

# VALERO BENICIA CRUDE BY RAIL PROJECT

Draft Environmental Impact Report  
SCH # 2013052074  
Use Permit Application 12PLN-00063

Prepared for  
City of Benicia

June 2014





# VALERO BENICIA CRUDE BY RAIL PROJECT

Draft Environmental Impact Report  
SCH # 2013052074  
Use Permit Application 12PLN-00063

Prepared for  
City of Benicia

June 2014



550 Kearny Street  
Suite 800  
San Francisco, CA 94108  
415.896.5900  
[www.esassoc.com](http://www.esassoc.com)

Los Angeles

Oakland

Orlando

Palm Springs

Petaluma

Portland

Sacramento

San Diego

Santa Cruz

Seattle

Tampa

Woodland Hills

202115



# TABLE OF CONTENTS

## Valero Benicia Crude by Rail Project Draft Environmental Impact Report

	<u>Page</u>
<b>Executive Summary</b> .....	<b>ES-1</b>
ES-1 Introduction .....	ES-1
ES-2 Project Objectives .....	ES-1
ES-3 Project Setting and Location .....	ES-2
ES-4 Project Description .....	ES-3
ES-5 Alternatives .....	ES-4
ES-6 Environmentally Superior Alternative .....	ES-7
ES-7 Areas of Controversy and Issues to be Resolved .....	ES-7
ES-8 Summary of Impacts .....	ES-8
<b>1. Introduction</b> .....	<b>1-1</b>
1.1 Purpose of This Document .....	1-1
1.2 Project Overview .....	1-1
1.3 Project Background .....	1-2
1.4 Key Areas of Environmental Concern .....	1-3
1.5 Public Comment on the Draft EIR .....	1-4
1.6 Areas of Controversy .....	1-4
1.7 Confidential Business Information .....	1-4
1.8 Organization of the Document .....	1-6
1.9 Use of this Document by Agencies .....	1-7
1.10 Permits and Approvals .....	1-7
<b>2. Summary of Environmental Impacts</b> .....	<b>2-1</b>
<b>3. Project Description</b> .....	<b>3-1</b>
3.1 Project Overview and Location .....	3-1
3.1.1 Introduction .....	3-1
3.1.1.1 The Refinery .....	3-1
3.1.1.2 The Proposed Project .....	3-1
3.1.2 Location .....	3-2
3.2 Project Objectives and Components .....	3-5
3.2.1 Project Objectives .....	3-5
3.2.2 Project Component Summary .....	3-5
3.3 The Existing Refinery .....	3-7
3.3.1 Overview of Petroleum Refining .....	3-7
3.3.1.1 Types of Crude Oil .....	3-7
3.3.1.2 The Refining Process .....	3-8
3.3.1.3 Refinery Optimization .....	3-9
3.3.2 The Benicia Refinery .....	3-10

	<u>Page</u>
3.3.2.1 Crude Oil Processing.....	3-10
3.3.2.2 Crude Feedstocks.....	3-12
3.3.2.3 Refinery Maintenance and Monitoring Activities.....	3-15
3.4 Components of the Proposed Project.....	3-17
3.4.1 New and Modified Facilities and Equipment.....	3-17
3.4.1.1 Tank car Unloading Rack.....	3-17
3.4.1.2 Unloading Rail Spurs.....	3-17
3.4.1.3 Tank Cars.....	3-19
3.4.1.4 Ancillary Facilities.....	3-20
3.4.2 Project Operation.....	3-20
3.4.2.1 Tank car Transport and Unloading.....	3-20
3.5 Future Crude Oil Feedstock.....	3-22
3.6 Project Construction.....	3-25
3.6.1 Schedule.....	3-25
3.6.2 Site Preparation.....	3-25
3.6.3 Construction Labor Force.....	3-25
3.6.4 Construction Materials and Services.....	3-26
3.6.5 Construction Traffic.....	3-26
3.7 Federal Preemption of Railroad Regulation.....	3-26
<b>4. Environmental Setting, Impacts, and Mitigation Measures</b>	
4.0 Approach to the Analysis of Impacts.....	4.0-1
4.1 Air Quality.....	4.1-1
4.2 Biological Resources.....	4.2-1
4.3 Cultural Resources.....	4.3-1
4.4 Energy Conservation.....	4.4-1
4.5 Geology and Soils.....	4.5-1
4.6 Greenhouse Gas Emissions.....	4.6-1
4.7 Hazards and Hazardous Materials.....	4.7-1
4.8 Hydrology and Water Quality.....	4.8-1
4.9 Land Use and Planning.....	4.9-1
4.10 Noise.....	4.10-1
4.11 Transportation and Traffic.....	4.11-1
<b>5. CEQA Statutory Sections.....</b>	<b>5-1</b>
5.1 Significant Unavoidable Environmental Impacts.....	5-1
5.2 Significant Irreversible Environmental Effects.....	5-1
5.3 Growth-Inducing Impacts.....	5-2
5.4 Cumulative Impacts.....	5-3
5.4.1 General and Regional Plans Considered in the Cumulative Analysis.....	5-4
5.4.2 Specific Projects Considered in the Cumulative Analysis.....	5-4
5.4.2.1 Other Recent Valero Benicia Refinery Projects.....	5-4
5.4.2.2 Other Crude by Rail Projects in California.....	5-5
5.4.2.3 Other Relevant Local Projects.....	5-5
5.4.2.4 Other City of Benicia Projects.....	5-5
5.4.3 Areas of Potential Cumulative Impacts.....	5-5
5.4.3.1 Air Quality.....	5-5
5.4.3.2 Biological Resources.....	5-15
5.4.3.3 Cultural Resources.....	5-16
5.4.3.4 Energy Conservation.....	5-16
5.4.3.5 Geology and Soils.....	5-16
5.4.3.6 Greenhouse Gas Emissions.....	5-17

