



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS' REGULAR MEETING

January 21, 2004

A meeting of the Bay Area Air Quality Management District Board of Directors will be held at 9:45 a.m. in the 7th floor Board room at the Air District headquarters, 939 Ellis Street, San Francisco, California.

Questions About an Agenda Item

The name, telephone number and e-mail of the appropriate staff person to contact for additional information or to resolve concerns is listed for each agenda item.

Meeting Procedures

The public meeting of the Air District Board of Directors begins at 9:45 a.m. The Board of Directors generally will consider items in the order listed on the agenda. However, any item may be considered in any order.

After action on any agenda item not requiring a public hearing, the Board may reconsider or amend the item at any time during the meeting.

BOARD OF DIRECTORS' REGULAR MEETING A G E N D A

**WEDNESDAY
JANUARY 21, 2004
9:45 A.M.**

**BOARD ROOM
7TH FLOOR**

CALL TO ORDER

Opening Comments
Roll Call
Pledge of Allegiance
Commendations/Proclamations

Scott Haggerty, Chairperson
Clerk of the Boards

PUBLIC COMMENT PERIOD

Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3
Members of the public are afforded the opportunity to speak on any agenda item. All agendas for regular meetings are posted at District headquarters, 939 Ellis Street, San Francisco, CA, at least 72 hours in advance of a regular meeting. At the beginning of the regular meeting agenda, an opportunity is also provided for the public to speak on any subject within the Board's subject matter jurisdiction. Speakers will be limited to three (3) minutes each.

CONSENT CALENDAR (ITEMS 1 –7)

Staff/Phone (415) 749-

1. Minutes of January 7, 2004

M. Romaidis/4965
mromaidis@baaqmd.gov
2. Communications
Information only

J. Broadbent/5052
jbroadbent@baaqmd.gov
3. Report of the Advisory Council

B. Hanna/4962
bhanna@napanet.net
4. Monthly Activity Report
Activities for the month of December, 2003

P. Hess/4971
phess@baaqmd.gov
5. Quarterly Report of Air Resources Board Representative Director Mark DeSaulnier

J. Broadbent/5052
jbroadbent@baaqmd.gov
6. Quarterly Report of the Clerk of the Boards

J. Broadbent/5052
jbroadbent@baaqmd.gov

7. Approval of Proposed Amendment to Administrative Code Division I Section: 2.1:
Officers of the Board
J. Broadbent/5052
jbroadbent@baaqmd.gov

Consider approval of proposed amendment to Administrative Code Division I, Section 2.1: Officers of the Board as noticed at the January 7, 2004 meeting. The proposed amendment clarifies the reference to term limits in the same Board office.

COMMITTEE REPORTS AND RECOMMENDATIONS

8. Report of the **Mobile Source Committee** Meeting of January 8, 2004
CHAIR: S. YOUNG
J. Broadbent/5052
jbroadbent@baaqmd.gov

Action(s): The Committee recommends approval of the following:

- A) Modification to the Transportation Fund for Clean Air (TFCA) Policies and Evaluation Criteria for the FY 2004/2005 funding cycle, as proposed by staff, and an additional modification, to delete the word "diesel" from the second line of paragraph (c) of proposed Policy Number 33;*
- B) Approve selection of Macias, Gini & Company as the auditor to conduct fiscal audits of 54 TFCA Program Manager projects;*
- C) Approve selection of Environmental Engineering Studies, Pick-N-Pull, and Pick Your Part as contractors for the FY'03/04 Vehicle Buy Back Program and authorize the Executive Officer/APCO to execute contracts up to \$900,000 with Environmental Engineering Studies; \$1,300,00 with Pick-N-Pull; and \$1,300,000 with Pick Your Part to provide vehicle scrapping and related services; and*
- D) Approve allocation of \$60,000 in TFCA funds as an amendment to the FY '03/04 Santa Clara County Program Manager TFCA expenditure program for Santa Clara County Transportation Authority's Downtown Area Shuttle (DASH) Retrofits.*

9. Report of the **Legislative Committee** Meeting of January 14, 2003
CHAIR: B. WAGENKNECHT
J. Broadbent/5052
jbroadbent@baaqmd.gov

Action: The Committee recommends approval of co-sponsoring legislation to improve the Smog Check program.

PUBLIC HEARINGS

10. Public Hearing to Consider Approval of Proposed Amendments to District Regulation 8, Rule 10: Process Vessel Depressurization
K. Wee/4760
kwee@baaqmd.gov

The proposed amendments to Regulation 8, Rule 10: Process Vessel Depressurization would implement Control Measure SS-17 from the 2001 San Francisco Bay Area Ozone Attainment Plan by prohibiting venting to the atmosphere unless the total organic compounds are reduced to a concentration of less than 10,000 parts per million (ppm), expressed as methane (C₁).

11. Public Hearing to Consider Approval of Proposed Amendments to District Regulation 8, Rule 18: Equipment Leaks

K. Wee/4760

kwee@baaqmd.gov

The proposed amendments to Regulation 8, Rule 18: Equipment Leaks would implement SS-16 (low-Emission Refinery Valves) from the 2001 San Francisco Bay Area Ozone Attainment Plan and will clarify specific provisions of the rule to ensure consistency.

PRESENTATION

12. Summary of Environmental Community Tour

J. Broadbent/5052

jbroadbent@baaqmd.gov

Staff will provide a summary of the Environmental Community tour and the Air District's response to questions raised during the tour.

OTHER BUSINESS

13. Report of the Executive Officer/APCO
14. Chairperson's Report

CLOSED SESSION

15. Conference with Legal Counsel

Existing Litigation:

Pursuant to Government Code Section 54956.9(a), a need exists to meet in closed session with legal counsel to consider the following cases:

- A) **Alvin J. Greenberg, Ph.D. v. Bay Area AQMD, et al.**, United States District Court, N.D. Cal., Case No. C 02 1501 VRW
- B) **Communities for a Better Environment, and Our Children's Earth Foundation v. Bay Area Air Quality Management District, Valero Refining Company – California, et al.**, San Francisco Superior Court, Case No. CPF03502678
- C) **Communities for a Better Environment v. Bay Area AQMD, Dow Chemical, Real Party in Interest**, San Francisco County Superior Court, Case No. _____
(New Case)

OPEN SESSION

16. Board Members' Comments

Any member of the Board, or its staff, on his or her own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda. (Gov't Code § 54954.2)

17. Place of Next Meeting - 9:45 a.m., Wednesday, February 4, 2004 -939 Ellis Street, San Francisco, CA 94109

18. Adjournment

JPB:mag

CONTACT CLERK OF THE BOARD - 939 ELLIS STREET SF, CA 94109

(415) 749-4965
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- To request special accommodations for those persons with disabilities notification to the Clerk's Office should be given at least 3 working days prior to the date of the meeting, so that arrangements can be made accordingly.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET - SAN FRANCISCO, CALIFORNIA 94109

Draft Minutes: Board of Directors Regular Meeting – January 7, 2004

Call To Order

Opening Comments: Chairperson Haggerty called the meeting to order at 9:50 a.m.

Pledge of Allegiance: Director Hill led the Board in the Pledge of Allegiance.

Roll Call: Present: Scott Haggerty, Chair, Roberta Cooper, Jerry Hill, Liz Kniss (10:20 a.m.), Patrick Kwok, Nate Miley, Julia Miller, Mark Ross, Tim Smith (9:57 a.m.), Pam Torliatt, Marland Townsend, Gayle Uilkema (9:52 a.m.), Brad Wagenknecht, Shelia Young.

Absent: Harold Brown, Willie Brown, Jr., Chris Daly, Mark DeSaulnier, Jake McGoldrick, Dena Mossar, John Silva.

Commendations/Proclamations: There were none.

Public Comment Period: Speaker: There were none.

Consent Calendar (Items 1 – 5)

1. Minutes of December 3, 2003
2. Communications. Correspondence addressed to the Board of Directors
3. Report of the Advisory Council – *There was no report.*
4. Monthly Activity Report – *Activities for the month of November 2003.*
5. Notice of Proposed Amendments to Administrative Code Division I, Section 2.1: Officers of the Board

Notice of proposed amendments to Administrative Code Division I, Section 2.1: Officers of the Board. This amendment clarifies the reference to term limit in the same Board office.

Board Action: Director Townsend moved approval of Consent Calendar Items 1 through 5; seconded by Director Wagenknecht; carried unanimously without objection.

Committee Reports and Recommendations

6. Report of the Budget and Finance Committee Meeting of December 16, 2003

Action: The Committee recommends approval of a purchase order to Allsteel in the amount of \$105,825 for the purchase of 17 modular workstations to be funded with a transfer from the reserve for furniture replacement.

Director Miller presented the report and stated that the Committee met on Tuesday, December 16, 2003 and staff presented the First Quarter Financial Report for Fiscal Year 2003/2004. Staff reviewed the Statement of Revenue and noted that the District received \$84,000 from the Tesoro refinery, which is why the Miscellaneous Revenue is high at this time. Staff reviewed the Statement of Expenditures and noted that the Capital Outlay would even out as the roof repair, the HVAC system and other expenditures are completed.

Staff reviewed the income and expenditures of the Transportation Fund for Clean Air (TFCA) fund and noted the additional expenditure of \$90,000 for payroll was due to an extra pay period in August. The variance for the Personnel Expenditures in the TFCA program is due to several unfilled positions. Staff stated that the Governor will have a budget briefing on January 10, 2004 and more information will be available at that time regarding the extent of any additional cuts that would affect the Air District.

Staff presented a report on and the Committee recommended approval of a purchase order to Allsteel in the amount of \$105,825 for the purchase of workstation partitions and office furniture; the transfer of funds in that amount from the Furniture Reserves; and to amend the fiscal year 2003/2004 Capital Budget.

The Committee discussed the start time of the meetings and determined that future meetings would start at 9:45 a.m. The next meeting of the Committee is scheduled for 9:45 a.m., Wednesday, January 28, 2004. Director Miller noted that there is a possibility this meeting may be cancelled, but that will be determined after staff has had an opportunity to review the Governor's budget, which comes out on Friday.

Board Action: Director Miller moved the Board approve the report and the recommendations of the Budget and Finance Committee; seconded by Director Cooper; carried unanimously without objection.

7. Report of the Executive Committee Meeting of December 19, 2003

Chairperson Haggerty presented the report and stated that the Committee met on Wednesday, December 19, 2003, and received and filed the Report of the Advisory Council. William Hanna, Chairperson of the Advisory Council, announced the officers for 2004 as follows: Elinor Blake, Chairperson; Brian Zamora, Vice-Chairperson; and Kraig Kurucz, Secretary.

Mr. Hanna presented the Advisory Council's recommendations on refinery flaring and the primary recommendations are:

1. District staff works collaboratively with refineries to develop improved estimates of Hydrocarbon (HC) emissions from flares at refineries. In addition, District staff should collaborate with the staff of the Contra Costa and/or Solano County health departments regarding data epidemiology and hospital admission that they can correlate with major flaring events.

2. District staff and refiners should investigate further the use of optical remote sensing or other appropriate plume monitoring techniques to measure the destruction efficiency in flare systems.
3. The adoption of any control rule directed at refinery flares should incorporate and be based upon data gathered under the recently adopted flare-monitoring rule.

The Committee discussed the release of the Technical Assessment Document, which was to be released on Monday, December 22, 2003. The Committee discussed the need to have the District and refineries agree on the inventory numbers before the document is released. There was discussion on the 98% destruction efficiency and that the remaining emissions (2%) that come out the stack could be either the most toxic or the least toxic. The Committee noted that it is important to get the most accurate refinery flare emissions estimates. The District should move expeditiously and the refinery representatives should give the District staff the data as soon as possible so the District can meet its obligation under the Plan. The report would then be done in January 2004. The Committee recommendation is to encourage the expeditious completion of the work in collaboration with the refineries so that the report can be moved forward.

Staff provided an overview of the District's Air Pollution Complaint Program revisions and highlighted the following:

- Compliant investigation and resolution is one of the District's most important responsibilities.
- Community meetings were held to receive input from the Environmental Justice communities.
- The five highest priority needs for change from the Community members.
- State and national surveys were conducted for Best Practices.
- Staff discussed ways for the public to register complaints or provide additional information, in addition to other improvements such as translation for non-English-speaking communities, listings in Bay Area telephone books, and training of office and field staff.
- Future changes include improved computer infrastructure for complaint processing and increased information flow to the community through web access.
- There was also discussion on a brochure that is provided to the public and the possibility of a PG&E mail stuffer to educate people.

Staff updated the Committee on the Enterprise Resource Planning (ERP) implementation status and reviewed the following:

1. The ERP implementation components.
2. The pre-contract projected dollars from Deloitte & Touche.
3. The actual dollars.

Staff noted that when the District goes live with J.D. Edwards, several functions, including accounts receivable, would be taken out of the IRIS system and brought into J.D. Edwards. The project is on time and within budget.

Staff provided a status report on four aspects of the 2003-04 Ozone Planning process and reviewed the following:

- Public comments on EPA's proposed finding of attainment.

- Upcoming EPA action on the 2001 Ozone Attainment Plan.
- Re-designation request and maintenance plan.
- Control measure evaluations.

The next meeting of the Executive Committee will be at the Call of the Chair.

Board Action: Chairperson Haggerty moved the Board approve the Executive Committee Report; seconded by Director Townsend; carried unanimously without objection.

Closed Session (The Board adjourned to Closed Session at 10:00 a.m.)

8. Conference with Legal Counsel

Existing Litigation:

Pursuant to Government Code Section 54956.9(a), a need existed to meet in Closed Session with legal counsel to consider the following cases:

- A) **Alvin J. Greenberg, Ph.D. v. Bay Area AOMD, et al.**, *United States District Court, N.D. Cal., Case No. C 02 1501 VRW*
- B) **Carl W. Gabler v. Bay Area Air Quality Management District**, *Santa Clara County Superior Court, Small Claims Division, Case No. 2-03-SC000606*
- C) **Communities for a Better Environment and Transportation Defense and Education Fund v. Bay Area AOMD, Metropolitan Transportation Commission, Association of Bay Area Governments, and California Air Resources Board**, *San Francisco Superior Court, Case No. 323849*

Open Session (The Board reconvened to Open Session at 10:11 a.m.)

Brian Bunger, Counsel, reported on agenda Items 8A, B and C and stated that the Board heard a status report from Counsel on each of the cases and provided general direction to Counsel.

Other Business

- 9. Report of the Executive Officer/APCO. Mr. Broadbent stated he had no report.
- 10. Chairperson's Report. Chairperson Haggerty stated that an Environmental Community Tour of three facilities in San Francisco will be conducted today. The Board will continue this meeting to the bus that is waiting in front of the building. When the Board returns from the Tour, the meeting will be adjourned at that time.
- 11. Board Members' Comments: There were none.
- 12. Time and Place of Next Meeting - 9:45 a.m., Wednesday, January 21, 2004, 939 Ellis Street, San Francisco, California.
- 13. Environmental Community Tour.

The Board of Directors participated in a tour that visited some of the communities in the vicinity of the following facilities:

1. Mirant Corporation's Potrero Power Plan, 1201 Illinois Street (at Humboldt Street, South of 22nd Street and North of 23rd Street)
2. PG&E's Hunters Point Power Plant, 100 Evans Avenue (@ India Basin Park on Evans, just East of Jennings Street)
3. Shell Gas Station, Excelsior District, (@ Mission and Silver)

The following individuals spoke during the tour:

Bradley Angel
Greenaction

Ina Mundine
Hunter's Point Mothers Association

Marie Harrison
Greenaction

Gordon Mar
Chinese Progressive Association

Steven Moss
San Francisco Community Power Cooperative

Antonio Diaz
People Organizing to Demand
Environmental & Economic Rights

Greg Karras
Communities for a Better Environment

Amy Cohen
Environmental Law & Justice Clinic

Karen Pierce
Bayview Hunter's Point Advocates

Teresa Almaguer
People Organizing to Demand
Environmental & Economic Rights

Joshua Abraham
Literacy for Environmental Justice

Yen May Wong
San Francisco Community School parent

Tessie Ester
Hunter's Point Mothers Association

Ruth
San Francisco Community School parent

Connie Wilson
Hunter's Point Mothers Association

Sherman Ho
Common Roots

Subrena Warren
Hunter's Point Mothers Association

A J Napolis
Communities for a Better Environment

14. Adjournment: The meeting was adjourned at 12:25 p.m.

Mary Romaidis
Clerk of the Boards

mr

Memorandum

To: Chairperson Haggerty and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 21, 2004

Re: Report of Division Activities for the month of December 2003

RECOMMENDED ACTION:

Receive and file.

Reviewed by: Peter Hess

ADMINISTRATIVE SERVICES DIVISION – W. TANAKA, DIRECTOR

Budget preparation information was prepared and will be presented to program managers in January. The use of the indirect cost rate, as recommended from the KPMG Peat Marwick Cost Recovery Study, will continue with the development of the Fiscal Year 2004/2005 budget. The indirect cost rate is the mechanism for which certain allowable expenses are charged back from non-direct to direct service programs. This gives a truer cost for direct service programs.

Staff presented the 1st Quarter Financial Report for Fiscal Year 2003/2004 to the Budget & Finance Committee meeting held on December 16, 2003. Staff reviewed the Statement of Revenue and Statement of Expenditures comparing the budget to actual. It was noted that the interest earned on funds on deposit with the San Mateo County Treasurer was 2.83% as compared to 1.68% LAIF rate. Income and expenditures for the Transportation Fund for Clean Air Fund was also presented to the committee. It was reported to the committee that the Governor will present his budget proposal in January and more information will be available at that time regarding any cuts in revenue that will impact next years budget.

Staff completed preparations and data gathering for the annual audit that will commence in January 2004.

COMPLIANCE & ENFORCEMENT DIVISION – K. WEE, DIRECTOR

Staff responded to a fire at the Valero Refining Company's Jet Fuel Hydrofining unit on December 29 in Benicia. The fire started when a hole (4" x 8") blew open on the side of a stripping tower. Completing the public review period for Complaint Policies and Procedures revisions, staff met with representatives of Publicly Owned Treatment Works (POTW) plants to discuss their comments. Staff participated in the ABAG Green Business Coordinators

meeting in Oakland to discuss their upcoming pollution prevention initiative for alternatives to perchlorethylene in garment cleaning. Staff met with PG&E to review asbestos rule applicability. Staff participated in a Mt. View community meeting to discuss elevated TCE monitoring data found at NASA/Moffett Field. Beta-testing of an automated odor complaint notification to the City of Milpitas and the Local Enforcement Agency (LEA) was conducted. New Inspector interviews for four vacancies were conducted.

Refinery further study measure revisions of Regulation 8, Rule 18, Equipment Leaks, and Rule 10, Process Vessel Depressurization, have been finalized for public hearing on January 21.

(See Attachment for Activities by County)

ENGINEERING DIVISION – B. BATEMAN, DIRECTOR

Permit Evaluation Activity

Major Permit Activity

Application 18028: Issuance of 504 TPY of NOx ERCs to Owens Corning in Santa Clara.

Monthly Title V Activity: Initial Issuance

No draft Title V permits were circulated for final internal review before public comment begins.

No proposed Title V permits were placed on public comment.

Two new Title V permits were issued.

Plant # A2721	City of Palo Alto Landfill	Application 3047
Plant # A9183	Napa-Vallejo Waste Mgmt Authority	Application 2631

Issued, still active: 91

- Post-comment process 2
- Public Comment: 0
- Under Review: 8
- Not yet submitted 1

Total: 102

Monthly Title V Activity: Renewals

The District is also giving a high priority to completion of the 17 applications for Title V permit renewals currently under review. Progress on these permits will be reported in future monthly activity reports.

Three draft Title V permit renewals were circulated for final internal review before public comment begins.

Plant # A0083	United States Pipe & Foundry Company, Inc	Application 3908
Plant # A0575	Acme Fiberglass	Application 3927
Plant # A1209	Union Sanitary Dist	Application 3905

No proposed Title V permit renewals were placed on public comment.

No new Title V permit renewals were issued.

Title V permits undergoing renewal

- Post-comment process 0
- Public Comment: 0
- Under Review: 17
- Not yet submitted 4
- Not yet submitted (late) 0

Total: 21

Toxics Program

Rule development activities continued on Regulation 2, Rule 5, which would convert the existing District Risk Screening Procedure and Risk Management Policy into an Air Toxics New Source Review rule. This project should be completed in the first half of 2004. Risk screening analyses for new/modified sources continue at historically high levels due primarily to applications for new backup generators.

INFORMATION SYSTEMS DIVISION – J. McKAY, DIRECTOR

Enterprise Resource Planning (ERP) Project for Air District Financial Systems

District-wide User Training for JD Edwards Budgeting is complete. District-wide use of JDE Budgeting will begin in January. The Administration cutover from Mitchell Humphrey will then be timed to occur at the beginning of the new fiscal year.

Meanwhile, Administration and Human Resources are focused on modeling of business processes. Modeling Design for HR and Payroll involves significant innovation because these systems are currently paper based. This process will continue into next year.

The first phase of implementation will not only replace the old Mitchell Humphrey's financial system, but will also absorb a small portion of the function currently in the IRIS/Databank system. The interfaces between JDE and the Districts' Engineering/Production systems (IRIS/Databank) have shown initial successful trials. Determination of appropriate tool sets and functional design for the Districts' future Engineering/Production Systems (used by Permits, Enforcement and Legal) continues as a separate, but linked, process.

Toolsets for Permits/Enforcement/Legal

High-level functional design and toolset evaluations are ongoing with Engineering. The process of determining high-level system architecture will continue concurrent with the ERP implementation. This process will further mature in the first half of the calendar year, and will then receive full staffing as the ERP implementation completes.

Web Site Development

The roadmap for the next phase of the new site is under development.

LEGAL DIVISION – B. BUNGER, DISTRICT COUNSEL

The District Counsel's Office received 52 Violations reflected in Notices of Violation ("NOVs") for processing.

Mutual Settlement Program staff initiated settlement discussions regarding civil penalties for 125 Violations reflected in NOVs. In addition, Mutual Settlement Program staff sent 4 Final 30 Day Letters regarding civil penalties for 5 Violations reflected in NOVs. Finally, settlement negotiations by Mutual Settlement Program staff resulted in collection of \$84,887 in civil penalties for 112 Violations reflected in NOVs.

Counsel in the District Counsel's Office initiated settlement discussions regarding civil penalties for 74 Violations reflected in NOVs. Settlement negotiations by counsel in the District Counsel's Office resulted in collection of \$134,500 in civil penalties for 26 Violations.

PLANNING DIVISION – J. ROGGENKAMP, DIRECTOR

Staff sent a letter to the U. S. Environmental Protection Agency supporting EPA's proposed finding of attainment of the national 1-hour ozone standard for the San Francisco Bay Area. Staff began preparation of a redesignation request, including a Maintenance Plan for the national 1-hour ozone standard. EPA sent a letter to the Governor of California indicating that EPA expects to designate the Bay Area as a non-attainment area for the national 8-hour ozone standard. EPA will make final designations for the 8-hour ozone standard in April 2004. Staff completed preliminary evaluation of approximately 370 stationary and mobile source measures suggested by the public as well as other agencies and organizations for the region's ozone control strategy. The District's vehicle buy back contractors purchased 237 vehicles in December 2003. Staff wrote four comment letters regarding air quality impacts of development projects and plans in the Bay Area: Northern Waterfront General Plan Amendment (City of Alameda), Elmwood Residential and Commercial Development (Milpitas), Mt. Eden Rezoning and Annexation (Hayward), and University District Specific Plan (Rohnert Park). Staff also responded to a letter regarding HOV requirements on the Benicia-Martinez Bridge from TRANSPAC. Two new managers joined the management team of the Planning and Research Division: Daniel Belik as the Rule Development Manager and Juan Ortellado as the Grant Programs Manager.

PUBLIC INFORMATION & OUTREACH – T. GALVIN LEE, DIRECTOR

The Air District's wintertime campaign continued throughout December with television and radio ads. The *Spare the Air Tonight* campaign asks the general public not to burn wood in fireplaces and woodstoves if possible, and to avoid unnecessary driving. Staff worked with the Lung Association to develop a tip card in English, Spanish, and Chinese, which are being distributed along with copies of the Woodburning Handbook and other wintertime materials to companies, government offices, and individuals. Press releases on wintertime pollution and the Santa Clara County Woodsmoke Rebate Campaign were issued, with good media feedback. KRON and KNTV carried stories, along with a number of local newspapers including two Spanish language ones. Display ads on Woodsmoke Rebate program were also produced and placed in five papers. Staff attended outreach events at the San Jose tree lighting and Jingle Jam with Radio Disney.

1812 smoking vehicles were reported during December.

TECHNICAL DIVISION – G. KENDALL, DIRECTOR**Air Monitoring**

Particulate monitors for PM_{2.5}, including five BAM (continuous PM_{2.5}) monitors continued their enhanced wintertime sampling schedules at all designated stations. Ozone monitors at eight stations are shut down during the low ozone winter period as authorized under by a waiver granted by the EPA. An additional BAM monitor was installed and became operational in December at the Redwood City Station to aid District staff in forecasting for PM air quality.

Meteorology and Data Analysis (MDA)

The third quarter 2003 air monitoring data were reviewed and input into EPA's AQS database. An MDA staff member traveled to Ventura and presented BAAQMD Data Acquisition and Data Management upgrade plans to the Ventura Co. APCD, District partners under an EPA funding agreement.

Quality Assurance

BAAQMD staff audited the two particulate samplers located in West Oakland, operated by GAIA Incorporated for the Port of Oakland. BAAQMD staff audited ground level monitoring network monitors at five sites: ConocoPhillips Refinery, ConocoPhillips Carbon Plant, Gaylord Container, Valero Refinery, and Tesoro Refinery. QA staff participated in CARB audits at eight District air monitoring stations.

Air Quality

There were no days in December when the air quality reached the Unhealthful for Sensitive Groups category (AQI >100). Although rain occurred on 20 of the 31 days in the Bay Area, over half the days in December recorded particulate levels in the moderate air quality category. Moderate air quality levels (51-100 AQI) are typical this time of year due to light winds and increased wood burning. Rain in itself does not seem to have much effect on reducing the particulate levels, except when it is associated with the influx of clean air after the passage of a frontal system. A series of storms around Christmas kept the air quality levels, which can often be in the unhealthful category, in the good air quality category.

Laboratory

In addition to the ongoing, routine analyses performed by the lab, gaseous samples from the outlets of two vapor recovery units of Equilon Enterprises in Martinez were analyzed for oxygenated hydrocarbons, paraffins and olefins. Also, the California Air Resources Board (CARB) audited the laboratory for analysis of PM_{2.5} filters.

Source Test

Ongoing Source Test activities included Continuous Emissions Monitoring (CEM) Field Accuracy Tests, source tests, gasoline cargo tank testing, and evaluations of tests conducted by outside contractors. The ConocoPhillips Refinery's open path monitor monthly report for the month of November was reviewed. The Source Test Section

provided ongoing participation in the District's Further Studies Measures for refineries and marine vapor recovery.

These facilities have received one or more Notices of Violations
Report period: December 1, 2003 – December 31 2003

Alameda County

Status				Regulation
Date	Site #	Site Name	City	Title
12/18/2003	A8833	RMC Pacific Materials Inc	Berkeley	Failure to Meet Permit Conditions
12/10/2003	P6054	Tim Green	Castro Valley	Asbestos Demolition, Renovation and Manufacturing
12/23/2003	A7533	Boston Scientific/Target	Fremont	Failure to Meet Permit Conditions
12/1/2003	P5668	Harmeet Anand	Fremont	Asbestos Demolition, Renovation and Manufacturing
12/29/2003	P6754	Magnum Drywall	Fremont	Asbestos Demolition, Renovation and Manufacturing
12/23/2003	A1438	New United Manufacturing, Inc	Motor Fremont	Major Facility Review (Title V); Gasoline Dispensing Facilities
12/29/2003	A3423	Olympic Screen Crafts	Fremont	Failure to Meet Permit Conditions
12/9/2003	C5509	Seven-Eleven Store #19168	Fremont	Gasoline Dispensing Facilities
12/9/2003	B5750	We CARE Coffee Company	Fremont	Authority to Construct and Permit to Operate
12/18/2003	A8391	Western Digital Corporation	Fremont	Failure to Meet Permit Conditions
12/18/2003	A9609	Zomax Incorporated	Fremont	Failure to Meet Permit Conditions
12/23/2003	A4348	Alameda Newspaper Group	Hayward	Failure to Meet Permit Conditions
12/29/2003	B2106	D W Nicholson Corporation	Hayward	Authority to Construct
12/9/2003	P6197	David Nunez	Hayward	Asbestos Demolition, Renovation and Manufacturing
12/18/2003	A1009	Hayward Waste Treatment Plant	Water Hayward	Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines
12/3/2003	C5152	Geno's Deli	Livermore	Gasoline Dispensing Facilities
12/18/2003	C8260	Grafco Station	Livermore	Gasoline Dispensing Facilities
12/18/2003	A8885	Printegra Waste Management of	Livermore	Failure to Meet Permit Conditions
12/18/2003	A2066	Alameda County	Livermore	Failure to Meet Permit Conditions
12/18/2003	A1662	Arch Mirror West	Newark	Failure to Meet Permit Conditions
12/18/2003	A1190	Evergreen Oil, Inc	Newark	Public Nuisance; Parametric Monitoring and Recordkeeping Procedures and Failure to Meet Permit Conditions
12/18/2003	C0690	ARCO Facility #02169 – KULWINDER KAUR	Oakland	Gasoline Dispensing Facilities
12/9/2003	A6154	Oakland Auto Body & Frame	Oakland	Motor Vehicle and Mobile Equipment Coating Operations
12/18/2003	A0030	Owens-Brockway Container Inc	Glass Oakland	Particulate Matter and Visible Emissions
12/23/2003	B1662	Matheny Door & Mill Co	San Leandro	Permit to Operate

**Contra
County**

Costa

Received Date	Site #	Site Name	City	Regulation Title
12/3/2003	C1109	A-Street Union 76	Antioch	Permit to Operate
12/10/2003	P3754	Rogers House Moving	Antioch	Asbestos Demolition, Renovation & Manufacturing
12/9/2003	P6491	Rudy's Service Company	Concord	Asbestos Demolition, Renovation & Manufacturing
12/3/2003	A4022	SFPP, L P	Concord	Storage of Organic Liquids
12/16/2003	P6594	Ray Hammond	Martinez	Open Burning
12/1/2003	B2758	Tesoro Refining and Marketing Co.	and Martinez	Continuous Emission Monitoring and Recordkeeping Procedures; Particulate Matter and Visible Emission Equipment Leaks and Storage of Organic Liquids; Sulfur Dioxide and Hydrogen Sulfide
12/11/2003	A3244	GWF Power Systems,LP (Site 2)	Pittsburg	Major Facility Review (Title V)
12/9/2003	A0010	Chevron Products Company General Chemical Corporation	Richmond	Hydrogen Sulfide
12/1/2003	A0023	ConocoPhillips - San Francisco Refinery	Richmond	Failure to Meet Permit Conditions
12/3/2003	A0016	Sierra Process Systems Inc	Rodeo	Failure to Meet Permit Conditions
12/3/2003	B1973	San Pablo Mini Mart	Rodeo	Failure to Meet Permit Conditions
12/24/2003	D0220	Valero Refining Co	San Pablo	Authority to Construct
12/29/2003	D0397	SS#7033	San Ramon	Gasoline Dispensing Facilities

Marin County

Received Date	Site #	Site Name	City	Regulation Title
12/22/2003	P6680	M/T Valiant/Valiant Cascade Marine	Holding Kentfield	Public Nuisance
12/9/2003	K3771	Jakela Inc.	Novato	Asbestos Demolition, Renovation and Manufacturing

Napa County

Received Date	Site #	Site Name	City	Regulation Title
12/9/2003	P6492	Kent Rasmussen	Napa	Open Burning
12/9/2003	P6498	Richard Wax	Saint Helena	Open Burning
12/23/2003	C7248	Vintage Gas	Saint Helena	Gasoline Dispensing Facilities
12/10/2003	P6512	Jeff Mathis	Yountville	Open Burning

Napa County

Received Date	Site #	Site Name	City	Regulation Title
12/9/2003	A2929	Earl Scheib Auto Paint Shop	San Francisco	Motor Vehicle & Mobile Equipment Coating Operations
12/9/2003	J3672	Precision Works Inc	Redwood City	Asbestos Demolition, Renovation and Manufacturing

12/29/2003	P6753	Redwood City Electric	Redwood City	Asbestos Demolition, Renovation and Manufacturing
12/9/2003	A2929	Earl Scheib Auto Paint Shop	San Francisco	Motor Vehicle and Mobile Equipment Coating Operations
12/29/2003	A5070	Alameda Newspaper Group/San Mateo Times	San Mateo	Graphics Arts Printing and Coating Operations
12/9/2003	B5764	Autobahn Specialties LTD/Linden Body Shop	San Francisco	San Authority to Construct and Permit to Operate

Santa Clara County

Received Date	Site #	Site Name	City	Regulation Title
12/1/2003	C9911	McCarthy Ranch Chevron & Carwash	Milpitas	Gasoline Dispensing Facilities
12/15/2003	C9721	Shell Service Station	Morgan Hill	Gasoline Dispensing Facilities
12/3/2003	A9941	McLachlan Wood Finishing Co	Mountain View	Failure to Meet Permit Conditions and Wood Products Coa
12/18/2003	A0550	NASA-AMES Research Center	Mountain View	Parametric Monitoring and Recordkeeping Procedures
12/15/2003	C4080	Almaden Unocal #4831	San Jose	Gasoline Dispensing Facilities
12/18/2003	A2783	Cupertino Electric Inc	San Jose	Failure to Meet Permit Conditions
12/1/2003	C9809	DBA McKee Beacon Service	San Jose	Gasoline Dispensing Facilities
12/1/2003	C8706	Rotten Robbie #32	San Jose	Gasoline Dispensing Facilities
12/15/2003	C4157	Saratoga Shell	San Jose	Gasoline Dispensing Facilities
12/23/2003	B5791	Global Satcom Technology	Santa Clara	Surface Coating of Plastic Parts and Products
12/18/2003	A9848	Perkin Elmer, Inc Optoelectronics	- Santa Clara	Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines
12/9/2003	A7155	Santa Clara Auto Care	Santa Clara	Motor Vehicle and Mobile Equipment Coating Operations
12/9/2003	C9016	Unocal #6859 -- Rajiv Dilawari	Saratoga	Gasoline Dispensing Facilities
12/3/2003	A3285	Camaro Cleaners	Sunnyvale	Failure to Meet Permit Conditions
12/11/2003	B5102	Exact Image Printing	Sunnyvale	Graphics Arts Printing and Coating Operations
12/9/2003	P6493	Simmons Island Land Co.	Sunnyvale	Open Burning

Solano County

Received Date	Site #	Site Name	City	Regulation Title
12/23/2003	C9647	Benicia Shell (cardlock site)	Benicia	Gasoline Dispensing Facilities
12/23/2003	C0077	Foodmaker/Quickstuff	Benicia	Gasoline Dispensing Facilities
12/23/2003	C9588	Lake Herman/Benicia Shell	Benicia	Gasoline Dispensing Facilities
12/2/2003	A0901	Valero Benicia Asphalt Plant	Benicia	Public Nuisance; Particulate Matter and Visible Emissions; Releases From Pressure; Storage of Organic Liquids; Sulfur Dioxide and Hydrogen Sulfide

Sonoma County

Received

Date	Site #	Site Name	City
12/2/2003	B0385	Sonoma Wood Finishing	Rohnert Park Wood Products Coatings
12/22/2003	A6248	Trinity Engineering	Rohnert Park Failure to Meet Permit Conditions
12/2/2003	F0429	Sonoma Cutrer Winery	Windsor Open Burning
12/2/2003	P6394	Talawind Ranch	Windsor Open Burning

Outside Bay Area**Received**

Date	Site #	Site Name	City
12/3/2003	F4405	Teichert Construction	Stockton Particulate Matter and Visible Emissions

December 2003 Closed NOVs with Penalties by County**Alameda**

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Allied Environmental, Inc.	G3136	Hayward	\$100	1
ARCO Facility #06148 - BALAJI AN	C8818	Oakland	\$400	1
Berkeley Asphalt Co	A0123	Berkeley	\$2,000	1
Berkeley Auto Body Inc	A5469	Berkeley	\$500	1
Biofuel Systems	A8329	Livermore	\$1,200	1
Cargill Salt	A0094	Newark	\$40,000	2
Chevron #0121	C0725	Oakland	\$500	1
Chevron Inc	C0220	Fremont	\$2,000	1
Dharma Press	B0757	Berkeley	\$500	1
Fremont Gas N Wash	D0206	Fremont	\$500	1
George V Arth & Son	A3737	Oakland	\$500	1
High Street Gas & Food	C8661	Oakland	\$750	1
Karcher Environmental	P1018	San Leandro	\$500	1

Owens-Brockway Glass Container Inc	A0030	Oakland	\$50,000	10
SS Herme Kiepe/Maersk Terminals	N9760	Oakland	\$1,000	1
Sun Autobody	A9165	Hayward	\$1,000	2
USA Petroleum	C5372	Fremont	\$500	1
Wellex Corporation	B5498	Fremont	\$1,000	2

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Contra Costa

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
7-Eleven Store #32787	C0504	Oakley	\$500	1
A-1 Martin's Auto Body Shop	B0803	San Pablo	\$1,450	2
Beneto Tank Lines	B1956	Martinez	\$3,000	1
Bethel Market	C9744	Bethel Island	\$3,000	1
Charles Wall	P3779	Walnut Creek	\$200	1
Chevron Products Company	C8644	San Ramon	\$500	1
Chevron SS# 9-0103	C5566	Richmond	\$750	1
Conoco Phillips	A0061	Richmond	\$1,000	1
Diablo Country Club	C6384	Diablo	\$400	1
Douglas Lewis	N4130	Oakley	\$500	1
Ray's Pinole Service Station	C8108	Pinole	\$250	1
Stoltz Metals Inc	A8662	Richmond	\$2,000	1

**Total
Closed
Violations: 13**

Marin

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Marin Cleaners	B2237	San Rafael	\$1,000	4
Blake's Auto Body	A3503	Novato	\$2,000	2

**Total
Closed
Violations: 6**

Napa

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Bel-Aire Cleaners	A5102	Napa	\$500	1
Darioush Winery	N3631	Napa	\$500	1
Sabina Vineyards	P2381	Saint Helena	\$2,000	1
Sweeney Property	P1022	Calistoga	\$500	2

Total Closed Violations: 5

Santa Clara

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Biofuel Systems	A8329	Milpitas	\$1,500	2
Cambrian Plaza Dry Cleaners	A0372	San Jose	\$250	1
Casa Del Lago	P4727	San Jose	\$1,000	2
Chevron USA #4793	C3949	San Jose	\$500	1
Chip Express Corporation	B0951	Santa Clara	\$500	1
Classic Car Wash	C3830	San Jose	\$750	1
Cochrane Chevron	C0758	Morgan Hill	\$500	1
Fuel Delivery Services	A4020	San Jose	\$500	1
HGM	B4667	Santa Clara	\$1,500	2

Northrop Grumman Systems Corporation	B0861	Sunnyvale	\$1,500	2
Olson Brothers Body Shop	A3354	Milpitas	\$750	3
Robinson Oil Company	A4020	San Jose	\$500	1
Safe Cleaners	A4864	San Jose	\$250	1
Scientific Metal Finishing Inc	A9315	Santa Clara	\$1,500	4
Shiro's Auto Body	A9654	Campbell	\$700	1
Specialty Solid Waste & Recycling Inc	B0398	Santa Clara	\$1,000	1
SVPC Partners, LLC	A3557	Santa Clara	\$4,000	1
The Way Auto Body	A3544	Santa Clara	\$1,000	2
Town & Country Gas Depot	C0060	San Jose	\$1,500	4
USA Petroleum	C8383	San Jose	\$500	1
Valero Refining Co SS#7669	D0370	Sunnyvale	\$500	1

Total Closed Violations: 34

San Francisco

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Buena Vista Builders	P2286	San Francisco	\$600	1
C R Construction Company	P0100	San Francisco	\$3,000	3
Demakas Plumbing	P1886	San Francisco	\$4,000	2
International Sport Motors	B2814	San Francisco	\$500	1
John Banks	N6716	San Francisco	\$750	1
Kaiser French Campus	A0433	San Francisco	\$2,437	2
Keegan Construction Inc	P2780	San Francisco	\$3,000	3
Kokkari Restaurant	H4020	San Francisco	\$1,500	3
Pacific Demolition	P2784	San Francisco	\$400	1
Pierre's Auto Body Inc	A3705	San Francisco	\$1,000	2
UCSF/Parnassus	A2478	San Francisco	\$43,000	11

Total Closed Violations: 30

San Mateo

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Boni's Auto Body Shop	South San Francisco	A8658	\$1,000	2
Free-Flow Packaging International Inc	Redwood City	A1690	\$1,000	1
Saronix Inc	Menlo Park	B2397	\$1,500	2
Corporate Identity Systems	South San Francisco	B0640	\$1,000	1
Tara Cabinets	San Carlos	A5270	\$250	1
ConocoPhillips	San Mateo	C7111	\$500	1
Juan Romero	San Mateo	P4594	\$200	1
John Banks	San Francisco	N6716	\$750	1
Express Hauling	Daly City	P2784	\$600	2
Communications & Power Industries, Inc	San Carlos	B0521	\$4,000	1

Total Closed Violations: 13**Solano**

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Chevron Inc S# New-082	C8398	Suisun City	\$750	1
Discovery Land Care Inc.	P4593	Fairfield	\$500	1
Romak Iron Works	B3012	Benicia	\$1,500	1

Total Closed Violations: 3**Sonoma**

Site Name	Site Occurrence	City	Penalty	# of Violations Closed
Kieran Kearney Construction	P4431	Petaluma	\$1,200	2
Madeline Garzelli	P1427	Petaluma	\$250	1
USA Petroleum #3703	C8364	Petaluma	\$500	1

Total Closed Violations: 4**ACRONYMS AND TERMINOLOGY**

ABAG	Association of Bay Area Governments
AC	Authority to Construct issued to build a facility (permit)
AQI	Air Quality Index
ARB	[California] Air Resources Board
ATCM	Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BANKING	Applications to deposit or withdraw emission reduction credits
BAR	[California] Bureau of Automotive Repair
BARCT	Best Available Retrofit Control Technology
BTU	British Thermal Units (measure of heat output)
CAA	[Federal] Clean Air Act
CAL EPA	California Air Resources Board
CCAA	California Clean Air Act [of 1988]
CCCTA	Contra Costa County Transportation Authority
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CMA	Congestion Management Agency
CMAQ	Congestion Management Air Quality [Improvement Program]
CMP	Congestion Management Program
CO	Carbon monoxide
EBTR	Employer-based trip reduction
EJ	Environmental Justice
EIR	Environmental Impact Report
EPA	[United States] Environmental Protection Agency
EV	Electric Vehicle
HC	Hydrocarbons
HOV	High-occupancy vehicle lanes (carpool lanes)
hp	Horsepower
I&M	[Motor Vehicle] Inspection & Maintenance ("Smog Check" program)
ILEV	Inherently Low Emission Vehicle
JPB	[Peninsula Corridor] Joint Powers Board
LAVTA	Livermore-Amador Valley Transit Authority ("Wheels")
LEV	Low Emission Vehicle
MPG	Miles per gallon
MTC	Metropolitan Transportation Commission
NAAQS	National Ambient Air Quality Standards (federal standards)
NO _x	Nitrogen oxides, or oxides of nitrogen
NPOC	Non-Precursor Organic Compounds

NSR	New Source Review
O ₃	Ozone
PM _{2.5}	Particulate matter less than 2.5 microns
PM ₁₀	Particulate matter (dust) less than 10 microns
PM _{>10}	Particulate matter (dust) over 10 microns
POC	Precursor Organic Compounds
pphm	Parts per hundred million
ppm	Parts per million
PUC	Public Utilities Commission
RFG	Reformulated gasoline
ROG	Reactive organic gases (photochemically reactive organic compounds)
RIDES	RIDES for Bay Area Commuters
RTP	Regional Transportation Plan
RVP	Reid vapor pressure (measure of gasoline volatility)
SCAQMD	South Coast [Los Angeles area] Air Quality Management District
SIP	State Implementation Plan (prepared for <i>national</i> air quality standards)
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
TCM	Transportation Control Measure
TFCA	Transportation Fund for Clean Air [BAAQMD]
TIP	Transportation Improvement Program
TMA	Transportation Management Association
TOS	Traffic Operations System
tpd	tons per day
Ug/m ³	micrograms per cubit meter
ULEV	Ultra low emission vehicle
USC	United States Code
UV	Ultraviolet
VMT	Vehicle miles traveled (usually per <i>day</i> , in a defined area)
VTA	Santa Clara Valley Transportation Authority
ZEV	Zero Emission Vehicle

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

TO: Chairperson Haggerty and Members of the Board of Directors
 FROM: Mary Romaidis, Clerk of the Boards
 DATE: January 16, 2004
 RE: Quarterly Report of the Clerk of the Boards: October 1 – December 31, 2003

RECOMMENDED ACTION

This report is provided for information only.

DISCUSSION

Listed below is the status of minutes for the Board of Directors and Advisory Council and activities of the Hearing Board for the fourth quarter of 2003:

Board of Directors

<u>Meeting Type</u>	<u>Meeting Date</u>	<u>Status of Minutes</u>
Regular Meeting	October 1	Approved
Regular Meeting	October 15	Approved
Regular Meeting	November 19	Approved
Regular Meeting	December 3	Approval
Budget & Finance Committee	December 16	Minutes Completed/Pending Approval
Executive Committee	October 29	Approved
Executive Committee	December 19	Minutes Completed/Pending Approval
Public Outreach Committee	November 3	Minutes Completed/Pending Approval
Mobile Source Committee	November 13	Approval
Stationary Source Committee	November 24	Minutes Completed/Pending Approval
Legislative Committee	November 17	Minutes Completed/Pending Approval

Advisory Council

<u>Meeting Type</u>	<u>Meeting Date</u>	<u>Status of Minutes</u>
Regular Meeting	November 12	Minutes Completed/Pending Approval
Executive Committee	November 12	Minutes Completed/Pending Approval
Technical Committee	October 20	Approved
Technical Committee	December 9	Minutes Completed/Pending Approval
Public Health Committee	October 20	Approved
Public Health Committee	December 8	Minutes Completed/Pending Approval

Hearing Board

1. During the Period October – December 2003, the Clerk’s Office processed and filed nine Applications for Variance and nine Appeals.
2. The Clerk of the Boards staff attended and took minutes at a total of five hearings and other discussions at the District facility.
3. On October 29, 2003, the Hearing Board presented its Quarterly Report (July –September 2003) to the Board Executive Committee.
4. A total of \$367.55 was collected in excess emission fees.
5. The Application for Variance form was revised.

Respectfully submitted,

Mary Romaidis
Clerk of the Boards

FORWARDED _____

MR:hl
1/20/04
G/Board/Quarter.doc

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Haggerty and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 13, 2004

Re: Approval of Proposed Amendment to Administrative Code Division I,
Section 2.1: Officers of the Board

RECOMMENDED ACTION

Approve proposed amendments to Administrative Code Division I, Section 2.1: Officers of the Board. The attached proposed amendment provides clarification for term in office for Board Officers.

