AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

July 14, 1998

Lynn Terry
ARB - Deputy Executive Office
P.O. Box 2815
Sacramento, CA 95814

SUBMITTAL OF 1998 TRIENNIAL REGIONAL AIR QUALITY STRATEGY REVISION

On June 17, 1998, the San Diego County Air Pollution Control District adopted 1998 Triennial Regional Air Quality Strategy Revision. Attached is a copy of each of the following documents:

A letter to the Air Pollution Control Board regarding this action.

The adopted resolution.

A copy of the Workshop Reports dated April 18, 1997, and January 15, 1998.

The official affidavit of publication of the Hearing Notice dated May 15, 1998.

A copy of the Air Pollution Control Minute Order dated June 17, 1998.

A copy of the 1998 Triennial Regional Air Quality Strategy Revision.

A copy of the Supplemental Environmental Impac Report and Revised Initial Study.

There was no opposition to the proposal at the June 17 '98, public hearing. If there are any questions, please call me at (619) 694-3303.

Richard J. Smith

RICHARD J. SMITH
Deputy Director

RJSm:RR:jo

Attachments

cc: Dean Saito, ARB (with attachments)

9150 Chesapeake Drive • San Diego • Califor 123-1096 • (619) 694-3307
FAX (619) 694-2730 • Smoking Vehicle ine 1-800-28-SMOKE

WEDNESDAY, JUNE 17, 1998

Air Pollution Control District)
of San Diego County . . . . .)

RESOLUTION ADOPTING THE 1998 TRIENNIAL REGIONAL AIR QUALITY STRATEGY REVISION, CERTIFYING THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT, AND MAKING RELEVANT FINDINGS

On motion of Member ROBERTS, Seconded by Member SLATER
the following resolution is adopted:

WHEREAS, California Health and Safety Code Sections 40910 through 40922 require local air pollution control agencies in air basins not attaining health based state air quality standards to submit air quality strategies to the California Air Resources Board to provide for attaining and maintaining the state standards by the earliest practicable date;

WHEREAS, the Air Resources Board has designated the San Diego County Air Pollution Control District (the District) as a Serious nonattainment area regarding the state ozone standard;

WHEREAS, the San Diego County Air Pollution Control Board (the Board) adopted the Regional Air Quality Strategy on June 30, 1992, pursuant to the requirements of California Health and Safety Code Sections 40910 through 40922;

WHEREAS, a program Environmental Impact Report was prepared, pursuant to California Environmental Quality Act, assessing the potential environmental impacts resulting from implementing the control measures in the Regional Air Quality Strategy;

WHEREAS, the Board amended the Regional Air Quality Strategy on March 2, 1993, by adopting a revised rule adoption schedule in response to California Air Resources Board comments;

WHEREAS, California Health and Safety Code Sections 40924 and 40925 require annual and triennial progress reports and triennial strategy revisions be submitted to the Air Resources Board;

WHEREAS, the Board adopted a Triennial Update of the Regional Air Quality Strategy on December 12, 1995;

WHEREAS, the District has prepared the 1998 Triennial Regional Air Quality Strategy Revision according to California Air Resources Board guidance, addressing the requirements of California Health and Safety Code Sections 40924 and 40925;

WHEREAS, California Health and Safety Code Section 40913(b) requires the Board to find that each Regional Air Quality Strategy revision is a cost-effective strategy to achieve attainment of the state standards by the earliest practicable date;

WHEREAS, pursuant to the California Environmental Quality Act, adoption of the 1998 Triennial Regional Air Quality Strategy Revision is a project requiring environmental review;

WHEREAS, an Initial Study was prepared in January 1998 pursuant to the California Environmental Quality Act indicating no substantial evidence that the proposed 1998 Triennial Regional Air Quality Strategy Revision will have a significant adverse effect on the environment;

WHEREAS, based on the Initial Study, a proposed Negative Declaration was prepared pursuant to the California Environmental Quality Act, and a public notice and a 30-day public comment period were provided for the proposed Negative Declaration;

WHEREAS, comments received on the proposed Negative Declaration asserted further evaluation was needed on potential cumulative air quality impacts resulting from the proposed 1998 Triennial Regional Air Quality Strategy Revision along with other new District projects;

WHEREAS, in response to the comments, a Revised Initial Study was prepared in March 1998, recommending preparation of a Supplemental Environmental Impact Report supplementing the Final Environmental Impact Report for the 1991 Regional Air Quality Strategy, and a Notice of Preparation was circulated for a 30-day public comment period;

WHEREAS, a Draft Supplemental Environmental Impact Report was prepared in April 1998 pursuant to the California Environmental Quality Act and circulated for a 45-day public comment period;

WHEREAS, comments received on the Draft Supplemental Environmental Impact Report did not warrant or result in changes to the Supplemental Environmental Impact Report;

WHEREAS, a response to comments received on the Draft Supplemental Environmental Impact Report has been prepared and is contained in the Final Supplemental Environmental Impact Report;

WHEREAS, the Supplemental Environmental Impact Report concludes there is no evidence indicating the 1998 Triennial Regional Air Quality Strategy Revision will have a significant adverse impact on the environment;

WHEREAS, the Supplemental Environmental Impact Report further concludes the air quality benefits of the 1998 Triennial Regional Air Quality Strategy Revision and the risks of imposing unnecessary costs to San Diego County businesses to obtain uncertain benefits by adhering to the 1995 Regional Air Quality Strategy Update far outweigh the risk of any potential unidentified adverse environmental effects;

WHEREAS, California Health and Safety Code Section 40925(a), requires the 1998 Triennial Regional Air Quality Strategy Revision be adopted by the Board at a public hearing;

WHEREAS, a public hearing on the 1998 Triennial Regional Air Quality Strategy Revision was held on June 17, 1998;

WHEREAS, the Board considered all comments, testimony and exhibits; and

WHEREAS, the Board has reviewed the Final Supplemental Environmental Impact Report.

NOW THEREFORE, IT IS RESOLVED AND ORDERED, that the Air Pollution Control Board of the County of San Diego, in its independent judgment, hereby makes the following findings as supported by the record as a whole:

1. The Regional Air Quality Strategy, as amended by the 1998 Triennial Regional Air Quality Strategy Revision, is a cost-effective strategy to attain the state air quality standard for ozone by the earliest practicable date;

2. Upon adoption of the 1998 Triennial Regional Air Quality Strategy Revision, the Air Pollution Control Board has adopted or has scheduled for adoption every feasible control measure to achieve and maintain the state air quality standard for ozone by the earliest practicable date;

3. Considering the Initial Study and Final Supplemental Environmental Impact Report and the entire record before the Board, including comments received and responses prepared by District staff, the proposed 1998 Triennial Regional Air Quality Strategy Revision will not have a significant adverse effect on the environment;

4. There are overriding considerations which outweigh and make acceptable the risk of potential unidentified adverse impacts that may be associated with the 1998 Triennial Regional Air Quality Strategy Revision;

5. There is no evidence in the record as a whole that the proposed 1998 Triennial Regional Air Quality Strategy Revision will have an adverse effect on wildlife resources, and on the basis of substantial evidence, the presumption of adverse effect in California Code of Regulations, Title 14, Section 753.5(d) has been rebutted.

IT IS FURTHER RESOLVED AND ORDERED that the Air Pollution Control Board of the County of San Diego hereby adopts the 1998 Triennial Regional Air Quality Strategy Revision for the San Diego Air Basin.

IT IS FURTHER RESOLVED AND ORDER that the Final Supplemental Environmental Impact Report is hereby certified as a true and complete statement of environmental impacts associated with the 1998 Triennial Regional Air Quality Strategy Revision.

PASSED AND ADOPTED by the Air Pollution Control Board of the San Diego County Air Pollution Control District, State of California, this 17th day of June, 1998 by the following votes:

AYES: Cox, Jacob, Slater, Roberts, Horn

I hereby certify that the foregoing is a full, true and correct copy of the Original Resolution which is now on file in my office.

THOMAS J. PASTUSZKA
Clerk of the Board of Supervisors

(SEAL)

By A. Gomez
Adair Gomez, Deputy

APPROVED AS TO FORM AND LEGALITY
COUNTY COUNSEL
BY Dutton
DEPUTY

No. 98-156; 6/17/98 (APCB 4)

AIR POLLUTION CONTROL BOARD
COUNTY OF SAN DIEGO AIR POLLUTION CONTROL DISTRICT
WEDNESDAY, JUNE 17, 1998

MINUTE ORDER NO. 4

SUBJECT: Noticed Public Hearing:
1998 Triennial Regional Air Quality Strategy Revision
(Supv. Dist: All)

OVERVIEW:
The California Air Resources Board (ARB) designated San Diego County as a Serious non-attainment area regarding the state ozone standard. The California Clean Air Act (state Act) requires air districts in non-attainment areas to prepare an air quality strategy identifying feasible emission control measures to attain State air quality standards as early as possible, and provide annual and triennial progress reports (Health and Safety Code (HSC) Section 40910 et seq., enacted in 1988). Triennial revisions are required to be adopted by the Board after a public hearing.

The Regional Air Quality Strategy (RAQS) was initially adopted by the Board on June 30, 1992 (APCB 1), and amended March 2, 1993 (APCB 1), in response to ARB comments. The first triennial revision was adopted December 12, 1995 (APCB 3).

This second triennial revision addresses the status of RAQS implementation from 1995 to 1997, and revises the control strategy for ozone precursors [volatile organic compounds (VOC) and oxides of nitrogen (NOx)] to reflect new data on potential control effectiveness, cost effectiveness, and feasibility. It also satisfies annual progress reporting requirements for 1996 and 1997.

The State Act requires the RAQS provide for minimum interim progress of 5% annual emission reductions for non-attainment pollutants (HSC §40914) or, if that is not achievable, it must include an expeditious schedule for adopting every feasible control measure. The RAQS reflects expeditiously adopting every feasible control measure. No air district in the state can demonstrate sustained 5% average annual ozone precursor reductions.

Estimated emission reductions over the last three years outpaced reductions projected for that period in the 1991 RAQS. Regionwide daily VOC emissions decreased from 275 to 231 tons between 1994 and 1997, a 5.5% average annual reduction far exceeding the projected 2.1% reduction. Regionwide daily NOx emissions decreased from 243 to 210 tons, a 4.8% average annual reduction exceeding the projected 3.3% reduction. The additional state and federal measures being added to the RAQS did not contribute to these reductions because their effective dates are beyond 1997. The additional reductions resulted primarily from greater than anticipated benefit of motor vehicle pollution controls. Additionally, emission reductions between 1994 and 1997 exceeded previous periods due to the statewide introduction of reformulated gasoline in 1996. No measures of comparable impact are anticipated during the 1998 - 2000 planning cycle.

Air quality continues to steadily improve because of emission controls developed for motor vehicles and industry. In 1997, San Diego County achieved its best air quality on record, exceeding the federal one-hour ozone standard on just one day and the more stringent state ozone standard on 43 days. Ten years ago, the federal and state standards were exceeded on 40 and 127 days, and 20 years ago on 90 and 151 days.

Between 1986 and 1996, measured peak daily ozone concentrations at Alpine, the monitoring site with highest smog levels, improved from 16.7 to 14.2 parts per hundred million (pphm), a 15% improvement. The El Cajon monitoring site, recording second highest smog levels, improved from 14.4 to 11.9 pphm, an 18% improvement.

Another indicator of progress is population-weighted ozone exposure. It is a composite of ozone exposures within each census tract within San Diego County, weighted by relative population within each tract. Regionwide population-weighted ozone exposure improved by 61% between 1986 and 1996, indicating substantial improvement.

Of the 24 control measures scheduled for adoption during 1995-1997, six (25%) were adopted; six (25%) are rescheduled for adoption during 1998 - 2000 (four in 1998, one in 1999, and one in 2000); nine (37.5%) are being deleted from the adoption schedule; two (8.3%) are delayed pending technology development; and one (4.2%) is being studied for possible implementation using an existing District rule. Delays in adopting certain control measures are attributable to control technology limitations, the state not completing guidance documents, and the District reevaluating certain control measures. The deleted measures were determined infeasible based on updated emission control and cost-effectiveness analyses, and recent amendments to state law (Trip Reduction Statute repeal).

Two new measures are being added reflecting feasible emission controls (1999 amendments to existing District Rule 67.6, Solvent Cleaning Operations, and 2000 amendments to Rule 67.24, Bakery Ovens). Also, two previously unanticipated additional control measures were adopted in 1997 (Rule 67.10 amendments, Kelp Processing and Bio-Polymer Manufacturing Operations, and Rule 67.9 amendments, Aerospace Coating Operations). These adopted rule amendments are included because state law requires identifying Fiscal Year every feasible measure.