	<u>Page</u>
5.4.3.7 Hazards and Hazardous Materials.....	5-17
5.4.3.8 Hydrology and Water Quality.....	5-17
5.4.3.9 Land Use and Planning.....	5-19
5.4.3.10 Noise.....	5-19
5.4.3.11 Transportation and Traffic.....	5-20
5.5 Effects Found Not to Be Significant.....	5-21
<b>6. Analysis of Alternatives.....</b>	<b>6-1</b>
6.1 General Consideration of Alternatives.....	6-1
6.1.1 Identification of Alternatives.....	6-1
6.1.2 Alternatives Screening Methodology.....	6-2
6.1.3 Consistency with Project Objectives.....	6-2
6.1.4 Feasibility.....	6-3
6.1.5 Potential to Eliminate Significant Environmental Effects.....	6-4
6.2 Potentially Significant Impacts of the Project.....	6-4
6.3 Alternatives Considered but Dismissed from Further Consideration in this EIR.....	6-4
6.3.1 Locate Tank car Unloading Racks at the Port of Benicia Valero Marine Terminal.....	6-5
6.3.2 Locate Tank car Unloading Racks at the AMPORTS Property Near Benicia Marine Terminal.....	6-5
6.3.3 Receiving Crude from the Proposed WesPac Energy--Pittsburg Terminal.....	6-5
6.3.4 Project with an Onsite Wye Rail Spur.....	6-6
6.4 Alternatives to the Project.....	6-6
6.4.1 No Project Alternative.....	6-6
6.4.2 Reduced-Project Alternatives.....	6-7
6.4.2.1 Alternative 1 – Limiting Project to One 50-Car Train Delivery per Day.....	6-7
6.4.2.2 Alternative 2 – Two 50-Car Trains Delivered during Nighttime Hours.....	6-8
6.4.3 Alternative 3 – Offsite Unloading Terminal.....	6-8
6.4.4 Environmentally Superior Alternative.....	6-10
<b>7. Report Preparation.....</b>	<b>7-1</b>
7.1 Report Authors.....	7-1
7.1.1 Lead Agency.....	7-1
7.1.2 Consultants.....	7-1
7.2 Agencies and Organizations Contacted.....	7-2
<b>8. Glossary and Acronyms.....</b>	<b>8-1</b>
8.1 Glossary.....	8-1
8.2 Acronyms and Abbreviations Used in This EIR.....	8-5
<b>9. References.....</b>	<b>9-1</b>

**Appendices**

A.	Notice of Preparation/Initial Study.....	A-1
B.	Scoping Report .....	B-1
C.1	Areas of Controversy—Potential Air Quality Impacts From Increased Use of Heavy Canadian Crudes.....	C.1-1
C.2	Areas of Controversy—Potential Air Quality Impacts From Increased Use of Light Sweet Crudes .....	C.2-1
D.	Discussion of Confidential Business Information .....	D-1
E.1	Construction Emissions .....	E.1-1
E.2	Marine Vessel Criteria Pollutant and GHG Baseline Emissions.....	E.2-1
E.3	Air Permit Application, February 2013 .....	E.3-1
E.4	Air Permit Application, Project Update #1, November 2013.....	E.4-1
E.5	Air Quality and GHG Emissions Supplement.....	E.5-1
E.6	Updated Methodology for Assessment of Risk and PM <sub>2.5</sub> Concentrations at Receptors near Locomotive Tracks in Fairfield, CA.....	E.6-1
F.	Railroad Crude Oil Release Rate Analysis for Route between Roseville and Benicia .....	F-1
G.	Valero Emergency Procedures Manual, Sections 203 and 206.....	G-1
H.	UPRR Hazardous Material Emergency Response Plan .....	H-1
I.	Transportation Impact Analysis.....	I-1
J.	Mitigation Monitoring Reporting Program.....	J-1
K.	McGovern Report for City of Benicia Valero Crude by Rail Project .....	K-1
L.	Union Pacific Railroad Statement re: Preemption.....	L-1