BACKGROUND

A notice of proposed amendments to Administrative Code Division I, Section 2.1 Officers of the Board was noticed at the January 7, 2004 meeting of the Board of Directors. Director Gayle Uilkema requested that staff clarify language regarding the term of office for Board Officers as provided in the Administrative Code Division I, Section 2.1: Board of Directors, Officers of the Board. The proposed amendment responds to this request by clarifying that no Board member may serve more than three years in any particular Board Office. This proposed amendment resolves the ambiguity in the existing language which might be read to suggest that a Board member could serve no more than three years in any combination of Board Offices.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Mary Ann Goodley
Reviewed by: Brian Bunger

Proposed Amendments to Division I Operating Policies and Procedures,
Section 2.1: Board of Directors, Officers of the Board

2.1 OFFICERS OF THE BOARD. (Revised 12/03/03)

The presiding officer of the Board is the Chairperson of the Board of Directors. The Chairperson, Vice Chairperson and Secretary shall, no later than the first meeting in December of each year, be elected by the Board of Directors and assume office January 1, (effective January 1, 2005). The Chairperson shall preserve order and decorum at regular and special meetings of the Board. The Chairperson shall state each question, shall announce the decision, shall decide all questions of order subject to an appeal to the Board. The Chairperson shall vote on all questions, last in order of the roll, and shall sign all ordinances and resolutions adopted by the District Board while the Chairperson presides. (see Section II-4.3)

In the event that the Chairperson is unable, for whatever reason, to fulfill his or her one-year term of office, the Vice-Chairperson shall succeed the Chairperson and the Secretary shall succeed the Vice-Chairperson. Section 2.3 below shall determine the filling of the Secretary vacancy. In any event, no Board Officer shall serve more than three (3) years in any one Board office (Chairperson, Vice-Chairperson, or Secretary).

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Haggerty and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 12, 2004

Re: Report of the Mobile Source Committee Meeting of January 8, 2004

RECOMMENDED ACTIONS

The Committee recommends Board approval of the following:

- A) Modifications to the Transportation Fund for Clean Air policies and evaluation criteria for the FY 2004/05 funding cycle, as proposed by staff, and an additional modification, discussed during the January 8, 2004 meeting, to delete the word "diesel" from the second line of point c) of proposed *Policy Number 33. Reducing Emissions from Existing Heavy-Duty Diesel Engines* (top of page 11 of Attachment A of Mobile Source Committee Item #4);
- B) Selection of Macias, Gini & Company as the auditor to conduct fiscal audits of 54 Transportation Fund for Clean Air Program Manager Projects;
- C) Selection of Environmental Engineering Studies, Pick-N-Pull, and Pick Your Part as the contractors for the FY 2003/04 Vehicle Buy Back Program and authorize the Executive Officer/APCO to execute contracts up to \$900,000 with Environmental Engineering Studies; \$1,300,000 with Pick-N-Pull; and \$1,300,000 with Pick Your Part to provide vehicle scrapping and related services; and
- D) Allocation of \$60,000 in Transportation Fund for Clean Air funds as an amendment to the FY 2003/04 Santa Clara County Program Manager Transportation Fund for Clean Air expenditure program. The funds will be used to install Cleaire Longview PM/NOx filters on four vehicles that serve Santa Clara Valley Transportation Authority's Downtown Area Shuttle (DASH).

DISCUSSION

The Mobile Source Committee met Thursday, January 8, 2004. Chairperson Shelia Young will give a summary of the meeting. The attached staff reports were presented to the Committee.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Haggerty and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 14, 2004

Re: Report of the Legislative Committee Meeting of January 14, 2004

RECOMMENDED ACTIONS

The Committee recommends Board approval of co-sponsoring legislation to improve the Smog Check program.

DISCUSSION

The Legislative Committee met Wednesday, January 14, 2004. Chairperson Brad Wagenknecht will give a summary of the meeting. The attached staff reports were presented to the Committee.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Haggerty and Members of the Board

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 14, 2004

Re: Public Hearing to Consider Proposed Amendments to Regulation 8, Rule 10:
Process Vessel Depressurization and Approval of a Negative Declaration pursuant
to the California Environmental Quality Act

RECOMMENDED ACTION:

Staff recommend that the Board take the following actions:

- A) Adopt proposed amendments to District Regulation 8, Rule 10: Process Vessel Depressurization;
- B) Approve a Negative Declaration pursuant to the California Environmental Quality Act (CEQA) for this rule-making activity.

BACKGROUND

Proposed amendments to District Regulation 8, Rule 10: Process Vessel Depressurization implement control measure SS-17: Improved Process Vessel Depressurization Rule from the 2001 San Francisco Bay Area Ozone Attainment Plan (2001 OAP). Process vessels in refineries and chemical plants are typically large vessels where organic compounds are fractionated, distilled, chemically reacted, purified or otherwise processed. As with all process equipment, process vessels must be periodically shut down and emptied for maintenance and repair. The process of shutting down a unit and depressurizing vessels involves venting vapors to an abatement device. Rule 10 requires abatement until the partial pressure of hydrocarbons inside the vessel is no more than 1000 mm Hg (4.6 pounds per square inch). Once the process vessel complies with this requirement, it may be opened and purged with air until the interior is safe for personnel to enter.

Control measure SS-17 in the 2001 OAP calls for abatement of emissions to a more stringent standard than currently required, or abatement until the atmosphere in the interior of the vessel reaches a lower pressure than currently required, or abatement until the hydrocarbon concentration in the vessel reaches a minimal point. Staff, in development of the proposed amendments, reviewed other district rules and refinery practices and considered similar rules that establish allowable concentration or emission limit standards. Also, staff formed a workgroup

that included representatives from industry, environmental groups, and the California Air Resources Board (CARB). The workgroup met three times to discuss technical issues and proposals, and staff presented draft language at a workshop in Crockett on the evening of October 28, 2003.

DISCUSSION

The proposed amendments will supplement the existing control options with a concentration standard and a mass emission limit.

The proposed amendments to Regulation 8, Rule 10 will:

- Significantly expand the number of process vessels covered by this rule by including all but the smallest of these vessels and make the requirements apply during all vessel depressurizations, not just during refinery turnarounds;
- Retain the internal pressure requirement, but also prohibit process vessels from venting to the atmosphere unless the emissions of organic compounds are reduced to a concentration below 10,000 parts per million (ppm);
- Allow a limited number (no more than 10% over a 5 year period) of vessels that cannot meet the 10,000 ppm limit to be opened to atmosphere, however, limit those vessels to emissions of less than 15 pounds per day;
- Prohibit the opening of vessels that cannot meet the 10,000 ppm limit during Spare the Air days;
- Add two exemptions, for very small vessels and batch processes. These units were not subject to the previous standards, but became so by the proposed change in the definition of “process vessel”; and
- Add monitoring, recordkeeping and reporting requirements.

In addition, the proposed amendments change, clarify, add definitions, delete obsolete language, add a reference to a test method, and clarify that vessels used in operations subject to other rules, such as paint or pharmaceutical manufacturing, are subject to existing standards in those rules.

A question was raised at the Board’s Stationary Source Committee meeting about process vessel venting during emergency situations. Regulation 8, Rule 10 addresses planned or anticipated process vessel openings for repair and maintenance. Unforeseen emissions from emergency situations or unanticipated equipment failures are addressed by District Regulation 1, Section 112: Breakdown. This section provides relief from any District rule should it be necessary, provided that the emissions were not the result of negligence, disregard or failure to properly maintain equipment.

The proposed amendments fulfill the requirements of control measure SS-17 of the 2001 OAP, and will reduce emissions of organic and other pollutants, including toxic compounds. Because vessel depressurizations are infrequent events, emissions on an average daily basis are small, however, they may be significant on a given day. The amended rule will codify best refinery practices and reduce the allowable emissions by approximately 200 pounds per day. Staff have estimated a total implementation cost of approximately \$24,500 per year and a cost effectiveness of approximately \$70 per ton of organic compound emissions reduced. In addition, the

socioeconomic analysis prepared for this rule found that there would not be an adverse economic effect on refineries or other industry.

Pursuant to the California Environmental Quality Act (CEQA), the District prepared an initial study to determine the potential environmental impacts of proposed Regulation 8, Rule 10. The study concluded that the proposed rule would not result in any significant environmental impacts. No comments on the proposed CEQA negative declaration were received.

CHANGES TO THE PROPOSED RULE AFTER PUBLICATION

Staff suggest two minor changes to the proposed rule to correct an improper cross reference and make a minor editorial change. In the publicly-noticed rule, Section 8-10-401 requires annual submittal of a report that includes elements required by Section 8-10-502. This reference should have been to Section 8-10-503. The proposed change to the reference reflects staff intent as was presented during the rule workshop and as was understood by all parties. A minor editorial change is proposed for Section 8-10-302. The revised language is shown in Sections 8-10-302 and 401 of the rule as ~~double strikethrough~~ and double underlined text. The changes are not significant, and do not require continuation of the public hearing.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Alex Ezersky and Daniel Belik
Reviewed by: Peter Hess

Attachments:

1. Proposed Amendments to Regulation 8, Rule 10: Process Vessel Depressurization.
2. Staff Report for Regulation 8, Rule 10, including socioeconomic analysis
3. CEQA Negative Declaration and Initial Study

**REGULATION 8
ORGANIC COMPOUNDS
RULE 10
PROCESS VESSEL DEPRESSURIZATION**

INDEX

8-10-100 GENERAL

- 8-10-101 Description
- 8-10-110 Exemption, ~~Storage Vessels-Equipment Subject to Other Rules~~
- ~~8-10-111 Exemption, Chemical Plants~~
- 8-10-112 Limited Exemption, Measurement Periods
- 8-10-113 Exemption, Small Vessels
- 8-10-114 Exemption, Batch Processes

8-10-200 DEFINITIONS

- 8-10-201 Chemical Plant
- 8-10-202 Petroleum Refinery
- 8-10-203 Process Unit
- 8-10-204 Process Vessel
- 8-10-205 Organic Compound
- 8-10-206 Total Organic Compound

8-10-300 STANDARDS

- 8-10-301 Process Vessel Depressurizing
- 8-10-302 Opening of Process Vessels

8-10-400 ADMINISTRATIVE REQUIREMENTS

- 8-10-401 Turnaround Records Reporting
- ~~8-10-402 Increments of Progress~~

8-10-500 MONITORING OF AND RECORDS (Not included)

- 8-10-501 Monitoring
- 8-10-502 Concentration Measurement
- 8-10-503 Records

8-10-600 MANUAL OF PROCEDURES (Not included)

- 8-10-601 Monitoring Procedures

**REGULATION 8
ORGANIC COMPOUND
RULE 10
PROCESS VESSEL DEPRESSURIZATION**

8-10-100 GENERAL

8-10-101 Description: The purpose of this Rule is to limit emissions of precursor organic compounds from depressurizing and opening of process vessels depressurization at petroleum refineries and chemical plants.

(Amended 3/17/82, 7/20/83)

8-10-110 Exemption, Equipment Subject to Other Rules Storage Vessels: ~~The requirements of Section 8-10-301 shall not apply to stationary containers used solely for the storage of an organic liquid. The provisions of this rule shall not apply to vessels that are subject to the following Regulation 8 rules:~~

110.1 Regulation 8, Rule 5: Storage of Organic Liquids

110.2 Regulation 8, Rule 24: Pharmaceutical and Cosmetic Manufacturing Operations

110.3 Regulation 8, Rule 35: Coating, Ink and Adhesive Manufacturing

110.4 Regulation 8, Rule 36: Resin Manufacturing

110.5 Regulation 8, Rule 41: Vegetable Oil Manufacturing Operations

110.6 Regulation 8, Rule 50: Polyester Resin Operations

110.7 Regulation 8, Rule 52: Polystyrene, Polypropylene, and Polyethylene Foam Product Manufacturing Operations

~~**8-10-111 Exemption, Chemical Plants:** The provisions of Section 8-10-301 shall not apply to chemical plants until January 1, 1985.~~ (Adopted 7/20/83)

~~**8-10-112 Limited Exemption, Measurement Periods:** The provisions of Section 8-10-301 shall not apply while a process vessel is opened for a period of time reasonably necessary for measurements to determine compliance with the concentration and mass emission limits of this rule.~~

~~**8-10-113 Exemption, Small Vessels:** The provisions of this Rule shall not apply to any process vessel with a volume of less than 100 cubic feet (ft³).~~

~~**8-10-114 Exemption, Batch Processes:** The provisions of this rule shall not apply to any process vessel used in a batch process operation that requires periodic vessel opening as part of the routine operation of the vessel, including but not limited to delayed coking vessels.~~

8-10-200 DEFINITIONS

8-10-201 Chemical Plant: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has ~~28 325~~ as the first two three digits in their ~~Standard Industrial Classification Code~~ as determined from the ~~Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget-North American Industrial Classification Standard (NAICS) code.~~ Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining.

(Adopted 7/20/83)

~~**8-10-202 Petroleum Refinery:** Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants or other products through distillation of petroleum or through redistillation, cracking, rearrangement or reforming of~~

~~unfinished petroleum derivatives.~~ Any facility that processes petroleum, as defined in the North American Industrial Classification Standard No. 32411 (1997). (Adopted 7/20/83)

8-10-203 Process Unit: A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed of raw materials and sufficient storage facilities for the final product. (Adopted 7/20/83)

8-10-204 Process Vessel: Any vessel in which organic compounds are fractionated ~~on more than one tray or on packing,~~ or chemically reacted, or washed or purified. These vessels shall include but are not limited to reactors, columns, accumulator vessels, knockout pots, surge/settling drums and other similar devices.

(Renumbered 7/20/83)

8-10-205 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-10-206 Total Organic Compound: All organic compounds of carbon including methane, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-10-300 STANDARDS

8-10-301 Process Vessel Depressurizing: ~~The control Emissions of precursor organic compounds emissions from depressurizing any process vessel at a petroleum refinery or a chemical plant during a process unit turnaround shall be accomplished so that the organic compounds, after passing through a knockout pot to remove the condensable fraction, must either be:~~ controlled by venting them to a

~~301.1 Recovered (add to the fuel gas system) and combusted,~~

~~301.2 Controlled and piped to an appropriate firebox, or incinerator, thermal oxidizer, for combustion,~~

~~301.3 Flared, or otherwise~~

~~301.4 Contained and treated so as to prevent their emissions to the atmosphere.~~ Such procedures shall continue until the pressure within the process vessel is as close to atmospheric pressure as practicably possible, in no case shall a process vessel be vented to the atmosphere until the partial pressure of organic compounds in that vessel is less than 1000 mm Hg (4.6 psig).

(Amended 3/17/83, 3/20/83)

8-10-302 Opening of Process Vessels: Effective July 1, 2004, no process vessel may be opened to the atmosphere unless the following requirements are met except as provided below:

302.1 No process vessel may be opened to the atmosphere unless the internal concentration of total organic compounds has been reduced prior to release to atmosphere to less than 10,000 parts per million (ppm), expressed as methane (C₁) except as provided in Section 8-10-302.2.

302.2 A process vessel at a refinery or chemical plant may be opened when the internal concentration of total organic compounds is 10,000 ppm or greater provided that the total number of such vessels opened with such concentration during any consecutive five year period does not exceed 10% of the total process vessel population as documented pursuant to section 8-10-401, and the organic compound emissions from the opening of these vessels shall not exceed 15 pounds per day. Vessels with an internal concentration of total organic compounds of 10,000 ppm or greater shall not be opened on any day on which the APCO predicts an exceedance of a National Ambient Air Quality Standard for ozone or declares a Spare the Air Day.

8-10-400 ADMINISTRATIVE REQUIREMENTS

8-10-401 Turnaround Records Reporting: ~~Refinery personnel shall keep records of each process unit turnaround, listing as a minimum:~~

~~401.1 The date of unit shutdown and/or depressurizing,~~

~~401.2 The approximate process vessel hydrocarbon concentration when the organic emissions were first discharged into the atmosphere, and~~

~~401.3 The approximate quantity of total precursor organic compounds emitted into the atmosphere. These records shall be kept for at least two (2) years and be made available to the APCO during any compliance inspection.~~

~~Any facility subject to the provisions of this rule shall submit an annual report to the Air Pollution Control Officer (APCO) containing the elements of Section 8-10-~~502~~ 503. The annual report shall be submitted by February 1 of each year. By April 1, 2004, any facility subject to the provisions of this rule shall submit an initial report that lists all process vessels, it's volume in cubic feet, and it's service type. The list shall be updated yearly, as necessary, and submitted with the annual report.~~

(Amended 3/17/82, 7/10/83)

8-10-402 Increments of Progress: ~~A person who must modify existing sources or install new control equipment at chemical plants to comply with the requirements of this Rule shall comply with the following compliance schedule:~~

~~402.1 January 1, 1984: Submit to the APCO final control plan which describes, as a minimum, the steps, including a construction schedule, that will be taken to achieve compliance with such requirements.~~

~~402.2 July 1, 1984: Submit a completed application for any Authority to Construct necessary to achieve compliance with such requirements.~~

~~402.3 January 1, 1985: Be in compliance with all the requirements of this Rule.~~

(Amended July 20, 1983)

8-10-500 MONITORING AND RECORDS

8-10-501 Monitoring: ~~Any vessel subject to this rule shall be monitored for the concentration of total organic compounds prior to opening and once per day during the time the vessel is open to the atmosphere. The sample shall be a representative sample of the internal atmosphere of the vessel. This section shall not apply if it can be demonstrated that the concentration of total organic compounds has been reduced to a concentration equal to or less than 100 ppm for three consecutive days.~~

8-10-502 Concentration Measurement: ~~The meter used to measure the concentration of total organic compound emissions shall meet the accuracy requirements specified in EPA Method 21.~~

8-10-503 Records: ~~Any facility subject to the provisions of this rule shall keep records of each vessel depressurization. The records shall include the following information:~~

~~503.1 The date, time, type of activity, and duration of depressurization and vessel opening,~~

~~503.2 The type of service, size and name or vessel identification number,~~

~~503.3 The measured total organic compound concentration and calculated mass emissions from each depressurized vessel, including the sample location and any assumptions made in calculating the mass emissions, and~~

~~503.4 The number and size of any air movers used to assure compliance with confined space entry requirements.~~

~~503.5 Records shall be maintained for at least 5 years and shall be made available to the APCO for inspection at any time.~~

8-10-600 MANUAL OF PROCEDURES

8-10-601 Monitoring Procedures: ~~The procedures used to monitor emissions are set forth in EPA Method 21 (40 CFR Part 60, Appendix A).~~

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Proposed Amendments
Regulation 8 Rule 10: Process Vessel Depressurization
Control Measure SS-17

Staff Report

January 2004

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- A. DISCUSSION OF MONITORING TECHNOLOGIES
- B. SUMMARY OF OTHER DISTRICT STANDARDS
- C. LIST OF FLAMMABLE PROPERTIES
- D. CEQA ANALYSIS
- E. SOCIOECONOMIC ANALYSIS

EXECUTIVE SUMMARY

Regulation 8, Rule 10 requires Bay Area refineries and chemical plants to control emissions from the depressurization of process vessels. The proposed amendments to this rule will:

- Generally prohibit opening or venting process vessels to the atmosphere unless the emissions of total organic compounds have been reduced to a concentration of below 10,000 parts per million (ppm);
- Limit the mass emissions of a limited number of vessels that exceed 10,000 ppm at opening to below 15 pounds per day;
- Expand the number of process vessels covered by this rule; and
- Add monitoring and recording requirements to measure emissions vented to atmosphere once each 24-hour period.

The vessels subject to this rule typically process hydrocarbons and other materials, often under pressure. These vessels require periodic maintenance and repairs that may involve entry into the confined space by plant personnel. To make a vessel safe for entry, it must be purged of the hydrocarbons and other materials it contains. This purging requires great care in order to minimize any risk of explosion or risk to personnel. Typically, hydrocarbons are swept from a vessel by non-combustible purge gas until the hydrocarbon content is well below the level at which an explosion may occur. Once this level is reached, air can be used to purge remaining vapors from the vessel. Personnel may then enter the vessel to perform repairs or maintenance.

The proposed amendments implement Control Measure SS-17 from the Bay Area 2001 Ozone Plan by supplementing existing requirements with a concentration standard and a mass emission limit. The amendments will reduce emissions of organic and other pollutants, including toxic compounds. Staff has identified a potential reduction of 1 ton per day of precursor organic compounds with a total implementation cost of approximately \$24,500 per year. The cost effectiveness is approximately \$70 per ton of precursor organic compound emissions reduced. An analysis of the socioeconomic impacts of the proposal has been prepared by Applied Development Economics of Berkeley, California. The analysis concludes that the economic and employment impacts to the Bay Area from the proposal would not be significant.

A California Environmental Quality Act (CEQA) analysis for the proposed amendments has been prepared by Environmental Audit, Inc., of Placentia, California, concluding that the proposed amendments would not have any significant adverse environmental impacts. A Negative Declaration has been prepared for the proposed amendments pursuant to Public Resources Code section 21080(c) and CEQA Guidelines section 15070 et seq., and was circulated for public review. No comments were received.

The proposed amendments were developed through a workgroup that included District and ARB staff and representatives from environmental groups, the affected refineries, and the Western States Petroleum Association. The workgroup met three times on September 3, September 23, and October 22. In addition, the proposal was discussed at a public workshop October 28, 2003 in Crockett.

BACKGROUND

Emission Source

Periodic maintenance and repair of process equipment are essential to refinery and chemical plant operations. The procedure for shutting down a process unit for maintenance or repair varies from refinery to refinery and from one process vessel to another. In general, shutdowns are accomplished by first shutting off the heat supply to the unit and circulating feedstock through the unit as it cools. Gas oil may be blended into the feedstock to prevent solidification of the product as the temperature drops. The cooled liquid is then pumped out to storage facilities, leaving hydrocarbon vapors in the unit. The pressure of the hydrocarbon vapors in the unit is reduced by venting the various components in the unit to a disposal facility such as a fuel gas system, a vapor recovery system, or a flare system. The residual hydrocarbons remaining in the unit after reducing the pressure are purged with steam, nitrogen, chemical agents, and/or water. Any purged gases should be discharged to the disposal facilities. Condensed steam and water effluent that may contain hydrocarbon or malodorous compounds should be handled by closed water treatment systems.¹ Once the unit has been purged, air is then used to sweep out any remaining process gases so that personnel may safely enter the process unit.

¹ Air Pollution Engineering Manual

A survey was conducted to determine the scope of applicability of the current rule and to review the methods presently used for depressurization of vessels. Plants listed in the District database were screened to determine the applicability of the existing rule. A number of the chemical plants screened were determined to be subject to other source specific regulations. An exemption has been added for these plants to clarify the applicability of the rule to chemical plants not subject to other District rules and to petroleum refineries. The five Bay Area refineries participated in workgroup meetings, and submitted site-specific depressurization methods. Site visits were conducted to review records and procedures.

The procedures for depressurization were relatively consistent and demonstrated compliance with a combination of the compliance options provided for in the current regulation. The procedures emphasized recovery of gases that could be used as fuel, and disposing of those gases that have low heating value and would negatively impact the quality of fuel gas. Typically, inert gases include nitrogen, and steam. The methods for emission calculations varied. Most facilities record the lower explosive limit (LEL) and estimate the mass emissions using the assumption that there are no emissions after one vessel volume turnover. No records are kept by the refineries beyond two years so there was insufficient data to verify this assumption. The proposed amendments would include a provision for daily monitoring and record retention for five years.

Rule Development History

Regulation 8, Rule 10 was adopted by the BAAQMD Board of Directors on March 17, 1982 and amended July 20, 1983. It is intended to limit emissions of precursor organic compounds from process vessel depressurization during refining unit turnarounds. It requires that organic compounds, after passing through a knockout pot to remove the condensable compounds, be: (1) recovered and combusted in the fuel gas system, (2) controlled and piped to an appropriate firebox or incinerator, (3) flared, or (4) contained and treated. Venting to the atmosphere is prohibited until the partial pressure of organic compounds in the vessel is less than 4.6 psig. Emission reductions from the implementation of the initial rule in 1982 were estimated by the Air Resource Board at over 17 tons of organics per year.²

² Air Resource Board, Response to Request for Information, December 23, 1980

In attainment plans for the state ozone standard (Clean Air Plans) from 1991 to 2000, the District included Control Measure C4: Improved Process Vessel Depressurization Rule. The measure originally focused on the control efficiency as the preferred means used to reduce emissions during depressurization. The measure proposed that carbon adsorption with a control efficiency of 95% be used. It also proposed that compressor capacity for the flare gas recovery systems be sufficient to recover flows from vessels during depressurization, thereby reducing flaring.³ The measure was revised for the Bay Area 2000 Clean Air Plan to require abatement of emissions to continue below the pressure limit in the current rule to an unspecified lower pressure or concentration.⁴

Control Measure SS-17, Process Vessel Depressurization was included in the 2001 Ozone Attainment Plan for the national ozone standard. This measure is identical to Control Measure C4 from the 2000 Clean Air Plan. The measure identified 0.14 tons per day of precursor organic emissions as available for control. The proposal estimated a reduction of 0.07 tons per day to be achieved by a concentration standard or a reduction in the allowable pressure prior to opening the vessel to atmosphere. The proposed amendments include a prohibition on venting to atmosphere unless the total organic compounds prior to release are reduced to a concentration below 10,000 ppm, expressed as methane and the total emissions from vessels having a concentration greater than 10,000 ppm be less than 15 pounds per day for a limited population of vessels.

Purpose of Proposed Regulation

The proposed amendments to Regulation 8, Rule 10, Process Vessel Depressurization are intended to implement Control Measure SS-17 from the Bay Area 2001 Ozone Attainment Plan. The purpose of the rule is to limit the amount of total organic compounds emitted to the atmosphere after a process vessel is depressurized and opened for servicing.

Means for Controlling Emissions

Prior to adoption of Regulation 8 Rule 10 in 1982, emissions from depressurized vessels were vented to the atmosphere. The regulation imposed control requirements consisting of thermal destruction or treatment until the partial pressure of hydrocarbon in a vessel

³ Bay Area '91 Clean Air Plan, Vol. III, Appendix G, Control Measure # C4.

⁴ Bay Area 2000 Clean Air Plan, Control Measure # C4.

was less than 4.6 psig. Although this was interpreted to mean the indicated vessel gauge pressure had to be less than 4.6 psig, depressurization typically achieved control by thermal destruction to a gauge pressure of 2-4 pounds. At this point the depressurized vessel was prepared for maintenance by venting to atmosphere any remaining emissions, with air movers. The movement of air through the vessel is essential to maintain a safe workspace. Standards for these conditions are set forth in permits required for confined space entry and county use permits.

The proposed amendments target the emissions vented to atmosphere. The options used to control emissions are left to the facility, while the level of control is mandated by the specified concentration or mass standard. These options would still include the existing methods of thermal destruction, however other options are available. These are likely to involve more extensive cleaning procedure either in the form of more time or alternate materials used for cleaning. Another option might involve portable abatement devices, for example a thermal oxidizer or carbon beds. Each of these options has unique factors to consider when choosing a compliance strategy. The facilities will have the flexibility to choose the option most suitable to their operational requirements.

The factors that need to be considered when choosing a control option include safety, cost, and degree of cleanliness. Safety issues were voiced during workgroup meetings when discussing portable abatement devices. Adding abatement collection components would add to mobility concerns in already confined spaces that occur during major maintenance turnarounds. Facility use permits might prohibit the introduction of a source of ignition within process units, such as a portable thermal oxidizer. Some suggest that an increase flammability risk might occur with contamination of carbon beds. These issues may be resolved with increased costs and proper monitoring and maintenance. The most probable choice for achieving the proposed emission standard is likely to be extended purging either with steam or chemical agents. None of the options require facilities to use any unsafe practices.

Means for Monitoring Emissions

The method for monitoring emissions is driven by Section 8-10-301.4 partial pressure of hydrocarbon less than 4.6 psig or conditions specified on the permit for confined space entry, typically 10% of the lower explosive limit (LEL). To determine the partial pressure of hydrocarbons in a vessel, a sample is collected then analyzed by gas chromatography. Confined space entry standards, OSHA regulation 29CFR1910.146

require the internal atmosphere be tested with a calibrated, direct-reading instrument for oxygen content, flammable gases, and if necessary toxic air contaminants. These checks are typically done using LEL meters which provide the percent LEL and oxygen level in the atmosphere. Other sensors may be used including for example carbon monoxide or hydrogen sulfide. A discussion of monitoring technologies is included in Appendix A. Most manufacturers suggest the meters be calibrated using a known methane or pentane standard. However, a previous National Institute for Occupational Safety and Health (NIOSH) study found that manufacturer-recommended calibration techniques do not match instrument performance when monitoring jet fuel vapors. JP-8 and Jet-A fuels are generally C9 to C16 compounds. Because most LEL meters are calibrated against n-alkanes less than C9, some meters may underestimate the explosive potential of jet fuel vapor in tanks after removal of the most volatile components.⁵

PROPOSED AMENDMENTS

The proposed amendments to Regulation 8, Rule 10, Process Vessel Depressurization would supplement the existing control requirements with a concentration standard and a mass emission limit. A new provision will add a requirement to measure total organic compounds initially upon the opening of the vessel to the atmosphere and once per 24-hour period during the time the vessel is open. Monitoring and recording requirements are added to reflect these changes.

Section 8-10-101, Description

The applicability of the rule has been expanded from controlling emissions from depressurizing vessels during major turnarounds to controlling emissions from depressurizing and opening a process vessel.

Section 8-10-110, Exemption, Equipment Subject to Other Rules

⁵ *Field-Produced Jp-8 Standard For Calibration Of Lower Explosive Limit Meters Used By Jet Fuel Tank Maintenance Personnel.* S. Martin, P. Jensen, NIOSH, Morgantown, WV; J. Pleil, US EPA, Research Triangle Park, NC

These exemptions are proposed for adoption to eliminate duplication of standards for vessels covered by existing District regulations. Most of the referenced rules were adopted after Regulation 8, Rule 10 and impose requirements more closely tailored to the specific industry regulated by the rule.

Section 8-10-111, Chemical Plants

The exemption for chemical plants in Section 8-10-111 is proposed for deletion because it is obsolete. Though chemical plants are not exempt from the rule, very few plants are subject to the rule because most are regulated by other Regulation 8 rules. However, any chemical plant not listed in Section 8-10-110 is subject to the provisions of the rule.

Section 8-10-112, Limited Exemption, Measurement Periods

This language is necessary to distinguish emissions released due to compliance monitoring from those released from normal depressurization activities. Sample locations vary and may include sample taps, bleeder valves, and/or open manways located at various positions on the vessel. The most significant release would occur if measurements are taken from open manways. Emissions from these activities are insignificant, and the exemption is necessary to ensure that compliance monitoring is not treated as a rule violation.

Section 8-10-113, Exemption, Small Vessels

This language was added to exclude small vessels that are not large enough to enter for maintenance work. These vessels are not subject to the current rule under the current definition of process vessel. Because of amendments to the definition of process vessel in Section 8-10-204, some extremely small vessels would, without this proposed exemption, become subject to requirements for concentration monitoring, which is unnecessary both because these vessels are not entered and because emissions are insignificant. Emissions from depressurizing these small vessels are handled in the same way as those from larger vessels through recovery into the fuel gas system, flaring, or combustion in an appropriate firebox or incinerator.

Section 8-10-114, Exemption, Batch Processes

The existing rule applies only during turnaround activities. Almost all refinery operations are continuous processes, with constant flow of materials into and out of the processes. The current rule applies when these continuous processes are halted during a turnaround so that the process vessels can be inspected and, when necessary, repaired

Under the proposed rule amendments, depressurization requirements would apply regardless when the depressurization activity occurs (see discussion of Section 8-10-301). As a result, some routine batch process operations could become subject to the rule. In a batch process, material is placed in a vessel at the start of a process and removed at the end of the process, with no material flowing into or out of the process. Opening a batch process vessel is a routine part of the process. The rule has never applied to this type of activity.

The only refinery batch process identified by staff is delayed coking. Delayed coking is a process for upgrading residual heavy ends to higher value liquids.. Heavy ends are fed into a coke drum, and at high temperature, "cracked" to produce lighter products while leaving a solid residue called coke. Once coke reaches a certain level within the drum, the drum is isolated from the process flow, and ultimately, after cooling, opened so that coke can be cut out of the drum.

The purpose of the proposed exemption in Section 8-10-114 is to clarify that the rule continues to be inapplicable to delayed coking and other batch process operations. Emissions of organics from opening coke drums is unlikely to be significant.

Section 8-10-201, Chemical Plant

The SIC code system has been replaced by the North American Industrial Classification Standard (NAICS) code. The facilities we call "chemical plants" all appeared in the 1987 SIC (the last update to the SIC codes) under standards with numbers that began with the digits "28." Under the NAICS, almost all of these industrial categories now have 5 or 6-digit numbers beginning with "325," but there are some minor exceptions that are not an issue in the Bay Area (e.g., sulfur recovery from natural gas production, alumina refining, table salt manufacturing). The definition is amended to reflect this change.

Section 8-10-202, Petroleum Refinery

The proposed amendment to this section reflects the new classification for petroleum refineries under the NAICS code.

Section 8-10-204, Process Vessel

The definition of process vessel is revised to broaden and clarify the range of vessels subject to the rule. Examples of types of vessels that would be subject to the rule are added.

Section 8-10-205, Organic Compound

This definition is the same as that found in other District rules.

Section 8-10-206, Total Organic Compounds

Proposed new Section 8-10-302 specifies the concentrations of "total organic compounds" at which a vessel may be opened. Section 8-10-206 defines the term as organic compounds, as defined by the District (Section 8-10-205), plus methane. Under District rules, methane is not defined to be an organic compound, although it contains a carbon atom. This unusual treatment of methane is common in ozone regulations because methane does not contribute significantly to ozone formation and is therefore excluded from those compounds for which controls are required. However, the instruments used to determine concentrations of hydrocarbons in vessels respond to methane, as well as to other hydrocarbons, and this new definition is necessary to make it clear that rule requirements are based on what the instruments measure.

8-10-301, Process Vessel Depressurizing

Proposed revisions to this section are intended primarily to simplify and clarify existing language. One significant change, however, is the deletion of language limiting applicability to process unit turnarounds. This change is intended to impose rule requirements whenever a vessel is opened, not just during turnarounds.

Section 8-10-302, Opening of Process Vessels

This section imposes a new prohibition on the opening of process vessels unless the total organic compounds have been reduced to a concentration less than 10,000 ppm, expressed as methane, along with a mass emissions standard for vessels that cannot meet the 10,000 ppm standard. Staff considered existing refinery practices, standards in rules from other air districts (Appendix B), and similar District standards to establish the concentration standard.

The mass emission limit was developed to recognize that the internal concentration for a very limited number of vessels cannot be easily reduced to 10,000 ppm, often because minor amounts of organic material remaining in a vessel cannot be readily removed until the vessel is entered. This exception to the concentration standard is very narrow. The number of vessels that can be opened over a five-year period under the exception is limited to 10% of the vessel population for the refinery or chemical plant. For example, if a facility has a total population of 150 vessels subject to the rule, the facility would be allowed to open 15 vessels over any consecutive five-year period, provided that, on any given day, mass emissions from all vessels opened under the exception, taken together, do not exceed 15 pounds. As a further limitation, the exception would not apply on days that the District predicts an excess of any Federal Ambient Air Quality Standard for ozone.

This exception was established after extensive review of refinery records and discussion in the workgroup. Discussions both in the workgroup meetings and the public workshop focused on the proposed mass limit, the method used to calculate the mass emissions, and the need for clear language to describe this very limited exemption from the 10,000 ppm requirement.

Refineries and chemical plants are already achieving the requirements imposed by Section 8-10-302. This is because safety standards more stringent than the air pollution requirements found in the existing rule guide refinery practice. Refinery practices for entering vessels are dictated by U.S. Occupational Safety And Health Administration standards found in 29 Code of Federal Regulations Part 1910 (and particularly in 29 CFR § 1910.146 - Permit-Required Confined Spaces). These standards require an employer to develop an overall program to protect employees from hazards associated with confined spaces.

One required element under the OSHA standards is evaluation testing, where the atmosphere of a confined space is analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated. Combustible gasses are tested after oxygen levels and before toxic gases because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gasses and vapors. The level generally established in the industry is to achieve 10% of the lower explosive limit (LEL), although some procedures specify 2% and actual levels in practice tend towards zero. Staff reviewed these values to develop the concentration standard. A list of the LEL of various compounds can be found in Appendix C.

Section 8-10-401, Reporting

A requirement to submit an annual report is proposed to account for inventory changes and to help calculate emissions from process vessel depressurizations and openings. The frequency was selected based on the need to gather timely information for future air quality planning. The proposed amendments require an initial inventory report and yearly updates.

Section 8-10-402, Increments of Progress

This section is obsolete and is proposed to be deleted.

Section 8-10-501, Monitoring

This proposed new section specifies procedures for measuring emissions from depressurized process vessels. Measurement is required prior to the opening of a vessel. The proposed language is intended to ensure that a representative sample of the internal atmosphere of the vessel is acquired while providing some flexibility in sampling locations. Monitoring is required after the vessel is opened to verify the cleanliness of the vessel and to determine emissions after a number of air changes in the vessel. This data will be used for future air quality planning. Monitoring after vessel opening can be halted when the measured concentration drops below 100 ppm for three days. This provision is intended to reduce the cost of monitoring, given that some vessels may remain open for 30 days.

Section 8-10-502, Concentration Measurement

The specification for meter accuracy proposed in this section references EPA standards. The EPA standards include requirements for: (1) response time, (2) detection technology, (3) scale of the instrument, (4) sample flow rate, (5) response factor, and (6) calibration precision and frequency.

Section 8-10-503, Records

This proposed section adds new record keeping elements to those previously required by Section 8-10-401. Section 8-10-401 required that records include the date, time, and duration of turnarounds, vessel identification, including the volume and material processed, and the concentration and calculated mass of emissions for the vessel turnaround. The proposed new provisions require tracking the time of the vessel opening, the type of activity, the sample location, and any assumptions used in the calculation of mass emissions. In addition, the record retention period is expanded to five years to correspond to Title V requirements.

Section 8-10-601, Monitoring Procedures

This section is proposed to specify a method (EPA Method 21) to use when monitoring the concentration of organic emissions from open vessels.

EMISSIONS AND EMISSION REDUCTIONS

The amount of emissions from process vessel depressurization depends on how often the vessel goes through a turnaround. The frequency of turnarounds varies depending on the process unit. The typical time between turnarounds is generally three to four years. Some process units go for as long as ten years between turnarounds. The current rule requires retention of records for two years. This factor limits the data available for analysis. Staff requested records for the prior two years and received information from three of the five refineries. This information was used to estimate the quantity of precursor organic compounds and the potential emissions allowed by the current rule. Table 3 compares emissions theoretically allowed under the rule and actual emissions. Actual emissions are significantly lower than those that would be theoretically allowed under the existing rule.

The emissions allowed by the current rule are shown as approximately one ton per day. This estimate assumes that a vessel is hydrocarbon free after one volume turnover. Potential emissions are likely higher due to factors that affect the cleanliness of the vessel, such as material off-gassing from catalysts or remaining liquids, clingage to the vessel walls and internal components, and turnaround timelines.

Table 3: Estimated Precursor Organic Emissions¹ Actual vs. Potential

REFINERY	ACTUAL EMISSIONS - REFINERY ESTIMATE ² (pounds per day)		EMISSIONS POTENTIALLY ALLOWED BY CURRENT RULE ³ (pounds per day)	
	2002	2003	2002	2003
Refinery A	0.56	0.42	382	148
Refinery B	0.19	0.57	340	730
Refinery C	4.22	N/A		
Refinery D ⁴	N/C	N/C		
Refinery E	N/A	N/A		
Bay Area ⁵	1.88	2.5	1,805	2,195

¹ Methane content at 1% (District Sample Analysis, Lab # 02-144)

² Calculated mass emissions from refinery records

³ Assumes no clingage, no outgassing, no liquid in vessel, a molecular weight of 100, and a pressure of 4.6 psig

⁴ Values given are as either greater or less than 10% LEL. N/C-not calculated

⁵ Assumes 2 of 5 (A&B) refineries 2 yr data set is representative of all refineries

The potential emissions allowed by the current rule were calculated using refinery reported volumes, an assumed composition, one vessel volume turnover and a partial pressure of hydrocarbon at 4.6 pounds per square inch gauge (psig). Refinery practices typically achieve a partial pressure of organics within the vessel significantly less than 4.6 psig, due primarily to their requirements for confined space entry. The proposed amendments will codify the existing practices.

Economic Impacts

Socioeconomic Impacts

Section 40728.5 of the Health and Safety Code requires an air district to assess the socioeconomic impacts of the adoption, amendment, or repeal of a rule if the rule is one that “will significantly affect air quality or emissions limitations.” Applied Economic Development, Berkeley, California, prepared a socioeconomic analysis, which is attached as Appendix E. The analysis concludes that the proposed amendments would not have significant socioeconomic impacts.

Costs

The proposed amendments impose requirements that differ only slightly from existing practice. There are some minor costs associated with a change in monitoring equipment for those facilities that switch to flame or photoionization detectors for surveying emissions from vessel depressurization. Generally, facilities use catalytic detectors to monitor confined space atmospheres. Although flame ionization detectors are used for fugitive surveys, for example to determine compliance with District Regulation 8, Rule 18, Equipment Leaks, some refineries reported that extra staff, specialized training, and higher quality calibration gases would be required to monitor process vessel depressurization. This would be necessary to insure compliance with OSHA standards (...a user shall be properly trained on the meter used to measure...), and the accuracy requirements of Method 21. The workgroup discussed capability of meeting Method 21 by the existing LEL technology. Manufacturers have suggested that new meters meet Method 21, and EPA has listed the technology as an approved technology in Method 21.

Industry stated that based on current depressurization procedures a few vessels would be in violation of the proposed standard. Currently, there is insufficient information available to determine the additional time and methods necessary to meet the standard. An estimate was developed based on the presumed cost of an additional day of cleaning. Table 5 is staff’s estimate of the various cost items that may be imposed by the proposed rule.

Table 5: Cost Estimate Per Facility

COST ITEM	COST ITEM
Records ¹	\$360
Maintenance & Calibration ²	\$1,540
Monitoring ³	\$22,500
Total	\$24,500

¹ \$30/hr for 12 hours (one hour per month for 12 months)

² 10% of equipment purchase price (EPA Cost Manual), Includes Parts and Calibration once per quarter

³ 300 vessels, annual cost at one half-hour per vessel monitored once per day for 15 days every 3 years at \$30/hr

Table 5 is an estimate of costs associated with the implementation of the proposed amendments. These amendments will reduce emissions of organic and other pollutants, including toxic compounds. Staff has estimated a total implementation cost of approximately \$24,500 per year. The cost effectiveness is approximately \$70 per ton of precursor organic compound emissions reduced.

Incremental Costs

Under Health and Safety Code Section 40920.6, the District is required to perform an incremental cost analysis when adopting a Best Available Retrofit Control Technology (BARCT) rule or feasible measure required by the California Clean Air Act. To perform this analysis, the District must (1) identify one or more control options achieving the emission reduction objectives for the proposed rule, (2) determine the cost effectiveness for each option, and (3) calculate the incremental cost effectiveness for each option. To determine incremental costs, the District must “calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option.” The proposed amendments to Regulation 8, Rule 10 are intended to implement Control Measure SS-17 from the Bay Area 2001 Ozone Attainment Plan and Control Measure C4 from the Bay Area 2000 Clean Air Plan. Because Control Measure C4 is intended to meet feasible measure requirements under the California Clean Air Act, an incremental cost analysis is required.

During the rule development process, two control options were discussed: (1) measure all vessels and determine emissions, and (2) limit emissions to 10,000 ppm. Option 1 would require monitoring and reporting of data. Option 2 would be a standard that would limit

emissions to 10,000 ppm. The cost of monitoring for each option was assumed to be the same. A summary of these costs is listed in Table 5 and is discussed in the next section. Option 1 assumes that the only additional costs would be the daily monitoring and recordkeeping requirements. This is based on existing requirements. Option 2 assumes rental costs for regenerative systems at \$5,000 per day. This assumption was based on discussions at workgroup meetings.

Table 4: Total Incremental Cost Effectiveness for All Facilities

	Cost (\$/year)	Emission Reduction (tons/year)	Cost Per Ton of Emissions (\$/ton)	Incremental Cost (\$/ton)
Option 1	122,000	266	450	---
Option 2	228,000	298	750	300

ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act, the District’s environmental consultant, Environmental Audit, Inc., prepared an initial study for the proposed rule amendments to determine whether rule adoption would result in any significant environmental impacts. In general, the initial study concludes that the proposed amendments would result in environmental benefits through ensuring that emissions from vessel depressurization are minimized. Because the proposed new requirements for vessel depressurization are in line with current practices, the initial study also concludes that the proposed amendments will not change operating practices in any way that might have adverse environmental impacts. The complete environmental document is attached as Appendix D. A Negative Declaration for the proposed amendments has been prepared and was circulated for comment. The comment period was from December 22, 2003 to January 12, 2004, and no comments were received.

REGULATORY IMPACTS

California Health and Safety Code section 40727.2 requires the District to identify existing federal air pollution control requirements for the equipment or source type affected by the proposed rule or regulation. The District must then note any differences between these existing requirements and the requirements imposed by the proposed rule. Regulation 8, Rule 10: Process Vessel Depressurization, applies to specific vessels in

refineries and chemical plants when depressurizing a vessel. The proposed amendments expand the applicability to a greater number of process vessels and limit the emissions after depressurization. No federal air pollution control requirement was identified for the equipment or source type affected by the proposed rule or regulation.

RULE DEVELOPMENT HISTORY

A workgroup was formed that included representatives from California Air Resources Board, Industry, Communities for a Better Environment, and District staff. The workgroup has met three times to discuss technical issues. The issues discussed included the definition of process vessel, current methods used to determine emissions to the atmosphere, methods used to clean and purge vessels, interpreting existing data, emission limitations and controls. A public workshop was held on October 28, 2003 to present proposed language and discuss technical issues.

The issue of most concern was the proposed requirement to use EPA Method 21 for monitoring emissions. Industry was of the opinion that the specifications in the method added costs with little gains. They based this opinion on the need to adhere to the calibration and performance specifications of the instrument used to measure emissions in addition to the added time for training and monitoring. This is relevant for those facilities that contract out for monitoring, and/or use a basic LEL meter. The method has flexibility in the type of meter that may be used to monitor emissions. The requirements for calibration are similar to existing procedures (OSHA requires “the use of a calibrated meter”), however some meters in use may not meet the performance specification. In these cases an increased cost would be incurred, however staff is of the opinion these costs are insignificant.

The proposed rule amendments and draft staff report were transmitted to CARB on December 22, 2003. CARB reviewed the proposed amendments and submitted written comments on January 13, 2003. Based on staff’s review of the comments, a minor clarification has been made to the rule. Responses to the CARB comments are included in this staff report (see pp. 20-23).

DISTRICT STAFF IMPACTS

Implementation of the proposed regulation will have a limited impact on the District's resources. However, these changes are essential and necessary in order to satisfy the commitments in the Bay Area 2001 Ozone Attainment Plan. Staff will need to verify the vessel concentration during turnarounds, review reports and records, and collect and analyze gas samples for selected vessels.

CONCLUSION

The proposed amendments to Regulation 8, Rule 10, Process Vessel Depressurization will meet the commitments made during the adoption of the 2001 Ozone Attainment Plan for Control Measure SS-17. It is intended to limit the amount of precursor organic compounds released when a vessel is being depressurized and opened for entry.