Seven statewide motor vehicle and consumer product measures to which ARB committed in the 1994 State Implementation Plan (SIP), California's plan for attaining the federal one-hour ozone standard, are also added. The 1995 triennial revision incorporated the San Diego portion of the SIP because it fulfilled certain triennial revision requirements. However, these seven statewide measures were not included because they were not needed to demonstrate local attainment of the federal ozone standard. Accordingly, although these are not new measures, they are being added to the RAQS per ARB request, consistent with including every feasible measure as required by state law.

Additionally, amendments to Rule 61.2 (Transfer of Volatile Organic Compounds into Mobile Transport Tanks) will be studied for feasibility. Bulk gasoline storage tank degassing will also be evaluated to determine whether implementation is feasible using existing New Source Review rules.

The revision also reflects the District's intent to propose amending the New Source Review rules in 1998 to delete state emission offset requirements as authorized by state law (AB 3319). Prior to deleting these requirements, state law requires the Board find every feasible measure has been adopted or scheduled for adoption. The revision provides the basis for this finding, which is included in the attached Resolution.

Pursuant to the California Environmental Quality Act (CEQA), a Supplemental Environmental Impact Report (Supplemental EIR) was prepared supplementing the Final EIR for the 1991 RAQS. The results indicate revisions are not substantial and will not result in new or more severe significant environmental impacts. Pursuant to CEQA, the Board must certify Fiscal Year that the Final Supplemental EIR reflects the Board's independent judgment of potential environmental consequences resulting from the revision.

In the Supplemental EIR, the District has evaluated and disclosed potential environmental consequences based on information presently available. There remains a possibility additional information could become available in the future indicating potential adverse environmental consequences that are presently unidentified. However, not adopting the revision and instead adhering to the 1995 RAQS Update, thereby retaining measures determined infeasible and not delaying certain measures pending control technology development would impose unnecessary costs on San Diego County businesses to obtain negligible benefits. Therefore, a Statement of Overriding Considerations has been prepared as authorized by state law because the benefits of the revision and avoiding potential adverse economic impacts far outweigh the risk of any potential unidentified adverse environmental effects.

FISCAL IMPACT:
There is no fiscal impact associated with these recommendations. The fiscal impact of individual rules will be addressed separately during the rule development process.

BUSINESS IMPACT STATEMENT:
This proposal will affect certain businesses by committing the District to implement feasible emission controls. However, state law mandates every feasible control measure be included in the RAQS. Specific impacts on businesses will be addressed when rules implementing individual measures are developed. The District will work with affected industry groups to ensure any proposed rules are feasible and cost-effective.

RECOMMENDATION:
CHIEF ADMINISTRATIVE OFFICER:

(1) Adopt the Resolution adopting the 1998 RAQS Revision. The Resolution certifies the revision is a cost-effective strategy and the Board has adopted or scheduled for adoption every feasible control measure to achieve and maintain the state ozone standard by the earliest practicable date. It also certifies the Final Supplemental Environmental Impact Report and adopts the Statement of Overriding Considerations.

(2) Direct the Air Pollution Control Officer to submit the Resolution and the revision to the California Air Resources Board for approval.

(3) Approve the Certificate of Fee Exemption for De Minimis Impact Finding exempting the District from payment of fees to the California Department of Fish and Game.

ACTION:
ON MOTION of Member Roberts, seconded by Member Slater, the Members of the Air Pollution Control Board closed the Hearing and took action as recommended, adopting Resolution No. 98-156, entitled: RESOLUTION ADOPTING THE 1998 TRIENNIAL REGIONAL AIR QUALITY STRATEGY REVISION, CERTIFYING THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT, AND MAKING RELEVANT FINDINGS.

AYES: Cox, Jacob, Slater, Roberts, Horn

- - -

State of California)
County of San Diego)SS

I hereby certify that the foregoing is a full, true and correct copy of the Original entered in the Minutes of the Air Pollution Control Board.

THOMAS J. PASTUSZKA
Clerk of the Air Pollution Control Board

By A Gomez
Adair Gomez, Deputy

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DJC8808030

Proof of Publication

(2015.5 C.C.P.)

State of California)
County of San Diego) ss

1998 REGIONAL AIR QUALITY

I am a citizen of the United States and a resident of the State of California; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I a[illegible]e principal clerk of the printer and publisher of the SAN DIEGO COMMERCE, a newspaper published in the English language in the City of San Diego, and adjudged a newspaper of general circulation as defined by the laws of the State of California by the Superior Court of the County of San Diego, State of California, under date of January 15, 1991, Case No. 631749. That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

05/15/98

EXECUTED ON : 05/15/98
AT LOS ANGELES, CALIFORNIA

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

.....
Signature

NOTICE OF PUBLIC HEARING
SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT

NOTICE is hereby given of a public hearing on June 17, 1998, at 9:00 a.m., before the Air Pollution Control Board of the County of San Diego, in Room 310, County Administration Center, 1600 Pacific Highway, San Diego, California, to receive public comments on and consider the adoption of proposed changes to the Regional Air Quality Strategy (RAQS). The RAQS identifies control measures to be implemented to reduce air pollutant emissions to continue progress toward achieving the State clean air standard for ozone. Volatile organic compounds and oxides of nitrogen are ozone precursors.

The proposed 1998 RAQS Revision would delete control measures determined infeasible based on updated analyses of emission reduction potential and cost-effectiveness, and because of recent amendments to State law. Measures proposed for deletion are: further control of petroleum dry cleaning, control of semiconductor manufacturing, control of marine fueling operations, new and retrofit residential and new commercial solar hot water heaters, a student travel reduction program, a non-commute travel reduction program, and a truck operations program.

The proposed 1998 RAQS Revision would incorporate additional local, state, and federal control measures not reflected in the 1995 Triennial RAQS Update, including further control of: aerospace coating operations, kelp processing and bio-polymer manufacturing operations, bakery ovens, solvent cleaning operations, consumer solvent products, and new medium - and heavy-duty vehicles. Also, further control of transferring volatile organic compounds into mobile transport tanks will be examined for possible implementation. The additional control measures more than compensate for the potential emission reductions foregone by deleting measures no longer considered feasible.

The following measures identified in the current RAQS but not yet adopted are being rescheduled for adoption as indicated: adhesives operations (1998), low-NOx water heaters (1998), low-NOx furnaces (1998), further control of stationary combustion turbines (1998), further control of stationary reciprocating internal combustion engines (1999), and control of plastic parts, rubber, composite, and glass coating operations (2000). Further control of wood products coatings is being delayed until acceptable low-emitting coating technology becomes available for all applicable applications. Commercial charbroiling emission control is being rescheduled for adoption one year after the South Coast Air Quality Management District adopts a rule controlling most charbroiling operations. Bulk gasoline storage tank degassing will be evaluated to determine if associated emission reductions can be achieved by existing New Source Review (NSR) rules. The proposed 1998 RAQS Revision also reflects the District's intent to consider NSR rule amendments delaying emission offset requirements as authorized by State law.

The Board may consider modifications to the proposals deemed appropriate. Written comments are invited. Please submit written comments at least one week before the hearing date, addressed to: Robert Reider, Supervising Resources Specialist, San Diego County Air Pollution Control District, 9150 Chesapeake Drive, San Diego, CA 92123-1096.

Copies of the proposed 1998 RAQS Revision may be examined or obtained at Room 102, Air Pollution Control District Headquarters, 9150 Chesapeake Drive, San Diego, California 92123. Copies of the proposed 1998 RAQS Revision may also be examined at the office of the Clerk of the Board of Supervisors, Room 402, County Administration Center, 1600 Pacific Highway, San Diego, California. Specific information with respect to this matter may also be obtained by calling Robert Reider at (619) 694-8862.

THOMAS J. PASTUSZKA
Clerk of the Air Pollution Control Board of the San Diego County Air Pollution Control District
SDT-DJC8808030
05/15

1998 TRIENNIAL
REGIONAL AIR QUALITY STRATEGY REVISION
FOR THE SAN DIEGO AIR BASIN

JUNE 1998

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO
9150 CHESAPEAKE DR.
SAN DIEGO CA 92123

1998 REGIONAL AIR QUALITY STRATEGY REVISION FOR THE SAN DIEGO AIR BASIN

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REGIONAL AIR QUALITY STRATEGY REVISION

INTRODUCTION

The San Diego Regional Air Quality Strategy (RAQS) was developed pursuant to California Clean Air Act requirements and identifies an emission control strategy to provide expeditious progress toward attaining state ambient air quality standards. The pollutants addressed are volatile organic compounds (VOC) and oxides of nitrogen (NOx), precursors to the photochemical formation of ozone, the primary component of smog. The District does not yet attain the state ambient air quality standard for ozone.

The RAQS is required to provide for minimum interim progress of 5% annual emission reductions for nonattainment pollutants or, if that is not achievable, it must include an expeditious schedule for adopting every feasible control measure. The RAQS reflects expeditiously adopting every feasible control measure. No air district in the state can demonstrate sustained 5% average annual ozone precursor reductions.

State law requires annual and triennial progress reports regarding implementation of control measures, and triennial strategy revisions, as necessary [California Health and Safety Code (H&SC) Sections 40924 and 40925]. A district may revise the emission reduction strategy if the district demonstrates to the state board, and the state board finds, that the modified strategy is at least as effective in improving air quality as the strategy which is being replaced [H&SC Section 40925(b)].

Revisions to the RAQS pursuant to state law are contained herein. Annual progress reporting requirements are also addressed. This document was prepared pursuant to the state Air Resources Board's (ARB) "Guidance for Annual and Triennial Progress Reports Under the California Clean Air Act."

The San Diego County Air Pollution Control Board (Board) initially adopted the RAQS on June 30, 1992, and amended it on March 2, 1993, in response to ARB comments. The Board adopted the first triennial update on December 12, 1995. It reflected rescheduling implementation of all remaining control measures to 1996 or 1997. The status of all control measures scheduled for adoption is addressed herein and identified in Table 1. (Tables 1 and 2 are located at the end of this document immediately before Attachment I.)

The District has reevaluated RAQS control measures remaining to be implemented, reflecting new data on potential control effectiveness, cost effectiveness, and feasibility. As a result of the reevaluation, this 1998 RAQS Revision includes a revised control measure adoption schedule, as indicated in Table 1. Six measures are rescheduled for adoption during the next three years (Table 1, Section B). Two measures are delayed pending development of control technology (Table 1, Section C). Nine control measures are being deleted (Table 1, Section D) because they were determined infeasible based on updated emission control and cost-effectiveness analyses, and recent amendments to state law.

Additionally, four new District control measures (Table 1, Section F) and seven statewide control measures (Table 1, Section H) are being added to the RAQS. Two additional measures will be studied for possible future implementation (Table 1, Section G). The additional control measures will more than compensate for the potential VOC and NOx reductions from deleted and delayed measures. Consequently, the 1998 RAQS Revision provides increased emissions reductions relative to the 1995 RAQS and, thus, is a more effective air quality strategy.

The 1995 Triennial RAQS Update incorporated the San Diego portion of the 1994 State Implementation Plan (SIP) because it fulfilled certain triennial revision requirements. However, seven statewide motor vehicle and consumer product measures to which ARB committed in the 1994 SIP were not included, because they were not needed to demonstrate local attainment of the federal ozone standard. Accordingly, although these are not new measures, they are being added to the RAQS, consistent with including every feasible measure as required by state law. These additional statewide control measures will provide emissions reductions not previously anticipated in the RAQS.

A triennial RAQS revision must include a comparison of estimated rates of regionwide emissions reductions over the previous three years to the rates anticipated in the RAQS for that same period [H&SC 40925(a)]. As indicated in Table 2, estimated emission reductions over the last three years outpaced reductions projected for that period in the 1991 RAQS. Regionwide daily VOC emissions decreased from 275 to 231 tons between 1994 and 1997, a 5.5% average annual reduction far exceeding the projected 2.1% reduction. Regionwide daily NOx emissions decreased from 243 to 210 tons, a 4.8% average annual reduction exceeding the projected 3.3% reduction.

Annual progress reports must present the proposed and actual dates for adoption and implementation of each control measure scheduled for adoption in that year [H&SC §40924(a)]. Table 1 presents the status of control measures scheduled for adoption during the 1995 - 1997 planning cycle. A 1995 Annual Progress Report was submitted to ARB in January 1996. This document fulfills the annual progress reporting requirements for 1996 and 1997.

