those of past, present, and reasonably probable future projects is an egregious error given the severely degraded environmental conditions in the Wilmington District. Wilmington is one of worst-polluted communities in the state. The California Environmental Protection Agency ("Cal EPA") ranked Wilmington as one of the top

3-14

[34] *See id.* at pp. 1-5, 1-9
[35] *Id.* at p. 1-15.
[36] *See* South Coast AQMD, Ultramar Inc., Valero Wilmington Refinery, Alkylation Improvement Project Final EIR, Dec. 2004, at p. 5-1, attached as Attachment 3.
[37] *Ibid.*
[38] *Id.* at pp. 5-1-5-9.
[39] *See id.*
[40] *See id.* at p 5-22.

5 to 10 percent environmentally burdened areas in California.[41] The scoring used by Cal EPA considers, among other factors, existing concentrations of criteria pollutants and toxic air contaminants,[42] both of which will be exacerbated by the Project. According to the District's monitoring data, cancer risk at the Wilmington monitoring site has been estimated at 380 per million, far in excess of the significance of 10 in one million.[43] The District is required to prepare a revised analysis which discloses past, present, and reasonably foreseeable future projects in the Project vicinity, considers the overlap of emissions between the Project and surrounding facilities, and discloses the resulting impacts on ambient air quality and public health. 3-14 cont.

V. AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED TO SATISFY CEQA'S PURPOSES AND GOALS

CEQA has two basic purposes, neither of which the IS/ND satisfies. First, CEQA is designed to inform decisionmakers and the public about the potential, significant environmental effects of a project.[44] CEQA requires that lead agencies analyze any project with potentially significant environmental impacts in an EIR.[45] The purpose of the EIR is to "inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made. Thus, the EIR protects not only the environment, but also informed self-government."[46] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[47] 3-15

[41] Type in zip code 90744 here: http://oehha.maps.arcgis.com/apps/OnePane/basicviewer/index.html?&extent={%22xmin%22:-15258078.058859076,%22ymin%22:3548564.614538959,%22xmax%22:-11316150.391797591,%22ymax%22:5441756.931105701,%22spatialReference%22:{%22wkid%22:102100}}&appid=e508a6f9af534fcc98e7884558c467d6.

[42] *See* California Communities Environmental Health Screening Tool, Version 1, *available at* http://oehha.ca.gov/ej/pdf/042313CalEnviroScreen1.pdf.

[43] *See* South Coast AQMD, Ultramar Inc., Valero Wilmington Refinery, Alkylation Improvement Project Final EIR, Dec. 2004, at p. 5-32, attached as Attachment 3.

[44] CEQA Guidelines, § 15002, subd. (a)(1).

[45] *See* Pub. Resources Code, § 21000; CEQA Guidelines ,§ 15002.

[46] *See Citizens of Goleta Valley v. Bd. of Supervisors* (1990) 52 Cal.3d 553, 564 (citations omitted).

[47] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures.[48] The EIR serves to provide public agencies and the public in general, with information about the effect that a proposed project is likely to have on the environment, and to "identify ways that environmental damage can be avoided or significantly reduced."[49] If a project has a significant effect on the environment, the agency may approve the project only upon a finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible," and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081.[50]

3-16

CEQA's purpose and goals must be met through the preparation of an EIR, except in certain limited circumstances.[51] CEQA contains a strong presumption in favor of requiring a lead agency to prepare an EIR. This presumption is reflected in the "fair argument" standard. Under that standard, a lead agency must prepare an EIR whenever substantial evidence in the whole record before the agency supports a fair argument that a project may have a significant effect on the environment.[52] The fair argument standard creates a "low threshold" favoring environmental review through an EIR, rather than through issuance of a negative declaration.[53] An agency's decision not to require an EIR can be upheld only when there is no credible evidence to the contrary.[54]

3-17

[48] CEQA Guidelines, § 15002, subd. (a)(2)-(3); *Berkeley Keep Jets Over the Bay Com. v. Bd of Port Comrs.* (2001) 91 Cal.App.4th 1344, 1354.
[49] CEQA Guidelines, § 15002, subd. (a)(2).
[50] *Ibid.*; CEQA Guidelines § 15092, subd. (b)(2)(A)-(B).
[51] *See* Pub. Resources Code, § 21100.
[52] Pub. Resources Code, § 21082.2; CEQA Guidelines, § 15064(f), (h); *Laurel Heights Improvement Ass'n v. Regents of the University of California* (1993) (*"Laurel Heights II"*) 6 Cal. 4th 1112, 1123; *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal. 3d 68, 75, 82; *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150-151; *Quail Botanical Gardens Foundation, Inc. v. City of Encinitas* (1994) 29 Cal.App 4th 1597, 1601-1602.
[53] *Citizens Action to Serve All Students v. Thornley* (1990) 222 Cal.App.3d 748, 754.
[54] *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th, 1307, 1318; *see also Friends of "B" Street v. City of Hayward* (1980) 106 Cal.App.3d 988, 1002 ["If there was substantial evidence that the proposed project might have a significant environmental impact, evidence to the contrary is not sufficient to support a decision to dispense with preparation of an [EIR] and adopt a negative declaration, because it could be 'fairly argued' that the project might have a significant environmental impact"].

Substantial evidence can be provided by technical experts or members of the public.[55] "If a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect."[56] The CEQA Guidelines provides that "if there is disagreement among expert opinion supported by facts over the significance of an effect on the environment, the Lead Agency shall treat the effect as significant and shall prepare an EIR."[57]

3-17 cont.

There is a fair argument supported by substantial evidence that the Project may result in significant impacts to workers through exposure to hazardous substances and potentially significant and cumulatively considerable impacts to ambient air quality and public health. The District is required to prepare an EIR to evaluate the Project's impacts and propose all mitigation measures that are necessary to reduce Project impacts to a less-than-significant level.

A. There is a Fair Argument That The Project May Result in Potentially Significant Impacts to Workers During Construction

The Refinery is located in an area that has been in use for oil well drilling and oil production since the 1930s.[58] During oil exploration and production activities, significant portions of the Refinery were used for sumps and spreading grounds. These historic features are the primary source of residual crude oil hydrocarbon that remains in the soil and groundwater underlying the Refinery.[59]

3-18

[55] *See, e.g., Citizens for Responsible and Open Government v. City of Grand Terrace* (2008) 160 Cal.App.4th 1323, 1340 [substantial evidence regarding noise impacts included public comments at hearings that selected air conditioners are very noisy]; *see also Architectural Heritage Ass'n v. County of Monterey* (2004) 122 Cal.App.4th 1095, 1117-1118 [substantial evidence regarding impacts to historic resource included fact-based testimony of qualified speakers at the public hearing]; *Gabric v. City of Rancho Palos Verdes* (1977) 73 Cal.App.3d 183, 199.

[56] CEQA Guidelines, § 15062 subd. (f).

[57] CEQA Guidelines, § 15062 subd. (g).

[58] Environmental Engineering & Contracting, Inc., Report Third Quarter 2011 Groundwater Monitoring and Sampling at Valero Wilmington Refinery and Hydrogen Air Products Facility, at p. 1, available at http://geotracker.waterboards ca.gov/esi/uploads/geo_report/5957325756/SL373432446 PDF (last visited May 9, 2013).

[59] Environmental Engineering & Contracting, Inc., Conceptual Site Model for Wilmington Refinery and Air Products Hydrogen Facility, June 29, 2011, *available at*

The State Water Resources Control Board directed the Applicant to install monitoring and test wells throughout the Refinery in connection with prior cleanup and abatement actions, in order to evaluate groundwater quality and hydrogeologic conditions at the Refinery. The Refinery continues to be subject to a groundwater quality monitoring and product removal program under the oversight of the Regional Water Quality Control Board.

3-18 cont.

There is substantial evidence that workers will be exposed to contaminated groundwater during Project construction activities due to the presence of residual groundwater contamination and the fact that the Project site, and the Refinery at large, is characterized by a shallow groundwater table. Mr. Hagemann concludes that groundwater where excavation is to take place is overlain by a layer of refined products.[60] Mr. Hagemann's conclusion is based upon reports, submitted to the Regional Board as recently as the first quarter of 2013, indicating that a groundwater monitoring well located within 200 feet of the Project is contaminated with refined free product.[61] Further investigation by Mr. Hagemann revealed that refined product has been present in the same monitoring well since 1999 and that sampling conducted by the Applicant's consultants has detected high levels of gasoline and diesel hydrocarbons in the well.[62]

3-19

Matthew Hagemann concludes that construction workers involved in foundation work and trenching may be exposed to gasoline and diesel contaminants through dermal contact and inhalation of vapors from an exposed water table.[63] Mr. Hagemann's conclusion is supported by information included in the IS/ND and the Applicant's reports to the Regional Board. The IS/ND states that excavation for the foundations is expected to extend less than four feet below ground surface ("bgs"), while groundwater depth within 400 feet of the Project was recorded at 3.4 feet bgs in March 2013.[64] The shallow depth at which groundwater has been encountered in the vicinity of the Project is consistent with the prior finding by the Applicant's consultant that the entire Refinery is underlain by a shallow groundwater table.[65]

3-20

http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL373432446 (last visited May 9, 2013) (hereafter "2011 Conceptual Site Model").

[60] Letter from Matthew Hagemann to Elizabeth Klebaner, May 10, 2013, at p. 2, attached as Attachment 4 (hereafter "Hagemann Comments").

[61] *See id.* at p. 2.

[62] *See ibid.*

[63] *See ibid.*

[64] *Id.* at p. 1.

[65] *See* 2011 Conceptual Site Model, at p. xiii.

2899-009cv

Mr. Hagemann further concludes that worker exposure to gasoline and diesel contaminants during Project construction is a potentially significant impact. As explained by Mr. Hagemann, gasoline and diesel contain benzene, a well-known human carcinogen.[66] Benzene concentrations far in excess of screening levels have been detected in monitoring wells in proximity to the Project site, and may be encountered within the Project impact area.[67]

The IS/ND fails to disclose the potential for construction workers to be exposed to groundwater contaminants through dermal contact and inhalation. Further, the statement in the IS/ND that excavation is not expected to impact groundwater is unsubstantiated and contradicted by recorded groundwater depths in the vicinity of the Project site, as well as prior reports submitted to regulatory agencies. Finally, the conclusion in the IS/ND that impacts from potential contamination would be less than significant because the Applicant would comply with District Rule 1166 and standards contained in Title 22 of the California Code of Regulations lacks basis.[68] 3-21

Rule 1166 sets forth requirements to control VOC emissions from excavating, grading, and handling VOC-contaminated soil.[69] However, Rule 1166 does not apply until VOC-contaminated soil has been encountered and contamination confirmed.[70] Rule 1166 also does not address worker exposure to contaminated groundwater. For these reasons, Rule 1166 would not protect workers that may encounter contamination at the Project site. The District also failed to ensure against adverse environmental impacts *before* they occur by declining to require preparation of a mitigation plan pursuant to Rule 1166 as a condition of Project approval. 3-22

Similarly, contrary to the District, reliance on Title 22 and "federal rules which regulate the handling, transportation, and ultimate disposition of contaminated soils," will not eliminate the risk of worker exposure. Although it is unclear exactly which regulatory standards the District has in mind, the discussion in the IS/ND appears to pertain to hazardous waste management, not workplace exposure to contaminated soils and groundwater. The IS/ND fails to state how 3-23

[66] Hagemann Comments, at p. 2.
[67] *See id.*
[68] *See* IS/ND, at pp. 2-15, 2-59.
[69] *See* District Rule 1166 subd. (a).
[70] *See* District Rule 1166 subd. (b)(5), (c).

2899-009cv

compliance with Title 22 will ensure against worker exposure to hazardous substances in the course of excavation and trenching activities. 3-23 cont.

There is a fair argument supported by substantial evidence that the Project may result in potentially significant, unmitigated impacts to workers through exposure to on-site contamination during Project construction. The District is required to prepare an EIR which analyzes the potential for worker exposure to hazardous substances and proposes measures to reduce impacts to a less-than-significant level. 3-24

B. There is a Fair Argument That The Project May Result in Potentially Significant Impacts to Workers During Project Operations

The Applicant proposes to construct a control room in the vicinity of a monitoring well where contamination has been detected. As described by Matthew Hagemann in his comments, the Project site may be underlain by a shallow layer of gasoline and diesel contaminants.[71] Mr. Hagemann concludes that these contaminants may lead to the collection of unhealthful levels of vapors of benzene and VOCs and result in vapor intrusion at the Project.[72]

Vapor intrusion is a process through which vapors move into indoor air space from contaminated soils and groundwater below.[73] Mr. Hagemann further concludes that the risk to workers within the control room is potentially significant because benzene has been detected in the vicinity of the Project in concentrations that exceed regulatory screening levels.[74] Mr. Hagemann's conclusion is supported by recommendations from the California Department of Toxic Substances Control that vapor intrusion risks should be evaluated when buildings exist over or near contaminated groundwater.[75] 3-25

There is a fair argument supported by substantial evidence that the Project may result in potentially significant impacts to workers through exposure to on-site contamination during Project operation. The District is required to prepare an EIR

[71] Hagemann Comments at p. 2.
[72] *See id.*
[73] *Ibid.*
[74] *See id.*
[75] *Id.*

which analyzes the potential for worker exposure to hazardous substances and proposes measures to reduce impacts to a less-than- significant level.

3-25 cont.

C. There Is a Fair Argument That The Project May Result In Potentially Significant Construction Particulate Matter Emissions

The IS/ND concludes that construction emissions will be below significance thresholds for all criteria pollutants during Project construction.[76] As described by Dr. Valorie Thompson, the conclusion is contradicted by the Localized Significance Threshold ("LST") analysis prepared for the Project. The District developed an LST Methodology to be used by public agencies to determine whether a project may result in significant adverse localized air quality impacts.[77] According to the District, LSTs represent "the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard."[78] "LSTs are derived based on the location of the activity (i.e. source/receptor area); the emission rate[] of ... [the applicable criteria pollutant]; and the distance to the nearest exposed individual."[79]

3-26

There is a fair argument supported by substantial evidence that the Project may result in potentially significant emissions of particulate matter during construction. As described by Dr. Thompson, during Project construction, emissions of coarse particulate matter[80] and fine particulate matter[81] may exceed significance thresholds within 25 meters of the Project.[82] Dr. Thompson has shown that workers may be exposed to emissions at this distance throughout the workday. Dr. Thompson further concludes that worker exposure to particulates within 25 meters of the Project is a potentially significant impact.

The District failed to account for human exposure to regulated air pollutants at the distance of "the nearest exposed individual,"[83] by limiting its analysis to

3-27

[76] *See* IS/ND at p. 2-15.
[77] *See* South Coast AQMD, Final Localized Significance Threshold Methodology (June 2003, Revised July 2008), at p. 1-1 (hereafter "LST Methodology").
[78] *Ibid.*
[79] *Id.* at p. 1-2.
[80] Also referred to as particulate matter that is between 2.5 and 10 micrometers in diameter, or "PM10."
[81] Also referred to as particulate matter with a diameter of less than 2.5 micrometers, or "PM2.5."
[82] Thompson Comments, at pp. 3-4.
[83] LST Methodology, at p. 1-2.

2899-009cv

impacts to sensitive receptors located approximately one-half mile from the Project site.[84] As a result, the IS/ND fails to address the Project's potentially significant emissions of particulate matter. At a minimum, the District should have evaluated emissions within 25 to 50 meters of the Project site to account for workers that may be present at the hydrogen plant, located directly across the Dominguez Channel, at the Union Pacific rail line, and at the overhead pedestrian bridge adjacent to the Project site. 3-27 cont.

There is a fair argument supported by substantial evidence that the Project may result in potentially significant emissions of particulates during construction. The District is required to prepare an EIR which analyzes construction emissions within the Project impact area and proposes measures to reduce impacts to a less-than- significant level. 3-28

D. There Is a Fair Argument That The Project May Result in Potentially Significant Emissions of Toxic Air Contaminants

The record supports a fair argument that the Project may significantly increase the cancer burden within Wilmington. An agency may not avoid preparing an EIR by failing to gather the relevant data because "CEQA places the burden of environmental investigation on government rather than the public."[85] For this reason, "[d]eficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences."[86] As we discuss in section IV above, the IS/ND fails to include a valid cumulative impact analysis of the Project's emissions of air pollutants and toxic air contaminants by omitting discussion of the Project's emissions in combination with past, present, and reasonably foreseeable future projects. This, together with evidence that existing concentrations of these pollutants in the Project vicinity are far in excess of regulatory thresholds, raises a fair argument that the Project may result in potentially significant air quality and public health impacts.[87] The District is required to prepare an EIR which analyzes construction emissions within the Project impact area and proposes measures to reduce impacts to a less than significant level. 3-29

[84] *See* IS/ND, at p. 2-15.
[85] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.
[86] *Ibid.*
[87] See Section IV for a discussion of the existing conditions in Wilmington and the District's conclusions in prior EIRs prepared for projects at the Refinery.

E. There Is a Fair Argument That the Project May Result In Cumulatively Considerable Emissions of Greenhouse Gases

In addition to evaluating the direct and indirect impacts caused by a project, the lead agency is also required to determine whether a cumulative effect requires an EIR.[88] CEQA Guidelines section 15064 provides that a project's impact is cumulatively considerable and requires preparation of an EIR if its incremental effects are "significant when viewed in connection with the effects of past projects, the effects of current projects, and the effects of probable future projects."[89] The lead agency's determination of the significance of greenhouse gas ("GHG") emissions must be consistent with the provisions of CEQA Guidelines section 15064. [90]

The IS/ND fails to consider the Project's cumulative GHG emissions. The Project's unmitigated GHG emissions exceeds the District's significant threshold of 10,000 metric tons per year of carbon dioxide equivalent emissions, with annual emissions of 43,813 metric tons per year.[91] As shown by Dr. Thompson, absent enforceable mitigation, the Project's emissions are cumulatively considerable when considered in light of past, present, and reasonably foreseeable future Projects.[92] There is a fair argument supported by substantial evidence that the Project may result in cumulatively considerable GHG emissions. The District is required to prepare an EIR which addresses the Project's cumulative GHG emissions, and requires the Applicant to reduce emissions to a less-than-significant level as a condition of Project approval. 3-30

VI. CONCLUSION

The IS/ND is inadequate because it fails to include a complete and accurate Project description, set forth the existing environmental setting for soil and groundwater contamination, and include a defensible analysis of the Project's cumulative impacts on ambient air quality and public health. Due to these significant deficiencies in the IS/ND, the District cannot conclude that the Project's potentially significant impacts have been mitigated to a less than significant level. 3-31

[88] *See* CEQA Guidelines, § 15064 subd. (h)(1).
[89] *See ibid.*
[90] CEQA Guidelines, § 15064 4 subd (a).
[91] IS/ND at p. 2-30.
[92] *See* Thompson Comments, at pp. 4-5.

2899-009cv

The CEQA Guidelines require that an EIR be prepared if there is substantial evidence supporting a fair argument that any aspect of a project, either individually or cumulatively, may cause a significant effect on the environment.[93] As discussed in detail above, there is substantial evidence that the Project may result in potentially significant adverse impacts that were not identified in the IS/MNDs. These include unmitigated and potentially significant impacts to workers due to worker exposure to hazardous substances and VOC emissions during ground disturbance as well as Project operations, potentially significant and unmitigated emissions of particulates during construction, and cumulatively considerable and unmitigated GHG and toxic air contaminant emissions. 3-31 cont.

We urge the District to fulfill its responsibilities under CEQA by withdrawing the IS/ND and preparing an EIR that addresses the issues raised in this comment letter. By complying with State law, the District and the public can ensure that the Projects' significant environmental impacts are mitigated to a less than significant level.

Sincerely,

Elizabeth Klebaner

EK:clv
Attach.

[93] CEQA Guidelines § 15063 subd. (b)(1).

2899-009cv

ATTACHMENT 1

Scientific Resources Associated

May 9, 2013

Ms. Elizabeth Klebaner
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080

Dear Ms. Klebaner:

Per your request I have reviewed the *Draft Negative Declaration for the Ultramar, Inc. Wilmington Refinery Proposed Cogeneration Project* prepared by the South Coast Air Quality Management District, dated April 10, 2013. My review focused on the air quality and greenhouse gas analyses prepared for the Draft Negative Declaration.

My qualifications include a doctorate in Chemical Engineering from Purdue University and 24 years of environmental consulting experience in the preparation of air permit applications, air quality analyses, CEQA and NEPA documents throughout the western United States. I have prepared and reviewed numerous permit application and project and plan documents for power generation projects, and am very familiar with the state and local requirements for evaluating air quality and greenhouse gas impacts. My resume is attached to this letter.

My comments on the Air Quality Analysis are as follows:

The project description is unclear and does not provide complete information. The project description states that the installation of the Cogen Unit would "limit the use of several existing boilers that produce steam at the Refinery."[1] The project description does not include any information as to how the boilers would be limited. The project description indicates that "Even during low capacity periods Boilers 86-B-9001 and 86-B-9002 would need to continue operating during operation of the Cogen Unit so they are immediately available to produce steam in the event that the Cogen Unit is unexpected shut down."[2] Several scenarios are provided in the Appendix, but no information is provided that would clarify how the boilers will operate, and what the proposed limitations on the permits for the boilers would be. Absent a description of the proposed

3-32

[1] Draft ND, Page 1-1.
[2] Draft ND, Page 1-7.

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operational schedule in the project description or an enforceable mitigation measure to the same effect, any alleged limitation on the use of the existing boilers and the Project's incremental emissions, is unenforceable and unverifiable. Because the Draft ND fails to identify a proposed operational schedule, or "limitation" on operations, it must be assumed that the Project may operate at its maximum operational capacity. If the project operates at its maximum capacity and the three existing boilers are allowed to operate as currently permitted without an enforceable operational limit, the criteria pollutant emissions would be higher than presented in the ND. The table below presents the emissions that would result if boilers continue to operate at their baseline levels and the cogeneration unit is installed.

Maximum Daily Emissions, lbs/day						
Source	**VOC**	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Baseline Boiler Emissions	38.0	118.0	106.5	72.1	62.2	62.2
Cogeneration Unit	48.2	151.8	177.7	44.5	136.8	61.5
Fugitive VOC Emissions	7.8					
Total	**94.0**	**269.8**	**284.2**	**116.6**	**199.0**	**123.7**
SCAQMD Significance Thresholds	55	550	55	150	150	55
Significant?	Yes	No	Yes	No	Yes	No

As shown in the table, without any enforceable permit limits on the boiler operations, emissions would exceed the thresholds for VOCs, NOx, and PM_{10}, and would result in a significant impact.

3-32 cont.

The Localized Significance Threshold analysis for construction impacts does not consider impacts on ambient air quality. As stated in the SCAQMD's *Final Localized Significance Threshold Methodology*, "LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard." [3] The SCAQMD has conducted a LST analysis for construction impacts in the Draft ND. For the LST analysis, the SCAQMD evaluated impacts using the LSTs for a 1-acre site for the nearest sensitive receptor, which the SCAQMD indicates is "located in the residential area, which is about one-half mile northwest of the Refinery in Wilmington." [4]

3-33

[3] SCAQMD. 2008. *Final Localized Significance Threshold Methodology.* June 2003, revised July. Page 1-1.
[4] Draft ND, Page 2-15.

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Ambient air quality standards do not apply solely to sensitive receptors. As shown in Chapter 2 of the ND,[5] the CEQA Checklist and Appendix G of the State CEQA guidelines include the threshold that addresses whether the project would violate any air quality standard or contribute to an existing or projected air quality violation. Ambient air quality includes the ambient air outside the facility boundary. As discussed in the LST Methodology, the analysis applies to "residential, commercial and industrial land use areas; and any other areas where persons can be situated for an hour or longer at a time. These other areas include parks, bus stops, and side walks but would not include the tops of buildings, roadways, or permanent bodies of water such as, oceans or lakes."[6] 3-33 cont.

Because the LST Methodology is designed to also evaluate whether a project would violate any air quality standard or contribute to an existing or projected violation, the LST analysis does not apply only to the sensitive receptor identified in the analysis, but to all land uses and areas beyond the Project fenceline where persons can be situated for an hour or longer.

To address whether project operations would violate any air quality standard or contribute to an existing or projected violation, the LST analysis that was conducted for project operations includes a receptor grid with receptors directly outside of the facility boundary, and evaluated impacts from PM_{10} and $PM_{2.5}$ at receptors that are nearer to the facility than the nearest residence. A consistent methodology should be used to evaluate the significance of construction PM_{10} and $PM_{2.5}$ emissions. If these emissions result in a significant impact, mitigation must be adopted to reduce the impacts to the extent possible. 3-34

Consistent with the operational analysis, the LSTs for construction based on a 1-acre site with a receptor located 25 meters from the site are appropriate. This methodology is also appropriate becuase workers would be present on-site during construction and therefore would be exposed to criteria pollutants during facility construction. At a minimum, the District should have analyzed impacts at a distance of 50 meters to account for wokers that may be present at the hydrogen plant, located directly across the Dominguez Channel from the facility, and those workers that could be present along the Union Pacific rail line or on the overhead pedestrian bridge adjacent to the project site. 3-35

The LSTs for particulate matter as shown in the look-up table for the South Coastal Los Angeles County Source-Receptor Area, are 4 lbs/day for PM_{10} and 3 lbs/day for $PM_{2.5}$.[7] The construction emissions reported in the ND are 43.16 lbs/day of PM_{10} and 23.8 lbs/day of $PM_{2.5}$. These emission estimates are above the LSTs for a 1-acre site for

[5] Draft ND, Page 2-9.
[6] SCAQMD. 2008. *Final Localized Significance Threshold Methodology.* June 2003, revised July. Page 3-2.
[7] SCAQMD. 2009. Tables C-4 and C-6 of the LST Look-Up Tables, Appendix C. October 21.

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receptors located 25 meters from the construction site. Because the emissions are above the LSTs, impacts would be significant and would require mitigation.

3-35 cont.

Cumulative impacts from past, present, and reasonably foreseeable future projects were not addressed. The cumulative impacts analysis only addresses emissions from the on-site boilers, and does not take into account other emission sources in the vicinity of the project. In reviewing the SCAQMD's Facility Information Detail database on the SCAQMD's website[8], we identified 79 facilities within a one-mile radius from the Refinery. No discussion of these existing facilities and their emissions was included in the ND, nor was any discussion of reasonably foreseeable future projects included in the ND. The ND does not provide a basis for limiting the cumulative impacts analysis to on-site sources of emissions. The facilities and reasonably foreseeable projects would include sources of criteria pollutants, toxic air contaminants, and greenhouse gases, which were not evaluated in the ND. By way of illustration, we provide in the below table the reported emissions from several facilities in the vicinity of the Refinery that should have been considered in a cumulative impact analysis. However, the additional facilities identified from the SCAQMD's database, as well as reasonably foreseeable future projects, would also contribute to the emissions in the region and their cumulative emissions should be analyzed by the District.

3-36

Criteria Pollutant Emissions, Tons/Year					
Source	**VOC**	**CO**	**NOx**	**SOx**	**Particulates**
BP Carson Refinery	499.808	670.889	650.402	418.397	367.298
Tesoro Refining and Marketing	199.789	574.324	575.598	185.673	271.294
Air Products and Chemicals	27.417	5.293	26.861	1.691	4.728
Harbor Cogeneration	0.578	3.109	3.109	0.147	0.329
New NGC, Inc.	1.930	7.803	8.701	0.133	18.780
Project Emissions (based on 365 days per year of operation)	11.61	58.36	37.46	16.72	28.835
Total	741.132	1319.778	1302.131	622.761	691.264
Average Daily Emissions	4060.997	7231.66	7134.964	3412.389	3787.748

GHG emissions from existing facilities in the vicinity of the project would also contribute to cumulative impacts. The table below provides a summary of the GHG emissions as

[8] http://www.aqmd.gov/webappl/pubinfo/mapviewer.aspx?fac_id=800026

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reported to the ARB for the facilities listed above, including the project. The project GHG emissions are above the SCAQMD's interim significance threshold for industrial projects of 10,000 metric tons of CO2e, and without an enforceable mitigation measure would be cumulatively considerable.

Source	CO2e Emissions, metric tons/year
BP Carson Refinery	5,190,278
Tesoro Refining and Marketing	1,456,915
Air Products and Chemicals	616,026
Harbor Cogeneration	6,501
New NGC, Inc.	21,180
Project Emissions (based on 365 days per year of operation)	332,391
Total	**7,623,291**

3-36 cont.

Sincerely,

Valorie L. Thompson

Valorie L. Thompson, Ph.D.
Principal

1328 Kaimalino Lane San Diego, CA 92109 (858) 488-2987

ATTACHMENT 2

JUNE 1994 SCH No. 92111042

ULTRAMAR INC. WILMINGTON REFINERY REFORMULATED FUELS PROGRAM

VOLUME 1

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Prepared by

Environmental Audit, Inc.

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (909) 396-2000

June 21, 1994

SUBJECT: **NOTICE OF COMPLETION OF A DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT**

PROJECT TITLE: **Ultramar Inc. Wilmington Refinery Reformulated Fuels Program**

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (SCAQMD) is the Lead Agency and has prepared a Draft Subsequent Environmental Impact Report (EIR) for the project identified above. The document includes a project description, the environmental setting, environmental impacts associated with the project, mitigation measures and alternatives to the project.

This letter, the Notice of Completion, and the Draft Subsequent EIR are not SCAQMD applications or forms requiring a response from you. Their purpose is simply to provide information on the above project. If the above project is not applicable to you or you do not wish to comment on the Draft Subsequent EIR, no action is necessary on your part.

Please note that the comment period for the Draft Subsequent EIR is June 24 through August 8, 1994. If you wish to submit comments on the Draft EIR for the above project, they must be submitted to the SCAQMD no later than 5 p.m. on August 8, 1994. Please send any comments to Jonathan D. Nadler, (c/o Office of Planning, Transportation & Information Management) at the address shown above.

Project Applicant: Ultramar Inc.

Signature: Steve Smith
Steve Smith, Ph.D.

Title: Program Supervisor

Telephone: (909) 396-3054

Reference: Title 14, California Code of Regulations, Section 15085

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

21865 E. Copley Drive Diamond Bar, California 91765

NOTICE OF COMPLETION

Project Title:
Ultramar Inc. Wilmington Refinery Reformulated Fuels Program

Project Location:
Ultramar Inc. Wilmington Refinery, 2402 E. Anaheim St., Wilmington, California, 90744

Description of Nature, Purpose, and Beneficiaries of Project:
Ultramar Inc. recently proposed an upgrade of its Wilmington, California refinery in order to meet state and federal requirements for production of reformulated fuels. The requirements take effect January 1, 1995, as specified by the 1990 amendments to the federal Clean Air Act, and March 1, 1996 as specified by the California Clean Air Act . To comply with the state and federal requirements, Ultramar is building new units, making changes to existing units, changing the way certain units are operated, adding tanks, and expanding auxillary support systems to supply steam, compressed air, cooling water, fuel gas, and other utilities. As a result of this upgrade, the refinery will produce fuels that will reduce air pollutant emissions from mobile sources in the South Coast Air Basin.

Subsequent to certification of the Environmental Impact Report (EIR) for the above project, Ultramar proposed modifications to their original proposal. The key modifications include a new gas oil hydrotreater, a truck loading rack, a hydrogen plant, a cogeneration plant, an air separation unit, and a carbon dioxide recovery system.

Potentially Significant Adverse Environmental Impacts:
The Draft Subsequent EIR has identified the proposed project as having potential significant adverse impacts on air quality, water demand, noise (cumulative impact), risk of upset, and transportation (cumulative impact).