Pursuant to the Health and Safety Code Section 40727, new regulations must meet necessity, authority, clarity, consistency, non-duplicity and reference. The proposed regulation is:

- Necessary to protect public health by reducing ozone precursor emissions to meet control measure SS-17 in the Bay Area 2001 Ozone Attainment Plan. The amendments also reduce exposures to toxic air contaminants.
- Authorized by California Health and Safety Code section 40702.
- Clear, in that the new regulation specifically delineates the affected industry, compliance options and administrative requirements for industry subject to this rule,
- Consistent with other District rules, and not in conflict with state or federal law,
- Non-duplicative of other statutes, rules or regulations, and
- The proposed regulation properly references the applicable District rules and test methods and does not reference other existing law.

The proposed regulation has met all legal noticing requirements and has been discussed with all interested parties. District staff recommends adoption of Regulation 8, Rule 10: Process Vessel Depressurization.

REFERENCES

Air Pollution Engineering Manual

Field-Produced Jp-8 Standard For Calibration Of Lower Explosive Limit Meters Used By Jet Fuel Tank Maintenance Personnel. S. Martin, P. Jensen, NIOSH, Morgantown, WV; J. Pleil, US EPA, Research Triangle Park, NC.

Infrared Technology For Fail-To-Safe Hydrocarbon Gas Detection, Dr. Shankar Baliga, Senior Development Scientist, General Monitors

Century OVA 128 Portable Hydrocarbon Analyzer Product Specification Brochure

Control Measure C4, Technical Assessment Document, October 9, 1991

EPA Sector Notebook, 1995

EPA Cost Manual, January 2002

Bay Area 2001 Ozone Attainment Plan, adopted October 24, 2001

COMMENTS AND RESPONSES

The following comments were received during the rule development process for the proposed rule amendments.

- 1. The rule references EPA in several instances. To improve enforceability of the rule, we recommend that the acronym U.S. EPA be used when referencing the United States Environmental Protection Agency. There are several states with environmental protection agencies (e.g. California, Illinois, Ohio). There are also other countries with environmental protection agencies.**

In over 40 years of enforcement of BAAQMD rules, many of which refer to "EPA," no enforceability issues have arisen from the use of this acronym. Among the EPAs cited, only U.S. EPA has any direct regulatory authority over the sources regulated by BAAQMD Regulation 8, Rule 18. Given the widespread use of the acronym in District rules, it may be more appropriate for the District to amend its Regulation 1 to include a definition of "EPA" if any real enforceability issues arise.

- 2. Section 8-10-112 states there is an exemption from this rule while a process vessel is opened for a period of time reasonably necessary for measurements to determine compliance. It is possible that a testing crew could open a hatch, get side tracked for an hour or so and then complete testing upon their return. To improve enforceability and minimize the abuse of this exemption, we recommend that the rule not allow opening any hatch more than 30 seconds before monitoring. We also recommend that the rule require a sampling spigot or sampling port for monitoring and require that the spigot to be properly maintained and purged.**

District staff believe the exemption is appropriately worded to address the wide variety of circumstances encountered during compliance inspections. Under the circumstances described in the comment (testing crew gets side tracked for an hour), District staff would likely conclude that the period of time exceeded what was reasonably necessary. The currently proposed language

gives the District sufficient authority to ensure that the exemption is not abused. The suggested alternative language is too prescriptive.

- 3. Section 8-10-113 ... states that the requirements of this rule shall not apply to any process vessel with a volume of less than 100 cubic feet. This is a new exemption. The existing rule prohibits the venting to atmosphere of any vessel during a process unit turnaround unless the partial pressure of organic compounds is less than 1000 mm Hg (without regard to VOC concentration or content). Without a detailed analysis of the potential adverse emissions impact associated with this exemption, we believe it is possible that its inclusion in the proposed rule revisions may result in emissions increases from these small vessels. We recommend that the small vessel exemption be limited to the requirements of Section 8-10-302 only.. <Rump, California Air Resources Board (ARB). E-mail. 1/13/04>**

Small vessels are not subject to the existing rule because the existing definition of process vessel makes the rule applicable to large vessels: fractionation columns, reactors, desalters, etc. The proposed amendments add smaller vessels (accumulators, knockout pots, surge/settling drums, etc.) to the definition of process vessel, and these vessels would now be covered under the rule. Because many of these newly regulated vessels are very small vessels that are not entered by personnel and from which emissions are relatively minor, the exemption has been proposed to avoid requiring costly concentration monitoring pursuant to proposed new Section 8-10-302. Because these small vessels are not regulated under the existing rule, the exemption is not a rule relaxation, particularly because the amendments would broaden the range of vessels subject to the rule and would apply rule requirements at all shutdowns, not just at turnaround.

- 4. Section 8-10-200 does not contain a definition of U.S. EPA Test Method 21. Section 8-10-601 references U.S. EPA Test Method 21. We recommend that Section 8-10-200 be amended to include a definition of U.S. EPA Test Method 21.**

Rather than add a definition of the test method, a Code of Federal Regulations citation has been added to Section 8-10-601 to make it clear that the test method is a U.S. EPA test method.

5. **We are concerned that the potential emissions associated with the exemption in Section 8-10-302 (15 pounds per day total per facility) represent a significant portion (~40 per cent) of the overall reductions anticipated from the adoption of the rule amendments. ARB staff believes that, at a minimum, the staff report should include additional discussion of this issue and its potential emissions impact. <Rump, ARB. E-mail. 1/13/04>**

Because current best refinery practices are significantly more stringent than required by the existing rule and are in line with requirements in the proposed amendments, we have not calculated actual emission reductions from the proposed amendments. The discussion of emission reductions in the staff report refers to allowable emissions under the existing rule and the rule as proposed for amendment. The discussion of emission reductions in the staff report has been clarified to make this clear.

6. **Section 8-10-401 ... states that the facility shall submit an annual report containing the elements identified in Subsection 8-10-502, but Subsection 8-10-502 does not list any reporting requirements. To improve the stringency and enforceability of the rule we recommend that the annual reporting requirements be listed. <Rump, ARB. E-mail. 1/13/04>**

Section 8-10-401 was intended to require submittal of the records required by Section 8-10-503, which lists record keeping requirements for depressurization events. The citation has been changed to refer to Section 8-10-503 rather than 502.

7. **Section 8-10-601 references U.S. EPA Test Method 21 which contains analysis procedures but does not contain proper sampling procedures. To improve the stringency and enforceability of the rule, we recommend that the rule either reference a sampling procedure or include one. Also, this section should require a sampling spigot or port to be used to collect at least three representative samples uniformly spaced in time over a one hour time period. <Rump, ARB. E-mail. 1/13/04>**

Because of the wide variety of vessels subject to the rule, the rule states that a concentration sample must be "a representative sample of the internal

atmosphere of the vessel.” If further guidance is necessary for sampling and calculation, the District will provide it in an enforcement policy document for the rule.

APPENDICES

APPENDIX A. Discussion on Monitoring Technologies

The principle of operation of an instrument measuring % LEL is called catalytic oxidation. When exposed to a mixture containing gases and oxygen, the measuring bead coating allows the oxygen and combustibles to combine at its surface, Figure 1. The energy produced by this reaction heats the measuring bead. The rise in temperature changes the bead's resistance and is related to the concentration of the combustible gas. This rise in temperature is generated by a constant-current supplied to the sensor. The sensor signal readout is indicated as percent LEL. The catalyst employed in these sensors is critical to the accuracy and life of the sensor, and impacts the variety of combustible gases the sensor can detect.

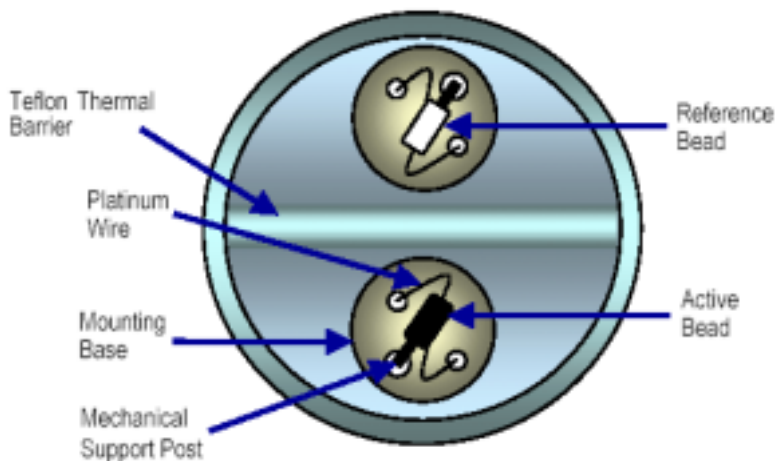


Fig. 1 Catalytic Bead Sensor

Although catalytic bead sensors have been in use for decades, the technology has some drawbacks. A main drawback is the inability to operate in an environment deficient in oxygen since the bead requires oxidation of hydrocarbon gas. Oxygen levels impact oxidation efficiency and the sensor's accuracy. Another drawback is sensor poisoning by chemical compounds such as silicones and sulfur compounds leading to a decline in catalytic activity. Contamination can show up during normal maintenance of the system as an increase in the response time to calibrate, recovery time after exposure and loss of exposure response. Since these conditions can occur without warning to the operator, electrocatalytic hydrocarbon sensors are not fail-to-safe. Fail-to-safe in this instance implies the sensor's ability to communicate its dysfunctional status to the

operator. Catalytic sensors are still the sensors of choice when it comes to operating the sensor head above 75°C.

Hydrocarbon sensors based on infrared (IR) absorption principles do not suffer from the drawbacks of catalytic bead sensors. This leads to increased reliability and a hydrocarbon monitoring system that can operate maintenance free for years. IR absorption based instruments offer fail-to-safe operation because the optical technology is an active one, able to communicate the sensor's status and faults to the operator.

The IR method of measuring gas concentration is based on the absorption of IR radiation at certain wavelengths as the radiation passes through a volume of the gas. IR hydrocarbon gas detectors can be classified into two types known as point detectors and open path detectors. For point detectors, the absorption path length is fixed, and is determined by the instrument design to be a few inches. For the open path IR detectors, the absorption path length can be as long as 100 meters.

Instruments based on IR technology use two wavelengths, one at the gas-absorbing wavelength and the other at a wavelength not absorbed by the gas. IR detectors are immune to poisoning, resistant to corrosion, operate in a deficit or surplus oxygen atmosphere, and have no reduction in sensor life from repeated exposure to gas. With the sophisticated optical and electronic designs currently used, the detectors are factory calibrated and virtually maintenance free. This is particularly desirable when sensors must be located in inaccessible areas and cannot be easily calibrated on a periodic basis.¹

With flame ionization technology, the sample gas is mixed with a fuel (normally hydrogen) and burned in an atmosphere of "blanket air". The hydrogen delivery system provides a precise flow to the detector. Sample gathering is done by using a small diaphragm air pump. The sample delivery system provides air to the detector chamber to maintain the flame combustion and introduce the organic air contaminants for analysis. The ions formed in the burning process cause an electrical conduction between two electrodes in the combustion chamber (or detector cell) that is amplified by a highly sensitive electrometer-amplifier circuit. The electrical output of the electrometer-amplifier is directly proportional to the quantity of flame ionizable hydrocarbons present, and is linear over a wide range. Figure 2 illustrates both the hydrogen flow and air flow patterns in the OVA 128.

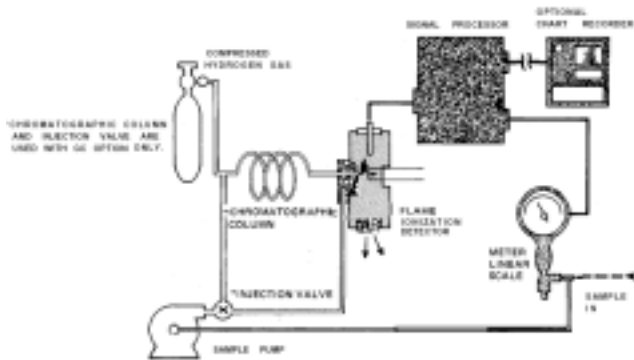


Figure 2 OVA 128²

Staff considered three technologies to monitor the emissions from depressured vessels. Table 1 suggests some advantages and disadvantages of each technology. The proposed amendments specify the use of a meter that meets the accuracy requirements of [EPA Method 21](#).

¹ *Infrared Technology For Fail-To-Safe Hydrocarbon Gas Detection*, Dr. Shankar Baliga, Senior Development Scientist, General Monitors

² Century OVA 128 Portable Hydrocarbon Analyzer Product Specification Brochure

Table 1: Monitoring Technology Comparison

TECHNOLOGY	ADVANTAGE	DISADVANTAGE
Catalytic detectors	Robust	Catalysts can become poisoned or inactive due to contamination
	Simple to operate	The only means of identifying detector sensitivity loss due to catalytic poisons is by checking with the appropriate gas on a routine basis and recalibrating as required.
	Easy to install, calibrate and use	Requires oxygen for detection.
	Long life with a low life-cycle cost	Prolonged exposure to high concentrations of combustible gas may degrade sensor performance.
	Proven technology currently in use by refiners.	
Flame ionization	Universal organic compound response with approximately the same high sensitivity for all	The initial cost is higher than catalytic detectors.
	Flame ionization will not respond to changes in relative humidity or changes in CO and CO2 concentration.	More difficult to calibrate and maintain than catalytic detectors.
	A mass sensing detector which exhibits minimal effects from changes in temperature, pressure, or flow.	High maintenance cost compared to catalytic detectors.
	Provides excellent dynamic range and concentration linearity.	Requires a fuel source.
Infrared	High resistance to contamination and poisoning	Initial higher cost per point. IR detectors in the past have been more expensive than catalytic detectors at initial purchase, but they are rapidly coming down in price to cost parity with catalytic detectors.
	Fail-to-safe operation	Higher spare parts cost.
	Ability to operate in the absence of oxygen or in enriched oxygen	The gas to be measured must be infrared active, such as a hydrocarbon.
		Gases that do not absorb IR energy (such as hydrogen) are not detectable.
		High humidity, dusty and/or corrosive field environments can increase IR detector maintenance costs.
		Routine calibration to a different gas is not practical.
		A relatively large volume of gas is required for response testing.
		Does not perform well for multiple gas applications.
		Cannot replace the IR source in the field – must be returned to factory for repair.

APPENDIX B
SUMMARY OF OTHER DISTRICT RULES

AGENCY	PROVISIONS
<p>San Joaquin Valley Rule 4454: Refinery Process Unit Turnaround</p>	<p>A person shall not depressurize any vessel containing VOCs unless the organic vapors are: Recovered, added to the refinery fuel gas system and combusted; or Controlled and piped to an appropriate firebox or incinerated for combustion; or Flared, until the pressure within the process vessel is as close to atmospheric pressure as is possible.</p> <p>All process vessels shall be depressurized into the control facilities to less than 1020 mm Hg (5 psig) before venting/opening to atmosphere.</p>
<p>San Luis Obispo Rule 442: Refinery Process Turnarounds</p>	<p>A person shall not vent organic compounds to the atmosphere during the depressurization or the vessel purging steps of a refinery process turnaround. B. Compliance may be through venting all uncondensed organic gases to a fuel gas system or to a flare</p>
<p>Santa Barbara Rule 332: Process Turnarounds</p>	<p>1. A person shall not vent organic compounds to the atmosphere during process depressurization or the vessel purging steps of a refinery process turnaround. 2. Compliance may be through venting all uncondensed organic gases to a fuel gas system or to a flare, collected and contained for use as fuel or sent to a gas disposal system until the pressure in the vessel is below five pounds per square inch, gauge, or is within ten percent above the minimum gauge pressure at which the vapors can be collected, whichever is lower.</p>
<p>South Coast Rule 1123: Refinery Process Unit Turnaround</p>	<p>For every refinery that uses inert gas displacement or vacuum education for process turnaround, a person operating the refinery shall submit to the Executive Officer a plan which describes at least the following: (A) the procedure used for gas displacement or education; (B) the disposition of the displaced or educed organic gases; (C) the stage in the displacement or education procedure at which the disposition is changed from a control facility to atmospheric venting (D) the criteria by which said stage is identifiable.</p> <p>Any vessel, or group of vessels, that has been depressurized to less than five pounds per square inch, gauge, shall be exempted</p>
<p>Ventura Rule 74.8: Refinery Process Turnarounds</p>	<p>A person shall not vent reactive organic compounds to the atmosphere Compliance may be through venting all uncondensed reactive organic compound gases to a fuel gas system or to a flare</p>

APPENDIX C. Flammable Properties

COMPOUND	MOLECULAR WEIGHT	LEL (volume %)	LEL (PPM)	10% LEL (expressed as ppm C ₁)
Methane	16.04	5.00	50,000	5,000
Ethane	30.07	3.00	30,000	6,000
Propane	44.09	2.12	21,200	6,360
Butane	58.12	1.86	18,600	7,440
Pentane	72.15	1.40	14,000	7,000
Hexane	86.17	1.18	11,800	7,080
Octane	114.23	0.95	9,500	7,600
Nonane	128.25	0.83	8,300	7,470
Decane	142.28	0.77	7,700	7,700
Ethylene	28.05	2.75	2,750	550
Propylene	42.08	2.00	2,000	600
Acetylene	26.04	2.50	2,500	500
Cyclohexane	84.16	1.26	1,260	756
Benzene	78.11	1.40	1,400	840
Toluene	92.13	1.27	1,270	889

APPENDIX D. CEQA ANALYSIS

APPENDIX E. SOCIOECONOMIC ANALYSIS

**Socioeconomic Analysis
Proposed Amendments
Regulation 8 Rule 10
Process Vessel Depressurization**

Prepared for

**Bay Area Air Quality Management District
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1. EXECUTIVE SUMMARY

The purpose of Regulation 8 Rule 10 is to reduce the emission of VOCs by requiring controls on emissions from the depressurization of process vessels at refineries and chemical plants. The following are some of the key findings from the socioeconomic analysis of the proposed amendments.

- According to the Bay Area Air Quality Management District (BAAQMD), there are 5 petroleum refineries in the region that are subject to Regulation 8, Rule 10. These corporations are Chevron, Shell, Connoco Phillips, Valero, and Tesoro.
- In 2002, these five refineries employed an estimated 2,280 workers, generated revenues of \$4.5 billion, and earned an estimated \$220 million in profits.
- The BAAQMD also indicates that there are an additional 22 sites in their database that are likely to be affected by proposed amendments to Regulation 8, Rule 10. These sites are facilities within the chemical and allied products industry (SIC 28).
- In aggregate, the 22 sites employ an estimated 926 workers, generated revenues of \$340 million, and earned an estimated \$12.6 million in profit in the year 2002.
- The BAAQMD estimates that each facility that is subject to the proposed amendments to Regulation 8, Rule 10 will be subject to \$24,400 in costs, meaning that the proposed amendments will result in aggregate compliance costs of an estimated \$658,800—or 0.3 percent of aggregate profits for the 27 affected sites. Among the 27 affected sites, there are 5 oil refineries. The five refineries will bear \$122,000 in costs as a result of the proposed amendments, or 0.1 percent of estimated profits. Thus, the proposed amendments to Regulation 8, Rule 10 do not result in any economic impact on affected sites.

2. INTRODUCTION

Regulation 8, Rule 10 was adopted by the BAAQMD Board of Directors on March 17, 1982 and amended July 20, 1983. It is intended to limit emissions of precursor organic compounds from process vessel depressurization during refining unit turnarounds. It requires that organic compounds, after passing through a knockout pot to remove the condensable compounds, be: (1) recovered and combusted in the fuel gas system, (2) controlled and piped to an appropriate firebox or incinerator, (3) flared, or (4) contained and treated. The proposed amendments to Regulation 8, Rule 10 require more stringent controls on emissions from the depressurization of process vessels at refineries and chemical plants.

This report describes the socioeconomic impacts of proposed amendments to Regulation 8, Rule 10. Following this introduction, the report summarizes proposed amendments to the rule and describes the methodology for the socioeconomic analysis. In Section 5, the report describes the economic characteristics of sites affected by the proposed amendment. The sixth section analyzes the socioeconomic impacts of proposed amendments to Regulation 8, Rule 10.

3. DESCRIPTION OF PROPOSED AMENDMENTS

The Bay Area Air Quality Management District (BAAQMD) seeks to amend Regulation 8, Rule 10 (Process Vessel Depressurization) to require more stringent controls on emissions from the depressurization of process vessels at refineries and chemical plants. These vessels typically process hydrocarbons and other materials, often under pressure. These vessels require periodic maintenance and repairs that may involve entry into the confined space by plant personnel. To make a vessel safe for entry, it must be purged of the hydrocarbons and other materials it contains. This purging requires great care in order to minimize any risk of explosion or risk to personnel. Typically, hydrocarbons are swept from a vessel by non-combustible purge gas until the hydrocarbon content is well below the level at which an explosion may occur. Once this level is reached, air can be used to purge remaining vapors from the vessel. Personnel may then enter the vessel to perform repairs or maintenance.

The proposed amendments implement what is called Control Measure SS-17 by supplementing the existing control options with a concentration standard or a mass emission limit. In addition to reducing emissions of organic and other pollutants, including toxic compounds, the amendments will:

- Prohibit process vessels from venting to the atmosphere unless the emissions of total organic compounds are reduced to a concentration of below 10,000 parts per million (ppm);
- Limit the mass emissions of a limited number of vessels that exceed 10,000 ppm to below 15 pounds per day;
- Expand the number of process vessels covered by this rule; and
- Add monitoring and recording requirements to measure emissions vented to atmosphere once each 24-hour period.

4. METHODOLOGY

The socioeconomic analysis involves the use of information provided directly by the District, the corporations and sites directly affected by proposed amendments, as well as secondary data used to describe the industries affected by proposed amendments to Regulation 8, Rule 10. The approach is briefly described below.

ADE began the analysis by requesting from the District a list of all sites subject to the proposed amendments to Regulation 8, Rule 10. In addition to a list of all sites, we also requested the Standard Industrial Code (SIC) for each affected site, the name of the company that manages and or owns sites, as well as information on site location.

We then began to prepare a statistical description of the industry groups of which the affected sites are part, as well as to analyze data on the number of jobs, sales levels, the typical profit ratios and other economic indicators for each industry. ADE also reviewed and summarized documents available to the public such as annual reports for publicly traded companies.

With the annual reports and data from the US Economic Census, ADE was able to estimate sales and profit ratios for many of the sites affected by the proposed amendments to Regulation 8, Rule 10. ADE calculated an average sales figure per affected refinery to estimate sales for and profitability of sites affected by the proposed amendments to the rule. To estimate employment, ADE used employment data from data vendors such as the US Economic Census and the Minnesota IMPLAN Group.

Using the annual reports and data culled by Dun and Bradstreet, ADE calculated ratios of profit per dollar of sales for each refinery. This corporate profitability ratio was applied against site-level sales estimates to yield an estimate of profit generated at refineries affected by the proposed amendments. The result of the socioeconomic analysis shows what proportion of profit the compliance costs represent. Based on a given threshold of significance, ADE discusses in the report whether the affected sites are likely to reduce jobs as a means of recouping the cost of rule compliance or as a result of reducing business operations.

To the extent that such jobs losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model.

5. IMPACTED SOURCES SUBJECT TO PROPOSED AMENDMENTS TO REGULATION 8, RULE 10

This section of the socioeconomic analysis describes demographic and economic trends in the San Francisco Bay Area region. The first part of this section compares the Bay Area against California as a whole and, in so doing, provides a context for understanding demographic and economic changes that occurred within the Bay Area between 1997 and 2002. Starting with sub-section 5.2, the second part of this section narrows the focus of the socioeconomic analysis to those industries identified by the District as subject to the proposed amendments. For the most part, the 27 sites that are subject to the proposed amendments to Regulation 8, Rule 10 are within SIC 28 (chemical and allied products manufacturing) and SIC 29 (petroleum refining), which are broadly analyzed in Section 5.2. The second part of this section describes the economic characteristics of impacted sites subject to Regulation 8, Rule 10. For the purposes of this report, the Bay Area region is defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma Counties.

5.1 REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

Regional Demographic Trends

The San Francisco Bay Area experienced moderate population growth during the 1990s. The nine-county region as a whole increased by 13 percent, from 6.0 million in 1990 to 6.8 million in 2000. The Bay Area grew almost at the same pace with the state, which increased by 14 percent. San Francisco, Marin, and San Mateo counties grew at significantly slower paces, perhaps because of the high cost of housing in these parts of the Bay Area.

TABLE 1
Population Growth: San Francisco Bay Area
1990 - 2000

	California	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
1990	29,760,021	1,443,741	948,816	247,289	124,279	776,733	707,161	1,682,585	394,542	458,614
2000	33,871,648	1,279,182	803,732	230,096	110,765	723,959	649,623	1,497,577	340,421	388,222
%Change	14%	13%	18%	7%	12%	7%	9%	12%	16%	18%

Source: US Census, 1990 and 2000

Regional Economic Trends

Economic development practitioners and planners have traditionally divided economies into two broad industrial categories—the economic base and local support industries. Economic base industries are the drivers of local and regional economies in that these industries draw income into a local economy by selling products outside of the local economy, much like the export industries of a national economy. Accrued earnings then circulate throughout the local area in the form of wages and salaries, investments, purchase of fixed assets, and goods and services, generating more jobs and wealth.

The economic base is typically comprised of industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the “local support industries” such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services – such as realtors, teachers, healthcare – increases, as does demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

With notable companies such as Intel, Apple, NUMMI, to name a few, manufacturing continues to be the economic base of the San Francisco Bay Area, exporting goods and produce throughout the nation and globe. The industries affected by Regulation 8, Rule 10 are a prominent part of the region’s economic base. Over the course of the late 1990s, local support industries gained somewhat within the region. Growth in local support industries, such as construction, retail and services, is in large part due to regional population growth, particularly in Alameda (Livermore Valley region), Contra Costa, Solano and Sonoma Counties.

As Table 2 shows, the service sector is the largest employment sector in the region, at 1.1 million or 40 percent of all private sector jobs. In 1997, services represented 37 percent of all jobs (1.0 million jobs). While the proportion of people employed in the services-based sector increased between 1997 and 2002, the proportion of people employed in the manufacturing economic base declined, from 18 to 15 percent of all private sector workers in the Bay Area. Between 1997 and 2002, manufacturing jobs decreased by 16 percent, from 495,500 to 416,500, as Table 2 shows.

Between 2000 and 2002, construction decreased, leading to the overall 1 percent decline in the number of construction jobs between 1997 and 2002. Retail also declined, by 3 percent between 1997 and 2002. In short, Bay Area's economy continues to be diverse even as it experiences one of its worst recessions in history. However, the region has lost jobs in the relatively higher wage generating economic base of manufacturing, while population-driven local support industries as a whole have been stable. Services increased by 6 percent between 1997 and 2002, and has become an even greater share of regional employment, while retail, finance and real estate industries have declined.

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TABLE 2
Employment Profile Of The San Francisco Bay Area, 1997 - 2002

Description	Bay Area Employment 1997	Bay Area Employment 2002	Percentage Change in Bay Area Employment 1997 to 2002	State Employment 1997	State Employment 2002	Percentage Change in State Employment 1997 to 2002
Agriculture	42,617	37,714	-12%	501,483	461,708	-8%
Mining	4,003	3,881	-3%	28,962	25,246	-13%
Construction	142,408	140,486	-1%	551,269	582,641	6%
Manufacturing	495,584	416,460	-16%	1,902,332	1,680,811	-12%
Transportation And Public Utilities	179,333	171,438	-4%	650,006	659,116	1%
Wholesale Trade	176,870	165,640	-6%	774,779	782,708	1%
Retail Trade	513,214	497,373	-3%	2,271,468	2,306,136	2%
Finance, Insurance, And Real Estate	202,944	181,113	-11%	759,924	728,334	-4%
Services	1,017,933	1,075,368	6%	3,984,420	3,984,420	0%
Not Elsewhere Classified	356	356	0%	23,867	23,867	0%
Total	2,775,262	2,689,828	-3%	11,448,510	11,234,987	-2%

Sources: Applied Development Economics, based on data from the US Economic census, IMPLAN, and California EDD-LMID

5.2 DESCRIPTION OF AFFECTED INDUSTRIES

Regulation 8, Rule 10 affects a wide set of industries within SIC 28 (chemical and allied products), as well as five oil refineries (SIC 2911). Table 3 identifies economic trends for select industries in SIC 28 (chemical and allied products) and for oil refineries (SIC 2911) in the Bay Area and state, and it provides a comparison between two points in time—1997 and 2002. Data in Table 3 are for all sources, not just the five (5) impacted sources subject to the proposed amendments. Employment and other estimates for the year 2002 for sites affected by Regulation 8, Rule 10 are based on from vendors such as the California LMID-EDD, Minnesota IMPLAN Group, and the US Census Economic Census.

As Table 3 shows, employment in oil refineries increased by an estimated 8 percent for the five-year period from 1997 to 2002 — from 7,292 to 7,849 jobs. In contrast, between 1997 and 2002, manufacturing as a whole decreased by 16 percent and 12 percent in the Bay Area region and California respectively, as Table 2 above demonstrates. In short,

employment in petroleum refining industries in the Bay Area increased at a time when manufacturing as a whole declined significantly.

Table 3 also shows employment trends for select industries within SIC 28 (chemical and allied products). The select industries correspond to SIC codes for non-oil refinery sites subject to Regulation 8, Rule 10. The SIC codes for these industries range between SIC 2813 and SIC 2899. Between 1997 and 2002, in aggregate, employment in these industries increased by 2 percent, from 8,924 to 9,112 in the nine-county Bay Area. By contrast, employment in these industries increased by 0.7 percent in the state as a whole during the same time.

TABLE 3
Employment Trends: Industries Affected By Proposed Amendments to Regulation 8, Rule 10
1997 - 2002

	Bay Area 1997	Bay Area 2000	Bay Area 2002 (est)	Bay Area 1997 -2002	State 1997	State 2000	State 02 (est)	State 1997 -2002
Manufacturing (all)	495,584	510,376	416,460	-16%	1,902,332	1,939,161	1,680,811	-12%
2813 Industrial gases	607	310	613	1%	1,586	1,232	1,213	-23%
2819 Industrial inorganic	1,695	1,640	1,744	3%	3,466	3,062	3,016	-13%
2821 Plastics materials	644	509	688	7%	2,919	3,306	3,905	34%
2835 Diagnostic substances	853	1,236	926	9%	2,972	4,008	3,947	33%
2842 Polishes and sanitation	1,137	1,067	1,173	3%	3,720	2,965	2,918	-22%
2844 Surface active agents	379	322	385	1%	7,354	7,983	8,062	10%
2851 Paints, varnishes	629	1,047	498	-21%	4,423	4,768	4,586	4%
2869 Industrial organic	1,139	760	1,168	3%	2,764	1,917	1,888	-32%
2875 Fertilizers, mixing only	100	98	112	12%	1,075	931	916	-15%
2879 Agricultural chemicals	635	353	650	2%	1,183	789	776	-34%
2891 Adhesives and sealants	474	282	492	4%	3,344	3,451	3,396	2%
2892 Explosives	13	8	14	8%	398	443	436	10%
2899 Chemical preparations	619	613	650	5%	2,025	2,457	2,418	19%
<i>SIC 28 Chemical allied products</i>	<i>8,924</i>	<i>8,245</i>	<i>9,112</i>	<i>2%</i>	<i>37,229</i>	<i>37,312</i>	<i>37,477</i>	<i>0.7%</i>
2911 Oil refineries	7,292	7,539	7,849	8%	16851	14,351	14,900	-12%
Total Employment	2,775,262	3,097,902	2,689,828	-3%	11,448,510	12,652,960	11,234,987	-2%

Sources: Applied Development Economics, based on data from the US Economic Census, IMPLAN, and California EDD-LIMD

5.3 ECONOMIC CHARACTERISTICS OF 27 SITES AFFECTED BY THE PROPOSED AMENDMENTS TO REGULATION 8, RULE 10

Table 4 identifies the economic characteristics of the refineries and chemical and allied products sites affected by the proposed amendments. This table shows that these sites are estimated to employ 3,206 workers, with the bulk of workers — 2,280 workers— at petroleum refineries. The 27 sites have an estimated aggregate payroll of \$174 million, and estimated revenues of \$4.9 billion. As Table 4 further shows, the affected sites produce an estimated \$1.1 billion in value-added production.¹

**TABLE 4
SOCIO-ECONOMIC ANALYSIS OF REGULATION 8 RULE 10
AFFECTED SITES SUMMARY, 2002 (estimates)**

SIC	Establishments	Employment	Payroll	Value-added	Shipment/Sales	Est. Profits
2813	4	98	\$4,088,251	\$23,591,108	\$32,102,590	\$1,187,796
2819-2821	4	170	\$7,698,805	\$40,850,119	\$81,112,871	\$3,001,176
2835/2851	3	209	\$9,760,813	\$44,438,011	\$75,651,999	\$2,799,124
2842-2844	2	32	\$987,392	\$6,008,050	\$7,362,314	\$272,406
2869	3	164	\$8,072,081	\$47,117,107	\$91,837,680	\$3,397,994
2875-2879	2	35	\$1,156,363	\$4,509,352	\$10,706,673	\$396,147
2891-2892	2	149	\$5,069,398	\$10,905,891	\$25,916,995	\$958,929
2899	2	69	\$2,358,140	\$10,621,681	\$15,458,793	\$571,975
2911	5	2,280	\$134,891,089	\$887,478,276	\$4,546,989,022	\$220,301,259
	27	3,206	\$174,082,334	\$1,075,519,595	\$4,887,138,937	\$232,886,806

Sources: Applied Development Economics, based on data from the US Economic Census, Dun and Bradstreet, and various corporate annual reports

¹ Value-added measures the difference between sales and costs of inputs (i.e. materials and labor). It is a measure of productivity.

As Table 5 shows, the affected sources represent 19 percent of all employment within their respective industries (SIC 28 various and SIC 2911) in the Bay Area region. Overall, there are an estimated 16,961 employees in the Bay Area in industries that are potentially affected by Regulation 8, Rule 10. Of these 16,961 workers, 3,206 work in the 27 affected sites.

TABLE 5
Employment In Impacted Sites Subject To Proposed Amendment to Regulation 8, Rule 10
Relative To the Bay Area and California, 2002

	Employment at Affected Sites	Bay Area Employment in Affected Industries	State Employment in Affected Industries	Sites As Percent of Bay Area	Sites As Percent of State
2813 Industrial gases	98	613	1,213	16%	8%
2819 Industrial inorganic chemicals, nec	170	2,432	6,920	7%	2%
2835 Diagnostic substances	209	1,423	8,533	15%	2%
2842 Polishes and sanitation goods	32	1,557	10,980	2%	0%
2869 Industrial organic chemicals, nec	164	1,168	1,888	14%	9%
2875 Fertilizers, mixing only	35	762	1,693	5%	2%
2891 Adhesives and sealants	149	506	3,832	30%	4%
2899 Chemical preparations, nec	69	650	2,418	11%	3%
2911 Petroleum refining	2,280	7,849	14,900	29%	15%
	3,206	16,961	52,377	19%	6%

Source: Applied Development Economics, based on data from the US Economic Census and IMPLAN-MIG

6. SOCIOECONOMIC IMPACTS

6.1 COMPLIANCE COST ESTIMATES

The District's cost of compliance analysis indicates that each site would experience annual costs of \$24,400. Thus, 27 sites would experience aggregate annual cost of \$658,800. Table 6 provides a breakdown of the estimated costs, and these costs are broken down into three cost elements.

TABLE 6
Cost Estimate Per Facility

Items	Costs
Records	\$360
Maintenance and Calibration	\$1,540
Monitoring	\$22,500
TOTAL	\$24,400
27 sites	\$658,800

Source: Bay Area Air Quality Management District

6.2 BUSINESS RESPONSE TO COMPLIANCE COSTS

Sites impacted by the proposed amendments to proposed amendments to Regulation 8, Rule 10 may respond in a variety of ways when faced with new regulatory costs. These responses may range from simply absorbing the costs and accepting a lower rate of return to shutting down the business operation altogether. Businesses may also seek to pass the costs on to their customers in the form of higher prices, or they may renew efforts to increase productivity and reduce costs elsewhere in their operation in order to recoup the regulatory costs and maintain profit levels.

6.3 IMPACT ANALYSIS

The businesses' responses to increased compliance costs hinge on the effect of the costs on the profits generated at the affected sites. An impact on estimated profits greater than 10 percent implies that the source would experience serious economic effects because of the compliance cost. When compliance costs are greater than 10 percent of estimated profits, companies typically respond to the impact by laying off some workers, closing parts of manufacturing facilities or, in the most drastic case, possibly closing the manufacturing facility.

Using the cost estimates developed by the District, Applied Development Economics calculated the socioeconomic impacts of the proposed amendments. In calculating impacts of the proposed amendments on profits, ADE used return on sales ratios identified by Dun and Bradstreet for select industries and in annual reports of companies directly affected by the draft rule. Base on data from the US Economic Census and from corporate annual report, we estimate that the 5 affected refineries generated a combined profit of \$220 million on \$4.5 billion in sales in the year 2002. Altogether, the 27 affected sites generated a combined profit of \$232.9 million on \$4.9 billion in the year 2002.

Table 7 compares the estimated costs of the proposed amendments to this rule under both cost alternatives. Affected sites will incur an aggregate cost \$658,800. This cost represents an estimated .03 percent of profits for the 27 sites affected by the proposed amendment. The cost of the proposed rule to oil refineries represents an estimated 0.1 percent of profits, as Table 8 shows. In short, the proposed amendments to Regulation 8, Rule 10 will not result in any significant employment impacts to the 27 affected oil refineries and chemical-allied products plants in the Bay Area.

TABLE 7
SOCIO-ECONOMIC ANALYSIS OF REGULATION 8 RULE 10
AFFECTED SITES SUMMARY, 2002 (estimates)

SIC	Shipment/Sales	Est. Profits	Annual Facilities Cost	Annual Cost As Percent of Sales	Annual Cost As Percent of Profits	Above Threshold	Dollar Amount Above Theshold	Average Wages Plus benefits	Direct Job Loss Impacts
2813	\$32,102,590	\$1,187,796	\$97,600	0.3%	8.2%	na			none
2819-2821	\$81,112,871	\$3,001,176	\$97,600	0.1%	3.3%	na			none
2835/2851	\$75,651,999	\$2,799,124	\$73,200	0.1%	2.6%	na			none
2842-2844	\$7,362,314	\$272,406	\$48,800	0.7%	17.9%	7.9%	\$21,559	\$40,274	1
2869	\$91,837,680	\$3,397,994	\$73,200	0.1%	2.2%	na			none
2875-2879	\$10,706,673	\$396,147	\$48,800	0.5%	12.3%	2.3%	\$9,185	\$42,644	none
2891-2892	\$25,916,995	\$958,929	\$48,800	0.2%	5.1%	na			none
2899	\$15,458,793	\$571,975	\$48,800	0.3%	8.5%	na			none
2911	\$4,546,989,022	\$220,301,259	\$122,000	0.0%	0.1%	na			none
	\$4,887,138,937	\$232,886,806	\$658,800	0.0%	0.3%	na			

Sources: Applied Development Economics, based on data from the US Economic Census, Dun and Bradstreet, and various corporate annual reports.

6.4 IMPACT ON SMALL BUSINESSES

In addition to analyzing the employment impacts of proposed amendments to Regulation 8, Rule 10, state legislation requires that the socioeconomic analysis assess whether small businesses are disproportionately affected by air quality rules such as the proposed amendments to the Regulation 8, Rule 10. First, this section profiles chemical plants and oil refineries in the San Francisco Bay Area region by employment size categories, and, in so doing, shows that most of these manufacturers are relatively large employers. Then, this section discusses the average size of the five refineries affected by the proposed amendments. Finally, this section shows how the five refineries affected by the proposed amendments to Regulation 8, Rule 10 fail to qualify as small businesses as defined by the State of California.

Chemical and Allied Products and Oil Refineries By Employment Size Categories

More than 50 percent of all businesses in California and the United States employ less than four people, and almost 80 percent employ less than ten people. Data in Table 8 are for all sites in industries identified by the BAAQMD, and it includes data on sites affected by amendments to Regulation 8, Rule 10. The data in the table comes from a combination of vendors—Minnesota IMPLAN Group and the US County Business Patterns—and is current as of the year 2001. Table 8 distributes affected industries by number of employees per manufacturing site. As a group, establishments in the affected oil refining industries are significantly larger than state and national industries as a whole. Establishments with more than 100 workers represent 2.5 percent of all establishments in all industries in California and the United States. In contrast, 44 percent of affected refineries employ at least 100 people. In fact, 55 percent of all refineries employ at least 50 people versus the statewide and national average of 5.7 percent, as Table 8 shows. As for chemical and allied product plants, 6 percent employ at least 100 workers, an amount that, while less than oil refineries, is significantly greater than state and national rates for establishments with at least 100 workers. Consistent with data in Table 8, we estimate that the oil

refinery sites directly affected by the proposed amendment employ, on average, 455 workers, placing these facilities as mid- to large-sized employers. And, the 22 chemical and allied product sites directly affected by the proposed amendments employ at least 42 workers. Thus, the chemical and allied products sites affected by the proposed amendments are mid-sized establishments.

TABLE 8
Distribution Of Chemical and Allied Products (SIC 28) and Oil Refineries (SIC 2911) In The San Francisco Bay Area By Size of Facilities, 2001

	Employment Size Categories						
	1 thru 4	5 thru 9	10 thru 19	20-49	50-99	100-249	250 or more
Bay Area SIC 28 (Chemical and allied products)	33%	17%	16%	20%	7%	4%	2%
Bay Area SIC 2911 (Oil refineries)	11%	0%	11%	22%	11%	0%	44%
California (all industries)	54.0%	18.5%	12.6%	9.1%	3.2%	1.8%	0.7%
US (all industries)	53.9%	19.3%	12.7%	8.7%	3.0%	1.8%	0.7%

Source: United States Bureau of the Census, County Business Patterns 2000, IMPLAN MIG

Definition Of Small Business Per California Statute

The previous section showed that chemical and allied product plants and oil refineries in the San Francisco Bay Area are significantly larger than most businesses in California and the nation, which, on average, employ less than 10 people. This section discusses how the State of California defines small business, and, in so doing, shows how the five sources affected by the proposed amendments to Regulation 8, Rule 10 fail to meet the State’s definition of small business.

For purposes of qualifying small businesses for bid preferences on state contracts and other benefits, the State of California defines small businesses in the following manner². To be eligible for small business certification, a business:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;

² State of California. Department of General Services. “California Small Business Certification” (<http://www.pd.dgs.ca.gov/smbus/sbcert.htm>)

- Must have its principal office located in California
- Must have its owners (or officers in the case of a corporation) domiciled in California; and
- Together with its affiliates, be either:
 - A business with 100 or fewer employees, and an average gross receipts of \$10 million or less over the previous tax years, or
 - A manufacturer with 100 or fewer employees

The five refineries that are affected by the proposed amendments are not independently-owned and operated businesses. These refineries are owned by publicly-traded global corporations whose headquarters are outside of California (except for Chevron). In addition, the affected oil refineries sources employ, on average, 455 workers, and their average revenue is approximately \$909 million. Thus, by the standards established by the State of California, the oil refineries are not small businesses. With regards to 22 chemical and allied product sites, slightly over half (12) of these sites are estimated to have earned more than \$10 million in the year 2002. Thus, of the 22 chemical and allied product sites, 10 are small businesses. However, the analysis of Section 6.3 concludes that the cost of the proposed amendment to Regulation 8, Rule 10 does not disproportionately impact these 10 sites. Based on this discussion, it is determined that proposed amendments to the Regulation 8, Rule 10 do not disproportionately affect small businesses.



NEGATIVE DECLARATION

December 22, 2003

PROJECT SPONSOR

Bay Area Air Quality Management District

PROJECT LOCATION

The proposed rule amendments would apply within the geographic area covered by the Bay Area Air Quality Management District. The District includes all of seven counties - Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa - and portions of two others - southwestern Solano and southern Sonoma.

PROJECT DESCRIPTION

This project consists of amendments to an existing BAAQMD rule (Regulation 8, Rule 10) that regulates the depressurization of process vessels at petroleum refineries and chemical plants. The rule amendments are being proposed to implement control measure SS-17 from the 2001 Bay Area Ozone Attainment Plan. Proposed amendments to the rule will reduce emissions of organic compounds by:

- Prohibiting venting of process vessels to the atmosphere unless the concentration of total organic compounds inside the vessel is less than 10,000 parts per million or, for a limited number of vessels, unless mass emissions are 15 pounds per day or less;
- Expanding the number of process vessels covered by this rule; and
- Adding monitoring and recording requirements to measure emissions vented to atmosphere once each 24-hour period.

DETERMINATION

Pursuant to the California Environmental Quality Act (Public Resources Code Section 21000 et seq.), the District is the Lead Agency for the described project. The District has prepared an Initial Study (attached), and on the basis of that study, has determined that the project will not have a significant effect on the environment.

REVIEW PERIOD

Written comments on the proposed amendments or negative declaration must be addressed to Bill Guy, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California, 94109, or to wguy@baaqmd.gov. Comments will be received during the period from Monday, December 22, 2003 until 5:00 p.m. on Monday, January 12, 2004. Questions regarding the project should be directed to Alex Ezersky at (415) 749-4650 or by e-mail to aezersky@baaqmd.gov.

**Initial Study/Negative Declaration
For the Amendments to Bay Area Air Quality
Management District Regulation 8, Rule 10
Process Vessel Depressurization**

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December 2003

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Chapter 1

Introduction

Purpose of this Document

This Initial Study/Negative Declaration (IS/ND) assesses the environmental impacts of the proposed adoption of amendments to Regulation 8, Rule 10, by the Bay Area Air Quality Management District (BAAQMD or District) as required by the California Environmental Quality Act (CEQA) and in compliance with the state CEQA Guidelines (Title 14 California Code of Regulations §§1400 et seq.). An IS/ND serves as an informational document to be used in the decision-making process for a public agency that intends to carry out a project; it does not recommend approval or denial of the project analyzed in the document. The BAAQMD is the lead agency under CEQA and must consider the impacts of the proposed rule amendments when determining whether to adopt them. The BAAQMD has prepared this IS/ND because no significant impacts would result from the proposed rule amendments.

Scope of this Document

This document evaluates the potential impacts of the proposed amendments on the following resource areas:

- aesthetics,
- agricultural resources,
- air quality,
- biological resources,
- cultural resources,
- geology and soils,
- hazards and hazardous materials
- hydrology and water quality,
- land use planning,
- mineral resources,

- noise,
- population and housing,
- public services,
- recreation,
- transportation/traffic, and
- utilities and service systems.

Impact Terminology

The following terminology is used in this initial study to describe the levels of significance of impacts that would result from the proposed rule amendments:

- An impact is considered *beneficial* when the analysis concludes that the project would have a positive effect on a particular resource.
- A conclusion of *no impact* is appropriate when the analysis concludes that there would be no impact on a particular resource from the proposed project.
- An impact is considered *less than significant* if the analysis concludes that an impact on a particular resource topic would not be significant (i.e., would not exceed certain criteria or guidelines established by BAAQMD). Impacts are frequently considered less than significant when the changes are minor relative to the size of the available resource base or would not change an existing resource.
- An impact is considered *less than significant with mitigation incorporated* if the analysis concludes that an impact on a particular resource topic would be significant (i.e., would exceed certain criteria or guidelines established by BAAQMD) but would be reduced to a less than significant level through the implementation of mitigation measures.

