

**Initial Study/Negative Declaration for the  
Amendments to Bay Area Air Quality  
Management District Regulation 9, Rule 6:  
Nitrogen Oxides (NOx) from Natural Gas-Fired Water Heaters**

*Prepared for:*

Bay Area Air Quality Management District  
939 Ellis Street  
San Francisco, CA 94109  
Contact: Guy Gimlen  
(415) 749-4734

*Prepared By:*

Environmental Audit, Inc.  
1000-A Ortega Way  
Placentia, CA 92870  
Contact: Debra Bright Stevens  
(714) 632-8521

September 2007

**Chapter 1**

Introduction..... 1-1  
 Purpose of This Document..... 1-1  
 Scope of This Document..... 1-1  
 Impact Terminology..... 1-2  
 Organization of This Document..... 1-2

**Chapter 2**

Description of the Proposed Rule ..... 2-1  
     Background..... 2-1  
     Objectives ..... 2-2  
     Rule Amendments Being Considered..... 2-2  
 Proposed Method of Control..... 2-3  
     Residential Water Heaters..... 2-3  
     Swimming Pool & Spa Heaters ..... 2-3  
     Mobile Home Water Heaters ..... 2-3  
     Commercial Water Heaters..... 2-4  
     Emission Reductions Expected..... 2-4  
 Affected Area..... 2-5

**Chapter 3**

Environmental Checklist Form..... 3-1  
 Environmental Factors Potentially Affected..... 3-2  
 Determination ..... 3-2  
 I. Aesthetics..... 3-3  
     Setting ..... 3-3  
     Regulatory Background ..... 3-3  
     Discussion of Impacts ..... 3-3  
 II. Agriculture Resources..... 3-4  
     Setting ..... 3-4  
     Regulatory Background ..... 3-4  
     Discussion of Impacts ..... 3-5  
 III. Air Quality ..... 3-5  
     Setting ..... 3-6  
     Regulatory Background ..... 3-11  
     Discussion of Impacts ..... 3-13  
 IV. Biological Resources ..... 3-16  
     Setting..... 3-16  
     Regulatory Background..... 3-17  
     Discussion of Impacts ..... 3-17  
 V. Cultural Resources ..... 3-17  
     Setting..... 3-18  
     Regulatory Background..... 3-18  
     Discussion of Impacts ..... 3-18

|                                           |      |
|-------------------------------------------|------|
| VI. Geology and Soils .....               | 3-19 |
| Setting.....                              | 3-19 |
| Regulatory Background.....                | 3-20 |
| Discussion of Impacts .....               | 3-20 |
| VII. Hazard and Hazardous Materials ..... | 3-22 |
| Setting .....                             | 3-22 |
| Regulatory Background .....               | 3-23 |
| Discussion of Impacts .....               | 3-24 |
| VIII. Hydrology and Water Quality.....    | 3-25 |
| Setting .....                             | 3-26 |
| Regulatory Background .....               | 3-27 |
| Discussion of Impacts .....               | 3-27 |
| IX. Land Use and Planning .....           | 3-28 |
| Setting .....                             | 3-29 |
| Regulatory Background .....               | 3-29 |
| Discussion of Impacts .....               | 3-29 |
| X. Mineral Resources .....                | 3-29 |
| Setting .....                             | 3-29 |
| Regulatory Background .....               | 3-30 |
| Discussion of Impacts .....               | 3-30 |
| XI. Noise .....                           | 3-30 |
| Setting .....                             | 3-31 |
| Regulatory Background .....               | 3-31 |
| Discussion of Impacts .....               | 3-31 |
| XII. Population and Housing.....          | 3-31 |
| Setting .....                             | 3-32 |
| Regulatory Background .....               | 3-32 |
| Discussion of Impacts .....               | 3-32 |
| XIII. Public Services.....                | 3-32 |
| Setting .....                             | 3-33 |
| Regulatory Background .....               | 3-33 |
| Discussion of Impacts .....               | 3-33 |
| XIV. Recreation .....                     | 3-33 |
| Setting .....                             | 3-34 |
| Regulatory Background .....               | 3-34 |
| Discussion of Impacts .....               | 3-34 |
| XV. Transportation and Traffic .....      | 3-34 |
| Setting .....                             | 3-35 |
| Regulatory Background .....               | 3-36 |
| Discussion of Impacts .....               | 3-36 |
| XVI. Utilities and Service Systems.....   | 3-37 |
| Setting .....                             | 3-37 |
| Regulatory Background .....               | 3-38 |
| Discussion of Impacts .....               | 3-38 |

XVII. Mandatory Findings of Significance ..... 3-39  
 Discussion of Impacts ..... 3-39

**Chapter 4**

References ..... 4-1

**FIGURES:**

Figure 1 – Bay Area Air Quality Management District..... 2-6

**TABLES:**

Table 3-1 Federal and State Ambient Air Quality Standards ..... 3-9  
 Table 3-2 Bay Area Air Pollution Summary 2006..... 3-10  
 Table 3-3 Bay Area Air Quality Summary ..... 3-11  
 Table 3-4 Concentrations of Toxic Air Contaminants in  
 the Bay Area ..... 3-12

HLH\2496-BAAQMD-\2538-R9 TOC.doc

# 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 9, Rule 6 – Nitrogen Oxides from Natural Gas-Fired Water Heaters - by the Bay Area Air Quality Management District (BAAQMD or District). This assessment is required by the California Environmental Quality Act (CEQA) and in compliance with the state CEQA Guidelines (Title 14 California Code of Regulations §15000 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 adverse 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 and 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 9, Rule 6, 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.

M:\DBS\2538-BAAQMD Water Heaters\2538-R9Ch1NegDec..doc

## Chapter 2

# Description of the Proposed Rule

### Background

The Air District regulates NO<sub>x</sub> emissions from water heaters under Regulation 9, Rule 6, (“Regulation 9-6”) which currently imposes a NO<sub>x</sub> limit of 40 nanograms NO<sub>x</sub> per joule of heat output on water heaters with a rated heat input capacity of 75,000 British thermal units per hour (Btu/hr) or less. The regulated water heaters are conventional tank water heaters typically found in single-family residences. Regulation 9-6 was adopted April 1, 1992. Bay Area 2005 Ozone Strategy Control Measure SS-13 (Nitrogen Oxides (NO<sub>x</sub>) from Natural Gas-Fired Water Heaters) proposed amendments to Bay Area Air Quality Management District Regulation 9-6. The proposed amendments to Regulation 9-6 would implement Control Measure SS-13 by supplementing existing requirements in Regulation 9-6.

Larger water heaters and boilers are regulated under three separate rules. Two rules apply to large industrial boilers at refineries and power plants (Regulation 9, Rules 10 and 11 respectively). The third rule, Regulation 9, Rule 7 (“Regulation 9-7”), imposes a 30 ppm NO<sub>x</sub> limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million Btu/hr or more. Regulation 9-7 was adopted September 15, 1993. Control Measures SS-12 and SS-13 in the Air District’s 2005 Ozone Strategy propose to review each regulation, and close the gap that currently exists between Regulation 9-6 and Regulation 9-7, by amending each rule so that together they regulate all water heaters and boilers with a rated heat input of less than 10 million Btu per hour. Control Measure SS-12 committed the Air District to consider extending coverage of Regulation 9-7 to smaller boilers (less than 10 million Btu/hr heat input) that are currently exempt. Control Measure SS-13 committed the Air District to review NO<sub>x</sub> emission limits for residential water heaters, and consider extending coverage of Regulation 9-6 to larger water heaters (heat input greater than 75,000 Btu/hr) and some small boilers.

Larger water heaters, between 75,001 and 400,000 Btu/hr heat input, are usually tank type water heaters, and are similar to the smaller water heaters subject to Regulation 9-6 in appearance, design, and construction. Units larger than 400,000 Btu/hr are typically small boilers and are different in appearance, design, and construction from water heaters. The small boilers to which this measure applies are generally sold as “package boilers” that are prefabricated, equipped and shipped complete with burners and control systems. Boilers in this size range generally rely on natural draft rather than mechanical (fan assisted) draft. They are used in office buildings, hotels, schools, and commercial and industrial facilities to supply heat, steam, or hot water. Regulation 9-6 does not apply to any other kind of space heaters, process fluid heaters or other industrial heaters in this size range.