Triennial RAQS revisions must include an assessment of monitored air quality improvements in peak concentrations and population exposure [H&SC §40924(b)(1)]. This requirement is addressed in Attachment I, San Diego Regional Air Quality Progress. Air quality continues to steadily improve because of emission controls developed for motor vehicles and industry. Between 1986 and 1996, measured peak daily ozone concentrations at Alpine, the monitoring site with highest smog levels, improved from 16.7 to 14.2 parts per hundred million (pphm), a 15% improvement. The El Cajon monitoring site, recording second highest smog levels, improved from 14.4 to 11.9 pphm, an 18% improvement. Furthermore, regionwide population-weighted ozone exposure improved by 61% between 1986 and 1996, indicating substantial improvement.

Triennial RAQS revisions should incorporate updated growth projections [H&SC §40925(a)]. There are no updated growth projections to report in this RAQS revision. The 1995 Triennial RAQS Update incorporated the San Diego Association of Governments Series 8 forecast. The Series 8 forecast is still applicable. The Series 9 forecast will not be adopted until later in 1998.

State law also requires a 1997 comprehensive plan update under specified circumstances. However, ARB has determined, pursuant to H&SC §40925(c), that a comprehensive RAQS update is not necessary in 1997. Therefore, this 1998 RAQS Revision addresses only triennial air quality planning requirements.

1995 RAQS IMPLEMENTATION PROGRESS FOR 1995 - 1997

Of the 24 control measures scheduled for adoption during 1995 - 1997, six (25%) were adopted; six (25%) are rescheduled for adoption during 1998 - 2000 (four in 1998, one in 1999, and one in 2000); nine (37.5%) are being deleted from the adoption schedule; two (8.3%) are delayed pending technology development; and one (4.2%) is being studied for possible implementation using an existing District rule. Delays in adopting certain control measures are attributable to control technology limitations, the state not completing guidance documents, and the District reevaluating certain control measures. The deleted measures were determined infeasible based on updated

emission control and cost-effectiveness analyses, and recent amendments to state law (Trip Reduction Statute repeal).

Measures adopted in the 1995 - 1997 planning cycle are identified in Table 1, Section A, and are discussed below.

Automotive Refinishing

Rule 67.20 - Automotive Refinishing requires VOC controls from motor vehicle and mobile equipment coating (painting) operations. This measure limits the VOC content of topcoats, primers, specialty coatings, surface preparation and cleaning materials and requires the use of high transfer efficiency spray application equipment and enclosed cleaning devices for spray guns. High VOC content precoats and specialty coatings are restricted if the total amount used at a facility exceeds specified levels.

This measure is expected to reduce VOC emissions from motor vehicle and mobile equipment finishing and refinishing operations in San Diego County by about 64% or 500 tons per year (2.0 tons per day). Rule cost-effectiveness is estimated to be $0.65 per pound of VOC reduced. The measure meets California Best Available Retrofit Control Technology (BARCT) requirements.

Implementation: The Air Pollution Control Board adopted new Rule 67.20 - Motor Vehicle and Mobile Equipment Refinishing Operations on November 13, 1996.

Electrical Generating Steam Boilers

Rule 69 - Electrical Generating Steam Boilers previously specified control technology and operating parameters for individual boilers. Amendments requested by the affected utility deleted boiler-specific provisions and instead established limits on the utility as a whole. Control equipment is also required to run at all times a boiler is operating, rather than on possible ozone violation days. A utility-wide limit of 650 tons per year of NOx emissions is also established for 2005, reducing emissions 150 tons per year (0.41 tons per day) from the 800 tons limit for 2001 already in the rule. By 2005, NOx emissions will have been reduced 85% from 1989 levels. This measure meets state BARCT requirements and is expected to result in net savings to industry.

Implementation: The Air Pollution Control Board amended Rule 69 - Electrical Generating Steam Boilers on December 12, 1995.

Further Control of Can Coating

Rule 67.4 - Metal Container, Metal Closure and Metal Coil Coating Operations limits VOC emissions from metal container and metal closure (cans and drums) coating operations. Amendments implement BARCT by requiring water-based end sealing compounds emitting less than 20 grams per liter VOC emissions for food and beverage cans. The one company affected has complied with this standard since 1992, achieving annual emission reductions of 17.5 tons (0.07 tons per day). The cost-effectiveness is estimated to be $2.75 per pound of VOC removed.

Implementation: The Air Pollution Control Board amended Rule 67.4 - Metal Container, Metal Closure and Metal Coil Coating Operations on July 25, 1995.

Groundwater Decontamination

This Groundwater Decontamination control measure requires using add-on control technology to reduce air emissions generated in the process of removing organic compounds, including toxic air contaminants, from contaminated underground water. In 1991, the potential VOC emissions reduction was estimated to be less than 2.5 tons per year (less than 0.01 tons per day), and the cost was projected to be approximately $20 per pound of VOC removed. The recently adopted District Rule 1200 - Toxic Air Contaminants New Source Review regulates toxic air contaminant emissions by requiring Toxics - Best Available Control Technology (T-BACT) for such operations.

Implementation: The Groundwater Decontamination control measure was implemented through Rule 1200 - Toxic Air Contaminants New Source Review, adopted June 12, 1996.

Underground Gas Tank Decommissioning and Soil Decontamination

This control measure requires special procedures for removing underground gasoline storage tanks to prevent VOC emissions, and for decontamination of soil saturated by gasoline or other VOC-emitting materials. In 1991, the estimated VOC emissions reduction from tank decommissioning procedures was 10 tons per year at a cost of approximately $11.50 per pound, and from the soil decontamination measure was 125 tons per year at a cost of approximately $10 per pound. Total emission reductions were 135 tons per year (0.37 tons per day).

Most VOC emissions from these operations are toxic air contaminants. The District regulates toxic air contaminant emissions from soil decontamination activities through Rule 1200 - Toxic Air Contaminants New Source Review, which requires T-BACT standards for such operations. Unregulated non-toxic VOC emissions from tank decommissioning are negligible.

Implementation: The Underground Gas Tank Decommissioning and Soil Decontamination control measure was implemented through Rule 1200 - Toxic Air Contaminants New Source Review, adopted June 12, 1996.

Indirect Source Program

This control measure consists of an advisory program to help municipalities reduce vehicle trips through land use and transportation infrastructure design. The District has issued an indirect source guidance document for use by local municipalities, citizen groups, developers, and others. The guidance provides 37 strategies and accompanying examples encouraging walking, bicycling and transit use. The guidance was adopted by the Board in December 1997. In addition to the guidance, technical assistance is being offered to municipalities interested in implementing the guidance strategies or related transportation/land use strategies aimed at reducing vehicle emissions. The RAQS does not claim credit for emission reductions from this measure.

Implementation: The Air Pollution Control Board adopted an indirect source guidance document, *Tools for Reducing Vehicle Trips Through Land Use Design*, on December 17, 1997.

REVISED CONTROL STRATEGY

MEASURES RESCHEDULED FOR 1998 - 2000

Four 1995 RAQS control measures are rescheduled for adoption in 1998, one in 1999, and one in 2000. These measures are identified in Table 1, Section B and are discussed below.

Adhesives (Adopt a New Rule)

The Adhesives control measure requires limiting the VOC content of adhesives and cleaning materials, the use of high transfer efficiency application equipment where practicable, and limiting emissions from application equipment cleaning operations. Developing the adhesives control measure was delayed pending an ARB BARCT determination. A draft BARCT determination for adhesive operations was completed in 1996, and is awaiting ARB completion.

In 1991, adhesives use caused about 750 tons per year of VOC emissions. Most of these emissions are attributed to non-permitted sources such as construction (flooring, carpeting, roofing work, etc.). In 1991, the 100 permitted adhesive coating operations in the District emitted an estimated 75 tons per year of VOC. The Adhesives tactic evaluation in the 1991 RAQS indicated potential emissions reductions of 0.22 tons per day at a cost-effectiveness range of $0.26 - $10.00 per pound. During rule development, the District will update information on the number of sources, the magnitude of emissions from adhesives applications, and the potential emission reductions. The cost-effectiveness estimate for San Diego County sources will also be updated.

1998 RAQS Revision: Adoption of Rule 67.21 is rescheduled for 1998.

Low-NOx Water Heaters (Adopt a New Rule)

The control measures for residential and commercial low-NOx water heaters were based on controls already achieved by corresponding South Coast Air Quality Management District (AQMD) regulations. Cost-effectiveness was estimated in the 1991 RAQS at $1.53 per pound of NOx reduced for residential units and $8.12 per pound of NOx reduced for commercial units. RAQS cost-effectiveness values represented then-current information on anticipated costs and emissions reductions. More recent data on water heater costs revise the estimated cost-effectiveness for both residential and small-scale commercial units to $0 - $2.48 per pound of NOx reduced.

1998 RAQS Revision: The separate control measures for residential and commercial water heaters are being combined into one low-NOx water heaters measure. Adoption of a water heaters rule is rescheduled for 1998.

Low-NOx Furnaces (Adopt a New Rule)

The need for a rule requiring residential low-NOx furnaces was reevaluated during the 1995 - 1997 planning cycle. This control measure was included in the 1991 RAQS because San Diego County was nonattainment for the state nitrogen dioxide standard, which was violated during winter months, when furnaces are used. However, San Diego is now designated attainment for nitrogen dioxide. The 1995 Triennial RAQS Update delayed rule development pending further study of potential benefits. Rule development has been determined appropriate because the state ozone standard is still occasionally exceeded during winter months, and NOx is also an ozone precursor.

Cost-effectiveness was estimated in the 1991 RAQS at $5.76 per pound of NOx reduced. RAQS cost-effectiveness represented then-current information on anticipated costs and emissions reductions. More recent data on costs revise the estimated cost-effectiveness to $0 - $3.39 per pound of NOx reduced.

1998 RAQS Revision: Adoption of a furnaces rule is rescheduled for 1998.

Further Control of Stationary Gas Turbine Engines (Adopt a New Rule)

Rule 69.3 Stationary Gas Turbine Engines was adopted in 1994 and was approved into the SIP in June 1997, and requires federal Reasonably Available Control Technology (RACT) for NOx emissions from existing turbines rated at 1 megawatt or more and new turbines rated at 0.3 megawatt or more. In 1987, 42 turbines had permits in the District with total NOx emissions of approximately 945 tons per year (2.87 tons per day). Through further control of stationary combustion turbines, the 1991 RAQS had anticipated 0.64 tons per day NOx emissions reduction from the 1987 baseline.

There are now 69 turbines at 12 facilities emitting an estimated 662 tons per year of NOx (2 tons per day). The reduction in emissions from an increased number of turbines results from the application of Best Available Control Technology (BACT) required by New Source Review rules on new and replacement turbines. Existing Rule 69.3 affects 33 cogeneration and peaking turbines. (The remaining 36 turbines are exempt because of their size, application, or usage.) Since the NOx emissions from affected turbines were already controlled and in compliance at the time of rule adoption, the 1994 Rule 69.3 did not result in any additional emissions reductions.

The 1995 Triennial RAQS Update indicated that if state-mandated BARCT is determined to be more stringent than the federal RACT in Rule 69.3, a rule requiring BARCT would be adopted. The District proposes to adopt a new Rule 69.3.1 addressing BARCT NOx emission limits. It would reduce NOx emissions about 140 tons per year (0.38 tons per day). The estimated cost-effectiveness range indicated in the 1991 RAQS is $0.63-$6.36 per pound of NOx reduced.

1998 RAQS Revision: Adoption of Rule 69.3.1 to require BARCT is rescheduled to 1998.

Further Control of Stationary Reciprocating Internal Combustion Engines (Adopt a New Rule)

The 1991 RAQS included three control measures for Stationary Internal Combustion (IC) Engines scheduled for adoption in 1995: (1) Stationary Internal Combustion Engines (50 - 200 Horsepower), (2) Stationary Internal Combustion Engines (200 - 500 Horsepower), and (3) Further Control of Lean Burn Engines (including those larger than 500 horsepower). These control measures reflected the District's then-current estimate of the control level representing state-mandated BARCT. The 1995 Triennial RAQS Update combined the three previous control measures into one, Rule 69.4-Stationary Reciprocating Internal Combustion Engines, adopted by the Board in 1994.