Organization of This Document

The content and format of this document, described below, are designed to meet the requirements of CEQA.

- Chapter 1, “Introduction,” identifies the purpose, scope, and terminology of the document.
- Chapter 2, “Description of the Proposed Rule,” provides background information of Regulation 8, Rule 10, describes the proposed rule amendments, and describes the area and facilities that would be affected by the amendments.

- Chapter 3, “Environmental Checklist,” presents the checklist responses for each resource topic. This chapter includes a brief setting description for each resource area and identifies the impact of the proposed rule amendments on the resources topics listed in the checklist.
- Chapter 4, “References Cited,” identifies all printed references and personal communications cited in this report.

Chapter 2

Description of the Proposed Rule Amendments

Background

Regulation 8, Rule 10 was adopted by the BAAQMD Board of Directors on March 17, 1982 and amended July 20, 1983. It is intended to limit emissions of precursor organic compounds from process vessel depressurization during refining unit turnarounds. It requires that organic compounds, after passing through a knockout pot to remove the condensable compounds, be: (1) recovered and combusted in the fuel gas system, (2) controlled and piped to an appropriate firebox or incinerator, (3) flared, or (4) contained and treated. Venting to the atmosphere is prohibited until the partial pressure of organic compounds in the vessel is less than 4.6 psig. Emission reductions from the implementation of the initial rule in 1982 were estimated by the Air Resource Board at over 17 tons of organics per year.

In attainment plans for the state ozone standard (Clean Air Plans) from 1991 to 2000, the District included Control Measure C4: Improved Process Vessel Depressurization Rule. The measure originally focused on the control efficiency as the preferred means used to reduce emissions during depressurization. The measure proposed that carbon adsorption with a control efficiency of 95% be used. It also proposed that compressor capacity for the flare gas recovery systems be sufficient to recover flows from vessels during depressurization, thereby reducing flaring. The measure was revised for the Bay Area 2000 Clean Air Plan to require abatement of emissions to continue below the pressure limit in the current rule to an unspecified lower pressure or concentration.

Control Measure SS-17, Process Vessel Depressurization was included in the 2001 Ozone Attainment Plan for the national ozone standard. This measure is identical to Control Measure C4 from the 2000 Clean Air Plan. The measure identified 0.14 tons per day of precursor organic emissions as available for control. The proposal estimated a reduction of 0.07 tons per day to be achieved by a concentration standard or a reduction in the allowable pressure prior to opening the vessel to atmosphere. The proposed amendments include a prohibition on venting to atmosphere unless the total organic compounds prior to release are reduced to a concentration below 10,000 ppm, expressed as methane or the total emissions from vessels having a concentration greater than 10,000 ppm be less than 15 pounds per day for a limited population of vessels.

Proposed Amendments

Regulation 8, Rule 10 requires Bay Area refineries and chemical plants to control emissions from the depressurization of process vessels. The proposed amendments to this rule will:

- Generally prohibit opening or venting process vessels to the atmosphere unless the emissions of total organic compounds have been reduced to a concentration of below 10,000 parts per million (ppm);
- Limit the mass emissions of a limited number of vessels that exceed 10,000 ppm at opening to below 15 pounds per day;
- Expand the number of process vessels covered by this rule; and
- Add monitoring and recording requirements to measure emissions vented to atmosphere once each 24-hour period.

The vessels subject to this rule typically process hydrocarbons and other materials, often under pressure. These vessels require periodic maintenance and repairs that may involve entry into the confined space by plant personnel. To make a vessel safe for entry, it must be purged of the hydrocarbons and other materials it contains. This purging requires great care in order to minimize any risk of explosion or risk to personnel. Typically, hydrocarbons are swept from a vessel by non-combustible purge gas until the hydrocarbon content is well below the level at which an explosion may occur. Once this level is reached, air can be used to purge remaining vapors from the vessel. Personnel may then enter the vessel to perform repairs or maintenance.

The proposed amendments implement Control Measure SS-17 from the Bay Area 2001 Ozone Plan by supplementing existing requirements with a concentration standard and a mass emission limit. The amendments will reduce emissions of organic and other pollutants, including toxic compounds. Staff has identified a potential reduction of 1 ton per day of precursor organic compounds.

Objectives

The objective of the proposed rule is to implement Control Measure SS-17 from the Bay Area 2001 Ozone Attainment Plan, to reduce emissions of ozone forming compounds [e.g., volatile organic compounds (VOCs)], and achieve compliance with state and federal ozone standards.

The U.S. Environmental Protection Agency (U.S. EPA) has set primary national ambient air quality standards for ozone and other air pollutants to define the levels considered safe for human health. CARB has also set California ozone standard. The federal and state standards are 12 and 9 parts per hundred million (pphm), respectively. The BAAQMD is designated as an unclassified nonattainment area for the federal 1-hour standard for ozone and as a nonattainment area for the state 1-hour standard. Under the requirements of the federal Clean Air Act (CAA),

nonattainment areas must prepare ozone attainment demonstrations showing how they will attain the federal standard. The most recent federal attainment demonstration is the Bay Area 2001 Ozone Attainment Plan. Similarly, the California Clean Air Act of 1988 requires areas that do not comply with the standard to prepare ozone attainment plans. The most recent state plan is the Bay Area 2000 Clean Air Plan.

Both federal and state plans include measures to reduce emissions of the pollutants that form ozone. These measures may be already adopted rules or proposal to adopt new regulations or amendments to existing regulations. As noted, Regulation 8, Rule 18 would implement Control Measure SS-17 from the most recent federal plan for the Bay Area (2001 Ozone Attainment Plan).

Affected Area

The proposed rule would apply to refineries under BAAQMD jurisdiction, which includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma counties (approximately 5,600 square miles). The San Francisco Bay Area is characterized by a large, shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast. The Basin is bounded by the Pacific Ocean to the west and includes complex terrain consisting of coastal mountain ranges, inland valleys, and bays.

The proposed rule amendments may apply to chemical plants; however, to date the chemical plants that have been identified are controlled by other BAAQMD rules. The proposed rule amendments would include process vessels from chemical plants that are not covered by other rules; however, no such chemical plants have been identified at this time. Therefore, the known process vessels covered by the proposed amendments to Regulation 8, Rule 10 are located at refinery sites. The refineries primarily affected by this rule are located in Contra Costa County and Solano County (see Figure 1) adjacent to the San Francisco Bay. The general locations of the refineries are discussed below.

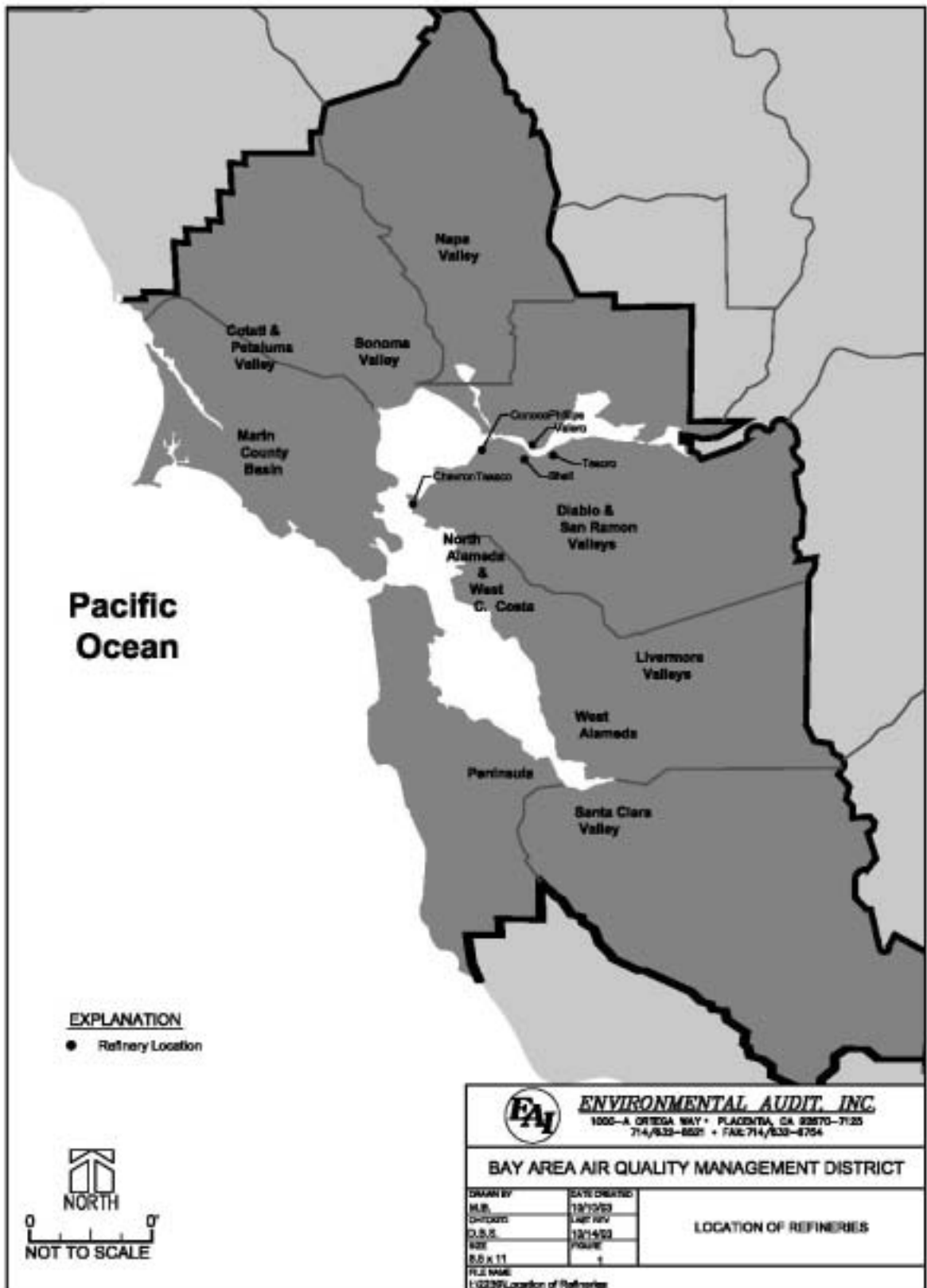
The ChevronTexaco refinery is located in Richmond, Contra Costa County, California. The refinery lies to the west of Castro Street and mostly to the north of Interstate 580 and some storage tanks and the wharf lie south of I-580. The refinery occupies most of the Point San Pablo Peninsula and covers approximately 2,900 acres. It is generally bordered on the north and south by the residential communities of North Richmond and Point Richmond, respectively. East of the refinery, across Castro Street and Garrard Boulevard, are the Iron Triangle and Santa Fe communities and central and downtown Richmond. San Francisco and San Pablo Bays form the western border of the refinery.

The Valero refinery is located on about 800 acres of land within the City of Benicia. The refinery is located about 0.5 mile north of I-780 and immediately west of I-680. Valero is bisected in a north-south direction by East Second Street. The refinery is bounded on the north by residential development and open space, on the east by an industrial park and I-680, on the south by industrial development, and on the west by residential development.

The ConocoPhillips refinery is located on approximately 1,100 acres of land in the unincorporated area northeast of the community of Rodeo. The refinery property is bounded on the north by San Pablo Bay and a marine terminal, on the east by agricultural lands, on the south and southwest by a residential area and on the west by San Pablo Bay. Interstate 80 runs north-south through the refinery dividing the eastern portion of the refinery.

The Shell Oil refinery is located on about 880 acres in Contra Costa County, partially within the City of Martinez. The main portion of the refinery is bordered by Marina Vista Boulevard to the north, Interstate 680 to the east, Pacheco Boulevard to the South, Merrithew Avenue to the west, and the Shell marine terminal to the northwest. Land use north of the refinery is a combination of industrial and open space; northeast of the refinery is an environmental conservation district; east is residential land use with some light industrial areas; land use south and southwest of the refinery is residential. The Martinez reservoir is also located to the south of the refinery.

The Tesoro refinery is located in Contra Costa County, within the community of Avon. The refinery is located south of Suisun Bay and is bordered by Waterfront road to the north and Solano Way to the west. Land use south and east of the refinery is a combination of industrial and open space. The Tesoro refinery is located east of the Shell Martinez refinery. The Mallard reservoir is also located southeast of the refinery.



Chapter 3

Environmental Checklist

ENVIRONMENTAL CHECKLIST FORM

- 1. Project Title:** Bay Area Air Quality Management District (BAAQMD) Proposed Amendments to Regulation 8, Rule 10
- 2. Lead Agency Name and Address:** Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109
- 3. Contact Person and Phone Number:** Bill Guy, Planning and Research Division
415/749-4773 or wguy@baaqmd.gov
- 4. Project Location:** This rule applies to the area within the jurisdiction of the Bay Area Air Quality Management District, which encompasses all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The facilities affected by the proposed rule amendments are primarily the refineries located in Contra Costa and Solano Counties.
- 5. Project Sponsor’s Name and Address:** Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109
- 6. General Plan Designation:** The rule primarily applies to refineries that are usually located in heavy manufacturing or industrial areas.
- 7. Zoning** The rule primarily applies to refineries that are usually located in heavy manufacturing or industrial areas.
- 8. Description of Project** See “Background” in Chapter 2.
- 9. Surrounding Land Uses and Setting** See “Affected Area” in Chapter 2.
- 10. Other Public Agencies Whose Approval Is Required** None

Environmental Factors Potentially Affected:

The environmental factors checked below would potentially be affected by this Project (i.e., the project would involve one impact that is a “Potentially Significant Impact”), as indicated by the checklist on the following pages.

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

Determination:

On the basis of this initial evaluation:

- I find the proposed project COULD NOT have a significant effect on the environment, and that a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be significant effects in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Printed Name

For

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. AESTHETICS.				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses.

The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties. Scenic highways or corridors are generally not located in the vicinities of the affected refineries.

Regulatory Background

Visual resources are generally protected by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

I a-d: The proposed rule amendments to Regulation 8, Rule 10 involve the use of monitoring equipment and additional control of emissions from process vessels, including reactors, columns, accumulator vessels, knockout pots, surge/settling drums,

and other similar devices, within the refineries. The refineries are expected to comply with the proposed rule amendments using existing monitoring and control mechanisms. In some cases, portable emission control equipment could also be used more frequently. These components are small and generally not noticeable to areas adjacent to the refineries.

Activity associated with the proposed rule amendments would not be noticeable to areas surrounding the refineries. Additionally, existing light sources are expected to be sufficient, so the proposed rule would not alter existing lighting sources in any way. The proposed amendments are not expected to result in any significant adverse aesthetic impacts.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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II. AGRICULTURE RESOURCES.

In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation. Would the project:

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

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land

uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. Some of these agricultural lands are under Williamson Act contracts.

The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties. Agricultural resources are generally not located in the vicinities of or within the affected refineries.

Regulatory Background

Agricultural resources are generally protected by the City and/or County General Plans, Community Plans through land use and zoning requirements, as well as any applicable specific plans, ordinances, local coastal plans, and redevelopment plans.

Discussion of Impacts

II a-c. The proposed rule amendments would not require conversion of agricultural land use to other uses. The proposed amendments to Regulation 8, Rule 10 involve the use of monitoring equipment and additional control of emissions from existing pressurized vessels within the refineries. The proposed rule amendments would not require construction or impacts outside of the refinery boundaries. The refineries are located within heavy industrial areas. Therefore, no significant adverse impacts on agricultural resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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III. AIR QUALITY.

When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

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

Environmental Setting

Meteorological Conditions

The summer climate of the West Coast is dominated by a semipermanent high centered over the northeastern Pacific Ocean. Because this high pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus the conditions that persist along the coast of California during summer are a northwest air flow and

negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

In winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place in the November through April period. During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate and air pollution potential is very low. During winter periods when the Pacific high becomes dominant, inversions become strong and often are surface based; winds are light and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area and often include tule fog.

Topography

The San Francisco Bay Area is characterized by complex terrain consisting of coastal mountain ranges, inland valleys and bays. Elevations of 1,500 feet are common in the higher terrain of this area. Normal wind flow over the area becomes distorted in the lower elevations, especially when the wind velocity is not strong. This distortion is reduced when stronger winds and unstable air masses move over the areas. The distortion is greatest when low level inversions are present with the surface air, beneath the inversion, flowing independently of the air above the inversion.

Winds

In summer, the northwest winds to the west of the Pacific coastline are drawn into the interior through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more nearly from the west as they stream through the Golden Gate. This channeling of the flow through the Golden Gate produces a jet that sweeps eastward but widens downstream producing southwest winds at Berkeley and northwest winds at San Jose; a branch curves eastward through the Carquinez Straits and into the Central Valley. Wind speeds may be locally strong in regions where air is channeled through a narrow opening such as the Carquinez Strait, the Golden Gate, or San Bruno Gap.

In winter, the Bay Area experiences periods of storminess and moderate-to-strong winds and periods of stagnation with very light winds. Winter stagnation episodes are characterized by outflow from the Central Valley, nighttime drainage flows in coastal valleys, weak onshore flows in the afternoon and otherwise light and variable winds.

Temperature

In summer, the distribution of temperature near the surface over the Bay Area is determined in large part by the effect of the differential heating between land and water surfaces. This process produces a large-scale gradient between the coast and the Central Valley as well as small-scale local gradients along the shorelines of the ocean and bays.

The winter mean temperature high and lows reverse the summer relationship in that daytime variations are small while mean minimum nighttime temperatures show large differences and strong gradients. The moderating effect of the ocean influences warmer minimums along the coast and penetrating the Bay. The coldest temperatures are in the sheltered valleys, implying strong radiation inversions and very limited vertical diffusion.

Inversions

A primary factor in air quality is the mixing depth, i.e., the vertical dimension available for dilution of contaminant sources near the ground. Over the Bay Area the frequent occurrence of temperature inversions limits this mixing depth and consequently limits the availability of air for dilution. A temperature inversion may be described as a layer or layers of warmer air over cooler air.

Precipitation

The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in November to April period; and between June and September, normal rainfall is typically less than 0.10 inches. Annual precipitation amounts show greater differences in short distances. Annual totals exceed 40 inches in the mountains and are less than 15 inches in the sheltered valleys.

Pollution Potential

The Bay Area is subject to a combination of physiographic and climatic factors which result in a low potential for pollutant buildups near the coast and a high potential in sheltered inland valleys. In summer, areas with high average maximum temperatures tend to be sheltered inland valleys with abundant sunshine and light winds. Areas with low average maximum temperatures are exposed to the prevailing ocean breeze and experience frequent fog or stratus. Locations with warm summer days have a higher pollution potential than the cooler locations along the coast and bays.

In winter, pollution potential is related to the nighttime minimum temperature. Low minimum temperatures are associated with strong radiation inversions in inland valleys that are protected from the moderating influences of the ocean and bays. Conversely, coastal locations experience higher average nighttime temperatures, weaker inversions, stronger breezes and consequently less air pollution potential.

Air Quality

Criteria Pollutants

It is the responsibility of the BAAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the

federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter less than 10 microns (PM₁₀), sulfur dioxide (SO₂) and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM₁₀ and SO₂, far more stringent. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride.

The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-1. The BAAQMD monitors levels of various criteria pollutants at 26 monitoring stations. The 2002 air quality data from the BAAQMD's monitoring stations are presented in Table 3-2.

Air quality conditions in the San Francisco Bay Area have improved since the District was created in 1955. Ambient concentrations of air pollutants and the number of days on which the region exceeds air quality standards have fallen dramatically (see Table 3-3). The District is in attainment of the state and federal ambient air quality standards for CO, nitrogen oxides (NO_x), and sulfur oxides (SO_x). The District also is in attainment of the federal 24-hour PM₁₀ standard. However, the District does not comply with the state or federal ozone standards or the state 24-hour PM₁₀ standard.

The 2002 air quality data from the BAAQMD's monitoring stations are presented in Table 3-2. All monitoring stations were below the standard and federal ambient air quality standards for CO, NO₂, and SO₂. The federal 1-hour ozone standard was exceeded on two days in 2002 at the Livermore monitoring station. The other monitoring stations were in compliance with the federal 1-hour ozone standard. The federal 8-hour standard was exceeded on seven days in the District in 2002, most frequently in the Eastern District (Bethel Island, Concord, Fairfield, Livermore, and Pittsburg) and the Santa Clara Valley (Gilroy, Los Gatos and San Martin). The state 1-hour standard was exceeded on 16 days in 2002 in the District, most frequently in the Eastern District and Santa Clara Valley (see Table 3-2).

All monitoring stations were in compliance with the federal PM₁₀ standards. The California PM₁₀ standards were exceeded on six days in 2002 throughout the various monitoring stations in the District. The District exceeded the federal PM_{2.5} standards on four days in 2002 at several monitoring stations including Vallejo, San Francisco, and Concord (see Table 3-2).

**TABLE 3-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS**

AIR POLLUTANT	STATE STANDARD CONCENTRATION/ AVERAGING TIME	FEDERAL PRIMARY STANDARD CONCENTRATION/ AVERAGING TIME	MOST RELEVANT EFFECTS
Ozone	0.09 ppm, 1-hr. avg. >	0.12 ppm, 1-hr avg.> 0.08 ppm, 8-hr avg. >	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg.> 35 ppm, 1-hr avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr avg. >	0.053 ppm, ann. avg.>	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0.03 ppm, ann. avg.> 0.14 ppm, 24-hr avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	20 µg/m ³ , ann.arithmetic mean > 50 µg/m ³ , 24-hr average>	50 µg/m ³ , annual arithmetic mean > 150 µg/m ³ , 24-hr avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter (PM2.5)		15 µg/m ³ , annual arithmetic mean> 150 µg/m ³ , 24-hour average>	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/m ³ , 24-hr avg. >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m ³ , 30-day avg. >=	1.5 µg/m ³ , calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)		Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

TABLE 3-2 BAY AREA AIR POLLUTION SUMMARY 2002

MONITORING STATIONS	Ozone							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM10					PM2.5						
	Max 1-Hr	Nat Days	Cal Days	3-Yr Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr	Max 8-Hr	Nat/Cal Days	Max 1-Hr	Ann Avg	Nat/Cal Days	Max 24-Hr	Ann Avg	Nat/Cal Days	Ann Geo Mean	Ann Avg	Max 24-Hr	Nat Day	Cal Days	Max 24-Hr	Nat Days	3-Yr Avg	Ann Avg	3-Yr Avg		
	(pphm)							(ppm)			(pphm)			(ppb)			$(\mu\text{g}/\text{m}^3)$					$(\mu\text{g}/\text{m}^3)$						
NORTH COUNTIES																												
Napa	12	0	1	0.0	8	0	6.3	4.2	2.4	0	5	1.3	0	--	--	--	22.6	25.4	67	0	4	--	--	--	--	--	--	
San Rafael	8	0	0	0.0	6	0	4.7	4.1	1.9	0	6	1.7	0	--	--	--	19.1	21.4	70	0	2	--	--	--	--	--	--	
Santa Rosa	8	0	0	0.0	6	0	5.2	3.7	2.1	0	5	1.3	0	--	--	--	17.8	19.7	60	0	2	51	0	40.2	10.5	10.5		
Vallejo	11	0	1	0.0	7	0	5.9	5.8	3.9	0	5	1.3	0	4	1.3	0	18.7	21.4	80	0	1	72	1	51.3	13.6	12.6		
COAST & CENTRAL BAY																												
Oakland	5	0	0	0.0	4	0	4.0	4.4	3.3	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Richmond	--	--	--	--	--	--	--	--	--	--	--	--	--	5	1.0	0	--	--	--	--	--	--	--	--	--	--	--	--
San Francisco	5	0	0	0.0	5	0	4.4	3.5	2.6	0	8	1.9	0	6	1.9	0	21.0	24.7	74	0	2	70	4	48.0	13.1	11.9		
San Pablo*	7	0	0	0.0	5	0	4.5	3.7	1.8	0	5	*	0	5	*	0	*	*	67	0	3	--	--	--	--	--	--	
EASTERN DISTRICT																												
Bethel Island	11	0	5	0.3	10	3	7.9	1.7	1.3	0	4	1.0	0	9	2.5	0	20.8	23.8	58	0	3	--	--	--	--	--	--	
Concord	10	0	5	0.7	9	3	7.8	3.5	2.3	0	6	1.5	0	6	0.8	0	17.9	20.9	63	0	3	77	4	44.7	13.3	11.4		
Crockett	--	--	--	--	--	--	--	--	--	--	--	--	--	12	1.8	0	--	--	--	--	--	--	--	--	--	--	--	--
Fairfield*	10	0	4	0.0	8	0	7.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Livermore	16	2	10	1.0	11	6	8.2	4.8	2.5	0	8	1.7	0	--	--	--	21.5	24.5	64	0	2	62	0	47.7	13.8	12.3		
Martinez	--	--	--	--	--	--	--	--	--	--	--	--	--	7	1.2	0	--	--	--	--	--	--	--	--	--	--	--	--
Pittsburg	11	0	4	0.0	10	2	7.4	6.2	2.5	0	5	1.3	0	14	2.5	0	21.1	23.7	73	0	3	--	--	--	--	--	--	
SOUTH CENTRAL BAY																												
Fremont	11	0	3	0.0	7	0	6.1	3.7	2.2	0	6	1.9	0	--	--	--	20.0	22.5	52	0	1	48	0	41.6	12.5	11.4		
Hayward	9	0	0	0.0	7	0	6.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Redwood City	9	0	0	0.0	6	0	5.3	5.8	2.8	0	7	1.7	0	--	--	--	19.5	22.0	53	0	1	43	0	41.8	11.5	11.3		
San Leandro	10	0	1	0.0	6	0	5.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SANTA CLARA VALLEY																												
Gilroy*	12	0	6	*	9	2	5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Los Gatos*	11	0	4	0.0	9	2	6.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
San Jose Central*	*	*	*	*	*	*	*	5.3	4.5	0	8	*	0	--	--	--	*	*	70	0	2	58	0	*	*	*	*	
San Jose East	9	0	0	0.0	7	0	5.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
San Jose, Tully Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21.9	25.4	70	0	2	54	0	45.9	12.0	11.8		
San Martin	12	0	8	0.0	10	5	8.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sunnyvale*	9	0	0	*	7	0	*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Total bay Area Days over Standard		2	16			7				0			0			0				0	6		5					

(ppm) = parts per million, (pphm) = parts per hundred million, (ppb) = parts per billion

TABLE 3-3
TEN-YEAR BAY AREA AIR QUALITY SUMMARY
 Days over standards

YEAR	OZONE		CARBON MONOXIDE				NO _x	SULFUR DIOXIDE		PM10		PM2.5	
	1-Hr		8-Hr		1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*	24-Hr**
	Nat	Cal	Nat	Cal	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal
1993	3	19	-	0	0	0	0	0	0	0	0	10	-
1994	2	13	-	0	0	0	0	0	0	0	0	9	-
1995	11	28	-	0	0	0	0	0	0	0	0	7	-
1996	8	34	-	0	0	0	0	0	0	0	0	3	-
1997	0	8	-	0	0	0	0	0	0	0	0	4	-
1998	8	29	16	0	0	0	0	0	0	0	0	5	-
1999	3	2	9	0	0	0	0	0	0	0	0	12	-
2000	3	12	4	0	0	0	0	0	0	0	0	7	1
2001	1	15	7	0	0	0	0	0	0	0	0	10	5
2002	2	16	7	0	0	0	0	0	0	0	0	6	5

* PM10 is sampled every sixth day – actual days over standard can be estimated to be six times the numbers listed.

** 2000 is the first full year for which the Air District measured PM2.5 levels.

Toxic Air Pollutants

The precursor chemicals that form ozone are VOCs and NO_x. Some of these VOCs are toxic air contaminants (TACs) and some are known carcinogens. The BAAQMD maintains a network of monitoring stations to monitor certain TACs in ambient air. In addition, the California Air Resources Board (CARB) maintains several monitoring stations in the Bay Area as part of a statewide toxics monitoring effort. The mean ambient concentrations of monitored TACs are listed in Table 3-4 based on monitoring conducted during 2000 for the monitoring stations closest to the refineries. The Richmond station is located at 7th Street downwind from the ChevronTexaco refinery and the Richmond parkway. The Crockett station is located at the end of Kendall Avenue generally downwind of the ConocoPhillips refinery. There are two Concord stations.

TABLE 3-4
CONCENTRATIONS OF TOXIC AIR CONTAMINANTS
IN THE BAY AREA⁽¹⁾

CHEMICAL	MONITORING STATION (mean ppb)				
	Crockett	Concord (Treat Blvd)	Richmond	Bethel Island	Concord (Arnold)
Vinyl Chloride	<0.30	<0.30	<0.30	<0.30	<0.30
Methylene Chloride (DCM)	0.30	0.26	0.26	0.30	<0.50
Chloroform (CHCl ₃)	<0.30	<0.30	0.01	<0.30	<0.30
Ethylene Dichloride	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,1-Trichloroethane (TCA)	0.12	0.06	0.06	0.05	0.20
Carbon Tetrachloride (CCl ₄)	0.11	0.11	0.10	0.11	0.10
Trichloroethylene (TCE)	<0.08	0.04	0.05	<0.08	<0.08
Benzene	0.20	0.54	0.41	0.26	0.43
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02	<0.02
Perchloroethylene	0.02	0.04	0.06	0.03	0.05
Toluene	0.35	2.32	1.92	0.49	0.94
MTBE	0.67	0.54	0.69	0.46	0.59

(1) BAAQMD, Toxic Air Contaminant, 2000 Annual Report, December 2001.

The concentrations of TACs at these monitoring stations are similar to concentrations of TACs in the rest of the Bay Area.

Regulatory Background

Criteria Pollutants

At the federal level, the Clean Air Act (CAA) Amendments of 1990 give the U.S. EPA additional authority to require states to reduce emissions of ozone precursors and PM₁₀ in nonattainment areas. The amendments set new attainment deadlines based on the severity of problems. At the state level, CARB has traditionally

established state ambient air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved state implementation plans. At a local level, California's air districts, including the BAAQMD, are responsible for overseeing stationary source emissions, approving permits, maintaining emission inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

The BAAQMD regulates air contaminants from stationary sources. The BAAQMD is governed by a 21-member Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties. The Board has the authority to develop and enforce regulations for the control of air pollution within its jurisdiction. The BAAQMD is responsible for implementing emissions standards and other requirements of federal and state laws. It is also responsible for developing air quality planning documents required by both federal and state laws.

Toxic Air Contaminants

TACs are regulated in the District through federal, state, and local programs. At the federal level, TACs are regulated primarily under the authority of the CAA. Prior to the amendment of the CAA in 1990, source-specific National Emission Standards for Hazardous Air Pollutants (NESHAPs) were promulgated under Section 112 of the CAA for certain sources of radionuclides and Hazardous Air Pollutants (HAPs).

Title III of the 1990 CAA amendments requires U.S. EPA to promulgate NESHAPs on a specified schedule for certain categories of sources identified by U.S. EPA as emitting one or more of the 189 listed HAPs. Emission standards for major sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. All NESHAPs were to be promulgated by the year 2000. Specific incremental progress in establishing standards must be made by the years 1992 (at least 40 source categories), 1994 (25 percent of the listed categories), 1997 (50 percent of remaining listed categories), and 2000 (remaining balance). The 1992 requirement was met; however, many of the four-year standards were not promulgated as scheduled. Promulgation of those standards has been rescheduled based on court ordered deadlines, or the aim to satisfy all Section 112 requirements in a timely manner.

Many of the sources of TACs that have been identified under the CAA are also subject to the California TAC regulatory programs. CARB developed three regulatory programs for the control of TACs. Each of the programs is discussed in the following subsections.

Control of TACs Under the TAC Identification and Control Program:

California's TAC identification and control program, adopted in 1983 as Assembly Bill 1807 (AB 1807) (California Health and Safety Code §39662), is a two-step program in which substances are identified as TACs, and airborne toxic control measures (ATCMs) are adopted to control emissions from specific sources. Since adoption of the program, CARB has identified 18 TACs, and CARB adopted a regulation designating all 189 federal HAPs as TACs.

Control of TACs Under the Air Toxics "Hot Spots" Act: The Air Toxics Hot Spot Information and Assessment Act of 1987 (AB 2588) (California Health and Safety Code §39656) establishes a state-wide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with those emissions. Inventory reports are required to be updated every four years under current state law. The BAAQMD uses a maximum individual cancer risk of 10 in one million, or an ambient concentration above a non-cancer reference exposure level, as the threshold for notification.

Senate Bill (SB) 1731, enacted in 1992 (California Health and Safety Code §44390 et seq.), amended AB 2588 to include a requirement for facilities with significant risks to prepare and implement a risk reduction plan which will reduce the risk below a defined significant risk level within specified time limits. At a minimum, such facilities must, as quickly as feasible, reduce cancer risk levels that exceed 100 per one million. The BAAQMD adopted risk reduction requirements for perchloroethylene dry cleaners to fulfill the requirements of SB 1731.

Discussion of Impacts

III a. The objectives of the proposed rule amendments are to implement Control Measure SS-17 from the Bay Area 2001 Ozone Attainment Plan, to reduce emissions of ozone forming compounds [e.g., volatile organic compounds (VOCs)], and achieve compliance with state and federal ozone standards. Therefore, the proposed amendments are in compliance with the local air quality plan and implements portions of that plan.

III b-d, f. The frequency of turnarounds varies depending on the process unit. The typical time between turnarounds is generally three to four years. Some process units go for as long as ten years between turnarounds. The current rule requires retention of records for two years. This factor limits the data available for analysis. BAAQMD staff requested records for the prior two years and received information from three of the five refineries. This information was used to determine the quantity of precursor organic compounds available for reduction, the potential emissions allowed by the current rule, and the estimated reduction if the proposed limit is adopted. Table 3-5 shows the summary of emissions.

TABLE 3-5
ESTIMATED ORGANICS⁽¹⁾ EMISSIONS

REFINERY	REFINERY ESTIMATE ⁽²⁾ (pounds per day)		ALLOWED BY CURRENT RULE ⁽³⁾ (pounds per day)	
	2002	2003	2002	2003
Refinery A	0.56	0.42	382	148
Refinery B	0.19	0.57	340	730
Refinery C	4.22	N/A		
Refinery D ⁽⁴⁾	N/C	N/C		
Refinery E	N/A	N/A		
Bay Area ⁽⁵⁾	1.88	2.5	1,805	2,195

- (1) Methane content at 1% (District Sample Analysis, Lab # 02-144)
- (2) Calculated mass emissions from refinery records
- (3) Assumes no clingage, no outgassing, no liquid in vessel, a molecular weight of 100, a molar volume of 379 cubic feet per pound mole.
- (4) Values given are as either greater or less than 10% LEL. N/C-not calculated.
- (5) Assumes 2 of 5 (A&B) refineries 2 yr data set is representative of all refineries.

The emissions allowed by the current rule are approximately one ton per day. This is a conservative estimate and assumes that a vessel is hydrocarbon free after one volume turnover. The potential to emit is likely higher due to factors that affect the cleanliness of the vessel, such as material off-gassing from catalysts or remaining liquids, clingage to the vessel walls and internal components, and turnaround timelines. The proposed rule amendments will allow the BAAQMD access to information necessary to calculate the mass of emissions.

The proposed amendments would result in an estimated 403 pound per day (lbs/day) of emission reductions providing an overall air quality benefit in the Bay Area. The proposed rule amendments will help the Bay Area move towards compliance with the ozone standard by reducing organic emissions and helping to reduce potential exposure to organic compounds. Further, the reduction in organic emissions should also result in a decrease in certain toxic emissions as well, as a number of organic emissions from refineries are also toxic air contaminants. Therefore, no significant adverse air quality impacts (either individually or cumulatively) are expected and the proposed rule amendments are expected to result in beneficial air quality impacts.

III e. The proposed amendments are expected to result in better control of organic emissions from depressurization of vessels, reducing VOC emissions and potential odors associated with those emissions. The rule amendments are not expected to generate any additional odors at refineries.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. A wide variety of biological resources are located within the Bay Area.

The refineries are located in the Bay Area-Delta Bioregion (as defined by the State's Natural Communities Conservation Program). This Bioregion is comprised of a variety of natural communities, which range from salt marshes to chaparral to oak woodland. The refineries affected by the rule are located in the industrial portions of Contra Costa and Solano Counties. The refinery sites have been graded to develop the various refinery structures and are typically, surrounded by other commercial and industrial facilities. Native vegetation, other than landscape vegetation, has been removed from operating portions of the refineries to minimize fire hazards.

Regulatory Background

Biological resources are generally protected by the City and/or County General Plans through land use and zoning requirements that minimize or prohibit development in biologically sensitive areas. Biological resources are also protected by the California Department of Fish and Game and the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service and National Marine Fisheries Service oversee the federal Endangered Species Act. Development permits may be required from one or both of these agencies if development would impact rare or endangered species. The California Department of Fish and Game administers the California Endangered Species Act that prohibits impacting endangered and threatened species. The U.S. Army Corps of Engineers and the U.S. EPA regulate the discharge of dredge or fill material into waters of the United States, including wetlands.

Discussion of Impacts

IV a-f. No impacts on biological resources are anticipated from the proposed rule amendments that would apply to existing process vessels. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would affect sensitive biological resources. Therefore, no significant adverse impacts on biological resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside a formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural and open space uses. Cultural resources are defined as buildings, sites, structures, or objects that might have historical architectural, archaeological, cultural, or scientific importance.

The Carquinez Strait represents the entry point for the Sacramento and San Joaquin Rivers into the San Francisco Bay. This locality lies within the San Francisco Bay and the west end of the Central Valley archaeological regions, both of which contain a rich array of prehistoric and historical cultural resources. The areas surrounding the Carquinez Strait and Suisun Bay have been occupied for millennia given its abundant combination of littoral and oak woodland resources.

The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties. The sites have been graded to develop the various refinery structures and are typically surrounded by other commercial and industrial facilities. Cultural resources are generally not located within the operating portions of the refineries.

Regulatory Background

The State CEQA Guidelines define a significant cultural resources as a “resource listed or eligible for listing on the California Register of Historical Resources” (Public Resources Code Section 5024.1). A project would have a significant impact if it would cause a substantial adverse change in the significance of a historical resource (State CEQA Guidelines Section 15064/5(b)). A substantial adverse change in the significance of a historical resource would result from an action that would demolish or adversely alter the physical characteristics of the historical resource that convey its historical significance and that qualify the resource for inclusion in the California Register of Historical Resources or a local register or survey that meets the requirements of Public Resources Code Sections 50020.1(k) and 5024.1(g).

Discussion of Impacts

V a – d. No impacts on cultural resources are anticipated from the proposed rule amendments that would apply to existing process vessels. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would affect sensitive cultural resources. No major construction activities are expected from the proposed rule amendments. Therefore, no significant adverse impacts on cultural resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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VI. GEOLOGY AND SOILS.

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> • Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. • Strong seismic groundshaking? • Seismic-related ground failure, including liquefaction? • Landslides? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. The refineries affected by the rule are located in the industrial portions of Contra Costa and Solano Counties.

The refineries are located in the natural region of California known as the Coast Ranges geomorphic province. The province is characterized by a series of northwest trending ridges and valleys controlled by tectonic folding and faulting, examples of which include the Suisun Bay, East Bay Hills, Briones Hills, Vaca Mountains, Napa Valley, and Diablo Ranges.

Regional basement rocks consist of the highly deformed Great Valley Sequence, which include massive beds of sandstone interfingering with siltstone and shale. Unconsolidated alluvial deposits, artificial fill, and estuarine deposits, (including Bay Mud) underlie the low-lying region along the margins of the Carquinez Strait and Suisun Bay. The estuarine sediments found along the shorelines of Solano County are soft, water-saturated mud, peat and loose sands. The organic, soft, clay-rich sediments along the San Francisco and San Pablo Bays are referred to locally as Bay Mud and can present a variety of engineering challenges due to inherent low strength, compressibility and saturated conditions. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

The San Francisco Bay Area is a seismically active region, which is situated on a plate boundary marked by the San Andreas Fault System. Several northwest trending active and potentially active faults are included with this fault system. Under the Alquist-Priolo Earthquake Fault Zoning Act, Earthquake Fault Zones were established by the California Division of Mines and Geology along “active” faults, or faults along which surface rupture occurred in Holocene time (the last 11,000 years). In the Bay area, these faults include the San Andreas, Hayward, Rodgers Creek-Healdsburg, Concord-Green Valley, Greenville-Marsh Creek, Seal Cove/San Gregorio and West Napa faults. Other smaller faults in the region classified as potentially active include the Southampton and Franklin faults.

Ground movement intensity during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geological material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. Earthquake ground shaking may have secondary effects on certain foundation materials, including liquefaction, seismically induced settlement, and lateral spreading.

Regulatory Background

Construction is regulated by the local City or County building codes that provide requirements for construction, grading, excavations, use of fill, and foundation work including type of materials, design, procedures, etc. which are intended to limit the probability of occurrence and the severity of consequences from geological hazards. Necessary permits, plan checks, and inspections are generally required.

The City or County General Plan includes the Seismic Safety Element. The Element serves primarily to identify seismic hazards and their location in order that they may be taken into account in the planning of future development. The Uniform Building Code is the principle mechanism for protection against and relief from the danger of earthquakes and related events.

In addition, the Seismic Hazard Zone Mapping Act (Public Resources Code §§2690 – 2699.6) was passed by the California legislature in 1990 following the Loma Prieta earthquake. The Act required that the California Division of Mines and Geology (DMG) develop maps that identify the areas of the state that require site specific investigation for earthquake-trigger landslides and/or potential liquefaction prior to permitting most urban developments. The act directs cities, counties and state agencies to use the maps in their land use planning and permitting processes.

Local governments are responsible for implementing the requirements of the Seismic Hazards Mapping Act. The maps and guidelines are tools for local governments to use in establishing their land use management policies and in developing ordinances and review procedures that will reduce losses from ground failure during future earthquakes.

Discussion of Impacts

VI a – e. No impacts on geology and soils are anticipated from the proposed rule amendments that would apply to existing process vessels. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries. No major construction activities are expected from the proposed rule amendments and no new structures would be required. Therefore, no significant adverse impacts on geology and soils are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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VII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Be located within an airport land use plan or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The facilities affected by the proposed rule amendments are primarily the refineries. Petroleum refineries handle and process large quantities of flammable, hazardous, and acutely hazardous materials. Accidents involving these substances can result in worker or public exposure to fire, heat, blast from an explosion, or airborne exposure to hazardous substances.

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facility. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions, including the following events.

- **Toxic gas clouds:** Toxic gas clouds are releases of volatile chemicals (e.g., anhydrous ammonia, chlorine, and hydrogen sulfide) that could form a cloud and migrate off-site, thus exposing individuals. “Worst-case” conditions tend to arise when very low wind speeds coincide with an accidental release, which can allow the chemicals to accumulate rather than disperse.
- **Torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases):** The rupture of a storage tank containing a flammable gaseous material (like propane), without immediate ignition, can result in a vapor cloud explosion. The “worst-case” upset would be a release that produces a large aerosol cloud with flammable properties. If the flammable cloud does not ignite after dispersion, the cloud would simply dissipate. If the flammable cloud were to ignite during the release, a flash fire or vapor cloud explosion could occur. If the flammable cloud were to ignite immediately upon release, a torch fire would ensue.
- **Thermal Radiation:** Thermal radiation is the heat generated by a fire and the potential impacts associated with exposure. Exposure to thermal radiation would result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual to the fire.
- **Explosion/Overpressure:** Process vessels containing flammable explosive vapors and potential ignition sources are present at refineries. Explosions may occur if the flammable/explosive vapors came into contact with an ignition source. An explosion could cause impacts to individuals and structures in the area due to overpressure.

For all refineries, risks to the public are reduced if there is a buffer zone between refinery processes and residences, or the prevailing wind blows away from residential areas. The risks posed by refinery operations are unique and determined by a variety of factors. Refineries tend to be located in industrial areas which helps minimize public exposure in the event of a release.

Regulatory Background

There are many federal and state rules and regulations that refineries must comply with which serve to minimize the potential impacts associated with hazards at these facilities.

Under the Occupational Safety and Health Administration (OSHA) regulations [29 Code of Federal Regulations (CFR) Part 1910], facilities which use, store, manufacture, handle, process, or move highly hazardous materials must prepare a fire prevention plan. In addition, 29 CFR Part 1910.119, Process Safety Management (PSM) of Highly Hazardous Chemicals, and Title 8 of the California Code of Regulations, General Industry Safety Order §5189, specify required prevention program elements to protect workers at facilities that handle toxic, flammable, reactive, or explosive materials. Prevention program elements are aimed at preventing or minimizing the consequences of catastrophic releases of the chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances, U.S. EPA regulations are set forth in 40 CFR Part 68. In California, the California Accidental Release Prevention (CalARP) Program regulation (CCR Title 19, Division 2, Chapter 4.5) was issued by the Governor's Office of Emergency Services (OES). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. Refineries are also required to comply with the U.S. EPA's Emergency Planning and Community Right-to-Know Act (EPCRA).

The refineries are required to have a Spill Prevention Control and Countermeasures (SPCC) Plan per the requirements of 40 Code of Federal Regulations, Section 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.

The Hazardous Materials Transportation (HMT) Act is the federal legislation that regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. Department of Transportation, the Federal Highway Administration, and the Federal Railroad Administration. The HMT Act requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practical moment (49 CFR Subchapter C). The California Department of Transportation (Caltrans) sets standards for trucks in California. The regulations are enforced by the California Highway Patrol.

California Assembly Bill 2185 requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the

release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The business plans must provide a description of the types of hazardous materials/waste on-site and the location of these materials. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

Contra Costa County has adopted an industrial safety ordinance that addresses the human factors that lead to accidents. The ordinance requires stationary sources to develop a written human factors program that includes the following:

- Consideration of human factors in the process hazards analysis process;
- Consideration of human systems as causal factors in the incident investigation process for major accidents or releases or for incidents that could have led to a major accident or release;
- Training of employees in the human factors program;
- Operating procedures;
- Management of changes in staffing, staffing levels, or organization in operations or emergency response;
- Participation of employees and their representatives in the development of the written human factors program;
- Development of a program that includes issues such as staffing, shiftwork, and overtime; and
- Incorporation of the human factors program description in the facility safety plan.

Discussion of Impacts

VII a-b. The proposed rule amendments would require more stringent controls on emissions from the depressurization of process vessels at refineries and chemical plants. The vessels typically process hydrocarbons and other materials, often under pressure. These vessels require periodic maintenance and repairs that may involve entry into the confined space by plant personnel. To make a vessel safe for entry, it must be purged of the hydrocarbons and other materials it contains. This purging requires great care in order to minimize any risk of explosion or risk to personnel. Typically, hydrocarbons are removed from a vessel by non-combustible purge gas (e.g., nitrogen and steam) until the

hydrocarbon concentration is below the level at which an explosion may occur. Once this level is reached, air can be used to purge remaining vapors from the vessel. Personnel may then enter the vessel to perform repairs or maintenance. Standards for work in confined spaces are set forth in permits required for confined space entry and county use permits.

The proposed rule amendments are not expected to substantially affect the way that process vessels are depressurized. Adding abatement collection components would add to mobility concerns in already confined spaces that occur during major maintenance turnarounds. Facility use permits might prohibit the introduction of a source of ignition within process units, such as a portable thermal oxidizer. Additional concerns include increased flammability due to contamination of carbon beds, if carbon filters are used to control emissions. These issues are expected to be resolved with proper monitoring and maintenance. The most probable choice for achieving the proposed emissions standard is likely to be extended purging either with steam or chemical agents. None of the options require facilities to use any unsafe practice.