## Objectives

In Control Measure SS-13, the District suggested review of NO<sub>x</sub> emission requirements for residential water heaters, and to include small boilers and large commercial water heaters. The objective of the amendments for Regulation 9-6 is to further reduce NO<sub>x</sub> emissions from natural gas-fired water heaters in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. The Bay Area and neighboring regions are not yet in attainment with the State one-hour ozone standard, so further reductions in ozone precursors, NO<sub>x</sub> and reactive organic gases (ROG) are needed. Additional NO<sub>x</sub> reductions can be achieved by a technique involving the premixing of fuel and air before combustion takes place in water heaters, boilers and process heaters. This results in a lower and more uniform flame temperature, which reduces formation of NO<sub>x</sub>.

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. The California Air Resources Board (CARB) has also set a California ozone standard. The Bay Area is a non-attainment area for the state one-hour and eight-hour ozone standards and is a marginal non-attainment area for the federal eight-hour ozone standard. Under State law, ozone non-attainment areas must prepare plans showing how they will attain the state standard. The 2005 Ozone Strategy is the most recent planning document for the State one-hour ozone standard. Because the Bay Area is a marginal non-attainment area for the national eight-hour standard, the least severe non-attainment classification, the BAAQMD is not required to prepare an attainment plan for the national standard.

## Rule Amendments Being Considered

The Bay Area is not yet in attainment of state ozone standards, so the region must implement all feasible measures to reduce the pollutants that form ozone (NO<sub>x</sub> and ROG). Control Measure SS-13 of the Air District's 2005 Ozone Strategy included consideration of amendments to Regulation 9, Rule 6: *Nitrogen Oxides from Natural Gas-Fired Water Heaters*. Control Measure SS-13 suggested review of the Regulation 9-6 NO<sub>x</sub> emission limits to include larger commercial water heaters and small boilers to further reduce NO<sub>x</sub> emissions.

NO<sub>x</sub> emissions also react in the atmosphere to form secondary particulate matter (PM). The Bay Area is not in attainment of either California's particulate matter of 10 microns or less (PM<sub>10</sub>) or particulate matter of 2.5 microns or less (PM<sub>2.5</sub>) standards.

Regulation 9-6 is a "point of sale" type regulation, currently limiting sale and installation of new water heaters to only those certified to meet 40 nanograms of NO<sub>x</sub> per joule (ng/joule) of heat output. The regulation applies to typical tank residential water heaters of 75,000 Btu/hr heat input or less.

## **Proposed Method of Control**

### **Residential Water Heaters**

This measure would reduce the NO<sub>x</sub> emissions limit for new residential water heaters of 75,000 Btu/hr heat input rating or less sold, offered for sale or installed in the District to 10 nanograms/joule (ng/Joule) of heater output from its current limit of 40 ng/Joule. Staff proposes amending Regulation 9-6 to require the following categories of new residential water heaters to meet a NO<sub>x</sub> emission limit of 10 ng/joule according to the following schedule:

- < 50 gallon storage tank effective January 1, 2009
- > 50 gallon storage tank effective January 1, 2010
- Power assist storage tank effective January 1, 2011

Manufacturers claim that they are certifying their new water heater designs, and will be able to deliver less than 50 gallon tank water heaters that meet the efficiency, safety, and NO<sub>x</sub> standards to California customers by late 2007. Manufacturer progress reports also anticipate being able to achieve similar emissions for the greater than 50 gallon tank water heaters by 2009, and for the direct-vent, power-vent, and power direct-vent water heaters by 2010.

### **Swimming Pool & Spa Heaters**

Water heaters used exclusively for swimming pools and spas are similar in design to large commercial water heaters, and have been exempt from this regulation in the past. Residential pools are seldom heated year-round, so they will remain exempt from this rule. Commercial, public, and institutional swimming pools normally keep their pools heated all year and, therefore, can be significant sources of NO<sub>x</sub> emissions. Staff recommends requiring any new heaters sold, offered for sale or installed in the District that are used for commercial, public, and institutional swimming pools (those greater than 400,000 Btu/hr heat input) and spas to meet a NO<sub>x</sub> emissions standard of 40 ng/joule, (~55 ppm), effective January 1, 2008. Further, staff recommends that new commercial, public and institutional pool and spa water heaters be required to meet a 14 ng/joule NO<sub>x</sub> emission limit by January 1, 2013, consistent with other large commercial water heaters.

### **Mobile Home Water Heaters**

Water heaters used exclusively for mobile homes are similar in design to those with power assist vent systems. Proposed amendments to Rule 9-6 would require any new heaters not to exceed a NO<sub>x</sub> emissions standard of 40 ng/joule, effective July 1, 2008.

### **Commercial Water Heaters**

Water heaters larger than 75,000 Btu/hr heat input are currently not regulated by the Air District. The proposed amendments to Regulation 9-6 would impose a NO<sub>x</sub> limit of 40

ng/Joule of heat output (~55 ppm) for new water heaters from greater than 75,000 Btu/hr up to 400,000 Btu/hr heat input sold, offered for sale or installed in the District, effective January 1, 2008. Instantaneous water heaters are included here because they have similar rated heat input capacity, since they are designed to heat cold water up to normal hot water temperatures (typically 140 – 160°F) for immediate delivery. Water heaters certified to meet these emissions are currently available in southern California. Staff proposes a 14 ng/joule standard, effective for new heaters on January 1, 2013. New package boilers larger than 400,000 Btu/hr up to 2 million Btu/hr inclusive, will also be regulated by these amendments. Regulation 9-7 currently requires all large boilers to meet a NO<sub>x</sub> emissions limit of 20 ng/Joule (~30 ppm). The proposed amendments to Regulation 9-6 would impose a similar NO<sub>x</sub> limit of 20 ng/Joule (~30 ppm) of heat output for new water heaters from greater than 400,000 Btu/hr up to 2 million Btu/hr (MMBtu/hr) heat input, effective January 1, 2008. Staff further proposes to require new water heaters with a heat input of 400,000 Btu/hr to 2,000,000 Btu/hr to meet a 14 ng/Joule standard effective January 1, 2013.

All of the NO<sub>x</sub> emissions limits proposed for Regulation 9-6 will apply to new units sold, offered for sale or installed in the Bay Area after the effective dates only.

### **Emission Reductions Expected**

Current emissions for residential water heaters in the Bay Area are estimated at 3.29 tons per day (tpd). The proposed amendments will reduce NO<sub>x</sub> by 75 percent, or 2.47 tpd. These emission reductions will occur as new water heaters replace the existing higher emissions water heaters. Typical life expectancy for a residential water heater is 12 years. Staff proposes this rule amendment go into effect on January 1, 2009, thus reducing NO<sub>x</sub> emissions by a about 0.21 tpd for each of the subsequent 12 years.

Emissions estimates for commercial, institutional, and industrial water heaters from 75,000 to 2 MMBtu/hr heat input total 0.5 tpd. The NO<sub>x</sub> emission reductions staff expects will occur in two phases. The first phase is a reduction from uncontrolled NO<sub>x</sub> emissions (~74 ng/Joule) to 40 ng/Joule beginning in 2008. The second phase is a reduction from 40 ng/Joule to 14 ng/Joule beginning in 2013. Large water heaters and small boilers also have a longer lifespan – estimated at 25 years, which equates to only 4 percent replacement each year. NO<sub>x</sub> reductions are expected to be 0.01 tpd each year beginning in 2008. NO<sub>x</sub> reductions are expected increase to 0.016 tpd in 2013. Since this is a relatively small amount of potential NO<sub>x</sub> reduction, staff proposes the strategy of replacement with new low emission water heaters and package boilers when they reach their end of useful life, rather than to require a retrofit or accelerated replacement.

Bay Area NO<sub>x</sub> reductions may also reduce ambient levels of fine particulate matter (PM<sub>2.5</sub>) pollution, because a fraction of NO<sub>x</sub> emissions is ultimately converted to nitrate particles in the atmosphere. Potential PM reductions resulting from the proposed amendments are estimated to be approximately 0.36 tpd. Burners used to comply with these amendments are included with the water heater redesign for improved efficiency,

and will reduce energy usage. Energy savings from new water heaters are estimated to be from 5 – 10 percent better than existing conventional units.