**List of Figures**

3-1	Project Location .....	3-3
3-2	Valero Refinery Boundary.....	3-4
3-3	Site Plan .....	3-6
3-4	Crude Oil Classes .....	3-7
3-5	Schematic View of Crude Oil Distillation and Downstream Processing .....	3-8
3-6	Typical Natural Yields of Light and Heavy Crude Oils .....	3-9
3-7	Schematic of Typical Petroleum Refinery .....	3-11
3-8	West Coast Crude Deliveries Compared to Valero's Typical Crudes and Blended Crude Feedstock Capability.....	3-13
3-9	API vs Sulfur in Blended Crudes Processed at Valero Benicia Refinery, 2010 to 2013.....	3-14
3.10	Unloading Rack .....	3-18
3.11	West Coast Crude Deliveries and Sample of Crudes Available by Rail.....	3-24
4.5-1	Active and Potentially Active Bay Area Earthquake Faults .....	4.5-3
4.7-1	Evolution of Rail Industry Tank Car Standards for Crude Oil.....	4.7-7
4.9-1	Existing Land Use Designations .....	4.9-3
4.9-2	Existing Zoning .....	4.9-6
4.10-1	Typical A-Weighted Sound Levels .....	4.10-2
4.10-2	Noise Monitor Location and Sensitive Receptors .....	4.10-7



Page**List of Tables**

2-1	Summary of Impacts and Mitigation Measures .....	2-2
3-1	Available North American Crudes .....	3-23
4.1-1	Air Quality Data Summary (2008–2012) for the Project Area .....	4.1-5
4.1-2	Ambient Air Quality Standards and Bay Area Air Basin Attainment Status .....	4.1-6
4.1-3	Average Daily Construction Exhaust Emissions .....	4.1-14
4.1-4	Baseline Maritime Emissions Within the Bay Area Air Basin .....	4.1-19
4.1-5	Annual Net Operational Exhaust Emissions Within the Bay Area Air Basin .....	4.1-19
4.1-6	Annual Operational Exhaust Emissions within the Sacramento Valley Air Basin .....	4.1-20
4.1-7	Emissions Factors Comparison for 1,000,000 Barrels Delivered per 1,000 Miles Travelled Outside of the Bay Area and Sacramento Basins .....	4.1-21
4.1-8	Examples of Emissions Outside of the Bay Area and Sacramento Basins .....	4.1-22
4.1-9	Maximum Cancer and Noncancer Risk in the Bay Area Basin .....	4.1-25
4.1-10	Maximum Cancer and Noncancer Risk in the Sacramento Basin .....	4.1-26
4.2-1	Special-Status Species Considered for the Proposed Project .....	4.2-5
4.5-1	Modified Mercalli Intensity Scale .....	4.5-6
4.6-1	California Greenhouse Gas Emissions .....	4.6-2
4.6-2	Recommended Actions of Climate Change Scoping Plan Relevant to the Refinery .....	4.6-5
4.6-3	Project Construction Greenhouse Gas Emissions .....	4.6-11
4.6-4	Baseline Marine Vessel GHG Emissions within California .....	4.6-12
4.6-5	Project Annual Net GHG Emissions Generated within California .....	4.6-12
4.6-6	Emissions Factors Comparison for 1,000,000 Barrels Delivered per 1,000 Miles Travelled Outside of California .....	4.6-13
4.6-7	Examples of GHG Emissions Outside of California .....	4.6-14
4.7-1	Schools within 1/4 mile of the UPRR Mainline .....	4.7-23
4.8-1	Designated Beneficial Uses .....	4.8-5
4.10-1	Average Existing Leq in the Project Area for Daytime, Evening, and Nighttime Periods .....	4.10-6
4.10-2	Noise Level Performance Standards for Noise-Sensitive Land Uses .....	4.10-9
4.10-3	Vibration Source Levels from Construction Equipment .....	4.10-15
4.10-4	Typical Maximum Noise Levels from Construction Equipment .....	4.10-16
4.11-1	Existing At-Grade Rail Operations .....	4.11-7
4.11-2	Existing Off-Peak Hour Intersection Level of Service (LOS) .....	4.11-8
5-1	Potential Projects for Cumulative Effects Evaluation .....	5-6
5-2	Cumulative Health Risk at near the Refinery .....	5-13
5-3	Cumulative Health Risk at the Maximum Exposed Individual Receptor .....	5-14

This page intentionally left blank