Lead Agency: SCAQMD	**Division:** Planning, Transportation & Information Management
Copy of Draft Subsequent EIR and all documents referenced are available at: SCAQMD Headquarters 21865 E. Copley Drive Diamond Bar, CA 91765	**or by calling:** (909) 396-3600
Review Period: June 24 through August 8, 1994	
Contact Person: Jonathan D. Nadler	**Phone Number:** (909) 396-3071

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

Chairman: HENRY W. WEDAA
Cities Representative, County of Orange

Vice Chairman: JON D. MIKELS
San Bernardino County Representative

MEMBERS:

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Supervisor, County of Los Angeles

MARVIN BRAUDE
Councilman, City of Los Angeles
Cities Representative, County of Los Angeles, Western Region

WILLIAM BURKE, Ed.D.
Speaker of the Assembly, Appointee

MEE HAE LEE
Senate Rules Committee, Appointee

LEONARD PAULITZ
Councilman, City of Montclair
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TABLE OF CONTENTS

TABLE OF CONTENTS

Volume I - Draft Subsequent Environmental Impact Report:

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLES:

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

FIGURES:

CHAPTER 1

INTRODUCTION AND EXECUTIVE SUMMARY

Introduction

Chapter 2 Summary - Project Description

Chapter 3 Summary - Environmental Setting

Chapter 4 Summary - Potential Environmental Impacts and Mitigation

Chapter 5 Summary - Project Alternatives

Chapter 6 Summary - Cumulative Impacts

Chapter 7 Summary - Other CEQA Topics

CHAPTER 1.0

INTRODUCTION AND EXECUTIVE SUMMARY

Ultramar is proposing a new Gas Oil Hydrotreater (GOH) facility plus related refinery modifications and a truck loading rack. In addition, Ultramar and Air Products and Chemicals, Inc. (Air Products) are proposing the construction of a Hydrogen Plant, a Cogeneration Plant, an Air Separation Unit, a Carbon Dioxide Recovery System, and a hydrogen pipeline. These modifications plus other refinery modifications described in this document are collectively referred to as the Ultramar Reformulated Fuels Program. The California Environmental Quality Act (CEQA) requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. Therefore, this Draft Subsequent Environmental Impact Report (EIR) is being prepared under the CEQA requirements.

PROJECT NEED

Existing Air Quality

California has severe air quality conditions and emissions from motor vehicles are a major contributor to these conditions. The state ambient air quality standards for ozone and particulate matter less than 10 microns equivalent aerodynamic diameter (PM10) are widely exceeded throughout California. The state standard for carbon monoxide (CO) also is exceeded throughout the state. The state standard for nitrogen dioxide (NO_2) currently is exceeded in the South Coast Air Basin (CARB, 1992).

Mobile sources account for a substantial portion of the total emissions from all sources in California. In 1987, mobile sources accounted for over 50 percent of the total statewide emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_x), which are the major precursors to ozone formation. In addition, mobile sources accounted for about 60 percent of the PM10 precursor emissions, and about 70 percent of the CO emissions. Gasoline-powered motor vehicles accounted for almost 35 percent of the total emissions of ozone and PM10 precursors, and almost 60 percent of the CO emissions (CARB, 1991).

A variety of toxic air contaminants and potentially toxic air contaminants are emitted by motor vehicles including benzene, acetaldehyde, formaldehyde, and 1,3-butadiene. Gasoline-powered vehicles account for 90 percent of the benzene emissions in the state and almost 80 percent of the 1,3-butadiene emissions (CARB, 1991a).

REGULATORY BACKGROUND

The Federal Clean Air Act Amendments (CAAA) were signed into law on November 15, 1990. Under the authority of the CAAA, the United States Environmental Protection Agency (EPA) has issued regulations designed to improve air quality throughout the United States. The major source of air emissions in many urban areas is from motor vehicles. Therefore, included as part of the CAAA are new requirements for cleaner, reformulated gasolines in areas which are designated as extreme ozone nonattainment areas. The

reformulated gasolines must be available for sale in these areas by January 1, 1995. The South Coast Air Basin is designated an extreme ozone nonattainment area.

The new federal requirements for reformulated gasolines are designed to reduce ozone and carbon monoxide levels from vehicles as well as reduce air toxic emissions. Specific requirements for reformulated gasoline in the CAAA include: (1) reducing the volatility of gasoline to reduce hydrocarbon emissions that contribute to the formation of ozone and other photochemical pollutants; (2) increasing the oxygen content of gasoline to reduce CO emissions by adding petroleum-derived compounds called oxygenates; (3) reducing toxic compounds including benzene; and (4) imposing a nationwide ban on lead in fuel.

The California Clean Air Act (CCAA) imposes even more stringent requirements for reformulated gasolines than the federal EPA. Under the authority of the CCAA, the California Air Resources Board (CARB) adopted state regulations for reformulated gasolines in November 1991. These regulations known as CARB's Phase II Reformulated Gasoline regulations, are designed to reduce emissions of volatile organic compounds and oxides of nitrogen that form ozone, as well as reduce carbon monoxide, sulfur dioxide (SO_2), and toxic air pollutants from vehicles (CARB, 1991b). According to CARB estimates, the use of these reformulated gasolines will result in a 10 percent reduction in ozone precursor emissions (including ROG and NO_x), a 17 percent reduction in carbon monoxide and an 80 percent reduction in SO_2 emissions when the regulations are fully implemented in early 1996 (CARB, 1993). CARB also has established diesel fuel regulations to limit the aromatic content of diesel fuel sold in California to ten percent by volume. The CARB regulations provide for independent refiners (see Chapter 9) to be in compliance with the diesel fuel limitations by October 1, 1996.

In 1991, the South Coast Air Quality Management District (SCAQMD) promulgated revisions to the state mandated Air Quality Management Plan (AQMP). The 1991 AQMP takes into consideration the emission reductions which will come from reformulated fuels in the overall strategy to reduce air pollution in the South Coast Air Basin. The AQMP also sets out strategies to reduce emissions from sources within SCAQMD authority to improve the air quality of the South Coast Air Basin and achieve state and federal air quality standards. The Ultramar Wilmington refinery is proposing specific modifications to refining processes and equipment, and the installation of new equipment to comply with state and federal reformulated fuel requirements.

PROJECT BENEFITS

Implementation of the Phase II reformulated fuel requirements is expected to provide air emission reductions and improve air quality in non-attainment areas of California, including the South Coast Air Basin. Use of the reformulated fuels will result in emission reductions of criteria air pollutants as well as several toxic air contaminants. CARB estimates that in 1996 the emission reductions in the South Coast Air Basin from motor vehicles due to use of reformulated gasoline will be 439 tons per day of carbon monoxide, 25 tons per day of nitrogen oxides, 42 tons per day of volatile organic compounds, and 10 tons per day of sulfur dioxide (CARB, 1993). The reductions in tailpipe emissions of PM10 expected to be negligible. However, a substantial overall reduction in PM10 is expected as a result of reformulated gasoline usage because a decrease in the formation of sulfate and nitrate particulates will be associated with the net reductions in sulfur oxide SO_x and NO_x emissions from motor vehicles.

Reductions in the toxic air contaminants benzene and 1,3-butadiene also are expected. An estimated five tons per day of benzene and one ton per day of 1,3-butadiene are expected to be reduced due to implementation of the Phase II regulations in Los Angeles County in 1996. The reduction in these toxic emissions is expected to result in a reduction in cancer incidence of 12 cancer cases in Los Angeles County in 1996 (CARB, 1993).

PURPOSE AND AUTHORITY

CEQA requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid, or eliminate identified significant adverse impacts of these projects be considered. To fulfill the purpose and intent of CEQA, the SCAQMD, as the CEQA lead agency, directed the preparation of this Draft Subsequent EIR, which addresses the potential environmental impacts associated with the Ultramar reformulated fuels program.

The Lead Agency is "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment" (Public Resources Code, Section 21067). For this project, the SCAQMD, the California Coastal Commission, and the City of Los Angeles, where the Ultramar refinery is located, evaluated the lead agency determination. It was determined that the SCAQMD has the greatest discretionary approval and permitting authority for the proposed project so that the SCAQMD would be the appropriate lead agency.

CEQA requires that responsible agencies, trustee agencies, and the public be notified of the intent and scope of the proposed project. A Notice of Preparation (NOP) and Initial Study were distributed to the identified responsible agencies and interested parties for review and comment (see Appendix A). The written comments and responses to those comments received on the NOP are provided in Appendix B of this Draft Subsequent Environmental Impact Report.

TYPE OF EIR

As discussed above, the proposed project is integral to the production of reformulated fuels. The CEQA document for the modifications to the Ultramar Wilmington refinery for the production of reformulated fuels (Final EIR: Ultramar, Inc. Wilmington Refinery Reformulated Fuels Program) was certified by the SCAQMD in August 1993. State CEQA Guidelines, 14 California Code of Regulations Section 15000 et seq., require additional analysis to a previously prepared and certified EIR if subsequent changes are proposed in the project which involve new significant environmental impacts not previously considered, or new information of substantial importance which was not known and could not have been known becomes available and shows significant effects previously examined will be substantially more severe (CEQA Guidelines Sections 15153 and 15162).

Ultramar's proposal to construct the GOH, Hydrogen Plant and other related facilities described above in support of their reformulated fuels program constitutes new information of substantial importance which may result in new significant environmental impacts and/or increase the severity of significant impacts previously identified in the previous Final EIR for Ultramar's reformulated fuels program. Consequently, this Environmental Impact Report to be prepared for the proposed project will be subsequent to and compliment the August 1993 Final EIR: Ultramar, Inc. Wilmington Refinery Reformulated Fuels Program (SCH No. 92111042), and will be referred to as the "Subsequent EIR".

CHAPTER 1: EXECUTIVE SUMMARY

The GOH, a Hydrogen Plant and sulfur recovery facilities were the subject of a 1988 Final EIR (SCAQMD, 1988). The GOH and Hydrogen Plant were not built. These facilities are related to producing reformulated gasoline and diesel, and are being incorporated into the Subsequent EIR.

SCOPE OF EIR AND FORMAT

The scope of the Draft Subsequent EIR meets the requirements identified under CEQA. A description of the proposed project is included in Chapter 2. The existing environmental setting is discussed in Chapter 3. The potential impacts associated with the proposed project are analyzed and presented in Chapter 4. Alternatives are discussed and analyzed in Chapter 5. The cumulative impacts of related projects are analyzed in Chapter 6. The relationship between local short-term uses and long-term productivity is presented in Chapter 7. In addition, Chapter 7 includes discussions of significant irreversible changes and growth-inducing impacts. The organizations and persons consulted and references used in the preparation of this document are provided in Chapter 8. Supporting documentation to the impact analysis are provided as technical attachments to this Draft Subsequent EIR. The technical attachments (Volumes II, III, IV, and V) are available upon request from the SCAQMD Public Information Office at (909) 396-3600.

CHAPTER 2 SUMMARY - PROJECT DESCRIPTION

Ultramar is proposing to make equipment modifications and/or additions and operational changes to the Wilmington refinery in order to comply with state and federal gasoline specifications. The project description has been divided into two sections: (1) new and modified facilities that were evaluated in the EIR prepared for Ultramar Inc. Wilmington Refinery Reformulated Fuels Program (State Clearinghouse No. 92111042, referred to herein as the "previous Final EIR"); and (2) new refinery units and modifications that are the subject of this Subsequent EIR.

Project Modifications Identified in Previous Final EIR

The modifications associated with the Ultramar reformulated fuels program that were evaluated in the previous Final EIR were divided into three steps corresponding to compliance dates for federal and state requirements. The modifications included in the previous Final EIR are outlined in Chapter 2, Table 2-1. For a more detailed description of these units, processes and modifications, see the previous Final EIR. All of the new and modified facilities identified in Table 2-1 will be located within the confines of the existing refinery.

Project Description for the Revised Reformulated Fuels Program

The proposed project, which is the subject of this Subsequent EIR, includes the project components described in the above section, as well as a Gas Oil Hydrotreater, Hydrogen Plant, Cogeneration facility, Sulfur Recovery Unit, and other facilities. A description of the new and altered units and systems which are the subject of this Subsequent EIR are provided below.

New Units

Gas Oil Hydrotreater (GOH)
Hydrogen Plant (H_2)
Cogeneration Plant
Air Separation Unit
Carbon Dioxide Recovery System
Truck Loading Racks

Altered Process Units

Sulfur Recovery Unit (SRU)

Ancillary Systems

Flare
Electrical Substation
Pipelines
Cooling Water Tower
Waste Heat Recovery System
Water Treatment System
Selective Catalytic Reduction/Aqueous Ammonia Delivery and Storage System

Both the new and modified facilities identified in the previous Final EIR and those included in this Subsequent EIR, will enable Ultramar to meet the federal and state reformulated fuels requirements, as well as help achieve attainment of federal and state air quality standards throughout the state.

CHAPTER 3 SUMMARY - ENVIRONMENTAL SETTING

Earth Resources

The proposed project site, located along the southwest margin of the Los Angeles Basin, is immediately north of the Los Angeles/Long Beach Harbor. Sediments are underlain by volcanic rocks and marine sedimentary rocks of early Pleistocene, Piloscene and Miocene age. The area is characterized by physiographic and tectonic structures that generally trend southeast to northwest. Seismicity and related geologic hazards are prevalent throughout the region.

Air Quality

The South Coast Air Basin, where the Ultramar refinery is located, fails to attain federal and state ambient air quality standards for the following air pollutants: ozone, CO, NO_x, and PM10. Currently, stationary sources, electrical energy use, onsite equipment, and mobile sources at the Ultramar refinery emit about 1,700 pounds per day of CO and SO_x, 2,000 pounds per day of NO_x, 2,400 pounds per day of ROG, and 2,500 pounds per day of PM10. The refinery also emits air toxics that result in the risk of excess cancer in the worst-case for the maximum exposed individual worker (MEIW) (4.7 in one million) and maximum exposed individual resident (MEIR) (3.0 in one million).

CHAPTER 1: EXECUTIVE SUMMARY

Water

The Ultramar refinery site is located over the Los Angeles Basin groundwater aquifer system. Four aquifers are present within the Los Angeles Basin and are used for industrial and municipal water supply outside of the harbor area. The groundwater underlying the Ultramar refinery is highly saline and not considered usable for a fresh water supply. The Los Angeles River and the Dominguez Channel are the major drainages that flow into the Los Angeles-Long Beach Harbor complex. Sediment and contaminants are transported into the harbor with the flow from the Los Angeles River, and to a lesser degree, the Dominguez Channel. The Ultramar refinery is located in the City of Los Angeles Department of Water and Power's (LADWP) Harbor Area Water Service District, and all potable water in this area is purchased by the LADWP from the Metropolitan Water District (MWD). The refinery used 14,538 million gallons of potable water 1991 and 12,332 million gallons in 1990. Wastewater generated by the Ultramar refinery is treated and discharged to the Los Angeles County Sanitation Districts (LACSD) sewage system. The refinery discharges an average of about 778,100 gallons per day of wastewater.

Noise

Major contributors to the ambient noise levels in the general vicinity of the Ultramar refinery include local railways, vehicular traffic, industrial facilities and numerous port-related activities. The measured existing noise levels at the west property line average about 65 decibels (dBA) during the nighttime, which represents the most critical time period for noise-sensitive areas. The measured daytime west property-line noise level averages 69 dBA during peak-hour traffic. Noise levels in the vicinity of the Hydrogen Plant site generally are about 68 dBA. Noise levels along the proposed hydrogen pipeline route are assumed to be about 65 dBA. The overall ambient noise levels during the night are lower due to reduced traffic. The refinery operations are continuous during 24-hour period; i.e., processing equipment is not shut down during the night, weekends, or holidays. The refinery's relative contribution to ambient noise is therefore greater during the night since the number of other noise sources in the area is reduced. Nonetheless, the City of Los Angeles Noise Ordinance currently is not exceeded due to noise from the existing Ultramar refinery or other existing noise sources.

Land Use

The refinery is located within a district zoned by the City of Los Angeles for heavy industrial uses (M3-1-VL). Refinery land uses are compatible within this zoning designation. The 4.5 acre site being acquired for the GOH site also is within a heavy industrial zone (M3-1-VL). Structures on the proposed GOH site include railroad tracks, a one story office building and warehouse, elevated drum storage rack, and also is used for general storage to support oil production field operations. Land uses surrounding the refinery and GOH parcel include other refineries and car wrecking/dismantling yards to the north, the Dominguez Channel and the proposed Hydrogen Plant parcel to the west, and oil production facilities properties to the south and east. The facilities associated with the Port of Long Beach are located south of the refinery.

The project site for the Hydrogen Plant and other related facilities is currently used as a parking lot, for the manufacture, storage and distribution of drilling muds, for sulfuric acid unloading and transfer operations, and for oil production. The site is zoned (Q)M3-1 and M3-1-VL which allows for heavy industrial land use. The southwestern portion of the Hydrogen Plant site is qualified by a "Q" designation which conditions the property for marine related uses.

The land uses along the pipeline route are predominantly heavy industrial, commercial, and public land along the Dominguez Channel. In generally, pipelines are acceptable in these areas since, once construction is complete, there are few impacts associated with pipelines.

The Ultramar refinery as well as the GOH site and portions of the Hydrogen Plant parcel are located with the Coastal Zone as defined by the California Coastal Act (see Figure 2-2).

Risk of Upset

In the existing refinery, the principal concerns with risk of upset are associated with the potential accidental release of acutely hazardous materials (hydrogen fluoride, ammonia, hydrogen sulfide, sulfur dioxide, and sulfuric acid) and flammable materials (propane, butane, and other petroleum products in storage vessels and butane, hydrogen, and fuel gas in pipelines). For a worst-case scenario, accidents could release materials that could cause irritation, injury or fatality to persons in close proximity to the refinery, particularly to persons traveling along the Terminal Island Freeway.

Transportation/Circulation

The Ultramar refinery is located south of Anaheim Street and east of Henry Ford Drive in the City of Los Angeles. Vehicular access to the refinery is provided via two driveways, both located off Anaheim Street. Regional access to the Ultramar refinery is provided by the Long Beach Freeway, which is located approximately two miles east of the site, and the Harbor Freeway, located approximately three miles west of the site. Pacific Coast Highway, Anaheim Street, and Alameda Street are key arterials which serve local traffic. These streets are the primary arterials servicing the project. Other key roadways in the local area network include "B" Street, Figueroa Street, Wilmington Boulevard, and Avalon Boulevard. Although the Terminal Island Freeway bisects the site, it provides no access and is not used by refinery vehicles. The ambient level of service (LOS) for the area indicates typical urban traffic conditions in the area surrounding the refinery with most intersections operating at LOS A to C during peak hours. The intersection of Wilmington Avenue and 223rd Street operates at a LOS D during a.m. peak hours and an LOS E during p.m. peak hours. The LOS at Santa Fe Avenue and Pacific Coast Highway is at C during a.m. peak hours, and drops to D during p.m. peak hours.

Public Services/Utilities/Natural Resources

Fire protection and prevention in the project area is provided by the City of Los Angeles Fire Department (LAFD). LAFD Station No. 38, located at 124 East "I" Street in Wilmington, is within two miles of the site. In addition, Ultramar maintains an on-site fire fighting force which includes three trucks for fire fighting and emergency response, firewater monitors near process units, and automatic deluge systems. The City of Los Angeles Police Department (LAPD) is the responding agency for law enforcement needs in the vicinity of the proposed project. The project site is located within the jurisdiction of the LAPD's Harbor Division. The Ultramar refinery maintains its own private security force. Security guards are at the facility 24 hours a day, seven days a week. The entire facility is fenced and entry is limited by gated access roads. Security guards are posted at each of the access gates and monitor personnel entering and exiting the facility.

CHAPTER 1: EXECUTIVE SUMMARY

The Ultramar refinery obtains electrical power from the LADWP. LADWP produces electric power at 1.12 billion kilowatt hours (kwh). Electrical consumption at the refinery averages about 511,000 kilowatt hours per day. The Ultramar refinery produces fuel gas on-site for refinery operations. Supplemental supplies of natural gas are also purchased from the Southern California Gas Company (The Gas Company). The refinery consumed 6,815 million cubic feet of natural/fuel gas in 1991.

Ultramar refinery processes generated approximately 2,000 tons per year of materials which could be classified as hazardous waste. Ultramar currently recycles a substantial portion of its materials. The materials which are not recycled are disposed of as hazardous waste at licensed hazardous waste disposal facilities. The refinery generates about 301.5 tons of nonhazardous solid wastes per year. This waste is transported by Haig Disposal Service to American Waste Transit Facility in Gardena for final transport and disposal at the Puente Hills Class III Landfill and the Bradley West Class III Landfill, which are located in Los Angeles County. Other landfills are available for use in Los Angeles County, including the BKK landfill in West Covina.

Human Health

The primary potential affect on the health of the public and refinery workers is exposure to criteria air pollutants and air toxics generated by the refinery during normal operations and under potential risk of upset conditions. Other potential adverse human health impacts could include exposure to noise during operations and exposure to soils contaminated with petroleum hydrocarbons.

CHAPTER 4 SUMMARY - POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A brief summary is provided below for each environmental discipline that describes the potential impacts of the revised proposed project and mitigation measures that may be necessary. The ultimate levels of significance were determined by comparing potential impacts with the significance criteria developed for each discipline.

Earth Resources

Impact: Earthmoving activities such as excavation, grading, and placement of fill are expected to be minimal, however, they may increase the potential for water erosion at the site. In order to prevent water erosion, standard construction grading practices to contain runoff will be implemented during construction. Dust control, to prevent wind erosion, will be accomplished by routine watering of excavation sites and pipeline trenches. Contaminated soils encountered during construction which exceeds standards for reuse on-site will be transported off-site to a licensed facility for either land disposal, recycling or treatment. The site could experience earthquakes and the potential impacts of an earthquake on the site are considered to be slightly greater than current conditions. The proposed project must be designed to comply with the Uniform Building Code Zone 4 requirements to minimize the potential impacts of an earthquake on the proposed facilities. No impacts due to liquefaction or subsidence are expected.

Mitigation: No significant impacts to earth resources are expected due to implementation of the proposed project and, therefore, no mitigation measures are required.

Level of Significance: All potential earth resources impacts would be insignificant.

Air Quality

Impact: Construction activities will generate temporary air emissions associated with grading activities, use of heavy equipment, trucks, employee vehicles and soil remediation. Construction emissions would exceed significance thresholds for ROG, NO_x, PM10, and CO. The significance level for SO_x would not be exceeded during project construction.

Operation of the revised proposed project will generate significant impacts on air quality for ROG, NO_x, SO_x, PM10, and CO since the SCAQMD mass emission thresholds would be exceeded. The revised proposed project would not exceed the significant change threshold for CO. The project would exceed the significant change threshold for annual and 1-hour NO_2, 24-hour PM10, and annual PM10. The concentration of SO_x from the revised proposed project plus the background SO_x concentration would still be below state and federal regulations. The concentration of lead from the revised proposed project also would be below state and federal limits. Therefore, the project impacts on ambient air quality concentrations of CO, SO_x, and lead would be less than significant. The project impacts on 1-hour NO_x, annual NO_x, 24-hour PM10 and annual PM10 concentrations would be considered significant. The project also will result in large emission benefits associated with emission reductions of criteria and toxic air contaminants from mobile sources that use the reformulated fuels.

The impacts of the project due to toxic air contaminants would be increased from the refinery baseline case. The project would result in an increased cancer risk to the MEIR of two cancers per million. The project would result in an increased cancer risk to the MEIW of about three per million. The maximum cancer risk to a sensitive receptor due to the proposed project was estimated to be about one per million. The project will result in a residential cancer burden of 0.12. The occupational cancer burden is estimated to be 0.08.

The highest acute hazard index for any toxicological endpoint was estimated to be 0.12 for the respiratory system. The highest total chronic hazard index for any toxicological endpoint was estimated to be 0.06 for the cardiovascular system. The project would be below the significance criteria for cancer risk of 10 per million, below the cancer burden significance criteria of 0.5, and below the non-cancer hazard index of 1.0. Therefore, the project impacts on toxic air contaminants would be less than significant.

Mitigation: Mitigation measures developed to reduce emissions of criteria pollutants during construction include: develop a trip reduction plan to achieve average vehicle ridership of 1.5 or higher for construction employees; site watering; maintain vehicles and equipment to minimize emissions; and use best available control technology (BACT) on construction equipment, including retarding timing. The mitigation measures developed to reduce emissions of criteria and toxic pollutants during operation of the proposed project include the use of BACT.

Level of Significance: The impacts of criteria pollutants during construction activities are projected to be significant for ROG, NO_x, PM10 and CO. The level of significance for criteria pollutants during operation of the new/modified facilities would be significant for ROG, NO_x, SO_x, PM10 and CO. The potential impacts of criteria pollutants on ambient air concentrations, based on the results of air quality modeling, would be insignificant for SO_x, CO and lead. The project impacts on ambient air quality concentrations of annual and 1-hour NO_x, and annual and 24-hour PM10 would be considered significant. Significant air quality impacts are anticipated during operation of the project in spite of using BACT equipment. The

project impacts for toxic air contaminants would be insignificant for operation of the proposed project. This]project will result in significant benefits of criteria pollutants and toxic air contaminants from mobile sources that use the reformulated fuels.

Water

Impact: Water quality impacts during construction are not expected because minor grading will be required. Additional fresh water will be used during construction activities for dust suppression and for pressure testing of vessels and pipelines. Ground water quality is not expected to be impacted. No increase in surface water runoff is expected. The revised project would increase the water usage at the refinery by about 3.3 million gallons per day. There is sufficient capacity to supply the increased water demand; however, the increased water use is substantial and, therefore, significant. The revised project is expected to generate 1.3 million gallons per day of additional wastewater.

Mitigation: Ultramar must continue to review its water use and wastewater discharge in an effort to minimize both. Reclaimed water will be utilized when available at an acceptable quality and when its economically feasible. Ultramar will pursue the following wastewater discharge alternatives in the event there is insufficient capacity in the sewer system: reduce the discharge to the sewer system during off-peak hours to the extent feasible, and upgrade pumping station No. 668, if needed.

Level of Significance: The project impacts on ground water and surface water are considered insignificant. The impacts on water demand will remain significant if reclaimed water is not utilized. Impacts on wastewater discharge can be mitigated to a level of insignificance.

Noise

Impact: The highest construction impacts will be along the western boundary of the refinery since most of the refinery modifications will occur in this area and the GOH will be located immediately adjacent to the western refinery boundary. Since construction would be limited to daytime hours, property line and residential area noise due to construction activities only would occur during the daytime. The construction noise would exceed the 75 dBA noise limit by one decibel, which is not perceptible by human beings. This is a temporary impact and is considered insignificant. Temporary localized increases in noise levels are expected due to operation of pipeline installation equipment. The pipeline construction noise levels at 500 feet are expected to be about 70 dBA. Pipeline construction will take place during normal working hours, in mostly industrial areas. Mitigation measures are available to prevent construction during the more sensitive nighttime period near residential areas. Operational noise levels within the Wilmington area will increase to a maximum of about 73 dBA (near the western boundary of the refinery). Therefore, the noise levels for the new process units would not exceed the City of Los Angeles Noise Ordinance of 75 dBA at the refinery or Hydrogen Plant boundary during the day or night. The proposed project is not expected to have significant noise impacts to that adjacent surrounding areas due to operation of the proposed reformulated fuels program.

Mitigation: Although no significant noise impacts from construction activities are expected, the potential for short-term adverse noise impact exists during the demolition and construction phase of any project and the installation of pipeline. To minimize noise impacts during construction, Ultramar will limit construction activities primarily to daylight hours, use mufflers, silencers and other noise reduction devices; route trucks around residential areas to

the extent possible. No mitigation measures are required for operational impacts, since the noise levels are expected to be generally acceptable for the surrounding land uses.

Level of Significance: The project impacts on noise during construction have been mitigated to an insignificant level. The project impacts on noise during operation would be insignificant.

Land Use

Impacts: A portion of the reformulated fuels program modifications will be made within the confines of the Ultramar refinery. These modifications are compatible with the existing land use and zoning.

Ultramar is acquiring two parcels for the GOH and Hydrogen Plant facilities in areas adjacent to the refinery. The 4.5 acre GOH site is located immediately west of the existing refinery boundary and will effectively extend the western boundary of the refinery. The proposed nine acre site for the Hydrogen Plant, Cogeneration Unit, rack, and other facilities is adjacent to and immediately west of the Ultramar refinery (west of the Dominguez Channel). The GOH and Hydrogen Plant sites are zoned M3-1-VL which allows for industrial development but places a 45-foot height limitation on development. In addition, the southwestern portion of the proposed Hydrogen Plant site is zoned (Q)M3-1 which restricts land use to marine-related facilities.

The proposed project generally conforms to the land use and zoning designation of the general area. However, the refinery and other structures will exceed the 45 foot height limitation. The proposed project will require a modification, exception or variance from the City of Los Angeles. Most of the existing Refinery Units exceed 45 feet in height and the city has approved the prior development at the site.

Construction of the hydrogen pipeline also is expected to conform with the land use designations along the route since most areas are zoned industrial, commercial, or for public uses.

Mitigation Measures: Authorization by the City of Los Angeles will be required for construction of structures that exceed the height limitation of 45 feet.

Level of Significance: The proposed project is expected to comply with the City of Los Angeles Zoning requirements, assuming the authorization by the City of Los Angeles, and will be compatible with the surrounding land uses. Therefore, no significant impacts on land use are expected.

Risk of Upset

Impacts: Modeling analysis was performed to determine the proposed project's potential for off-site population exposures to hazardous or flammable materials in the event of an accidental upset. The modeling analysis was performed for two levels of concern: "irritation" and "serious injury/fatality." Risk of upset impacts from the revised project are expected to be significant for: hydrofluoric acid (HF) transport; aqueous ammonia on-site use and transport; the GOH Unit; Sulfur Recovery Unit; the Hydrogen Plant; and hydrogen transport.

CHAPTER 1: EXECUTIVE SUMMARY

Mitigation: Mitigation measures were developed to mitigate the impacts associated with HF transport, aqueous ammonia on-site use and transport, the GOH, Sulfur Recovery Units, and hydrogen transport.

Measures to mitigate HF transport/unloading include the use of emergency response and safety procedures currently used at the refinery. This includes unloading HF in the presence of an Ultramar refinery facility-trained operator, coordinated delivery schedules, strict driver hiring and training policies and in enhanced vehicle inspection and maintenance programs. Also, an HF detection and alarm system will continued to be used.

Mitigation measures to reduce the hazards associated with ammonia transport and handling will include use of safe, reliable suppliers, and include the development of delivery routes in coordination with the local police and fire departments and school districts. Ultramar also will continue to use the emergency response system, which will limit the impacts of an aqueous ammonia spill at the refinery.

Mitigation measures for the GOH and the Sulfur Recovery Unit will include a safety review for each unit as part of the Process Safety Management program and revisions to the Risk Management and Prevention Program (RMPP) for hydrogen sulfide. Recommendations of the RMPP related to safety must be implemented at the refinery.

Mitigation measures for the transport of hydrogen include installation of telemetry systems for monitoring pipeline operation and input/output differential monitoring, new pipeline construction and maintenance to standards specified by the ANSI, weekly pipeline patrol, participation with Underground Service Alert, and installation of pipeline warning tape in the ditch over the pipeline.

Level of Significance: The mitigation measures generally would reduce the probability of an incident but would not alter the consequence of a worst-case emergency event. Therefore, the proposed project impacts on HF transport, aqueous ammonia handling and transport, the GOH unit, the Sulfur Recovery Unit and hydrogen transport would remain significant after mitigation.

Transportation/Circulation

Impact: No significant impacts are expected due to the increase in construction traffic since the LOS at the local intersections would be level C or better at most intersections or would be unaffected by the proposed project. The intersection of Anaheim Street and Henry Ford Avenue would reduce from LOS C to E during P.M. construction activities peak hours during which is considered to be a significant impact.

Operation of the proposed project at the refinery is expected to create eight permanent jobs and require about seven additional truck trips. The Hydrogen Plant is expected to create 35 permanent jobs plus about 40 truck trips per day. The truck loading rack will require two permanent employees and involve about 45 truck trips per day. An LOS analysis was completed for the increased operational traffic and also assumed an ambient growth of one percent per year. The LOS analysis indicated that no significant impacts on traffic during project operation were expected. The project also will increase the amount of marine vessels making calls in the Port of Los Angeles by 12 per year. This level of vessel traffic is not expected to be significant since the existing level of vessel traffic within the port area is about 7,000 vessels per year.

Mitigation: Mitigation measures to minimize the traffic construction impacts at the Henry Ford Avenue/Anaheim Street intersection include restriping the north bound approach on Henry Ford Avenue to include one exclusive left turn pocket, one straight through lane, and one exclusive right turn lane. Other construction traffic mitigation measures include: (1) develop a transportation management plan to achieve an average vehicle ridership (AVR) of 1.5 or greater; (2) implementing a work schedule that avoids peak hour traffic to the extent feasible, e.g., 6:30 a.m. to 5:00 p.m.; (3) developing a traffic control plan for pipeline construction; and (4) coordinating truck delivery schedules to avoid peak traffic hours.

Level of Significance: Construction and operation traffic impacts are not expected to be significant following mitigation.