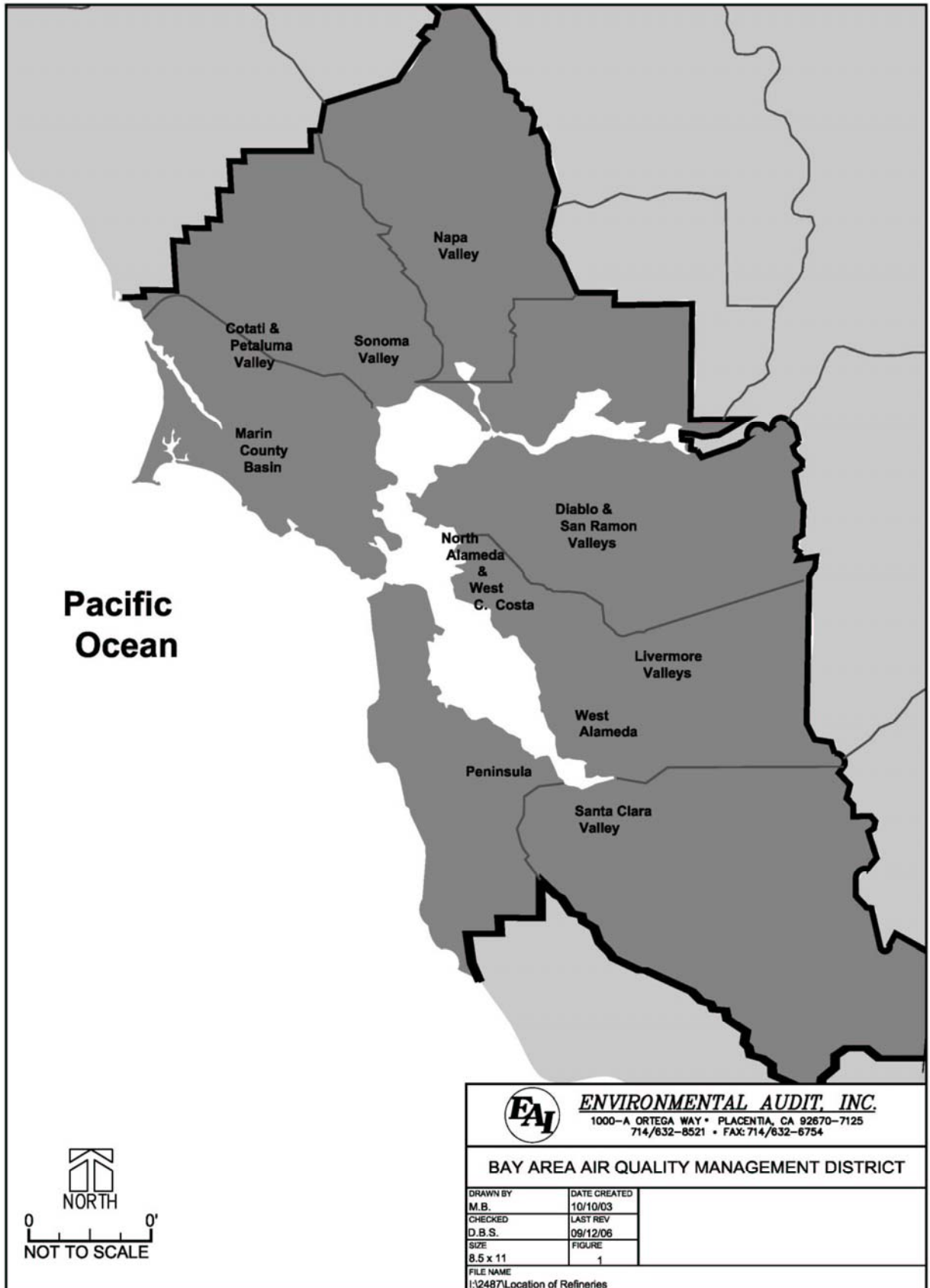
BAAQMD air quality permits are not currently required for water heaters and boilers in this size range, and will not to be required under the proposed amendments. NOx limits for these units would be enforced by requiring certification of any water heaters sold or installed.

### **Affected Area**

The proposed rule amendments would apply to facilities under BAAQMD jurisdiction. The BAAQMD jurisdiction includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and 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 facilities affected by the proposed rule amendments are located within the jurisdiction of the Bay Area Air Quality Management District (see Figure 1).

M:\DBS\2496BAAQMD\2496-R9Ch2-ProjDesc.doc



## Chapter 3

**Environmental Checklist****ENVIRONMENTAL CHECKLIST FORM**

- 1. Project Title:** Bay Area Air Quality Management District (BAAQMD)  
Proposed Amendments to Regulation 9, Rule 6.
- 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:** Guy Gimlen, Planning and Research Division  
415/749-4734 or [ggimlen@baaqmd.gov](mailto:ggimlen@baaqmd.gov)
- 4. Project Location:** This rule amendment 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.
- 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 residences with small gas-fired water heaters and commercial applications using large water heaters and small boilers.
- 7. Zoning** The rule amendments apply to water heaters with less than 50 gallon capacity which are found in residential areas, as well as larger water heaters and small boilers which tend to be located in commercial zones.
- 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                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>I. AESTHETICS.</b>                                                                                                                             |                                |                                                           |                              |                                     |
| 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.

Some of the proposed rule amendments affect typical tank water heaters with heat input of 75,000 Btu/hr or less. These types of water heaters are most often found in residential applications. Other rule amendments affect large water heaters and small boilers that are expected to be located in commercial or industrial areas throughout the Bay Area. Scenic highways or corridors are generally not located in the vicinity of commercial or industrial areas.

## 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 amendments to Regulation 9-6 would further reduce NOx emissions from natural gas-fired water heaters in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. The proposed amendments are not expected to require the construction of any major new structures that would be visible to areas outside of the affected residences or facilities, and are not expected to result in any adverse aesthetic impacts. Changing to new technology would occur over time as equipment is retired and replaced. Once completed, the modifications are not



expected to be visible. The rule amendment would also not require any new sources of light or glare, since new equipment would replace existing equipment. Therefore, no significant adverse aesthetic impacts are expected from the implementation of the amendments to Regulation 9-6.

---

|  | Potentially<br>Significant<br>Impact | Less Than<br>Significant<br>Impact With<br>Mitigation<br>Incorporated | Less Than<br>Significant<br>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 areas with water heaters and small boilers affected by the proposed rule amendments are primarily located in residential or commercial areas throughout the Bay Area. Agricultural resources are generally not located in the vicinity of residential or commercial areas.

## 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 amendments to Regulation 9-6 would further reduce NOx emissions from small and large natural gas-fired water heaters and small boilers in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. Facilities are expected to comply with Regulation 9-6 by installing low-NOx burners in new water heaters, thus reducing flame temperatures which reduces the production of NOx. The proposed amendment will be implemented over time installing new, and replacing old units which use the new technology. These changes would be made within existing structures, or in new structures which are being built within approved parcels controlled by a General Plan. No development outside of existing facilities would be required by the proposed amendments to Regulation 9-6. Therefore, no adverse significant impacts to agricultural resources are expected due to the proposed project.

|  | 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"/> |

## Setting

### Meteorological Conditions

The summer climate of the West Coast is dominated by a semi-permanent 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; 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 (NO<sub>2</sub>), particulate matter less than 10 microns in diameter (PM<sub>10</sub>), particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>) 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. 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 24 monitoring stations. The 2006 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 Air 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 Air District is in attainment of the State and federal ambient air quality standards for CO, nitrogen oxides (NO<sub>x</sub>), and sulfur dioxides (SO<sub>2</sub>). The Air District is not considered to be in attainment with the State PM<sub>10</sub> and PM<sub>2.5</sub> standards.