There are existing inherent hazards associated with the depressurizing of process vessels. The proposed rule amendments are expected to increase the amount of emissions captured while de-gassing and not so much change the method in which the vessels are depressurized. The proposed rule amendments are expected to reduce emissions from existing process vessels thus reducing the emissions and releases of potentially hazardous materials. Therefore, no significant adverse impacts on releases of hazardous materials into the environment are expected.

VII c. the operations affected by the proposed amendments are facilities located within industrial and commercial areas; the amendments are not expected to result in any new construction activities. Some facilities may be within 0.25 mile of an existing or proposed school, but the proposed rule amendments generally increase the level of protection by reducing organic emissions and toxic air contaminant emissions. Therefore, no significant adverse impacts are expected.

VII d. No impacts on hazardous material sites are anticipated from the proposed rule amendments that would apply to existing refinery operations. Some of the refineries may be located on the hazardous materials sites listed pursuant to Government Code Section 65962.5. However, the proposed rule amendments would have no effect on hazardous materials nor would the amendments create a significant hazard to the public or environment. The process vessels already exist and are located within the confines of existing refineries or chemical plants. The proposed rule amendments neither require nor are likely to result in activities that would affect hazardous materials or existing site contamination. Therefore, no significant adverse impacts on hazards are expected.

VII e – f. No impacts on airports or airport land use plans are anticipated from the proposed rule amendments that would apply to existing operations. The process vessels affected by the rule amendments already exist and are located within the confines of existing facilities. The proposed rule amendments neither require nor are likely to result

in activities that would affect the environment outside of the refinery boundaries. No major construction activities are expected from the proposed rule amendments. Further, the refineries are not located within two miles of airports. Therefore, no significant adverse impacts on hazards at airports are expected.

VII g. No impacts on emergency response plans are anticipated from the proposed rule amendments that would apply to existing refinery operations. Each refinery has prepared an emergency response plan; however, the process vessels to be controlled already exist and are located within the confines of existing industrial facilities. The proposed rule amendments neither require nor are likely to result in activities that would impact the emergency response plan. No major construction activities are expected from the proposed rule amendments. Therefore, no significant adverse impacts on emergency response plans is expected.

VII h. No increase in hazards related to wildfires are anticipated from the proposed rule amendments that would apply to existing industrial facilities. The process vessels already exist and are located within the confines of existing industrial facilities. No major construction activities are expected from the proposed rule amendments and no activities would occur outside the confines of the existing industrial facilities. Vegetation surrounding the operating portions of the refineries has been removed to reduce the potential fire hazards. Therefore, no significant adverse impacts on fire hazards are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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VIII. HYDROLOGY AND WATER QUALITY.

Would the project:

a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- j) Inundation by seiche, tsunami, or mudflow?

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and affected environment vary substantially throughout the area and include commercial, industrial, residential, agricultural, and open space uses.

The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties and are generally surrounded by other commercial and industrial facilities. The refineries are located within rolling, low elevation hills along the shores of the San Francisco Bay, San Pablo Bay, Carquinez Strait, and Suisun Bay. ChevronTexaco is bordered by the San Francisco and San Pablo Bays on the western border of the refinery. The ConocoPhillips refinery is bounded on the north and west by San Pablo Bay. The Valero, Shell, and Tesoro refineries are located adjacent to Suisun Bay along the Carquinez Straits.

Reservoirs and drainage streams are located throughout the area and discharge into the Bays. Marshlands incised with numerous winding tidal channels containing brackish water are located near the refineries.

The refineries are located within the San Francisco Bay Area Hydrologic Basin. The primary regional groundwater water-bearing formations include the recent and Pleistocene (up to two million years old) alluvial deposits and the Pleistocene Huichica formation. Salinity within the unconfined alluvium appears to increase with depth to at least 300 feet. Water of the Huichica formation tends to be soft and relatively high in bicarbonate, although usable for domestic and irrigation needs (CWDR 2002).

Regulatory Background

The Federal Clean Water Act of 1972 primarily establishes regulations for pollutant discharges into surface waters in order to protect and maintain the quality and integrity of the nation’s waters. This Act requires industries that discharge wastewater to municipal sewer systems to meet pretreatment standards. The regulations authorize the U.S. EPA to set the pretreatment standards. The regulations also allow the local treatment plants to set more stringent wastewater discharge requirements, if necessary, to meet local conditions.

The 1987 amendments to the Clean Water Act enabled the U.S. EPA to regulate, under the National Pollutant Discharge Elimination System (NPDES) program, discharges from industries and large municipal sewer systems. The U.S. EPA set initial permit application requirements in 1990. The State of California, through the State Water

Resources Control Board, has authority to issue NPDES permits, which meet U.S. EPA requirements, to specified industries.

The Porter-Cologne Water Quality Act is California's primary water quality control law. It implements the state's responsibilities under the Federal Clean Water Act but also establishes state wastewater discharge requirements. The RWQCB administers the state requirements as specified under the Porter-Cologne Water Quality Act, which include storm water discharge permits. The water quality in the Bay Area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board.

In response to the Federal Act, the State Water Resources Control Board prepared two state-wide plans in 1991 and 1995 that address storm water runoff: the California Inland Surface Waters Plan and the California Enclosed Bays and Estuaries Plan. Enclosed bays are indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. San Francisco Bay and its constituents parts, including Carquinez Strait and Suisun Bay, fall under this category.

The San Francisco Bay Basin Plan identifies the: (1) beneficial water uses that need to be protected; (2) the water quality objectives needed to protect the designated beneficial water uses; and (3) strategies and time schedules for achieving the water quality objectives. The beneficial uses of the Carquinez Strait that must be protected which include water contact and non-contact recreation, navigation, ocean commercial and sport fishing, wildlife habitat, estuarine habitat, fish spawning and migration, industrial process and service supply, and preservation of rare and endangered species. The Carquinez Strait and Suisun Bay are included on the 1998 California list as impaired water bodies due to the presence of chlordane, copper, DDT, diazinon, dieldrin, dioxin and furan compounds, mercury, nickel, PCBs, and selenium.

Discussion of Impacts

VIII a. The facilities affected by the proposed rule amendments have existing programs that monitor compliance with water quality. None of the proposed rule amendments would affect these programs so no significant adverse impacts are expected.

VIII b-j. The facilities affected by the proposed rule amendments are facilities located within industrial and commercial areas; the amendments are not expected to result in any new construction. No impacts on hydrology/water quality resources are anticipated from the proposed rule amendments that would apply to existing process vessels. The refineries affected by the proposed rule amendments are required to treat and monitor wastewater discharges from their facilities. The pressure vessels to be controlled and monitored already exist and are located within the confines of existing refineries. The proposed rule amendments will have no impact on wastewater discharges, alter drainage patterns, create additional water runoff, place any additional structures within 100-year flood zones or other areas subject to flooding, or contribute to inundation by seiche, tsunami or mudflow. No major construction activities are expected from the proposed

rule amendments and no new structures are required. Therefore, no significant adverse impacts on hydrology/water quality are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to a general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses.

The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties and generally adjacent to industrial and commercial land uses.

Regulatory Background

Land uses are generally protected and regulated by the City and/or County General Plans or specific plans through land use and zoning requirements.

Discussion of Impacts

IX a-c. The pressure vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial or commercial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities. Therefore, no land use impacts or conflicts with existing land use plans, policies or regulations are anticipated.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties.

Regulatory Background

Mineral resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

X a-b. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither requires nor is likely to result in construction inside or outside of those facilities. The proposed rule amendments are not associated with any action that would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Therefore, no impacts on mineral resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. NOISE. Would the project:				
a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Expose persons to or generate of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be located within the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties and are typically surrounded by other commercial and industrial facilities.

Regulatory Background

Noise issues related to construction and operation activities are addressed in local City or Country General Plan policies and local noise ordinance standards. The General Plan and noise ordinances generally establish allowable noise limits within different land uses including residential areas, other sensitive use areas (e.g., schools, churches, hospitals, and libraries), commercial areas, and industrial areas.

Discussion of Impacts

XI a-f. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities and will not alter noise levels either within or outside of the refineries. No new equipment that would generate noise is expected to be required as part of the proposed rule amendments. Therefore, no noise impacts are expected.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties.

Regulatory Background

Population and housing growth and resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

XII a. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities. No additional workers will be required at the refineries; therefore, no increase in population is expected.

XII b-c. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial areas. No housing would be impacted or removed by the proposed rule amendments and no displacement housing would be required. Therefore, no significant adverse impacts on population/housing is expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIII. PUBLIC SERVICES. Would the project:

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

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

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The refineries affected by the rule are located in the industrial portions of Contra Costa and Solano Counties.

Given the large area covered by the BAAQMD, public services are provided by a wide variety of local agencies. Fire protection and police protection/law enforcement services within the BAAQMD are provided by various districts, organizations, and agencies. There are several school districts, private schools, and park departments within the BAAQMD. Public facilities within the BAAQMD are managed by different county, city, and special-use districts.

Regulatory Background

City and/or County General Plans usually contain goals and policies to assure adequate public services are maintained within the local jurisdiction.

Discussion of Impacts

XIII a. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments do not require the installation of new equipment or new public services. No impacts on the need for fire or police protection are expected. The proposed rule amendments are not expected to require additional workers at the refinery or result in population growth so no impacts on schools or parks are expected. Therefore, no significant adverse impacts on public services are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIV. RECREATION. Would the project:

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

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that there are numerous areas for recreational activities. The refineries affected by the rule are located in the industrial portions of Contra Costa and Solano Counties. Public recreational land uses are not located within the confines of the refineries.

Regulatory Background

Recreational areas are generally protected and regulated by the City and/or County General Plans at the local level through land use and zoning requirements. Some parks and recreation areas are designated and protected by state and federal regulations.

Discussion of Impacts

XIV a-b. The process vessels to be further controlled and monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities. No additional workers will be required at the refineries, no increase in population is expected and, therefore, no significant adverse impacts on recreation are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC. Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause, either individually or cumulatively, exceedance of a level-of-service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards because of a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles). Transportation systems located within the Bay Area include railroads, airports, waterways, and highways. The transportation infrastructure for vehicles and trucks in the Bay Area ranges from single lane roadways to multilane interstate highways. The refineries affected by the rule are located in the industrial portions of Contra Costa and Solano Counties and are accessed via highways and local roadway systems.

Interstate 80 is a major east-west freeway link providing access between Richmond and Oakland/San Francisco to the south and west and Sacramento to the east. Interstate 80 is a six-lane north-south freeway which connects Contra Costa County to Solano County via the Carquinez Bridge. The ConocoPhillips Refinery is bisected by Interstate 80, south of the Carquinez Bridge, near the interchange with State Route 4.

The ChevronTexaco Refinery is located north and adjacent to Interstate 580. Interstate 580 is a six-lane freeway and connects Interstate 80 east of the ChevronTexaco Refinery with U.S. 101 in Marin County via the Richmond-San Rafael Bridge.

The Shell Martinez Refinery is located north of State Route 4 and west of Interstate 680, south of the Benicia-Martinez Bridge. The Tesoro Avon Refinery is located north of State Route 4 and east of Interstate 680, south of the Benicia-Martinez Bridge and several miles east of the Shell Martinez Refinery.

The Valero Benecia Refinery is also located near Interstate 680. Interstate 680 is a four-lane, north-south freeway near the Valero, Tesoro, and Shell refineries. From the Benicia-Martinez Bridge, Interstate 680 extends north to Interstate 80 in Cordelia. Caltrans constructed a second freeway bridge adjacent and east of the existing Benicia-Martinez Bridge. The new bridge consists of five northbound traffic lanes. The existing bridge was restriped to accommodate four lanes for southbound traffic.

Interstate 780 is a four lane, east-west freeway extending from the Benicia-Martinez Bridge west to I-80 in Vallejo.

Regulatory Background

Transportation planning is usually conducted at the county level and the refineries in the Bay Area are located in Contra Costa and Solano Counties. The County of Contra Costa and the Contra Costa Transportation Authority share the duties of transportation planning and administration of improvement projects in the County of Contra Costa. The Contra Costa County Community Development Department conducts and oversees the transportation and planning for new development projects. The Contra Costa Transportation Agency implements the transportation programs and projects created by the County's Measure C, the Transportation Improvement and Growth Management Program and also serves as the County's Congestion Management Agency.

The Solano Transportation Authority is the designated Congestion Management Agency for Solano County and develops the Congestion Management Plan (CMP) for Solano County. The CMP identifies a system of state highways and regionally significant principal arterials and specifies level of service standards for those roadways.

Discussion of Impacts

XV a-b. The process vessels to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments do not require construction activities or the installation of new equipment. The transport of additional materials will not be required and no additional workers will be required. Some refineries use contractors to implement inspection and maintenance programs. The proposed rule amendments may require that the contractor visit the site on additional days. The increase in traffic would be limited to about one trip per day per refinery. Additional traffic at the existing facilities that would result in changes to traffic patterns or levels of service at local intersections is not expected.

XV c. The proposed rule amendments include minor modifications to the operation of existing facilities. The project will not involve the delivery of materials via air so no increase in air traffic is expected.

XV d - e. The proposed rule amendments are not expected to increase traffic hazards or create incompatible uses at or adjacent to the site. Emergency access is provided at the refinery sites, will continue to be maintained at the refinery sites, and will not be impacted by the proposed rule amendments.

XV f. No construction activities are expected, so no parking is required for construction workers. No increase in permanent workers is expected. Therefore, the proposed rule amendments will not result in significant adverse impacts on parking.

XV g. The proposed rule amendments involve modifications to the operations within the confines of existing refineries and chemical plants. The proposed rule amendments are not expected to conflict with adopted policies, plans, or programs supporting alternative transportation modes (e.g., bus turnouts, bicycle racks).

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVI. UTILITIES/SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily the refineries located in the industrial portions of Contra Costa and Solano Counties.

Given the large area covered by the BAAQMD, public utilities are provided by a wide variety of local agencies. The refineries have wastewater and storm water treatment facilities and discharge treated wastewater under the requirements of NPDES permits.

Water is supplied to the refineries by several water purveyors in the Bay Area. Solid waste is handled through a variety of municipalities, through recycling activities and at disposal sites.

There are no hazardous waste disposal sites within the jurisdiction of the BAAQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities are the Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Safety-Kleen facility in Buttonwillow (Kern County). Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; USPCI, Inc., in Murray, Utah; and Envirosafe Services of Idaho, Inc., in Mountain Home, Idaho. Incineration is provided at the following out-of-state facilities: Aptus, located in hAragonite, Utah and Coffeyville, Kansas; Rollins Environmental Services, Inc., located in Deer Park, Texas and Baton Rouge, Louisiana; Chemical Waste Management, Inc., in Port Arthur, Texas; and Waste Research & Reclamation Co., Eau Claire, Wisconsin.

Regulatory Background

City and/or County General Plans usually contain goals and policies to assure adequate utilities and service systems are maintained within the local jurisdiction.

Discussion of Impacts

XVI a – e. No additional construction activities are expected to be required to comply with the proposed rule amendments. The proposed rule amendments will not generate or affect wastewater, will not affect stormwater or stormwater drainage, and will not require water or affect water supplies. No increases in demand for these public services are expected as a result of the proposed rule amendments so that no significant adverse impacts are expected.

Fuel gas or natural gas may be required to operate thermal oxidizers used to destroy organic emissions. All of the industrial facilities affected by these proposed rule amendments currently use fuel gas and/or natural gas. The amount of gas required to operate a thermal oxidizer for a short period of time is minimal compared to the current fuel use at the refineries. Further, the most probable choice for achieving the proposed emission standard is likely to be extended purging either using steam or chemical agents so that no significant increase in the use of fuel or natural gas is expected.

XVI f-g. The proposed rule amendments may generate additional solid or hazardous waste in the form of carbon used to control organic emissions, should facilities choose to comply using activated carbon filters. The additional volume of carbon is not expected to be significant since carbon is usually collected and regenerated so that little additional solid waste would be expected. Further, the most probable choice for achieving the proposed emission standard is likely to be extended purging either using steam or chemical agents so that significant volumes of carbon are not expected to be generated as waste.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XVII. MANDATORY FINDINGS OF SIGNIFICANCE.

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) | Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) | Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) | Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion of Impacts

XVII a. The proposed rule amendments do not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory, as discussed in the previous sections of the CEQA checklist. The proposed rule amendments are expected to result in emission reductions from refineries, thus providing a beneficial air quality impact and improvement in air quality. No significant adverse impacts are expected.

XVII b. The proposed rule amendments are expected to result in emission reductions from refineries, thus providing a beneficial air quality impact and improvement in air

quality. The proposed rule amendments are part of a long-term plan to bring the Bay Area into compliance with the federal and state ambient air quality standards for ozone. The proposed rule amendments do not have adverse environmental impacts that are limited individually, but cumulatively considerable when considered in conjunction with other regulatory control projects. The proposed rule amendments do not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. No significant adverse impacts are expected.

XVII c. The proposed rule amendments are expected to result in emission reductions from refineries, thus providing a beneficial air quality impact and improvement in air quality. The proposed rule amendments are part of a long-term plan to bring the Bay Area into compliance with the federal and state ambient air quality standards for ozone, thus reducing the potential health impacts due to ozone exposure. The proposed rule amendments do not have significant adverse effects (either directly or indirectly) to human beings.

DABWORD:2239:Reg 8, Rule 10:R10CHAP3.doc

Chapter 4**References**

Bay Area Air Quality Management District (BAAQMD), 2003. Draft Staff Report, Proposed Amendments Regulation 8, Rule 18: Equipment Leaks, Control Measure SS-16, November 2003.

BAAQMD, 2001. Revised 2001 San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard, adopted October 24, 2001.

BAAQMD, 2001. Toxic Air Contaminant 2000 Annual Report. December 2001.

BAAQMD, 2002. 2002 BAAQMD Ambient Air Quality Data.

BAY AREA AIR QUALITY MANGEMENT DISTRICT

Memorandum

To: Chairperson Haggerty and Members of the Board

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 14, 2004

Re: Public Hearing to Consider Proposed Amendments to Regulation 8, Rule 18:
Equipment Leaks and Approval of a Negative Declaration pursuant to the
California Environmental Quality Act

RECOMMENDED ACTION:

Staff recommend that the Board take the following actions:

- A) Adopt proposed amendments to District Regulation 8, Rule 18: Equipment Leaks;
- B) Approve a Negative Declaration pursuant to the California Environmental Quality Act (CEQA) for this rule-making activity.

BACKGROUND

Proposed amendments to District Regulation 8, Rule 18 implement control measure SS-16: Low Emission Refinery Valves from the 2001 San Francisco Bay Area Ozone Attainment Plan (2001 OAP). Rule 18 controls fugitive emissions from over 200,000 refinery valves, and also from flanges, pumps, compressors, pressure relief valves, pipes, connections and other components at the five Bay Area refineries and at chemical plants, gasoline bulk terminals, and bulk plants. The rule requires that refineries develop a Leak Detection and Repair (LDAR) program to locate, minimize and repair leaks from this equipment. The existing rule has the most stringent leak requirements in California (and the nation) and has served to significantly reduce fugitive emissions from these facilities since those stringent requirements were adopted in 1992.

Control measure SS-16 in the 2001 OAP calls for leaking valves at refineries to be replaced with best available technology or "leakless technology". Staff made numerous site visits to refineries, reviewed vendor literature regarding valve technology, reviewed other air district regulations and analyzed information provided by the refineries on their LDAR programs and compliance rates. During the development of these amendments, staff held six workgroup meetngs that included affected industry, community groups and California Air Resources Board (CARB) staff, and presented draft rule language in an evening workshop in Crockett on October 28, 2003.

DISCUSSION

Rule 18 currently allows one half of one percent (0.5%) of the population of valves in any given refinery to be placed on a “non-repairable” list. This list exists to allow some components to continue to leak when the process of shutting down and restarting a process unit to make a repair would create far more emissions than the leak itself. These components are required to be repaired during the next shutdown. The proposed amendments will reduce the number of allowable valves on the list to three tenths of one percent (0.3%).

In addition, the proposed amendments will set a maximum leak rate for components that can be on a non-repairable list. Any valve with a leak rate of greater than 10,000 ppm will have to either be shown to emit less than 15 pounds per day, or be repaired within 45 days. The number of valves with leak rates greater than 10,000 ppm (that leak at less than 15 lbs/day) allowed to be on the non-repairable list will be limited to one quarter of one tenth of a percent of the valve population (0.025%).

To allow regulatory flexibility, the proposed amendments will also allow connections to be placed on the non-repairable list. Connections are solid or flanged fittings that have been subject to the same stringent leak standards as valves since 1998. Connections may be placed on the non-repairable list for valves at a ratio of one connection for two valves. This prevents expansion of the total number of components allowed on the list.

Staff considered various options to implement control measure SS-16, including requiring all leaking valves to be replaced with hermetically sealed valves. Staff have concluded that the stringent leak standards in the rule combined with the new limits placed on the non-repairable list will require facilities to choose the “best available technology” for each application and type of service, fulfilling the proposal in the 2001 OAP.

These amendments will reduce emissions of organic compounds, including toxics, by 0.2 tons per day. The rule amendments will cost a total of \$23,500 to \$118,000 per year, which includes the costs associated with sampling leaks and component repair. The cost effectiveness of this proposal ranges from \$320 to \$1600 per ton of organic compound emissions reduced. The socioeconomic analysis prepared for these amendments found that there would not be an adverse economic effect on refineries or other industry.

Pursuant to the California Environmental Quality Act (CEQA), the District prepared an initial study to determine the potential environmental impacts of proposed Regulation 8, Rule 18. The study concluded that the proposed rule would not result in any significant adverse environmental impacts. No comments were received on the proposed CEQA negative declaration.

CHANGE TO THE PROPOSED RULE AFTER PUBLICATION

Staff suggest two minors change to the language of the proposed amendments to improve clarity. The word “connection” has been added to Section 8-18-306: Non-repairable Equipment. Also, in Section 8-18-306.4, the language concerning the time period for components with major leaks (greater than 10,000 ppm) to be repaired or determined to leak at less than 15 lbs/day needed clarification. The proposed language changes reflect staff intent as was presented and understood by all parties. The revised language is shown in Section 8-18-306 and 306.4 of the

rule as ~~double-strikethrough~~ and double underlined text. These changes are not significant, and do not require continuation of the public hearing.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Victor Douglas and Daniel Belik
Reviewed by: Peter Hess

Attachments:

1. Proposed Amendments to Regulation 8, Rule 18, Equipment Leaks
2. Staff Report for Regulation 8, Rule 18, Equipment Leaks, including socioeconomic analysis
3. CEQA Negative Declaration and Initial Study

**REGULATION 8
ORGANIC COMPOUNDS
RULE 18
EQUIPMENT LEAKS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 18
EQUIPMENT LEAKS**

(Adopted October 1, 1980)

8-18-100 GENERAL

8-18-101 Description: The purpose of this Rule is to limit emissions of organic compounds, including and methane, from leaking equipment at petroleum refineries, chemical plants, bulk plants and bulk terminals including, but not limited to: valves, connectors, pumps, compressors, pressure relief devices, diaphragms, hatches, sight-glasses, fittings, sampling ports, meters, pipes, vessels, and refinery wastewater collection system components.

(Amended 3/17/82; 3/4/92; 1/7/98)

8-18-110 Exemption, Controlled Seal Systems and Pressure Relief Devices: ~~Except for Section 8-18-603,~~ The provisions of this Rule shall not apply to seal systems and pressure relief devices vented to a vapor recovery or disposal system which reduces the emissions of organic compounds from the equipment by 95% or greater as determined according to Section 8-18-603.

(Amended, Renumbered January 7, 1998)

8-18-111 Exemption, Small Facilities: The provisions of this rule shall not apply to facilities which have less than 100 valves or less than 10 pumps and compressors. Such facilities are subject to the requirements of Regulation 8, Rule 22.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-112 Exemption, Bulk Plant and Terminal Loading Racks: The provisions of this rule shall not apply to those connections at the interface between the loading rack and the vehicle being loaded.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-113 Limited Exemption, Initial Boiling Point: The provisions of Sections 8-18-400 shall not apply to equipment which handle organic liquids having an initial boiling point greater than 302° F.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-114 Limited Exemption, Research and Development: The provisions of Sections 8-18-401, 402 and 502 shall not apply to research and development plants which produce only non-commercial products solely for research and development purposes.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-115 Limited Exemption, Storage Tanks: The provisions of this rule shall not apply to appurtenances on storage tanks including pressure relief devices, which are subject to requirements contained in Regulation 8, Rule 5: Storage of Organic Liquids.

(Adopted January 7, 1998)

8-18-116 Limited Exemption, Vacuum Service: The provisions of Sections 8-18-400 and 502 shall not apply to equipment in vacuum service.

(Amended January 7, 1998)

8-18-117 Limited Exemption, Visual Inspection: The provisions of Section 8-18-403 shall not apply to days when a facility is not staffed.

(Amended, Renumbered January 7, 1998)

8-18-117 Deleted January 7, 1998

8-18-200 DEFINITIONS

8-18-201 Background: The ambient concentration of total organic compounds determined at least 3 meters (10 feet) upwind from the equipment to be inspected and not influenced by any specific emission point as indicated by a hydrocarbon analyzer specified by Section 8-18-501.

(Amended March 4, 1992)

8-18-202 Bulk Plants and Terminals: A distribution facility which is subject to Regulation 8, Rule 6, 33 or 39.

- 8-18-203 Chemical Plant:** Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has 28 325 as the first two three digits in their ~~Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget North American Industrial Classification Standard (NAICS) code.~~ Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining.
- (Renumbered and Amended January 7, 1998)
- 8-18-204 Connection:** Flanged, screwed, or other joined fittings used to connect any piping or equipment.
- (Amended, Renumbered January 7, 1998)
- 8-18-205 Equipment:** All components including, but not limited to: valves, pumps, compressors, pressure relief devices, diaphragms, hatches, fittings, sampling ports, pipes, plugs, open-ended lines, gages or sight-glasses.
- (Amended, Renumbered January 7, 1998)
- 8-18-206 Inaccessible Equipment:** Any equipment located over 13 feet above the ground when access is required from the ground; or any equipment located over 6.5 feet away from a platform when access is required from a platform.
- (Amended, Renumbered January 7, 1998)
- 8-18-207 Inspection:** The determination of the concentration of total organic compounds leaking from equipment using EPA Reference Method 21 as required by Section 8-18-501.
- (Amended, Renumbered January 7, 1998)
- 8-18-208 Leak:** The concentration of total organic compounds ~~measured~~ above background, ~~measured 1 centimeter or less from the leak,~~ expressed as methane, as and measured 1 centimeter or less from the leak using EPA Reference Method 21 in accordance with Section 8-18-602.
- (Amended, Renumbered January 7, 1998)
- 8-18-209 Leak Minimization:** Reducing the leak to the lowest achievable level using best modern practices and without shutting down the process the equipment serves.
- (Renumbered 3/17/82; Amended 3/4/92; 1/7/98)
- 8-18-210 Leak Repair:** The tightening, adjustment, or addition of material, or the replacement of the equipment, which reduces the leakage to the atmosphere below the applicable standard in Section 8-18-300.
- (Renumbered 3/17/82; Amended 3/4/92; 1/7/98)
- 8-18-211 Liquid Leak:** Dripping of liquid at a rate of greater than 3 drops per minute and a concentration of total organic compounds greater than the applicable leak standard in Section 8-18-300.
- (Amended, Renumbered January 7, 1998)
- 8-18-212 Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.
- (Amended, Renumbered January 7, 1998)
- 8-18-213 Petroleum Refinery:** Any facility that processes petroleum products as defined in North American Industrial Classification Standard Number 32411, Petroleum Refining.
- (Amended, Renumbered January 7, 1998)
- 8-18-214 Pressure Relief Device:** The automatic pressure-relieving device actuated by the static pressure upstream of the device including, but not limited to pressure relief valves and rupture disks.
- (Amended, Renumbered January 7, 1998)
- 8-18-215 Process Unit:** A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed or raw materials and has sufficient storage facilities for product.
- (Amended, Renumbered January 7, 1998)

- 8-18-216 Quarter:** One of the four consecutive 3-month divisions of the calendar year beginning on January 1.
(Amended, Renumbered January 7, 1998)
- 8-18-217 Reinspection:** Any inspection following the minimization or repair of leaking equipment.
(Amended, Renumbered January 7, 1998)
- 8-18-218 Rupture Disc:** The thin metal diaphragm held between flanges.
(Amended, Renumbered January 7, 1998)
- 8-18-219 Total Organic Compounds:** The concentration of organic compounds and methane as indicated by a hydrocarbon analyzer as specified by Section 8-18-501, ~~including methane.~~
(Amended, Renumbered January 7, 1998)
- 8-18-220 Turnaround:** The scheduled shutdown of a process unit for maintenance and repair work.
(Amended, Renumbered January 7, 1998)
- 8-18-221 Valve:** Any device that regulates the flow of process material by means of an external actuator acting to permit or block passage of liquids or gases.
(Amended, Renumbered January 7, 1998)
- 8-18-222 Weephole:** A drain hole in the discharge horn of a pressure relief device.
(Adopted January 7, 1998)
- 8-18-223 Deleted January 7, 1998**
- 8-18-224 Deleted January 7, 1998**
- 8-18-225 Major Leak:** Any leak that cannot be minimized below a concentration of 10,000 parts per million (ppm) total organic compounds, expressed as methane.

8-18-300 STANDARDS

- 8-18-301 General:** Except for valves, pumps and compressors, connections and pressure relief devices subject to the requirements of Sections 8-18-302, 303, 304, 305 and 306, a person shall not use any equipment that leaks total organic compounds in excess of 100 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days.
(Amended 7/15/81; 3/17/82; 9/6/89; 3/4/92; 1/7/98)
- 8-18-302 Valves:** A person shall not use any valve that leaks total organic compounds in excess of 100 ppm ~~unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.~~ one of the following conditions is met:
- 302.1 If the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
- 302.2 If the leak has been discovered by the APCO, repaired within 24 hours; or
- 302.3 The valve meets the applicable provisions of Section 8-18-306.
(Adopted 3/4/92; Amended 1/7/98)
- 8-18-303 Pumps and Compressors:** A person shall not use any pump or compressor that leaks total organic compounds in excess of 500 ppm ~~unless one of the following conditions is met: the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.~~
- 303.1 If the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
- 303.2 If the leak has been discovered by the APCO, repaired within 24 hours; or
- 303.3 The pump or compressor meets the applicable provisions of Section 8-18-306.
(Adopted 3/4/92; Amended 1/7/98)
- 8-18-304 Connections:** A person shall not use any connection that leaks total organic compounds in excess of 100 ppm unless one of the following conditions ~~are~~ is met:
- 304.1 If ~~the~~ the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
- 304.2 If ~~the~~ the connection is inspected as required by Section 8-18-401.6 and the leak has been discovered by the APCO, repaired within 24 hours; or

- ~~2.1 If the leak is discovered by the operator, minimized within 24 hours and repaired within 7 days; or~~
- ~~2.2 If the leak has been discovered by the APCO, repaired within 24 hours.~~

304.3 The connection meets the applicable provisions of Section 8-18-306.
(Adopted 3/4/92; Amended 1/7/98)

8-18-305 Pressure Relief Devices: A person shall not use any pressure relief device that leaks total organic compounds in excess of 500 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 15 days; or if the leak has been discovered by the APCO, repaired within 7 days.
(Amended January 7, 1998)

8-18-306 Non-repairable Equipment: Any valve, connection, pressure relief device, pump or compressor which cannot be repaired as required by Section 8-18-302, 303 or 305, ~~must~~ shall comply with the following conditions:

- 306.1 The valve, connection, pressure relief device, pump or compressor ~~must be~~ is repaired or replaced within 5 years or at the next scheduled turnaround, whichever date comes first.
- 306.2 Effective July 1, 2004, the number of individual pieces of equipment awaiting repair shall does not exceed the percentages of the total population for each equipment type expressed in the table below or 1 piece of equipment.

Equipment	Total Number of Non-repairable Equipment Allowed (%)
<u>Valves (including Valves with Major Leaks) and Connections as allowed by Section 8-18-306.3</u>	<u>0.530% of total number of valves</u>
<u>Valves with Major Leaks as allowed by Section 8-18-306.4</u>	<u>0.025% of total number of valves</u>
Pressure Relief Devices	<u>1.0% of total number of pressure relief devices</u>
Pumps and Compressors	<u>1.0% of total number of pumps and compressors</u>

306.3 A connection that leaks in excess of 100 ppm and no greater than 10,000 ppm can be considered non-repairable equipment pursuant to Section 8-18-306 provided each non-repairable connection is considered as two valves toward the total number of non-repairable equipment allowed.

306.4 Effective July 1, 2004, a valve with a major leak may not be considered non-repairable equipment pursuant to Section 8-18-306 unless, within for more than 45 days of after leak discovery, unless the mass emission rate has been measured in accordance with Section 8-18-604 and has been determined to be less than 15 pounds per day. The APCO shall be notified no less than 96 hours prior to conducting measurements required by this section.

~~306.3 In lieu of compliance solely with Sections 8-18-306.24 and not with any other requirements of this rule, the valve, pressure relief device, pump or compressor must meet the following conditions:-~~

- ~~3.1 The valve, pressure relief device, pump or compressor must be measured for mass emissions within 7 days after the leak is discovered;~~
- ~~3.2 The mass emission measurement of the component must be less than the applicable standard in the table below and the corresponding total number of non-repairable equipment, including non-repairable~~

~~equipment from Section 8-18-306.2, are less than the standards in the table below.~~

Equipment	Mass Emission-Standard	Total Number of Non-repairable Equipment-Allowed (%)
Valves	0.1 lb/day	1.0%
Pressure Relief Devices	0.2 lb/day	5%
Pumps and Compressors	0.2 lb/day	5%

~~3.3 If the valve, pressure relief device, pump or compressor's mass emission measurement is greater than 15 lb/day total organic compounds, the valve, pressure relief device, pump or compressor must be repaired within 7 days after the mass emission measurement is determined.~~

(Adopted 3/4/92, Amended 1/7/98)

8-18-307 Liquid Leak: A person shall not use any equipment that leaks liquid as defined in Section 8-18-211, unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days.

(Adopted 3/4/92; Amended 1/7/98)

8-18-308 Alternate Compliance: The requirements of Sections 8-18-301, 302, 303, 304, 305, 306 and 307 shall not apply to any facility which complies with an alternative emission reduction plan that satisfies all the requirements in Sections 8-18-405 and 406.

(Adopted January 7, 1998)

8-18-400 ADMINISTRATIVE REQUIREMENTS

8-18-401 Inspection: Any person subject to this Rule shall comply with the following inspection requirements:

- 401.1 All connections that have been opened during a turnaround shall be inspected for leaks within 90 days after start-up is completed following a turnaround.
- 401.2 Except as provided under Subsection 8-18-401.3, 404, 405, and 406 all valves, pressure relief devices, pumps or compressors subject to this Rule shall be inspected quarterly.
- 401.3 Inaccessible valves and pressure relief devices subject to this Rule shall be inspected at least once a year.
- 401.4 Any equipment subject to this Rule may be inspected at any time by the APCO.
- 401.5 Any equipment found to have a leak in excess of the standard in Section 8-18-300 shall be reinspected within 24 hours after leak repair or minimization.
- 401.6 Any connection that is inspected annually or that is part of an APCO and EPA approved connection inspection program is subject to the provisions of Subsection 8-18-304.2.
- 401.7 Any pressure relief device equipped with a weep hole shall be inspected quarterly at the outlet of the weep hole if the horn outlet is inaccessible.
- 401.8 Any pressure relief device that releases to the atmosphere shall be inspected within 5 working days after the release event.
- 401.9 Effective July 1, 2004, any valve placed on the non-repairable list shall be inspected at least once per quarter.
- 401.10 Effective July 1, 2004, the mass emission rate of any valve with a major leak placed on the non-repairable list in accordance with Section 8-18-306 shall be determined at least once per calendar year. The APCO shall be notified no less than 96 hours prior to conducting the measurements required by this section.

(Amended 3/17/82; 9/3/86; 9/6/89; 3/4/92; 1/7/98)

8-18-402 Identification: Any person subject to this Rule shall comply with the following identification requirements:

402.1 All valves, pressure relief devices, pumps and compressors shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the valve, pressure relief device, pump or compressor location. Records for each valve, pressure relief device, pump or compressor shall refer to this identification code.

402.2 All equipment with a leak in excess of the applicable leak limitation in Section 8-18-300 shall be tagged with a brightly colored weatherproof tag indicating the date the leak was detected.

(Amended 3/4/92; 1/7/98)

8-18-403 Visual Inspection Schedule: All pumps and compressors subject to this rule shall be visually inspected daily for leaks. If a leak is observed, the concentration of organic compounds shall be determined.

(Renumbered January 7, 1998)

8-18-404 Alternative Inspection Schedule: The inspection frequency for valves may change from quarterly to annually provided all of the conditions in Subsection 404.1 and 404.2 are satisfied.

404.1 The valve has been operated leak free for five consecutive quarters; and

404.2 Records are submitted and approval from the APCO is obtained.

404.3 The valve remains leak free. If a leak is discovered, the inspection frequency will revert back to quarterly.

(Adopted January 7, 1998)

8-18-405 Alternate Emission Reduction Plan: Any person may comply with Section 8-18-308 by developing and submitting an alternate emission reduction plan to the APCO that satisfies all of the following conditions:

405.1 The plan shall contain all information necessary to establish, document, measure progress and verify compliance with an emission reduction level set forth in this rule.

405.2 All emission reductions must be achieved solely from equipment and connections subject to this rule.

405.3 Public notice and a 60-day public comment period shall be provided.

405.4 Following the public comment period, the plan shall be submitted to and approved in writing by the EPA, Region IX prior to the APCO approval of the plan.

405.5 An alternate emission reduction plan must provide for emission reductions equal to or greater than required by the specific limits in this rule.

(Adopted 1/7/98; Amended 11/27/02)

8-18-406 Interim Compliance: A facility is subject to the limits contained in Sections 8-18-301, 302, 303, 304, 305, 306 and 307 until receipt of the written approvals of both the APCO and the EPA of an Alternate Emission Reduction Plan that complies with Section 8-18-405.

(Adopted 1/7/98; Amended 11/27/02)

8-18-500 MONITORING AND RECORDS

8-18-501 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds shall be a combustible gas indicator that has been approved by the APCO and meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A).

(Amended 3/17/82; 9/6/89; 3/4/92)

8-18-502 Records: Any person subject to the requirements of this rule shall maintain records that provided the following information:

502.1 For equipment subject to Section 8-18-402.1, the equipment identification code, equipment type and the location of the equipment.

502.2 The date of all inspections and reinspections and the corresponding leak concentrations measured as specified by Section 8-18-401.

- 502.3 Records shall be maintained for at least 5 years and shall be made available to the APCO for inspection at any time.
- 502.4 Records of all non-repairable equipment subject to the provisions of Section 8-18-306 shall be maintained, ~~submitted to the District quarterly~~ and contain the equipment identification code, equipment type, equipment location, leak concentration measurement and date, the duration the equipment has been on the non-repair list, any mass emission rate determination and date of the determination was made, last process unit turnaround date, and total number of non-repairable equipment awaiting repair.

(Adopted 3/4/92; Amended 1/7/98)

8-18-503 Reports: Any person subject to the requirements of this rule shall submit the information to the District:

- 503.1 Records of all non-repairable equipment subject to the provisions of Section 8-18-306 shall be submitted to the District quarterly and contain the equipment identification code, equipment type, equipment location, leak concentration measurement and date, the duration the equipment has been on the non-repair list, any mass emission rate determination, date the determination was made, last process unit turnaround date, and total number of non-repairable equipment awaiting repair.
- 503.2 An inventory of the total numbers of valves, pressure relief devices, pumps and compressors and connections to which this rule applies shall be submitted to the District at least once a year.

8-18-600 MANUAL OF PROCEDURES

- 8-18-601 Analysis of Samples:** Samples of organic compounds as defined in Section 8-18-113 shall be analyzed for Initial Boiling Point as prescribed in ASTM D-1078- 98 or ASTM D-86.

(Adopted March 17, 1982; Amended March 4, 1992; January 7, 1998)

- 8-18-602 Inspection Procedure:** Inspections of equipment shall be conducted as prescribed by EPA Reference Method 21 (40 CFR 60, Appendix A).

(Adopted 9/6/89; Amended 3/4/92; 1/7/98)

- 8-18-603 Determination of Control Efficiency:** The control efficiency as specified by Section 8-18-110 shall be determined by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions of organic compounds measured by any of the referenced test methods exceed the standards of this rule.

(Renumbered and Amended January 7, 1998)

- 8-18-604 Determination of Mass Emissions:** The mass emission determination as specified by Section 8-18-306 shall be made determined using ~~by~~ any of the following methods: 1) EPA Protocol for Equipment Leak Emission Estimates, Chapter 4, Mass Emission Sampling, (EPA-453/R-95-017) November, 1995 or 2) a method determined to be equivalent by the EPA and approved by the APCO.

(Adopted January 7, 1998)

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Proposed Amendments
Regulation 8 Rule 18: Equipment Leaks
Control Measure SS-16

Staff Report

January 2004

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EXECUTIVE SUMMARY

Regulation 8, Rule 18 requires refineries to develop and implement a Leak Detection and Repair (LDAR) program to control fugitive emissions from valves, pumps, compressors, pressure relief valves, flanges, connectors, piping, and other equipment components. The rule, which includes the most stringent leak standards in California, also applies to chemical plants, bulk plants and bulk terminals.

The proposed amendments to Regulation 8, Rule 8 ensure that best available control technologies are used for valves. The proposed amendments would:

- Reduce the number of valves allowed on a non-repairable list;
- Limit the number of valves on the non-repairable list with leaks of 10,000 parts per million (ppm) or more and ensure that emissions from each of these valves is less than 15 pounds per day; and
- Allow connections to be placed on a non-repairable list at a ratio of one connection per two valves.

The proposed amendments are intended to implement Control Measure SS-16 from the Bay Area 2001 Ozone Attainment Plan. That measure called for amendments to Regulation 8, Rule 18 that would require that replacement valves meet Best Available Control Technology requirements or that they be “leakless” valves.

To implement the control measure, staff conducted numerous site visits to the Bay Area refineries and reviewed specific valve technologies to determine short-term and long-term emission performance. Staff found that no single valve type offered superior performance for the wide range of valve sizes and operating conditions encountered in a refinery, and that specifying valves for the many different situations encountered would be a complex undertaking with no clear benefits beyond those that come from the current rule.

Staff determined that the existing valve leak standard of 100 ppm provides the best means to ensure that refineries use the best technology available for valve replacements. The 100 ppm standard is the most stringent in California (the South Coast AQMD leak standard for valves is 500 ppm) and is set at a level just above typical background concentrations. The amendments therefore implement the control measure by limiting the number of valves allowed on the non-repairable list, thereby ensuring the broadest possible application of the 100 ppm standard.

During the rule development process for the amendments, refineries requested flexibility for connections that are very difficult to repair. Currently, connections must be repaired at any cost irrespective of emissions. To address this concern without increasing emissions, the proposed amendments would allow connections leaking below 10,000 ppm to be placed on the non-repairable list at a ratio of one connection per two valves. The total number of valves and connections allowed on the list would continue to be determined strictly by the total number of valves in use at the refinery as documented annually.

These amendments will reduce emissions of organic and other pollutants, including toxic compounds. Staff has identified an emission reduction of 0.2 ton per day of precursor organic compounds. The expected total cost for all five Bay Area refineries to implement the proposed amendments is \$23,500 to \$118,000 per year. The cost effectiveness is approximately \$320 to \$1600 per ton of precursor organic compound emissions reduced. An analysis of the socioeconomic impacts of the proposal was prepared by Applied Development Economics of Berkeley, California. The analysis concludes that the economic and employment impacts to the Bay Area from the proposal would not be significant.

A California Environmental Quality Act (CEQA) analysis for the proposed amendments has been prepared by Environmental Audit, Inc. of Placentia, California, concluding that the proposed amendments would not have any significant adverse environmental impacts. A Negative Declaration has been prepared for the proposed amendments pursuant to Public Resources Code § 21080(c) and CEQA Guidelines 15070 et seq. and was circulated for public review. No comments were received.

The proposed amendments were developed through a workgroup that included District and ARB staff and representatives from environmental groups, the affected refineries, and the Western States Petroleum Association. The workgroup met six times in various locations. In addition, the proposal was discussed at a public workshop on October 28, 2003 in Crockett.

BACKGROUND

There are five petroleum refineries within the jurisdiction of the District with approximately 233,000 total valves. The population of connections is estimated to be five times greater. The rule also applies to chemical plants, bulk plants and bulk terminals that have more than 100 valves or more than 10 pumps and compressors. The proposed amendments are not expected to significantly impact these smaller facilities.

Regulatory History

Rule 8-18 was first adopted in 1980 and was amended in 1992, with minor changes in 1998 and 2002. Rule amendments adopted in 1992 significantly lowered the allowable leak concentration limits to the lowest in the country and required more effective inspection and repair programs in order to reduce emissions and promote self-compliance. The 1992 amendments have reduced emissions by an estimated 1.2 tons per day.

Rule 8-18 was last amended in November 2002 to address minor deficiencies identified by US EPA in their limited approval/disapproval of the rule. The U.S. Environmental Protection Agency (US EPA) fully approved the current rule in June 2003.

Rule Development Process

During the process to develop this proposed amendment to Rule 8-18, staff has worked extensively with the affected industry, interested public, and other air pollution control

agencies, such as the California Air Resources Board (CARB), US EPA and other air pollution control districts.

Site Visits

Staff conducted numerous site visits to the Bay Area refineries to accompany both facility and district inspectors during Rule 8-18 inspections and learn how refinery staff carry out their leak detection and repair programs. These tours and the time spent in communication with both the inspectors and the representatives of the refineries were invaluable to the development of a balanced understanding of operations and technologies associated with the implementation of Rule 8-18.

Literature Review and Information Requests

Staff reviewed various sources of information regarding fugitive emissions, including bellow sealed valves, hermetically-sealed valves, fugitive emission rules of other California air districts, and reports provided by the refineries regarding their non-repairable lists and leak detection and repair programs.

Workgroup Meetings

During this rule development process, six workgroup meetings were held in various locations in the District. These workgroup meetings provided a forum in which technical and regulatory issues concerning this rule could be discussed in a effort to ensure that all participants had ample opportunity to voice their concerns and present comments and related information. In attendance at these meetings were industry representatives, environmentalists, CARB staff members, and district staff.

Workshops

Staff hosted one workshop on October 28, 2003 in Crockett, to discuss draft amendments to the rule in a public forum. In attendance at the meeting were industry representatives, members of the public, environmentalist, and CARB staff members.

ARB Review

The proposed rule amendments and draft staff report were transmitted to CARB on December 22, 2003. CARB reviewed the proposed amendments and submitted written comments on January 13, 2003. Responses to the CARB comments are included in this staff report (see pp. 20-22).

Current Rule Requirements

Each of the five refineries within the District has a leak detection and repair (LDAR) program. These programs function to ensure that all components are inspected regularly and, if a leak is found, the equipment is repaired, replaced, or placed on a list to be repaired. Under the current rule, there are four options under which a facility may comply with the rule:

Option 1 – Leak Concentration Standard: This option allows the facility to inspect affected equipment for leaks; 100 ppm for valves and connections, and 500 ppm for pumps, compressors and pressure relief devices. All equipment with leaks discovered by the facility must be minimized within 24 hours and repaired within seven days. All leaks discovered by the District must be repaired within 24 hours. All equipment not subject to an LDAR program discovered to be leaking by District staff is a violation of this rule.