Public Services/Utilities/Natural Resources

Impact: Operation of the proposed project would continue to require police and fire protection from the City Los Angeles Police Department and the City of Los Angeles Fire Department. These services are already provided to the Ultramar refinery and are supplemented by on-site security, fire and emergency response personnel. Operation of the proposed project is not expected to impact the existing response times of the City Police Department or require an increase in personnel or equipment. Although the operation of the proposed project will continue to require emergency response service from the City of Los Angeles Fire Department, it is not expected to require additional emergency response personnel or equipment.

Nonhazardous waste generation is expected to increase by 523 tons per year, which is not expected to be a significant impact. Construction of the proposed project could result in generation of contaminated soil. Soil that cannot be reused would be transported to a licensed hazardous waste facility for treatment and disposal. The amount of contaminated soil that could be generated during construction represents an insignificant portion of hazardous waste received at these facilities. Operation of the revised proposed project would generate an incremental increase in hazardous waste. Only a small amount of these additional wastes would be sent off-site for disposal. There is adequate disposal capacity to accommodate these wastes, and this is considered an insignificant impact.

The amounts of electricity and natural gas required for construction and operation of the proposed project are not considered to be significant. The proposed Cogeneration Unit will supply the required electricity. Refinery fuel gas will continue to be produced by Ultramar on-site. The amount of electricity and natural gas that would need to be purchased would be small and insignificant.

Mitigation: No mitigation measures are required.

Level of Significance: Potential impacts on public utilities and services would not be significant. See the Water Quality section above for impacts on water demand and wastewater discharge.

Human Health

Impact: Potential impacts from exposure to contaminated soils will be avoided by following regulations that limit exposure and delineate procedures for removal and disposal of this material. Because of its temporary nature, no significant impacts to health from air emissions would occur during construction. Operation of the proposed project would exceed

the SCAQMD significance threshold levels for ROG, NO_x, SO_x, PM10, and CO. However, the localized impacts of criteria pollutants on ambient concentrations as determined by modeling are expected to be insignificant for all pollutants except PM10 and annual NO_x. The project is expected to have health benefits by producing fuels which will reduce emissions from mobile sources using the reformulated fuels. In addition, the project impacts on toxic air contaminants are expected to be below significance threshold levels. Construction noise increases would be minor and would not affect human health. Health and safety training will continue to be implemented by the refinery.

Mitigation: No mitigation measures beyond those required for air quality and risk of upset are needed.

Level of Significance: No significant health impacts are expected from the proposed project except those discussed under air quality and risk of upset.

CHAPTER 5 SUMMARY - PROJECT ALTERNATIVES

Seven alternatives to the proposed project were evaluated and they are described below.

Alternative 1: This alternative would eliminate the construction of the Cogeneration Plant. This would mean that the electrical needs of the project would have to be supplied by the LADWP.

Alternative 2: This alternative would substitute a Partial Oxidation Hydrogen (POX) process to produce the hydrogen. The components of the POX process would include: an air separator/oxygen compressor, a gasifier reactor, a particulate scrubber, a shift reactor, a purification unit, and a carbon monoxide boiler. Because the POX process would not be able to provide steam, an additional boiler would be included with this alternative.

Alternative 3: This alternative would relocate the Cogeneration Unit to another site near the Ultramar refinery. The most probable location would be adjacent to the southern boundary of the refinery near the Harbor Cogeneration site. Impacts of this alternative would be shifted to the alternative site.

Alternative 4: Under this alternative the hydrogen plant would be located at another site. It is assumed that the plant would be located somewhere in the Wilmington area near or within the Ultramar refinery since the Hydrogen Plant is needed to supply hydrogen to Ultramar and may also provide hydrogen to other refineries.

Alternative 5: This alternative would increase the size of the hydrogen plant from 88 mmscfd to 120 mmscfd, in order to supply other refineries with hydrogen.

Alternative 6: This alternative involves the construction of a number of small hydrogen plants at the various local refineries. In essence, this is the alternative that has been evaluated under most of the EIRs prepared for the reformulated fuels projects. This alternative would avoid the noise, air quality, and traffic impacts associated with the hydrogen pipeline, but would generally result in higher daily emissions, increase the probability of risk of upset events, and result in larger impacts on utilities.

Alternative 7: This alternative consists of a hydrogen pipeline route which provides an alternative route to the various local refineries.

It was determined that several of the alternatives would reduce the project impacts but none of the alternatives would eliminate, or reduce the impacts to an insignificant level, the significant impacts identified for air quality, water demand, and risk of upset. All alternatives, as well as the proposed project would result in significant impacts to air quality, water demand, and risk of upset. No other alternatives have been identified that would reduce these impacts to an insignificant level. Consequently, the proposed project is considered the most feasible alternative to ensure that Ultramar will be able to produce reformulated fuels as specified in federal and state regulations.

CHAPTER 6 SUMMARY - CUMULATIVE IMPACTS

Earth Resources: No significant cumulative earth resources impacts were identified. In the event of a major earthquake, significant ground shaking could occur at the project site and the surrounding areas. The combined impacts of the related projects on soil excavation are not expected to be significant. Implementation of mitigation measures (compliance with building codes) for all proposed projects would reduce the impact of such seismic activity on the project's operation and equipment.

Air Quality: The cumulative construction emissions from other refineries plus Ultramar would exceed SCAQMD thresholds and are considered significant. Similarly, operation of the collective refinery reformulated fuels projects would exceed the SCAQMD significance thresholds for most criteria air pollutants. However, the related refinery projects would result in net air quality benefits from mobile sources that utilize the reformulated fuels. The emission reductions from mobile sources far outweigh the combined emission increases at the refineries.

The 1×10^{-6} isopleths for the ARCO, Unocal, Texaco, and Ultramar refineries have the potential to overlap and the cumulative impacts associated with these refineries were evaluated. The area identified as exceeding the 10×10^{-6} cancer risk level is located immediately north of the Ultramar refinery.

The cumulative analysis for toxic air contaminants does not take into account the fact that there will be a reduction in toxic emissions of benzene and 1,3-butadiene from mobile sources that utilize the reformulated fuels. An estimate of the expected reduction in background cancer risk in the vicinity of the Ultramar refinery that would result from the use of reformulated gasoline in motor vehicles was completed. This analysis indicates that the reduction in benzene emissions from on-road motor vehicles would potentially reduce the local cancer risk by 85 in one million. Comparing this reduction to the cumulative risk resulting from future operations of the Ultramar refinery plus the reformulated fuels projects at other nearby refineries (21 per million) indicates that a large net decrease in cancer risk of 64 per million is expected.

Ultramar and other refineries will utilize BACT for construction equipment, keep all vehicles and construction equipment well tuned, develop a trip reduction plan, and water active construction sites twice daily (except during periods of rain) in an effort to reduce potential emissions. Similar mitigation measures will be imposed at the other refineries and local construction projects in the City of Los Angeles. Mitigation measures for operation of the proposed project consist of the use of BACT in all new and modified units.

Water Resources: Increased use of potable water from all reformulated fuel projects and other related projects would occur, resulting in a significant impact. Increases in wastewater generated would limit available sewer and treatment capacity in the area but sufficient capacity is available.

Cumulative impacts can be mitigated by on-going efforts to reduce water use and wastewater streams. The cumulative impact on water demand may be reduced by the use of reclaimed water. As part of their mitigation monitoring programs, the refineries will be required to submit annual reports to the SCAQMD through 1998 on the potential to utilize reclaimed water. No significant adverse cumulative impacts are expected to occur from the generation of additional wastewater as long as each refinery complies with its Industrial Wastewater Discharge or its National Pollutant Discharge Elimination System (NPDES) permit conditions.

Noise: Construction phases of each of the related projects are expected to generate localized, short-term noise impacts. Construction activities associated with pile driving for the 2020 Plan and the Alameda Corridor are expected to be significant. Construction activities are expected to be limited to daytime hours which would reduce the potential for impacts on residential areas.

Operational impacts of the related refinery projects are not expected to be significant since most of the Wilmington area is industrialized. Sufficient distance exists between the refineries to prevent overlap of noise impacts.

Existing noise levels from traffic in the vicinity are already considered unacceptable for certain residential areas. The build out of the 2020 Plan and Alameda Corridor projects are expected to result in noise impacts to the Long Beach Naval Station housing and to residential areas adjoining Alameda Street (ACE, 1990).

Compliance with the City of Los Angeles noise ordinance, which generally prohibits construction during the nighttime, should minimize noise impacts due to construction activities. The noise impacts on construction and operation remain significant for the construction of the Port 2020 Plan and Alameda Corridor modifications. The noise impacts associated with the related refinery projects are not expected to be significant.

Land Use: No cumulative impacts will conflict with land use and zoning designations established by the City of Los Angeles as result of the construction and operation of the related projects in the area. The revised project will be built within the heavy industrial zoned portion of Wilmington. The related refinery projects are being conducted within the confines of existing refineries or in areas zoned for such purposes. Port projects will be in compliance with the designated zoning requirements for the harbor area. Cumulative impacts associated with land use and zoning are expected to be insignificant.

Risk of Upset: Although other refineries exist within a few thousand feet of the Ultramar refinery, the cumulative impacts from and between the on-site operation of the refineries' reformulated fuels projects is not expected to be significant because it is extremely unlikely that upset conditions would occur at more than one refinery at a time. It also is extremely unlikely that an upset condition at one refinery would create an upset at another nearby refinery. Sufficient distance exists between the refinery to avoid "knock on-type" effects.

Other refinery reformulated fuels projects may require the transport of additional sulfuric acid, ammonia, HF and butane. The transportation of additional ammonia (either aqueous or anhydrous), HF and butane into the area may be significant as there would be more vehicle miles and/or railcar miles traveled, thereby increasing the probability of an accident. The increase in probability is not related to the potential trucks or trains transporting ammonia, HF or butane having accidents with each other, but simply based on the additional number of trips in the area.

Specific mitigation measures have been developed for most of the refineries in the Southern California area to mitigate the impacts associated with risk of upset events at the refinery and associated with transport of hazardous materials.

Transportation: Construction impacts are expected to be temporary, but significant at the intersection of 223rd Street/Wilmington Avenue and Anaheim Street/Henry Ford Avenue, due to the number of other projects taking place near the refinery (i.e., other refinery projects plus the Alameda Corridor improvements). Mitigation measures have been identified that would reduce traffic construction impacts to a level of insignificance.

Operational traffic impacts are considered significant for the 223rd Street/Wilmington Avenue intersection due to traffic impacts associated with other refineries.

Public Services/Utilities: Reformulated fuels projects for the ARCO, Mobil, Unocal, Texaco and Chevron refineries would impact public services and utilities. Even when added together, however, no significant cumulative impacts would be expected and, therefore, no mitigation measures are required.

Human Health: The cumulative impacts of primary consideration relative to human health are those anticipated with other reformulated fuels projects. Direct emissions are expected to increase within the vicinity of the nearby refineries; however, overall area emissions are expected to be significantly reduced with the use of reformulated fuels. Cumulative health risks, other than those discussed under air quality and risk of upset, are not expected to be significant, therefore, no additional mitigation measures are proposed.

CHAPTER 7 SUMMARY - OTHER CEQA TOPICS

Relationship Between Local Short-term Uses of the Environment and Maintenance and Enhancement of Long-term Productivity

The Ultramar reformulated fuels program consists of modifications and the construction of additional equipment at and near the existing refinery. Beneficial uses of the environment in the refinery area would not be restricted by the implementation of the project because the refinery is already operating. In addition, the GOH and Hydrogen Plant sites will be located within areas already designated for heavy industrial uses.

CEQA requires justification for the decision to proceed with the proposed project at this time rather than reserving an option for future alternatives. Refineries have been mandated by the federal Clean Air Act Amendments and the California Air Resources Board to produce cleaner-burning fuels by 1995 and 1996, respectively. Ultramar has proposed the reformulated fuels program at this time to ensure that the refinery is manufacturing fuels that meet the specifications within the required compliance dates.

CHAPTER 1: EXECUTIVE SUMMARY

Significant Irreversible Environmental Changes

The reformulated fuels program will require additional water. This can be considered an irretrievable commitment of a resource, although the water used will be treated and recycled where feasible. Ultramar will review the potential for use of recycled water from near by treatment plants.

There would be increases in total criteria air pollutant emissions from the refinery during construction and operation of the refinery. These impacts would be significant. The refinery impacts on the ambient air quality are not expected to be significant with the exception of NO_2 and PM10. The use of reformulated fuels will reduce emissions of most of these pollutants and provide a large air quality benefit. There would be an increased potential for a risk of upset due to the proposed project modifications and ammonia, HF, and hydrogen transport.

Growth-Inducing Impacts of the Proposed Project

The Ultramar reformulated fuels program is not expected to increase population growth in the area, nor require additional housing. The project involves equipment additions and modifications at an existing refinery; therefore, no infrastructure development or improvement will be required and no population growth will be induced as a result of the project. The Ultramar refinery is located in a fully developed urban area with little potential for increased population growth. The project's purpose is to produce reformulated fuels that will reduce emissions from mobile sources not to stimulate population growth.

TABLE 1-1

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS FROM REVISED PROJECT, PROJECT ALTERNATIVES, OR CUMULATIVELY WITH OTHER PROJECTS

Issue Areas	Potential Impacts from the Project	Level of Significance		
		Project	Alter.	Cumul.
Earth Resources	Increased erosion from excavation	NS	NS	NS
	High concentrations of hydrocarbon in soil	NS	NS	NS
	Seismic related hazards	NS	NS	NS
	Liquefaction effect on structures	NS	NS	NS
	Subsidence damage to facilities	NS	NS	NS
Air Quality	Construction emissions of ROG, NOx, PM10 and CO	S	S	S
	Construction emissions of SOx	NS	NS	S
	Operation emissions of ROG, NOx, SOx, PM10 and CO	S	S	S
	Ambient concentrations of SOx and CO	NS	NS	NS
	Ambient Concentrations of annual & 24hr PM10 and NOx	S	S	NS
	Emissions of air toxics	NS	NS	NS
	Odors	NS	NS	NS
Water	Impacts during construction	NS	NS	NS
	Impacts on groundwater, surface water and wastewater during operation	NS	NS	NS
	Impacts on water demand	S	S	S

Level of Significance:

NS = No significant impacts
S = Significant impacts even after mitigation

TABLE 1-1 (CONT.)

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS FROM REVISED PROJECT, PROJECT ALTERNATIVES, OR CUMULATIVELY WITH OTHER PROJECTS

Issue Areas	Potential Impacts from the Project	Level of Significance		
		Project	Alter.	Cumul.
Noise	Increased noise associated with construction	NS	NS	S
	Increased operational noise	NS	NS	S
Land Use	Impacts on land use	NS	NS	NS
Risk of Upset	Hydrogen sulfide process release	S	S	NS
	Aqueous ammonia process release	S	S	NS
	Hydrogen transport	S	S/NS*	NS
	Aqueous ammonia transport	S	S	S
	HF transport	S	S	S
Transport/ Circulation	Temporary construction traffic	NS	NS	NS
	Operation traffic	NS	NS	S
Utilities/ Public Services	Increased use of police and fire during construction and operation	NS	NS	NS
	Increases in electricity, natural gas, and hazardous/solid waste generation	NS	NS	NS
Human Health	Health effects and occupational health**	NS	NS	NS

Level of Significance:

NS = No significant impacts
S = Significant impacts even after mitigation
* = Alternative 6 would involve construction of a hydrogen plant at each refinery, thus eliminating the transport of hydrogen associated with this project
** = Impacts on human health are considered insignificant except for those issues discussed under air quality and risk of upset

CHAPTER 6

CUMULATIVE IMPACTS

Introduction
Local Refineries
Other Related Projects
Earth Resources
Air Quality
Water
Noise
Land Use
Risk of Upset
Transportation/Circulation
Utilities/Public Services/Natural Resources
Human Health

CHAPTER 6.0

CUMULATIVE IMPACTS

INTRODUCTION

There are a number of projects proposed for development in the vicinity of the Ultramar refinery. These include extensive improvements to the Ports of Long Beach and Los Angeles, pipeline projects, and the Alameda Corridor Transportation Authority projects as well as the reformulated fuels modifications planned by other petroleum refineries in the South Coast Air Basin. Figure 6-1 shows the locations of the Southern California refineries. The reformulated fuels modifications are to be completed in order to supply reformulated gasoline as required under the Federal Clean Air Act by January 1, 1995 and as required by the California Clean Air Act by March 1, 1996. The discussion below lists projects which are reasonably expected to proceed in the foreseeable future, i.e., project information has been submitted to a public agency. Cumulative construction impacts were evaluated if the major portion of construction occurred during the same construction period as Ultramar's reformulated fuels program, i.e., 1994 and 1995.

Public agencies were contacted to obtain information on projects within the Wilmington area. Figure 6-2 identifies by number the location of each of the projects discussed below. The number is used to identify the related projects throughout the discussion of cumulative impacts. Localized impacts were assumed to include projects which would occur within the same timeframe as the Ultramar reformulated fuels program and which are within a one mile radius of the Ultramar refinery. These projects generally include reformulated fuels projects at the ARCO refinery (1); reformulated fuels projects at the Unocal refinery (2); reformulated fuels projects at the Texaco refinery (4); the Hydrogen Plant by Praxair (9); the Pacific Pipeline Project (12); portions of the Port 2020 Plan (13); and the Alameda Corridor projects (14). Regional impacts were assumed to include projects throughout the basin, e.g., all refineries.

Some of the resources affected by the proposed Ultramar project would primarily occur during the construction phase, e.g., traffic. Other impacts would primarily occur during the operational phase, e.g., public utilities, risk of upset, and human health. Other impacts would occur during both phases, e.g., air quality and noise.

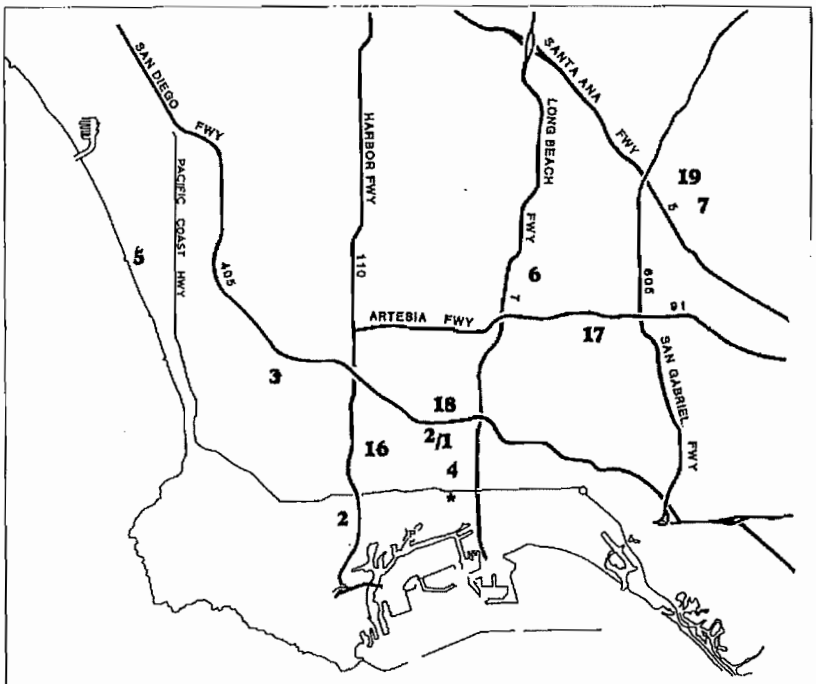
LOCAL REFINERIES

1) ARCO

A. The ARCO refinery, located at 1801 E. Sepulveda Boulevard in Carson, approximately two miles north of the Ultramar refinery, has proposed the following modifications in order to produce the reformulated gasolines:

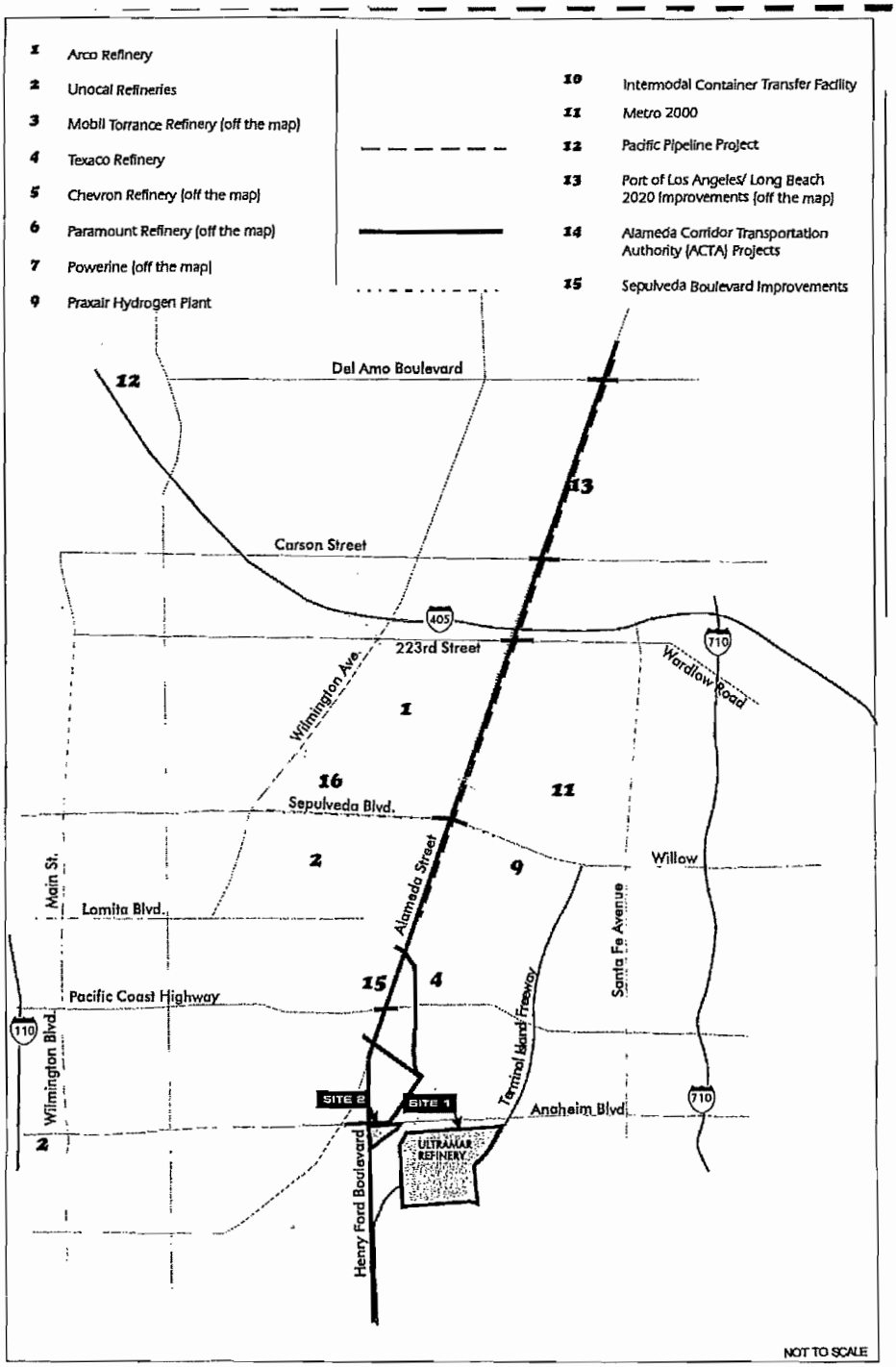
Add the following new equipment:

Two Dehexanizer Towers
Naphtha Hydrodesulfurizer



Southern California Refineries

FIGURE 6



RELATED PROJECTS

FIGURE 6-2

6-3

DRAFT SUBSEQUENT EIR: ULTRAMAR INC.

Naphtha Isomerizer
C5 Treater
C4 Isomerization Unit
Alkylation Unit
Hydrogen Plant
FCCU Distillation Tower
FCCU Depentanizer
FCCU Jet Stripper Distillation Tower
Cooling Tower

Modify the following existing units:

Crude Oil Distillation
Superfractionation Area (SFIA)
Reformers
Fluid Catalytic Cracker HDS Unit
Hydrocracker
Udex Unit/Aromatic Extraction
Flare System

Associated modifications and additions to storage facilities, pipelines and support facilities also are proposed (SCAQMD, 1993c).

B. The Watson Cogeneration Company is proposing to install a central refrigeration system to control the gas turbine generator inlet air conditions at its cogeneration plant, which is surrounded by the ARCO refinery. Natural gas consumption is anticipated to increase slightly, if at all, and incremental increases in emissions will not exceed permit limits for existing equipment (Brian Copley, Watson, Personal Communication, May 1993). Construction is planned to last from January to March of 1994, and to employ a peak work force of about 100 (SCAQMD, 1993c). For purposes of this discussion, the cogeneration plant will be considered as part of the overall ARCO reformulated fuels modifications. No significant air pollutant emissions were projected following construction associated with this project.

2) Unocal

The Unocal refinery consists of facilities at two locations approximately three miles apart, one at 1520 E. Sepulveda in Carson and one at 1660 W. Anaheim Street in Wilmington, with intermediate products transferred between locations via pipeline.

The proposed reformulated fuels program at the Carson facility will include the following new equipment:

Cogeneration unit to produce electricity (possibly)
Hydrotreater

The proposed reformulated fuels program at the Carson facility would include modifying the following units:

Crude Unit
Coker Unit

The proposed reformulated fuels program at the Wilmington facility would include construction of the following new equipment:

Hydrogen Plant
Butamer/C4 Isomerization Unit
Debutanizer (possibly)
New tower in the Hydrocracker/Unicracker (possibly)

Modifications of the following existing equipment at the Wilmington facility are proposed:

Alkylation Unit
Catalytic Light Ends Fractionation
Sulfuric Acid Unit
Hydrotreating and Reforming Unit
Modify Reforming Unit into one Benzene Saturation Unit and one Naphtha Isomerizing Unit.

Associated modifications and additions to storage facilities, pipelines and support facilities are also expected (SCAQMD, 1993d).

3) Mobil

The Mobil refinery is located at 3700 W. 190th Street in Torrance, about seven miles from the Ultramar refinery. This refinery is located a sufficient distance to not create cumulative impacts with Ultramar for localized impacts. The reformulated fuels program includes modifications and/or additions to the following equipment:

Crude Unit and/or Saturate Gas Plant, including a new Deisobutanizer distillation column;

Naphtha Pretreater including installation of one or more new distillation columns;

FCCU Feed Hydrotreater;

Hydrogen Plant including installation of hydrogen recovery facilities;

FCCU and Unsaturate Gas Plant, including one or more new distillation columns;

Alkylation Unit including new distillation column; and

Associated modifications and additions to storage facilities, pipelines and support facilities are also expected (SCAQMD, 1994a).

4) Texaco

The Texaco refinery is located at 2101 East Pacific Coast Highway, Wilmington and immediately north of the Ultramar refinery. The reformulated fuels program proposes the following new equipment:

Butane/Butylene Selective Hydrogenation Unit
MTBE Unit
Pentane/Pentylene Selective Hydrogenation Unit
TAME Unit
Pentylene Skeletal Isomerization Unit
Butane Isomerization Unit
Hydrogen Generation Unit
Naphtha Hydrodesulfurization Unit

Modifications to the following units are proposed:

Catalytic Reforming Unit No. 1
Catalytic Reforming Unit No. 2
Catalytic Reforming Unit No. 3
Alkylation Unit
Hydrogen Generation Unit
Alkylation Merichem
Hydrocracking Unit
FCCU

Associated modifications and additions to storage facilities, pipelines and support facilities also are expected (SCAQMD, 1994b).

5) Chevron

The Chevron refinery is located at 324 West El Segundo Boulevard in El Segundo, California, about 13.5 miles from the Ultramar refinery. This refinery is located at a sufficient distance to avoid cumulative localized impacts with Ultramar. The Chevron refinery has proposed a number of modifications to be built in three phases in order to produce the reformulated gasolines (SCAQMD, 1993e). The proposed new refinery units include:

Naphtha Prefractionator
PenHex plus Isomerization Unit
Isomax Naphtha Hydrotreater
Tame Plant/C5 Treating Section
Alkylation Unit
C4 Treating Unit

Modifications to existing refinery units are proposed for the following:

Catalytic Reforming Unit No. 2 conversion to a Continuous Catalyst Regeneration Design
C-102 and NHT3 modifications
Conversion of ARU to a butamer plant
Acid Plant
Hydrogen Plants

Due to the distance separating the Chevron refinery from the Ultramar refinery, no cumulative impacts are expected during the construction or operation of the proposed project.

6) Paramount

The Paramount Petroleum refinery is located at 14700 Downey Avenue, Paramount, about 12.5 miles northeast of the Ultramar refinery. This refinery is located a sufficient distance to avoid cumulative localized impacts with Ultramar. The Paramount refinery will be undergoing modifications to produce reformulated fuels in compliance with state and federal requirements. The major components of the Paramount refinery project include:

Replacement of the debutanizer system in the Naphtha HDS unit;
Installation of a new naphtha fractionation unit;
Installation of a new isomerization unit;
Installation of a new hot oil system; and
Replacement of the Gas/Oil Hydrodesulfurizer Reactor (Personal Communication, Marc Blodgett, David Evans and Associates, Inc.).

Due to the distance separating the Paramount refinery from the Ultramar refinery, no cumulative impacts are expected during the construction or operation of the proposed project.

7) Powerine

The Powerine refinery is located at 12354 Lakeland Road, Santa Fe Springs, about 20.5 miles north-east of the Ultramar refinery. This refinery is located a sufficient distance to avoid cumulative localized impacts with Ultramar. Powerine has proposed modifications in order to produce reformulated fuels at its refinery. The Powerine proposed project includes:

A new reformate splitter;
A new Bensat/Isomerization Unit;
A new fractionation column (Rerun);
A new MTBE/TAME Unit;
Modifications to the existing Hydrogen Plant or additional hydrogen generating capacity;
Modifications to the FCC gas recovery unit;
Modifications to the FCCU Feed Hydrotreater;
Modifications to the Amine System, Sulfur Recovery Unit and Tail Gas Treating Unit; and
Additional storage tanks and component blending systems (SCAQMD, 1994c).

Due to the distance separating the Powerine refinery from the Ultramar refinery, no cumulative impacts are expected during the construction or operation of the proposed project.

8) Miscellaneous Projects

Several other refineries are identified in Figure 6-1 including Fletcher (16), Edgington (17), Shell (18), and Golden West (19). These refineries are no longer in operation as refineries or are not expected to make modifications to comply with the reformulated fuel requirements. Therefore, no significant impacts are expected from these refineries.

OTHER RELATED PROJECTS

9) Praxair Hydrogen Plant

The Hydrogen Supply Company (HSC) which was an independent joint venture company created by subsidiaries of Texaco, Inc. and Praxair, Inc., had proposed to construct a hydrogen plant at 2226 Sepulveda Boulevard, Carson, approximately one and one-half miles north of the Ultramar refinery. The major components of the project consisted of a 75 million cubic feet per day gaseous hydrogen plant, a 27 megawatt (MW) steam cogeneration unit, a carbon dioxide purification and storage facility, an office building and other ancillary equipment (City of Carson, 1993). In addition, the project would include a pipeline network to supply hydrogen to the local refineries.

The City of Carson released an NOP (1993) and a revised NOP (1994) for the proposed HSC project and was preparing the EIR (personal communication, Mark Gross, City of Carson, and Mike Barcetelli, Praxair). However, Praxair has apparently withdrawn the application from the City of Carson (Kim Glasglow, Ogden Environmental) so that no further analysis of the impacts from this proposed project are available and no further analysis of this project is required.

10) Intermodal Container Transfer Facility

The Southern Pacific Transportation Company is proposing to expand its Intermodal Container Transfer Facility, which is located northeast of Sepulveda Boulevard/Willow Street at the Dominguez Channel. The additional 75 acres would be located within an adjacent Southern California Edison transmission corridor easement. Significant site preparation would be required and at this time Southern Pacific has no firm development plans. If Southern Pacific proceeds, the construction phase would not begin until 1995 or 1996 (Ray Sencheck, Southern Pacific, Personal Communication, 1993). The amount of additional truck traffic which would be generated during the operational phase or other impacts of this project is currently unknown. No details are available on this project, so the cumulative impacts of this project cannot be analyzed.

11) Metro 2000

Metro 2000, a proposed 1,500,000 square foot factory outlet mall, would be located in the City of Carson at Del Amo and the 405 Freeway, about five miles from the refinery. It has been in abeyance for the last few years with no projected construction date (Patricia Elkins, City of Carson, Personal Communication, 1993). This project is located a sufficient distance from the refinery to avoid cumulative localized impacts with the proposed Ultramar project.