The 2006 air quality data from the BAAQMD monitoring stations are presented in Table 3-2. All monitoring stations were below the state standard and federal ambient air quality standards for CO, NO<sub>2</sub>, and SO<sub>2</sub>. The federal 8-hour ozone standard was exceeded 12 days in the District in 2006, while the state standard was exceeded on 22 days. The Bay Area is designated as a non-attainment area for the California 1-hour ozone standard. The State 1-hour ozone standard was exceeded on 18 days in 2006 in the District, most frequently in the Eastern District (Livermore) (see Table 3-2).

All monitoring stations were in compliance with the federal PM<sub>10</sub> standards. The California PM<sub>10</sub> standards were exceeded on 15 days in 2006, most frequently in San Jose. The Air District exceeded the federal PM<sub>2.5</sub> standard on ten days, most frequently in San Jose, in 2006 (see Table 3-2).

**TABLE 3-1**

**FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS**

|                                      | STATE STANDARD                                                                                                                                                                             | FEDERAL PRIMARY STANDARD                                                                  | MOST RELEVANT EFFECTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIR POLLUTANT                        | CONCENTRATION/<br>AVERAGING TIME                                                                                                                                                           | CONCENTRATION/<br>AVERAGING TIME                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ozone                                | 0.09 ppm, 1-hr. avg. ><br>0.070 ppm, 8-hr                                                                                                                                                  | 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. ><br>20 ppm, 1-hr avg. >                                                                                                                                                | 9 ppm, 8-hr avg.><br>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.><br>0.25 ppm, 1-hr. avg. >                                                                                                                                            | 0.03 ppm, ann. avg.><br>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 <sup>3</sup> , annarithmic mean ><br>50 µg/m <sup>3</sup> , 24-hr average>                                                                                                         | 50 µg/m <sup>3</sup> , annual arithmetic mean ><br>150 µg/m <sup>3</sup> , 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) | 12 µg/m <sup>3</sup> , annual arithmetic mean>                                                                                                                                             | 15 µg/m <sup>3</sup> , annual arithmetic mean><br>35 µg/m <sup>3</sup> , 24-hour average> | Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.                                                                                                                                                                                                                                                                                                                                                            |
| Sulfates                             | 25 µg/m <sup>3</sup> , 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 <sup>3</sup> , 30-day avg. >=                                                                                                                                                     | 1.5 µg/m <sup>3</sup> , 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 - 2006**

| MONITORING STATIONS             | OZONE    |           |          |           |           |          | CARBON MONOXIDE |          |              | NITROGEN DIOXIDE |         |              | SULFUR DIOXIDE |         |              | PM <sub>10</sub>   |           |          |           | PM <sub>2.5</sub>  |           |          |         |          |   |
|---------------------------------|----------|-----------|----------|-----------|-----------|----------|-----------------|----------|--------------|------------------|---------|--------------|----------------|---------|--------------|--------------------|-----------|----------|-----------|--------------------|-----------|----------|---------|----------|---|
|                                 | Max 1-hr | Cal Days  | Max 8-hr | Nat Days  | Cal Days  | 3-Yr Avg | Max 1-hr        | Max 8-hr | Nat/Cal Days | Max 24-hr        | Ann Avg | Nat/Cal Days | Max 24-hr      | Ann Avg | Nat/Cal Days | Ann Avg            | Max 24-hr | Nat Days | Cal Days  | Max 24-hr          | Nat Days  | 3-Yr Avg | Ann Avg | 3-Yr Avg |   |
| <b>North Counties</b>           | (ppb)    |           |          |           |           |          | (ppm)           |          |              | (ppb)            |         |              | (ppb)          |         |              | (µm <sup>3</sup> ) |           |          |           | (µm <sup>3</sup> ) |           |          |         |          |   |
| Napa                            | 96       | 1         | 72       | 0         | 2         | 60       | 3.5             | 2.8      | 0            | 3.5              | 11      | 0            | -              | -       | -            | 21.9               | 52        | 0        | 1         | -                  | -         | -        | -       | -        | - |
| San Rafael                      | 89       | 0         | 58       | 0         | 0         | 50       | 2.6             | 1.5      | 0            | 2.6              | 14      | 0            | -              | -       | -            | 18.1               | 68        | 0        | 1         | -                  | -         | -        | -       | -        | - |
| Santa Rosa                      | 77       | 0         | 58       | 0         | 0         | 47       | 2.4             | 1.7      | 0            | 2.4              | 11      | 0            | -              | -       | -            | 18.8               | 90        | 0        | 2         | 59.0               | 1         | 28.7     | 9.2     | 8.3      |   |
| Vallejo                         | 80       | 0         | 69       | 0         | 0         | 57       | 3.7             | 2.9      | 0            | 3.7              | 12      | 0            | 4              | 1.0     | 0            | 19.8               | 50        | 0        | 0         | 42.2               | 1         | 35.6     | 9.8     | 10.2     |   |
| <b>Coast/Central Bay</b>        |          |           |          |           |           |          |                 |          |              |                  |         |              |                |         |              |                    |           |          |           |                    |           |          |         |          |   |
| Richmond                        | -        | -         | -        | -         | -         | -        | -               | -        | -            | -                | -       | -            | 6              | 1.6     | 0            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        | - |
| San Francisco                   | 53       | 0         | 46       | 0         | 0         | 45       | 2.7             | 2.1      | 0            | 107              | 16      | 0            | 6              | 1.3     | 0            | 22.9               | 61        | 0        | 3         | 54.3               | 3         | 30.9     | 9.7     | 9.7      |   |
| San Pablo                       | 61       | 0         | 50       | 0         | 0         | 48       | 2.5             | 1.4      | 0            | 55               | 13      | 0            | 5              | 1.6     | 0            | 21.3               | 62        | 0        | 2         | -                  | -         | -        | -       | -        |   |
| <b>Eastern District</b>         |          |           |          |           |           |          |                 |          |              |                  |         |              |                |         |              |                    |           |          |           |                    |           |          |         |          |   |
| Bethel Island                   | 116      | 9         | 90       | 1         | 14        | 73       | 1.3             | 1.0      | 0            | 44               | 8       | 0            | 7              | 2.1     | 0            | 19.4               | 84        | 0        | 1         | -                  | -         | -        | -       | -        |   |
| Concord                         | 117      | 8         | 92       | 4         | 14        | 74       | 1.7             | 1.3      | 0            | 47               | 11      | 0            | 7              | 0.8     | 0            | 18.5               | 81        | 0        | 3         | 62.1               | 5         | 35.0     | 9.3     | 9.7      |   |
| Crockett                        | -        | -         | -        | -         | -         | -        | -               | -        | -            | -                | -       | -            | 8              | 1.8     | 0            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| Fairfield                       | 106      | 3         | 87       | 1         | 8         | 69       | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| Livermore                       | 127      | 13        | 101      | 5         | 15        | 80       | 3.3             | 1.8      | 0            | 64               | 14      | 0            | -              | -       | -            | 21.8               | 69        | 0        | 3         | 50.8               | 3         | 33.5     | 9.8     | 9.7      |   |
| Martinez                        | -        | -         | -        | -         | -         | -        | -               | -        | -            | -                | -       | -            | 7              | 1.9     | 0            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| Pittsburg                       | 105      | 3         | 93       | 1         | 10        | 70       | 3.3             | 1.9      | 0            | 52               | 11      | 0            | 9              | 2.4     | 0            | 19.9               | 59        | 0        | 2         | -                  | -         | -        | -       | -        |   |
| <b>South Central Bay</b>        |          |           |          |           |           |          |                 |          |              |                  |         |              |                |         |              |                    |           |          |           |                    |           |          |         |          |   |
| Fremont                         | 102      | 4         | 74       | 0         | 3         | 60       | 2.9             | 1.8      | 0            | 63               | 15      | 0            | -              | -       | -            | 20.0               | 57        | 0        | 1         | 43.9               | 2         | 30.3     | 10.3    | 9.6      |   |
| Hayward                         | 101      | 2         | 71       | 0         | 1         | n/a      | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| Redwood City                    | 85       | 0         | 63       | 0         | 0         | 53       | 5.5             | 2.4      | 0            | 69               | 14      | 0            | -              | -       | -            | 19.8               | 70        | 0        | 2         | 75.3               | 1         | 29.4     | 9.6     | 9.2      |   |
| San Leandro                     | 88       | 0         | 66       | 0         | 0         | 53       | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| <b>Santa Clara Valley</b>       |          |           |          |           |           |          |                 |          |              |                  |         |              |                |         |              |                    |           |          |           |                    |           |          |         |          |   |
| Gilroy                          | 120      | 4         | 101      | 2         | 8         | 70       | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| Los Gatos                       | 116      | 7         | 87       | 4         | 11        | 73       | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| San Jose Central                | 118      | 5         | 87       | 1         | 5         | 63       | 4.1             | 2.9      | 0            | 74               | 18      | 0            | -              | -       | -            | 21.0               | 73        | 0        | 2         | 64.4               | 6         | 38.5     | 10.8    | 11.4     |   |
| San Jose, Tully Rd              | -        | -         | -        | -         | -         | -        | -               | -        | -            | -                | -       | -            | -              | -       | -            | 35.0               | 106       | 0        | 13        | 30.6               | 0         | -        | -       | -        |   |
| San Martin                      | 123      | 7         | 105      | 5         | 11        | 76       | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| Sunnyvale                       | 106      | 3         | 78       | 0         | 1         | 63       | -               | -        | -            | -                | -       | -            | -              | -       | -            | -                  | -         | -        | -         | -                  | -         | -        | -       | -        |   |
| <b>Total Days over Standard</b> |          | <b>18</b> |          | <b>12</b> | <b>22</b> |          |                 |          | <b>0</b>     |                  |         | <b>0</b>     |                |         | <b>0</b>     |                    |           | <b>0</b> | <b>15</b> |                    | <b>10</b> |          |         |          |   |