Rule 69.4 meets federal NOx RACT requirements and was approved into the SIP in January 1997. It requires RACT on engines rated at 50 horsepower or higher and located at major stationary sources of NOx emissions. There are about 270 such engines in the District. However, most are exempt because they are emergency generators and engines associated with military support tactical equipment. Only six stationary IC engines at two major sources are currently subject to

Rule 69.4 RACT emissions control requirements. NOx emissions reductions attributable to the current rule are estimated at about 300 tons per year (1 ton per day).

The 1995 Triennial RAQS Update indicated that if state-mandated BARCT is determined to be more stringent than the federal RACT in Rule 69.4, a rule requiring BARCT would be adopted. A statewide BARCT determination is being developed for Stationary Reciprocating Internal Combustion Engines, but is not yet final. Drafts of the BARCT determination indicate BARCT will be more stringent than the current requirements of Rule 69.4.

The District proposes to adopt a new Rule 69.4.1 requiring BARCT-level emissions control for IC engines rated at 50 horsepower or higher, both at federal major and non-major sources. Recent information indicates there are now 948 IC engines at both federal major and non-major sources in the District, with estimated NOx emissions of 1700 tons per year. However, 717 of the engines, emitting approximately 1000 tons per year of NOx, are exempt from BARCT requirements because they are emergency generators, are portable, or are components of military support tactical equipment. Another 114 engines already meet BARCT requirements. Therefore, the proposed BARCT control measure would affect only 117 currently uncontrolled or undercontrolled IC engines. Projected emission reductions are approximately 250 tons per year (0.68 ton per day). Preliminary cost-effectiveness estimates (based on the proposed control level in the most recent draft BARCT Guidance) range from $7-$12 per pound of NOx reduced. This is notably higher than other NOx and VOC control measures adopted by the District.

1998 RAQS Revision: Adoption of Rule 69.4.1 to require BARCT is rescheduled to 1999.

Plastic Parts, Rubber, Composite and Glass Coating Operations

This control measure would require using low VOC coatings and cleaning materials and high transfer efficiency application equipment, or alternatively, add-on control equipment, to reduce VOC emissions. In 1991, there were 18 facilities in the District potentially subject to this control measure, with estimated VOC emissions of 54.7 tons per year. In 1997, there are 36 facilities emitting approximately 110 tons of VOC per year.

Plastic parts and rubber coating operations account for 29 tons per year of VOC emissions. Some plastic and rubber coating facilities currently use high transfer efficiency application equipment and low VOC content coatings and solvents. Based on a review of current permit files, implementing the proposed control measure would reduce VOC emissions approximately 10 tons per year.

The only glass coating facility (Sony) has add-on control equipment and uses low VOC coatings and solvents whenever feasible. The facility emits 18 tons per year, and no further emission reductions would be expected from this source.

Composite coating operations (primarily golf products manufacturing) account for remaining VOC emissions from this control measure category, approximately 63 tons per year. Most of these companies apply coatings on carbon composite products. No other air district in the state regulates composite coating operations. Presently, the District is unaware of any low VOC content coatings for carbon composites which would be suitable for most of these applications, especially for high-end products. Therefore, it is assumed that while some non-critical coatings might be substituted by presently available materials having a lower VOC content, a projected 14 tons per year emissions reductions would come primarily from using low-emitting cleaning materials. Thus, it is estimated that implementing the Plastic Parts, Rubber, Composite and Glass Coating control measure would reduce VOC emissions approximately 24 tons per year (0.10 tons per day).

1998 RAQS Revision: The Plastic Parts, Rubber, Composite and Glass Coating control measure is rescheduled for adoption in 2000. If further investigation during the preliminary stages of rule development indicates the potential emissions reduction is smaller than expected and would not warrant expending resources developing, adopting and implementing a new rule, including preparing a socioeconomic impact assessment, then the measure would be considered infeasible and deleted from the RAQS in the next triennial update.

DELAYED MEASURES

Two measures are delayed indefinitely pending development of applicable control technology, as indicated in Table 1, Section C.

Further Control of Wood Coating Operations (Amend Rule 67.11)

The Wood Coating control measure required limiting the VOC content for several types of wood coatings. Implementation was to occur in three steps, with effective dates in 1991, 1995 and 1997. The first two steps were incorporated in Rule 67.11. The more stringent third step was left for later rulemaking. However, several VOC limits scheduled to take effect in 1995 were technology-forcing, and relied on coating manufacturers' assurances that low VOC coatings using either water- or 1,1,1-trichloroethane-based technology would become available by the specified dates.

In 1995, the District amended Rule 67.11 to delay several step two VOC standards to 1997 because the production and usage of 1,1,1-trichloroethane, a stratospheric ozone depleter, were being severely limited by EPA. It is now clear that while water-based wood coatings are available, they are not suitable for all wood products and all applications. Most wood coating operations in the San Diego area are small businesses which can not afford the additional costs of water-based technology. Since some applications must use higher VOC content coatings than would be allowed, the technology-forcing VOC limits in this control measure for those coatings are not technologically feasible. Rule 67.11 was amended in 1997 to postpone implementation of technology-forcing step two standards for those coatings to 2005. The District will monitor coating technology developments, and if low VOC coatings having acceptable performance become available, Rule 67.11 will be amended to incorporate appropriate step three limits.

1998 RAQS Revision: Adoption of further control for wood products coating is delayed until technology becomes available.

Commercial Charbroiling Operations (Adopt a New Rule)

The Commercial Charbroiling control measure applies to charbroiling performed at restaurants and other food-service establishments. It would require installing electrostatic precipitators to reduce particulate emissions followed by a VOC control device. In 1991, approximately 590 food service establishments in San Diego County used charbroilers, with estimated VOC emissions of 221 tons per year. The 1991 RAQS projected annual emissions reductions of 190 tons with an overall cost-effectiveness of $1.60 per pound of VOC reduced. However, further investigations have determined technology is not presently available for most charbroiling operations.

In November 1997, the South Coast Air Quality Management District (SCAQMD) adopted Rule 1138 controlling chain-driven broilers, which account for only 12% of VOC emissions in this category. No cost-effective technology presently exists to reduce emissions from griddles and

underfired charbroilers, the largest emitters. A local commercial charbroiling rule is delayed until technology becomes available to control most operations.

1998 RAQS Revision: A commercial charbroiling rule is rescheduled for adoption one year after SCAQMD adopts a rule controlling most charbroiling operations.

DELETED MEASURES

Nine control measures have been determined infeasible and are being deleted from the RAQS, as indicated in Table 1, Section D.

Further Control of Petroleum Dry Cleaning

The Petroleum Dry Cleaning control measure was intended to amend existing Rule 67.2 - Dry Cleaning Equipment Using Petroleum-Based Solvent. The amendments would have decreased the exemption limit and required secondary emission control at one large facility (US Navy Training Center). In 1991, 8 sources were subject to Rule 67.2, with total VOC emissions of 40 tons per year. Besides the Navy source, only one additional facility would have been affected by the proposed measure.

However, by 1996, six of the eight sources were closed, including both facilities subject to the proposed control measure. Only two small operations remain in the District; their combined VOC emissions are 5.8 tons per year. Both are in compliance with the current Rule 67.2, and the proposed control measure would not provide additional emissions reductions. Therefore, this measure is no longer applicable to the District. Any new sources will be subject to BACT requirements of the New Source Review (NSR) rules if VOC emissions exceed ten pounds per day.

1998 RAQS Revision: The Petroleum Dry Cleaning control measure is deleted from the RAQS.

Semiconductor Manufacturing

This control measure would apply to semiconductor manufacturing and electronic packaging operations. It would require reducing VOC emissions by process modifications or add-on control equipment, and using low VOC cleaning materials.

In 1991, there were seven facilities in San Diego County manufacturing or packaging semiconductors, with total VOC emissions of approximately 71 tons per year. In 1997, there are 22 facilities emitting approximately 35 tons of VOC per year.

Some facilities have already made process modifications and other improvements resulting in emission reductions. Control measure implementation would reduce VOC emissions an estimated 15 tons per year (0.06 tons per day). This small potential reduction does not warrant expending resources developing, adopting and implementing a new rule, including preparing a socio-economic impact assessment. Implementing the measure would cause it to divert limited staff resources away from implementing more beneficial scheduled measures. Furthermore, any new sources will be subject to BACT requirements of the NSR rules if VOC emissions exceed ten pounds per day.

1998 RAQS Revision: The Semiconductor Manufacturing control measure is deleted from the RAQS.

Marina Gasoline Refueling

This control measure would require installing Phase II gasoline vapor recovery equipment at marina fuel docks to control VOC emissions during the fueling of marine vessels (mostly pleasure craft). In 1991, there were 11 marinas with gasoline refueling operations, with estimated VOC emissions totaling 8.3 tons per year.

There are now seven facilities with VOC emissions totaling less than 5 tons per year. Each has installed Phase I vapor recovery equipment. Expected remaining emissions reduction from the proposed control measure would be 2.5 tons per year (.007 tons per day) with an estimated cost-effectiveness of $8 per pound of VOC emissions reduced. The low throughput in these facilities does not justify the additional expense for installing the Phase II control equipment. The control measure would provide negligible emission reductions and is not economically feasible.

1998 RAQS Revision: The Marina Gasoline Refueling control measure is deleted from the RAQS.

Mandatory Solar Hot Water Heaters

The District has determined that implementing the three mandatory solar hot water heater measures is infeasible due to unacceptably high control costs. The cost-effectiveness ranges, per pound of NOx reduced, as identified in the 1991 RAQS for the three measures are:

New Residential Solar Hot Water Heaters,	$44 - $131
Retrofit Residential Solar Hot Water Heaters,	$49 - $146
New Commercial Solar Hot Water Heaters,	Savings - $158

By contrast, the maximum NOx control cost imposed under current District rules is $7 per pound. Thus, the solar hot water heater control measures are not economically feasible. Therefore, in the 1995 Annual Progress Report, the District proposed deleting these measures from the RAQS adoption schedule in this update.

Furthermore, the 1991 RAQS overstated anticipated NOx reductions and cost-effectiveness of the solar water heaters measures because the effect of low-NOx water heaters being implemented was not considered. The 1991 RAQS analysis assumed solar water heaters would supplement standard water heaters. However, as previously discussed, the RAQS includes a control measure requiring low-NOx gas-fired water heaters. Since low-NOx water heaters reduce NOx emissions by roughly 50 percent relative to standard gas-fired water heaters, supplementing a low-NOx water heater with a solar unit would yield half the anticipated emission reductions. Since the anticipated NOx reductions for the solar water heater measures were overstated by a factor of two, the costs per pound of NOx reduced were proportionally understated. Also, the 1991 RAQS inadvertently listed the 2010 emission reductions for the Retrofit Residential Solar Hot Water Heaters, while emission reduction estimates for the two other solar measures reflected 2000. The revised potential emission reduction estimates for all three solar measures in Table 1, Section D of this 1998 RAQS Revision reflect 2010 and account for low-NOx water heaters.

1998 RAQS Revision: The control measures for New Residential Solar Hot Water Heaters, Retrofit Residential Solar Hot Water Heaters, and New Commercial Solar Hot Water Heaters are deleted from the RAQS.

Mandatory Travel Reduction Programs

The Employee Commute Travel Reduction Program (formerly Rule 1301) was deleted from the RAQS in the 1995 Triennial RAQS Update, pursuant to H&SC §40929, because the program is no longer required under federal law. The 1995 Triennial RAQS Update also relisted as "unscheduled" the Student Travel Reduction Program because the need for the program under state law was in question. Subsequently, all state requirements for mandatory trip reduction programs were eliminated by Assembly Bill 3048 (Statutes of 1996, Chapter 777), responding to widespread public opposition to such mandates. Consequently, the Student Travel Reduction Program, the Non-Commute Travel Reduction Programs and the Goods Movement/Truck Operation Program proposed in the 1991 RAQS are no longer statutorily mandated. H&SC §40717.6 prohibits regulation of non-commute shopping trips. The Student Travel Reduction Program was estimated to potentially cost more than $16 per pound of ozone precursors reduced, and thus would not be economically feasible. The Goods Movement/Truck Operation Program was made a contingency measure in the 1991 RAQS, rather than being scheduled for implementation, because of social feasibility issues. Furthermore, no emissions reductions are credited in the RAQS for those measures.

1998 RAQS Revision: The Student Travel Reduction Program, the Non-Commute Travel Reduction Programs and the Goods Movement/Truck Operation Program are deleted from the RAQS.