12) Pacific Pipeline Project

The proposed Pacific Pipeline project would connect production facilities in Gaviota with refineries in Wilmington and El Segundo. Public workshops were held on the Draft Environmental Impact Report on June 14-18, 1993. The No Project Alternative was the preferred alternative identified by the DEIR. The proposed project

has been revised and resubmitted to the California Public Utilities Commission for approval. A revised construction schedule has yet to be proposed.

13) Port of Los Angeles/Port of Long Beach 2020 Plan

Activity at the ports of Los Angeles and Long Beach is projected to double by the year 2020 (Myra Frank & Associates, 1992a). The 2020 Plan is a long-range, joint-planning effort of the Port of Los Angeles, the Port of Long Beach, and the U.S. Army Corps of Engineers to meet expected trade needs of the region and the nation through the year 2020. It is a phased program of existing facility optimization, dredging, landfilling, and facilities construction, which in total will expand the Port complex by 2,400 acres of new land and 600 acres of development on existing land. (L.A. Harbor Dept., 1993). The Alameda Corridor Transportation Authority ("ACTA") improvements are considered mitigation measures for the adverse effects of the projected growth in port activity on regional rail and truck transportation systems. See below for further discussion of the ACTA projects.

The Port of Long Beach is planning a variety of improvements including expansion of cargo-handling facilities, potential landfilling to create additional cargo handling, and development of a passenger cruise terminal. Transportation improvements include grade separations at rail crossings, use of on-dock rail as a way of reducing truck trips, and implementation of the Alameda Corridor improvements (Port of Long Beach, undated).

The Port of Los Angeles is planning a variety of improvements as part of the 2020 Plan. Construction of the Pier 300 Container Terminal would provide four ship berths and 200 acres of container storage, a near-dock intermodal container transfer facility, an adjacent four-lane roadway, several at-grade road and rail crossings, and an overpass at Seaside Avenue and Navy Way. Construction of the Terminal Island Container Transfer Facility project would include redevelopment of the Brighton Beach Rail Yard, development of an intermodal container transfer facility, realignment and replacement of railroad tracks, grade separation for New Dock Street, closure of Ocean Avenue and New Dock Street, and expansion of the container terminal at Berths 218-233. The Berth 142-147 Wharf and Backland improvements include demolition of the existing concrete wharf and construction of 900 linear feet of container wharf, with removal of 120,000 cubic yards of dredge material (L.A. Harbor Dept., 1993).

In general, many of the 2020 improvements will take place within the harbor area and will include dredging to create additional land. These types of projects would be a sufficient distance from the Ultramar refinery to minimize cumulative impacts. However, the regional, transportation-related projects (which are discussed in detail below), are included as mitigation measures for the 2020 Plan and would occur in the vicinity of the Ultramar refinery.

14) Alameda Corridor Transportation Authority (ACTA)

The Alameda Corridor Transportation Authority is an inter-agency, inter-governmental commission which is the lead agency for a number of projects designed to improve highway and railroad access to the Ports of Los Angeles and Long Beach by making a substantial number of improvements along Alameda Street between the harbor area and downtown Los Angeles to consolidate truck and railroad traffic. ACTA has prepared an environmental impact report that was finalized in December of

1992, and certified in January of 1993. They are currently in the process of completing an Environmental Impact Statement for the project, and are expecting to receive a Record of Decision by December of 1994.

In general, Corridor projects include consolidation of the routes currently used by three different common rail carriers, widening Alameda Street to six lanes with left turn pockets and new signalization, grade separation of cross traffic at numerous street intersections, grade separation of train from vehicular traffic, and construction of sound barriers. Preliminary engineering for the Corridor is pending upon agreement of the railroad companies to utilize the Corridor. Both Santa Fe and Southern Pacific Railroads have agreed to use the Corridor. Union Pacific Railroad has yet to sign an agreement (Gill Hicks, Personal Communication, May 1994). ACTA's goal is to finish all improvements by 2000, although the actual construction period is expected to last 10 years.

South of the 91 Freeway, roadway improvements to the Corridor, which follows Alameda Street and Henry Ford Avenue, are part of the Ports Access Demonstration Project ("PADP"), while railroad work, grade separations and overcrossings are ACTA projects. The PADP is planned for three phases, with several Phase I projects already completed. Phase II is in the engineering phase and Phase III is still in preliminary design. Phases I and II are not part of the Corridor, while most Phase III PADP projects are part of the Corridor (Myra Frank & Associates, 1992b).

Upon completion of the improvements, Alameda Street would become a state highway with CalTrans taking over maintenance responsibility. Depending on the governmental agency involved and the funding available, different segments of Alameda Street will be under construction at different times; work will not necessarily progress linearly along Alameda (Paul Pritikin, Caltrans, Personal Communication, 1993).

Several segments of the ACTA/PADP improvements will be located in the vicinity of the Ultramar refinery and possibly under construction at the same time as the reformulated fuels projects. These are described below:

Reconstruct the existing bridge on Anaheim crossing over the Dominguez Channel. This improvement would widen the bridge to provide six lanes of traffic and raise the soffitt to provide 26.5 feet of clearance.

Construct a grade separation/interchange at the railroad tracks along Henry Ford Avenue at the Terminal Island interchange.

Widen Alameda to six lanes from Lomita Boulevard north to Interstate 405. Planned construction dates are unavailable at this time.

Widen Alameda to six lanes from Pacific Coast Highway north to Lomita Boulevard. Construction is expected during 1996, which is expected to occur after completion of the reformulated fuels program construction.

Replace and relocate railroad bridge crossing Alameda just north of Pacific Coast Highway. Construction is not expected until 1996 or later, depending on acquisition of right-of-way. The reformulated fuels construction should be completed by this time.

Consolidation of railroad corridor adjacent to the western and southern boundaries of the Texaco refinery, and possible realignment of junction between Santa Fe and Southern Pacific lines. This will take place within the right-of-way, with construction expected between January 1995 and March 1996. Confining work to the right-of-way would minimize traffic impacts.

15) Sepulveda Boulevard Improvements

Improvements to Sepulveda from the Dominguez Channel to Wilmington, including widening to two lanes in each direction and installation of a left-turn median, are also planned to proceed in three segments:

One segment is installation of storm drains along Sepulveda from Alameda east to the Dominguez Channel, in the City of Carson. The drain would be approximately 2,200 linear feet, varying from an 84-inch diameter reinforced concrete pipe to an eight feet wide by nine feet high reinforced concrete box. The project includes a lateral extending westerly from the proposed drain at Sepulveda Boulevard and Alameda Street. The lateral would be approximately 400 feet of 36-inch diameter reinforced concrete pipe and require 152 feet of jacking under two sets of railroad tracks running parallel to Alameda Street. A Negative Declaration was issued for this project. A construction start date has not yet been determined (Patricia Elkins, Personal Communication, May 1994).

Another project will widen Sepulveda from Alameda to a point 300 feet west of Alameda by converting a two-lane, 40-foot wide roadway within a 50-foot right of way to a four-lane, 84-foot roadway within 100 feet of right of way and installing a left-turn pocket and raised median. The project also includes relocating the existing railroad tracks, modifying the existing railroad crossings, and acquiring the necessary rights of way. During construction, traffic lanes will be restricted to one lane in each direction. A Supplemental Negative Declaration was issued for this project. Construction is expected to begin in late 1994 or early 1995, depending on acquisition of right-of-way. The County anticipates that construction for this addition to the larger Alameda Street-Santa Fe Road Improvements, which were approved in October of 1986, will all go forward at the same time (Clarice Nash, L.A. Co. Public Works, Personal Communication, 1993). Access routes to the Ultramar refinery are not expected to be impacted during construction of the revised project since little Ultramar refinery traffic is expected on Sepulveda west of Alameda.

A third project will widen Sepulveda from 300 feet west of Alameda to Wilmington Boulevard, including two traffic lanes and one parking lane in each direction and a left turn median. This project is currently underway, and is expected to be completed in September of 1994 (Patricia Elkins, Personal Communication, May 1994).

CHAPTER 6: CUMULATIVE IMPACTS

A. EARTH RESOURCES

CUMULATIVE IMPACTS

Seismicity

The proposed project and related projects are subject to groundshaking, as are most areas of California. The related projects would increase the number of facilities and structures subject to earthquake damage, and thus increase the potential impacts during an earthquake. Assuming adherence to the applicable building codes, Seismic Safety Plans, and Uniform Building Codes, the cumulative impacts from a major earthquake would be reduced, but not eliminated. All projects would require geotechnical evaluation by the local agency (usually the city) responsible for issuing building permits and a civil or structural engineer to assure the project design complies with appropriate building and safety regulations. The cumulative seismic impacts are considered to be insignificant with adherence to appropriate building codes.

Contaminated Soils

All of the related projects, and in particular the pipeline projects, the storm drain installation project, and the portions of the roadway and railway improvements that will require excavation, have the potential to unearth contaminated soils. The Alameda Corridor project, since it involves lands with a variety of ownerships, presents a number of unknowns. The Corridor's DEIR states: "Sites along the corridor that would be disturbed by corridor construction and that are known to contain contaminated soil or ground water would be cleaned prior to or during construction of the project. Clean-up activities would be conducted in accordance with all applicable regulations and guidelines governing the removal and disposal of hazardous materials. In most cases these clean-up efforts would remediate the problem and no further work would be required. However, in some cases continued monitoring of particular sites may be required to ensure that no migration of existing contamination has occurred subsequent to the primary clean-up operations. Responsibility for clean up (including Phase I assessments) and monitoring of individual sites has not been established" (Myra Frank & Associates, 1992b).

Further clarification is offered in the Alameda Corridor DEIR: "It was assumed for concept estimating purposes that the properties to be acquired for the project had already been cleared of any contaminants. The record of known contaminated sites on file with the State were [sic] used as a basis for locating existing contaminant sources along the corridor. In later stages of design, additional geotechnical work would be carried out to better identify sources and locations of contaminants along the corridor. The issue of contamination removal would then be identified in more detail. Responsibilities for cleanups would be established in the purchase and sale agreement" [for acquisition of right of way] (Myra Frank & Associates, 1992c).

In the previous Final EIR, Ultramar estimated that about 1,000 cubic yards of soil would be excavated during construction activities that may be contaminated. It is estimated that the construction of the GOH and Hydrogen Plant will generate approximately 4,000 cubic yards of contaminated soil. Table 6-1 lists the cumulative total of soil that will potentially be excavated during the construction of the refineries' reformulated fuels projects. Additional quantities of contaminated soils are expected due to construction of the various pipelines in the area.

TABLE 6-1

CUMULATIVE IMPACTS OF CONSTRUCTION GENERATED, POTENTIALLY CONTAMINATED SOILS

PROJECT	AMOUNT OF EXCAVATED SOIL POTENTIALLY CONTAMINATED (cubic yards)
ARCO	42,000
CHEVRON	23,000
MOBIL	1,000
TEXACO	38,400
ULTRAMAR	
Previous Final EIR	1,000
GOH/Hydrogen Plant	4,000
UNOCAL	NA*
TOTAL	109,400

*NA = Not available

The overall impact of the related projects on soil contamination would be considered beneficial since remediation would remove or reduce soil contamination in the area. Soil remediation is regulated by numerous regulatory agencies including the Department of Toxic Substances Control division of the California EPA, the State Regional Water Quality Control Board, local health departments, and the SCAQMD. Compliance with all applicable rules and regulations would mitigate impacts to a level of insignificance.

MITIGATION MEASURES

No significant cumulative impacts to seismicity are expected due to implementation of the related projects with compliance with the Uniform Building Code Zone 4 requirements to minimize the potential impacts of an earthquake on the proposed projects.

A number of existing rules regulate the disposal and treatment of contaminated soils including Title 22 of the California Code of Regulations. Compliance with existing regulations should provide adequate mitigation for handling and disposal of contaminated soils.

Level of Significance

Implementation of the mitigation measures are expected to reduce impacts to less than significant for earth resources.

B. AIR QUALITY

Construction

Air quality impacts due to construction at the refineries for their reformulated fuels projects is expected to be temporarily significant since the SCAQMD thresholds will be exceeded. Table 6-2 summarizes the cumulative air quality impacts due to construction at each of the major Southern California refineries. There will be construction emissions associated with other projects in the area including the Alameda Corridor projects, but these emissions were not estimated and sufficient information does not exist to estimate these emissions. The air quality impacts due to construction will be significant and exceed the SCAQMD thresholds of significance, however, they will be temporary. It should be noted that the construction emissions will be spread throughout the basin and not emitted in one localized area, although a number of the projects (Unocal, ARCO, Ultramar, and Texaco) are located within the Wilmington area.

Emissions from construction of the reformulated fuels projects will be from two main sources, vehicles used by commuting workers, and use of heavy equipment. All refineries are expected to be undergoing construction during the same time period. Maximum daily emissions during peak labor periods and peak equipment usage periods were estimated for each of the refineries.

The Pacific Pipeline project is expected to produce construction emissions which will exceed the ozone and PM10 air quality standards during adverse meteorological conditions (intense sunlight and low wind speed).

Table 6-2 summarizes the total construction emissions of the related refinery projects. On a cumulative basis, construction emissions would exceed the thresholds established by the SCAQMD. Therefore, the cumulative air quality construction impacts are considered significant.

Operation - Criteria Pollutants

During operation, the pipelines, the transportation improvement projects and the various refinery reformulated fuels programs are all expected to reduce overall air emissions. However, there are localized increases in certain air pollutants.

The Pacific Pipeline project is estimated to produce less than 2.0 pounds per hour of ROG and NO_x. It should be noted that the environmentally superior alternative to the Pacific Pipeline project is the No Project Alternative, based on the assumption that the No Project Alternative is the use of existing pipelines rather than tankering from Gaviota to Los Angeles. If tankering becomes part of the No Project scenario, then the No Project Alternative is not environmentally superior.

Implementation of the Los Angeles and Long Beach Harbors 2020 improvements will allow for doubling of cargo handling through the port, resulting in a

TABLE 6-2

CUMULATIVE CONSTRUCTION AIR QUALITY IMPACTS[1]
(LBS/DAY)

PROJECT	ROG	NO_x	SO_x	PM10	CO
ARCO[a]	311	1,207	87	1,395	7,684
CHEVRON[b2]	52	638	NA	45	139
MOBIL[3c]	184	1,315	54	495	1,067
TEXACO (Phase I)[d]	129	954	33	365	682
TEXACO (Phase II)[d]	51	302	26	404	615
ULTRAMAR					
Previous Final EIR	32	138	10	251	333
GOH/Hydrogen Plant	82	617	36	158	568
UNOCAL[e]	1,491	3,793	341	974	26,100
TOTALS	2,332	8,964	587	4,087	37,188
SCAQMD THRESHOLDS	75	100	150	150	550
TOTALS (tons/qtr)	105	403	26	184	1,673

NOTES

NA = Not Available

1) All numbers are rounded to the nearest whole number.
2) Used Phase III estimated emissions.
3) Used peak day projections.

SOURCES

a) SCAQMD 1993c
b) SCAQMD 1993e
c) SCAQMD 1994a
d) SCAQMD 1994b
e) SCAQMD 1993d

significant increase in truck and rail traffic in the vicinity of the port. Construction of the Alameda Corridor improvements is intended to mitigate the impact of the increase in port-related traffic. The improved efficiency of the consolidated railway along the Alameda Corridor is expected to reduce emissions of locomotive exhaust over the No Project alternative. Elimination of railway/roadway intersections through consolidation of rail traffic and construction of grade separations will reduce motor vehicle idling emissions and improve the efficiency of truck transport.

The reformulated fuels projects at all of the local refineries will increase the criteria pollutants emitted from the refineries. These emission increases are summarized in Table 6-3.

On a regional basis, the reformulated fuels produced by the refineries are expected to result in a reduction in emissions from mobile sources that utilize the reformulated fuels. Table 6-3 summarizes the emission increases from the various refineries as well as the expected emission decreases from the mobile sources which use the reformulated fuels.

Air quality impacts associated with operation of the six reformulated fuels projects are considered significant for ROG, NO_x, SO_x, PM10, and CO since SCAQMD mass emissions thresholds would be exceeded. Although operations will exceed significance thresholds, there will be large benefits from the usage of the reformulated fuels by mobile sources. Emissions of mobile sources will be reduced for ROG, NO_x, SO_x, and CO counteracting the emissions being produced by the refineries and providing a large environmental benefit. The emission reductions are far greater than the direct cumulative emissions for all of these pollutants except for PM10. The reduction in tailpipe emissions of PM10 are expected to be negligible. However, a substantial overall reduction in PM10 is expected as a result of reformulated gasoline usage because a decrease in the formation of sulfate and nitrate particulates will be associated with the net reductions in SO_x and NO_x emissions from motor vehicles.

Based on Table 6-3, the overall impact of the reformulated fuels projects within the basin will have a cumulative beneficial effect on air quality.

Operation - Toxic Air Contaminants

In order to determine the cumulative impacts of toxic air contaminants, the emissions from the implementation of the proposed project were analyzed. This is referred to as the 1996 refinery scenario and includes all the existing emission sources at the refinery plus the proposed new/modified emission sources associated with the revised reformulated fuels program. In addition, the potential cumulative impacts associated with the overlap of emissions from other refineries were addressed in the analysis provided below.

1996 Ultramar Refinery Scenario

A comprehensive air dispersion modeling analysis and a HRA were performed for the projected refinery emissions in 1996 following completion of the proposed project. This section discusses the results of the air dispersion modeling and health risk

TABLE 6-3

CUMULATIVE OPERATIONAL AIR QUALITY IMPACTS[1]
(LBS/DAY)

PROJECT	ROG	NO_x	SO_x	PM10	CO
ARCO[2a]	977	456	292	419	513
CHEVRON[b]	-395	-13	-34	38	9
MOBIL[c]	440	2,848	1,450	474	303
MOBIL TANK PROJECT	63	0	0	0	0
TEXACO[d]	940	3,407	1,629	519	387
ULTRAMAR[3]					
Previous Final EIR	915	473	126	349	92
GOH/Hydrogen Plant	521	594	511	573	1,473
UNOCAL[e]	1,282	540	-1,126	403	235
TOTALS	4,743	8,305	2,848	2,775	3,012
SCAQMD THRESHOLDS	55	55	150	150	550
EMISSION REDUCTIONS FROM MOBILE SOURCES THAT USE REFORMULATED FUELS IN BASIN IN 1996	-84,000	-50,000	-20,000	NA	-878,000

NOTES

1) All numbers are rounded to the nearest whole number.
2) On-site and Off-site, including marine terminal.
3) 1992 Ultramar baseline emissions (in lbs. per day): ROG - 2373; NO_x - 1995; SO_x - 1696; CO - 1683; PM10 - 2473.

SOURCES

a) SCAQMD 1993c
b) SCAQMD 1993e
c) SCAQMD 1994a
d) SCAQMD 1994b
e) SCAQMD 1993d

TABLE 6–4
Multipathway Cancer Risk by Source for MEIR
Cumulative

SOURCE	INHALE	DERMAL	SOIL	WATER	PLANTS	ANIMAL	MOTHER	SUM	Percent
1	1.84E-08	3.72E-11	3.91E-08	0.00E+00	1.32E-08	0.00E+00	0.00E+00	1.45E-08	0.34%
2	8.00E-08	4.77E-10	1.53E-06	0.00E+00	8.13E-08	0.00E+00	0.00E+00	1.14E-07	2.64%
3	4.86E-08	4.41E-10	1.52E-06	0.00E+00	7.66E-08	0.00E+00	0.00E+00	7.30E-08	1.69%
4	1.56E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E-08	0.36%
5	4.85E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.85E-08	1.06%
6	1.90E-07	8.52E-10	2.78E-06	0.00E+00	1.45E-06	0.00E+00	0.00E+00	2.04E-07	4.72%
7	5.73E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.73E-14	0.00%
8	2.94E-08	2.36E-10	8.14E-08	0.00E+00	4.10E-08	0.00E+00	0.00E+00	8.90E-08	0.90%
9	2.11E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.11E-08	0.50%
10	1.04E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-08	0.24%
11	9.67E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.67E-08	2.23%
12	9.61E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.61E-08	2.23%
13	1.33E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E-08	0.31%
14	3.34E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.34E-07	7.72%
15	1.44E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-07	3.32%
16	3.21E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.21E-08	0.74%
17	1.18E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-10	0.00%
18	5.80E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.80E-10	0.01%
19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
20	4.01E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.01E-08	0.09%
21	5.91E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.91E-08	0.14%
22	2.09E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.09E-07	4.85%
23	5.40E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.40E-10	0.01%
24	2.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-08	0.57%
25	4.44E-08	3.94E-10	1.36E-06	0.00E+00	6.45E-08	0.00E+00	0.00E+00	8.47E-08	1.50%
26	6.96E-08	6.64E-10	2.36E-06	0.00E+00	1.09E-06	0.00E+00	0.00E+00	1.01E-07	2.34%
27	1.81E-08	1.47E-10	5.55E-08	0.00E+00	2.84E-08	0.00E+00	0.00E+00	2.65E-08	0.61%
28	9.84E-09	6.36E-11	2.03E-08	0.00E+00	8.89E-10	0.00E+00	0.00E+00	6.71E-09	0.22%
29	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
30	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
31	2.41E-08	1.89E-10	7.37E-08	0.00E+00	3.81E-09	0.00E+00	0.00E+00	3.52E-08	0.82%
32	8.65E-09	4.73E-11	1.78E-08	0.00E+00	8.51E-10	0.00E+00	0.00E+00	8.59E-09	0.20%
33	7.13E-08	6.76E-11	2.16E-08	0.00E+00	1.04E-08	0.00E+00	0.00E+00	1.04E-06	0.24%
34	3.93E-08	2.11E-10	1.39E-06	0.00E+00	5.73E-09	0.00E+00	0.00E+00	3.74E-08	1.33%
35	5.72E-09	4.84E-11	1.77E-08	0.00E+00	8.42E-10	0.00E+00	0.00E+00	8.44E-09	0.20%
36	8.89E-09	4.81E-11	1.74E-09	0.00E+00	8.26E-10	0.00E+00	0.00E+00	8.30E-09	0.19%
37	2.83E-04	2.13E-10	8.03E-08	0.00E+00	2.81E-09	0.00E+00	0.00E+00	3.83E-04	0.87%
38	1.44E-04	1.17E-10	4.40E-08	0.00E+00	2.19E-09	0.00E+00	0.00E+00	2.16E-04	0.49%
39	4.24E-08	2.25E-10	7.94E-08	0.00E+00	3.84E-09	0.00E+00	0.00E+00	5.38E-04	1.25%
40	7.30E-08	3.81E-10	1.27E-06	0.00E+00	5.66E-08	0.00E+00	0.00E+00	9.34E-05	2.16%
41	7.48E-10	4.95E-12	1.76E-10	0.00E+00	8.71E-11	0.00E+00	0.00E+00	1.01E-09	0.02%
42	1.78E-09	1.15E-11	4.18E-10	0.00E+00	2.37E-10	0.00E+00	0.00E+00	2.41E-09	0.06%
43	2.31E-04	1.53E-10	8.44E-08	0.00E+00	2.66E-08	0.00E+00	0.00E+00	3.14E-04	0.73%
44	2.95E-08	1.96E-11	6.83E-10	0.00E+00	3.44E-10	0.00E+00	0.00E+00	4.01E-08	0.09%
45	2.21E-08	9.15E-10	1.48E-08	0.00E+00	1.05E-04	0.00E+00	0.00E+00	1.51E-06	0.35%
46	5.89E-07	2.53E-08	4.96E-06	0.00E+00	4.09E-07	0.00E+00	0.00E+00	1.10E-06	25.37%
47	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
48	1.02E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.02%
49	4.24E-08	4.27E-11	1.41E-08	0.00E+00	7.14E-10	0.00E+00	0.00E+00	8.41E-08	0.19%
50	1.68E-10	1.70E-12	5.63E-11	0.00E+00	2.84E-11	0.00E+00	0.00E+00	2.84E-10	0.01%
51	4.84E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.84E-12	0.00%
52	6.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-08	0.13%
53	6.44E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.44E-12	0.00%
54	3.12E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.12E-04	0.72%
55	3.60E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-10	0.01%
56	1.44E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-04	0.34%
57	2.02E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E-04	0.47%
58	1.27E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E-04	0.29%
59	1.11E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E-04	0.26%
60	2.69E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-04	0.06%
61	3.98E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-04	1.32%
62	7.91E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.91E-09	0.18%
63	1.82E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-04	0.38%
64	4.34E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E-04	0.84%
65	2.82E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.82E-04	0.61%
66	5.36E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.50E-09	0.12%
67	1.44E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-11	0.00%
68	2.54E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.54E-04	0.55%
69	1.25E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-09	0.03%
70	1.38E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-09	0.03%
71	1.05E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-09	0.02%
72	2.44E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-10	0.01%
73	5.31E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.31E-10	0.01%
74	1.13E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-09	0.03%
75	1.37E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-06	0.32%
76	4.95E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-06	1.81%
77	2.36E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-06	0.55%
78	1.55E-10	9.44E-11	1.02E-10	0.00E+00	7.34E-10	0.00E+00	0.00E+00	1.06E-09	0.02%
79	2.43E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-04	0.56%
80	2.71E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-06	0.63%
81	3.04E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E-04	0.70%
82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
83	1.47E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-11	0.00%
84	3.41E-04	2.64E-10	1.05E-06	0.00E+00	4.86E-08	0.00E+00	0.00E+00	4.97E-04	1.15%
85	3.10E-04	2.41E-10	8.52E-08	0.00E+00	4.42E-09	0.00E+00	0.00E+00	4.82E-06	1.05%
86	3.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.06E-06	0.72%
87	9.73E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.73E-06	2.26%
88	1.70E-11	1.33E-13	5.24E-12	0.00E+00	2.43E-12	0.00E+00	0.00E+00	2.46E-11	0.00%
89	1.13E-11	8.84E-14	3.53E-12	0.00E+00	1.64E-12	0.00E+00	0.00E+00	1.64E-11	0.00%
90	9.11E-04	4.64E-10	1.90E-08	0.00E+00	8.84E-08	0.00E+00	0.00E+00	9.03E-06	2.02%
91	1.06E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-08	0.25%
92	1.54E-07	1.22E-09	4.78E-08	0.00E+00	2.23E-08	0.00E+00	0.00E+00	2.27E-07	5.28%
93	1.80E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-08	0.37%
94	2.17E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-06	0.50%
95	2.49E-06	1.83E-10	7.87E-09	0.00E+00	3.52E-09	0.00E+00	0.00E+00	3.58E-06	0.83%
SUM	3.34E-06	4.34E-06	3.59E-07	0.00E+00	5.54E-07	0.00E+00	0.00E+00	4.32E-06	100.00%

assessment prepared for the 1996 refinery configuration. The procedures used to complete the 1996 projected HRA are the same as those used to complete the project HRA (see Chapter 4, Section B - Air Quality). Further details of the HRA are contained in Volume III which should be consulted for further details.

Hazard Identification: The list of TAC's evaluated for the 1996 refinery scenario are the same as those identified in the 1994 case (see Table 3-7). The only exception is that the use of carbon tetrachloride and 1,1,1-trichloroethane will be eliminated and replaced with the use of perchloroethylene on an equal volume basis. These changes have been made in the cumulative (1996) HRA analysis.

Emission Estimations and Sources: The estimated mass emissions of toxic air contaminants were based on a combination of the most recent AB2588 Air Toxics Inventory Report and engineering estimates that reflect operation of the proposed project. For further details on the emission estimates see Chapter 4, Section B - Air Quality and Volume III. The 1996 refinery configuration is based on the 1994 refinery configuration plus operational changes and all facility additions and modifications due to the revised reformulated fuels program.

HRA Methodology: The emissions estimated for the 1996 refinery configuration were used as input to the ISC2ACE model to determine the ground level concentration for each toxic air contaminant. The ACE2588 model was used to calculate the health risks associated with the proposed project. The ISC2ACE model used the same assumptions as the 1994 base case model for receptor grids, meteorological data and so forth. The ACE2588 model used the same assumptions for the 1996 refinery configuration as the 1994 base case model for multipathway analysis, pathways of exposures, and default exposure assumptions. The model was used to identify the MEIR and MEIW for the 1996 refinery configuration. The ACE2588 model calculated both carcinogenic and non-carcinogenic health impacts.

1996 HRA Results: The carcinogenic and non-carcinogenic health impacts associated with the 1996 refinery scenario are presented below.

1. **Carcinogenic Health Impacts**

Maximum Exposed Individual Risk: The predicted maximum cancer risk at the MEIR area due to exposure to projected 1996 emissions was calculated to be 4.3×10^{-6} or about 4 per million. The location of the MEIR is shown in Figure 6-4. Table 6-4 shows the MEIR broken down by source. Emissions from point source number 46 which includes the FCC unit account for 26 percent of the MEIR cancer risk. Table 6-5 shows the MEIR risk by pollutant. Emissions of benzene are responsible for 32 percent of the MEIR risk followed by cadmium (18 percent).

The one per million and ten per million cancer risk isopleths for the 1996 refinery configuration have been prepared and are shown in Figure 6-5 and 6-6, respectively. These isopleths were calculated based on the same assumptions used to calculate the residential cancer risk including a 70-year exposure and multipathway assumptions.

Maximum Exposed Individual Worker: The predicted maximum cancer risk to the MEIW due to exposure to projected 1996 emissions was calculated to be

DRAFT SUBSEQUENT EIR: ULTRAMAR INC.