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

**TABLE 3-3**  
**AREA AIR QUALITY SUMMARY**  
**Days over standards**

| YEAR | OZONE |     |      | CARBON MONOXIDE |     |      |     | NO <sub>x</sub> | SULFUR DIOXIDE |     | PM10   |     | PM2.5   |
|------|-------|-----|------|-----------------|-----|------|-----|-----------------|----------------|-----|--------|-----|---------|
|      | 1-Hr  |     | 8-Hr | 1-Hr            |     | 8-Hr |     | 1-Hr            | 24-Hr          |     | 24-Hr* |     | 24-Hr** |
|      | Nat   | Cal | Nat  | Nat             | Cal | Nat  | Cal | Cal             | Nat            | Cal | Nat    | Cal | Nat     |
| 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       |
| 2003 | 1     | 19  | 7    | 0               | 0   | 0    | 0   | 0               | 0              | 0   | 0      | 6   | 0       |
| 2004 | 0     | 7   | 0    | 0               | 0   | 0    | 0   | 0               | 0              | 0   | 0      | 7   | 1       |
| 2005 | 0     | 9   | 1    | 0               | 0   | 0    | 0   | 0               | 0              | 0   | 0      | 6   | 0       |
| 2006 | -     | 18  | 12   | 0               | 0   | 0    | 0   | 0               | 0              | 0   | 0      | 15  | 15      |

\* 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<sub>x</sub>. 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 data from selected monitoring stations.

**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 particulate matter in non-attainment areas. The amendments set 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.



**TABLE 3-4  
CONCENTRATIONS OF TOXIC AIR CONTAMINANTS  
IN THE BAY AREA<sup>(1)</sup>**

| CHEMICAL                    | MONITORING STATION<br>(mean ppb) |                         |          |                  |                     |                  |
|-----------------------------|----------------------------------|-------------------------|----------|------------------|---------------------|------------------|
|                             | Crockett                         | Concord<br>(Treat Blvd) | Richmond | Bethel<br>Island | Concord<br>(Arnold) | Bay Area<br>Mean |
| Benzene                     | 0.24                             | 0.51                    | 0.44     | 0.33             | 0.53                | 0.47             |
| Carbon Tetrachloride (CCl4) | 0.11                             | 0.13                    | 0.11     | 0.11             | 0.11                | 0.11             |
| Chloroform (CHCl3)          | 0.02                             | 0.03                    | 0.02     | 0.01             | 0.02                | 0.02             |
| Methylene Chloride (DCM)    | 0.56                             | 0.29                    | 0.27     | 0.26             | 0.28                | 0.38             |
| Ethylene Dibromide          | 0.01                             | 0.01                    | 0.01     | 0.01             | 0.01                | 0.01             |
| Ethylene Dichloride         | 0.05                             | 0.05                    | 0.05     | 0.05             | 0.05                | 0.05             |
| MTBE                        | 0.40                             | 0.71                    | 0.61     | 0.45             | 0.86                | 0.75             |
| Perchloroethylene           | 0.02                             | 0.03                    | 0.06     | 0.02             | 0.07                | 0.05             |
| 1,1,1-Trichloroethane (TCA) | 0.07                             | 0.05                    | 0.03     | 0.03             | 0.12                | 0.11             |
| Trichloroethylene           | 0.04                             | 0.04                    | 0.04     | 0.04             | 0.04                | 0.04             |
| Toluene                     | 0.45                             | 1.85                    | 1.16     | 0.71             | 1.05                | 1.48             |
| Vinyl Chloride              | 0.15                             | 0.15                    | 0.15     | 0.15             | 0.15                | 0.15             |

(1) BAAQMD, Toxic Air Contaminant, 2002 Annual Report, June 2004.

The BAAQMD is governed by a 22-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 must 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.

**Targeted Control of TACs Under the Community Air Risk Evaluation Program:** In 2004, BAAQMD established the Community Air Risk Evaluation (CARE) program to identify locations with high emissions of toxic air contaminants (TAC) and high exposures of sensitive populations to TAC and to use this information to help establish policies to guide mitigation strategies that obtain the greatest health benefit from TAC emission reductions. For example, BAAQMD will use information derived from the CARE program to develop and implement targeted risk reduction programs, which may include grant and incentive programs, community outreach efforts, collaboration with other governmental agencies, model ordinances, new regulations for stationary sources and indirect sources, and advocacy for additional legislation.

## Discussion of Impacts

**III a.** The objectives of the proposed rule amendments are to implement Control Measure SS-13 from the Bay Area 2005 Ozone Strategy in order to help reduce emissions of ozone forming compounds (e.g., NO<sub>x</sub>), and make Regulation 9-6 more stringent. Because the proposed amendments directly implement the control measure, the proposed amendments are in compliance with the local air quality plan.

**III b, c, d, and f.** Regulation 9-6 was adopted pursuant to the region's first plan prepared under the CCAA's ozone planning requirements, the Bay Area 1991 Clean Air Plan (CAP). Regulation 9-6 was adopted on April 1, 1992. Control Measure SS-13 in the Bay Area 2005 Ozone Strategy required the BAAQMD to determine if further reductions in NOx emissions from natural gas-fired water heaters and small boilers was feasible.

**Emissions:** Emissions from natural gas-fired water heaters and small boilers include all the products of combustion. The primary concern with emissions from natural gas-fired water heaters and small boilers in the Bay Area is NOx. Natural gas-fired water heaters and small boilers also produce CO, sulfur oxides (SOx), ROG, and particulates (PM) emissions, but the contribution from natural gas-fired water heaters and small boilers for each is relatively insignificant in the total emission inventory for the Bay Area, so no changes are being considered for pollutants other than NOx.

Combustion in natural gas-fired water heaters and small boilers also produces carbon dioxide (CO<sub>2</sub>), a growing concern with respect to climate change. NOx is formed from combustion of nitrogen in the fuel (fuel NOx), but the primary source of NOx is from the oxidation of nitrogen in the air (thermal NOx). Most water heaters and boilers in the Bay Area burn only natural gas, which is negligible in nitrogen content. A few water heaters and boilers can also burn liquid fuels (propane, butane, jet fuel or diesel fuel), but the nitrogen content in these fuels is very low. CO comes from incomplete combustion.

### **Controlling Emissions:**

All natural gas fired water heaters and boilers rely on a burner to combust fuel to heat the water. Manufacturers have tested a variety of burner types to achieve low NOx emissions. For residential water heaters, manufacturers have focused on pre-mixed atmospheric burners. These burners mix fuel and air before the mixture is ignited at the surface of the burner. In pre-mixed radiant burners, air and fuel are combusted slowly on the porous surface of the burner at the air/gas interface. Radiant burners are generally made of ceramic or metal fibers. Radiant burners evenly distribute the heat of combustion, which stabilizes the flame and prevents "hot spots." When hot spots are prevented, NOx emissions are minimized.