A fraction of the equipment that cannot be repaired may be placed on a non-repairable list for up to five years or the next scheduled turnaround for that plant, whichever date comes first. The maximum fraction of components on the facility-wide turnaround list cannot exceed 0.5 percent for valves and 1.0 percent for pumps, compressors and pressure relief devices. Currently, connections are not allowed to be placed on a turnaround list.

Option 2 – Mass Emissions Standard: This option allows the facility to use the concentration standards as trigger levels and measure any non-repairable component for mass emissions. Using the above Option 1 leak concentration standards as trigger levels, any non-repairable component can be measured for mass emissions. If the mass emission rate is greater than 15 pounds per day, the component must be repaired. If the mass emission rate is less than 0.1 pounds per day for valves or 0.2 pounds per day for any other component, no further action is required. The number of components leaking above their respective mass emission limit cannot exceed a small percentage of the total number of components at the facility.

Option 3 – Reduced Inspection Frequency: Using the above Option 1 leak concentration standards as trigger levels, facilities can increase the interval between inspections for components that do not leak. This option reduces the cost of inspection and maintenance plans. The inspection frequency for equipment, except pumps and compressors, may be changed from quarterly to annually provided the equipment has been operated leak free for five consecutive quarters and records are submitted and approved by the District. If a leak is discovered, the frequency reverts back to quarterly inspections for that component.

Option 4 – District Approved Inspection and Maintenance Plan: The final option allows facilities to implement an alternate program to reduce emissions from leaks. This option requires a written plan approved by the District and EPA. To date, no Bay Area refinery has elected to use this option.

Other Air District Rules

Several other air pollution control districts in California have rules that address fugitive emissions from refineries and chemical plants. These districts include the South Coast Air Quality Management District (Rule 1173), the San Joaquin Valley Unified Air

Pollution Control District (4451 & 4452), and Ventura County Air Pollution Control District (Rule 74.7). In addition to these districts' rules, the federal New Source Performance Standards affect emissions from equipment leaks. The table in Appendix A provides a simplified comparison of the major provisions of these rules with the provisions of the District's current rule. The BAAQMD rule is the most stringent leak rule in the State of California with leak standards that are significantly more stringent than those in all other rules.

Overview of Current Leak Detection and Repair (LDAR) Programs

Each LDAR program functions to ensure that all components are:

- Identified;
- Labeled (except connections);
- Inventoried;
- Inspected for leaks; and
- If found leaking, tagged, repaired, replaced, or placed on a non-repairable list.

Identification: Each piece of equipment is uniquely identified in association with the plant at which it is located, the type of equipment, and a unique identification number.

Labels: In addition, this identity is also placed on a label that is attached to each component or group of components. Labels contain varying degrees of information, but most will at least include the identification number.

Inventory: Each piece of equipment is inventoried in a database that contains information on the equipment such as type, location, installation date, dates of inspection, leak concentration, and repair history.

Inspections: Each refinery employs an inspection team that consists of either in-house employees or contractors.¹ The inspection team calibrates their VOC detector, which is typically either a flame or photo ionization detector, and proceeds with the inspection. A member of the inspection team carries a monitoring device that reads and records information from a barcode or identifier attached to the component being inspected. If a leak is detected, a team member or another facility employee will attempt to minimize the leak as required by the rule. If the leak cannot be minimized, a team member will identify the component with a waterproof, indelible tag, upon which information regarding the leak is recorded and the component is identified for repair or replacement. Once the inspection is completed, the recorded information is uploaded into an LDAR data base.

¹ Three of the five Bay Area refineries employ independent contractors to conduct leak detection and repair inspections, and the remaining refineries utilize in-house employees. All refineries have a separate group dedicated to the task of leak detection and repair.

Technology Review

The District reviewed equipment that could represent Best Available Control Technology for valves.

Bellows Seal Valves

Bellows seal valves normally operate in a leak free manner because the moving components of the valve are hermetically sealed from the ambient air. Bellows seal valves function by replacing the packing and sliding or rotating seals with bellows (accordion-like tubing). This replacement eliminates the opportunity for emissions from the sliding of rotating seals and packing. However, failure of the bellows can result in significant emissions.

The bellows are sealed in two different ways. In one approach, the bellows are welded to the valve stem at the top and the valve body at the bottom. The process fluid is contained inside the bellows. In the approach, the bellows are welded to the valve stem at the bottom and the body on the top. The process fluid is contained in the annular region between the valve bonnet and bellows.

Bellows valves are available only in a relatively narrow size range and could be used as replacements in only a small subset of all refinery applications.

Solenoid-Actuated Valves

Solenoid-actuated valves are a departure from the standard air- or motor-operated valve design typically used for process fluid storage and handling of hydrocarbons. These valves are solenoid-actuated. They do not use stem, packing, or bellows. Further, solenoid-actuated valves isolate all moving parts within the process pressure areas. Because the actuator of these valves is completely sealed from the atmosphere and is actuated via magnetism, the potential for emissions due to the failure of seals surrounding dynamically moving parts is eliminated. However, failure of the isolation, such as a crack in the valve body can result in significant emissions. And, as with bellows valves, solenoid-activated valves could only be used in a limited range of refinery applications.

“BACT” Standard of the Control Measure

After reviewing specific valve technologies to evaluate short-term and long-term emission performance, staff concluded that the petroleum refineries must use the best technology available for replacements to consistently achieve the stringent emission standards of the rule – the 100 ppm leak limit for valves and 0.5 percent of the total number of valve allowed on a non-repairable list. Consequently, the strict emission standard combined with the limit placed on the non-repairable list constitutes a “best available control technology” standard.

As long as the refineries consistently meet this standard, the regulation need not dictate which technologies should be used. Rather, refineries should be allowed to use their expertise to determine the technology best suited for the conditions of use that will ensure

compliance with the requirements of the rule. This approach will allow the introduction of improved technology that may “cross over” from other industrial application without requiring an exhaustive review process to maintain a BACT list.

PROPOSED RULE AMENDMENTS

The proposed amendments:

- Reduce the number of valves that are allowed on the non-repairable list;
- Limit the number of valves leaking in excess of 10,000 ppm;
- Require mass emission rate determinations for valves leaking in excess of 10,000 ppm and control those with excess emissions; and
- Allow connections with leaks that do not exceed 10,000 ppm to be placed on the non-repairable list at a ratio of one connection per two valves.

The amendments are made possible by improvements in the ability of the refineries to locate and repair leaking components and improvements in valve technology, such as hermetically sealed valves and advancements in valve stem packing materials. These improvements, which are already being implemented in some areas, have led to emission reductions that have not yet been credited to this rule. By implementing the improvements across the board, additional emissions reductions will be achieved. Finally, the amendments will ensure that the components that are believed to be responsible for the greatest emissions are examined and if found to have excessive emissions, controlled.

Reducing the Number of Components on the Non-Repairable List

The non-repairable list was established to provide a mechanism to address essential components. Essential components are those pieces of equipment that cannot be repaired or replaced unless the process unit is shutdown and the component is isolated. This activity would likely create more emissions than the actual fugitive leaks. The rule allows a certain percentage of each type of equipment to be placed on the list. Table 1 indicates the current allowable fractions of each component on the non-repairable list.

**Table 1
Current Allowable Limits for Components Awaiting Repair or Replacement**

Equipment	Fraction of Non-repairable Equipment Allowed	Maximum Duration
Valves	0.5%	5 years or next turnaround
Pressure Relief Devices	1 %	5 years or next turnaround
Pumps/Compressors	1 %	5 years or next turnaround

Data collected from the refineries indicate that the current LDAR programs implemented at some refineries result in a much lower fraction of leaking equipment being placed on a

non-repairable list than the fraction allowable by Rule 8-18. This suggests that it is possible to reduce the percentage of equipment allowed on the non-repairable list or address non-repairable equipment in a different manner.

Staff proposes to modify the allowable fractions according to the table below.

Table 2
Proposed Revisions to the Allowable Limits for Components Awaiting Repair or Replacement

Equipment	Number of Non-repairable Pieces of Equipment Allowed	Maximum Duration
Valves (including valves with major leaks) and connectors	0.3% of total number of valves	5 years or next turnaround
Valves with major leaks	0.025% of the total number of valves	5 years or next turnaround
Pressure Relief Devices	1.0% total number of PRVs	5 years or next turnaround
Pumps/Compressors	1.0% total number of pumps and compressors	5 years or next turnaround

In this proposal, the fraction of valves (including valves with major leaks) allowed on the non-repairable list would be reduced from 0.5 percent to 0.3 percent.

Concentration Limit for Non-repairable Components

The proposal will also limit the number of valves leaking in excess of 10,000 ppm to 0.025 percent of the total number of valves in operation at the facility; these valves would be included in the number that make up the 0.3 percent allowed for all valves. Before a valve with a major leak (one that leaks in excess of 10,000 ppm) can be placed on the non-repairable list, its mass emission rate must be determined and found to be below 15 pounds per day. In addition, the mass emission rate must be determined at least once per year to ensure that the leak does not exceed the 15-pound limit. This provision is intended to prevent a component from leaking an indefinite amount of mass emissions for up to five years.

The amendments will require refineries to take action on valves that are found leaking in excess of 10,000 ppm (50 to 100 times the allowable limits). If a component is found to leak in excess of 10,000 ppm, the operator must do one of the following: (1) minimize the leak below 10,000 ppm within 24 hours and repair the component within seven days, or (2) measure the mass emission rate of the leak and place the component on the non-repairable list only if the mass emission rate is less than 15 pounds per day. If the valve leaks in excess of the allowable mass emission rate, then the operator must either repair or replace that component or capture and vent those emissions to a control device. Additionally, the refiner must notify the District of each mass emission rate determination at least 96 hour prior to the determination. This will allow the District to review the process of the emission rate determination and also allow concurrent testing of the leaking component for methodology evaluation.

Connections on the Non-repairable List

The refineries have long asserted that regulatory flexibility is needed for connections that pose difficulty in repair. To address this concern, staff proposes allowing connections with leaks less than 10,000 ppm to be placed on the non-repairable list in a very limited fashion that would not result in a relaxation of the rule. To ensure that any emissions associated with a connection being placed on the non-repairable list are offset, the amendments would require that each connection placed on the list counts as two pieces of equipment. The number of components allowed on the list is strictly limited to the number of valves located at the refinery multiplied by the allowed fraction. For example, if a refinery has 50,000 valves and the fraction of valves allowed on the non-repairable list is 0.3 percent, then the number of valves allowed on the list could not exceed 150. Additionally, for each connection allowed on the list, two spaces of the 150 allotted for valves would no longer be available.

EMISSION INVENTORY AND EMISSION REDUCTIONS

Emission Inventory

Emission inventory data collected over the past several years indicate that fugitive emissions have been constantly decreasing. Table 3 details these emissions and reductions. There was a significant emissions reduction between the 2001 inventory and the current modified 2002 inventory. This emission reduction is due mostly to the adoption of new correlations factors from the EPA that are published in the ARB's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities." However, notwithstanding the change in correlation factors, there has been a general downward trend to fugitive emissions over the last several years. This trend is largely due to improvement in the leak detection and repair programs over time.

TABLE 3
Estimated Emissions Inventories for All Fugitives Components¹

	SIP (Modified 1999 Inventory)¹	2000 Inventory²	2001 Inventory²	Current (Modified 2002 Inventory)^{2,3,4}
Refinery	(organic emissions - pounds/day)			
Chevron	7,821	7,821	7,773	2,294
Shell	352	352	351	381
ConocoPhillips	1,543	1,543	1,473	1,474
Valero Asphalt	35	35	35	22
Valero	1,969	530	257	332
Tesoro	1,690	1,690	1,688	128
Total (tons/day)	6.71	5.99	5.79	2.32

1. These are the estimated fugitive emissions from all components affected by Rule 8-18, including valves, pumps, compressors, pressure relief devices, and connections.
2. The annual emission inventories are based on equipment counts provided to the District by each refinery.
3. The values in this column reflect the use of modified correlation factors for each component category, as published in the ARB's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities."
4. These values are currently under review and may not reflect the final emission inventory for 2002.

Emission Reductions

The emission reductions for the proposed amendments are presented in Table 4. These emission reductions are based on the assumption that all leaking components other than connections will be discovered at the five Bay Area refineries.

TABLE 4
Emission Reduction Estimates¹.

	Rule 8-18 Emissions² (lbs/day (TPD))	Amended Rule 8-18 Emissions³ (lbs/day (TPD))	Emission Reductions (lbs/day (TPD))
Valves	706 (0.35)	303 (0.15)	403 (0.20)

1. Assumes a total of 233,000 valves at all five Bay Area refineries (see Table 5).
2. Assumes that the total number of valves leaking is 0.50 percent of all valves.
3. Assumes that the total number of valves leaking is 0.30 percent of all valves and that fraction leaking above 10,000 ppm is 0.0025 percent.

Staff estimates that there are approximately 233,000 total valves at the five Bay Area refineries. Table 5 presents the inventory for valves, pump and compressors, pressure relief devices, and connections.

TABLE 5
Estimated Inventories¹ of Various Components Subject to Rule 8-18
at the Bay Area Refineries

Refinery	Components		
	Valves	Pumps and Compressors	Connections
Chevron	71,000	800	355,000
ConocoPhillips	27,000	250	134,000
Shell	52,000	360	217,000
Tesoro	33,000	1500	156,000
Valero	50,000	300	250,000
TOTALS	233,000	2110	1,112,000

1. These values are based on quarterly reports and direct quotes from industry representatives.

OTHER AREAS FOR POTENTIAL EMISSION REDUCTIONS

During this rule development process, staff examined other strategies that have some potential for achieving emission reductions. These strategies are not included in this rulemaking because they require further study. Each potential strategy examined by staff is discussed briefly below.

Maximum Leak Limit for All Components

District staff examined whether a maximum leak standard should be established and whether it would reduce emissions. The BAAQMD rule and many other air district fugitive rules allows repair to be deferred for a small number of valves that exceed leak limits. These allowances are intended to avoid the potentially significant emissions that could come from shutting down a unit to make repairs. On the other hand, emissions from components with significant leaks awaiting repair could be potentially significant.

There is limited data available to determine whether a focus on leaks with concentrations over an established maximum is warranted. For individual components, the available data suggests that the correlation between mass emissions and concentration is poor. It may be more appropriate to focus on a mass emission approach. The proposed amendments will require the facilities to measure mass emissions on leaking valves over 10,000 ppm leak concentrations. This data will help determine if a mass emission or a maximum concentration is warranted. Additionally, an initial assessment of data reported by the Bay Area refineries indicate that less than one in 5000 valves leak in excess of 10,000 ppm, which is less than ten at any one refinery. Only a very small fraction of these components are expected to have mass emissions rates in excess of the preset limits. Emission reductions may therefore be quite limited and need further examination.

Violations for Leaks Detected During District Inspections

The current rule allows refineries 24 hours to repair leaks found by District inspectors and seven days to repair leaks discovered by refinery. An alternative would be to treat as a violation the detection of leaks by District inspectors in a specified percentage of the components inspected. The South Coast fugitives rule uses such an approach. This might encourage more thorough inspections by refinery personnel. On the other hand, refiners expressed concerns that even with good LDAR programs, it is possible to find leaks, particularly if a District inspector chooses to inspect an area that is due for inspection but has not yet inspected under the refinery LDAR program. Refiners felt that this might be perceived as unfair and might not improve the refinery program.

Accelerated Replacement of Equipment with Frequent Leaks/Repairs

Some specific components appear to be more prone to leaks and to require more repair. The rule could require a component to be replaced if the number of leaks within a specified time period exceeds a threshold specified in the rule. The South Coast and Ventura rules use this approach. On the other hand, it may be true that more frequent repair is required for certain demanding types of service, and any replacement component will have the same failure rate.

Replacement of Inaccessible Equipment with Superior Technologies

Replacement of inaccessible equipment with superior technologies could reduce the potential for emissions. Regulation 8, rule 18 requires less frequent inspection for these components. This reduced inspection frequency results in a longer average time period before a leak is detected and repaired. It is unclear whether superior technologies can be readily identified.

Control Emissions from Heat Exchangers

Heat exchangers are potential sources of VOC emissions through leakage of VOCs into cooling liquid and subsequent emission at cooling towers. A first step would be to measure VOC emissions at cooling towers over an entire cycle to determine whether emissions are significant. To determine if a leak exists in a heat exchanger, the VOC concentrations of cooling water at the inlet and outlet to the heat exchanger could be compared. A higher VOC concentration at the outlet would indicate a leak. This work would have to be done to determine whether there is any potential for emission reductions.

Quantification of Mass Emissions and Emission Caps

If mass emissions for leaking components can be reliably determined, a cap could be placed on total emissions from equipment placed on the non-repairable equipment list. Leaking equipment could be added to the list, but only if the total fugitive emission cap is not exceeded. If adding a leaking component would cause the cap to be exceeded, emissions from equipment already on the non-repairable list would have to be reduced.

This approach would provide an incentive to replace high-emitting equipment on the list as soon as possible and would provide a facility flexibility to make the most cost effective choices that results in the least emission consequence. On the other hand, a mass emission cap could be overly complex and difficult to administer.

Increase Inspection Frequencies

Increasing the frequency of inspections would reduce the time that a leaking component goes undetected, and could decrease emissions. To implement increased inspection frequencies, additional staffing would be required. Staff would have to further assess potential emission reduction benefits from increased inspection frequencies.

Smart LDAR

The U.S. EPA and API have jointly worked on a project called “Smart LDAR” through the U.S. EPA’s Common Sense Initiative for the Petroleum Refining Sector. Research indicates that a small subset of all leaking components is responsible for most of the emissions. Rather than focus efforts on controlling minor leaks, the Smart LDAR project is examining the use of remote sensing methods that would allow quick identification and repair of leaks causing large emissions. It is unclear when those methods will become available for routine use in refinery LDAR programs.

ECONOMIC IMPACTS

Costs

The costs associated with the proposed amendment are primarily the costs of determining the mass emission rates of valves leaking in excess of 10,000 ppm and the cost of controlling component with emissions above the 15-pound limit. There are two methods that were identified as reliable methods of determining mass emissions: high volume collection system (HCVS) and the US EPA vacuum method. These methods are described and compared in Appendix B.

Table 6 compares the cost of each of these methods. The cost values in Table 5 have been inflated from 1995 values using inflation factor of 1.2 obtained from the US Department of Labor, Bureau of Statistics (www.bls.gov).

**TABLE 6
Cost Estimates for Mass Emission Rate Determinations**

	HCVS	Vacuum Method
Total time required for ONE sample ¹	4 hours	Two days
Labor Cost per sample (\$450/day)	\$225	\$900
Lab Cost per sample	\$0	\$400
TOTAL COST per sample	\$225	\$1300

1. This represents the time needed to sample one valve and not a population of valves. This value is based on the assumption that valves leaking in excess of 10,000 ppm would be found individually and, therefore addressed individually. Further, it is expected to take at least a half day to prepare the

instrumentation (calibration and flow rate determination) for the high volume sampler and two days to enclose the leaking component and prepare for sampling (calibration and flow rate determination).

Based on current inspection data, it was estimated that a total of 60 valves may need mass measurements. Using the cost estimates from Table 6, the cost of sampling 60 valves annually was estimated between \$13,500 and \$78,000. The cost to capture, vent and control emissions from a valve with excess emissions can range from \$5,000 to \$20,000² each depending on the valve size, location (accessible or inaccessible, proximity to a vent for flare or fire box, spatial proximity to other components, etc.). It was estimated that 2.5 percent of valves leaking in excess of 10,000 ppm will have emissions of 15 pounds per day or greater,³ or 2.5 percent. That is approximately two valves District-wide that could potentially be required to be controlled. This would result in a potential cost of \$10,000 to \$20,000 to reduce 5.5 tons of emissions or a cost effectiveness that range between \$1,800 and \$3,600 per ton reduced. The annual costs associated with these proposed amendments are presented in Table 7.

**TABLE 7
Costs of the Proposal**

Requirement	Annual Costs
Mass Emission Rate Determinations	\$13,500 -\$78,600
Control of Valves with Excessive Leaks	\$10,000 to \$40,000
TOTAL COSTS	\$23,500 to \$118,000

The emission reduction that will result from this proposal is estimated to be approximately 74 tons per year. This results in a potential cost effectiveness range of \$320 to \$1,600 per ton of precursor organic compounds District-wide.

Incremental Costs

Under Health and Safety Code section 40920.6, the District is required to perform an incremental analysis when adopting a Best Available Retrofit Control Technology (BARCT) rule or feasible measure required by the California Clean Air Act. To perform this analysis, the District must (1) identify one or more control options achieving the emission reduction objectives for the proposed rule, (2) determine the cost effectiveness for each option, and (3) calculate the incremental cost effectiveness of each option. To determine incremental costs, the District must “calculate the difference in dollar cost divided by the difference in the emission reduction potentials between each progressively

² This cost range is based on personal conversations between District staff and staff members of the California Air Resources Board and refinery personnel.

³ Emissions estimates provided by WSPA.

more stringent potential control option as compared to the next less expensive control option.”

This regulatory development process was initiated to examine the feasibility of drafting amendments to Regulation 8, Rule 18 that would implement Control Measure SS-16 from the Bay Area 2001 Ozone Attainment Plan. To implement Control Measure SS-16, staff evaluated requiring replacement valves that meet BACT requirements or that they be “leakless” valves. Staff has concluded the performance standard in the current rule combined with the limit placed on the non-repairable list constitutes the “best available control technology” and that no additional provisions are necessary or appropriate to ensure that refineries meet that standard of the rule.

In addition, during this rule development process, staff examined various alternatives to achieve the emissions reduction required under the 2001 Ozone plan. The first option considered was to require all valves placed on the non-repair list to be repaired or replaced with hermetically-sealed valves. This option would be extremely expensive. Bellow seal valves cost approximately \$12,000, which is about \$7000 more than a typical valve. Two tenths of a percent of the total number of valves (233,000), could be placed on the non-repairable list for up to five years (46,600 valves). It is expected that about half of these valves would need to be replaced with bellow seal valves or 23,300 valves. Because the valves can remain on the list up to five year, 20 percent of the valves would be cycled out each year (4660 valves). This type of an approach would result in an annual cost of \$32 million. The second option considered is outlined in this proposal. A comparison of the alternative and this proposal is summarized in Table 8.

TABLE 8

Incremental Cost Analysis

	Annual Emissions Reductions	Annual Costs	Cost Effectiveness
Replace Valves with Hermetically-Sealed Valves	Negligible ¹	\$32 million	Indeterminate
The Proposal	74 tons	\$23,500 to \$118,000	\$320 to \$1,600 per ton

1. Specific emission reductions cannot be credited to the replacement of valves with bellow seal valves because all valves must meet the 100 ppm standard and limits on the non-repairable list.

Socioeconomic Impacts

Section 40728.5 of the Health and Safety Code requires an air district to assess the socioeconomic impacts of the adoption, amendment, or repeal of a rule if the rule is one that “will significantly affect air quality or emissions limitations.” Applied Economic Development of Berkeley, California, has prepared the required cost analysis. (Appendix

D). That analysis concludes that the proposed amendments would have no significant socioeconomic impacts.

OTHER IMPACTS

Environmental Impacts

The District's environmental consultant, Environmental Audit, Inc., prepared an initial study for the proposed rule amendments to determine whether rule adoption would result in any significant environmental impacts. In general, the initial study concludes that the proposed amendments would result in environmental benefits by reducing the number and magnitude of leaks for which repairs can be deferred under existing rule provisions. The complete environmental document is attached as Appendix C. A Negative Declaration for the proposed amendments has been prepared and is proposed for adoption. The document was circulated for public comment during a comment period from December 22, 2003 to January 12, 2004. No comments were received.

Regulatory Impacts

California Health and Safety Code section 40727.2 requires the District to identify existing federal air pollution control requirements for the equipment or source type affected by the proposed rule or regulation. The District must then note any differences between these existing requirements and the requirements imposed by the proposal. Regulation 8, Rule 18: Equipment Leaks applies to fugitive emissions from valves, pumps, compressors, pressure relief devices, connection and any other component that may have fugitive leaks. The proposal does not expand the applicability or the current rule.

Numerous federal requirements apply to fugitive emissions at the facilities subject to Regulation 8, Rule 18. New sources are subject to New Source Performance Standards found in 40 CFR Part 60, Subpart VV (Equipment Leaks of VOC in the Synthetic Organic Chemicals Industry) and Subpart GGG (Equipment Leaks of VOC in Petroleum Refineries). Other sources are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPS) found in 40 CFR Part 61, Subpart V (National Emission Standards for Equipment Leaks (Fugitive Emission Sources)), and to 40 CFR Part 63, Subpart CC (National Emission Standards for Petroleum Refineries). A comparison between BAAQMD and federal requirements follows.

BAAQMD Reg. 8, Rule 18	40 CFR60 VV, GGG, 40 CFR63 CC
Applicability	
Components at petroleum refineries, chemical plants, bulk plants and bulk terminals.	Affected equipment in petroleum refineries, synthetic organic chemicals manufacturing facilities, onshore natural gas processing plants.
Requirements	
LDAR program for components in light liquid/gas/vapor. Quarterly inspections. Inaccessible components inspected annually.	Pumps and valves inspected monthly. Valves in light liquid/gas/vapor service inspected monthly. After two monthly inspections without leaks, they may be inspected quarterly until a leak is detected.
Leak threshold at 100 ppm for valves, connectors, 500 ppm for pumps, compressors and PRDs in gas/vapor/light liquid service.	Leak threshold at 10,000 ppm for pumps and valves in heavy liquid service.
Leaks detected by operator minimized within 24 hours and repaired within 7 days. A percent of non repairable components may delay repair until unit turnaround. Leaks detected by BAAQMD repaired within 24 hours.	Pumps, valves, PRDs and connectors in light liquid/gas/vapor service leak threshold at 10,000 ppm. Compressors required to have a seal system with barrier fluid. PRDs in gas/vapor service leak threshold at 500 ppm.
	Leaks > 10K ppm 15 days repair maximum, first attempt at repair within 5 days.
Recordkeeping and Reporting	
Submit quarterly reports of non repairable components and their leak rates.	Submit semiannual reports containing the number of components, by type, that were repaired and for which repair was delayed, and the reason for delay.
Test Methods	
U.S. EPA Method 21 for leak screening, ASTM Method D86 for VOC content of liquids.	U.S. EPA Method 21 for leak screening, ASTM E-260, E-168, E-169 for the VOC content, ASTM Method D-2879 for the vapor pressure.

Exemptions	
Components handling liquids with an initial boiling point greater than 302 ⁰ F.	Components that present a safety hazard
Components operating under negative pressure or enclosed systems and PRDs vented to vapor recovery or disposal system.	Components handling fluids with less than 10% by weight VOC.
Pressure vacuum valves on storage tanks.	Components operating under negative pressure, pumps with a closed vent system, PRDs vented to a control device.
PRDs installed for thermal protection of liquid lines provided they are vented to a drain or back in the line	
Administrative requirements for equipment handling organic liquids with an initial boiling point greater than 302 ⁰ F.	

District Staff Impacts

Implementation of the proposal will have a negligible impact on the resources of the District. Staff will need to review reports regarding mass emission rate determinations and, occasionally, conduct site visit to witness of those determinations.

CONCLUSIONS

The proposed amendments to Regulation 8, Rule 18, Equipment Leaks will meet the commitment made during the adoption of the 2001 Ozone Attainment Plan for Control Measure SS-16. The proposal is intended set stringent standard and performance requirements that when implemented, will represent the best current industry practices and abilities and allow the District to account for any associated emission reduction. Pursuant to the Health and Safety Code section 40727, new regulations must meet necessity, authority, clarity, consistency, non-duplicity and reference. The proposed regulation is:

- Necessary to protect public health by reducing volatile organic compounds that contribute to ozone formation and to carry out the commitment in control measure SS-16 in the Bay Area 2001 Ozone Attainment Plan; and to protect public health by reducing exposures to toxic air contaminants.
- Authorized by California Health and Safety Code section 40702.
- Clear, in that the new regulation specifically delineates the affected industry, compliance options and administrative requirements for industry subject to this rule.
- Consistent with other District rules, and not in conflict with state or federal law.
- Non-duplicative of other statutes, rules or regulations.

- The proposed regulation properly references the applicable District rules and test methods and does not reference other existing law.

The proposal has met all legal noticing requirements and has been discussed with all interested parties. District staff recommends adoption of Regulation 8, Rule 18, Equipment Leaks.

COMMENTS AND RESPONSES

The following comments were received during the rule development process for the proposed rule amendments.

- 1. The rule references EPA in several instances. To improve enforceability of the rule, we recommend that the acronym U.S. EPA be used when referencing the United States Environmental Protection Agency. There are several states with environmental protection agencies (e.g. California, Illinois, Ohio). There are also other countries with environmental protection agencies. <Rump, California Air Resources Board (ARB). E-mail. 1/13/04>**

In over 40 years of enforcement of BAAQMD rules, many of which refer to "EPA," no enforceability issues have arisen from the use of this acronym. Among the EPAs cited, only U.S. EPA has any direct regulatory authority over the sources regulated by BAAQMD Regulation 8, Rule 18. Given the widespread use of the acronym in District rules, it may be more appropriate for the District to amend its Regulation 1 to include a definition of "EPA" if any real enforceability issues arise.

- 2. Based on discussions with southern California refinery representatives and the SCAQMD, we believe that the amendments to BAAQMD Rule 8-18 do not achieve the equivalent of "all feasible measures."...The proposed rule includes a 5-year non-repairable provision. For comparison, South Coast AQMD Rule 1173 does not have a non-repairable provision. ARB staff consulted with refineries in the SCAQMD and found that these refineries comply with Rule 1173 by taking necessary efforts (such as using clamps and enclosures to contain process leaks without shutting down the operations) to control leaks, and all leaks must be repaired within 2 to 14 days and variances are seldom used. Therefore, BAAQMD should consider eliminating the 5-year provision in proposed Rule 8-18. <Rump, California Air Resources Board (ARB). E-mail. 1/13/04>**

The BAAQMD rule is the most stringent leak rule in the State of California, with leak standards that are significantly more stringent than those in all other rules.

In addition, the South Coast rule appears to include a non-repairable list and to allow non-repairable components at higher percentages than the Bay Area rule, though South Coast rule language is unclear on this point. The Bay Area rule includes an explicit non-repairable list which, with the proposed amendments, limits the number of valves allowed to exceed leak standards to 0.3% of all valves but with additional limits on mass emissions. The South Coast rule allows 0.5% of leaking valves inspected by air district inspectors to exceed leak standards (Section (d)(1), Table 1). It is unclear whether these

valves are then subject to requirements that operators repair valves within specified repair periods (Section (g)(1), Table 2), particularly where the operator has already inspected and repaired a valve. We are aware that ARB staff believe that these leaking components are subject to the repair requirements based on conversations with a single SCAQMD staff member.

If South Coast operators are required to repair these valves, it is unclear what this means. The South Coast rule defines "repair" as "...corrective action for the purpose of eliminating or reducing leaks..." while the Bay Area rule defines "leak repair" as "...tightening, adjustment, or addition of material, or the replacement of the equipment, which reduces the leakage to the atmosphere below the applicable leak standard..." In addition, the South Coast rule refers to repeated "repair actions" (Section (g)(2)), which may indicate that "repair" does not mean "reduce leaks below the standards." The South Coast rule also allows inspection frequencies to decrease if an operator keeps the percentage of components found leaking below the thresholds in Table I (Sections (e)(2) and (e)(3)). So even if repair is required, it is implicit in the rule that there is no rule violation if the percentage of leaking components remains below the threshold.

Even if, despite rule language to the contrary, the South Coast rule does not include the equivalent of a non-repairable list, this does not make the South Coast rule more stringent than the BAAQMD rule. The BAAQMD non-repairable list affects a very small number of components. On the other hand, the more stringent leak standards in the BAAQMD rule apply to all components. The emission reductions that come from looking at a broader range of leaks must be weighed against potential emission increases from a non-repairable list. In addition, if we assume that there is such a thing as a non-repairable component, then it is inevitable that, in the South Coast district, variances will have to be granted or heroic measures with unknown cost effectiveness will have to be undertaken, and ARB has not weighed these consequences in its analysis. BAAQMD staff believe that, in making All Feasible Measure determinations, it is simply not appropriate to pick and choose provisions from a comparator rule. Each of the two rules being compared must be treated as wholes rather than as collections of interchangeable provisions. BAAQMD staff believe the BAAQMD rule is more stringent than the SCAQMD rule. ARB has provided no data to the contrary.

- 3. The proposed amendments still allow for a 1 per cent exemption level under the non-repairable provision. This represents from 2 to 15 pumps/compressors per refinery. The representatives from the SCAQMD refineries said that for critical operations they have spare pumps that they can use while the main pumps are being repaired. Furthermore, in the SCAQMD, any occurrences over one leaking pump or compressor (>10,000 ppm) or pressure relief device (>200 ppm) is a violation. The District should consider eliminating this provision. <Rump, ARB. E-mail. 1/13/04>**

Although it may be true for the two refineries consulted by ARB that spare pumps are available, these spares are available, as ARB notes, only for "critical" operations. A non-repairable leak in a non-critical pump (and perhaps in any pump for the refineries not consulted) will require either a variance application or shutdown and subsequent startup with attendant emissions. ARB has provided no data to suggest that the SCAQMD approach would reduce emissions. It is just as reasonable to suppose that the rule provisions will result in shutdowns and subsequent startups that produce overall emission increases. In addition, the BAAQMD questions whether it is good public policy to write provisions that will almost certainly have to be addressed through extra-rule procedures like variances or enforcement discretion.

- 4. The CAPCOA correlation equation includes a mass flow rate of 0.064 kg/hr for valves with readings between 10,000 and 100,000 ppm. This corresponds to 3.4 lb/day. For concentrations over 100,000 ppm the mass flow rate is 0.138 kg/hr, which corresponds to 7.3 lbs/day. The District should determine if a lower threshold (<15 lb/day) is warranted based on relevant data.. <Rump, ARB. E-mail. 1/13/04>**

The correlation equations will tell you what emissions from an average valve leaking at a specified concentration would typically be and are used in constructing inventories. The correlations are derived from populations of valves and tell you nothing useful about an individual case. A valve going on the non-repairable list is not likely to be an average valve, and the cutoff was based on the BAAQMD's determination about what level of emissions is significant and should require immediate action, given the small number of components to which the non-repairable list applies. The District believes the 15-pound cutoff to be reasonable.

- 5. Appendix A includes a table comparing the BAAQMD proposed rule with other district rules. Under SCAQMD non-repairable list, the leak thresholds are listed. Leak thresholds cannot be compared to non-repairable provisions. Leak thresholds pertain to trigger levels for violations and the non-repairable provision pertains to limited term exemptions. The District should indicate that the SCAQMD does not have a non-repairable provision. <Rump, ARB. E-mail. 1/13/04>**

The BAAQMD disagrees with the view that the SCAQMD leak thresholds do not, in effect, constitute a non-repairable list. In addition, even if the SCAQMD provisions do not have the same effect as a non-repairable list, this does not make the SCAQMD rule more stringent than the BAAQMD rule, given the greater stringency of the BAAQMD leak standards, which apply to far more components than any provisions for non-repairable components. For a more detailed discussion of this issue, see the response to comment 2 above.

Appendix A

Comparison of the Basic Provisions of the Fugitive Emissions Rules of Four California Air Districts

Comparison of the Basic Provisions of the Fugitive Emissions Rules of Four California Air Districts

	BAAQMD Rule 8-18	South Coast AQMD Rule 1173	SJVUAPCD Rules 4451 & 4452	Ventura Co. APCD Rule 74.7
Minimum Leak Limits	§§8-18-211, 301→305	§1173 (d)(1)	§4451.3.9.1.1; §4451.3.9.2; §4452.3.6.1	§§74-7 L.18→L.20, L.22 & L.23,
Liquid	3 drops/min	3 drops/min	3 drops/min	minor ≥3 drops/min major = stream or mist
Valves	100 ppm	HL > 500; LL > 50k/10k*	10,000 ppm	minor ≥1,000 1,000 > major ≥
Connections	100 ppm	HL > 500; LL > 50k/10k*	10,000 ppm	10k
Pumps/ Compressors	500 ppm	HL > 500/100*; LL > 50k/10k*	10,000 ppm	
PRDs/PRVs	500 ppm	LL > 50k/200*	10,000 ppm	major > 200 ppm
		L = leak (in ppm or drops/min) HL = heavy liquid leak LL = light liquid/gas/vapor leak *Limits for leaks found above leak thresholds (see Turnaround Lists)		
INSPECTION FREQUENCIES	§§8-18-401.1→401.3	§§1173 (f)(1)(B) & (C)	§4451.5.2 & §4452.5.1	§74-7 D.1 & D.2
Valves	Quarterly	Quarterly	Quarterly	Monthly →Quarterly
Connections	Annually	Quarterly	Annually	Monthly →Annually
Pumps/ Compressors	Quarterly	Quarterly	Quarterly	Monthly →Quarterly
PRDs/PRVs	Annually	Quarterly	Quarterly	Quarterly (≤110 days)
Inaccessibles	Annually	Annually	Annual or shutdowns	
NON-REPAIRABLE LIST	§§8-18-306.2 & 306.3	Leak Thresholds: §1173(d)(1)Table 1	§4451.5.2 & §4452.5.1.4	
Duration	≤ 5 yrs.	No time limit (∞)	Next shutdown	none
Valves	0.5% 1%	0.5%	2%	none
Connections	0% 0%	0.5%	2%	none

	BAAQMD Rule 8-18		South Coast AQMD Rule 1173	SJVUAPCD Rules 4451 & 4452	Ventura Co. APCD Rule 74.7
Pumps/ Compressors	1%	5%	1%	2% Shutdown or one year	none
PRDs/PRVs	1%	5%	1%	2%	
REPAIR SCHEDULES	§§8-18-301→305		§1173 (g)(1) Table 2	§4451.5.3.2 & §4452.5.1.4	§74-7 E Table 1
Valves	24 hr (District)/ 7 days (operator)		500 < LL ≤ 10k: 7 days 100 < HL < 500: 7 days 3 drops/min & 100 < HL ≤ 500: 7 days 10k < L ≤ 25k: 2 days/ext 3 days L > 25k: 1 day HL > 500: 1 day/ext 3 days LL > 3 drops/min: 1 day	m: 1 yr M: 15 days reduce < 10 d/min / 10k or vent to flare or control or show control is infeasible	m: 14 days, M: 5 days, S: 1 days
Connections	24 hr (District)/ 7 days (operator)			m: 1 yr M: 15 days reduce < 10 d/min / 10k or vent to flare or control or show control is infeasible	m: 14 days, M: 5 days, S: 1 days
Pumps/ Compressors	24 hr (District)/ 7 days (operator)			15 day > 15 day: replace, vent to control or repair at shutdown	m: 14 days, M: 5 days, S: 1 days
PRDs/PRVs	7 days (District)/ 17 days (operator)		200 < L ≤ 25k: 2 days	m: 1 yr M: 15 days reduce < 10 d/min / 10k or vent to flare or control or show control is infeasible	m: 14 days, M: 5 days, S: 1 days
			L = leak (in ppm or drops) HL = heavy liquid leak LL = light liquid/gas/vapor leak ext = extended repair period	Leak: m ≤ 10 drops/min or 10,000 ppm M > 9 drops/min or 10,000 ppm.	Leaks: m ≤ 10,000, 10,000 < M ≤ 25,000 S > 25,000

Appendix B
Emissions Estimates

EMISSION ESTIMATES FOR VALVES

Valves

200,000 valves at a Leak Rate 0.5 percent

Screening Value (ppm)	Numbers of Valves	Leak Rate (lb/day)
0	198,575	82
0<S<100	425	1
100<S<10,000	850	16
>10,000	150	507
Total		606

Valves

200,000 valves at a Leak Rate 0.3% with only 0.025% of the valves above the 10,000-ppm limit

Screening Value (ppm)	Numbers of Valves	Leak Rate (lb/day)
0	199,145	82
0<S<100	255	0
100<S<10,000	550	10
>10,000	50	168
Total		260

Emission Reduction:

Emission Reductions @ 0.3 percent Leaking	Emission Reductions @ 0.2 percent Leaking
346 lbs/day	458 lbs/day
0.21 TPD	0.23 TPD

Approach and Assumptions

Source of Emission Factors:

Emission estimates were calculated using the ARB's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities."

TABLE IV-3a: CAPCOA-REVISED 1995 EPA CORRELATION EQUATIONS AND FACTORS FOR REFINERIES AND MARKETING TERMINALS^a

Component Type/ Service Type	Default Zero Factor (kg/hr) ^b	Correlation Equation (kg/hr) ^c	Pegged Factor (kg/hr) ^d	
			10,000 ppmv	100,000 ppmv
Valves/All	7.8E-06	$2.27E-06(SV)^{0.747}$	0.064	0.138
Pump seals/All	1.9E-05	$5.07E-05(SV)^{0.622}$	0.089	0.610 ^e
Others ^f /All	4.0E-06	$8.69E-06(SV)^{0.642}$	0.082	0.138
Connectors/All	7.5E-06	$1.53E-06(SV)^{0.736}$	0.030	0.034
Flanges/All	3.1E-07	$4.53E-06(SV)^{0.706}$	0.095	0.095
Open-ended lines/All	2.0E-06	$1.90E-06(SV)^{0.724}$	0.033	0.082

Number of Values at Refineries:

The number of valves in currently in operation at all the five Bay Area refineries is estimated to 200,000 and is based on WSPA Evaluation of Regulation 8, Rules 8 and 25 conducted by Radian (December 1996), which estimated 180,000 valves.

Number of Value Leaking in Excess of 10,000 ppm:

Based on data collected during inspection audits of refinery fugitive components (July 1999 BAAQMD Inspection Audit of Fugitive Components at Refineries and May 1997 BAAQMD Inspection Audit of Fugitive Components at Refineries), staff estimated that 15 percent of the leaking valves leak above 10,000.

Additional Assumptions for Emission Estimates:

For valves with leak concentrations between 0 and 100 ppm, the average leak concentration is 30 ppm; and the percent of leaking valves between 0 and 100 ppm is 0.5 times the number of valves leaking below 10,000 ppm.

Appendix C
CEQA Analysis

Appendix D
Socioeconomic Analysis

**Socioeconomic Analysis
Proposed Amendments
Regulation 8
Rule 18
Equipment Leaks**

Prepared for

**Bay Area Air Quality Management District
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December 30, 2003

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1. EXECUTIVE SUMMARY

The purpose of Regulation 8 Rule 18 is to reduce the emission of VOCs from valves and other components at petroleum refineries and chemical plants in the nine-county San Francisco Bay Area. Rule 8-18 was first adopted in 1980 and was amended in 1992, with minor changes in 1998 and 2002. Rule amendments adopted in 1992 significantly lowered the allowable leak concentration limits to the lowest in the country and required more effective inspection and repair programs in order to reduce emissions and promote self-compliance. Rule 8-18 was last amended in November 2002 to address a minor deficiencies identified by US EPA in their limited approval/disapproval of the rule.

The following are some of the key findings from the socioeconomic analysis of the proposed amendments.

- According to the Bay Area Air Quality Management District (BAAQMD), there are five (5) petroleum refineries in the region that are primarily affected by the amendments. These corporations are Chevron, Shell, Connoco Phillips, Valero-Valero Asphalt, and Tesoro.
- In 2002, these five refineries employed an estimated 2,280 workers, generated revenues of \$4.5 billion, and earned an estimated \$220 million in profits.
- The proposed amendments to will result in aggregate compliance costs ranging from \$23,500 to \$118,000 — between 0.01 and 0.05 percent of aggregate profits for the 5 refineries directly affected by the proposed amendments to Regulation 8, Rule 18. Thus, the proposed amendments to Regulation 8, Rule 18 do not result in any economic impact on affected refineries.

2. INTRODUCTION

This report describes the socioeconomic impacts of proposed amendments to Regulation 8, Rule 18. Following this introduction, the report summarizes proposed amendments to the rule and describes the methodology for the socioeconomic analysis. In Section 5, the report describes the economic characteristics of sites affected by the proposed amendment. The sixth section analyzes the socioeconomic impacts of proposed amendments to Regulation 8, Rule 18.

The proposed amendments to Regulation 8, Rule 18, Equipment Leaks, will assist the BAAQMD in meeting its commitments regarding the 2001 Ozone Attainment Plan for Control Measure SS-16. The proposal is intended to set stringent standards and performance requirements that, when implemented, will represent the best current industry practices and abilities, as well as allow the District to account for any associated emission reduction.

3. DESCRIPTION OF PROPOSED AMENDMENTS

Bay Area Air Quality Management District (BAAQMD) seeks to amend Regulation 8, Rule 18 (Equipment Leaks) to strengthen controls on emissions from leaking valves at petroleum refineries and chemical plants. Regulation 8, Rule 18 requires refineries to develop and implement a Leak Detection and Repair (LDAR) program to control fugitive emissions. Fugitive emissions occur from valves, pumps, compressors, pressure relief valves, flanges, connectors, piping and other equipment components.

BAAQMD staff reviewed specific valve technologies to determine short-term and long-term emission performance. From this evaluation, staff concluded that petroleum refineries are required to utilize the best technology available for replacements to consistently achieve the stringent leak standard of 100 ppm. The strict leak standard combined with the limit on the number of valves that can be placed on the non-repairable list constitute Best Available Control Technology (BACT). Therefore, compliance with this rule as proposed represents what is presently BACT.

Staff also evaluated areas in which additional emission reductions could be achieved. This evaluation indicated that:

- The number of valves allowed on the non-repairable list could be reduced from the current level of 0.5 percent to 0.3 percent. The level of 0.3 percent represents the level currently achieved by refineries.
- A maximum leak standard be established for valves leaking above 10,000 ppm because they are responsible for the largest fraction of the emission inventory.

The proposed amendments ensure that best available control technologies are used to reduce emissions. The proposed major amendments to Regulation 8, Rule 18 will:

- Reduce the fraction of components allowed on a non-repairable list;
- Set a maximum leak standard at 10,000 parts per million (ppm); and

- Allow connections to be placed on a non-repairable list at a ratio of one connection per two valves.

4. METHODOLOGY

The socioeconomic analysis involves the use of information provided directly by the District, the corporations and sites directly affected by proposed amendments, as well as secondary data used to describe the industries affected by proposed amendments to Regulation 8, Rule 18. The approach is briefly described below.

ADE began the analysis by requesting from the District a list of all sites subject to the proposed amendments to Regulation 8, Rule 18. In addition to a list of all sites, we also requested the Standard Industrial Code (SIC) for each affected site, the name of the company that manages and or owns sites, as well as information on site location. In reviewing the transmitted information, we determined that the bulk of the sites and corporations on the list were not petroleum refineries (SIC 2911). Based on conversations with District staff, we determined that the study would focus on oil refineries in the District region and, of these, we further focused attention on Chevron, Shell, Connoco Phillips, Valero and Tesoro.

We then began to prepare a statistical description of the industry groups of which the affected sites are part, as well as to analyze data on the number of jobs, sales levels, the typical profit ratios and other economic indicators for each industry. ADE also reviewed and summarized documents available to the public such as annual reports for publicly traded companies.

With the annual reports and data from the US Economic Census, ADE was able to estimate sales and profit ratios for many of the sites affected by the proposed amendments to Regulation 8, Rule 18. ADE calculated an average sales figure per affected refinery to estimate sales for and profitability of sites affected by the proposed amendments to the rule. To estimate employment, ADE used employment data from data vendors such as the US Economic Census and the Minnesota IMPLAN Group.