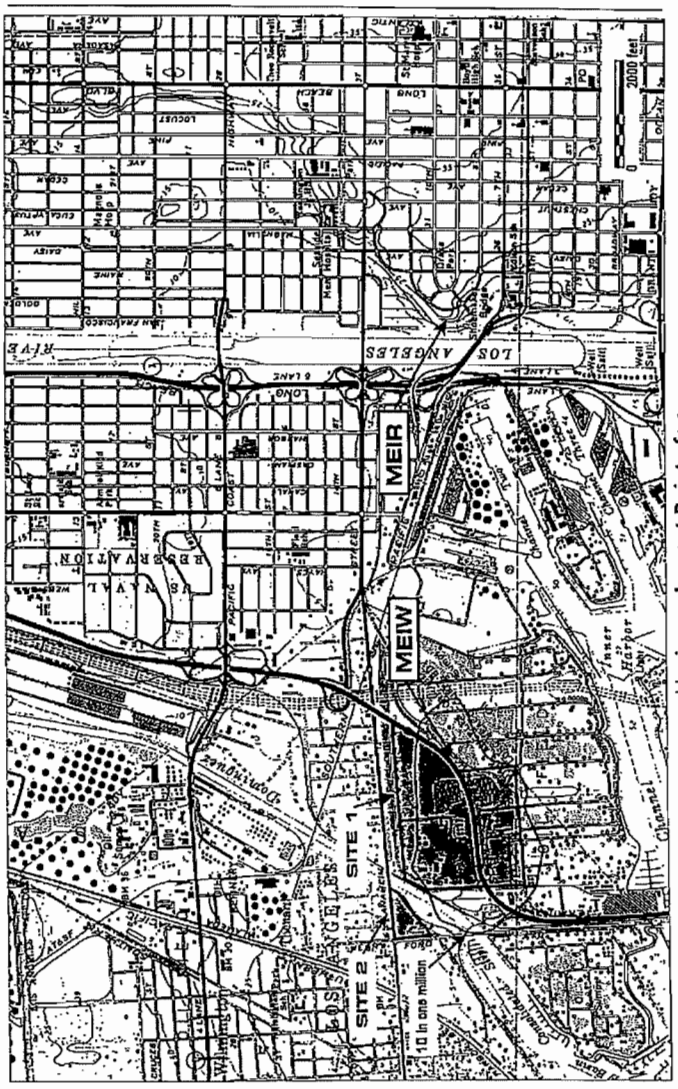


FIGURE 6-4
Maximum Impact Points for
1996 Cumulative Scenario
ULTRAMAR WILMINGTON REFINERY

Table 6–5
Multipathway Cancer Risk by Pollutant MEIR
Cumulative

POLLUTANT	INHALE	DERMAL	SOIL	WATER	PLANTS	ANIMAL	MOTHER	SUM	Percent
ACETA	2.86E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-09	0.07%
As	2.23E-07	8.33E-09	2.39E-07	0.00E+00	1.25E-07	0.00E+00	0.00E+00	5.53E-07	15.14%
BENZE	1.37E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-06	31.65%
Be	1.22E-10	1.20E-11	5.67E-10	0.00E+00	2.22E-10	0.00E+00	0.00E+00	9.23E-10	0.02%
Cd	7.87E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.87E-07	18.24%
PCE	6.84E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.84E-08	1.59%
HCHO	2.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-06	0.52%
Pb	2.86E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-08	0.66%
Ni	2.94E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.94E-07	6.82%
Se	9.91E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.91E-09	0.23%
STYRE	1.23E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-09	0.03%
PAH	5.36E-08	3.75E-08	5.90E-08	0.00E+00	4.29E-07	0.00E+00	0.00E+00	5.86E-07	13.56%
BUTAD	4.91E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.91E-07	11.37%
SUM	3.56E-06	4.38E-08	3.59E-07	0.00E+00	5.54E-07	0.00E+00	0.00E+00	4.32E-06	99.99%

6-20

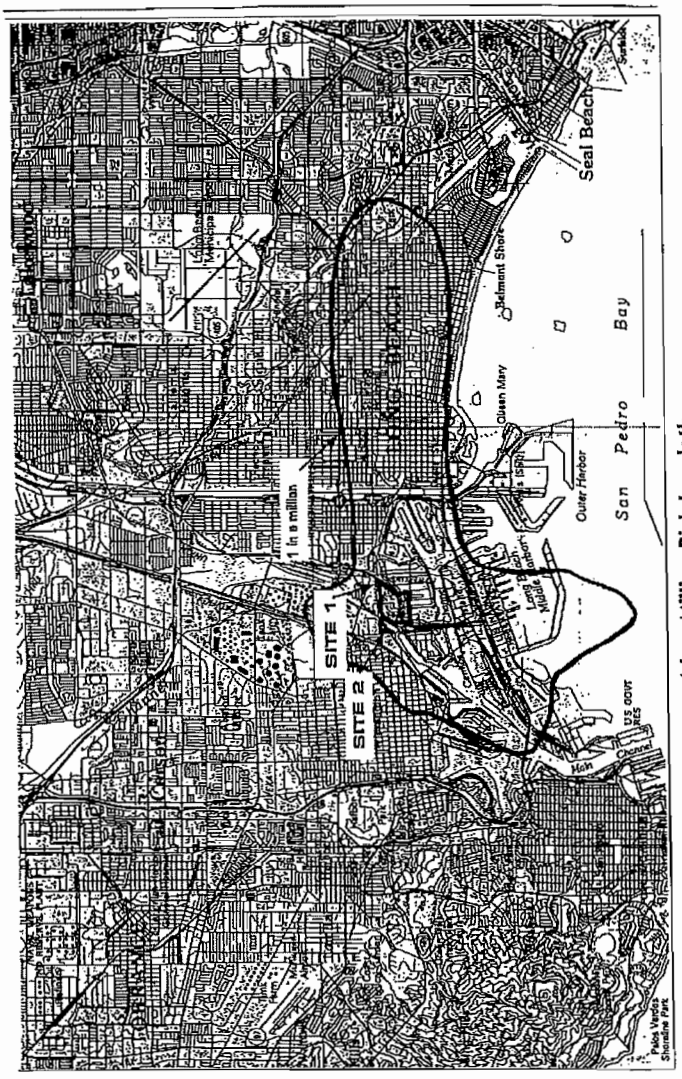

SITE 1
SITE 2
1 in a million
Seal Beach
Belmont Shore
Queen Mary
Outer Harbor
San Pedro Bay
Long Beach Airport
Terminal Island
Main
Pacific Ocean
Palos Verdes Shoreline Park
1 in a Million Risk Isopleth
1996 Cumulative
N
1" = 2.47 Km

FIGURE 6-5

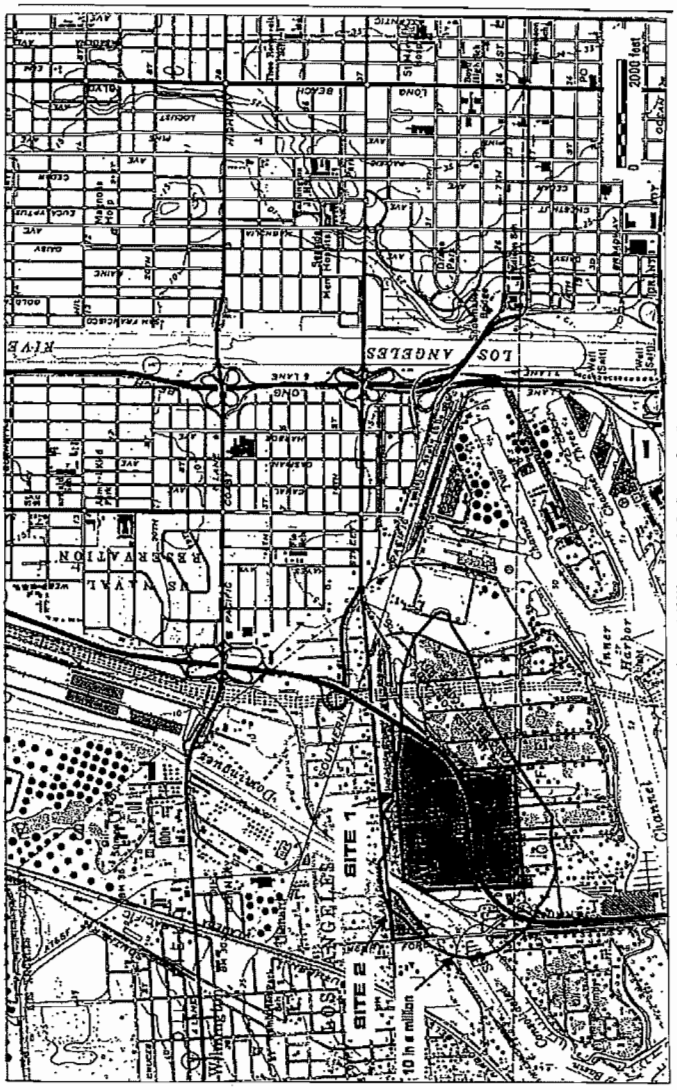


FIGURE 6-6
10 in a Million Risk Isopleth
1996 Cumulative
ULTRAMAR WILMINGTON REFINERY

7.4 x 10^{-6} or about 7 per million. The location of the MEIW is shown in Figure 6-4. Table 6-6 shows the MEIW cancer risk broken down by individual source contributions. Emissions from fugitive emissions from various process units contributed to 16 percent of MEIW cancer risk, followed by the MTBE/TAME Complex (12 percent). In addition, Table 6-7 shows the breakdown of the MEIW risk by pollutant. Benzene is the major contributor to the MEIW (54 percent) followed by 1,3-butadiene (25 percent).

Sensitive Receptors: The maximum cancer risk to a sensitive receptor was 3.7 x 10^{-6} or about 4 per million at the Edison School. This risk was based on a 70-year continuous exposure period which is a conservative estimate for exposure at a school.

Cancer Burden: The cancer burden for the area surrounding the refinery was calculated using the same assumptions as the 1996 cancer burden calculations. The hypothetical residential cancer burden for the 1996 refinery configuration is 0.293. The hypothetical worker cancer burden is 0.202 (see Volume III for further details).

2. Non-Carcinogenic Health Impacts

Acute Hazard Index: The highest total acute hazard index for any single toxicological endpoint was estimated to be 0.586 for the respiratory system, primarily due to exposure of hydrogen sulfide (see Table 6-8).

Chronic Hazard Index: The highest chronic hazard index for any single toxicological endpoint, at a residential receptor, was estimated to be 0.0942 for the respiratory endpoint (see Table 6-9), primarily due to exposure to hydrogen sulfide.

The cumulative impacts associated with the 1996 refinery configuration would be below the significance criteria for toxic air contaminants. Therefore, no significant cumulative impacts are expected from the Ultramar refinery.

Overlap of Impact Areas with Other Reformulated Fuels Projects

The cumulative impact of the emissions of toxic air contaminants from the reformulated fuels projects at the six local refineries were also evaluated. The potential cumulative carcinogenic impact for all of the refineries was based on a review of the 1 x 10^{-6} (one cancer case per million exposures) risk isopleths included in the respective Draft or Final Environmental Impact Reports for each refinery. It was determined that the 1 x 10^{-6} isopleth for the Chevron and Mobil refineries would not overlap with Ultramar's 1 x 10^{-6} isopleth. The 1 x 10^{-6} isopleths for ARCO, Unocal, Texaco, and Ultramar have the potential to overlap and the cumulative impacts associated with these refineries will be further evaluated.

In order to determine the areas which may be exposed to a cancer risk in excess of 10 x 10^{-6} and the 5 x 10^{-6} isopleths for ARCO, Unocal, Texaco and Ultramar were plotted (see Figures 6-7 and 6-8). These 1 x 10^{-6} and 5 x 10^{-6} isopleths for each refinery were plotted on separate maps for easier review. Figure 6-9 shows the combined refinery isopleths and identifies the area where the cumulative cancer risk may exceed the 10 x 10^{-6} cancer risk levels.

TABLE 6–6
Multipathway Cancer Risk by Source for MEIW
Cumulative

SOURCE	INHALE	DERMAL	SOIL	WATER	PLANTS	ANIMAL	MOTHER	SUM	PERCENT
1	3.99E-08	2.34E-10	5.18E-08	0.00E+00	4.11E-09	0.00E+00	0.00E+00	1.96E-08	0.22%
2	1.72E-08	8.09E-10	1.96E-08	0.00E+00	1.04E-08	0.00E+00	0.00E+00	4.81E-08	0.65%
3	8.90E-08	5.10E-10	1.74E-08	0.00E+00	9.47E-09	0.00E+00	0.00E+00	2.84E-08	0.48%
4	1.63E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-08	0.02%
5	2.74E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E-08	0.37%
6	5.65E-10	2.04E-11	6.73E-10	0.00E+00	3.92E-10	0.00E+00	0.00E+00	3.63E-08	0.02%
7	7.36E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.36E-14	0.00%
8	6.82E-08	3.92E-10	1.35E-08	0.00E+00	8.81E-09	0.00E+00	0.00E+00	2.74E-08	0.37%
9	3.56E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.56E-08	0.48%
10	1.86E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E-08	0.25%
11	1.34E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-07	1.46%
12	4.37E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.37E-07	5.88%
13	5.41E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.41E-08	0.97%
14	1.32E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-06	16.34%
15	9.18E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.18E-07	12.53%
16	8.33E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.33E-08	0.89%
17	1.05E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-08	0.91%
18	2.17E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-10	0.00%
19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
20	1.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-08	0.82%
21	1.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-08	0.21%
22	4.92E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.22E-07	5.88%
23	2.13E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-10	0.00%
24	7.86E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.86E-07	10.80%
25	1.37E-08	7.38E-10	2.75E-08	0.00E+00	1.33E-08	0.00E+00	0.00E+00	5.55E-08	0.75%
26	2.86E-08	1.55E-09	6.31E-08	0.00E+00	2.81E-08	0.00E+00	0.00E+00	1.80E-07	1.61%
27	1.83E-06	9.84E-10	3.77E-08	0.00E+00	1.77E-08	0.00E+00	0.00E+00	7.49E-08	1.00%
28	8.42E-08	3.41E-10	1.31E-08	0.00E+00	8.25E-09	0.00E+00	0.00E+00	2.61E-08	0.35%
29	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
30	6.99E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
31	9.34E-09	5.04E-10	1.91E-08	0.00E+00	9.10E-09	0.00E+00	0.00E+00	3.81E-08	0.51%
32	4.52E-08	2.44E-10	9.20E-09	0.00E+00	4.34E-10	0.00E+00	0.00E+00	1.83E-08	0.25%
33	4.52E-08	2.44E-10	9.22E-09	0.00E+00	4.35E-09	0.00E+00	0.00E+00	1.84E-08	0.25%
34	3.63E-08	4.96E-10	1.76E-08	0.00E+00	8.34E-09	0.00E+00	0.00E+00	3.31E-08	0.47%
35	3.65E-08	2.56E-10	7.84E-09	0.00E+00	3.74E-09	0.00E+00	0.00E+00	1.34E-08	0.21%
36	3.24E-06	2.15E-10	4.12E-09	0.00E+00	3.87E-10	0.00E+00	0.00E+00	1.97E-04	0.22%
37	8.99E-08	9.42E-10	2.04E-08	0.00E+00	9.73E-09	0.00E+00	0.00E+00	4.04E-08	0.55%
38	8.04E-06	3.29E-10	1.31E-08	0.00E+00	6.81E-09	0.00E+00	0.00E+00	2.47E-06	0.33%
39	4.06E-06	1.43E-08	4.72E-08	0.00E+00	2.47E-06	0.00E+00	0.00E+00	1.14E-07	1.54%
40	1.27E-06	4.56E-10	1.47E-08	0.00E+00	7.87E-09	0.00E+00	0.00E+00	3.55E-08	0.48%
41	8.18E-10	2.72E-11	8.89E-10	0.00E+00	4.79E-10	0.00E+00	0.00E+00	2.09E-09	0.03%
42	4.11E-10	1.82E-11	6.47E-10	0.00E+00	3.20E-10	0.00E+00	0.00E+00	1.40E-09	0.02%
43	4.19E-09	1.44E-10	4.53E-09	0.00E+00	3.22E-09	0.00E+00	0.00E+00	1.41E-08	0.19%
44	5.34E-10	2.34E-11	8.47E-10	0.00E+00	4.18E-10	0.00E+00	0.00E+00	1.83E-09	0.02%
45	2.55E-08	7.05E-09	1.11E-04	0.00E+00	8.87E-05	0.00E+00	0.00E+00	1.00E-07	1.37%
46	3.71E-06	1.59E-08	3.84E-04	0.00E+00	1.78E-07	0.00E+00	0.00E+00	2.64E-07	3.60%
47	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
48	1.11E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E-08	0.01%
49	2.27E-08	1.82E-10	5.04E-09	0.00E+00	2.54E-09	0.00E+00	0.00E+00	1.00E-08	0.13%
50	5.62E-11	3.52E-12	1.27E-10	0.00E+00	8.31E-11	0.00E+00	0.00E+00	2.80E-10	0.00%
51	5.44E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.44E-12	0.00%
52	4.62E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.62E-08	0.06%
53	2.84E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-11	0.00%
54	8.57E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.57E-07	11.32%
55	2.20E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-10	0.00%
56	2.47E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-06	0.33%
57	2.77E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-06	0.37%
58	1.65E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-06	0.22%
59	2.20E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-08	0.30%
60	8.05E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.05E-09	0.04%
61	1.53E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-07	1.78%
62	1.73E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E-06	0.24%
63	1.24E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-08	0.17%
64	2.81E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-08	0.35%
65	2.97E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-06	0.40%
66	3.19E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.19E-08	0.04%
67	4.17E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.17E-11	0.00%
68	2.47E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-07	3.33%
69	8.60E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.60E-10	0.01%
70	1.19E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-08	0.02%
71	1.04E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-08	0.01%
72	3.81E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-10	0.01%
73	1.81E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-08	0.02%
74	2.63E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.93E-08	0.04%
75	1.14E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	1.54%
76	8.56E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.56E-08	1.15%
77	1.34E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-08	0.21%
78	1.34E-10	2.45E-10	6.05E-10	0.00E+00	4.34E-08	0.00E+00	0.00E+00	3.51E-08	0.07%
79	2.92E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-08	0.39%
80	4.84E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.84E-08	0.65%
81	1.15E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-07	1.55%
82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
83	1.87E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-11	0.00%
84	1.01E-08	5.99E-10	2.07E-08	0.00E+00	9.81E-09	0.00E+00	0.00E+00	4.06E-08	0.55%
85	8.05E-09	4.20E-10	1.45E-08	0.00E+00	7.64E-09	0.00E+00	0.00E+00	3.29E-08	0.44%
86	4.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-08	0.60%
87	1.30E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-07	1.84%
88	1.74E-13	9.23E-15	3.95E-13	0.00E+00	1.75E-13	0.00E+00	0.00E+00	7.22E-13	0.00%
89	2.07E-13	1.04E-14	4.34E-13	0.00E+00	1.91E-13	0.00E+00	0.00E+00	8.32E-13	0.00%
90	4.84E-09	2.80E-10	1.05E-08	0.00E+00	4.74E-09	0.00E+00	0.00E+00	2.02E-08	0.27%
91	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%
92	8.84E-09	3.84E-10	1.43E-08	0.00E+00	8.65E-09	0.00E+00	0.00E+00	3.43E-08	0.34%
93	6.63E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.63E-09	0.09%
94	6.71E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.71E-09	0.09%
95	1.75E-08	8.84E-11	3.47E-09	0.00E+00	1.81E-09	0.00E+00	0.00E+00	6.67E-08	0.09%
SUM	8.42E-06	3.50E-08	4.83E-07	0.00E+00	4.79E-07	0.00E+00	0.00E+00	7.43E-06	101.00%

Table 6–7
Multipathway Cancer Risk by Pollutant MEIW
Cumulative

POLLUTANT	INHALE	DERMAL	SOIL	WATER	PLANTS	ANIMAL	MOTHER	SUM	Percent
ACETA	6.56E−10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.56E−10	0.01%
As	3.06E−05	9.55E−09	4.51E−07	0.00E+00	1.88E−07	0.00E+00	0.00E+00	6.99E−07	9.41%
BENZE	4.06E−06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.06E−06	54.71%
Be	8.39E−11	4.21E−11	1.99E−09	0.00E+00	7.77E−10	0.00E+00	0.00E+00	2.37E−09	0.04%
Cd	1.26E−07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E−07	1.70%
PCE	2.23E−07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E−07	3.00%
HCHO	8.81E−09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.81E−09	0.12%
Pb	6.23E−09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.23E−09	0.08%
Ni	5.47E−08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.47E−08	0.74%
Se	1.94E−09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E−09	0.03%
STYRE	3.50E−09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.50E−09	0.05%
PAH	6.46E−09	2.54E−05	4.00E−05	0.00E+00	2.91E−07	0.00E+00	0.00E+00	3.62E−07	4.88%
BUTAD	1.88E−06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E−06	25.24%
SUM	6.42E−05	3.50E−05	4.93E−07	0.00E+00	4.79E−07	0.00E+00	0.00E+00	7.43E−05	100.00%

Table 6–8
Maximum Acute Hazard Index
Cumulative

POLLUTANT	CONC (ug/m3)	BACKGR (ug/m3)	AEL (ug/m3)	CV	CNS	IMMUN	KIDN	LIVER	REPRO	RESP	EYE
NH3	8.51E+00	0.00E+00	2.10E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.05E−03	0.00E+00
PCE	3.43E+00	0.00E+00	5.80E+03	0.00E+00	5.85E−04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cu	3.55E−03	0.00E+00	1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.55E−04	0.00E+00
HCHO	1.32E−01	0.00E+00	3.70E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.56E−04	0.00E+00
HCN	7.15E−01	0.00E+00	3.30E+03	0.00E+00	2.17E−04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HF	5.44E−01	0.00E+00	5.80E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.37E−04	0.00E+00
H2S	2.40E+01	0.00E+00	4.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.71E−01	0.00E+00
Hg	1.58E−04	0.00E+00	3.00E+01	0.00E+00	5.27E−06	0.00E+00	5.27E−06	5.27E−06	0.00E+00	0.00E+00	0.00E+00
Ni	7.11E−03	0.00E+00	1.00E+00	0.00E+00	0.00E+00	7.11E−03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Se	6.40E−04	0.00E+00	2.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.20E−04	0.00E+00
XYLEN	3.76E+01	0.00E+00	4.40E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.54E−03	0.00E+00
TCA11	0.00E+00	0.00E+00	1.00E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
			SUM =	0.00E+00	7.27E−04	7.11E−03	5.27E−06	5.27E−06	0.00E+00	5.66E−01	0.00E+00

Table 6–9
Maximum Chronic Hazard Index
Cumulative

POLLUTANT	ORAL DOSE (mg/kg−d)	BACKGR (ug/m3)	AEL (ug/m3)	CV	CNS	IMMUN	KIDN	LIVER	REPRO	RESP	SKIN
ACETA	0.00E+00	0.00E+00	9.00E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E−04	0.00E+00
NH3	0.00E+00	0.00E+00	1.06E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E−02	1.68E−02
As	1.00E−03	0.00E+00	5.00E−01	5.85E−04	5.85E−04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E−04	5.85E−04
BENZE	0.00E+00	0.00E+00	7.10E+01	0.00E+00	1.31E−02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Be	5.00E−03	0.00E+00	4.80E−03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.70E−05	0.00E+00
Cd	1.00E−03	0.00E+00	3.50E+00	0.00E+00	0.00E+00	0.00E+00	1.16E−03	0.00E+00	0.00E+00	5.71E−05	0.00E+00
PCE	0.00E+00	0.00E+00	3.50E+01	0.00E+00	0.00E+00	0.00E+00	7.20E−03	7.20E−03	0.00E+00	0.00E+00	0.00E+00
Cu	0.00E+00	0.00E+00	2.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E−04	0.00E+00
CRESO	0.00E+00	0.00E+00	1.80E+02	0.00E+00	7.86E−04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HCHO	0.00E+00	0.00E+00	3.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.72E−03	0.00E+00
HCN	0.00E+00	0.00E+00	7.00E+01	0.00E+00	7.21E−04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HF	0.00E+00	0.00E+00	5.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.33E−03	9.33E−03
H2S	0.00E+00	0.00E+00	4.20E+01	0.00E+00	4.80E−02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.80E−02	0.00E+00
Pb	4.30E−04	0.00E+00	1.50E+00	4.87E−03	4.87E−03	4.87E−03	4.87E−03	0.00E+00	4.87E−03	0.00E+00	0.00E+00
Mn	0.00E+00	0.00E+00	4.00E−01	0.00E+00	2.01E−03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E−03	0.00E+00
Hg	3.00E−04	0.00E+00	3.00E−01	5.49E−04	5.49E−04	0.00E+00	5.49E−04	5.49E−04	0.00E+00	7.45E−05	0.00E+00
NAPTH	4.00E−03	0.00E+00	1.40E+01	7.36E−02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ni	0.00E+00	0.00E+00	2.40E−01	0.00E+00	0.00E+00	5.84E−03	5.84E−03	0.00E+00	0.00E+00	5.84E−03	0.00E+00
PHENO	0.00E+00	0.00E+00	4.50E+01	0.00E+00	0.00E+00	0.00E+00	2.11E−05	0.00E+00	0.00E+00	2.11E−05	0.00E+00
Se	0.00E+00	0.00E+00	5.00E−01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E−04	0.00E+00
STYRE	0.00E+00	0.00E+00	7.00E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.83E−05	0.00E+00	0.00E+00	0.00E+00
TOL	0.00E+00	0.00E+00	2.00E+02	0.00E+00	1.18E−02	0.00E+00	0.00E+00	0.00E+00	1.18E−02	0.00E+00	0.00E+00
XYLEN	0.00E+00	0.00E+00	3.00E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.21E−03	8.21E−03	0.00E+00
Zn	0.00E+00	0.00E+00	3.50E+01	2.74E−04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E−04	0.00E+00
TCA11	0.00E+00	0.00E+00	3.20E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CH3OH	0.00E+00	0.00E+00	6.20E+02	0.00E+00	4.51E−05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
			SUM =	8.00E−02	8.25E−02	1.07E−02	1.98E−02	7.80E−03	2.49E−02	9.42E−02	2.67E−02

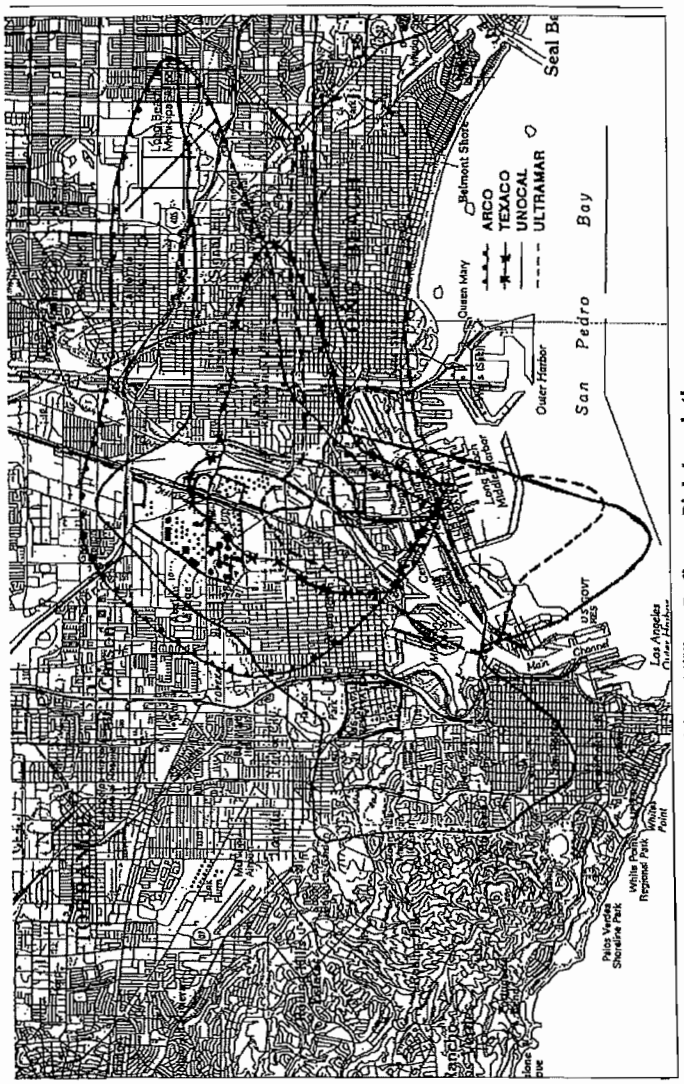
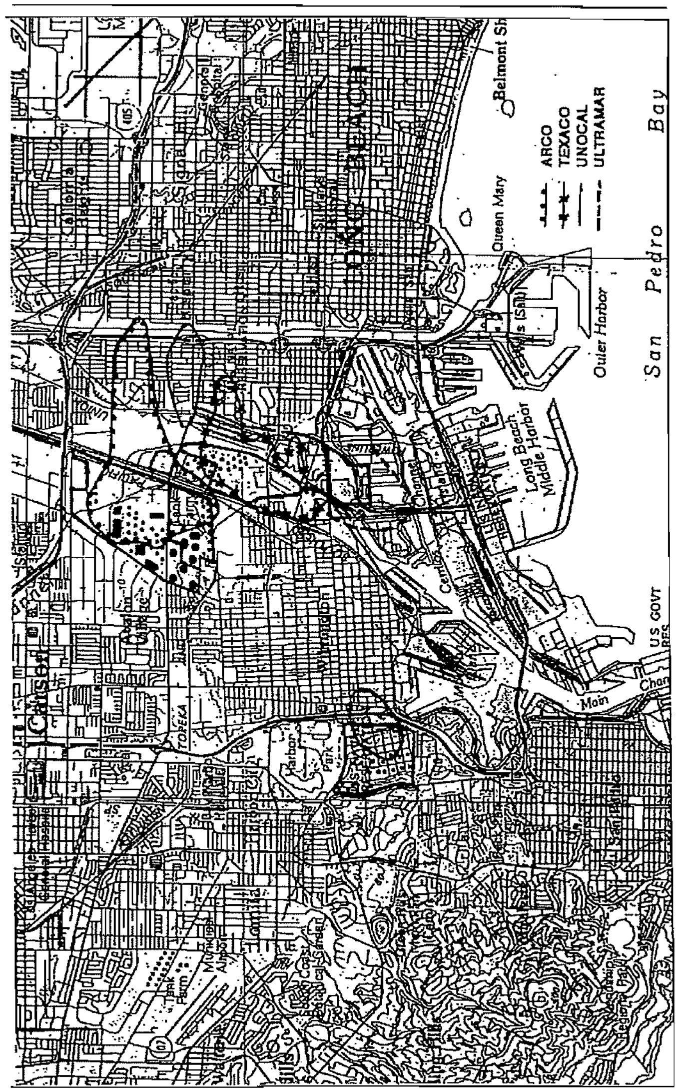

ARCO
TEXACO
UNOCAL
ULTRAMAR
Belmont Shore
Queen Mary
Outer Harbor
San Pedro Bay
Long Beach Municipal Airport
Los Angeles Outer Harbor
Pointe Vicente Shoreline Park
White Point Regional Park
White Point
1 In a Million Refinery Risk Isopleths
Cumulative Risk Isopleths
N

FIGURE 6-7

DRAFT SUBSEQUENT EIR: ULTRAMAR INC.



N

SCALE 1"=1.94 Km

5 in a Million Refinery Risk Isopleths

FIGURE 6-8

6-29

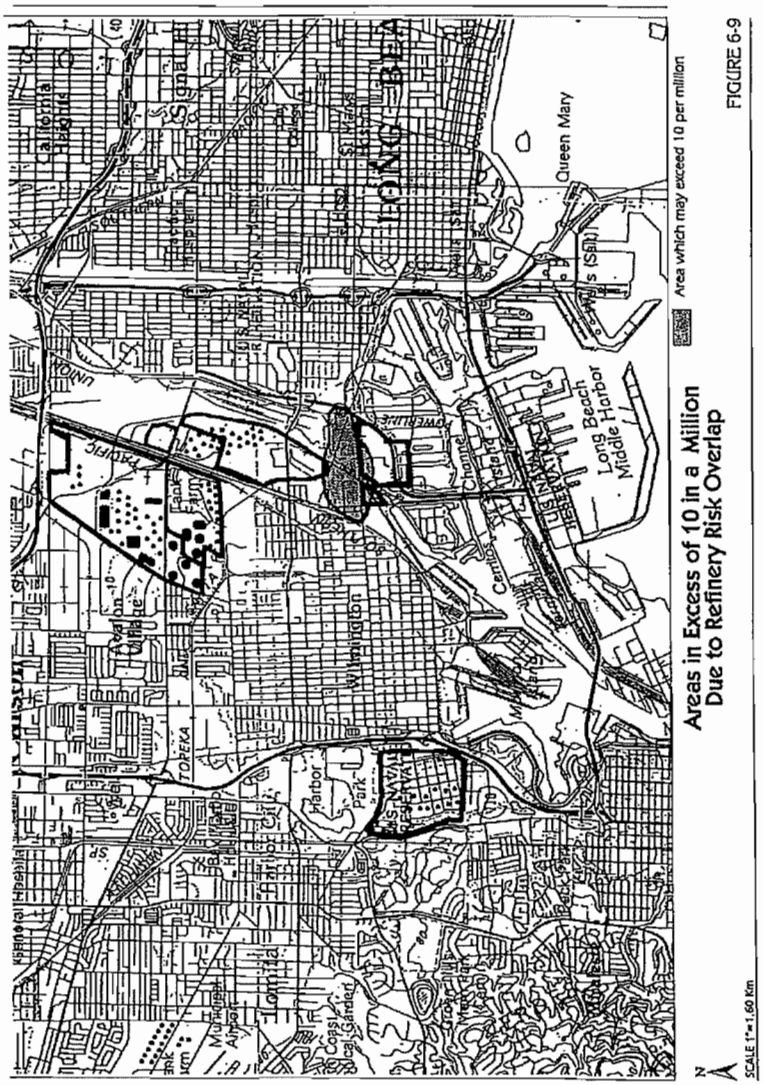

LONG BEACH
Queen Mary
Long Beach Middle Harbor
Area which may exceed 10 per million
Areas in Excess of 10 in a Million
Due to Refinery Risk Overlap
SCALE 1"=1.60 Km

FIGURE 6-9

Net Cumulative Risk

The cumulative analysis for toxic air contaminants does not take into account the fact that there will be a reduction in toxic emissions of benzene and 1,3-butadiene from mobile sources that utilize the reformulated fuels. An estimate of the expected reduction in background cancer risk in the vicinity of the Ultramar refinery that would result from the use of reformulated gasoline in motor vehicles is summarized in Table 6-10 (see Volume III of the Technical Attachments for details). This analysis indicates that the reduction in benzene emissions from on-road motor vehicles would potentially reduce the local cancer risk by 85 in one million. Comparing this reduction to the cumulative risk resulting from future operations of the Ultramar refinery emissions plus projects at other local refineries (21 per million) indicates that a large net decrease in cancer risk (64 per million) is expected.

TABLE 6-10

LOCAL CANCER RISK REDUCTION FROM USE OF REFORMULATED GASOLINE

IMPACT	AMOUNT
Reduction in local benzene emissions[1]	196 lbs/day
Reduction in local benzene concentration[2]	2.94 ug/m^3
Reduction in local cancer risk[3]	85 in one million
Maximum residential cancer risk[4]	21 in one million

1 Representative of 1996. Calculated from SCAQHD gridded emission inventory data assuming benzene is 6.6 percent of on-road VOC emissions. Fractional reduction (47 percent) derived from CARB (1993) data.