ADDITIONAL DISTRICT MEASURES

This 1998 RAQS Revision incorporates four new District control measures providing additional emissions reductions not previously anticipated in the RAQS, as indicated in Table 1, Section F.

Aerospace Coating (Amend Rule 67.9)

Rule 67.9 - Aerospace Coating Operations controls VOC emissions from coating, stripping, and cleaning operations used in the manufacture and repair of aerospace components. The Board amended Rule 67.9 in 1997, adjusting the VOC content limits for certain specialized coatings to reflect current technology, adding new maskant categories with associated VOC limits, prohibiting disposal of waste coatings or solvents into the air, and requiring new controls on dip coating operations. The rule amendment is estimated to reduce VOC emissions by 2 tons per year (<0.01 tons per day). This 1998 RAQS Revision incorporates the amendment.

1998 RAQS Revision: The Air Pollution Control Board amended Rule 67.9 Aerospace Coating Operations on April 30, 1997. The additional VOC emissions reduction for the new control measure is <0.01 tons per day.

Further Control of Kelp Processing and Bio-Polymer Manufacturing Operations (Amend Rule 67.10)

Rule 67.10 - Kelp Processing and Bio-Polymer Manufacturing Operations implements federal RACT requirements for the only affected facility, Kelco. Amendments were adopted in 1997 requiring further controls.

The 1991 RAQS reflected 0.17 ton per day VOC reductions from a 1991 amendment to Rule 67.10. The 1995 Triennial RAQS Update incorporated a 1994 amendment to Rule 67.10 and claimed an additional 3.71 tons per day VOC reduction. This 1998 RAQS Revision incorporates

an additional amendment, adopted June 25, 1997, which requires a further 1.2 tons per day VOC reduction by 1999.

1998 RAQS Revision: Rule 67.10 was amended on June 25, 1997. The additional VOC emission reductions for the new control measure is 1.2 tons per day.

Further Control of Solvent Cleaning Operations (Amend Rule 67.6)

Existing Rule 67.6, Solvent Cleaning Operations, is proposed to be amended in 1999. The amendments are intended to reflect the more stringent control requirements in recent South Coast AQMD Rules 1122 and 1171, to the extent feasible for San Diego County sources. These requirements are more stringent than those previously identified as BARCT in the statewide BARCT determination.

According to ARB, the South Coast rules contain the following requirements (effective January 1999) that are not in existing District Rule 67.6:

- Solvent VOC limit of 50 grams per liter for cold cleaners; or airless or air-tight cleaning systems for cold cleaners using high-VOC solvents;
- freeboard ratio of 0.75 for all cold cleaners;
- requirement for superheated vapor system or secondary freeboard chiller for open top vapor degreasers;
- freeboard ratio of 1.0 for all vapor degreasers; and
- automated parts handler.

These and other potential control requirements will be evaluated to determine which requirements are feasible for San Diego County sources and to identify their potential VOC reductions.

ARB area source emission estimates, projected from 1976 and 1983 nationwide and statewide data, indicate solvent cleaning operations in San Diego County emit nearly 10 tons per day. However, a recent District analysis indicates far lower emissions. In 1997, there were 5381 permitted degreasers in the County. Estimated annual VOC emissions are 191 tons from remote reservoir cleaners, 7 tons from vapor degreasers, and 162 tons from batch-loaded cold cleaners, for a total of 361 tons per year (1 ton per day).

Estimated reductions from this measure range from 0 to about 0.9 ton per day, depending on what requirements are determined feasible. However, further evaluation will be conducted during rule development to refine potential VOC emission reductions from degreasers in the San Diego region.

The 1991 RAQS scheduled for adoption in 1994 a control measure to amend Rule 67.6 to further control Solvent Cleaning Operations. Subsequently, ARB issued the statewide BARCT determination for Solvent Cleaning Operations and the District determined that the existing rule represented BAPCT, and the proposed measure represented control beyond BARCT. Therefore, the 1995 Triennial RAQS Update deleted the Solvent Cleaning Operations control measure. However, the measure incorporated into this 1998 RAQS Revision represents a higher BARCT standard and new additional controls relative to the 1995 RAQS.

1998 RAQS Revision: Amending Rule 67.6 to reflect new BARCT requirements is scheduled for 1999.

Further Control of Bakery Ovens (Amend Rule 67.24)

The 1991 RAQS included a control measure for Bakery Ovens. The District adopted Rule 67.24 - Bakery Ovens in 1994 and amended it in 1995 to meet federal VOC RACT requirements. Rule amendments are proposed in 2000 to meet BARCT requirements by lowering the exemption threshold to 25 tons per year from the current 50 tons per year threshold.

The second-largest bakery in the county is presently exempt from Rule 67.24 because it does not exceed the current 50 tons per year exemption threshold. At 90% control (as required by the present rule), additional emission reductions from installing controls on the presently exempt bakery would be approximately 24 tons per year with the cost-effectiveness range of $2.65-$3.71 per pound of VOC removed. However, this bakery could avoid further control by modifying operations to maintain the level of emissions below the new threshold.

Additionally, the feasibility of increasing the VOC control requirement from 90% to 95% will be investigated. At 95% control, estimated additional emission reductions from the two large bakeries is 6 tons per year, at the incremental cost-effectiveness of $2.20-$2.90 per pound of VOC reduced. Presently, however, the reliability of control equipment with 95% efficiency is uncertain. Further research and consultation with industry will be conducted during rule development to determine feasibility.

1998 RAQS Revision: Amending Rule 67.24 to reflect BARCT requirements is scheduled for 2000. The additional VOC emissions reduction for the new control measure is uncertain, but would range from 0–0.1 tons per day. If further investigation of the control measure during the preliminary stages of rule development indicates the potential emissions reduction is smaller than expected and would not warrant expending resources developing, adopting and implementing a rule, including preparing a socio-economic impact assessment, then the measure would be deleted from the RAQS in the next triennial update.

STUDY MEASURES

Two control measures, one previously scheduled and one new, will be studied to determine the feasibility of possible future implementation, as indicated in Table 1, Section G.

Bulk Gasoline Storage Tank Degassing

This control measure applies to degassing of above-ground storage tanks at bulk plants and bulk terminals during cleaning, repairing, or decommissioning operations. The measure would require reducing VOC emissions from these operations by 95% using add-on control equipment. Rule 61.1 already prohibits tank degassing operations during the peak smog season (from May through October). For other months, when ozone violations are less likely, the rule requires facilities to notify the District prior to planned cleaning and degassing and comply with District-specified conditions. Facilities must conduct degassing operations during evening hours, defer them if elevated smog levels are projected, and cease operations if a public nuisance is possible. Further, the District recommends controlling emissions during tank degassing.

In 1991, there were 33 bulk gasoline storage tanks in San Diego County. An average of 11 tanks were assumed to be cleaned and degassed each year, generating an estimated 14 tons of annual VOC emissions. These emissions occur only on days of cleaning and degassing, usually 2 days per tank. The potential total emissions reduction was about 12.6 tons per year. Conservatively assuming three tanks would be degassed over a given two-day period, the emissions reduction

potential was estimated to be 1.9 tons per day. Cost-effectiveness was estimated to range from $6-$17 per pound of VOC reduced.

More recent District data show that the actual frequency of bulk gasoline tank degassing operations is five per year, with estimated annual emissions of about 7.9 tons. Typically, 3-4 operations occur during the winter months (infrequent smog period), and 1-2 variances are granted allowing degassing during the peak smog season. Variances usually require emission controls. At 95% effectiveness, the control measure would reduce VOC emissions an average of 7.5 tons per year. This is equivalent to 0.75 tons per day averaged over the ten days of operations, or an annual average of 0.02 tons per day. Cost-effectiveness of this measure is estimated as $5.50 per pound of VOC reduced.

Although this measure is considered cost-effective, the low level of emission reductions expected does not warrant adoption of a new District rule. However, the measure will be evaluated to determine if the associated emission reductions can be achieved by the District's New Source Review rules (i.e., Best Available Control Technology requirements for emission units with potential VOC emission increases of 10 pounds per day or more).

1998 RAQS Revision: The Bulk Gasoline Tank Storage Degassing control measure will be evaluated to determine if it can be implemented using existing New Source Review rules.

Further Control of Transfer of Volatile Organic Compounds Into Mobile Transport Tanks

The District will study, during the 1998 - 2000 planning cycle, the potential for additional emission reductions from amending Rule 61.2 - Transfer of Volatile Organic Compounds Into Mobile Transport Tanks, to lower the exemption threshold below the current level of 5 million gallons throughput per year.

1998 RAQS Revision: The Transfer of VOC into Mobile Transport Tanks measure will be examined for potential rule amendment.

STATEWIDE MOTOR VEHICLE AND CONSUMER PRODUCT MEASURES

Seven statewide motor vehicle and consumer product measures to which ARB committed in the 1994 State Implementation Plan (SIP) are also added. The 1995 Triennial RAQS Update incorporated the San Diego portion of the SIP because it fulfilled certain triennial revision requirements. However, these seven statewide measures were not reflected in the San Diego portion of the SIP, because they were not needed to demonstrate local attainment of the federal ozone standard even though, as statewide measures, they will reduce emissions in San Diego County. This 1998 RAQS Revision incorporates those measures, because the RAQS aims toward attainment of the more stringent state ozone standard, and state law requires including every feasible measure in the plan. The measures are described in "The Air Resources Board's Mobile Source and Consumer Products Elements" in Volume II of The California State Implementation Plan for Ozone, which is incorporated here by reference.

1998 RAQS Revision: The statewide measures incorporated into the 1998 RAQS Revision include four mobile source control measures and three consumer products control measures, as listed below. The additional emissions reductions for the new statewide control measures are listed in Table 1, Section H.

M3) Accelerated Ultra-Low Emission Vehicle Requirement for Medium-Duty Vehicles

M5) Additional State Reductions from Heavy-Duty Diesel Vehicles

M6) Lower Federal Emission Standards for Heavy-Duty Diesel Vehicles

M8) Lower Emission Standards for Heavy-Duty Gasoline Vehicles

CP2) Additional Consumer Product Categories

CP3) Aerosol Paints

CP4) Advanced Technology and Market Incentives for Consumer Products

ARB MEASURES NOT INCORPORATED

ARB's Mobile Source and Consumer Products Elements of the 1994 Ozone SIP include 16 mobile source measures and four consumer products measures. Nine of these measures are not incorporated into this 1998 RAQS Revision because either they are already included in the RAQS or do not apply to San Diego County. M1, M2 and M7 apply only to the South Coast Air Basin. M4, incentives for accelerated introduction of low-emission heavy duty diesel vehicles in fleets, was conceptually included in the 1991 RAQS Transit Improvement measure which called for converting half the transit bus fleet to low-emission vehicles by 2000. M9 through M16 are off-road vehicle control measures which were already included in the 1991 RAQS. CP1, existing consumer products controls, was also already included in the 1991 RAQS. The Enhanced Inspection and Maintenance program was included in the 1994 SIP Revision for San Diego County as a contingency measure, and was thus incorporated into the 1995 Triennial RAQS Update.

NEW SOURCE REVIEW

The District intends to consider amending the NSR rules to delete the state offset requirements ("no-net-increase" permitting program), as authorized by Health and Safety Code Section 40918.5. Pursuant to that law, such an amendment to the NSR rules may be adopted only if the Board finds "that the no-net-increase permitting program is not necessary to achieve and maintain the state ambient air quality standards by the earliest practicable date." The RAQS does not claim any emissions reduction credit for NSR rules. Hence, amendments to the NSR rules do not have any effect relative to the RAQS.

1995 - 1997 EMISSION REDUCTIONS

State law [H&SC 40925(a)] and ARB guidance require the triennial plan revision to include estimated rates of emissions reductions for all source categories over the previous three years and compare this to the rates anticipated in the plan. Table 2 shows that average annual reductions of VOC and NOx over the 1995 - 1997 period, taking into account the most recent emission inventory methodologies, outpaced reductions projected for that period in the 1991 RAQS. Regionwide daily VOC emissions decreased from 275 to 231 tons between 1994 and 1997, a 5.5% average annual reduction far exceeding the projected 2.1% reduction. Regionwide daily NOx emissions decreased from 243 to 210 tons, a 4.8% average annual reduction exceeding the projected 3.3% reduction.

The additional state and federal measures being added to the RAQS did not contribute to these emission reductions because their effective dates are beyond 1997. The relatively high rate of reductions for the 1995 - 1997 period are due to a 17.3% VOC and 9.3% NOx annual decrease in mobile source emissions between 1995 and 1996, reflecting greater than anticipated benefit of statewide introduction of reformulated gasoline in 1996.