A number of burner and material manufacturers have developed atmospheric, pre-mixed, ceramic or metal fiber matrix burners. Manufacturers of ceramic and metal fiber radiant burners and other types of gas-fired appliances have developed burners with emission levels at or below the 10 ng/J limits the proposed amendments to Regulation 9, Rule 6 would ultimately require. These low NOx burners are manufactured for a wide range of applications. Available information shows that the interim and final rule limits are achievable in both natural draft and fan-assisted applications. Radiant burners can meet the rule limits within a range of conditions (i.e., amount of excess air) and use a variety of ignition technologies.

The manufacturers of boilers, water heaters and process heaters use similar approaches to achieve low NOx levels. The principle technique involves pre-mixing of fuel and air before combustion takes place. This results in a lower and more uniform flame temperature. A lower flame temperature reduces formation of NOx. Some pre-mix burners also use staged combustion with a fuel rich zone to start combustion and stabilize the flame, and a fuel lean zone to complete combustion and reduce the peak flame temperature. Burners can also be designed to spread flames over a larger area to reduce hot spots and lower NOx emissions. Radiant pre-mix burners with ceramic, sintered metal or metal fiber heads spread the flame and produce more radiant heat. When a burner produces more radiant heat, it can result in less heat escaping the boiler through exhaust gases.

The technology to produce water heaters that emit less than 10 ng/joule is currently available. Manufacturers have integrated these low NOx emissions into re-design of their water heaters, starting with the 50 gallon and smaller water heaters first. The re-design was required to meet U.S. Department of Energy Regulations, and California Energy Commission Appliance Efficiency Standards. These standards require greater than 80 percent efficiency, and enhanced safety requirements including Flammable Vapor Ignition Resistance (FVIR). Each manufacturer is now certifying their parts suppliers and manufacturing process to ensure each water heater meets all requirements.

Manufacturers expect to be able to supply water heaters that meet the efficiency, safety, and NOx standards by September 2007. Manufacturers expect to supply water heaters over 50 gallons that meet all requirements by 2009, and water heaters that require power assisted ventilation by 2010.

Low NOx burners for large heaters and small boilers can achieve NOx emissions of less than 14 ng/joule. Manufacturer certification test results provided to SCAQMD show that manufacturers have made substantial progress in reducing the NOx emissions from large water heaters and small boilers. Approximately 20 percent of the large water heaters providing test results in the 75,001 to 400,000 Btu/hr units size range meet the proposed Regulation 9, Rule 6 limit of 14 ng/joule. Approximately 45 percent of the small boilers and boiler type water heaters in the 400,001 to 2,000,000 Btu/hr size range units tested under the SCAQMD certification program meet the proposed limit. While no residential instantaneous water heaters currently meet the proposed emission limit, manufacturers have reported their progress quarterly to SCAQMD, and indicate they are on-track to achieve these standards by 2012.

**Emission Reductions Expected:** Current emissions for residential water heaters are estimated at 3.29 tons per day (tpd). The proposed amendments will reduce NOx by 75 percent, or 2.47 tpd. However, these emission reductions will occur as new water heaters replace the existing higher emissions water heaters. Typical life expectancy for a residential water heater is 12 years. Staff proposes this rule amendment go into effect on January 1, 2009, thus reducing NOx emissions by a cumulative 0.21 tpd for each of the subsequent 12 years.

Current emissions inventory information for commercial, institutional, and industrial water heaters from 75,000 to 2 MMBtu/hr heat input is less certain. Current estimates for these NOx emissions in the Air District inventory are a cumulative 0.5 tpd. The NOx emission reductions staff expects will occur in two phases. The first phase is a reduction from uncontrolled NOx emissions (~74 ng/joule) to 40 ng/joule beginning in 2008. The second phase is a reduction from 40 ng/joule to 14 ng/joule beginning in 2013. Large water heaters and small boilers also have a longer lifespan – estimated at 25 years, which equates to only 4 percent replacement each year. NOx reductions will be 0.01 tpd each year beginning in 2008. NOx reductions will increase to 0.016 tpd in 2013. Since this is a relatively small amount of potential NOx reduction, staff proposes the strategy of replacement with new low emission water heaters and package boilers when they reach their end of useful life, rather than to require a retrofit or accelerated replacement. The total NOx emissions reduction from these larger water heaters will be 0.4 tpd.

PM<sub>2.5</sub> (particulate matter of 2.5 microns diameter or less) is formed from a conversion of NOx to ammonium nitrate (NH<sub>4</sub>NO<sub>3</sub>). District staff has estimated the ration between NH<sub>4</sub>NO<sub>3</sub> formation to NOx emissions to range between 1:6 and 1:10. Assuming an average ration of 1:8 conversion, the 2.9 tpd reduction in NOx emission will reduce PM<sub>2.5</sub> by 0.36 tpd.

Based on the above, the proposed amendments to Regulation 9-6 are expected to provide a beneficial impact to air quality by reducing NOx emissions in the Bay Area.

**III e.** The proposed project is not expected to result in an increase in odors. The proposed amendments to Regulation 9-6 propose improved technology for reducing NOx emissions from natural gas-fired water heaters and small boilers. Residences and commercial facilities are expected to comply by replacing existing equipment with low NOx emitting units when existing units are retired. While the new technology for natural gas-fired water heaters and small boilers will produce less NOx, they will continue to be fueled with the natural gas which will not lead to any change in odors produced during operation. Potential odor impacts from the proposed project are not expected to be significant. Therefore, no significantly adverse incremental odor impacts are expected due to the proposed rule amendments.

|                                                                                                                                                                                                                                                                                                                  | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>IV. BIOLOGICAL RESOURCES. Would the project:</b>                                                                                                                                                                                                                                                              |                                |                                                           |                              |                                     |
| 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 areas affected by the proposed rule amendments 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 areas affected by the proposed rule

amendments are located in residential and commercial areas throughout the Bay Area. The affected areas have been graded to develop various residential and commercial structures. Native vegetation, other than landscape vegetation, has generally been removed from areas to minimize safety and fire hazards. Any new development would fall under compliance with the City or County General Plans.

## Regulatory Background

Biological resources are generally protected by the City and/or County General Plans through land use and zoning requirements which 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 which 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 which would apply to existing or newly constructed facilities with natural gas-fired water heaters or small boilers. Existing water heaters and small boilers will be replaced as they are retired, and new residences and commercial facilities will install the designated equipment required by the proposed amendments to Regulation 9-6. The areas have been graded and developed, and biological resources, with the exception of landscape species, have generally been removed. There will be no construction activities required due to the adoption of the proposed amendments to Regulation 9-6. Therefore, no adverse significant impacts to biological resources are expected due to the proposed project.

|                                                                                                                      | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact                           |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>V. CULTURAL RESOURCES.</b> 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 which 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 their abundant combination of littoral and oak woodland resources.

The areas with natural gas-fired water heaters and small boilers affected by the proposed rule amendments are primarily located in residential and commercial areas throughout the Bay Area. These sites have already been graded to develop residences and commercial facilities and are typically surrounded by uses of similar kind. Cultural resources are generally not located within these areas.

## Regulatory Background

The State CEQA Guidelines define a significant cultural resource 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 natural gas-fired water heaters or small boilers. The equipment already exists and is located inside the confines of existing residences or commercial facilities. The existing areas have been graded and developed. No new construction would be required due to the adoption of the proposed amendments to Regulation 9-6. The rule would apply to new equipment as it is installed. Therefore, no significant adverse impacts to cultural resources are expected due to the proposed amendments to Regulation 9-6.

|  | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|

**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"> <li>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.</li> <li>Strong seismic groundshaking?</li> <li>Seismic-related ground failure, including liquefaction?</li> <li>Landslides?</li> </ul> | <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 facilities affected by the proposed rule amendments are expected to be located primarily in residential and commercial areas throughout the Bay Area.