2 Calculated using urban diffusion model as described in Hanna (et. al. 1982).

3 Benzene concentration times unit risk factor of 2.9×10^{-5}.

4 Future refinery plus project plus related refinery projects.

MITIGATION MEASURES

Construction

Ultramar will utilize BACT for construction equipment, keep all vehicles and construction equipment well tuned, develop a trip reduction plan, and water active construction sites twice daily, except during periods of rain. Similar mitigation measures will be imposed at the other refineries.

Operation

The mitigation measures to minimize air emissions associated with operation of the related projects include the use of BACT for all new emission sources and modifications to existing sources. The use of BACT would control localized emissions. A BACT review will be completed during the SCAQMD permit approval process for all new/modified sources. In addition, the related refinery projects would provide regional emission benefits by reducing emissions from mobile sources that use the reformulated fuels.

Level of Significance

Although the cumulative air quality impacts due to construction and operation of the reformulated fuels projects exceed the SCAQMD significance thresholds, the positive benefits attributed to the usage of reformulated fuels by mobile sources beginning in 1996 are expected to outweigh the adverse impacts of the proposed projects.

C. WATER

Ground Water

The water demand from many of the refineries will be supplied from ground water from the West Coast Basin. To limit sea water intrusion, ground water extractions for the entire West Coast Basin currently are limited to 64,468 acre-feet/year. Water demand in the West Coast Basin for 1988-1989 was 44,327.43 acre-feet/year (WMD, 1992). The cumulative water demand from the various proposed refinery projects is estimated to be 8.7 million gallons per day or about 26.7 acre-feet per day or 9,746 acre-feet per year. Therefore, the proposed increase in water demand is within the forecast ground water demand for the area. Since the goal for the protection of the West Coast Basin is to reduce ground water extraction and the cumulative impacts from the proposed projects would have a negative impact on these goals. For further information, see the impacts discussed under Water Demand below.

Cumulative impacts to ground water quality are not expected due to the related projects. The refinery projects are not expected to impact ground water either individually or cumulatively due to the current regulatory controls on ground water. The transportation projects are not expected to impact ground water. The related projects may have a beneficial impact on water quality by removing contaminated soils which could impact ground water. Therefore, no significant impacts on ground water is expected due to the related projects. It should be noted that the potential for ground water contamination was not addressed by the Port 2020 Plan.

Surface Water

The cumulative impacts of the related projects on water quality are primarily limited to the refinery projects and are expected to be mitigated by compliance with various water quality regulations including Industrial Waste Discharge Permit requirements, Spill Prevention, Control and Countermeasures Plan, NPDES permits, Storm Water Pollution Prevention requirements and so forth.

The 2020 Plan is expected to have significant, short-term impacts on water quality due to dredging impacts needed to develop additional land and provide deeper channels.

There is the potential for water quality impacts in the event of a release or spill from any of the projects or pipelines. However, the related projects are not expected to have cumulative impacts or increase the probability of a spill on a cumulative basis. The probability of a spill is not expected to change from current conditions due to existing rules and regulations including the EPA requirements for SPCC Plans, and various pipeline regulations. Further, a permanent spill containment boom is located across the Dominguez Channel which would minimize impacts in the event of a spill.

Water Consumption

There will be an increase in the amount of water used and the amount of wastewater generated by each refinery. The other related projects are not expected to require an increase in water consumption. The water supply utility has indicated that they have the ability to supply the expected water demand. Nonetheless, cumulative impacts on water use are considered significant since there will be a cumulative increase of about 8.7 million gallons per day.

Table 6-11 below summarizes the amount of additional water required by the refineries for their reformulated fuels projects.

TABLE 6-11

ADDITIONAL WATER REQUIRED FOR REFORMULATED FUELS PROJECTS

	Total amount of Water (gpd)
ARCO	1,969,000
Chevron	50,000
*Ultramar	
Previous Final EIR	989,000
GOH/Hydrogen Plant	2,335,000
Unocal	1,829,000
Texaco	648,000
Mobil	892,800
TOTAL:	8,712,800

*Existing baseline use of water by Ultramar is approximately 15,000 million gallons per year.

Wastewater

The related refinery projects will discharge to the Los Angeles County Sanitation District's sewage system which is treated by the Joint Water Pollution Control Plant in Carson. The LACSD has indicated that there is sufficient capacity to handle this increased wastewater flow. As a result of the reformulated fuels projects, the six major refineries in the southern California area are expected to generate approximately 3.5 million gallons of additional wastewater per day. The LACSD has sufficient capacity to treat this proposed increase. Therefore, no significant impacts are expected. The exception to this is that a pumping station and pipeline segment that Ultramar discharges to is operating at capacity. No other refineries discharge to these facilities. The impacts to the wastewater treatment system are considered significant prior to mitigation. Mitigation measures have been developed that would reduce the impacts associated with Ultramar to less than significant (see Chapter 4, Section C). Table 6-12 below summarizes the amount of additional wastewater projected to be generated by the refineries as a result of their reformulated fuels projects.

Representatives from the Terminal Island Treatment Plant (TITP) have indicated that there have been discussions about closing that Plant. A decision regarding the closure of the TITP will not be made until July 1, 1994. Officials from the TITP are currently discussing the feasibility of transferring the wastewater currently treated by TITP to the JWPCP in Carson. No decision regarding this closure has been made but TITP officials indicate that if the JWPCP accepts the wastewater, the TITP would close

Level of Significance

The water use and wastewater discharge are within the capabilities of the utilities to supply service on a cumulative basis, following mitigation of the impacts from Ultramar. Water supply impacts will remain significant unless the refineries use reclaimed or recycled water. Wastewater impacts can be mitigated to below significance levels.

D. NOISE

Construction Impacts

Construction phases of each of the related projects are expected to generate localized, short-term noise impacts, some of which may be mitigated during construction by the use of muffling devices, restriction of work hours for segments in residential areas, etc. Construction activities associated with pile driving for the 2020 Plan are expected to be significant.

Sensitive receptors along the proposed Pacific Pipeline alignment in Los Angeles County are primarily schools and parks. The approximate daytime median noise level at these receptors ranges from 60 to 75 dBA. During construction, noise levels will increase by between five and 15 dBA above ambient conditions. These impacts will last for between one and four days at each location. Following construction, operation of the pipelines will produce no additional noise.

Construction of the Alameda Corridor is expected to generate noise levels as high as 90 dBA at a distance of 50 feet during excavation phases.

Construction of the proposed project hydrogen pipelines are not expected to be significant.

The cumulative construction impacts associated with the related refinery projects are not expected to be significant or exceed noise ordinances. However, the cumulative noise impacts due to certain Alameda Corridor projects and 2020 Plan construction are considered significant. Construction activities are expected to be limited to daytime hours which would reduce the potential for impacts on residential areas.

Operation Impacts

The operational impacts of the related refinery projects are not expected to be significant. Most of the Wilmington area is industrialized and the cumulative increase in noise is not expected to impact residential areas since they are located a sufficient distance. Also, sufficient distance exists between the refineries to prevent overlap of noise impacts.

Existing noise levels from traffic in the vicinity are already considered unacceptable for certain residential areas. The build out of the 2020 Plan and Alameda Corridor projects are expected to result in noise impacts to the Long Beach Naval Station housing and to residential areas adjoining Alameda Street (ACE, 1990).

Operation of the Alameda Corridor will concentrate train and motor vehicle noise along the corridor while reducing overall noise on other highways and railways.

The day-night average noise levels along the Alameda Corridor are expected to result in an increase of about eight to nine dBA at residential receptors along the Alameda Corridor between the Ports and the Intermodal Container Transfer Facility (ACE, 1990). Therefore, the cumulative noise impacts are considered significant.

Mitigation Measures

The mitigation measures to reduce noise impacts are outlined in the Alameda Corridor Draft EIR (ACTA, 1992) and include noise barriers and construction of portions of the Corridor below grade.

Level of Significance

The noise impacts on construction and operation remain significant for the construction of the Port 2020 Plan and Alameda Corridor modifications. The noise impacts associated with the related refinery projects are not expected to be significant.

E. LAND USE

No cumulative impacts will conflict with land use and zoning designations established by the City of Los Angeles as a result of the construction and operation of the related projects in the area. The revised project will be built within the heavy industrial zoned portion of Wilmington. The related refinery projects are being conducted within and adjacent to existing refineries, zoned for such purposes. Cumulative impacts associated with land use and zoning are expected to be insignificant.

Mitigation Measures

No impacts are expected to conflict with land use and zoning designations from the proposed revised project and related refinery projects. As a result, no mitigation measures are proposed.

Level of Significance

The cumulative land use impacts are considered insignificant.

F. RISK OF UPSET

Although other refineries exist in the general vicinity of Ultramar, the cumulative impacts from and between the onsite operation of the refineries' reformulated fuels projects are not expected to be significant because it is extremely unlikely that upset conditions would occur at more than one refinery at a time. It also is extremely unlikely that an upset condition at one refinery would create an upset at another nearby refinery because of the distance between refineries.

Other refinery reformulated fuels projects may require the use of additional ammonia. The transportation of additional ammonia (either aqueous or anhydrous) and HF into the area may be significant as there would be more vehicle miles traveled, thereby increasing the probability of an accident. The increase in probability is not related to the potential trucks transporting ammonia having accidents with each other, but simply based on the additional number of trips in the area. The same would be true

with the transport of butane since additional railcars transporting butane from most refineries would be required, thus increasing the probability (not the consequence) of an upset event during transport.

Mitigation Measures

A number of mitigation measures have been identified to minimize risk of upset conditions and are outlined in Chapter 4, Section F - Risk of Upset. Implementation of these mitigations would minimize risk of upset conditions. Similar mitigation measures have been proposed at other refineries.

Level of Significance

The cumulative risk of upset within the refinery processing units would be considered less than significant. The risk of upset conditions associated with the transport of ammonia and HF on a cumulative basis would remain significant even after implementation of mitigation measures.

G. TRANSPORTATION/CIRCULATION

Construction

Construction of the reformulated fuels projects at the various refineries are expected to occur at the same time. Therefore, there is the potential for cumulative impacts.

Pacific Pipeline Project. The pipeline route will be adjacent to Alameda Street from the 91 Freeway south to the GATX Terminal. During construction, parking and one lane of traffic will be blocked periodically. In addition, construction of hydrogen pipelines associated with the proposed project would occur along Alameda Street. Coordination with the Alameda Corridor improvements will be necessary to ensure that conflicts do not occur between construction schedules and the locations of the pipelines and any subterranean improvements. Construction of the proposed hydrogen pipeline along 190th Street has the potential for significant impacts since most of the intersections along 190th operate at LOS F.

Alameda Corridor. Several projects in various stages of development may affect or be affected by the Corridor improvements, including the PADP projects and the Pacific Pipeline project. Construction of the ACTA projects would require complete reconstruction of the combined highway facilities in Alameda Street and the SPTC San Pedro Branch railroad. Reconstruction of Anaheim Street bridge over the Dominguez Channel also would impact traffic flow in the area of the Ultramar refinery. Extensive disruption to the local traffic circulatory system would occur, creating detours and affecting accessibility to businesses and residences. Most construction locations would be subject to traffic disruption for between two and three years over the course of the 10- to 12-year construction period expected for the ACTA projects (Myra Frank & Associates, 1992a). The construction effects would be temporary, but in some instances they could be severe.

Once the Alameda Corridor improvements have been completed, there would be a region wide reduction in emissions from train and vehicular travel, due to improved

traffic circulation and less idling time. Despite the roadway improvements proposed, there would be residual adverse effects at some intersections, due to background growth in regional traffic and the fact that the improved highway would attract traffic. It would fall to local jurisdictions to make improvements to the local streets affected.

Table 6-13 provides an overview of the projected traffic level of service (LOS) analysis and volume to capacity ratios due to cumulative construction impacts from all the refineries. These ratios were calculated assuming an ambient traffic growth of one percent per year, plus all construction related traffic in the area and traffic associated with local refinery projects. There is no change in LOS at the following intersections due to construction of the proposed project:

Alameda Street/I-405 Ramps
Alameda Street/223rd Street
Alameda Street/Anaheim Street
Wilmington Avenue/Sepulveda Boulevard
Santa Fe Avenue/Pacific Coast Highway

Six intersections show changes due to the cumulative projects in the area. The p.m. peak hour at I-405 Ramps and Wardlow/223rd Street would change from LOS A to B. The p.m. peak hour at Alameda Street/Sepulveda Boulevard would change from LOS A to C. The p.m. peak hour at Alameda Street/Pacific Coast Highway would change from LOS B to C. The p.m. peak hour at Anaheim Street/Santa Fe Avenue would change from LOS C to D. The LOS changes at these four intersections are considered to be insignificant since free-flowing traffic would continue. However, the p.m. peak hour at Wilmington Avenue/223rd Street would change from LOS E to F and at Anaheim Street/Henry Ford Avenue would change from LOS C to E during p.m. peak hours.

Based on this analysis, the project impacts would be considered insignificant at all intersections with the exception of Wilmington Avenue/223rd Street and the Anaheim Street/Henry Ford Avenue intersections during p.m. peak hours. It should be noted that this is a "worst-case" analysis since it assumes that construction workers will leave the refinery during the p.m. peak hour which begins at most intersections between 3:30 p.m. and 4:30 p.m. The Ultramar construction schedule is expected to begin at 6:30 a.m. and end at 5:00 p.m. so that most of the construction traffic would avoid peak hour traffic.

Mitigation measures have been developed to minimize impacts at the Wilmington Avenue/223rd Street and Anaheim Street/Henry Ford Avenue intersections. Mitigation measures also have been developed to reduce traffic impacts during pipeline construction activities.

Operation

Table 6-14 shows the projected LOS analysis and volume to capacity ratios due to cumulative operational phase impacts. These ratios were calculated assuming an ambient traffic growth of one percent per year, plus operational phase related traffic and traffic associated with local refinery projects. There is no change in LOS at the following intersections due to the cumulative projects in the area:

TABLE 6-13

CUMULATIVE CONSTRUCTION IMPACTS LEVEL OF SERVICE ANALYSIS AND VOLUME-TO-CAPACITY RATIOS(1)

	BASELINE				IMPACTS			
	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C
Alameda Street and I-405 Ramps	A	0.412	A	0.372	NI	NI	A	0.410
Alameda Street and 223rd Street	A	0.296	A	0.387	NI	NI	A	0.426
I-405 Ramps and Wardlow/223rd Street	A	0.551	A	0.573	NI	NI	B	0.621
Alameda Street and Sepulveda Boulevard	A	0.503	A	0.592	NI	NI	C	0.774
Alameda Street and Pacific Coast Highway	A	0.523	B	0.669	NI	NI	C	0.731
Alameda Street and Anaheim Street	B	0.623	B	0.652	NI	NI	B	0.679
Wilmington Avenue and 223rd Street	D	0.870	E	0.903	NI	NI	F	1.039
Wilmington Avenue and Sepulveda Boulevard	C	0.722	B	0.648	NI	NI	B	0.680

TABLE 6-13 (CONT'D)

Santa Fe Avenue and Pacific Coast Highway	C	0.746	D	0.826	NI	NI	D	0.858
Anaheim Street and Henry Ford Avenue	A	0.575	C	0.775	NI	NI	E	0.903
(With recommended mitigation:							D	0.863
Anaheim Street and Santa Fe Avenue	B	0.606	C	0.717	NI	NI	D	0.830

NOTE:

(1) A.M. peak hour has no impact from from Ultramar.

V/C = Volume To Capacity Ratio (Capacity Utilization Ratio)
LOS = Level of Service
NI = No information on since A.M. peak hour has no impact from Ultramar. Not calculated since most traffic will avoid the morning peak hour.

TABLE 6-14

CUMULATIVE OPERATIONAL PHASE IMPACTS
LEVEL OF SERVICE ANALYSIS
AND VOLUME-TO-CAPACITY RATIOS

	BASELINE				IMPACTS			
	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C
Alameda Street and I-405 Ramps	A	0.412	A	0.372	A	0.421	A	0.382
Alameda Street and 223rd Street	A	0.296	A	0.387	A	0.305	A	0.399
I-405 Ramps and Wardlow/223rd Street	A	0.551	A	0.573	B	0.673	A	0.596
Alameda Street and Sepulveda Boulevard	A	0.503	A	0.592	A	0.595	C	0.703
Alameda Street and Pacific Coast Highway	A	0.523	B	0.669	A	0.559	C	0.705
Alameda Street and Anaheim Street	B	0.623	B	0.652	B	0.637	B	0.665
Wilmington Avenue and 223rd Street	D	0.870	E	0.903	D	0.888	F	1.048
Wilmington Avenue and Sepulveda Boulevard	C	0.722	B	0.648	C	0.736	B	0.668

TABLE 6-14 (CONT'D)

Santa Fe Avenue and Pacific Coast Highway	C	0.746	D	0.826	C	0.761	D	0.843
Anaheim Street and Henry Ford Avenue	A	0.575	C	0.775	A	0.596	C	0.791
Anaheim Street and Santa Fe Avenue	B	0.606	C	0.717	B	0.624	C	0.736

V/C = Volume To Capacity Ratio (Capacity Utilization Ratio)
LOS = Level of Service

Alameda Street/I-405 Ramps
Alameda Street/223rd Street
Alameda Street/Anaheim Street
Wilmington Avenue/Sepulveda Boulevard
Santa Fe Avenue/Pacific Coast Highway
Anaheim Street/Santa Fe Avenue
Anaheim Street/Henry Ford Avenue

Four intersections show a change due to the operation of the proposed reformulated fuels projects. The a.m. peak hour at I-405 Ramps and Wardlow/223rd Street would change from LOS A to LOS B. The p.m. peak hour at Alameda Street/Sepulveda Boulevard would change from LOS A to LOS C and at Alameda Street/Pacific Coast Highway would change from LOS B to LOS C. These three changes are considered insignificant impacts since free-flowing traffic would continue. However, the p.m. peak hour at Wilmington Avenue/223rd Street would change from LOS E to F, and is considered to be a significant impact.

The revised project is expected to increase the number of tanker calls to the Ultramar marine terminal in the Port of Los Angeles by one per month. The Texaco refinery is expecting to increase tanker calls into the ports by two ships per month. The ARCO and Mobil refineries both are also expecting to increase tanker calls into the ports of Los Angeles and Long Beach by three tankers per month. Unocal is expecting to have an additional four tankers per month. Cumulatively, about 13 tanker calls per month will result in a small incremental increase (about two percent) in total ship calls to the San Pedro Ports which are estimated to be about 7,000 vessels arriving per year (ACE, 1990). Therefore, no significant impact to the Los Angeles Harbor system is expected. Products shipped to the marine terminal will be transported to the refinery via pipeline so there are no other traffic impacts due to material delivery.

MITIGATION MEASURES

Mitigation measures have been developed for the proposed project as well as the other projects to reduce the traffic impacts to the Wilmington area.

Operational impacts significantly affect the p.m. peak hour at Wilmington Avenue/223rd Street. It should be noted that the ARCO refinery is located near the intersection of 223rd/Wilmington Avenue and the ARCO reformulated fuels program would have significant impacts at this intersection. A mitigation measure was developed that would install a westbound right-turn lane to reduce impacts from ARCO's construction and operational traffic. This mitigation measure also would reduce cumulative traffic impacts.

A mitigation measure has been identified that would re-stripe the northbound approach on Henry Ford Avenue from Anaheim Street into one exclusive left turn pocket, one straight through lane, and one exclusive right turn lane. The existing stripping provides one exclusive left turn pocket, one optional through or left turn lane, and one through/right turn lane. Implementation of this mitigation measure would improve the LOS during the p.m. peak hour at Anaheim Street/Henry Ford Avenue from E to C/D, thus reducing the significant traffic impacts at this intersection.

Traffic Control Plans will be required for construction of the various pipeline routes in order to minimize traffic impacts. The Traffic Control Plan would specify the

permitted hours of construction (generally off-peak hours), method of safeguarding traffic flow, method of re-routing or detouring traffic if necessary, the placement of traffic control devices (including signs, flashing arrows, traffic cones and delineators, barricades, etc.) and flaggers (if needed), temporary modifications to existing signals and signal timing (if necessary), and others. The Traffic Control Plan will need to be approved by the local cities to ensure that public safety will not be endangered, and traffic impacts will be reduced to a minimum. In addition, construction of the hydrogen pipeline along 190th Street must be coordinated with the City of Torrance's proposed widening of 190th Street.

LEVEL OF SIGNIFICANCE

The cumulative impacts on construction traffic are expected to be mitigated to a level of insignificance due to implementation of the above mitigation measures. The cumulative impacts on traffic following construction are not expected to be significant.

H. UTILITIES/PUBLIC SERVICES/NATURAL RESOURCES

Police/Fire: No significant cumulative impacts are expected on public services, such as the police and fire departments. All of the major refineries have onsite fire-fighting capabilities and 24-hour security force.

Electricity: The previous Final EIR required an additional 15 megawatts per day of electricity for the proposed reformulated fuels program. The GOH and Hydrogen Plant project will require and additional 20.5 megawatts per day. Most of the electrical increase for Ultramar will be supplied by the proposed Cogeneration plant. Only a small amount may need to be purchased. Cumulatively, all of the refinery projects are expected to require a total of 59.8 megawatts of additional electricity. This increase in demand is considered to be insignificant. Table 6-15 below summarizes the amount of additional electricity each refinery is expected to require as a result of the reformulated fuels projects.

TABLE 6-15

ADDITIONAL ELECTRICITY REQUIRED FOR REFORMULATED FUELS PROJECTS

	Total Electricity Usage (MW)
ARCO	15
Chevron	-37.5
*Ultramar Previous Final EIR GOH/Hydrogen Plant	 15 20.5
Unocal	30
Texaco	14.3
Mobil	2.5
TOTAL:	59.8

*Existing baseline use of electricity by Ultramar is an average of about 511 megawatts per day.

Natural Gas: An additional 130,380 million cubic feet per year of natural gas is expected to be required by the refineries for their reformulated fuels projects. Ultramar will produce the majority of their fuel gas needs on-site. Only a small amount may need to be purchased for back up purposes. Cumulatively, no adverse impact is expected due to the increase in demand for natural gas. Table 6-16 below summarizes the amount of additional fuel gas each refinery is expected to require as a result of the reformulated fuels projects.

TABLE 6-16

ADDITIONAL NATURAL GAS REQUIRED FOR REFORMULATED FUELS PROJECTS

	Total Natural Gas Usage (mmscf/yr.)
ARCO	5,110
Chevron	2,590
*Ultramar	
Previous Final EIR	6,674
GOH/Hydrogen Plant	82,000
Unocal	34,000
Texaco	6
Mobil	0
TOTAL:	130,380

*Existing baseline use of fuel gas by Ultramar is approximately 7,000 million cubic feet per year of which about 0.19 mmscf/year is natural gas purchased from The Gas Company.

Water/Wastewater

Additional water use and wastewater generation is discussed under the Chapter 6, Section C - Water.

Hazardous Waste

Operations of the reformulated fuels projects are expected to cumulatively generate 5,010 tons per year of hazardous wastes. Cumulatively, no adverse impact is expected due to the expected increase in hazardous waste generation since there currently is sufficient landfill capacity. Table 6-17 below summarizes the amount of hazardous wastes that is expected to be cumulatively generated as a result of the reformulated fuels projects operation.

TABLE 6-17

INCREMENTAL CUMULATIVE OPERATIONAL HAZARDOUS WASTE IMPACTS

PROJECT	AMOUNT OF HAZARDOUS WASTE PER YEAR (tons/year)
ARCO	600
CHEVRON	620
MOBIL	2,713
TEXACO	21
ULTRAMAR*	
Previous Final EIR	636
GOH/Hydrogen Plant	172
UNOCAL	248
TOTAL	5,010

*Existing baseline generation of hazardous waste by Ultramar was approximately 2,000 tons per year.

Solid/Non-hazardous Wastes

Operation of the reformulated fuels projects are expected to cumulatively generate 5,611 tons per year of solid/non-hazardous wastes. Table 6-18 below summarizes the amount of solid/non-hazardous wastes that is expected to be cumulatively generated as a result of the reformulated fuels projects operation.

TABLE 6-18

INCREMENTAL CUMULATIVE OPERATIONAL SOLID/NON-HAZARDOUS WASTE IMPACTS

PROJECT	AMOUNT OF SOLID WASTE PER YEAR (tons/year)
ARCO	4,212
CHEVRON	0[1]
MOBIL	272
TEXACO	42
[2]ULTRAMAR	
Previous Final EIR	0
GOH/Hydrogen Plant	523
UNOCAL	562
TOTAL	5,611

(1) Chevron project operations would add a one-time amount of approximately 8,450 cubic yards to the solid waste stream (SCAQMD, 1993e).

(2) Existing baseline generation of solid waste by Ultramar was approximately 301.5 tons in 1992.

Mitigation Measures

Cumulative impacts associated with police and fire service, electricity, natural gas, and hazardous/solid wastes are considered insignificant. The utilities can supply the projected increase and no additional man power is expected to be required by the fire or police departments. There is sufficient landfill capacity within the state to handle hazardous waste for about ten years. In addition, out-of-state facilities also can handle hazardous wastes. No additional mitigation measures are required.

Level of Significance

No adverse cumulative impacts on police and fire service, electricity, natural gas, wastewater generation and hazardous/solid wastes are expected to occur.

CHAPTER 6: CUMULATIVE IMPACTS

I. HUMAN HEALTH

Cumulative Impacts

The cumulative impacts of primary consideration relative to human health are those anticipated with the related refinery projects. Direct emissions are expected to increase within the vicinity of the nearby refineries; however, overall area emissions are expected to be significantly reduced with the use of reformulated fuels. The cumulative carcinogenic risk, also increases when evaluating the proposed project and those of nearby refineries, primarily Texaco, ARCO and Unocal. It should be noted that the assumptions used in the preparation of the health risk assessment for Ultramar, as well as the assessments for the other refineries, involve very conservative assumptions and more than likely reflect a worst-case scenario with respect to impacts on human health.

As discussed under Air Quality, the cumulative impacts of the reformulated fuels projects will result in large emission decreases from mobile sources which use the reformulated fuels. These emission decreases are expected to allow the basin to move closer towards compliance with state and federal ambient air quality standards, thus, providing a beneficial impact on human health.

The cumulative risk of upset impacts between the local refineries reformulated fuels projects are not expected to be significant because it is extremely unlikely that upset conditions would occur at more than one refinery at a time. It also is extremely unlikely that an upset condition at one refinery would create an upset at another nearby refinery.

Mitigation Measures

Mitigation measures have been developed specifically for air quality and risk of upset impacts. See Chapter 4, Sections B - Air Quality and F - Risk of Upset, for details. Similar mitigation measures should be required for all refinery reformulated fuels projects.

Level of Significance

The cumulative impacts on human health are considered to be insignificant with the exception of those issues discussed under Air Quality and Risk of Upset.

CHAPTER 7
OTHER CEQA TOPICS

Relationship Between Local Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

Significant Irreversible Environmental Changes

Growth-Inducing Impacts of the Proposed Project

ATTACHMENT 3

December 2004 SCH No. 20030536

ULTRAMAR INC. - VALERO WILMINGTON REFINERY

ALKYLATION IMPROVEMENT PROJECT

FINAL ENVIRONMENTAL IMPACT REPORT

Volume I: Final Environmental Impact Report

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ENVIRONMENTAL AUDIT, INC.

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PREFACE

This document constitutes the Final Environmental Impact Report (EIR) for the Ultramar Inc. Valero Wilmington Refinery Alkylation Improvement Project. The Draft EIR was circulated for a 45-day public review and comment period on April 1, 2004. The comment period ended on May 18, 2004. Two comment letters were received during the public comment period and one additional letter was received after the close of the public comment period. The comment letters and responses are included in Appendix E of this document. The project description in the Final EIR was modified from that in the Draft EIR due to some changes proposed by the applicant. The proposed project changes were evaluated and minor modifications have been made to the Draft EIR. None of the modifications alter any conclusions reached in the Draft EIR, nor provide new information of substantial importance relative to the draft document that would require recirculation of the Draft EIR pursuant to CEQA Guidelines §15088.5. Therefore, this document is now a Final EIR. Additions to the text of the EIR are denoted using italics. Text that has been eliminated is shown using ~~strike outs~~.

TABLE OF CONTENTS

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Speaker of the Assembly Representative

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EXECUTIVE OFFICER

BARRY WALLERSTEIN, D. Env.

TABLE OF CONTENTS
ULTRAMAR INC., VALERO WILMINGTON REFINERY
ALKYLATION IMPROVEMENT PROJECT
FINAL ENVIRONMENTAL IMPACT REPORT

VOLUME I Page No.

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

APPENDICES:

FIGURES:

TABLES:

in 2002 (Dr. Yi Shao, TITP Assistant Plant Manager). The closure of the TITP would have no direct impact on the Ultramar refinery since Ultramar's wastewater discharge is treated in the JWPCP in Carson. Closure of the TITP most likely would require expansion of the JWPCP and place additional demands on the JWPCP.

TABLE 6-12

ADDITIONAL GENERATION OF WASTEWATER

	Total amount of Wastewater (gpd)
ARCO	893,000
Chevron	0
*Ultramar	
Previous Final EIR	247,000
GOH/Hydrogen Plant	1,020,000
Unocal	1,109,000
Texaco	76,320
Mobil	117,595
TOTAL:	3,462,915

*Existing baseline generation of wastewater by Ultramar is approximately 800,000 gpd.

Mitigation Measures

Cumulative impacts can be mitigated by ongoing measures to reduce water use and wastewater streams. The cumulative impact on the water demand may be reduced or eliminated by the use of reclaimed water. If reclaimed water can be purified to meet the standards required by the refining industry and supplied at a reasonable cost, the refineries may be able to utilize recycled water. As part of their mitigation monitoring programs, the refineries will be required to submit annual reports to the SCAQMD through 1998 on the potential to utilize reclaimed water and, if required, will comply with off-peak hour discharge. No impacts are expected to occur from the generation of additional wastewater as long as the refineries continue to comply with Industrial Wastewater Discharge and NPDES permits issued by the Los Angeles County Sanitation District and Regional Water Quality Control Board, respectively.

TABLE OF CONTENTS

TABLE OF CONTENTS

DABWORD:2185/EIR/TOC EIR

CHAPTER 2
PROJECT DESCRIPTION

CHAPTER 2

PROJECT DESCRIPTION

PROJECT BACKGROUND AND INTRODUCTION

The proposed project (described in detail beginning on page 2-5) involves changes to the Alkylation Unit at the Ultramar Inc. - Valero Wilmington Refinery to eliminate the use of concentrated hydrofluoric acid (HF) as a catalyst for the production of alkylate, a high octane blend stock highly important to the production of state and federally mandated reformulated gasoline. HF can volatize in the event of an accidental release and is a toxic air contaminant. The hazards and health impacts associated with the use of HF have been well documented (U.S. EPA, 1993). Due to the high vapor pressure and low boiling point of HF, a release of liquid HF into the atmosphere will volatilize into the gas phase at typical ambient temperatures and pressures. A newly released cloud of HF has a vapor density approximately twice that of air and tends to spread as a ground-hugging cloud. Thus, an accidental release of HF would create a dense plume that would move in a passive mode with the prevailing winds in both direction and speed. An accidental release of HF could migrate off the Refinery property and expose individuals in the surrounding community.

On February 12, 2003, the Ultramar Inc. - Valero Wilmington Refinery (Refinery) and the South Coast Air Quality Management District (SCAQMD) entered into a Memorandum of Understanding (MOU) requiring the termination of the transport, storage and use of concentrated hydrofluoric acid at the Wilmington Refinery. The Refinery agreed to adopt a modified alkylation process that eliminates the use of concentrated HF catalyst and substituting it with the proprietary Reduced Volatility Alkylation Process (ReVAP). ReVAP incorporates a suppressant in the HF that reduces volatility in the event of an accidental release with a concurrent reduction in safety risks (i.e., distance that the HF could travel and number of persons exposed) in the surrounding area. Use of this modified process meets the SCAQMD's objectives with respect to elimination of concentrated HF.