Over the 1995 - 1997 period the San Diego region met the 5% average annual VOC reduction required by state law (H&SC Section 40914). However, the District will continue to implement all feasible measures, since future reductions of this magnitude are not expected. No measures providing air quality benefits comparable to reformulated gasoline are anticipated during the 1998 - 2000 planning cycle.

1998 RAQS REVISION NET EFFECT ON AIR QUALITY

Evaluation of deleted and added control measures indicates the net long-term effect of this 1998 RAQS Revision will be increased emission reductions. An updated evaluation of the control measures, as presented in Table 1, Section D, indicates the potential emissions reductions foregone by deleting the control measures determined infeasible would sum to be 0.07 ton per day potential VOC emissions reductions and 1.88 ton per day potential NOx emissions reductions. However, additional control measures listed in Table 1, Sections F and H, provide 15.72 - 16.72 tons per day additional VOC emissions reductions and 20.27 tons per day additional NOx emissions reductions. These additional reductions occur over timeframes equivalent to those of the deleted measures and more than compensate for the potential reductions foregone. Consequently, the 1998 Triennial RAQS Revision is a more effective air quality strategy than the 1995 RAQS.

TABLE 1
STATUS OF 1995 – 1997 SCHEDULED MEASURES AND
ADOPTION SCHEDULE FOR ADDITIONAL FEASIBLE MEASURES

Control Measure	1995 RAQS Adoption Schedule	Actual or Rescheduled Adoption Date	Year of Full Implementation	Pollutant	1995 RAQS Expected Emission Reductions (tons/day)	1998 RAQS Revised Emission Reductions (tons/day)
A. 1995 RAQS MEASURES ADOPTED DURING 95-97						
Automotive Refinishing	1996	11/13/96	1997	VOC	1.31	2.00
Electrical Generating Steam Boilers	1995	12/12/95	2005	NO_x	0.41	0.41
Further Control of Can Coating	1995	7/25/95	1995	VOC	0.31	0.07
Groundwater Decontamination	1997	6/12/96	1996	VOC	<0.01	<0.01
Underground Storage Tank Decommissioning and Soil Decontamination	1996/97	6/12/96	1996	VOC	0.55	0.37
Indirect Source Program	1996	12/17/97	Ongoing	All	—	—
B. 1995 RAQS MEASURES RESCHEDULED						
Adhesives Operations	1996/97	1998	1998	VOC	0.22	0.22
Low-NO_x Furnaces	1996/97	1998	2008	NO_x	1.01	0.30
Low-NO_x Water Heaters	1996/97	1998	2008	NO_x	2.62	0.87
Stationary Combustion Turbines BARCT	1996/97	1998	2002	NO_x	0.64	0.38
Stationary Reciprocating Internal Combustion Engines BARCT	1996/97	1999	2001	NO_x	2.98	0.68
Plastic, Rubber, Composite, and Glass Coating	1996/97	2000	2000	VOC	0.17	0.10
C. 1995 RAQS MEASURES DELAYED FOR TECHNOLOGY DEVELOPMENT						
Further Control of Wood Products Coating	1996/97	Delayed	—	VOC	0.14	0.14
Commercial Charbroiling	1996	Delayed	—	VOC	0.52	0.52

TABLE 1 (continued)
STATUS OF 1995 – 1997 SCHEDULED MEASURES AND
ADOPTION SCHEDULE FOR ADDITIONAL FEASIBLE MEASURES

Control Measure	1995 RAQS Adoption Schedule	Actual or Rescheduled Adoption Date	Year of Full Implementation	Pollutant	1995 RAQS Expected Emission Reductions (tons/day)	1998 RAQS Revised Emission Reductions (tons/day)
D. 1995 RAQS MEASURES DELETED						
Further Control of Petroleum Dry Cleaning	1996	Deleted	—	VOC	1.06	0.00
Semiconductor Manufacturing	1995	Deleted	—	VOC	0.07	0.06
Marina Fueling Operations	1997	Deleted	—	VOC	0.02	<0.01
New Commercial Solar Hot Water Heaters	1995	Deleted	—	NO_x	0.01	0.02
New Residential Solar Hot Water Heaters	1995	Deleted	—	NO_x	0.54	0.64
Retrofit Residential Solar Hot Water Heaters	1995	Deleted	—	NO_x	2.43	1.22
Non-Commute Travel Reduction Program	1995	Deleted	—	VOC / NO_x	0.00	0.00
Student Travel Reduction Program	Unscheduled	Deleted	—	VOC / NO_x	0.00	0.00
Truck Operation Program	Contingency	Deleted	—	VOC / NO_x	0.00	0.00
E. REVISION OF EXISTING RAQS MEASURES						
Revise New Source Review Rules	—	1998	1998	All	—	—
F. ADDITIONAL FEASIBLE MEASURES NOT SCHEDULED IN 1995 RAQS						
Further Control of Aerospace Coating	—	4/30/97	1997	VOC	—	<0.01
Further Control of Kelp Processing and Bio-Polymer Manufacturing	—	6/25/97	1999	VOC	—	1.2
Further Control of Solvent Cleaning Operations	—	1999	2001	VOC	—	0 - 0.9
Further Control of Bakery Ovens	—	2000	2002	VOC	—	0 - 0.1
G. STUDY MEASURES						
Bulk Gasoline Storage Tank Degassing	1996	—	—	VOC	1.90	0.75
Further Control of Transfer of VOC to Mobile Transport Tanks	—	—	—	VOC	—	—

TABLE 1 (continued)
STATUS OF 1995 – 1997 SCHEDULED MEASURES AND
ADOPTION SCHEDULE FOR ADDITIONAL FEASIBLE MEASURES

Control Measure	1995 RAQS Adoption Schedule	Actual or Rescheduled Adoption Date	Year of Full Implementation	Pollutant	1995 RAQS Expected Emission Reductions (tons/day)	1998 RAQS Revised Emission Reductions (tons/day)
H. ADDITIONAL STATE & FEDERAL MEASURES						
Further Control of Medium-Duty Vehicles	—	—	2010	VOC	—	0.77
				NO_x	—	6.57
State Control of Heavy-Duty Diesel Vehicles	—	—	2010	VOC	—	0.92
				NO_x	—	10.43
Federal Control of Heavy-Duty Diesel Vehicles	—	—	2010	VOC	—	0.29
				NO_x	—	2.83
Further Control of Heavy-Duty Gasoline Vehicles	—	—	2010	VOC	—	0.04
				NO_x	—	0.44
Additional Consumer Product Categories	—	—	2010	VOC	—	5
Aerosol Paints	—	—	2010	VOC	—	1.5
Advanced Technology for Consumer Products	—	—	2010	VOC	—	6

TABLE 2
RATES OF REDUCTION, 1995 – 1997
VOLATILE ORGANIC COMPOUNDS (VOC) & OXIDES OF NITROGEN (NOx)

Pollutant	Source	Emissions[1] (Tons/Day)				Average Annual Reduction 1995 – 1997	Approved 1991 RAQS Rate of Reduction[3] 1995 – 1997
		1994	1995[2]	1996[2]	1997[2]		
VOC	Stationary Sources	99.88	97.31 (–2.6%)	95.78 (–1.6%)	95.37 (–0.4%)	–1.5%	
	Mobile Sources	175.19	171.57 (–2.1%)	141.84 (–17.3%)	135.91 (–4.2%)	–7.9%	
	Total	275.07	268.88 (–2.3%)	237.62 (–11.6%)	231.28 (–2.7%)	**–5.5%**	–2.1%
NOx	Stationary Sources	24.96	24.19 (–3.1%)	22.25 (–8.0%)	21.13 (–5.0%)	–5.4%	
	Mobile Sources	217.93	213.86 (–1.9%)	193.97 (–9.3%)	188.42 (–2.9%)	–4.7%	
	Total	242.89	238.05 (–2.0%)	216.22 (–9.2%)	209.55 (3.1%)	**–4.8%**	–3.3%

[1] Emission inventory data provided by California Air Resources Board, December 15, 1997.
[2] Number in parentheses is percentage change from previous year.
[3] California Air Resources Board, Staff Report on 1991 Regional Air Quality Strategy, October 13, 1992.

ATTACHMENT I

SAN DIEGO REGIONAL AIR QUALITY PROGRESS

State law [Health and Safety Code Section 40924(b)(1)] requires triennial progress reports to include an assessment of progress towards attainment of the state clean air standards using air quality indicators developed by ARB. Progress in reducing ozone, nitrogen dioxide, and carbon monoxide is tracked over sequential 3-year periods, from the 1986-88 base period to the 1994-96 end period. Results indicate significant improvement for the three pollutants in the San Diego Air Basin over the last three years and since the 1986-1988 base period.

AIR QUALITY INDICATORS

The three indicators developed by ARB are a peak hot spot indicator, a population-weighted exposure indicator, and an area-weighted exposure indicator, all calculated from District air quality monitoring data.[1] Since monitoring data exhibits natural variability, each indicator value carries associated statistical uncertainty. Accordingly, ARB guidance recommends reporting air quality progress taking into account the statistical confidence level of the monitoring data. Improvements in air quality indicators with a 95% confidence level is considered "documented progress."

Peak Hot Spot Indicator

The peak hot spot indicator, Expected Peak Day Concentration (EPDC), is used to assess progress for all three pollutants. This measure reflects the potential for acute adverse health impacts by tracking progress in reducing peak concentrations of air pollution at monitoring sites where concentrations are highest.

Exposure Indicators

Two exposure indicators developed by ARB are used to assess progress for ozone. These measures reflect the potential for chronic adverse health impacts by tracking progress in reducing the total annual exposure to ambient ozone concentrations exceeding the state standard. The population-weighted exposure indicator represents a composite of exposures within each census tract within San Diego County, weighted by relative population within each tract to emphasize air quality levels in populated areas. The area-weighted exposure indicator is weighted by the size of each census tract to emphasize the geographic extent of air quality progress.

OZONE

The San Diego Air Basin is nonattainment for both the state and federal one-hour ozone standards. All three ozone indicators showed substantial ozone reductions since the 1986-1988 base period. The two highest ozone EPDC's between 1994 and 1996 occurred at the Alpine and El Cajon monitoring sites (Table 1).[2] The charted year-to-year 3-year averages (Figures 1 and 2) for these two sites indicate deterioration occurred between 1988 and 1990 that was more than offset by subsequent improvement between 1990 and 1996. This pattern is typical for the region as a whole, as reflected by both the population-weighted and area-weighted exposure indicators (Figures 3 and 4). Documented progress occurred at the 95% confidence level for all indicators.

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[1]Monitoring data for 1980-1996 was provided by ARB for this analysis.

[2]Concentration levels for the remaining sites in San Diego County were less than 90 percent of the concentration for the highest site and are not presented, pursuant to ARB guidance.

TABLE 1
Ozone Progress Indicators

Indicator	Base Period 86-88	End Period 94-96	Difference (Base-End)	Percent Difference (Base-End)	95% Confidence	
					Uncertainty	Documented Progress
EPDC - Alpine	16.7	14.2	2.5	15%	0.7	11%
EPDC - El Cajon	14.4	11.9	2.5	18%	0.5	14%
Pop-Weight Exposure	116	8	108	93%	37	61%
Area-Weight Exposure	397	112	285	72%	83	51%

CARBON MONOXIDE

The San Diego Air Basin meets both state and federal standards for carbon monoxide. EPDC data show the region's low carbon monoxide readings are continuing to decline. The two highest end-period EPDC's for carbon monoxide occurred at the Escondido and San Diego monitoring sites (Table 2), which showed documented progress of 15% and 24%, respectively. As with ozone, carbon monoxide concentrations rose in the years prior to 1990 (Figures 5 and 6), and then declined steadily between 1990 and 1996, resulting in significant reductions since the 1986-1988 base period.

TABLE 2
Carbon Monoxide Expected Peak Day Concentration (ppm)

Site	Base Period 86-88	End Period 94-96	Difference (Base-End)	Percent Difference (Base-End)	95% Confidence	
					Uncertainty	Documented Progress
Escondido-E Valley Pkwy	9.1	7.3	1.8	20%	0.4	15%
San Diego-Union Street	9.7	7.0	2.7	28%	0.4	24%

NITROGEN DIOXIDE

The San Diego Air Basin meets both state and federal nitrogen dioxide standards. Table 3 presents EPDC's for all sites with concentrations within 10% of the highest site, San Diego-12th Avenue. For the three sites with complete data, documented progress averaged 19%.