Using the annual reports and data culled by Dun and Bradstreet, ADE calculated ratios of profit per dollar of sales for each

refinery. This corporate profitability ratio was applied against site-level sales estimates to yield an estimate of profit generated at refineries affected by the proposed amendments. The result of the socioeconomic analysis shows what proportion of profit the compliance costs represent. Based on a given threshold of significance, ADE discusses in the report whether the affected sites are likely to reduce jobs as a means of recouping the cost of rule compliance or as a result of reducing business operations. To the extent that such jobs losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model.

5. IMPACTED SOURCES SUBJECT TO PROPOSED AMENDMENTS TO REGULATION 8, RULE 18

This section of the socioeconomic analysis describes demographic and economic trends in the San Francisco Bay Area region. The first part of this section compares the Bay Area against California as a whole and, in so doing, provides a context for understanding demographic and economic changes that occurred within the Bay Area between 1997 and 2002. Starting with sub-section 5.2, the second part of this section narrows the focus of the socioeconomic analysis to those industries identified by the District as subject to the proposed amendments. The five (5) sites that are affected by the proposed amendments to Regulation 8, Rule 18 are within SIC 2911 (petroleum refining). The second part of this section describes the economic characteristics of impacted sites subject to Regulation 8, Rule 18. For the purposes of this report, the Bay Area region is defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma Counties.

5.1 REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

Regional Demographic Trends

The San Francisco Bay Area experienced moderate population growth during the 1990s. The nine-county region as a whole increased by 13 percent, from 6.0 million in 1990 to 6.8 million in 2000. The Bay Area grew almost at the same pace with the state, which increased by 14 percent. San Francisco, Marin, and San Mateo counties grew at significantly slower paces, perhaps because of the high cost of housing in these parts of the Bay Area.

TABLE 1
Population Growth: San Francisco Bay Area
1990 - 2000

	California	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
1990	29,760,021	1,443,741	948,816	247,289	124,279	776,733	707,161	1,682,585	394,542	458,614
2000	33,871,648	1,279,182	803,732	230,096	110,765	723,959	649,623	1,497,577	340,421	388,222
%Change	14%	13%	18%	7%	12%	7%	9%	12%	16%	18%

Source: US Census, 1990 and 2000

Regional Economic Trends

Economic development practitioners and planners have traditionally divided economies into two broad industrial categories—the economic base and local support industries. Economic base industries are the drivers of local and regional economies in that these industries draw income into a local economy by selling products outside of the local economy, much like the export industries of a national economy. Accrued earnings then circulate throughout the local area in the form of wages and salaries, investments, purchase of fixed assets, and goods and services, generating more jobs and wealth.

The economic base is typically comprised of industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the “local support industries” such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services – such as realtors, teachers, healthcare – increases, as does demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

With notable companies such as Intel, Apple, NUMMI, to name a few, manufacturing continues to be the economic base of the San Francisco Bay Area, exporting goods and produce throughout the nation and globe. The industries affected by Regulation 8, Rule 10 are a prominent part of the region’s economic base. Over the course of the late 1990s, local support industries gained somewhat within the region. Growth in local support industries, such as construction, retail and services, is in large part due to regional population growth, particularly in

Alameda (Livermore Valley region), Contra Costa, Solano and Sonoma Counties.

As Table 2 shows, the service sector is the largest employment sector in the region, at 1.1 million or 40 percent of all private sector jobs. In 1997, services represented 37 percent of all jobs (1.0 million jobs). While the proportion of people employed in the services-based sector increased between 1997 and 2002, the proportion of people employed in the manufacturing economic base declined, from 18 to 15 percent of all private sector workers in the Bay Area. Between 1997 and 2002, manufacturing jobs decreased by 16 percent, from 495,500 to 416,500, as Table 2 shows.

Between 2000 and 2002, construction decreased, leading to the overall 1 percent decline in the number of construction jobs between 1997 and 2002. Retail also declined, by 3 percent between 1997 and 2002. In short, the Bay Area's economy continues to be diverse even as it experiences one of its worst recessions in history. However, the region has lost jobs in the relatively higher wage generating economic base of manufacturing, while population-driven local support industries as a whole have been stable. Services increased by 6 percent between 1997 and 2002, and has become an even greater share of regional employment. Overall, total employment decreased by 3 percent in the Bay Area between 1997 and 2002, versus the statewide decline of 2 percent.

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TABLE 2
Employment Profile Of The San Francisco Bay Area, 1997 - 2002

Description	Bay Area Employment 1997	Bay Area Employment 2002	Percentage Change in Bay Area Employment 1997 to 2002	State Employment 1997	State Employment 2002	Percentage Change in State Employment 1997 to 2002
Agriculture	42,617	37,714	-12%	501,483	461,708	-8%
Mining	4,003	3,881	-3%	28,962	25,246	-13%
Construction	142,408	140,486	-1%	551,269	582,641	6%
Manufacturing	495,584	416,460	-16%	1,902,332	1,680,811	-12%
Transportation And Public Utilities	179,333	171,438	-4%	650,006	659,116	1%
Wholesale Trade	176,870	165,640	-6%	774,779	782,708	1%
Retail Trade	513,214	497,373	-3%	2,271,468	2,306,136	2%
Finance, Insurance, And Real Estate	202,944	181,113	-11%	759,924	728,334	-4%
Services	1,017,933	1,075,368	6%	3,984,420	3,984,420	0%
Not Elsewhere Classified	356	356	0%	23,867	23,867	0%
Total	2,775,262	2,689,828	-3%	11,448,510	11,234,987	-2%

Sources: Applied Development Economics, based on data from the US Economic Census, IMPLAN-MIG and California LMID-EDD

5.2 DESCRIPTION OF AFFECTED INDUSTRIES

Regulation 8, Rule 18 affects industries in SIC 2911 (oil refineries). What follows is a description of this industry. Table 3 identifies economic trends for oil refineries in the Bay Area and state, and it provides a comparison between two points in time—1997 and 2002. Data in Table 3 are for all sources, not just the five (5) impacted sources subject to the proposed amendments. Employment and other estimates for the year 2002 for sites affected by Regulation 8, Rule 18 are based on from vendors such as the California LMID-EDD, Minnesota IMPLAN Group, and the US Census Economic Census.

As Table 3 shows, employment in oil refineries increased by an estimated 8 percent for the five-year period from 1997 to 2002 — from 7,292 to 7,849 jobs. In contrast, oil refinery employment for the state as a whole decreased by 12 percent. While Bay Area refinery jobs increased, between 1997 and 2002, manufacturing as a whole decreased by 16 percent and 12 percent in the Bay Area region and California respectively, as Table 2 above demonstrates. In short, employment in

petroleum refining industries in the Bay Area increased at a time when manufacturing as a whole experienced declined significantly.

TABLE 3
Employment Trends: Industries Affected By Proposed Amendments to Regulation 8, Rule 18
1997 - 2002

	Bay Area 1997	Bay Area 2000	Bay Area 2002 (estimated)	Bay Area 1997 -2002	State 1997	State 2000	State 02 (estimated)	State 1997 -2002
Manufacturing (all)	495,584	510,376	416,460	-16%	1,902,332	1,939,161	1,680,811	-12%
SIC 2911: refineries	7,292	7,539	7,849	8%	16,851	14,351	14,900	-12%
Total Employment	2,775,262	3,097,902	2,689,828	-3%	11,448,510	12,652,960	11,234,987	-2%

Sources: Applied Development Economics, based on data from the US Economic Census, IMPLAN-MIG, and California EDD-LMID

5.3 ECONOMIC CHARACTERISTICS OF SOURCES AFFECTED BY THE PROPOSED AMENDMENTS TO REGULATION 8, RULE 18

Table 4 identifies the economic characteristics of the refineries affected by the proposed amendments. This table shows that the refineries are estimated to employ 2,280 workers. These sites have an estimated aggregate payroll of \$134 million, and estimated revenues of \$4.5 billion. As Table 4 further shows, the five affected sources produced an estimated \$887 million in value-added production in 2002.¹

¹ Value-added measures the difference between sales and costs of inputs (i.e. materials and labor). It is a measure of productivity.

TABLE 4
Economic Characteristics of Impacted Sources Subject To Proposed
Amendments to Regulation 8, Rule 18

Refineries	Estimated Employment	Estimated Payroll	Estimated Value-Added	Revenues
SIC 2911 Oil Refineries	2,280	\$134,891,089	\$887,478,276	\$4,546,989,022

Sources: Applied Development Economics, based on data from the US Economic Census, Dun and Bradstreet, and various corporate annual reports

As Table 5 shows, the affected sources represent 29 percent of all employment within their respective industry (SIC 2911) in the Bay Area region. Overall, there are an estimated 7,539 petroleum refining employees in the Bay Area. Of these 7,539 workers, 2,280 work in the five affected refineries.

TABLE 5
Employment In Impacted Sites Subject To Proposed
Amendment to Regulation 8, Rule 18
Relative To the Bay Area and California, 2002

SIC	Estimated employment at Affected Refineries 2002	Affected Sites As percent of Bay Area 2911 Employment	Affected Sites As percent of California 2911 Employment
2911	2,280	29%	15%

Sources: Applied Development Economics, based on data from the US Economic Census and IMPLAN-MIG

6. SOCIOECONOMIC IMPACTS

6.1 COMPLIANCE COST ESTIMATES

The District's cost of compliance analysis indicates that, overall, all sources affected by the amendments would experience an aggregate annual cost between \$23,500 and \$118,000. Table 6 provides a breakdown of the estimated costs, and these costs are broken down into four cost scenarios.

The costs associated with the proposed amendment are primarily the costs of determining the mass emission rates of valves leaking in excess of 10,000 ppm and the cost of controlling component with emissions above the 15-pound limit. There are two methods that were identified as reliable methods of determining mass emissions: high volume collection system (HCVS) and the US EPA vacuum method. Table 6 compares the cost of each of these methods. The cost values in Table 6 have been inflated from 1995 values using inflation factor of 1.2 obtained from the US Department of Labor, Bureau of Statistics.

TABLE 6
Cost Estimates for
Mass Emission Rate Determinations

	HCVS	Vacuum Method
Total time required for ONE sample ¹	4 hours	Two days
Labor Cost per sample (\$450/day)	\$225	\$900
Lab Cost per sample	\$0	\$400
TOTAL COST per sample	\$225	\$1,300

Source: Bay Area Air Quality Management District

It was estimated that a total of 60 valves within the BAAQMD may need mass measurements each year. The cost of sampling 60 valves annually was estimated between \$13,500 and \$78,000. The cost to capture, vent and control emissions from a valve with excess emissions can range from

\$5,000 to \$20,000 each depending on the valve size, location (accessible or inaccessible, proximity to a vent for flare or fire box, spatial proximity to other components, etc.). It was estimated that 2.5 percent of valves leaking in excess of 10,000 ppm will have emissions of 15 pounds per day or greater, or 2.5 percent. That is approximately two valves District-wide that could potentially be required to be controlled. The annual costs associated with these proposed amendments are presented in Table 7.

**Table 7
Costs of the Proposal**

Requirement	Annual Costs
Mass Emission Rate Determinations	\$13,500 - \$78,600
Control of Valves with Excessive Leaks	\$10,000 to \$40,000
TOTAL COSTS	\$23,500 to \$118,000

Source: Bay Area Air Quality Management District

6.2 BUSINESS RESPONSE TO COMPLIANCE COSTS

Sites impacted by the proposed amendments to proposed amendments to Regulation 8, Rule 18 may respond in a variety of ways when faced with new regulatory costs. These responses may range from simply absorbing the costs and accepting a lower rate of return to shutting down the business operation altogether. Businesses may also seek to pass the costs on to their customers in the form of higher prices, or they may renew efforts to increase productivity and reduce costs elsewhere in their operation in order to recoup the regulatory costs and maintain profit levels.

6.3 IMPACT ANALYSIS

The businesses' responses to increased compliance costs hinge on the effect of the costs on the profits generated at the affected sites. An impact on estimated profits greater than 10 percent implies that the source would experience serious economic effects because of the compliance cost. When compliance costs are greater than 10 percent of estimated profits, companies typically respond to the impact by laying

off some workers, closing parts of manufacturing facilities or, in the most drastic case, possibly closing the manufacturing facility.

Using the cost estimates developed by the District, Applied Development Economics calculated the socioeconomic impacts of the proposed amendments. In calculating impacts of the proposed amendments on profits, ADE used return on sales ratios identified by Dun and Bradstreet for select industries and in annual reports of companies directly affected by the proposal. Base on data from the US Economic Census and from corporate annual report, we estimate that the 5 affected refineries generated a combined profit of \$220 million on \$4.5 billion in sales in the year 2002.

Table 8 compares the estimated costs of the proposed amendments to this rule under both cost alternatives. Affected sources will incur an aggregate cost \$23,500 under the lower cost alternative. This cost represents an estimated .01 percent of profits for the five sources affected by the proposed amendments.

**TABLE 8
Employment Impacts of Proposed Amendments to Regulation 8, Rule 18**

Refineries	Estimated SF Region Refinery Returns	Throughput Capacity (BPD)	Throughput Capacity Distribution	Lower Cost Scenario: \$23,500	Upper Cost Scenario: \$118,000	Lower Cost Scenario As Percentage Of Profits	Upper Cost Scenario As Percentage Of Profits	Exceeds Significance Threshold?	Potential Direct Job Losses
SIC 2911 Oil Refineries	\$220,301,259	676,200	100%	\$23,500	\$118,000	0.01%	0.05%	no	none

Sources: Applied Development Economics, based on data from the US Economic Census, Dun and Bradstreet, and various corporate annual reports

Affected sources will incur an aggregate cost of \$118,000 in the higher cost alternative. This cost represents an estimated 0.05 percent of aggregate profits for the 5 sites affected by the proposed amendment. Moreover, Table 8 shows that the cost of the proposed amendments does not disproportionately affect a single refinery. At \$3,288 to \$16,508, depending on the cost scenario, the cost of the proposed amendments to Valero could represent between 0.6 and 3.2 percent of profits generated by this refinery. However, these cost impacts are well below the significance threshold.

6.4 IMPACT ON SMALL BUSINESSES

In addition to analyzing the employment impacts of proposed amendments to Regulation 8, Rule 18, state legislation requires that the socioeconomic analysis assess whether small businesses are disproportionately affected by air quality rules such as the proposed amendments to the Regulation 8, Rule 18. First, this section profiles oil refineries in the San Francisco Bay Area region by employment size categories, and, in so doing, shows that most of these manufacturers are relatively large employers. Then, this section discusses the average size of the five refineries affected by the proposed amendments. Finally, this section shows how the five refineries affected by the proposed amendments to Regulation 8, Rule 18 fail to qualify as small businesses as defined by the State of California.

Oil Refineries By Employment Size Categories

More than 50 percent of all businesses in California and the United States employ less than four people, and almost 80 percent employ less than ten people. Data in Table 10 are for all sites in industries identified by the BAAQMD, and it includes data on sites affected by amendments to Regulation 8, Rule 18. The data in the table comes from a combination of vendors—Minnesota IMPLAN Group and the US County Business Patterns—and is current as of the year 2001. Table 9 distributes affected industries by number of employees per manufacturing site. As a group, establishments in the affected industries are significantly larger than state and national industries as a whole. Establishments with more than 100 workers represent 2.5 percent of all establishments in all industries in California and the United States. In contrast, 44 percent of affected sites employ at least 100 people. In fact, 55 percent of all sites employ at least 50 people versus the statewide and national average of 5.7 percent, as Table 9 shows. Consistent with data in Table 9, we estimate that the sites directly affected by the proposed amendment employ, on average 455 workers, placing these facilities as mid- to large-sized employers.

TABLE 9
Distribution Of Oil Refineries (SIC 2911) In The San Francisco Bay Area By Size of Facilities, 2001

	Employment Size Categories						
	1 thru 4	5 thru 9	10 thru 19	20-49	50-99	100-249	250 or more
Bay Area SIC 2911	11%	0%	11%	22%	11%	0%	44%
California (all industries)	54.0%	18.5%	12.6%	9.1%	3.2%	1.8%	0.7%
US (all industries)	53.9%	19.3%	12.7%	8.7%	3.0%	1.8%	0.7%

Source: United States Bureau of the Census, County Business Patterns 2000, IMPLAN MIG

Definition Of Small Business Per California Statute

The previous section showed oil refineries in the San Francisco Bay Area, including the five sources that are affected by the proposed amendments to Regulation 8, Rule 18, are significantly larger than most businesses in California and the nation, which, on average, employ less than 10 people. This section discusses how the State of California defines small business, and, in so doing, shows how the five sources affected by the proposed amendments to Regulation 8, Rule 18 fail to meet the State's definition of small business.

For purposes of qualifying small businesses for bid preferences on state contracts and other benefits, the State of California defines small businesses in the following manner².

To be eligible for small business certification, a business:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California
- Must have its owners (or officers in the case of a corporation) domiciled in California; and
- Together with its affiliates, be either:

² State of California. Department of General Services. "California Small Business Certification" (<http://www.pd.dgs.ca.gov/smbus/sbcert.htm>)

- A business with 100 or fewer employees, and an average gross receipts of \$10 million or less over the previous tax years, or
- A manufacturer with 100 or fewer employees

The five sources that are affected by the proposed amendments are not independently-owned and operated businesses. These refineries are owned by publicly-traded global corporations whose headquarters are outside of California (except for Chevron). In addition, each of the sources that are affected by the proposed amendments to Regulation 8, Rule 18 employ, on average, 455 workers, and their average revenue is approximately \$909 million. Thus, by the standards established by the State of California, these sources are not small businesses. Based on this discussion, it is determined that proposed amendments to the Regulation 8, Rule 18 do not disproportionately affect small businesses because the sources impacted by the proposed amendments do not meet California's definition of small business.



NEGATIVE DECLARATION

December 22, 2003

PROJECT SPONSOR

Bay Area Air Quality Management District

PROJECT LOCATION

The proposed rule amendments would apply within the geographic area covered by the Bay Area Air Quality Management District. The District includes all of seven counties - Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa - and portions of two others - southwestern Solano and southern Sonoma.

PROJECT DESCRIPTION

This project consists of amendments to an existing BAAQMD rule (Regulation 8, Rule 18) that regulates equipment leaks at petroleum refineries, chemical plants, bulk plants, and bulk terminals. The rule amendments are being proposed to implement control measure SS-16 from the 2001 Bay Area Ozone Attainment Plan. The proposed amendments will reduce emissions of organic compounds primarily by requiring refineries to:

- Reduce the fraction of components allowed on a non-repairable list;
- Set a maximum leak standard at 10,000 parts per million (ppm) for valves on the list; and
- Allow connections to be placed on a non-repairable list at a ratio of one connection per two valves.

DETERMINATION

Pursuant to the California Environmental Quality Act (Public Resources Code Section 21000 et seq.), the District is the Lead Agency for the described project. The District has prepared an Initial Study (attached), and on the basis of that study, has determined that the project will not have a significant effect on the environment.

REVIEW PERIOD

Written comments on the proposed amendments or negative declaration must be addressed to Bill Guy, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California, 94109, or to wguy@baaqmd.gov. Comments will be received during the period from Monday, December 22, 2003 until 5:00 p.m. on Monday, January 12, 2004. Questions regarding the project should be directed to Victor Douglas at (415) 749-4752 or by e-mail to vdouglas@baaqmd.gov.

**Initial Study/Negative Declaration for the
Amendments to Bay Area Air Quality
Management District Regulation 8, Rule 18**

Prepared for:

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Contact: William Guy
(415) 749-4773

Prepared By:

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December 2003

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Chapter 1

Introduction

Purpose of this Document

This Initial Study/Negative Declaration (IS/ND) assesses the environmental impacts of the proposed adoption of amendments to Regulation 8, Rule 18, by the Bay Area Air Quality Management District (BAAQMD or District) as required by the California Environmental Quality Act (CEQA) and in compliance with the state CEQA Guidelines (Title 14 California Code of Regulations §§1400 et seq.). An IS/ND serves as an informational document to be used in the decision-making process for a public agency that intends to carry out a project; it does not recommend approval or denial of the project analyzed in the document. The BAAQMD is the lead agency under CEQA and must consider the impacts of the proposed rule amendments when determining whether to adopt them. The BAAQMD has prepared this IS/ND because no significant impacts would result from the proposed rule amendments.

Scope of this Document

This document evaluates the potential impacts of the proposed amendments on the following resource areas:

- aesthetics,
- agricultural resources,
- air quality,
- biological resources,
- cultural resources,
- geology and soils,
- hazards and hazardous materials
- hydrology and water quality,
- land use planning,
- mineral resources,

- noise,
- population and housing,
- public services,
- recreation,
- transportation/traffic, and
- utilities and service systems.

Impact Terminology

The following terminology is used in this IS/ND to describe the levels of significance of impacts that would result from the proposed rule amendments:

- An impact is considered *beneficial* when the analysis concludes that the project would have a positive effect on a particular resource.
- A conclusion of *no impact* is appropriate when the analysis concludes that there would be no impact on a particular resource from the proposed project.
- An impact is considered *less than significant* if the analysis concludes that an impact on a particular resource topic would not be significant (i.e., would not exceed certain criteria or guidelines established by BAAQMD). Impacts are frequently considered less than significant when the changes are minor relative to the size of the available resource base or would not change an existing resource.
- An impact is considered *less than significant with mitigation incorporated* if the analysis concludes that an impact on a particular resource topic would be significant (i.e., would exceed certain criteria or guidelines established by BAAQMD) but would be reduced to a less than significant level through the implementation of mitigation measures.

Organization of This Document

The content and format of this document, described below, are designed to meet the requirements of CEQA.

- Chapter 1, “Introduction,” identifies the purpose, scope, and terminology of the document.
- Chapter 2, “Description of the Proposed Rule,” provides background information of Regulation 8, Rule 18, describes the proposed rule

amendments, and describes the area and facilities that would be affected by the amendments.

- Chapter 3, “Environmental Checklist,” presents the checklist responses for each resource topic. This chapter includes a brief setting description for each resource area and identifies the impact of the proposed rule amendments on the resources topics listed in the checklist.
- Chapter 4, “References Cited,” identifies all printed references and personal communications cited in this report.

Chapter 2

Description of the Proposed Amendments

Background

Regulation 8, Rule 18 requires refineries to develop and implement a Leak Detection and Repair (LDAR) program to control fugitive emissions from valves, pumps, compressors, pressure relief valves, flanges, connectors, piping, and other equipment components. The rule, which includes the most stringent leak standards in California, also applies to chemical plants, bulk plants and bulk terminals.

The proposed amendments to Regulation 8, Rule 8 ensure that best available control technologies are used for valves. The proposed amendments would:

- Reduce the number of valves allowed on a non-repairable list;
- Limit the number of valves on the non-repairable list with leaks of 10,000 parts per million (ppm) or more and ensure that emissions from each of these valves is less than 15 pounds per day; and
- Allow connections to be placed on a non-repairable list at a ratio of one connection per two valves.

The proposed amendments are intended to implement Control Measure SS-16 from the Bay Area 2001 Ozone Attainment Plan. That measure called for amendments to Regulation 8, Rule 18 that would require that replacement valves meet Best Available Control Technology requirements or that they be “leakless” valves.

To implement the control measure, staff conducted numerous site visits to the Bay Area refineries and reviewed specific valve technologies to determine short-term and long-term emission performance. Staff found that no single valve type offered superior performance for the wide range of valve sizes and operating conditions encountered in a refinery, and that specifying valves for the many different situations encountered would be a complex undertaking with no clear benefits beyond those that come from the current rule.

Staff determined that the existing valve leak standard of 100 ppm provides the best means to ensure that refineries use the best technology available for valve replacements. The 100 ppm standard is the most stringent in California (the South Coast AQMD leak standard for valves is 500 ppm) and is set at a level just above typical background concentrations. The amendments therefore implement the control measure by limiting the number of valves allowed on the non-repairable list, thereby ensuring the broadest possible application of the 100 ppm standard.

During the rule development process for the amendments, refineries requested flexibility for connections that are very difficult to repair. Currently, connections must be repaired at any cost irrespective of emissions. To address this concern without increasing emissions, the proposed amendments would allow connections leaking below 10,000 ppm to be placed on the non-repairable list at a ratio of one connection per two valves. The total number of valves and connections allowed on the list would continue to be determined strictly by the total number of valves in use at the refinery as documented annually.

These amendments will reduce emissions of organic and other pollutants, including toxic compounds. Staff has identified an emission reduction of 0.2 ton per day of precursor organic compounds. The expected total cost for all five Bay Area refineries to implement the proposed amendments is \$23,500 to \$118,000 per year. The cost effectiveness is approximately \$320 to \$1600 per ton of precursor organic compound emissions reduced.

Objectives

The objectives of the proposed rule amendments are to implement Control Measure SS-16 from the Bay Area 2001 Ozone Attainment Plan, to reduce emissions of ozone forming compounds [e.g., volatile organic compounds (VOCs)], and achieve compliance with state and federal ozone standards.

The U.S. Environmental Protection Agency (U.S. EPA) has set primary national ambient air quality standards for ozone and other air pollutants to define the levels considered safe for human health. CARB has also set a California ozone standard. The federal and state standards are 12 and 9 parts per hundred million (pphm), respectively. The BAAQMD is designated as an unclassified nonattainment area for the federal 1-hour standard for ozone and as a nonattainment area for the state 1-hour standard. Under the requirements of the federal Clean Air Act (CAA), nonattainment areas must prepare ozone attainment demonstrations showing how they will attain the federal standard. The most recent federal attainment demonstration is the Bay Area 2001 Ozone Attainment Plan. Similarly, the California Clean Air Act of 1988 requires areas that do not comply with the standard to prepare ozone attainment plans. The most recent state plan is the Bay Area 2000 Clean Air Plan.

Both federal and state plans include measures to reduce emissions of the pollutants that form ozone. These measures may be already adopted rules or proposal to adopt new regulations or amendments to existing regulations. As noted, Regulation 8, Rule 18 would implement Control Measure SS-16 from the most recent federal plan for the Bay Area (2001 Ozone Attainment Plan).

Affected Area

The proposed rule amendments would apply to refineries, chemical plants, bulk plants, and bulk terminals under BAAQMD jurisdiction, which includes all of Alameda, Contra

Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma counties (approximately 5,600 square miles). The San Francisco Bay Area is characterized by a large, shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast. The Basin is bounded by the Pacific Ocean to the west and includes complex terrain consisting of coastal mountain ranges, inland valleys, and bays.

The refineries affected by the proposed rule amendments are located within existing refineries located in Contra Costa County and Solano County (see Figure 1) adjacent to the San Francisco Bay. The general locations of the refineries are discussed below.

The ChevronTexaco refinery is located in Richmond, Contra Costa County, California. The refinery lies to the west of Castro Street and mostly to the north of Interstate 580 and some storage tanks and the wharf lie south of I-580. The refinery occupies most of the Point San Pablo Peninsula and covers approximately 2,900 acres. It is generally bordered on the north and south by the residential communities of North Richmond and Point Richmond, respectively. East of the refinery, across Castro Street and Garrard Boulevard, are the Iron Triangle and Santa Fe communities and central and downtown Richmond. San Francisco and San Pablo Bays form the western border of the refinery.

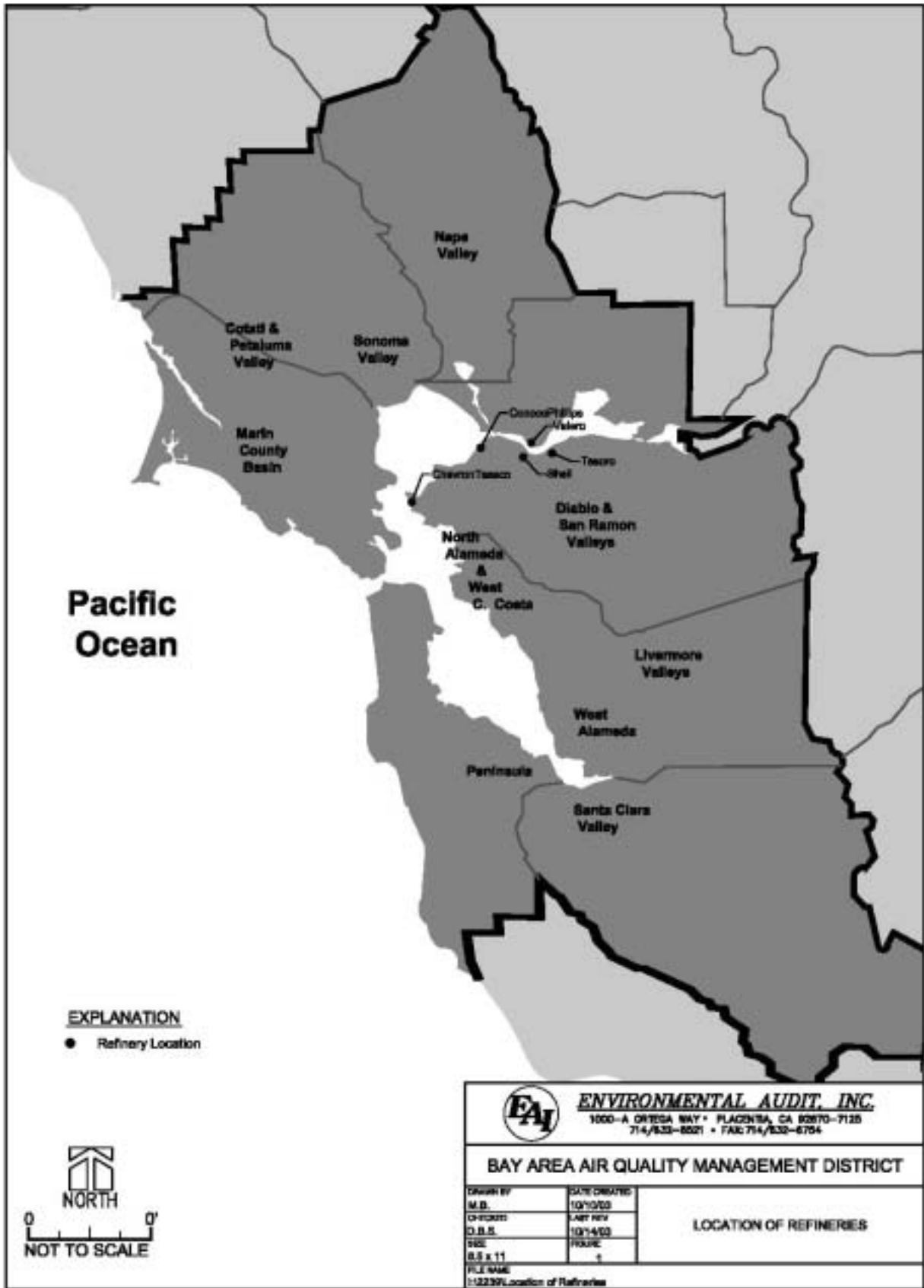
The Valero refinery is located on about 800 acres of land within the City of Benicia. The refinery is located about 0.5 mile north of I-780 and immediately west of I-680. Valero is bisected in a north-south direction by East Second Street. The refinery is bounded on the north by residential development and open space, on the east by an industrial park and I-680, on the south by industrial development, and on the west by residential development.

The ConocoPhillips refinery is located on approximately 1,100 acres of land in the unincorporated area northeast of the community of Rodeo. The refinery property is bounded on the north by San Pablo Bay and a marine terminal, on the east by agricultural lands, on the south and southwest by a residential area and on the west by San Pablo Bay. Interstate 80 runs north-south through the refinery dividing the eastern portion of the refinery.

The Shell Oil refinery is located on about 880 acres in Contra Costa County, partially within the City of Martinez. The main portion of the refinery is bordered by Marina Vista Boulevard to the north, Interstate 680 to the east, Pacheco Boulevard to the South, Merrithew Avenue to the west, and the Shell marine terminal to the northwest. Land use north of the refinery is a combination of industrial and open space; northeast of the refinery is an environmental conservation district; east is residential land use with some light industrial areas; land use south and southwest of the refinery is residential. The Martinez reservoir is also located to the south of the refinery.

The Tesoro refinery is located in Contra Costa County, within the community of Avon. The refinery is located south of Suisun Bay and is bordered by Waterfront road to the

north and Solano Way to the west. Land use south and east of the refinery is a combination of industrial and open space. The Tesoro refinery is located east of the Shell Martinez refinery. The Mallard reservoir is also located southeast of the refinery.



Chapter 3

Environmental Checklist

ENVIRONMENTAL CHECKLIST FORM

- | | |
|---|---|
| 1. Project Title: | Bay Area Air Quality Management District
(BAAQMD) Proposed Amendments to Regulation
8, Rule 18 |
| 2. Lead Agency Name and Address: | Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109 |
| 3. Contact Person and Phone Number: | Bill Guy, Planning and Research Division
415/749-4773 or wguy@baaqmd.gov |
| 4. Project Location: | This rule amendments apply to the area within the
jurisdiction of the Bay Area Air Quality
Management District, which encompasses all of
Alameda, Contra Costa, Marin, San Francisco, San
Mateo, Santa Clara, and Napa Counties and
portions of southwestern Solano and southern
Sonoma Counties. The refineries affected by the rule
are located in Contra Costa and Solano Counties. |
| 5. Project Sponsor's Name and Address: | Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109 |
| 6. General Plan Designation: | The rule amendments apply to refineries, chemical
plants, bulk plants and bulk terminals that are
usually located in heavy manufacturing or
industrial areas. |
| 7. Zoning | The rule amendments apply to refineries, chemical
plants, bulk plants and bulk terminals that are
usually located in heavy manufacturing or
industrial areas. |
| 8. Description of Project | See "Background" in Chapter 2. |
| 9. Surrounding Land Uses and Setting | See "Affected Area" in Chapter 2. |
| 10. Other Public Agencies Whose Approval
Is Required | None |

Environmental Factors Potentially Affected:

The environmental factors checked below would potentially be affected by this Project (i.e., the project would involve one impact that is a “Potentially Significant Impact”), as indicated by the checklist on the following pages.

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

Determination:

On the basis of this initial evaluation:

- I find the proposed project COULD NOT have a significant effect on the environment, and that a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be significant effects in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Printed Name

For

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. AESTHETICS.				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses.

The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties. Scenic highways or corridors are generally not located in the vicinities of the affected refineries.

Regulatory Background

Visual resources are generally protected by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

I a-d: The amendments to Regulation 8, Rule 18 may involve modifications to the fugitive refinery components (e.g., valves, connections, pressure relief devices, pumps and compressors). These components are small and generally not noticeable to areas adjacent to the refinery. The amendments may require refineries to replace some fugitive components sooner than they would have been otherwise; however, activity associated

with these replacements would not be noticeable to areas surrounding the refineries. The proposed amendments are not expected to result in any adverse aesthetic impacts.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
--	--------------------------------------	---	------------------------------------	-----------

II. AGRICULTURE RESOURCES.

In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation. Would the project:

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

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. Some of these agricultural lands are under Williamson Act contracts.

The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties. Agricultural resources are generally not located in the vicinities of or within the affected refineries.

Regulatory Background

Agricultural resources are generally protected by the City and/or County General Plans, Community Plans through land use and zoning requirements, as well as any applicable specific plans, ordinances, local coastal plans, and redevelopment plans.

Discussion of Impacts

II a-c: The amendments to Regulation 8, Rule 18 may involve modifications to the fugitive refinery components (e.g., valves, connections, pressure relief devices, pumps and compressors) within existing refineries. The amendments would not require construction or impacts outside of the refinery boundaries. The refineries are located within heavy industrial areas. Therefore, no significant adverse impacts on agricultural resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
--	--------------------------------	---	------------------------------	-----------

III. AIR QUALITY.

When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

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

Environmental Setting

Meteorological Conditions

The summer climate of the West Coast is dominated by a semipermanent high centered over the northeastern Pacific Ocean. Because this high pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus the conditions that persist along the coast of California during summer are a northwest air flow and negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

In winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place in the November through April period. During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate and air pollution potential is very low. During winter periods when the Pacific high becomes dominant, inversions become strong and often are surface based; winds are light and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area and often include tule fog.

Topography

The San Francisco Bay Area is characterized by complex terrain consisting of coastal mountain ranges, inland valleys and bays. Elevations of 1,500 feet are common in the higher terrain of this area. Normal wind flow over the area becomes distorted in the lower elevations, especially when the wind velocity is not strong. This distortion is reduced when stronger winds and unstable air masses move over the areas. The distortion is greatest when low level inversions are present with the surface air, beneath the inversion, flowing independently of the air above the inversion.

Winds

In summer, the northwest winds to the west of the Pacific coastline are drawn into the interior through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more nearly from the west as they stream through the Golden Gate. This channeling of the flow through the Golden Gate produces a jet that sweeps eastward but widens downstream producing southwest winds at Berkeley and northwest winds at San Jose; a branch curves eastward through the Carquinez Straits and into the Central Valley. Wind speeds may be locally strong in regions where air is channeled through a narrow opening such as the Carquinez Strait, the Golden Gate, or San Bruno Gap.

In winter, the Bay Area experiences periods of storminess and moderate-to-strong winds and periods of stagnation with very light winds. Winter stagnation episodes are characterized by outflow from the Central Valley, nighttime drainage flows in coastal valleys, weak onshore flows in the afternoon and otherwise light and variable winds.

Temperature

In summer, the distribution of temperature near the surface over the Bay Area is determined in large part by the effect of the differential heating between land and water surfaces. This process produces a large-scale gradient between the coast and the Central Valley as well as small-scale local gradients along the shorelines of the ocean and bays. The winter mean temperature high and lows reverse the summer relationship in that daytime variations are small while mean minimum nighttime temperatures show large differences and strong gradients. The moderating effect of the ocean influences warmer

minimums along the coast and penetrating the Bay. The coldest temperatures are in the sheltered valleys, implying strong radiation inversions and very limited vertical diffusion.

Inversions

A primary factor in air quality is the mixing depth, i.e., the vertical dimension available for dilution of contaminant sources near the ground. Over the Bay Area the frequent occurrence of temperature inversions limits this mixing depth and consequently limits the availability of air for dilution. A temperature inversion may be described as a layer or layers of warmer air over cooler air.

Precipitation

The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in November to April period; and between June and September, normal rainfall is typically less than 0.10 inches. Annual precipitation amounts show greater differences in short distances. Annual totals exceed 40 inches in the mountains and are less than 15 inches in the sheltered valleys.

Pollution Potential

The Bay Area is subject to a combination of physiographic and climatic factors which result in a low potential for pollutant buildups near the coast and a high potential in sheltered inland valleys. In summer, areas with high average maximum temperatures tend to be sheltered inland valleys with abundant sunshine and light winds. Areas with low average maximum temperatures are exposed to the prevailing ocean breeze and experience frequent fog or stratus. Locations with warm summer days have a higher pollution potential than the cooler locations along the coast and bays.

In winter, pollution potential is related to the nighttime minimum temperature. Low minimum temperatures are associated with strong radiation inversions in inland valleys that are protected from the moderating influences of the ocean and bays. Conversely, coastal locations experience higher average nighttime temperatures, weaker inversions, stronger breezes and consequently less air pollution potential.

Air Quality

Criteria Pollutants

It is the responsibility of the BAAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter less than 10 microns (PM₁₀), sulfur dioxide (SO₂) and lead. These standards were established to protect sensitive

receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM10 and SO₂, far more stringent. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride.

The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-1. The BAAQMD monitors levels of various criteria pollutants at 26 monitoring stations. The 2002 air quality data from the BAAQMD's monitoring stations are presented in Table 3-2.

Air quality conditions in the San Francisco Bay Area have improved since the District was created in 1955. Ambient concentrations of air pollutants and the number of days on which the region exceeds air quality standards have fallen dramatically (see Table 3-3). The District is in attainment of the state and federal ambient air quality standards for CO, nitrogen oxides (NO_x), and sulfur oxides (SO_x). The District also is in attainment of the federal 24-hour PM10 standard. However, the District does not comply with the state or federal ozone standards or the state 24-hour PM10 standard.

The 2002 air quality data from the BAAQMD's monitoring stations are presented in Table 3-2. All monitoring stations were below the standard and federal ambient air quality standards for CO, NO₂, and SO₂. The federal 1-hour ozone standard was exceeded on two days in 2002 at the Livermore monitoring station. The other monitoring stations were in compliance with the federal 1-hour ozone standard. Based on the Bay Area ozone record for 2001-2003, the U.S. EPA has now proposed a finding that the Bay Area has attained the federal 1-hour ozone standard (68 Fed. Reg. 62041, October 31, 2003). The federal 8-hour standard was exceeded on seven days in the District in 2002, most frequently in the Eastern District (Bethel Island, Concord, Fairfield, Livermore, and Pittsburg) and the Santa Clara Valley (Gilroy, Los Gatos and San Martin). The state 1-hour standard was exceeded on 16 days in 2002 in the District, most frequently in the Eastern District and Santa Clara Valley (see Table 3-2).

All monitoring stations were in compliance with the federal PM10 standards. The California PM10 standards were exceeded on six days in 2002 throughout the various monitoring stations in the District. The District exceeded the federal PM2.5 standards on four days in 2002 at several monitoring stations including Vallejo, San Francisco, and Concord (see Table 3-2).

**TABLE 3-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS**

AIR POLLUTANT	STATE STANDARD CONCENTRATION/ AVERAGING TIME	FEDERAL PRIMARY STANDARD CONCENTRATION/ AVERAGING TIME	MOST RELEVANT EFFECTS
Ozone	0.09 ppm, 1-hr. avg. >	0.12 ppm, 1-hr avg.> 0.08 ppm, 8-hr avg. >	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg.> 35 ppm, 1-hr avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr avg. >	0.053 ppm, ann. avg.>	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0.03 ppm, ann. avg.> 0.14 ppm, 24-hr avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	20 µg/m ³ , ann arithmetic mean > 50 µg/m ³ , 24-hr average>	50 µg/m ³ , annual arithmetic mean > 150 µg/m ³ , 24-hr avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter (PM2.5)		15 µg/m ³ , annual arithmetic mean> 150 µg/m ³ , 24-hour average>	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/m ³ , 24-hr avg. >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m ³ , 30-day avg. >=	1.5 µg/m ³ , calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)		Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

**TABLE 3-2
BAY AREA AIR POLLUTION SUMMARY 2002**

MONITORING STATIONS	Ozone						CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM10					PM2.5						
	Max 1-Hr	Nat Days	Cal Days	3-Yr Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr	Max 8-Hr	Nat/Cal Days	Max 1-Hr	Ann Avg	Nat/Cal Days	Max 24-Hr	Ann Avg	Nat/Cal Days	Ann Geo Mean	Ann Avg	Max 24-Hr	Nat/Cal Days	Cal Days	Max 24-Hr	Nat Days	3-Yr Avg	Ann Avg	3-Yr Avg	
	(pphm)						(ppm)			(pphm)			(ppb)			(µg/m ³)					(µg/m ³)						
NORTH COUNTIES																											
Napa	12	0	1	0.0	8	0	6.3	4.2	2.4	0	5	1.3	0	--	--	--	22.6	25.4	67	0	4	--	--	--	--	--	
San Rafael	8	0	0	0.0	6	0	4.7	4.1	1.9	0	6	1.7	0	--	--	--	19.1	21.4	70	0	2	--	--	--	--	--	
Santa Rosa	8	0	0	0.0	6	0	5.2	3.7	2.1	0	5	1.3	0	--	--	--	17.8	19.7	60	0	2	51	0	40.2	10.5	10.5	
Vallejo	11	0	1	0.0	7	0	5.9	5.8	3.9	0	5	1.3	0	4	1.3	0	18.7	21.4	80	0	1	72	1	51.3	13.6	12.6	
COAST & CENTRAL BAY																											
Oakland	5	0	0	0.0	4	0	4.0	4.4	3.3	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Richmond	--	--	--	--	--	--	--	--	--	--	--	--	--	5	1.0	0	--	--	--	--	--	--	--	--	--	--	--
San Francisco	5	0	0	0.0	5	0	4.4	3.5	2.6	0	8	1.9	0	6	1.9	0	21.0	24.7	74	0	2	70	4	48.0	13.1	11.9	
San Pablo*	7	0	0	0.0	5	0	4.5	3.7	1.8	0	5	*	0	5	*	0	*	*	67	0	3	--	--	--	--	--	
EASTERN DISTRICT																											
Bethel Island	11	0	5	0.3	10	3	7.9	1.7	1.3	0	4	1.0	0	9	2.5	0	20.8	23.8	58	0	3	--	--	--	--	--	
Concord	10	0	5	0.7	9	3	7.8	3.5	2.3	0	6	1.5	0	6	0.8	0	17.9	20.9	63	0	3	77	4	44.7	13.3	11.4	
Crockett	--	--	--	--	--	--	--	--	--	--	--	--	--	12	1.8	0	--	--	--	--	--	--	--	--	--	--	--
Fairfield*	10	0	4	0.0	8	0	7.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Livermore	16	2	10	1.0	11	6	8.2	4.8	2.5	0	8	1.7	0	--	--	--	21.5	24.5	64	0	2	62	0	47.7	13.8	12.3	
Martinez	--	--	--	--	--	--	--	--	--	--	--	--	--	7	1.2	0	--	--	--	--	--	--	--	--	--	--	--
Pittsburg	11	0	4	0.0	10	2	7.4	6.2	2.5	0	5	1.3	0	14	2.5	0	21.1	23.7	73	0	3	--	--	--	--	--	
SOUTH CENTRAL BAY																											
Fremont	11	0	3	0.0	7	0	6.1	3.7	2.2	0	6	1.9	0	--	--	--	20.0	22.5	52	0	1	48	0	41.6	12.5	11.4	
Hayward	9	0	0	0.0	7	0	6.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Redwood City	9	0	0	0.0	6	0	5.3	5.8	2.8	0	7	1.7	0	--	--	--	19.5	22.0	53	0	1	43	0	41.8	11.5	11.3	
San Leandro	10	0	1	0.0	6	0	5.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SANTA CLARA VALLEY																											
Gilroy*	12	0	6	*	9	2	5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Los Gatos*	11	0	4	0.0	9	2	6.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
San Jose Central*	*	*	*	*	*	*	*	5.3	4.5	0	8	*	0	--	--	--	*	*	70	0	2	58	0	*	*	*	
San Jose East	9	0	0	0.0	7	0	5.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
San Jose, Tully Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21.9	25.4	70	0	2	54	0	45.9	12.0	11.8	
San Martin	12	0	8	0.0	10	5	8.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sunnyvale*	9	0	0	*	7	0	*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Total bay Area Days over Standard		2	16			7				0			0			0				0	6		5				

(ppm) = parts per million, (pphm) = parts per hundred million, (ppb) = parts per billion

TABLE 3-3
TEN-YEAR BAY AREA AIR QUALITY SUMMARY
Days over standards

YEAR	OZONE		CARBON MONOXIDE				NO _x	SULFUR DIOXIDE		PM10		PM2.5		
	1-Hr		8-Hr		1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*	24-Hr**	
	Nat	Cal	Nat	Cal	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal	
1993	3	19	-	0	0	0	0	0	0	0	0	0	10	-
1994	2	13	-	0	0	0	0	0	0	0	0	0	9	-
1995	11	28	-	0	0	0	0	0	0	0	0	0	7	-
1996	8	34	-	0	0	0	0	0	0	0	0	0	3	-
1997	0	8	-	0	0	0	0	0	0	0	0	0	4	-
1998	8	29	16	0	0	0	0	0	0	0	0	0	5	-
1999	3	2	9	0	0	0	0	0	0	0	0	0	12	-
2000	3	12	4	0	0	0	0	0	0	0	0	0	7	1
2001	1	15	7	0	0	0	0	0	0	0	0	0	10	5
2002	2	16	7	0	0	0	0	0	0	0	0	0	6	5

* PM10 is sampled every sixth day – actual days over standard can be estimated to be six times the numbers listed.