Incorporation of ReVAP requires substantial improvements to the Alkylation Unit and related units and systems of the Refinery. The MOU recognizes that these improvements must be viewed in light of the objectives of both the California's Phase 3 Reformulated Gasoline (RFG 3) requirements and the Governor's executive order directing elimination of methyl tertiary butyl ether (MTBE) as an oxygenate and octane enhancer in California gasoline. Both these actions can result in the loss of gasoline production. The Refinery will incorporate alkylation efficiency improvements and design capacity enhancements to help offset any such losses. Although the proposed project will increase alkylate production capacity, the improvements will not increase annual crude throughput of the refinery.

The proposed project consists of the following principal components:

- Modify the existing Alkylation Unit to incorporate the ReVAP process, and enhance the alkylate production capacity to 20,000 barrels per day (bpd).

- Increase the existing Butamer Unit capacity to 17,000 bpd to provide sufficient feed for the enhanced Alkylation Unit with the ReVAP process. Modifications to the Liquified Petroleum Gas (LPG) Merox Treating Unit, Light Ends Units, and Naphtha Hydrotreater Unit, and installation of a new fuel gas treating system.

- Upgrade Refinery utility systems to support the improvements, including a new steam boiler with selective catalytic reduction (SCR), a new hot oil heater with SCR, modifications to an existing hot oil heater, a new cooling tower as well as modifications to an existing cooling tower, a new butane storage sphere, a new propane storage bullet, a new flare system, a new aqueous ammonia storage tank, and a relocation of existing storage tanks.

The MOU establishes a schedule for the project with enforceable deadlines. The MOU establishes a target of December 31, 2005 for commencing operation of the modified Alkylation Unit.

PROJECT OBJECTIVES

The objectives of the proposed project are as follows:

- Implementation of SCAQMD Environmental Justice Program Enhancements for FY 2002-03 that eliminate the transport, storage and use of concentrated HF at the Wilmington Refinery and the reduction of related potential consequences in the event of a release.

- Incorporate alkylation efficiency improvements and design capacity enhancements to help offset losses associated with the installation of the ReVAP process and CARB Phase 3 requirements including the elimination of MTBE.

PROJECT LOCATION

The proposed project will occur at the Wilmington Refinery, which is located at 2402 East Anaheim Street, in the Wilmington district of the City of Los Angeles in the southern portion of Los Angeles County (see Figure 2-1). The proposed modifications are entirely within the confines of this existing facility.

The Refinery is bounded to the north by Anaheim Street and industrial uses. Also northward of Anaheim Street is another major refinery complex. The Refinery is bounded on the south by an area used previously for oil field production facilities and which is now developed for marine cargo transport and storage facilities and other Port of Long Beach related uses. A Hydrogen Plant is located adjacent to and immediately west of the Refinery (west of the Dominguez Channel) on

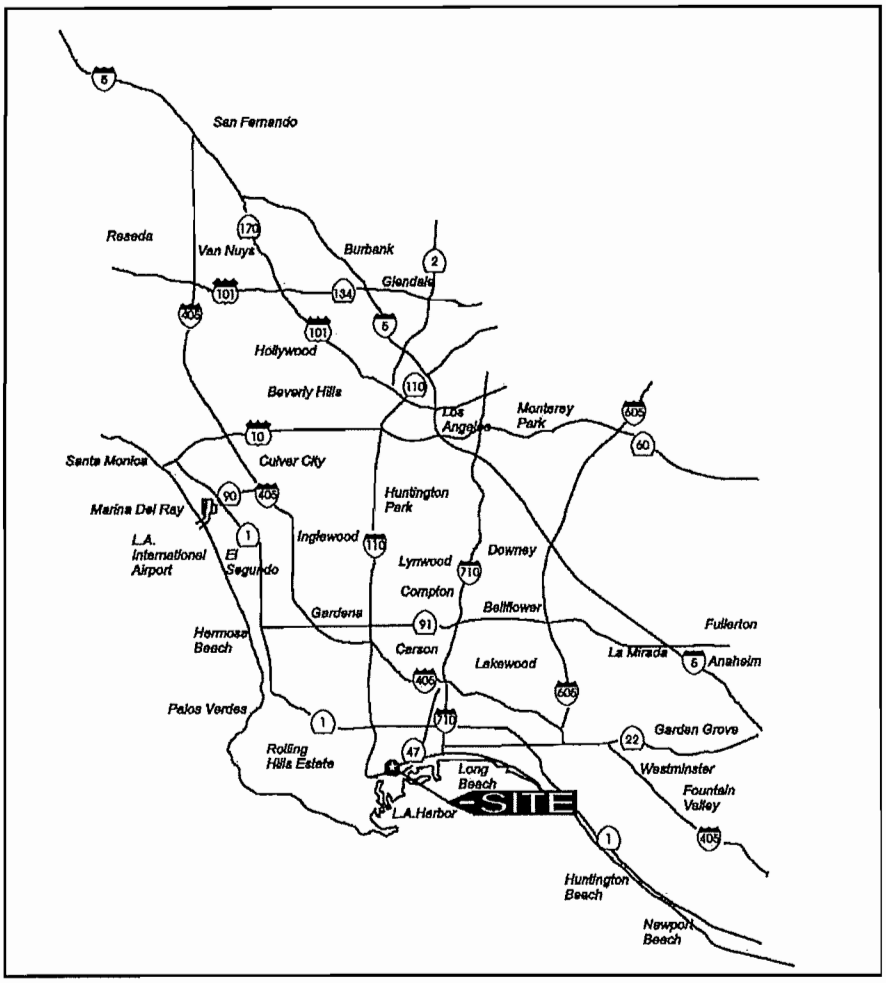


Figure 2-1

Project No. 2185
N:\2185\Regional Map

CHAPTER 5
CUMULATIVE IMPACTS

CHAPTER 5.0

CUMULATIVE IMPACTS

A. INTRODUCTION

CEQA Guidelines §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065(c). There are a number of projects proposed for development in the vicinity of the Refinery, which may contribute cumulative impacts to those generated by the Proposed Alkylation Improvement Project. These include extensive improvements to the Ports of Long Beach and Los Angeles, and the Alameda Corridor Transportation Authority projects, as well as the reformulated fuels modifications planned by other petroleum refineries in the South Coast Air Basin. Figure 5-1 shows the locations of the southern California refineries. Most of the construction associated with the reformulated fuels modifications were completed in order to supply reformulated gasoline as required by Executive Order D-5-99 and the resulting CARB RFG Phase 3 requirements by December 31, 2003. The discussion below lists projects which are reasonably expected to proceed in the foreseeable future, i.e., project information has been submitted to a public agency. Cumulative construction impacts were evaluated herein if the major portion of construction is expected to occur during the same construction period as the Alkylation Improvement Project project, i.e., 2004 and 2005.

Public agencies were contacted to obtain information on projects within the Wilmington area. Figure 5-2 identifies by number the location of each of the projects discussed below. The numbers are used to identify the related projects throughout the discussion of cumulative impacts. Local impacts were assumed to include projects which would occur within the same timeframe as the Alkylation Improvement Project and which is within a one-mile radius of the Refinery. These projects generally include other Refinery projects, port-related projects, Alameda Corridor projects, and projects in near-by cities. Regional impacts were assumed to include projects throughout the basin, e.g., all refineries.

Some of the resources affected by the proposed Refinery project would primarily occur during the construction phase, e.g., traffic. Other impacts would primarily occur during the operational phase, e.g., hazards. Other impacts would occur during both phases, e.g., air quality and noise.

B. LOCAL REFINERIES

1) Conoco-Phillips

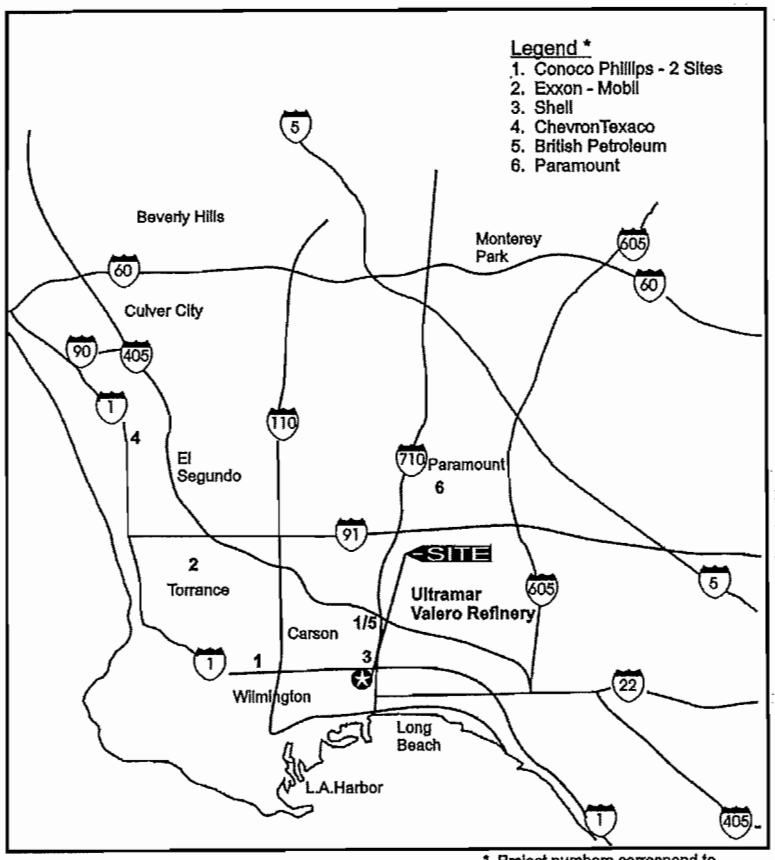
The Conoco-Phillips Refinery (formerly Tosco and Unocal) is approximately three miles west of the Refinery. It consists of facilities at two locations (Wilmington and Carson) approximately three miles apart. The two integrated sites transfer raw, intermediate, and finished materials primarily by pipelines. Finished products are transferred from the Wilmington location via the Torrance Tank Farm pipeline to distribution terminals in the

southern California area or to interstate pipelines. Conoco-Phillips proposed to modify existing process units at the Wilmington Plant in order to produce gasoline in compliance with CARB's Phase 3 requirements (SCAQMD, 2001). Modifications to the following units were proposed:

- Alkylation Unit (fractionation equipment, refrigeration compressor system, pumps, heaters and exchangers)
- Acid Plant (vapor recovery system)
- Butamer Unit (pumps)
- Catalytic Light Ends Fractionation Unit (fractionation equipment, pumps and piping)
- Rail Car Offloading Facilities
- Butane Storage Tank System
- Storage Tank System
- Utilities (the nitrogen, steam, water, condensate, electrical, hydrocarbon relief, and fresh/spent acid systems).

Associated modifications and additions to storage facilities, pipelines and support facilities were also proposed (SCAQMD, 2001). An Addendum to the Final EIR was prepared to include modifications to the Los Angeles Terminal including expansion of rail service at the terminal to include the unloading of ethanol.

In addition to the CARB Phase 3 project, Conoco-Phillips has been issued permits for an Ethanol Import and Distribution Project. In order to produce gasoline without MTBE earlier than required by the Governor's Executive Order and to remain compliant with state and federal reformulated fuel standards, Conoco-Phillips replaced MTBE with ethanol. This project was comprised of modifying existing facilities to permit ethanol to be received into the Marine Terminal for transshipment through the Wilmington Plant for ultimate blending into gasoline at existing, offsite marketing terminals. A Negative Declaration has been completed (SCAQMD, 2000b) and approved for this project. Because this project was found not to have any significant effect on the environment, no cumulative impacts are expected.



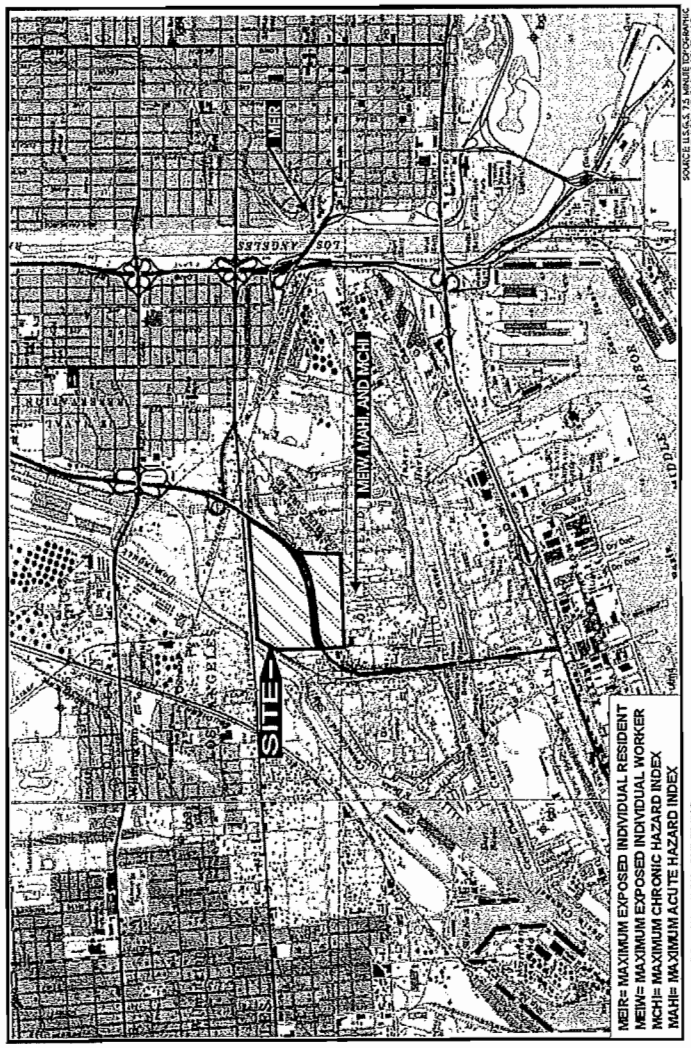
Environmental Audit, Inc.

* Project numbers correspond to the project numbers discussed in the text of Chapter 5.

REGIONAL MAP SHOWING REFINERIES

Figure 5-1

Project No. 2185
I:\2185\Regional


SITE
MEIR
MEIW
MACH
MAHI
LOS ANGELES
SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLES LONG BEACH AND TORRANCE CA
MEIR= MAXIMUM EXPOSED INDIVIDUAL RESIDENT
MEIW= MAXIMUM EXPOSED INDIVIDUAL WORKER
MACH= MAXIMUM CHRONIC HAZARD INDEX
MAHI= MAXIMUM ACUTE HAZARD INDEX
ENVIRONMENTAL AUDIT INC.
SITE LOCATION & MAXIMUM IMPACT MAP
ULTRAMAR INC. -
VALERO WILMINGTON REFINERY
Figure 5-3
Project No. 2185
N:\2185\Site Loc. & Max. Impact Map (Fig 5-3)

2) Exxon-Mobil

The Exxon-Mobil refinery is located at 3700 W. 190th Street in Torrance, about twelve miles northwest of the Refinery. The RFG Phase 3 project includes modifications and/or additions to the following equipment:

- Light FCCU – Unsaturated Gas Plant Debutanizer
- Light HDC – Stabilizer, Gasoline Component Isolation Piping
- Deisobutanizer Tower – Butane Handling, KOH Tower
- Alky Feed – Hydrotreating
- Liquefied Petroleum Rail Facilities – Vessels, Loading and Additional Track
- Fuel Ethanol Storage – Tanks, Rail and Off-loading Facilities
- Gasoline Storage – Tanks
- FCC – Hydrotreater Reactors and Heater Modifications
- Alkylate – Additive Water Wash System and Merox System
- Sulfur Contamination Elimination – Overhead Compressor Modifications
- Light FCC Gasoline – Splitter Modifications
- Torrance Loading Rack (add fuel ethanol off-loading rack; modify vapor recovery unit, piping, and manifolds)
- Vernon Terminal (add rail car off-loading system, two truck off-loading areas, gasoline tank, lighting area and drainage system; modify rail spur, loading rack, vapor recovery unit, vapor destruction unit, and two storage tanks)
- Anaheim (Atwood) Terminal (add two truck off-loading areas, storage tank, lighting area and drainage system; modify truck rack)
- One new pentane sphere

Associated modifications and additions to storage facilities, pipelines and support facilities were also proposed (SCAQMD, 2001a and SCAQMD 2003c). The Torrance refinery and loading rack, and the Vernon and Anaheim distribution terminals are located at least 15 to 25 miles from the Refinery so cumulative impacts are not expected to occur.

3) Shell

The Shell refinery (formerly Equilon and Texaco) is located at 2101 East Pacific Coast Highway, Wilmington. Shell's Wilmington Terminal is located adjacent to the southwestern portion of its Refinery at 1926 East Pacific Coast Highway, and the marine terminal is located on Mormon Island at Berths 167-169 within the Port of Los Angeles. The Shell project also required changes to Shell's other southern California area distribution terminals located in Signal Hill, Carson, Van Nuys, and Colton/Rialto. The RFG Phase 3 project included the following proposed modifications:

- Alkylation Unit (Contactor and Settler, refrigeration unit, exchangers/pumps, and effluent treating vessels)

- C4 Isomerization Unit (vessels, exchangers, pumps, piping, stabilizer, gas scrubber, and drier)
- Hydrotreater Unit No. 2 (Olefins Saturation Reactor, pretreatment reactor, charge pumps, heat exchangers, trays, stripper reboiler, and control valves)
- Hydrotreater Unit No. 4 (diesel side stripper, feed steam preheater, and heat exchangers)
- Hydrotreater Unit No. 1
- Catalytic Reforming Unit No. 2 (sulfur guard reactor)
- Fractionator Changes (HCU Main Fractionator, FCCU Debutanizer, Feed Prep Tower, Depentanizer, Alky Deisobutanizer, Alky Debutanizer and C4 Isomerization Deisobutanizer, and HCU Depropanizer)
- Refinery Storage Tank modifications
- Storage Tanks (at Wilmington, Carson, Signal Hill, Van Nuys, and Colton/Rialto Terminals)
- Pentane Sphere
- No. 2 (debutanizer tower)
- Flare
- Vapor Recovery Systems
- Carson Terminal (included storage tanks modifications and a new truck loading rack)
- Lomita Terminal (included an ethanol railcar unloading facility)
- Signal Hill Terminal (included storage tank and truck loading rack modifications)
- Colton/Rialto Terminal (included storage tank and truck loading rack modifications)
- Van Nuys Terminal (included storage tank and truck loading rack modifications)
- Marine Terminal (included storage tank modifications)
- Wilmington Terminal (included storage tank and truck loading rack modifications)

Associated modifications and additions to storage facilities, pipelines and support facilities were also proposed (SCAQMD, 2001b and SCAQMD 2002). The Shell Refinery is located about one mile north of the Refinery. The Shell terminal in Signal Hill, is located at least eight miles from the Refinery and the Van Nuys and Colton/Rialto Terminals are located over 50 miles from the Refinery. The Van Nuys and Colton/Rialto Terminals are located far enough away that cumulative impacts are not expected to occur.

4) ChevronTexaco

The ChevronTexaco refinery (formerly Chevron) is located at 324 West El Segundo Boulevard in El Segundo, California, about twenty miles northwest of the Refinery, which is a sufficient distance to avoid cumulative localized impacts with the Refinery. The ChevronTexaco refinery proposed to modify existing process operating units, construct and install new equipment, and provide additional ancillary facilities in order to

produce the RFG Phase 3 reformulated gasolines (SCAQMD, 2001c). The proposed new refinery units include:

- Isomax Complex (distillation column, steam reboilers and overhead condensers)
- TAME Plant (steam reboilers and overhead condensers)
- Pentane Storage Sphere
- Pentane Sales (rail loading facilities and railcar storage area)
- TAME Unit (distillation column, reflux pumps, steam reboilers and overhead condensers)
- No. 1 Naphtha hydrotreater (under Option A: one furnace, compressors, exchangers, and pumps. Under Option B: compressors, exchangers, and pumps).
- FCCU Depropanizer
- FCCU Debutanizer
- FCCU Deethanizer (vessels, pumps and exchangers)
- FCCU Propylene Caustic Treating Facilities
- FCCU Butene Caustic Treating Facilities
- FCCU Amine Absorber
- FCCU Relief System (headers)
- FCCU Wet Gas Compressor Insterstage System Upgrades (two exchangers and one vessel)
- Alkylation Plant (two contactors and an acid settler)
- Cooling Tower
- Trim coolers for existing Distillation Columns
- Iso-octene Plant (pressure vessels, exchangers and pumps)
- Two floating roof gasoline component storage tanks

Modifications to existing refinery units are proposed for the following:

- TAME Unit (Depentanizer column)
- No. 1 Naphtha hydrotreater (under Option A: modify one furnace; under Option B: modify two furnaces)
- Deethanizer (column)
- Relief Systems (vapor recovery facilities and flare)
- Main air blower rotor replacement
- Wet Gas Compressor
- Rotor and Gearbox Upgrade
- Recommission Existing Out-of-Service Deisobutanizer
- Retraying Distillation Columns
- MTBE storage tank (change of service)

The proposed project also included modifications to the ChevronTexaco Montebello Terminal (storage tank and loading rack modifications and a new ethanol railcar unloading facility), the Van Nuys Terminal (storage tank and loading rack

modifications), and the Huntington Beach Terminal (storage tank and loading rack modifications) (SCAQMD, 2001c).

Due to the distance separating the ChevronTexaco refinery and terminals from the refinery, no cumulative impacts are expected during the construction or operation of the proposed project.

5) British Petroleum

The British Petroleum (BP) Refinery (formerly ARCO), located at 1801 E. Sepulveda Boulevard in Carson, is approximately three miles north of the Refinery. Because of the location of this Refinery adjacent to the Wilmington area, this project will be included in the cumulative analysis. The BP Carson Terminal is located at 2149 E. Sepulveda Boulevard; the Marine Terminal 2 is located at 1300 Pier B Street within the Port of Long Beach. The proposed RFG Phase 3 project also required changes to BP's other southern California area distribution terminals located in South Gate, Rialto, Long Beach, and Signal Hill (SCAQMD, 2001d). The proposed new refinery units include:

- FCCU Gasoline Fractionation (Option #1) – rerun bottoms splitter (splitter tower, heat exchangers, etc.)

Modifications to existing refinery units included the following:

- Light Hydro Unit (modify heat exchangers; new exchangers, piping pumps and control systems)
- Isomerization Sieve (convert unit to hydrotreater; modifications to heat exchangers, piping and control systems; new reactor, exchangers, pumps and control systems)
- No. 3 Reformer Fractionator and Overhead Condenser (piping and control systems; new pumps)
- Gasoline Fractionation Area (retraying, piping and control systems)
- FCCU Gasoline Fractionation (Option #2) – convert gasoline fractionation area depentanizer to a FCCU bottoms splitter (retraying; new exchangers, flash drum, and product cooling)
- North hydrogen plant (new feed drum, pump and vaporizer)
- MTBE Unit (Option #1) – convert into ISO Octene Unit (modify heat exchangers, piping and control systems; new reactive, steam heater and heat exchangers)
- MTBE Unit (Option #2) – convert into Selective Hydrogenation Unit (modify stripper, reboiler, piping and control systems; new heat exchangers)
- Cat Poly Unit – modify to a Dimerization Unit Hydrotreater reactor system (modify piping and control systems; new pumps, heat exchangers, vessels, piping and control systems)
- Mid-Barrel Unit – modify to a Gasoline Hydrotreater (modify feed and product piping, hydrogen supply system and heat exchanger, controls systems)
- Tank Farm – piping modifications

- Pentane railcar loading facility – modify for pentane off-loading (new repressurizing vaporizer system and two railcar spots)
- Propylene railcar loading facility – modify for butane off- loading.

Associated modifications and additions to distribution storage facilities, pipelines and support facilities also are expected (SCAQMD, 2001d).

6) Paramount Refinery

The Paramount refinery is located in the City of Paramount at 14700 Downey Avenue and is approximately twelve miles northeast of the Refinery, which is a sufficient distance to avoid cumulative impacts with the Refinery. The Paramount refinery is proposing modifications that will allow it to produce gasoline and diesel fuels for California markets (SCAQMD, 2003). The refinery is proposing to install the following equipment.

- Naphtha Splitter,
- Benzene Saturation and Isomerization Unit,
- Light Naphtha rundown chiller,
- Ethanol Unloading and Blending facilities, and
- Pressure Swing Adsorption Unit.

Additionally, the Refinery proposes to: convert its existing Light Naphtha Stabilizer from a fired reboiler to a steam reboiler; modify an HDS unit to improve the quality of Reformer feed; modify its existing butane loading and unloading rack to accommodate pentane loading; change the service of two existing internal floating roof storage tanks; and modify its existing gasoline blender to handle the additional blendstocks needed to produce RFG. Construction of this project is expected to begin in 2004.

C. OTHER RELATED PROJECTS

Other proposed projects within the general Wilmington/Carson/Long Beach area are described below.

Port of Los Angeles/Port of Long Beach 2020 Plan

Development at the Port of Los Angeles and the Port of Long Beach is projected to double by the year 2020. The 2020 Plan is a long-range, joint-planning effort of the Port of Los Angeles, the Port of Long Beach, and the U.S. Army Corps of Engineers to meet expected trade needs of the region and the nation through the year 2020. It is a phased program of existing facility optimization, dredging, landfilling, and facilities

construction, which in total will expand the port complex by 2,400 acres of new land and 600 acres of development on existing land. (USACE, 1990). The Alameda Corridor Transportation Authority ("ACTA") improvements are considered mitigation measures for the adverse effects of the projected growth in port activity on regional rail and truck transportation systems. See below for further discussion of the ACTA projects.

7) **Port of Long Beach**

The Port of Long Beach is planning a variety of improvements as supported by the Port of Long Beach Facilities Master Plan (FMP). The FMP describes growth strategies for the port through the year 2020. The port plans to rebuild existing facilities and add the equivalent of 1,100 acres of new container cargo space and 400 acres of other types of terminal space to meet future needs. Some of these objectives are detailed in the Mega-Terminal Plan (Port of Long Beach, 2003a) which calls for the consolidation and redevelopment of seven of the eight existing container terminals into five large terminals. Several near-term projects at the Port of Long Beach are listed below.

Construction of a new 389-acre Pier T marine terminal: Pier T was formerly the Long Beach Naval Station. Phase I of this project, included a 3,500 foot wharf and channel deepening of the West Basin. Called the port's first "mega-terminal", it was completed in August of 2002. Phase II will include the completion of an additional 1,300-foot concrete wharf in the fourth quarter of 2004 (Port of Long Beach, 2003b).

Construction of a new liquid bulk terminal on Pier T: In May of 2003, the Long Beach Board of Harbor Commissioners approved a Letter of Intent for a subsidiary of Mitsubishi Corporation to develop the liquefied natural gas (LNG) terminal to service larger vessels, on twenty-seven acres of land at Pier T. Most of the natural gas will be distributed in southern California. The Federal Energy Regulation Commission will conduct a two-year study of the impact on the environment (Port of Long Beach, 2003c). The impacts related to this project are still being evaluated.

Construction of a new 198-acre Pier S marine terminal: The U.S. Army Corps of Engineers has issued a Notice of Intent to Prepare a Draft Environmental Impact Statement (EIS) for the Pier S Terminal Project. The development of Pier S would result in a 160-acre marine container terminal and include dredging wharf construction and container cranes, container yard, terminal buildings and truck gates, and an intermodal rail yard. The Draft EIS is expected to be available in Spring 2004. (U.S. ACE, 2003).

Consolidation of existing Piers G and J into one of the five mega-terminals: This project includes redeveloping a 54-acre landfill at the consolidated Pier, dredging, and expanding the secondary gate. Phase 1 of the four-phase improvement project included completion in March of 2003 of the $10 million Secondary Gate. Phase II is underway and includes construction of a $42 million

wharf scheduled for completion in early 2004 (Parsons Brinckerhoff, 2003). The project is expected to create a 300-acre marine terminal when finished.

Consolidation of existing Piers D and E: Consolidation and redevelopment of the existing Piers D and E marine terminals would create 45 acres of new land and relocate adjacent tenants. This will include dredging, wharf construction, and construction of an intermodal rail yard (Port of Long Beach, 2003).

Consolidation of existing Pier A: Redevelop oil field property and relocate adjacent tenants.

Consolidation of existing Pier J: The Port of Long Beach is proposing to develop 115 acres of landfill on Pier J to develop a marine terminal of up to 385 acres by consolidating and expanding the existing Pacific Container and Maersk Container terminals. Approximately 270 acres is existing land and the project would develop an additional 115 acres. To address concerns raised about air quality and cumulative impacts, the Port of Long Beach and Army Corps of Engineers circulated an updated Draft EIS/EIR on the Pier J Terminal for public review and comments (U.S. Army Corps of Engineers, 2003b).

The Refinery is located adjacent to the Port of Long Beach so that all the port-related projects will be included in the cumulative analysis, to the extent that data are available.

8) Port of Los Angeles

The Port of Los Angeles is located in San Pedro Bay approximately five miles southwest of the Port of Long Beach. The Port of Los Angeles also anticipates increased growth in cargo volumes and the supporting infrastructure of ships and terminals of approximately ten percent annually in the next ten years. The Port of Los Angeles initiated the Port Master Plan to meet the demand, in addition to various beautification projects designed to make the area more attractive to visitors, residents and businesses. The following projects will allow the port to meet its goals.

Channel Deepening

The Port of Los Angeles is planning a channel deepening project. In 1992, the United States Army Corps of Engineers (USACE) and the Los Angeles Harbor Department (LAHD) approved the Deep Draft Navigation Improvements Project EIS/EIR to optimize navigation channels in the Outer Los Angeles Harbor. Included in that planning effort was an assumption that in order to accommodate the anticipated cargo through San Pedro Bay, not only new land would be required, but also navigation channels and other existing facilities would need to be optimized (USACE, 2000a).

In January 1998, the port approved the Channel Deepening Project EIR that addressed deepening the main channel, associated channels and turning basins,

and disposal of the dredged channel sediments. Phase I of the project was completed in 2002 and mainly included the construction activities at Pier 400 outlined in the paragraph below. Phase II's focus is on dredging activities, this started in January of 2003 and is scheduled to be completed in August of 2004. (Marine Exchange of Southern California, 2002).

Pier 400

Pier 400 makes up a part of the southern terminus of the Alameda Corridor which is described in detail below. Phase I included construction of a submerged material storage site and a fill area and was completed in August 2002. Phase II, due to be completed in May 2004, is currently underway. Phase II general plan calls for development of backlands, wharves and terminal buildings, widening of the channel, a four lane highway, and storage facilities (Port of Los Angeles, 2003a).

China Shipping Line Berths 97-109

Berths 97-109 are located in the northwestern portion of the Port of Los Angeles. The proposal calls for construction of a new container complex to be operated by the China Shipping Holding Company. Phase I will reassess the completion of several elements of the project plan, including a new wharf at Berth 100, a rock dike construction and channel deepening. The uncompleted elements of Phase I will cover construction of container terminals, a bridge and terminal buildings and structures. Phase II, scheduled for 2005 will construct and operate a new wharf at Berth 102 and a new 376 linear foot extension at the southern end of the wharf at Berth 100. A new container terminal will be developed on backlands. A rock dike, concrete piles, and a second bridge to facilitate cargo movement between the terminals will also be constructed. Phase III is scheduled for 2010 completion and will include the expansion of the backland container storage capacity by an additional twenty acres by redeveloping the Catalina Terminal area and the former Todd Shipyard (U.S. Army Corp of Engineers, 2003).

Beautification Projects

The Port of Los Angeles has several on-going programs to make the port area more attractive to local residents, tourists and businesses.

- **The Urban Forest** program focuses on the shoreline adjacent to Pier 400. It includes extensive landscaping and tree planting.

- **Wilmington Window on the Water.** In August 2003, the Los Angeles Board of Harbor Commission, voted to establish a "Wilmington Window on the Water" master plan in order to improve access to the waterfront. Designated as "Planning Area 4", it is bounded on the north and east by an

existing rail line and on the west by Fries Avenue and on the south by Slip 5. This plan calls for removal of shipping containers and steel tanks in the area, or recommendations from the nearby community for alternative uses of the tanks and containers. General beautification activities are also planned which includes landscaping and streetscaping. The tentative kick off date for planning and design is scheduled for mid-2004. (Personal Communication, Tony Gioiello, Port of Los Angeles).

- **San Pedro Waterfront Promenade.** In an effort to help the community recapture the "blighted" waterfront area of San Pedro, a California State plan has been established to develop the area covering all property east of Harbor Boulevard to the edge of the Main Channel and south of Fire Station No. 112 to the south side of the Vincent Thomas Bridge. The goals are to improve public access to the waterfront, provide connections to the existing Cruise Center, Ports o'Call Village, residential areas, and the old downtown area of San Pedro. These goals will be accomplished by demolishing old buildings and removing vestiges of the heavy industrial zoning that has dominated the area. Phase I of the project begins at the Vincent Thomas Bridge and is scheduled to start in Spring of 2004. The project will span four to five years. (Port of Los Angeles, 2003b, and Personal Communication, Tony Gioiello, Port of Los Angeles).