TABLE 3
Nitrogen Dioxide Expected Peak Day Concentration (pphm)

Site	Base Period 86-88	End Period 94-96	Difference (Base-End)	Percent Difference (Base-End)	95% Confidence	
					Uncertainty	Documented Progress
San Diego-12th Avenue	—	12.9	—	—	—	—
Escondido-E Valley Pkwy	15.2	12.6	2.6	17%	1.3	9%
Oceanside-Mission Ave	20.4	12.2	8.1	40%	2.4	28%
San Diego-Overland Ave	16.8	11.8	5.0	30%	1.5	21%

Nitrogen dioxide data match the pattern of ozone and carbon monoxide data over the periods examined. Concentrations increased prior to 1990, and then declined substantially through 1996, resulting in overall significant improvement since the base period. Figures 7, 8, and 9, depicting results from Escondido, Oceanside, and and San Diego-Overland Avenue, each exhibit this pattern.

CONCLUSION

Air quality indicators demonstrate substantial improvement in the San Diego Air Basin between the 1986-1988 base period and the 1994-1996 end period. Indicators for all three pollutants exhibited rising concentrations prior to 1990, and steady improvement in each period thereafter, resulting in the lowest levels in the 1980-1996 data set. All measured improvements occurred at the 95% confidence level.

FIGURE 1
Ozone

Expected Peak Day Concentration
Alpine-Victoria Drive Monitoring Station

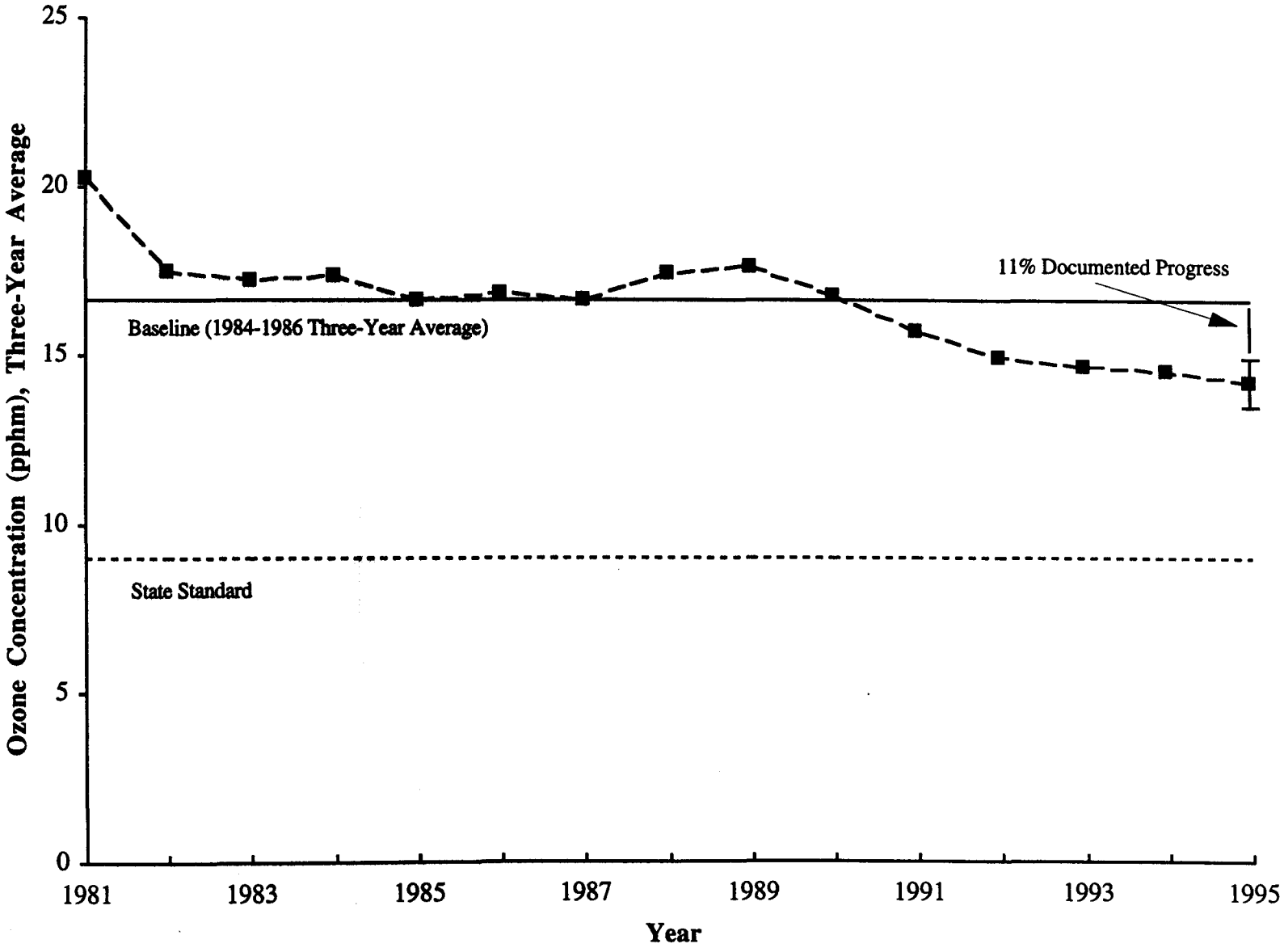

FIGURE 2
Ozone
Expected Peak Day Concentration
El Cajon-Redwood Avenue Monitoring Station