The affected areas with natural gas-fired water heaters and small boilers 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 inter-fingered 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 Straight 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-triggered 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.** The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are located within the confines of existing residences and commercial facilities. No new construction activities would be required as a result of adopting the proposed amendments to Regulation 9-6, rather, old equipment would be

required to be replaced with newer technology equipment with lower NOx emissions at the end of its usable life. New residential or commercial structures must be designed to comply with the Uniform Building Code Zone 4 requirements. The local cities and counties are responsible for assuring that new construction complies with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

New residential and commercial development will install low NOx emitting equipment and will be required to obtain building permits, as applicable, for all new structures at any site. The issuance of building permits from the local agency will assure compliance with the Uniform Building Code requirements which include requirements for building within seismic hazard zones. No significant impacts from seismic hazards are expected since no new development is required due to implementation of the proposed amendments to Regulation 9-6.

**VII b.** The natural gas-fired water heaters and small boilers which already exist are located within the confines of residences and existing commercial facilities. The specified equipment will be replaced with low NOx emitting equipment when it is retired. No new construction activities would be required due to the adoption of Regulation 9-6. Therefore, the proposed amendments are not expected to result in substantial soil erosion or the loss of topsoil as no major construction activities would be required.

**VII c – e.** The natural gas-fired water heaters and small boilers already exist and are located within the confines of existing residences and commercial facilities so no major construction activities are expected. Since the residences and commercial facilities already exist, no additional structures would be constructed on a geologic unit or soil that is unstable or that would become unstable, or potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse. Likewise, no structure would be constructed on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property. Compliance with the Uniform Building Code would minimize the impacts associated with existing geological hazards. Construction would not affect 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. Therefore, no adverse significant impacts to geology and soils are expected due to the proposed amendments to Regulation 9-6.

|                                                                                                                                                                                                                                            | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>VII. HAZARDS AND HAZARDOUS MATERIALS.</b>                                                                                                                                                                                               |                                |                                                           |                              |                                     |
| 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

Residential and commercial facilities do not typically 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 handling such materials are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facilities where they exist. 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 or vessel 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 many types of industrial facilities. 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 affected facilities, risks to the public are reduced if there is a buffer zone between industrial processes and residences or other sensitive land uses, or the prevailing wind blows away from residential areas and other sensitive land uses. The risks posed by operations at each facility are unique and determined by a variety of factors. The areas affected by the proposed amendments are typically located in residential and commercial areas.

## Regulatory Background

There are many federal and state rules and regulations that facilities handling hazardous materials 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.

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.

Affected facilities that store materials 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 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 considers human factors as part of process hazards analyses, incident investigations, training, operating procedures, among others.

## Discussion of Impacts

**VII a-b.** It is expected that the proposed amendments to Regulation 9-6 will lead to a reduction in NO<sub>x</sub> emissions but will not create additional transport, use or disposal of any hazardous materials. The use of lower NO<sub>x</sub> emitting natural gas-fired water heaters and small boilers would not result in an increase in hazards associated with their operation. The natural gas-fired water heaters would continue to use natural gas but the proposed amendments to Regulation 9-6 would not increase natural gas hazards or require the use of additional natural gas. Therefore, the impacts of the proposed project on hazards are expected to be less than significant.

**VII c.** The proposed amendments to Regulation 9-6 are expected to reduce NO<sub>x</sub> emissions from existing natural gas-fired water heaters and small boilers. The amendments to the rule will not require or change the use or storage of any hazardous material. Therefore, no increase in the potential for releases of hazardous materials and their related impacts to schools is expected.

**VII d.** No impacts on hazardous material sites are anticipated from the proposed rule amendments that would typically apply to existing residential areas or commercial operations. Some of the affected areas may be located on the hazardous materials sites list pursuant to Government Code Section 65962.5. However, the proposed rule amendments would have no affect on hazardous materials nor would the amendment create a significant hazard to the public or environment. Natural gas-fired water heaters and small boilers already exist and are located within the confines of residential and commercial facilities. 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, which would apply to natural gas-fired water heaters and small boilers. The natural gas-fired water heaters and small boilers that already exist are located within the confines residences and commercial facilities. No construction activities are expected to result from the adoption of the proposed amendments to Regulation 9-6. New residential and commercial development will be governed by City and/or County General Plans, which generally consider the proximity to airports prior to approval. 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 residences or commercial facilities. The natural gas-fired water heaters and small boilers which already exist are located within the confines of existing residences and commercial facilities. The proposed rule amendments neither require, nor are likely to result in, activities that would impact the emergency response plan and new residential or commercial development would consider emergency response as part of the City/County General Plans prior to approval. Therefore, no significant adverse impacts on emergency response plans are expected.

**VII h.** No increase in hazards related to wildfires are anticipated from the proposed rule amendments. The natural gas-fired water heaters and small boilers affected by the proposed amendments that already exist are located within the confines of existing residences and commercial facilities. No increase in exposure to wildfires will occur due to the proposed amendments to Regulation 9-6.

|  | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|

**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"/> |

---

|  | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|

---

**VIII. HYDROLOGY AND WATER QUALITY.**

Would the project:

|                                                                                                                                                                                      |                          |                          |                          |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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 residential and commercial facilities affected by the proposed rule amendments are located throughout the Bay Area. Affected areas are generally surrounded by other residential and commercial facilities. 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 throughout the Bay Area.

The affected areas 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.

## 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, which have been updated in 2005 as the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. 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, f.** No significant adverse impacts on hydrology/water quality resources are anticipated from the proposed rule amendments, which would apply primarily to existing residential and commercial facilities. The proposed rule amendments are not expected to require additional water use and no increase in wastewater discharge is expected. Therefore, no violation of any water quality standards or waste discharge requirements, and no decrease in water quality is expected from the proposed amendments to Regulation 9-6.

**VIII b.** The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residential and commercial facilities. As equipment is retired, new low NOx emitting natural gas-fired water heaters and small boilers will replace them. The 2005 Ozone Strategy addressed the impacts of control measures on water demand. The proposed amendments to Regulation 9-6 are not expected to require additional water use. Therefore, the proposed amendments are not expected to deplete



groundwater supplies or interfere with groundwater recharge. Therefore, no significant impacts on groundwater supplies are expected due to the proposed amendments to Regulation 9-6.

**VIII c - f.** Residences and commercial facilities are expected to comply with the proposed amendments to Regulation 9-6 by installing low NOx emitting natural gas-fired water heaters and small boilers. All affected equipment is primarily located in residential and commercial areas, where storm water drainage has been controlled and no construction activities are expected to be required. Therefore the proposed amendments are not expected to substantially alter the existing drainage or drainage patterns, result in erosion or siltation, alter 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. Nor are the proposed amendments expected to 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. The proposed amendments are not expected to substantially degrade water quality. Therefore, no significant adverse impacts to storm water runoff are expected.

**VIII g – i.** The residences and commercial facilities affected by the proposed rule amendments are primarily located within residential and commercial areas. No major construction activities are expected due to the adoption of the proposed amendments to Regulation 9-6. Residential and commercial facilities are generally located to avoid flood zone areas and other areas subject to flooding. The proposed amendments are not expected to require additional construction activities, place any additional structures within 100-year flood zones, or other areas subject to flooding. Therefore, no significant adverse impacts due to flooding are expected.

**VIII j.** The residences and commercial facilities affected by the proposed rule amendments are located within residential and commercial areas. No major construction activities are expected due to the adoption of the proposed amendments to Regulation 9-6. The proposed amendments are not expected to place any additional structures within areas subject to inundation by seiche, tsunami or mudflow. Therefore, no significant adverse impacts on hydrology/water due to seiche, tsunami or mudflow 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 located in residential and commercial areas throughout the Bay Area.

## 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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. Residences and commercial facilities are expected to comply with Regulation 9-6 by installing low NOx emitting natural gas-fired water heaters and small boilers when old heaters and boilers are at the end of their useful life. No new construction would be required due to the adoption of the proposed amendments to Regulation 9-6. Therefore, no adverse significant impacts to land use are expected due to the proposed project.

|  | 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 located in residential and commercial areas throughout the Bay Area.