- **Cabrillo Marina Phase II.** Plans are underway to deepen and expand the Cabrillo Marina in San Pedro. This project is currently in its design phase and includes minor dredging of the Marina, shoreline reconfiguration, landfilling, site improvements and construction of new boat slips. The project is anticipated to take two years to complete. (Personal Communication, Tony Gioiello, Port of Los Angeles).

In general, many of the 2020 improvements will take place within the harbor area and will include dredge and fill activities, excavation of the existing shoreline, disposal of excavated material, and deepening of the Cerritos Channel. Even though these activities are within a short distance of the Refinery, the existing timeline for construction related to some of the projects will not coincide with the Refinery's proposed project, so that cumulative localized impacts are not expected. The Refinery is located adjacent to the Port of Los Angeles so that all the port-related projects will be included in the cumulative analysis, to the extent that data are available.

9) Alameda Corridor Transportation Authority (ACTA)

Two additional master planning documents have been developed to address traffic and rail transportation issues related to the projects of the Facilities Master Plan. Explicit in these plans are issues related to truck and vehicular traffic anticipated in future port development. Currently, the regional, transportation-traffic related projects (which are

discussed in detail below), are included as mitigation measures for the 2020 Plan and would occur in the vicinity of the Refinery.

The Alameda Corridor Transportation Authority is an inter-agency, inter-governmental commission that is the lead agency for a number of projects. These projects are designed to improve highway and railroad access to the Ports of Los Angeles and Long Beach by making a substantial number of improvements along Alameda Street between the harbor area and downtown Los Angeles to consolidate truck and railroad traffic. ACTA has prepared an EIR that was finalized in 1992 (ACTA, 1992).

In general, Corridor projects include consolidation of the routes currently used by three different common rail carriers; widening Alameda Street to six lanes with left turn pockets and new signalization; grade separation of cross traffic at numerous street intersections; grade separation of train from vehicular traffic; and construction of sound barriers. Traffic conflicts at approximately 200 street-level railroad crossings have been or will be eliminated as a direct result of this program, allowing trains to travel more quickly and easing traffic congestion. The corridor generally parallels Alameda Street along most of the route (ACTA, 1992). Construction of the Alameda Corridor is largely complete. However, several projects are still under construction, or proposed for construction, and because of their location in relation to the Refinery, are included in the cumulative analysis to the extent that data are available.

- **Pacific Coast Highway Grade Separation:**

  A grade separation is currently under construction at Pacific Coast Highway (PCH) and Alameda Street. The project includes constructing an elevated bridge along PCH so that traffic would be routed over the railroad tracks at Alameda. PCH would be elevated from west of Alameda to about the Dominguez Channel (John Korous, ACTA, Personal Communication, November 2000). This project is under the jurisdiction of Caltrans. The lead contractor was selected and the project is currently underway with a completion date set for Summer 2004. Construction will require the closure of PCH between the Terminal Island Freeway and Coil Avenue starting in May 2003 and lasting until Spring 2004. Mitigation measures to minimize the inconveniences to the public include enforcement of rules that prohibit commercial trucks from using residential streets during construction, adding and sychronizing traffic signals and turn lanes and re-striping roads on the detour routes (ACTA, 2003b).

- **Street Improvements by Other Agencies:**

  ACTA and Caltrans are studying the feasibility of a dedicated expressway for truck traffic in and out of the port area, from the Commodore Heim Bridge to Alameda Street near PCH. This project is currently in its conceptual stage and has not been approved for construction (ACTA, 2003c).

10) City of Long Beach

The City of Long Beach has several projects planned for the near future.

- **Pike at Rainbow Harbor**

  This project is located on the Rainbow Harbor waterfront between the Long Beach Convention Center and the Long Beach Aquarium of the Pacific. Construction is nearly completed. The development features 370,000 square feet of waterfront restaurants and entertainment facilities. Distinguishing features will include a pedestrian bridge over Shoreline Drive and a turn-of-the-century carosel. This project is located four miles southeast of the Refinery (City of Long Beach, 2003).

- **CityPlace**

  CityPlace, an urban retail development in the heart of downtown Long Beach, covers eight city blocks and is bound by Third Street to the south, Sixth Street to the north, Pine Avenue to the west and Elm Avenue to the east. It covers 450,000 square feet with Phase I completed at the end of 2002. It consists of major department stores like Walmart and Ross Dress for Less, Albertsons, and Sav-On. Phase II includes 120 residential condominiums and 221 apartment rental units scheduled for completion in 2003. This project is located five miles east of the Refinery (City of Long Beach, 2003).

- **PacificCenter**

  This project is a mixed-use development of PacifiCenter by Boeing Realty on Lakewood Boulevard and the California State Long Beach Technology Park on the City's Westside. PacifiCenter at Long Beach will transform unused Boeing aircraft manufacturing buildings into a dynamic mixed-use community of offices, commercial development, neighborhood retail, a hotel and residential neighborhoods.

  The 260-acres of PacifiCenter, mixed-use development will offer a location with easy accessibility to Orange County and Los Angeles, and California State University at Long Beach's 32-acre parcel on former Navy-housing property is designed as a smart technology / light industrial park. An EIR has been prepared for this project. Anticipated occupancy date for the complex is 2005. This project is twelve miles north of the Refinery, so that no cumulative impacts are anticipated because of the distance from the Refinery (PacificCenter, 2003).

- **Second Street Bridge Seismic Retrofitting**

  The Los Angeles Department of Public Works is overseeing the seismic retrofitting of Second Street over Alamitos Bay. This project is eight miles east of the Refinery; it was started in February of 2003 and major construction activities have been completed. (LADPW, 2004) (Personal Communication, Neil Munaweera, Los Angeles County Department of Public Works).

Field Code Changed

- **The Long Beach Airport Runway**, which includes the rehabilitation of several critical taxiways, the grading and stabilizing of certain areas to comply with FAA standards, the construction of blast pads, and installation of lighting control systems (City of Long Beach, 2004). This project is located twelve miles northeast of the Refinery.

- **Renovations to the Public Safety Building and Fire Station No.1.** This project is located in Belmont Shore District of Long Beach, four miles east of the Refinery and includes interior demolition of several floors, asbestos abatement, and extensive reconstruction (City of Long Beach, 2004).

Other projects within five to ten miles east of the Refinery include street improvements at Ocean Boulevard between Bay Shore Aveneue and 72nd Place, Long Beach Boulevard between Ellis Street and Artesia Boulevard, Long Beach Boulevard between 1st Street and 10th Street, Walnut Street between 3rd Street and Pacific Coast Highway. Construction of a Police Substation Development is planned in North Long Beach. Improvements are also planned for the Belmont Pier. The projects currently being developed by the City of Long Beach are located a sufficient distance from the Refinery (at least four miles), so that no cumulative impacts are anticipated.

11) **City of Carson**

- **Los Angeles MetroMall Site**

  This site is located approximately twelve miles north of the Refinery in the City of Carson at Del Amo and the 405 Freeway. It is considered to be premium real estate because of its size (157 acres) and proximity to the I-405 and I-110 Freeways. In 1987 and 1978 the City of Carson marketed the site as a possible stadium for a couple of football teams based in the Los Angeles area. In 1999 the National Football League (NFL) made a bid for the property but did not follow through with the transaction. In 2002 GMS Realty of Carlsbad made an offer to purchase the property with the goal of constructing a 1.3 million square-foot retail center. GMS Realty is currently in negotiations with Los Angeles MetroMall, the pension-owned firm who holds title to the property, to acquire the property for resale to the NFL. The site was previously a heavily contaminated landfill on the U.S.EPA's Superfund List. Remediation activities are currently ongoing. This project is located a

sufficient distance from the Refinery to avoid cumulative localized impacts with the proposed project (Los Angeles Times, 2003 and Personal Communication, Sheri Repp Loadsman, City of Carson).

- **Other Development Projects**

The City of Carson has many other on-going development projects, all within seven to twelve miles north of the Refinery. The following are examples of the larger construction projects (City of Carson, 2003). These projects are located a sufficient distance from the Refinery to avoid cumulative localized impacts with the proposed project.

- At the auto-row located on 223rd Street, several auto dealers, Superior Nissan, Mazda and Honda are constructing new car dealership facilities.
- At the corner of Figueroa and Torrance Boulevard, Carson Town Center, a 56 acre retail, restaurant, and industrial use project is under construction.
- Dominguez Technology Center located east of Cal State Dominguez Hills, covers 288 acres and is in its final phase of development with fifteen buildings in various stages of construction.

The projects currently being developed by the City of Carson are located a sufficient distance from the Refinery (at least four miles), so that no cumulative impacts are anticipated.

D. AIR QUALITY

CONSTRUCTION IMPACTS

Air quality impacts due to construction at the refineries for their RFG Phase 3 projects are expected to be temporarily significant since the SCAQMD thresholds will be exceeded. Construction for most of the RFG projects have been completed since the CARB Phase 3 gasoline is required to be sold by January 1, 2004. The construction phase of the proposed project will exceed the significance thresholds for CO, VOC and NOx (see Chapter 4, Table 4-3). Therefore, the air quality impacts associated with construction activities are considered significant. A large portion of the total emissions is associated with on-site construction equipment and mobile sources (trucks and worker vehicles). Mitigation measures to reduce air emissions associated with construction activities are necessary primarily to control emissions from heavy construction equipment and worker travel.

A number of port projects are in various stages of construction. In order to provide an estimate of cumulative construction emissions, emission estimates provided in the Port 2020 plan EIR were used (USACE, 1990). The Port 2020 Plan provided estimates of

construction activities at the Ports of Los Angeles and Long Beach through the year 2020. Current construction activities within the ports are related to implementation of the 2020 Plan, thus, providing an estimate of the current construction impacts. The worst-case construction emissions assumed that there is simultaneous dredging and grading in for two major projects, one in the Port of Los Angeles and one in the Port of Long Beach (USACE, 1990). Construction air quality impacts would be significant (USACE, 1990).

There will be construction emissions associated with other projects in the area including the Alameda Corridor projects (e.g., the construction of the Pacific Coast Highway overpass), but these emissions were not estimated and sufficient information does not exist to estimate these emissions. Therefore, additional adverse air quality impacts may occur due to construction activities.

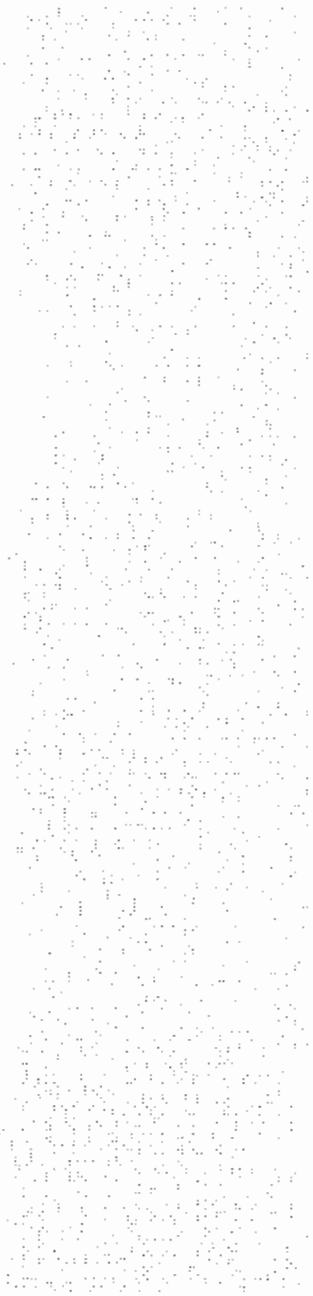
Table 5-1 summarizes the available construction emissions of the related projects. On a cumulative basis, construction emissions would exceed the thresholds established by the SCAQMD assuming they occur at the same time. Therefore, the cumulative air quality construction impacts are considered significant.

TABLE 5-1

AVAILABLE CUMULATIVE PROJECT
PEAK DAY CONSTRUCTION EMISSIONS
(lbs/day)[1]

ACTIVITY	CO	VOC	NOx	SOx	PM10
Ultramar Inc. – Valero Wilmington Refinery Alkylation Improvement Project[2]	*997* ~~995~~	*141* ~~140~~	*558* ~~467~~	*45* ~~42~~	*183* ~~158~~
Paramount Clean Fuels Project[3]	308	32	76	6	118
Port Projects[4]	4,367	--	19,905	331	1,349
Cumulative Emissions	*5,672* ~~5,670~~	*173* ~~172~~	*20,539* ~~20,448~~	*382* ~~379~~	*1,650* ~~1,620~~
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**

(1) Includes only those projects where public information is available.
(2) See Table 4-9
(3) SCAQMD, 2003
(4) USACE, 1990 (Scenario 4, assumes 8 hours of construction activities per day).



OPERATIONAL IMPACTS - CRITERIA POLLUTANTS

During operation, the transportation improvement projects and the various refinery CARB Phase 3 projects are all expected to reduce overall air emissions. However, there are localized increases for certain air pollutants (see Table 5-2). Direct stationary emission sources are generally subject to regulation. The emissions associated with the proposed project modifications, are shown in Chapter 4, Table 4-5.

The operation of the Alkylation Improvement Project will exceed SCAQMD thresholds for VOC and PM10, so air quality impacts are significant. The significance thresholds for the CO, NOx, and SOx for the Proposed Alkylation Improvement Project will not be exceeded.

TABLE 5-2

CUMULATIVE PROJECT
STATIONARY AND INDIRECT SOURCES
OPERATIONAL EMISSIONS
(lbs/day)[1]

SOURCE	CO	VOC	NOx	SOx	PM10
Ultramar Inc. – Valero Wilmington Refinery Alkylation Improvement Project[2]	483	275	202	190	268
ConocoPhillips Ethanol Import & Dist. Project	9	-54[1]	10	--	1
ConocoPhillips CARB RFG Phase 3	136	22	514	402	43
BP ARCO CARB Phase 3 Project	42	86	49	0	57
Shell CARB Phase 3 Project	2,213	482	2,030	71	57
ExxonMobil CARB Phase 3 Project	29	288	138	12	103
ChevronTexaco CARB Phase 3 Project	393	347	3,103	2,498	843
Paramount Clean Fuels Project	104	66	52	1	69
Port Projects[3]	12,425	NR	60,379	23,299	5,129
Cumulative Emissions	**15,834**	**1,512**	**66,477**	**26,473**	**6,570**
SCAQMD Thresholds	550	55	55	150	150
Significant (?)	YES	YES	YES	YES	YES

(1) Negative numbers represent emission reductions.
(2) See Table 4-5, includes both stationary and indirect sources.
(3) USACE, 1990 NR = Not Reported.

Implementation of the Los Angeles and Long Beach Harbors 2020 improvements will allow for doubling of cargo handling through the port, resulting in a significant increase in truck and rail traffic in the vicinity of the port. Construction of the Alameda Corridor improvements is intended to mitigate the impact of the increase in port-related traffic. The improved efficiency of the consolidated railway along the Alameda Corridor is expected to reduce emissions of locomotive exhaust over the No Project alternative. Elimination of railway/roadway intersections through consolidation

of rail traffic and construction of grade separations will reduce motor vehicle idling emissions and improve the efficiency of truck transport.

The CARB Phase 3 projects at all of the local refineries will increase the criteria pollutants emitted from the refineries. It is expected that, due to the large number of changes at the refineries that are concentrated in the Wilmington/Carson areas, the local operational impacts will be significant.

On a regional basis, the CARB Phase 3 project fuels produced by the refineries are expected to result in a reduction in emissions from mobile sources that utilize the reformulated fuels. Table 5-3 summarizes the expected statewide emission decreases from the mobile sources which use the reformulated fuels.

TABLE 5-3

CARB PHASE 3 EXPECTED STATEWIDE EMISSION CHANGES
(tons per day)

POLLUTANT	1998 Average In-Use Fuel		Future Representative In-Use Fuel Based on Flat Limits		Difference
	2005	2012	2005	2010	2005
NOx	2.1	1.7	-16.6	-13.6	-18.7
Exhaust Hydrocarbons	-16.0	-9.3	-16.5	-9.6	-0.5
Evaporative Hydrocarbons	-14.4	-11.3	-14.4	-11.3	0
Total Hydrocarbons	-30.4	-20.6	-30.9	-20.9	-0.5

Negative numbers indicate emission reductions
Source: CARB, 1999

Air quality impacts associated with cumulative projects are considered significant for CO, VOCs, NO_x, SO_x and PM10, since SCAQMD mass emissions thresholds are expected to be exceeded. Although operations will exceed the VOC significance threshold, there will be large regional benefits from the use of the reformulated fuels by mobile sources. Emissions of mobile sources will be reduced for NOx and VOCs counteracting the emissions being produced by the refineries and providing a large environmental benefit. The emission reductions are expected to be far greater than the direct cumulative emissions from the refineries. In addition, the CARB Phase 3 compliant fuels are expected to result in a 7.2 percent reduction in potency-weighted emissions of toxic air contaminants from mobile sources using the fuel providing additional emissions benefits.

OPERATIONAL IMPACTS - TOXIC AIR CONTAMINANTS

In order to determine the cumulative impacts of toxic air contaminants, the emissions from the implementation of the proposed project, along with modifications made since the baseline scenario, were analyzed. This is referred to as the post-project scenario and includes all the existing emission sources at the Refinery plus the proposed modified emission sources associated with the Alkylation Improvement Project. In addition, the potential cumulative impacts associated with the overlap of emissions from other refineries were addressed in the analysis provided below.

Ultramar Inc. – Valero Wilmington Post-Project Scenario

A comprehensive air dispersion modeling analysis and an HRA were performed for the projected refinery emissions following completion of the proposed project. This section discusses the results of the air dispersion modeling and health risk assessment. The procedures used to complete the projected HRA are the same as those used to complete the project specific HRA (see Chapter 4, Air Quality). The HRA is contained in Volume II, which should be consulted for further details.

Hazard Identification

The list of TACs evaluated in the post-project scenario are the same as those identified in the baseline assessment (see Table 3-6).

Emission Estimations and Sources

The estimated mass emissions of toxic air contaminants were based on a combination of the most recent AB2588 Air Toxics Inventory Report and engineering estimates that reflect operation of the proposed project. For further details on the emission estimates see Chapter 4, Air Quality and Volume II.

HRA Methodology

The source parameters for the post-project scenario were used as input to the ISCST3 model to determine unitized ground-level concentrations. The output from the ISCST3 model was combined with estimated emissions for each TAC in the ACE2588 model. The ACE2588 model calculated the health risks associated with the post-project scenario. The ISCST3 model used the same assumptions as the baseline model for receptor grids, meteorological data, and so forth. The ACE2588 model used the same assumptions for the post-project scenario as the baseline model for multi-pathway analysis, pathways to exposures, and default exposure assumptions. The model was used to identify the MEIW and MEIR for the post-project scenario. The ACE2588 model calculated both carcinogenic and non-carcinogenic health impacts.

Post-Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Worker

The predicted maximum cancer risk at the MEIW area due to exposure to projected post-project emissions was calculated to be 1.18×10^{-6} or about one per million. The location of the MEIW is the same at that for the baseline scenario and is shown in Figure 3-3. Table 5-4 shows major source contributions to the MEIW. About 19 percent of the cancer risk at the MEIW are attributed to emissions from Source No. 79, which includes the fugitive emissions from the southern portion of Unit 94 – Tank Farm. Other sources that contribute to the cancer risk include about 12 percent from Source No. 14 (the Hydrotreater heater stack) and 11 percent from Source No. 82 (fugitive emissions from the northern and eastern portions of Unit 94 – Tank Farm). Emissions of hexavalent chromium are responsible for about 47 percent of the MEIW risk, followed by PAHs (34 percent) and benzene (10 percent) (see Table 5-5).

TABLE 5-4

EMISSION SOURCE CONTRIBUTION TO CANCER RISK FOR POST-PROJECT SCENARIO MEIW

Source No.	Source Name	Percent Contribution
79	FUG 94-2 South	18.96
14	Hydrotreater Heater Stack	12.32
82	FUG 94-3 North East Area	11.03
17	Boiler	5.76
3	Vacuum Heater	5.48
16	Boiler	4.79
2	Crude Heater	4.60
1	Crude Heater	3.91
77	FUG 94-1 West Area	3.48
6	Coke Heater	2.59
12	Unibon Heater	2.38
68	FUG 10,20,30	2.25
4	Vacuum Heater	2.22
13	Alkylation Heater	1.97
11	Unibon Heater	1.64
73	FUG 81	1.40
83	FUG 50,61,63,64,65,66,69	1.36

TABLE 5-5

TAC CONTRIBUTION TO CANCER RISK FOR POST-PROJECT SCENARIO MEIW

Toxic Air Contaminant	Cancer Risk	Percent Contribution
Acetaldehyde	2.10E-08	1.78
Aniline	8.49E-10	0.07
Arsenic	2.49E-08	2.11
Benzene	1.22E-07	10.38
Beryllium	3.67E-10	0.03
1,3-Butadiene	1.47E-08	1.25
Cadmium	5.78E-09	0.49
Chromium (Hex.)	5.53E-07	46.90
Dibenzochloropropane	1.61E-11	<0.01
Formaldehyde	2.14E-08	1.81
Lead	3.36E-10	0.03
Nickel	1.27E-08	1.08
Perchloroethylene	1.22E-09	0.10
PAHs	4.00E-07	33.96
Styrene	6.35E-11	0.01
1,1,2,2-Tetrachloroethane	8.99E-14	<0.01
Total	**1.18E-06**	**100**

Maximum Exposed Individual Resident

The predicted maximum cancer risk at the MEIR area due to exposure to projected post-project emissions was calculated to be 3.97×10^{-6} or about four per million. The location of the MEIR is the same as the baseline assessment and is shown in Figure 3-3. Table 5-6 shows major source contributions to the MEIR. About 38 percent of the cancer risk at the MEIR is attributed to emissions from Source No. 14, (Hydrotreater Heaters Stack). Fugitive emissions from the southern portion of Unit 94 contributed seven percent, and Crude Heater No. 2 contributed about six percent. Emissions of hexavalent chromium are responsible for about 71 percent of the MEIR risk, followed by PAHs (13 percent), and benzene (six percent). Exposure via the inhalation pathway (85 percent) accounted for most of the cancer risk, followed by ingestion of homegrown produce (ten percent), and soil ingestion (four percent) (see Table 5-7).

TABLE 5-6

EMISSION SOURCE CONTRIBUTION TO CANCER RISK FOR POST-PROJECT SCENARIO MEIR

Source No.	Source Name	Percent Contribution
14	Hydrotreater Heaters Stack	38.19
79	FUG 94-2 South	6.94
2	Crude Heater	5.68
1	Crude Heater	5.09
19	FCC Reaction/Separation Heater & Exhaust	4.45
9	Platformer Heater	4.00
12	Unibon Heater	3.39
82	FUG 94-3 North East Area	3.18
6	Coke Heater	3.01
3	Vacuum Heater	2.70
13	Alkylation Heater	2.29
11	Unibon Heater	2.01
17	Boiler	1.70
77	FUG 94-1 West Area	1.66
16	Boiler	1.62
92	New Truck Loading Rack in Area 22	1.48
68	FUG 10,20,30	1.23
10	Platformer Heater	1.02

The one per million cancer risk isopleth for the post-project scenario is shown in Figure 5-4. This isopleth was calculated based on the same assumptions used to calculate the residential cancer risk including a 70-year exposure and multi-pathway assumptions.

Cancer Burden

The cancer burden for the area surrounding the Refinery was calculated using the same assumptions as the baseline cancer burden calculations. The total excess cancer burden within the area of influence was predicted to be 0.35 and 0.018 for the residential and occupational populations, respectively. (See Volume II for further details.) The combined excess cancer risk was predicted to be approximately 0.368.

TABLE 5-7

TAC CONTRIBUTION TO CANCER RISK FOR POST-PROJECT SCENARIO MEIR

Toxic Air Contaminant	Cancer Risk	Percent Contribution
Acetaldehyde	6.96E-08	1.75
Aniline	1.58E-09	0.04
Arsenic	1.47E-07	3.70
Benzene	2.44E-07	6.14
Beryllium	1.24E-09	0.03
1,3-Butadiene	2.60E-08	0.66
Cadmium	2.36E-08	0.59
Chromium (Hex.)	2.83E-06	71.28
1,2-Dibromo-3-chloropropane	7.73E-12	0.00
Formaldehyde	5.71E-08	1.44
Lead	1.42E-09	0.04
Nickel	3.43E-08	0.86
Perchloroethylene	1.94E-09	0.05
PAHs	5.32E-07	13.40
Styrene	1.48E-10	0.00
1,1,2,2-Tetrachloroethane	5.23E-04	0.00
Total	**3.97E-06**	**100**

Sensitive Receptors

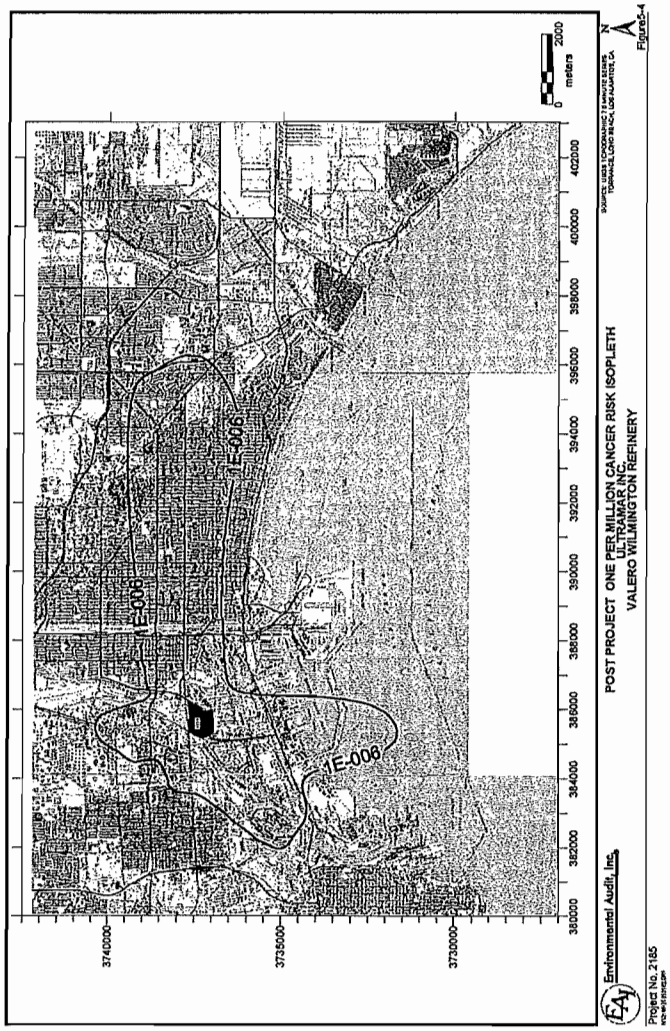
The maximum cancer risk to a sensitive receptor was estimated to be 3.55×10^{-6} or approximately four per million at the Edison School. This risk estimate is overly conservative as it is based on a 70-year continuous exposure period.

Post-Project HRA Results - Non-Carcinogenic Health Impacts

Acute Hazard Index

The highest acute hazard index for any single toxicological endpoint was estimated to be 0.796, at an occupational receptor, for the respiratory system, primarily due to exposure to acrolein (67 percent), (see Table 5-8).

Figure 5-3 goes here


1E-006
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meters
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Figure5-4
POST PROJECT ONE PER MILLION CANCER RISK ISOPLETH
ULTRAMAR INC.
VALERO WILMINGTON REFINERY
Environmental Audit, Inc.
Project No. 2185
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382000
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386000
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394000
396000
398000
400000
402000
3740000
3735000
3730000

TABLE 5-9

MAXIMUM CHRONIC HAZARD INDEX BY POLLUTANT
FOR THE POST-PROJECT SCENARIO

CHEMICAL	REL (ug/m^3)	TARGET ENDPOINTS							
		CV	CNS	IMMUN	KIDN	LIVER	REPRO	RESP	SKIN
Acetaldehyde	9.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-03	7.16E-03	0.00E+00
Acrolein	6.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-04	4.10E-04	4.10E-04
Ammonia	2.00E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.14E-03	6.14E-03	0.00E+00
Aniline	1.00E+00	0.00E+00	0.00E+00	0.00E+00	6.11E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	3.00E-02	1.25E-03	1.25E-03	0.00E+00	0.00E+00	0.00E+00	9.32E-04	9.32E-04	0.00E+00
Benzene	6.00E+01	0.00E+00	1.18E-03	0.00E+00	1.18E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beryllium	7.00E-03	0.00E+00	0.00E+00	1.57E-04	0.00E+00	0.00E+00	1.55E-04	1.55E-04	0.00E+00
Butadiene-1,3	2.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	2.00E-02	0.00E+00	0.00E+00	0.00E+00	5.54E-04	0.00E+00	5.54E-04	5.54E-04	0.00E+00
Carbon disulfide	7.00E+02	0.00E+00	2.11E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chlorobenzene	1.00E+03	0.00E+00	0.00E+00	0.00E+00	3.64E-07	3.64E-07	0.00E+00	0.00E+00	0.00E+00
Chromium (hex.)	2.00E-01	0.00E+00	0.00E+00	0.00E+00	1.56E-04	1.56E-04	0.00E+00	0.00E+00	0.00E+00
Copper	2.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.85E-05	2.85E-05	0.00E+00
Cresols	6.00E+02	0.00E+00	1.97E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dibromo3chloropropane	2.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-07	1.81E-07	1.81E-07
Ethyl Benzene	2.00E+03	0.00E+00	0.00E+00	2.36E-05	2.36E-05	2.36E-05	0.00E+00	0.00E+00	0.00E+00
Formaldehyde	3.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.45E-03	8.45E-03	8.45E-03
Hexane	7.00E+03	0.00E+00	5.53E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hydrochloric acid	9.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-05	1.50E-05	0.00E+00
Hydrogen cyanide	9.00E+00	6.01E-04	6.01E-04	6.01E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hydrogen fluoride	3.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.63E-04	6.63E-04	6.63E-04
Hydrogen sulfide	1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.13E-02	4.13E-02	0.00E+00
Manganese	2.00E-01	0.00E+00	7.72E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	9.00E-02	0.00E+00	5.43E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methyl chloroform	1.00E+03	0.00E+00	1.57E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methyl Ethyl Ketone	1.00E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methyl methacrylate	9.80E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-08	1.16E-08	0.00E+00
MTBE	8.00E+03	0.00E+00	0.00E+00	0.00E+00	1.36E-05	1.36E-05	0.00E+00	0.00E+00	1.36E-05
Naphthalene	9.00E+00	1.56E-03	0.00E+00	0.00E+00	1.56E-03	0.00E+00	1.56E-03	1.56E-03	0.00E+00
Nickel	5.00E-02	5.71E-03	0.00E+00	0.00E+00	5.71E-03	0.00E+00	5.71E-03	5.71E-03	0.00E+00
Perchloroethylene	3.50E+01	0.00E+00	0.00E+00	0.00E+00	1.50E-04	1.50E-04	0.00E+00	0.00E+00	0.00E+00
Phenol	2.00E+02	6.82E-05	6.82E-05	0.00E+00	6.82E-05	6.82E-05	0.00E+00	0.00E+00	0.00E+00
Propylene	3.00E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.37E-05	5.37E-05	0.00E+00
Selenium	2.00E+01	1.57E-06	1.57E-06	0.00E+00	0.00E+00	1.57E-06	0.00E+00	0.00E+00	0.00E+00
Styrene	9.00E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-06	0.00E+00	0.00E+00	0.00E+00
Toluene	3.00E+02	0.00E+00	8.30E-04	0.00E+00	0.00E+00	0.00E+00	8.30E-04	8.30E-04	0.00E+00
Xylene	7.00E+02	0.00E+00	4.12E-04	0.00E+00	0.00E+00	0.00E+00	4.12E-04	4.12E-04	0.00E+00
TOTAL		9.18E-03	5.94E-03	7.82E-04	1.55E-02	4.15E-04	7.44E-02	7.44E-02	9.54E-03

Liver target endpoint had hazard indices of zero and is omitted from the table. CV - Cardiovascular; CNS – Central nervous system; IMM – Immune system; REP – Reproductive system; RESP – Respiratory system; EYE – Eyes, KIDN – Kidney.