** 2000 is the first full year for which the Air District measured PM2.5 levels.

Toxic Air Pollutants

The precursor chemicals that form ozone are VOCs and NO_x. Some of these VOCs are toxic air contaminants (TACs) and some are known carcinogens. The BAAQMD maintains a network of monitoring stations to monitor certain TACs in ambient air. In addition, the California Air Resources Board (CARB) maintains several monitoring stations in the Bay Area as part of a statewide toxics monitoring effort. The mean ambient concentrations of monitored TACs are listed in Table 3-4 based on monitoring conducted during 2000 for the monitoring stations closest to the refineries. The Richmond station is located at 7th Street downwind from the ChevronTexaco refinery and the Richmond parkway. The Crockett station is located at the end of Kendall Avenue generally downwind of the ConocoPhillips refinery. There are two Concord stations.

TABLE 3-4
CONCENTRATIONS OF TOXIC AIR CONTAMINANTS
IN THE BAY AREA⁽¹⁾

CHEMICAL	MONITORING STATION (mean ppb)				
	Crockett	Concord (Treat Blvd)	Richmond	Bethel Island	Concord (Arnold)
Vinyl Chloride	<0.30	<0.30	<0.30	<0.30	<0.30
Methylene Chloride (DCM)	0.30	0.26	0.26	0.30	<0.50
Chloroform (CHCl ₃)	<0.30	<0.30	0.01	<0.30	<0.30
Ethylene Dichloride	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,1-Trichloroethane (TCA)	0.12	0.06	0.06	0.05	0.20
Carbon Tetrachloride (CCl ₄)	0.11	0.11	0.10	0.11	0.10
Trichloroethylene (TCE)	<0.08	0.04	0.05	<0.08	<0.08
Benzene	0.20	0.54	0.41	0.26	0.43
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02	<0.02
Perchloroethylene	0.02	0.04	0.06	0.03	0.05
Toluene	0.35	2.32	1.92	0.49	0.94
MTBE	0.67	0.54	0.69	0.46	0.59

(1) BAAQMD, Toxic Air Contaminant, 2000 Annual Report, December 2001.

The concentrations of TACs at these monitoring stations are similar to concentrations of TACs in the rest of the Bay Area.

Regulatory Background

Criteria Pollutants

At the federal level, the Clean Air Act (CAA) Amendments of 1990 give the U.S. EPA additional authority to require states to reduce emissions of ozone precursors and PM₁₀ in nonattainment areas. The amendments set new attainment deadlines based on the severity of problems. At the state level, CARB has traditionally

established state ambient air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved state implementation plans. At a local level, California's air districts, including the BAAQMD, are responsible for overseeing stationary source emissions, approving permits, maintaining emission inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

The BAAQMD regulates air contaminants from stationary sources. The BAAQMD is governed by a 21-member Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties. The Board has the authority to develop and enforce regulations for the control of air pollution within its jurisdiction. The BAAQMD is responsible for implementing emissions standards and other requirements of federal and state laws. It is also responsible for developing air quality planning documents required by both federal and state laws.

Toxic Air Contaminants

TACs are regulated in the District through federal, state, and local programs. At the federal level, TACs are regulated primarily under the authority of the CAA. Prior to the amendment of the CAA in 1990, source-specific National Emission Standards for Hazardous Air Pollutants (NESHAPs) were promulgated under Section 112 of the CAA for certain sources of radionuclides and Hazardous Air Pollutants (HAPs).

Title III of the 1990 CAA amendments requires U.S. EPA to promulgate NESHAPs on a specified schedule for certain categories of sources identified by U.S. EPA as emitting one or more of the 189 listed HAPs. Emission standards for major sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. All NESHAPs were to be promulgated by the year 2000. Specific incremental progress in establishing standards must be made by the years 1992 (at least 40 source categories), 1994 (25 percent of the listed categories), 1997 (50 percent of remaining listed categories), and 2000 (remaining balance). The 1992 requirement was met; however, many of the four-year standards were not promulgated as scheduled. Promulgation of those standards has been rescheduled based on court ordered deadlines, or the aim to satisfy all Section 112 requirements in a timely manner.

Many of the sources of TACs that have been identified under the CAA are also subject to the California TAC regulatory programs. CARB developed three regulatory programs for the control of TACs. Each of the programs is discussed in the following subsections.

Control of TACs Under the TAC Identification and Control Program:

California's TAC identification and control program, adopted in 1983 as Assembly Bill 1807 (AB 1807) (California Health and Safety Code §39662), is a two-step program in which substances are identified as TACs, and airborne toxic control measures (ATCMs) are adopted to control emissions from specific sources. Since adoption of the program, CARB has identified 18 TACs, and CARB adopted a regulation designating all 189 federal HAPs as TACs.

Control of TACs Under the Air Toxics "Hot Spots" Act: The Air Toxics Hot Spot Information and Assessment Act of 1987 (AB 2588) (California Health and Safety Code §39656) establishes a state-wide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with those emissions. Inventory reports are required to be updated every four years under current state law. The BAAQMD uses a maximum individual cancer risk of 10 in one million, or an ambient concentration above a non-cancer reference exposure level, as the threshold for notification.

Senate Bill (SB) 1731, enacted in 1992 (California Health and Safety Code §44390 et seq.), amended AB 2588 to include a requirement for facilities with significant risks to prepare and implement a risk reduction plan which will reduce the risk below a defined significant risk level within specified time limits. At a minimum, such facilities must, as quickly as feasible, reduce cancer risk levels that exceed 100 per one million. The BAAQMD adopted risk reduction requirements for perchloroethylene dry cleaners to fulfill the requirements of SB 1731.

Discussion of Impacts

III a. The objectives of the proposed rule amendments are to implement Control Measure SS-16 from the Bay Area 2001 Ozone Attainment Plan, to reduce emissions of ozone forming compounds [e.g., volatile organic compounds (VOCs)], and achieve compliance with state and federal ozone standards. Therefore, the proposed amendments are in compliance with the local air quality plan and implements portions of that plan.

III b-d, and f. Staff estimates that there are approximately 233,000 total valves at the five Bay Area refineries. Table 1 presents the inventory for valves, pump and compressors, and connections.

TABLE 3-5

**Estimated Inventories¹ of Various Components Subject to Rule 8-18
at the Bay Area Refineries**

Refinery	Components		
	Valves	Pumps and Compressors	Connections
Chevron	71,000	800	355,000
ConocoPhillips	27,000	250	134,000
Shell	52,000	360	217,000
Tesoro	33,000	1,500	156,000
Valero	50,000	300	250,000
TOTAL	233,000	2,110	1,112,000

(1) These values are based on quarterly reports and direct quotes from industry representatives.

Emission inventory data collected over the past several years indicate that fugitive emissions have been decreasing. Table 2 details these emissions and reductions. There was a significant emissions reduction between the 2001 inventory and the modified 2002 inventory. This emission reduction is due mostly to the adoption of new correlations factors from the U.S. EPA that are published in the CARB’s "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities." However, notwithstanding the change in correlation factors, there has been a general downward trend to fugitive emissions over the last several years. This trend is largely due to improvement in the leak detection and repair programs, required by the rule since 1998, and the fact that the refiners’ programs became more effective over time.

TABLE 3-6

Estimated Emissions Inventories for All Fugitives Components¹

Refinery	SIP (Modified 1999 Inventory)¹	2000 Inventory²	2001 Inventory²	Current (Modified 2002 Inventory)^{2,3,4}
(Organic Emissions - pounds/day)				
Chevron	7,821	7,821	7,773	2,294
Shell	352	352	351	381
ConocoPhillips	1,543	1,543	1,473	1,474
Valero Asphalt	35	35	35	22
Valero	1,969	530	257	332
Tesoro	1,690	1,690	1,688	128
Total (tons/day)	6.71	5.99	5.79	2.32

- (1) These are the estimated fugitive emissions from all components affected by Rule 8-18, including valves, pumps, compressors, pressure relief devices, and connections.
- (2) The annual emission inventories are based on emission estimates provided to the District by each refinery.
- (3) The values in this column reflect the use of modified correlation factors for each component category, as published in CARB's "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities."
- (4) These values are currently under review and may not reflect the final emission inventory for 2002.

Emission Reductions

The emission reductions for the proposed amendments to Regulation 8, Rule 18 are presented in Table 3. These emission reductions are based on the assumption that all leaking components other than connections will be discovered at the five Bay Area refineries.

TABLE 3-7

Emission Reduction Estimates¹

	Rule 8-18 Emissions² (lbs/day (TPD))	Amended Rule 8-18 Emissions³ (lbs/day (TPD))	Emission Reductions (lbs/day (TPD))
Valves	706 (0.35)	303 (0.15)	403 (0.20)

- (1) Assumes a total of 233,000 valves at all five Bay Area refineries (see Table 1).
- (2) Assumes that the total number of valves leaking is 0.50 percent of all valves.
- (3) Assumes that the total number of valves leaking is 0.30 percent of all valves and that fraction leaking above 10,000 ppm is 0.0025 percent.

The proposed amendments would result in an estimated 403 pound per day (lbs/day) of emission reductions providing an overall air quality benefit in the Bay Area. The proposed rule

amendments will help the Bay Area move towards compliance with the ozone standard by reducing VOC emissions and helping to reduce potential exposure to VOCs. Therefore, no significant adverse air quality impacts (either individually or cumulatively) are expected.

III e. The proposed amendments are expected to result in better maintenance of fugitive components, reducing VOC emissions and potential odors associated with those emissions. The rule amendments are not expected to generate any additional odors at refineries.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. A wide variety of biological resources are located within the Bay Area.

The refineries are located in the Bay Area-Delta Bioregion (as defined by the State's Natural Communities Conservation Program). This Bioregion is comprised of a variety of natural communities, which range from salt marshes to chaparral to oak woodland. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties. The refinery sites have been graded to develop the various refinery structures and are typically, surrounded by other commercial and industrial facilities. Native vegetation, other than landscape vegetation, has been removed from operating portions of the refineries to minimize fire hazards.

Regulatory Background

Biological resources are generally protected by the City and/or County General Plans through land use and zoning requirements that minimize or prohibit development in biologically sensitive areas. Biological resources are also protected by the California Department of Fish and Game and the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service and National Marine Fisheries Service oversee the federal Endangered Species Act. Development permits may be required from one or both of these agencies if development would impact rare or endangered species. The California Department of Fish and Game administers the California Endangered Species Act that prohibits impacting endangered and threatened species. The U.S. Army Corps of Engineers and the U.S. EPA regulate the discharge of dredge or fill material into waters of the United States, including wetlands.

Discussion of Impacts

IV a – f. No impacts on biological resources are anticipated from the proposed rule amendments that would apply to existing refinery operations. The fugitive components to be monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would affect sensitive biological resources. Therefore, no significant adverse impacts on biological resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside a formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural and open space uses. Cultural resources are defined as buildings, sites, structures, or objects that might have historical architectural, archaeological, cultural, or scientific importance.

The Carquinez Strait represents the entry point for the Sacramento and San Joaquin Rivers into the San Francisco Bay. This locality lies within the San Francisco Bay and the west end of the Central Valley archaeological regions, both of which contain a rich array of prehistoric and historical cultural resources. The areas surrounding the Carquinez Strait and Suisun Bay have been occupied for millennia given its abundant combination of littoral and oak woodland resources.

The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties. The sites have been graded to develop the various refinery structures and are typically surrounded by other commercial and industrial facilities. Cultural resources are generally not located within the operating portions of the refineries.

Regulatory Background

The State CEQA Guidelines define a significant cultural resources as a “resource listed or eligible for listing on the California Register of Historical Resources” (Public Resources Code Section 5024.1). A project would have a significant impact if it would cause a substantial adverse change in the significance of a historical resource (State CEQA Guidelines Section 15064/5(b)). A substantial adverse change in the significance of a historical resource would result from an action that would demolish or adversely alter the physical characteristics of the historical resource that convey its historical significance and that qualify the resource for inclusion in the California Register of Historical Resources or a local register or survey that meets the requirements of Public Resources Code Sections 50020.1(k) and 5024.1(g).

Discussion of Impacts

V a – d. No impacts on cultural resources are anticipated from the proposed rule amendments that would apply to existing refinery operations. The fugitive components to be monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would affect sensitive cultural resources. No major construction activities are expected from the proposed rule amendments. Therefore, no significant adverse impacts on cultural resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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VI. GEOLOGY AND SOILS.

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> • Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. • Strong seismic groundshaking? • Seismic-related ground failure, including liquefaction? • Landslides? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern

Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties.

The refineries are located in the natural region of California known as the Coast Ranges geomorphic province. The province is characterized by a series of northwest trending ridges and valleys controlled by tectonic folding and faulting, examples of which include the Suisun Bay, East Bay Hills, Briones Hills, Vaca Mountains, Napa Valley, and Diablo Ranges.

Regional basement rocks consist of the highly deformed Great Valley Sequence, which include massive beds of sandstone interfingering with siltstone and shale. Unconsolidated alluvial deposits, artificial fill, and estuarine deposits, (including Bay Mud) underlie the low-lying region along the margins of the Carquinez Strait and Suisun Bay. The estuarine sediments found along the shorelines of Solano County are soft, water-saturated mud, peat and loose sands. The organic, soft, clay-rich sediments along the San Francisco and San Pablo Bays are referred to locally as Bay Mud and can present a variety of engineering challenges due to inherent low strength, compressibility and saturated conditions. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

The San Francisco Bay Area is a seismically active region, which is situated on a plate boundary marked by the San Andreas Fault System. Several northwest trending active and potentially active faults are included with this fault system. Under the Alquist-Priolo Earthquake Fault Zoning Act, Earthquake Fault Zones were established by the California Division of Mines and Geology along “active” faults, or faults along which surface rupture occurred in Holocene time (the last 11,000 years). In the Bay area, these faults include the San Andreas, Hayward, Rodgers Creek-Healdsburg, Concord-Green Valley, Greenville-Marsh Creek, Seal Cove/San Gregorio and West Napa faults. Other smaller faults in the region classified as potentially active include the Southampton and Franklin faults.

Ground movement intensity during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geological material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. Earthquake ground shaking may have secondary effects on certain foundation materials, including liquefaction, seismically induced settlement, and lateral spreading.

Regulatory Background

Construction is regulated by the local City or County building codes that provide requirements for construction, grading, excavations, use of fill, and foundation work including type of materials, design, procedures, etc. which are intended to limit the

probability of occurrence and the severity of consequences from geological hazards. Necessary permits, plan checks, and inspections are generally required.

The City or County General Plan includes the Seismic Safety Element. The Element serves primarily to identify seismic hazards and their location in order that they may be taken into account in the planning of future development. The Uniform Building Code is the principle mechanism for protection against and relief from the danger of earthquakes and related events.

In addition, the Seismic Hazard Zone Mapping Act (Public Resources Code §§2690 – 2699.6) was passed by the California legislature in 1990 following the Loma Prieta earthquake. The Act required that the California Division of Mines and Geology (DMG) develop maps that identify the areas of the state that require site specific investigation for earthquake-trigger landslides and/or potential liquefaction prior to permitting most urban developments. The act directs cities, counties and state agencies to use the maps in their land use planning and permitting processes.

Local governments are responsible for implementing the requirements of the Seismic Hazards Mapping Act. The maps and guidelines are tools for local governments to use in establishing their land use management policies and in developing ordinances and review procedures that will reduce losses from ground failure during future earthquakes.

Discussion of Impacts

VI a – e. No impacts on geology and soils are anticipated from the proposed rule amendments that would apply to existing refinery operations. The fugitive components to be monitored already exist and are located within the confines of existing refineries. No major construction activities are expected from the proposed rule amendments and no new structures would be required. Therefore, no significant adverse impacts on geology and soils are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Be located within an airport land use plan or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

Petroleum refineries handle and process large quantities of flammable, hazardous, and acutely hazardous materials. Accidents involving these substances can result in worker or public exposure to fire, heat, blast from an explosion, or airborne exposure to hazardous substances.

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facility. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions, including the following events.

- **Toxic gas clouds:** Toxic gas clouds are releases of volatile chemicals (e.g., anhydrous ammonia, chlorine, and hydrogen sulfide) that could form a cloud and migrate off-site, thus exposing individuals. “Worst-case” conditions tend to arise when very low wind speeds coincide with an accidental release, which can allow the chemicals to accumulate rather than disperse.
- **Torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases):** The rupture of a storage tank containing a flammable gaseous material (like propane), without immediate ignition, can result in a vapor cloud explosion. The “worst-case” upset would be a release that produces a large aerosol cloud with flammable properties. If the flammable cloud does not ignite after dispersion, the cloud would simply dissipate. If the flammable cloud were to ignite during the release, a flash fire or vapor cloud explosion could occur. If the flammable cloud were to ignite immediately upon release, a torch fire would ensue.
- **Thermal Radiation:** Thermal radiation is the heat generated by a fire and the potential impacts associated with exposure. Exposure to thermal radiation would result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual to the fire.
- **Explosion/Overpressure:** Process vessels containing flammable explosive vapors and potential ignition sources are present at refineries. Explosions may occur if the flammable/explosive vapors came into contact with an ignition source. An explosion could cause impacts to individuals and structures in the area due to overpressure.

For all refineries, risks to the public are reduced if there is a buffer zone between refinery processes and residences, or the prevailing wind blows away from residential areas. The risks posed by refinery operations are unique and determined by a variety of factors. Refineries tend to be located in industrial areas which helps minimize public exposure in the event of a release.

Regulatory Background

There are many federal and state rules and regulations that refineries must comply with which serve to minimize the potential impacts associated with hazards at these facilities.

Under the Occupational Safety and Health Administration (OSHA) regulations [29 Code of Federal Regulations (CFR) Part 1910], facilities which use, store, manufacture, handle, process, or move highly hazardous materials must prepare a fire prevention plan. In addition, 29 CFR Part 1910.119, Process Safety Management (PSM) of Highly Hazardous Chemicals, and Title 8 of the California Code of Regulations, General Industry Safety Order §5189, specify required prevention program elements to protect workers at facilities that handle toxic, flammable, reactive, or explosive materials. Prevention program elements are aimed at preventing or minimizing the consequences of catastrophic releases of the chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances, U.S. EPA regulations are set forth in 40 CFR Part 68. In California, the California Accidental Release Prevention (CalARP) Program regulation (CCR Title 19, Division 2, Chapter 4.5) was issued by the Governor's Office of Emergency Services (OES). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. Refineries are also required to comply with the U.S. EPA's Emergency Planning and Community Right-to-Know Act (EPCRA).

The refineries are required to have a Spill Prevention Control and Countermeasures (SPCC) Plan per the requirements of 40 Code of Federal Regulations, Section 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.

The Hazardous Materials Transportation (HMT) Act is the federal legislation that regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. Department of Transportation, the Federal Highway Administration, and the Federal Railroad Administration. The HMT Act requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practical moment (49 CFR Subchapter C). The California Department of Transportation (Caltrans) sets standards for trucks in California. The regulations are enforced by the California Highway Patrol.

California Assembly Bill 2185 requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the

release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The business plans must provide a description of the types of hazardous materials/waste on-site and the location of these materials. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

Contra Costa County has adopted an industrial safety ordinance that addresses the human factors that lead to accidents. The ordinance requires stationary sources to develop a written human factors program that includes the following:

- Consideration of human factors in the process hazards analysis process;
- Consideration of human systems as causal factors in the incident investigation process for major accidents or releases or for incidents that could have led to a major accident or release;
- Training of employees in the human factors program;
- Operating procedures;
- Management of changes in staffing, staffing levels, or organization in operations or emergency response;
- Participation of employees and their representatives in the development of the written human factors program;
- Development of a program that includes issues such as staffing, shiftwork, and overtime; and
- Incorporation of the human factors program description in the facility safety plan.

Discussion of Impacts

VII a. The proposed rule amendments do not affect in any way the transport of hazardous material into, out of, or within any of the refineries. Therefore, no significant adverse impacts on transportation of hazardous materials are expected.

VII b – c. The proposed rule amendments are expected to reduce emissions from existing fugitive components at refineries thus reducing the emissions and releases of potentially hazardous materials. Therefore, no significant adverse impacts on releases of hazardous materials into the environment are expected.

VII d. No impacts on hazardous material sites are anticipated from the proposed rule amendments that would apply to existing refinery operations. Some of the refineries may be located on the hazardous materials sites list pursuant to Government Code Section 65962.5. However, the proposed rule amendments would have no effect on hazardous materials nor would the amendments create a significant hazard to the public or environment. The fugitive components to be monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would affect hazardous materials or existing site contamination. Therefore, no significant adverse impacts on hazards are expected.

VII e – f. No impacts on airports or airport land use plans are anticipated from the proposed rule amendments that would apply to existing refinery operations. The fugitive components to be monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would affect the environment outside of the refinery boundaries. No major construction activities are expected from the proposed rule amendments. Further, the refineries are not located within two miles of airports. Therefore, no significant adverse impacts on hazards at airports are expected.

VII g. No impacts on emergency response plans are anticipated from the proposed rule amendments that would apply to existing refinery operations. Each refinery has prepared an emergency response plan; however, the fugitive components to be monitored already exist and are located within the confines of existing refineries. The proposed rule amendments neither require nor are likely to result in activities that would impact the emergency response plan. No major construction activities are expected from the proposed rule amendments. Therefore, no significant adverse impacts on emergency response plans is expected.

VII h. No increase in hazards related to wildfires are anticipated from the proposed rule amendments that would apply to existing refinery operations. The fugitive components to be monitored already exist and are located within the confines of existing refineries. No major construction activities are expected from the proposed rule amendments and no activities would occur outside the confines of the existing refineries. Vegetation surrounding the operating portions of the refinery has been removed to reduce the potential fire hazards. Therefore, no significant adverse impacts on fire hazards are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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VIII. HYDROLOGY AND WATER QUALITY.

Would the project:

a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- | | | | | | |
|----|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| i) | Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| j) | Inundation by seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and affected environment vary substantially throughout the area and include commercial, industrial, residential, agricultural, and open space uses.

The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties and are generally surrounded by other commercial and industrial facilities. The refineries are located within rolling, low elevation hills along the shores of the San Francisco Bay, San Pablo Bay, Carquinez Strait, and Suisun Bay. ChevronTexaco is bordered by the San Francisco and San Pablo Bays on the western border of the refinery. The ConocoPhillips refinery is bounded on the north and west by San Pablo Bay. The Valero, Shell, and Tesoro refineries are located adjacent to Suisun Bay along the Carquinez Straits.

Reservoirs and drainage streams are located throughout the area and discharge into the Bays. Marshlands incised with numerous winding tidal channels containing brackish water are located near the refineries.

The refineries are located within the San Francisco Bay Area Hydrologic Basin. The primary regional groundwater water-bearing formations include the recent and Pleistocene (up to two million years old) alluvial deposits and the Pleistocene Huichica formation. Salinity within the unconfined alluvium appears to increase with depth to at least 300 feet. Water of the Huichica formation tends to be soft and relatively high in bicarbonate, although usable for domestic and irrigation needs (CWDR 2002).

Regulatory Background

The Federal Clean Water Act of 1972 primarily establishes regulations for pollutant discharges into surface waters in order to protect and maintain the quality and integrity of the nation’s waters. This Act requires industries that discharge wastewater to municipal sewer systems to meet pretreatment standards. The regulations authorize the U.S. EPA to set the pretreatment standards. The regulations also allow the local treatment plants to set more stringent wastewater discharge requirements, if necessary, to meet local conditions.

The 1987 amendments to the Clean Water Act enabled the U.S. EPA to regulate, under the National Pollutant Discharge Elimination System (NPDES) program, discharges from industries and large municipal sewer systems. The U.S. EPA set initial permit application requirements in 1990. The State of California, through the State Water Resources Control Board, has authority to issue NPDES permits, which meet U.S. EPA requirements, to specified industries.

The Porter-Cologne Water Quality Act is California's primary water quality control law. It implements the state's responsibilities under the Federal Clean Water Act but also establishes state wastewater discharge requirements. The RWQCB administers the state requirements as specified under the Porter-Cologne Water Quality Act, which include storm water discharge permits. The water quality in the Bay Area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board.

In response to the Federal Act, the State Water Resources Control Board prepared two state-wide plans in 1991 and 1995 that address storm water runoff: the California Inland Surface Waters Plan and the California Enclosed Bays and Estuaries Plan. Enclosed bays are indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. San Francisco Bay and its constituents parts, including Carquinez Strait and Suisun Bay, fall under this category.

The San Francisco Bay Basin Plan identifies the: (1) beneficial water uses that need to be protected; (2) the water quality objectives needed to protect the designated beneficial water uses; and (3) strategies and time schedules for achieving the water quality objectives. The beneficial uses of the Carquinez Strait that must be protected which include water contact and non-contact recreation, navigation, ocean commercial and sport fishing, wildlife habitat, estuarine habitat, fish spawning and migration, industrial process and service supply, and preservation of rare and endangered species. The Carquinez Strait and Suisun Bay are included on the 1998 California list as impaired water bodies due to the presence of chlordane, copper, DDT, diazinon, dieldrin, dioxin and furan compounds, mercury, nickel, PCBs, and selenium.

Discussion of Impacts

VIII a – j. No impacts on hydrology/water quality resources are anticipated from the proposed rule amendments that would apply to existing refinery operations. The refineries affected by the proposed rule amendments are required to treat and monitor wastewater discharges from their facilities. The fugitive components to be monitored already exist and are located within the confines of existing refineries. The changes to the monitoring for fugitive components will have no impact on wastewater discharges, alter drainage patterns, create additional water runoff, place any additional structures within 100-year flood zones or other areas subject to flooding, or contribute to inundation by seiche, tsunami or mudflow. No major construction activities are expected from the proposed rule amendments and no new structures are required. Therefore, no significant adverse impacts on hydrology/water quality are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to a general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses.

The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties and generally adjacent to industrial and commercial land uses.

Regulatory Background

Land uses are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

IX a-c. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities. Therefore, no land use impacts are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties.

Regulatory Background

Mineral resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

X a-b. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither requires nor is likely to result in construction inside or outside of those facilities. The proposed rule amendments are not associated with any action that would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Therefore, no impacts on mineral resources are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. NOISE. Would the project:				
a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Expose persons to or generate of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be located within the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties and are typically surrounded by other commercial and industrial facilities.

Regulatory Background

Noise issues related to construction and operation activities are addressed in local General Plan policies and local noise ordinance standards. The General Plan and noise ordinances generally establish allowable noise limits within different land uses including residential areas, other sensitive use areas (e.g., schools, churches, hospitals, and libraries), commercial areas, and industrial areas.

Discussion of Impacts

XI a-f. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities and will not alter noise levels either within or outside of the refineries. No new equipment that would generate noise is required as part of the proposed rule amendments. Therefore, no noise impacts are expected.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties.

Regulatory Background

Population and housing growth and resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

XII a. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities. No additional workers will be required at the refineries; therefore, no increase in population is expected.

XII b-c. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. No housing would be impacted or removed by the proposed rule amendments and no displacement housing would be required. Therefore, no significant adverse impacts on population/housing is expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIII. PUBLIC SERVICES. Would the project:

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

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

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties.

Given the large area covered by the BAAQMD, public services are provided by a wide variety of local agencies. Fire protection and police protection/law enforcement services within the BAAQMD are provided by various districts, organizations, and agencies. There are several school districts, private schools, and park departments within the BAAQMD. Public facilities within the BAAQMD are managed by different county, city, and special-use districts.

Regulatory Background

City and/or County General Plans usually contain goals and policies to assure adequate public services are maintain within the local jurisdiction.

Discussion of Impacts

XIII a. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments do not require the installation of new equipment or new public services. No impacts on the need for fire or police protection are expected. The proposed rule amendments are not expected to require additional workers at the refinery or result in population growth so no impacts on schools or parks are expected. Therefore, no significant adverse impacts on public services are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIV. RECREATION. Would the project:

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

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that there are numerous areas for recreational activities. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties. Public recreational land uses are not located within the confines of the refineries.

Regulatory Background

Recreational areas are generally protected and regulated by the City and/or County General Plans at the local level through land use and zoning requirements. Some parks and recreation areas are designated and protected by state and federal regulations.

Discussion of Impacts

XIV a-b. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments neither require nor are likely to result in construction inside or outside of those facilities. No additional workers will be required at the refineries, no increase in population is expected and, therefore, no significant adverse impacts on recreation are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC. Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause, either individually or cumulatively, exceedance of a level-of-service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards because of a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles). Transportation systems located within the Bay Area include railroads, airports, waterways, and highways. The transportation infrastructure for vehicles and trucks in the Bay Area ranges from single lane roadways to multilane interstate highways. The refiners

affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties and are accessed via highways and local roadway systems. Interstate 80 is a major east-west freeway link providing access between Richmond and Oakland/San Francisco to the south and west and Sacramento to the east. Interstate 80 is a six-lane north-south freeway which connects Contra Costa County to Solano County via the Carquinez Bridge. The ConocoPhillips Refinery is bisected by Interstate 80, south of the Carquinez Bridge, near the interchange with State Route 4.

The ChevronTexaco Refinery is located north and adjacent to Interstate 580. Interstate 580 is a six-lane freeway and connects Interstate 80 east of the ChevronTexaco Refinery with U.S. 101 in Marin County via the Richmond-San Rafael Bridge.

The Shell Martinez Refinery is located north of State Route 4 and west of Interstate 680, south of the Benicia-Martinez Bridge. The Tesoro Avon Refinery is located north of State Route 4 and east of Interstate 680, south of the Benicia-Martinez Bridge and several miles east of the Shell Martinez Refinery.

The Valero Benecia Refinery is also located near Interstate 680. Interstate 680 is a four-lane, north-south freeway near the Valero, Tesoro, and Shell refineries. From the Benicia-Martinez Bridge, Interstate 680 extends north to Interstate 80 in Cordelia. Caltrans constructed a second freeway bridge adjacent and east of the existing Benicia-Martinez Bridge. The new bridge consists of five northbound traffic lanes. The existing bridge was restriped to accommodate four lanes for southbound traffic.

Interstate 780 is a four lane, east-west freeway extending from the Benicia-Martinez Bridge west to I-80 in Vallejo.

Regulatory Background

Transportation planning is usually conducted at the county level and the refineries in the Bay Area are located in Contra Costa and Solano Counties. The County of Contra Costa and the Contra Costa Transportation Authority share the duties of transportation planning and administration of improvement projects in the County of Contra Costa. The Contra Costa County Community Development Department conducts and oversees the transportation and planning for new development projects. The Contra Costa Transportation Agency implements the transportation programs and projects created by the County's Measure C, the Transportation Improvement and Growth Management Program and also serves as the County's Congestion Management Agency.

The Solano Transportation Authority is the designated Congestion Management Agency for Solano County and develops the Congestion Management Plan (CMP) for Solano County. The CMP identifies a system of state highways and regionally significant principal arterials and specifies level of service standards for those roadways.

Discussion of Impacts

XV a-b. The fugitive components to be monitored already exist and are located within the confines of existing refineries within industrial areas. The proposed rule amendments do not require construction activities or the installation of new equipment. The transport of additional materials will not be required and no additional workers will be required. Some refineries use contractors to implement inspection and maintenance programs. The proposed rule amendments may require that the contractor visit the site on additional days to re-inspect some components. The increase in traffic would be limited to about one trip per day per refinery. Additional traffic at the existing facilities that would result in changes to traffic patterns or levels of service at local intersections is not expected.

XV c. The proposed rule amendments include minor modifications to the operation of existing facilities. The project will not involve the delivery of materials via air so no increase in air traffic is expected.

XV d - e. The proposed rule amendments are not expected to increase traffic hazards or create incompatible uses at or adjacent to the site. Emergency access is provided at the refinery sites, will continue to be maintained at the refinery sites, and will not be impacted by the proposed rule amendments.

XV f. No construction activities are expected, so no parking is required for construction workers. No increase in permanent workers is expected. Therefore, the proposed rule amendments will not result in significant adverse impacts on parking.

XV g. The proposed rule amendments involve modifications to the operations within the confines of an existing refinery. The proposed rule amendments are not expected to conflict with adopted policies, plans, or programs supporting alternative transportation modes (e.g., bus turnouts, bicycle racks).

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVI. UTILITIES/SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The refineries affected by the proposed rule amendments are located in the industrial portions of Contra Costa and Solano Counties.

Given the large area covered by the BAAQMD, public utilities are provided by a wide variety of local agencies. The refineries have wastewater and storm water treatment facilities and discharge treated wastewater under the requirements of NPDES permits.

Water is supplied to the refineries by several water purveyors in the Bay Area. Solid waste is handled through a variety of municipalities, through recycling activities and at disposal sites.

There are no hazardous waste disposal sites within the jurisdiction of the BAAQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities are the Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Safety-Kleen facility in Buttonwillow (Kern County). Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; USPCI, Inc., in Murray, Utah; and Envirosafe Services of Idaho, Inc., in Mountain Home, Idaho. Incineration is provided at the following out-of-state facilities: Aptus, located in Aragonite, Utah and Coffeyville, Kansas; Rollins Environmental Services, Inc., located in Deer Park, Texas and Baton Rouge, Louisiana; Chemical Waste Management, Inc., in Port Arthur, Texas; and Waste Research & Reclamation Co., Eau Claire, Wisconsin.

Regulatory Background

City and/or County General Plans usually contain goals and policies to assure adequate utilities and service systems are maintain within the local jurisdiction.

Discussion of Impacts

XVI a – g. The proposed rule amendments will not generate or affect wastewater or solid waste, will not affect stormwater or stormwater drainage, and will not require water or affect water supplies. No increases in demand for public utilities are expected as a result of the proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion of Impacts

XVII a. The proposed rule amendments do not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory, as discussed in the previous sections of the CEQA checklist. The proposed rule amendments are expected to result in emission reductions from refineries, thus providing a beneficial air quality impact and improvement in air quality. No significant adverse impacts are expected.

XVII b. The proposed rule amendments are expected to result in emission reductions from refineries, thus providing a beneficial air quality impact and improvement in air quality. The proposed rule amendments are part of a long-term plan to bring the Bay Area into compliance with the federal and state ambient air quality standards for ozone. The proposed rule amendments do not have adverse environmental impacts that are

limited individually, but cumulatively considerable when considered in conjunction with other regulatory control projects. The proposed rule amendments do not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. No significant adverse impacts are expected.

XVII c. The proposed rule amendments are expected to result in emission reductions from refineries, thus providing a beneficial air quality impact and improvement in air quality. The proposed rule amendments are part of a long-term plan to bring the Bay Area into compliance with the federal and state ambient air quality standards for ozone, thus reducing the potential health impacts due to ozone exposure. The proposed rule amendments do not have significant adverse effects (either directly or indirectly) to human beings.

DABWORD:2239:CHAP3rev.doc

Chapter 4**References**

Bay Area Air Quality Management District (BAAQMD), 2003. Draft Staff Report, Proposed Amendments Regulation 8, Rule 18: Equipment Leaks, Control Measure SS-16, November 2003.

BAAQMD, 2001. Revised 2001 San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard, adopted October 24, 2001.

BAAQMD, 2001. Toxic Air Contaminant 2000 Annual Report. December 2001.

BAAQMD, 2002. 2002 BAAQMD Ambient Air Quality Data.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Haggerty,
and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: January 15, 2004

Re: Summary of Environmental Community Tour

RECOMMENDED ACTION:

Informational item only, receive and file.

DISCUSSION

On January 7, 2004, the Board of Directors accompanied representatives of several environmental groups on a tour of San Francisco, which included some of the communities in the vicinity of Mirant's Potrero Power Plant, PG&E's Hunters Point Power Plant and a Shell gasoline station. During the tour, community members raised concerns and commented on a variety of issues related to air quality. In general, the concerns and comments related to the following:

- Title V permits for the power plants and public meetings
- Interchangeable emission credits (IERC's)
- Toxic risk at gasoline stations/Communicating in multiple languages
- Air quality monitoring and cumulative health risk assessments
- Dioxin emissions from a local steel drum facility
- Emissions from diesel truck traffic

The following is an update on these issues, including brief summaries of how the Air District is addressing these concerns.

Title V Permits – All major sources of air pollution nationwide as defined in the federal Clean Air Act (federal CAA) are required to obtain federal operating permits in accordance with Title V of the federal CAA. Locally, the United States Environmental Protection Agency (USEPA), which administers the federal CAA, has fully approved the Air District's Regulation 2, Rule 6 into the California State Implementation Plan and has thus delegated this program to the Air District. There are approximately 100 Title V facilities in the Bay Area. Title V permits must be renewed every five years. Both the Hunters Point and Potrero power plants operate under the terms of Title V permits.

PG&E and Mirant have applied to renew the Title V permits for the Hunters Point Power Plant and Potrero Power Plant, respectively. Pursuant to the federal CAA and Air District Regulation 2, Rule 6, the District may take up to 18 months from the date those applications were submitted to act on the applications. The deadlines by which the Air District must act on both renewal applications are in September 2004. The Air District is presently evaluating the permit

applications for both power plants. Draft renewal permits are scheduled to be released for public comment in March 2004. The community has asked for public meetings on the permits and these meetings will likely be scheduled in April 2004 at night or on the weekend to allow maximum participation.

Interchangeable emission credits (IERCs) – California law requires local air districts to establish alternative emission compliance programs that allow industries to generate “credits” by “over controlling” or reducing emissions beyond applicable regulatory requirements. These credits, called interchangeable emission reduction credits, or IERCs, once approved can be used for partial or full compliance with local air quality rules only in accordance with an approved Alternative Compliance Plan (essentially a permitting action that dictates how the credits may be used). The Air District has restricted the generation of IERCs to real, enforceable, and surplus reductions. The credits are valid for a limited period of time – no more than five years – and can only be used at the facility at which they were generated. In addition, the Air District rules essentially provide that a 10% Environmental Benefit Surcharge applies to IERCs, meaning that only 90% of achieved surplus emission reductions granted as IERCs can be used for rule compliance. The remaining 10% credits are permanently retired as an environmental benefit.

IERCs have been typically utilized to comply with Air District Regulation 9, Rule 11, which regulates emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from electric power generating steam boilers. Both the Hunters Point and Potrero power plants are natural gas fired steam boiler power plants. The steam generated in the boilers is used to spin turbines connected to the electricity generating equipment at the plants. Regulation 9, Rule 11 was originally adopted by the Air District’s Board of Directors in February of 1994. In broad terms, Regulation 9, Rule 11 is a rule implementing Best Available Retrofit Control Technology at the steam boiler power plants in the Bay Area. Essentially, this rule mandates that emissions from these plants be reduced in several interim steps over the course of ten years to less than 10% of the level of emissions the plants had when the rule was originally adopted. In other words, Regulation 9, Rule 11 mandates that emissions from steam boiler power plants in the Bay Area be reduced by more than 90% from 1994 through 2004. As of January 1, 2004, the emission limit has been reduced to less than 20% of the initial limit. The final and lowest emission limit takes effect on January 1, 2005.

Compliance with some of the interim emission limits in Regulation 9, Rule 11 was achieved by many of the power plants in the Bay Area through installation of equipment such as “low NOx burners” and various combustion controls and modifications. In the case of the Hunters Point and Potrero power plants, IERCs were generated by the installation and implementation of various combustion controls and modifications to reduce emissions from these facilities below then-applicable interim emission limits. Thus, when the IERCs were generated, the Potrero and Hunters Point plants were emitting less pollution than they would have been allowed to emit under Regulation 9, Rule 11. Also, in part because of the increasingly stringent emission limits, in March of 2001, PG&E permanently shut down four of the five boilers that had been operating at the Hunters Point plant for many years.

In order to achieve compliance with the final emission limits of Regulation 9, Rule 11 and continue operating for more than a short time, however, facilities will have to be retrofit with “post-combustion” emission controls because combustion controls alone are not sufficient to reduce emissions below the final limit. Typically, the facilities in the Bay Area have been retrofit with selective catalytic reduction (SCR) systems. SCR systems use a series of catalyst beds to

reduce NOx in the exhaust from the burners. SCR systems cost millions (and often tens of millions) of dollars to install and operate.

PG&E may use the IERCs in 2004 and 2005 to help comply with increasingly stringent limits in Regulation 9, Rule 11. Whether and how many of the IERCs will actually be used is not known at this time, because the use of the IERCs is dependent upon the extent to which the plant operates. The Hunters Point Power Plant operates strictly at the direction of the California Independent System Operator (CAISO) because it has been designated a “Reliability Must Run” facility in accordance with Federal Energy Regulatory Commission (FERC) regulations. Thus CAISO will determine the extent of operations at Hunters Point based on the need for generation of electricity in 2004 and 2005.

PG&E is on record as stating it would like to close the Hunters Point plant by the end of 2005 when the last of its IERCs expire. If the plant remains open after that time, PG&E will have to retrofit the plant with SCR or another post combustion control technology. If the plant were retrofitted, it would likely continue to operate for several more years to allow recovery of the substantial capital costs that would be involved in the retrofit. In order to close the plant, however, PG&E will need the approval of several energy regulators, including FERC and CAISO.

Toxic Risk at Gasoline Stations/ Communicating in Multiple Languages – Participants on the tour voiced concern about a Shell gasoline station located at Mission and Silver Streets in San Francisco and an application that the station filed with the Air District to increase the amount of gasoline that the station could pump. No physical modifications to the gas station were proposed. In addition, there was concern that information about the planned increase was not distributed to the public in multiple languages to reflect the multi-lingual composition of the community near the gas station.

Under the Waters Bill (codified in California Health and Safety Code section 42301.6), local air districts are required to notify the public of any increase in hazardous emissions that could occur within 1,000 feet of a school site. To implement the Waters Bill, the Air District notifies parents or guardians of students at schools within ¼ mile and all residents and businesses located within 1,000 feet of a proposed source of increased toxic emissions. Waters Bill notifications are often triggered when a gasoline station applies for a permit modification to increase the amount of gasoline that the station can pump. In 2003, for example, the Air District evaluated 80 permit applications that were subject to the notification provisions of the Waters Bill.

The Shell station was located within a quarter mile of three schools. The risk screening performed by the Air District utilizing state of the art risk assessment tools calculated the maximum increase in cancer at the schools at 1/50th in one million and the increased cancer risk to residents at less than 10 in a million from the requested increase in ability to pump gasoline. Both of these figures are within Air District permitting guidelines. In accordance with the Waters Bill notification procedures, notices of the proposed increase in throughput were sent to all businesses and residents within 1,000 feet of the station and to all parents or guardians of children enrolled in the three schools. However, as a result of input from the community and from the Air District’s Executive Officer, the owner of the Shell station agreed to surrender the permit that would have allowed the increase in throughput.

As a result of the community's input, the Air District revised its Waters Bill notification procedures. Notices are now translated into multiple languages where 10 percent of the students at an affected school speak a language other than English at home. The San Francisco Unified School District reviewed and approved the Air District's revised notification letter.

Local Air Quality Monitoring – The Hunters Point community has asked that localized air monitoring be conducted in the community to record levels of pollution, including toxics. In response to this concern, the Air District has been working with the California Air Resources Board (CARB) and the San Francisco Department of the Environment to site a mobile air-monitoring trailer in Hunters Point. The van is part of CARB's Children's Health Initiative and will be sited at the Earl Mills Community Center in Hunters Point, near a school and the PG&E power plant. The trailer will be in that location for a year, and will monitor a full range of criteria and toxic air pollutants. Air District staff will operate the station and assist with the analysis of the data.

The San Francisco Department of the Environment expects to finish the site preparation for the trailer, including supplying power to the station location, by January 16, 2004. The Air District expects monitoring to begin within three weeks of completion of the site's infrastructure. A meeting with the community is scheduled for the evening of January 16th to review the monitoring plan with the community.

Cumulative Risk Assessment – Cumulative health risk assessment involves attempting to estimate the combined health risks resulting from multiple sources of toxic exposures in a geographic area. Some community and environmental groups have requested that the District incorporate cumulative health risk assessment into regulatory programs such as the New Source Review permitting program. In theory, permitting decisions could then be based on the overall level of health risk in a community resulting from exposure to sources of toxic exposure.

A number of technical and policy issues need to be addressed before a decision can be made about incorporating cumulative health risk analyses into permitting programs. These issues are expected to be addressed at the state level over the next several years in a process involving all stakeholders, including the Air District. The Air District will also continue to improve its understanding of cumulative health risks in Bay Area communities with additional monitoring and modeling analyses.

At the present time Air District staff is also working on a proposed rule (titled Regulation 2, Rule 5), which will codify the existing Air District *Risk Screening Procedure* and *Risk Management Policy* into an Air Toxics New Source Review rule. Development of the rule includes all stakeholders, including representatives of the Environmental Law Clinic at Golden Gate University. Staff expects to bring a proposed rule before the Board in 2004.

Dioxin Emissions from a local steel drum facility – Participants on the tour expressed concern about suspected dioxin emissions from a steel drum reconditioning facility located in the Potrero-Bayview-Hunters Point vicinity. The Gonzalez Steel Drum Company is located at 1324 Fitzgerald Avenue in the Bayshore area of San Francisco. The facility reconditions used steel drums and operates a tunnel furnace to remove paints, interior linings, labels, residual liquids and other contaminants from the drums. The furnace is equipped with an afterburner to combust unburned hydrocarbons in the exhaust gases.

Information regarding dioxin emissions from drum reconditioning furnaces is limited. These facilities are not required under California law to conduct source testing to quantify their dioxin emissions. Existing information suggests that dioxin emissions from furnaces equipped with afterburners are minimal. The District estimates the dioxin emissions from the Gonzalez Steel Drum Company to be about 0.0001 grams (0.3 millionths of a pound) toxic equivalent (TEQ) per year. This emission estimate is based on an emission factor derived from a source test conducted at a similar facility and 2003 throughput levels reported by the Gonzalez facility.

Due to the concerns expressed by the community regarding dioxin emissions from the Gonzales Steel Drum facility, the District will be completing a site-specific health risk assessment that will quantify the potential health risks associated with these emissions. Based on analyses that have been conducted for other facilities with similar levels of dioxin emissions, we do not expect that these health risks will be significant. Public exposure to dioxins has been shown to occur primarily through ingestion of foods containing animal fats. Recent air monitoring completed by the Air District and ARB at a number of locations in the Bay Area has shown that exposure to dioxins from breathing the ambient air represents less than 1% of an individual's overall dioxin exposure (as estimated by USEPA for the general population).

Diesel Truck Emissions – Participants on the tour expressed concern about the level of diesel truck traffic in the community and the emissions from the diesel trucks. The Air District does not have direct regulatory authority over diesel trucks or truck traffic. However, the Air District administers several grant programs that address reducing emissions from diesel engines in on-road and off-road applications, such as the Carl Moyer program and the Transportation Fund for Clean Air program. Numerous grant awards from these programs have been made to the City and County of San Francisco and to entities operating in the Potrero, Bayview, and Hunters Point neighborhoods. As long as funding for these programs continues, the Air District will continue to fund projects that reduce diesel engine emissions in these areas. In addition, the Air District is exploring other possible means of lessening the impacts of diesel emissions on residents of the Bay Area.

Respectfully submitted,

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