## 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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residential and commercial facilities. No new construction activities are expected due to the adoption of the proposed amendments to Regulation 9-6. 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                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>XI. NOISE.</b> 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 located in residential and commercial areas throughout the Bay Area. A majority of the affected areas are surrounded by other residences and commercial 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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. The rule amendments impose limitations on the NOx emissions from this equipment. Compliance will be achieved by installing low NOx emitting natural gas-fired water heaters and small boilers when old heaters and boilers are at the end of their useful life. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6. No noise impacts associated with construction would result from adoption of the proposed rule. No increase in noise is expected due to operation of the low NOx emitting equipment. The technologies that are expected to be used to comply with the proposed rule amendment are not expected to result in an increase in noise. Therefore, no adverse significant impacts to noise are expected due to the proposed project.

|  | 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 areas affected by the proposed rule amendments are primarily located in residential and commercial areas throughout the Bay Area.

## 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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. Facilities are expected to comply by replacing retired and installing new natural gas-fired water heaters and small boilers at the end of their useful life with low NOx emitting units. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6. Since no new construction activities are expected, there would be no need to increase the existing labor pool within the Bay Area. The rule amendment is not expected to have any impact requiring additional permanent workers in the Bay Area. Therefore, no adverse significant impacts to population or housing are expected due to the proposed project.

**XII b-c.** The natural gas-fired water heaters and small boilers already exist and are primarily located within the confines of existing residences and commercial facilities. No housing would be impacted or removed by the proposed rule amendments and no displacement of housing would occur. Therefore, no significant adverse impacts on population/housing are expected.

|  | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|

**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 areas affected by the proposed rule amendments are primarily located in residential and commercial areas throughout the Bay Area.

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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. Compliance with the proposed rule amendments is expected to be achieved by replacing old natural gas-fired water heaters and small boilers at the end of their useful life with low NOx equipment. No new construction activities would be required due to the adoption of proposed amendment to Regulation 9-6. The proposed rule amendments are not expected to require additional fire protection or police protection as the affected residences and commercial facilities are within the confines of existing residential and commercial areas. The rule amendments would not require the use of any new chemicals or create new hazards. Therefore, no increase in the need for fire or police protection is required.

The proposed rule amendments are not expected to require additional workers in the Bay Area 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 |
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|

---

**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 facilities areas affected by the proposed rule amendments are located in residential and commercial areas throughout the Bay Area. Public recreational land uses are generally located adjacent to these areas.

## 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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6 negating the need to increase the existing construction workers labor pool in the Bay Area. The proposed rule amendments are not expected to require additional permanent workers in the Bay Area or result in population growth so no impacts on recreation are expected. 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"/> |

|  | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|
|--|--------------------------------|-----------------------------------------------------------|------------------------------|-----------|

**XV. TRANSPORTATION/TRAFFIC.** Would the project:

- |                                                                                                                                                          |                          |                          |                          |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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 Port of Oakland and three international airports in the area serve as hubs for commerce and transportation. The transportation infrastructure for vehicles and trucks in the Bay Area ranges from single lane roadways to multilane interstate highways. The Bay Area contains over 19,600 miles of local streets and roads, and over 1,400 miles of state highways. In addition, there are over 9,040 transit route miles of services including rapid rail, light rail, commuter, diesel and electric buses, cable cars, and ferries. The Bay Area also has an extensive local system of bicycle routes and pedestrian paths and sidewalks. At a regional level, the share of workers driving alone was about 68 percent in 2000. The portion of commuters that carpool was about 12.9 percent in 2000. About 3.2 percent of commuters walked to work in 2000. In addition, other modes of travel (bicycle, motorcycle, etc.), account for 2.2 percent of commuters in 2000 (MTC, 2004).

Cars, buses, and commercial vehicles travel about 143 million miles a day (2000) on the Bay Area Freeways and local roads. Transit serves about 1.7 million riders on the average weekday (MTC, 2004).

The region is served by numerous interstate and U.S. freeways. On the west side of San Francisco Bay, Interstate 280 and U.S. 101 run north-south. U.S. 101 continues north of San Francisco into Marin County. Interstates 880 and 660 run north-south on the east side of the Bay. Interstate 80 starts in San Francisco, crosses the Bay Bridge, and runs northeast toward Sacramento. Interstate 80 is a six-lane north-south freeway which connects Contra Costa County to Solano County via the Carquinez Bridge. State Routes 29 and 84, both highways that allow at-grade crossings in certain parts of the region, become freeways that run east-west, and cross the Bay. Interstate 580 starts in San Rafael, crosses the Richmond-San Rafael Bridge, joins with Interstate 80, runs through Oakland, and then runs eastward toward Livermore. 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 re-striped 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 state and county level. Planning for interstate highways is generally done by the California Department of Transportation.

Most local counties maintain a transportation agency that has the duties of transportation planning and administration of improvement projects within the county and implements the Transportation Improvement and Growth Management Program, and the congestion management plans (CMPs). 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 natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. No new construction activities would be required due to the adoption of proposed amendments to Regulation 9-6. While natural gas will be used in the low NO<sub>x</sub> emitting natural gas- fired water heaters and small boilers, natural gas is delivered mostly by pipeline, so no additional truck traffic will be required to deliver natural gas. In addition, the newer type equipment is more efficient, so will use less natural gas as the units being replaced during operation. Therefore, no adverse impacts to traffic are expected.

**XV c.** The proposed rule amendments require replacing retired equipment over an extended number of years. The proposed rule amendments are not expected to involve the delivery of materials via air so no increase and no adverse impacts on air traffic are expected.

**XV d - e.** The proposed rule amendments are not expected to increase traffic hazards or create incompatible uses at or adjacent to residential or commercial areas. Emergency access provided in these areas will continue to be maintained and will not be impacted by the proposed rule amendments.

**XV f.** The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6 negating any need for additional parking 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 are not expected to result in any noticeable increase in traffic. Therefore, 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                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>XVI. UTILITIES AND SERVICE SYSTEMS.</b> 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.

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

Water is supplied to affected facilities 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 can also 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, b, d and e.** The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. The proposed rule amendment is not expected to generate additional wastewater generated by the affected residences or commercial facilities. Additionally, no increase in water consumption would be associated with low NO<sub>x</sub> emitting equipment. Therefore, no impacts on wastewater treatment requirements or wastewater treatment facilities is expected.

**XVI c.** Residences or commercial facilities are expected to comply by installing low NO<sub>x</sub> emitting equipment. No new construction would be required due to the adoption of the proposed amendments to Regulation 9-6. Storm water management would not be affected due to the replacement of retired equipment in these areas. Therefore, no changes to or increases in storm water are expected due to the proposed rule amendments.

**XVI f and g.** The proposed rule amendments would not affected the ability of residences or commercial facilities to comply with federal, state, and local statutes and regulations related to solid waste. No significant impacts on waste generation are expected from the proposed rule amendments, since the proposed amendments would replace old equipment at the end of its useful life.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------|------------------------------|-------------------------------------|
| <b>XVII. MANDATORY FINDINGS OF SIGNIFICANCE.</b>                                                                                                                                                                                                                                                                                                                                                                                                          |                                |                                                           |                              |                                     |
| 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 residences and commercial facilities with natural gas-fired water heaters and small boilers, thus providing a beneficial air quality impact and improvement in air quality. As discussed in Section IV, Biological Resources and Section V, Cultural Resources, no significant adverse impacts are expected to biological or cultural resources.

**XVII b-c.** The proposed amendments are expected to result in emission reductions of NOx from affected residences and commercial facilities with natural gas-fired water heaters and small boilers, 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 state ambient air quality standards for ozone, thus reducing the potential health impacts due to ozone exposure. 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 are not expected to have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. No significant adverse impacts are expected.

HLH\2496-BAAQMD\2496R9Ch.3ChckList..doc

**Chapter 4****References**

Bay Area Air Quality Management District (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 2002 Annual Report. June, 2004.

BAAQMD, 2002. 2002 BAAQMD Ambient Air Quality Data.

BAAQMD, 2006. Bay Area 2005 Ozone Strategy, January 4, 2006

BAAQMD, 2007. Workshop Report, Bay Area Ozone Strategy Control Measure SS-13, BAAQMD Regulation 9, Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters, May, 2007.

HLH\2496-BAAQMD\2538-R9Ch 4 Refs.doc