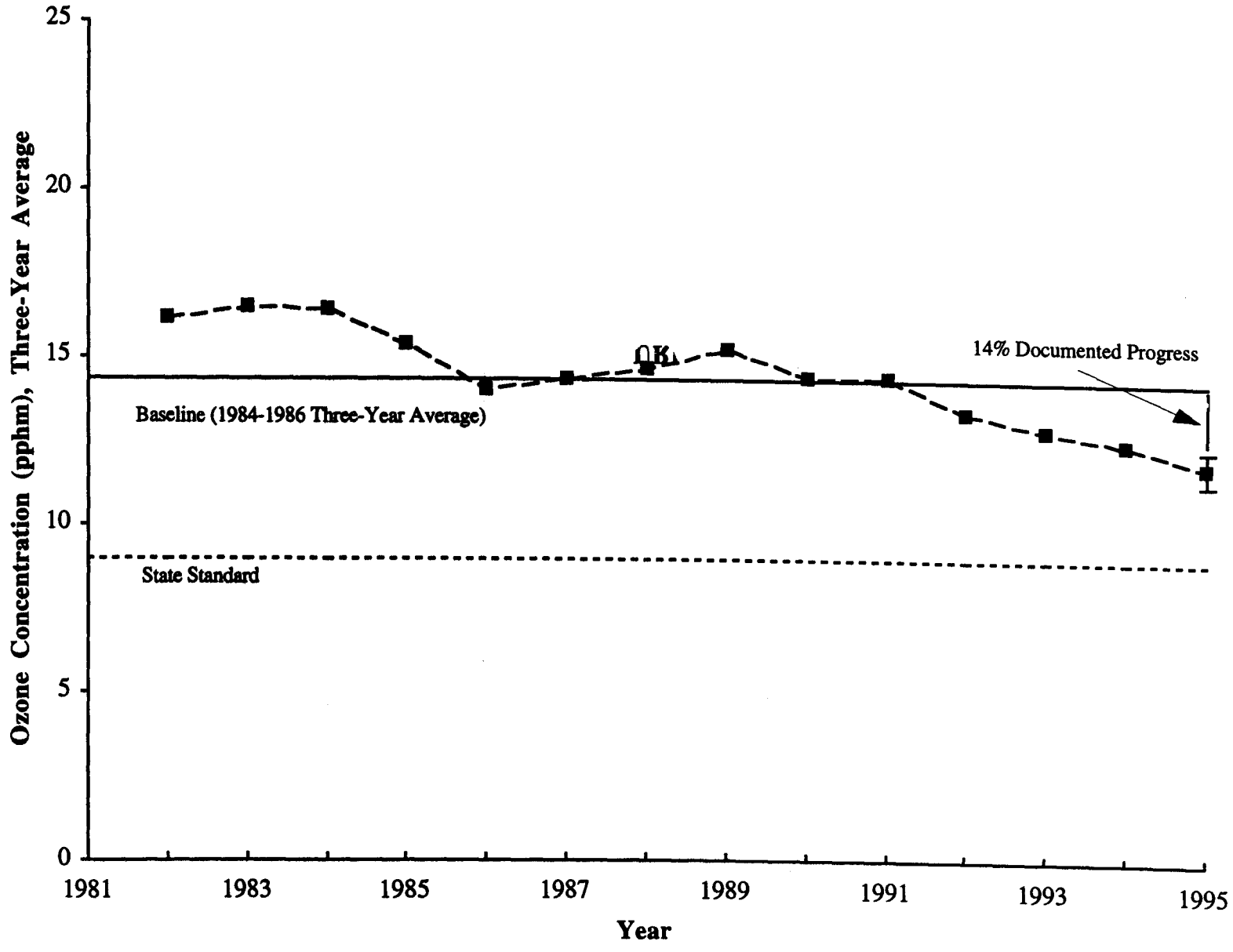

FIGURE 3

Ozone

Population-Weighted Exposure for All San Diego Monitoring Sites

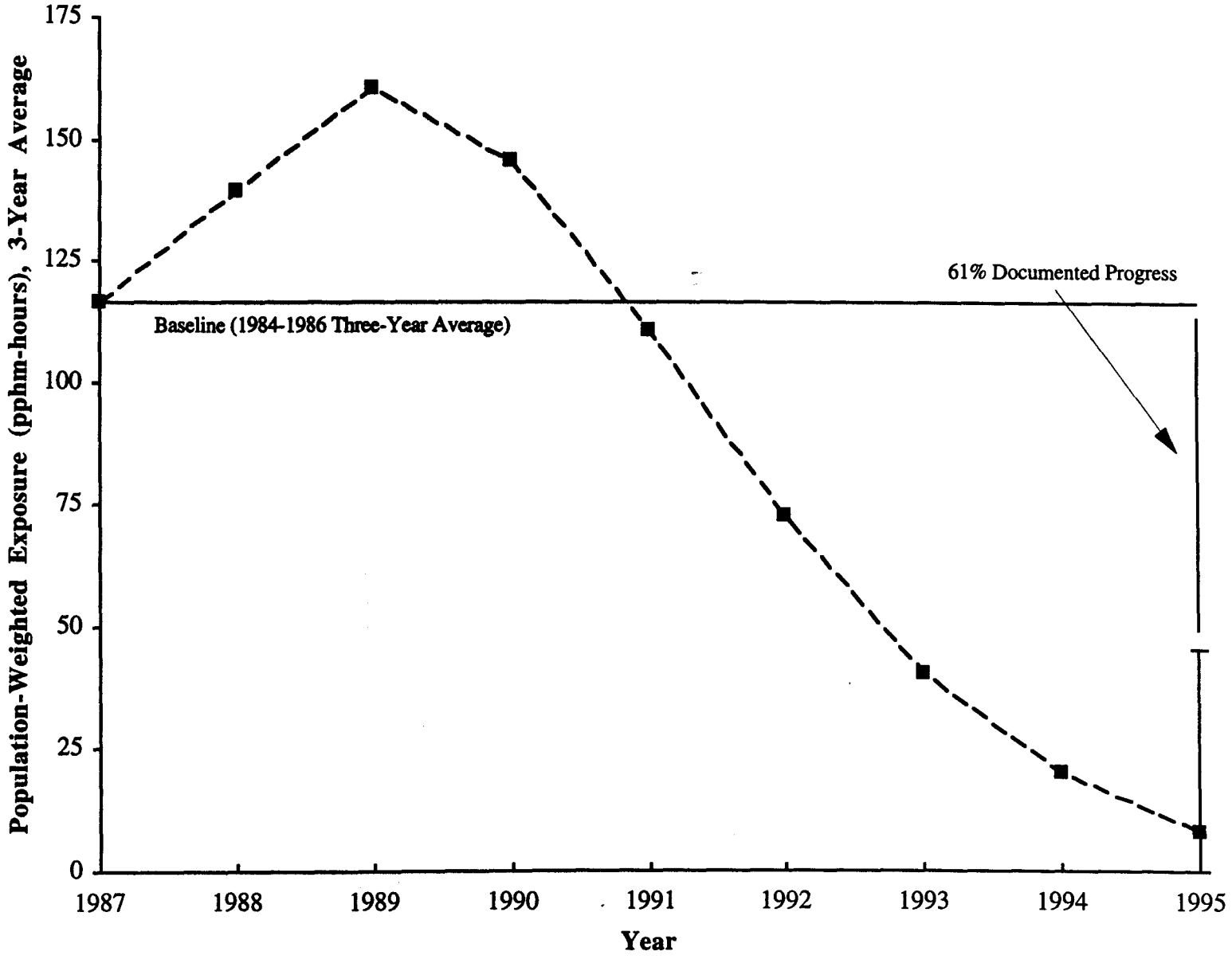

FIGURE 4

Ozone

Area-Weighted Exposure
for All San Diego Monitoring Sites

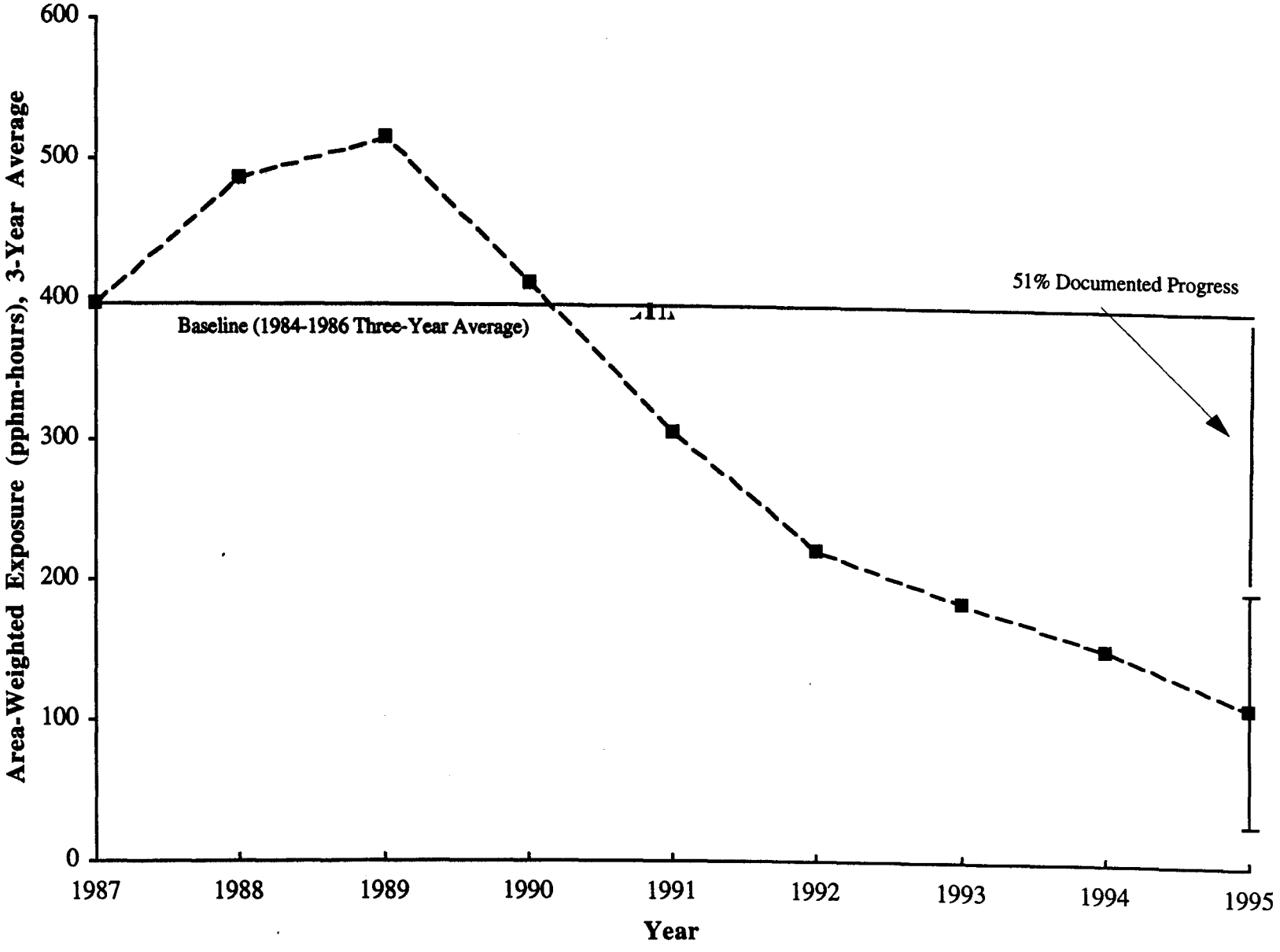

FIGURE 5
Carbon Monoxide
Expected Peak Day Concentration
Escondido-East Valley Parkway Monitoring Station

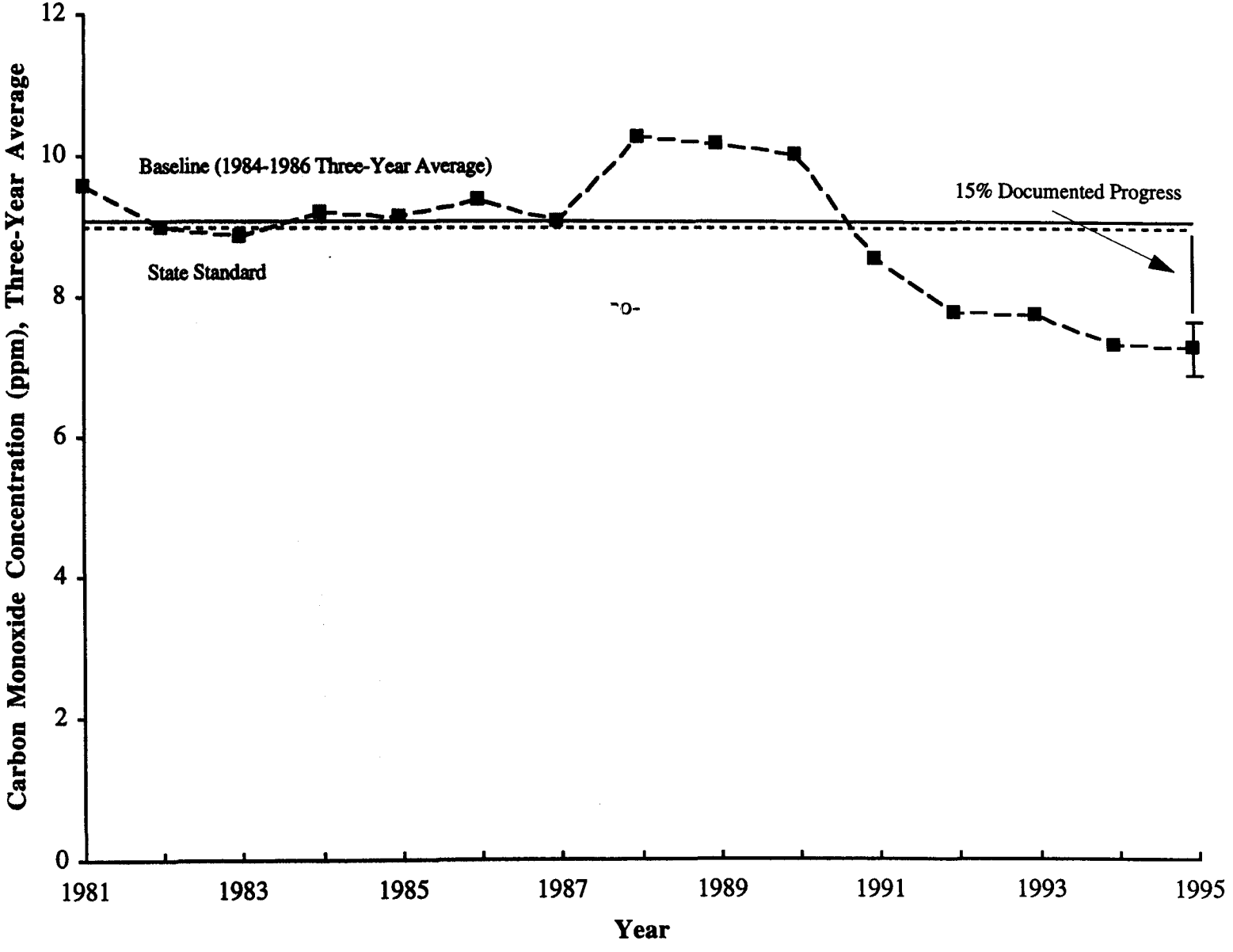

FIGURE 6
Carbon Monoxide

Expected Peak Day Concentration
San Diego-Union Street Monitoring Station

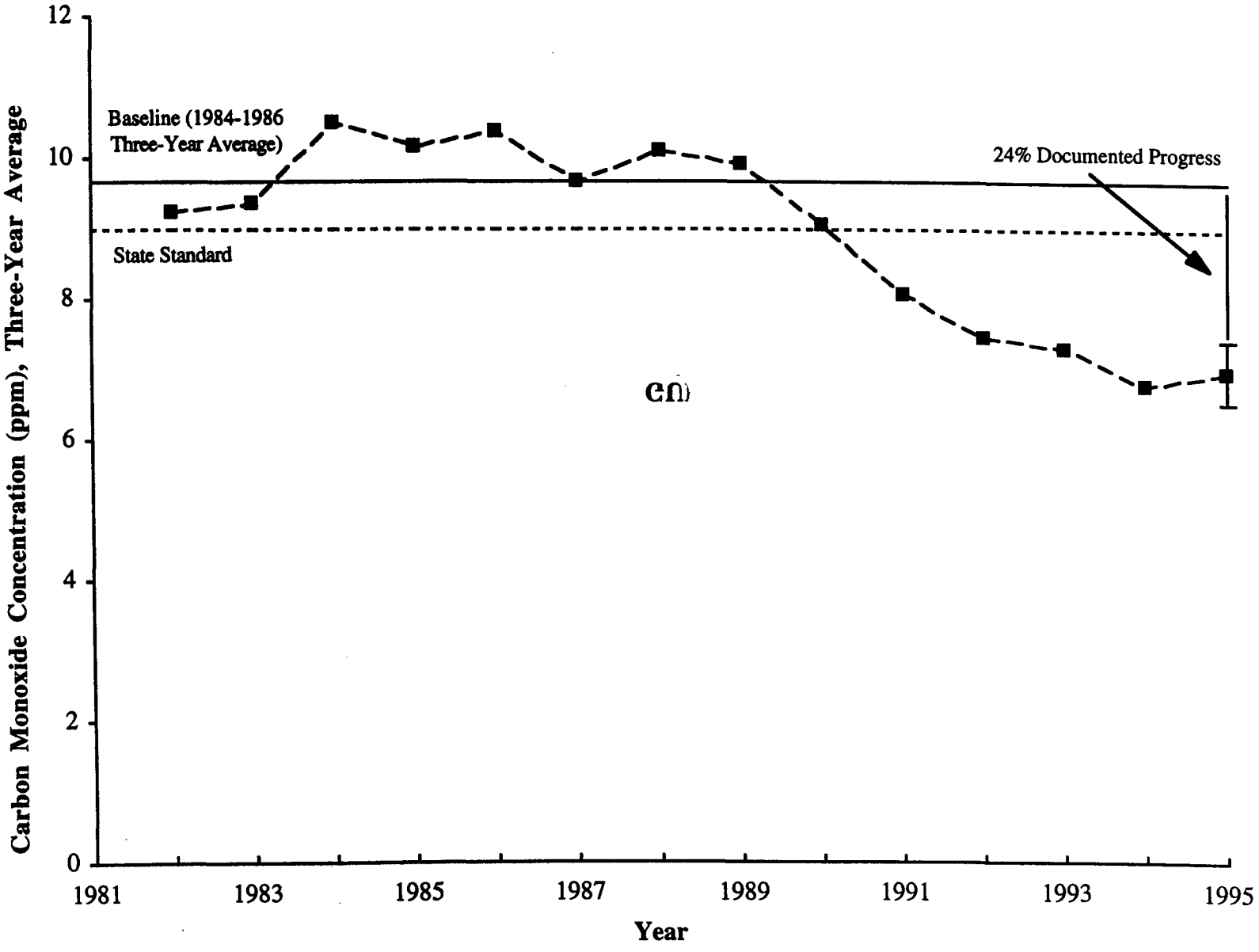

FIGURE 7
Nitrogen Dioxide

Expected Peak Day Concentration
Escondido-East Valley Parkway Monitoring Station

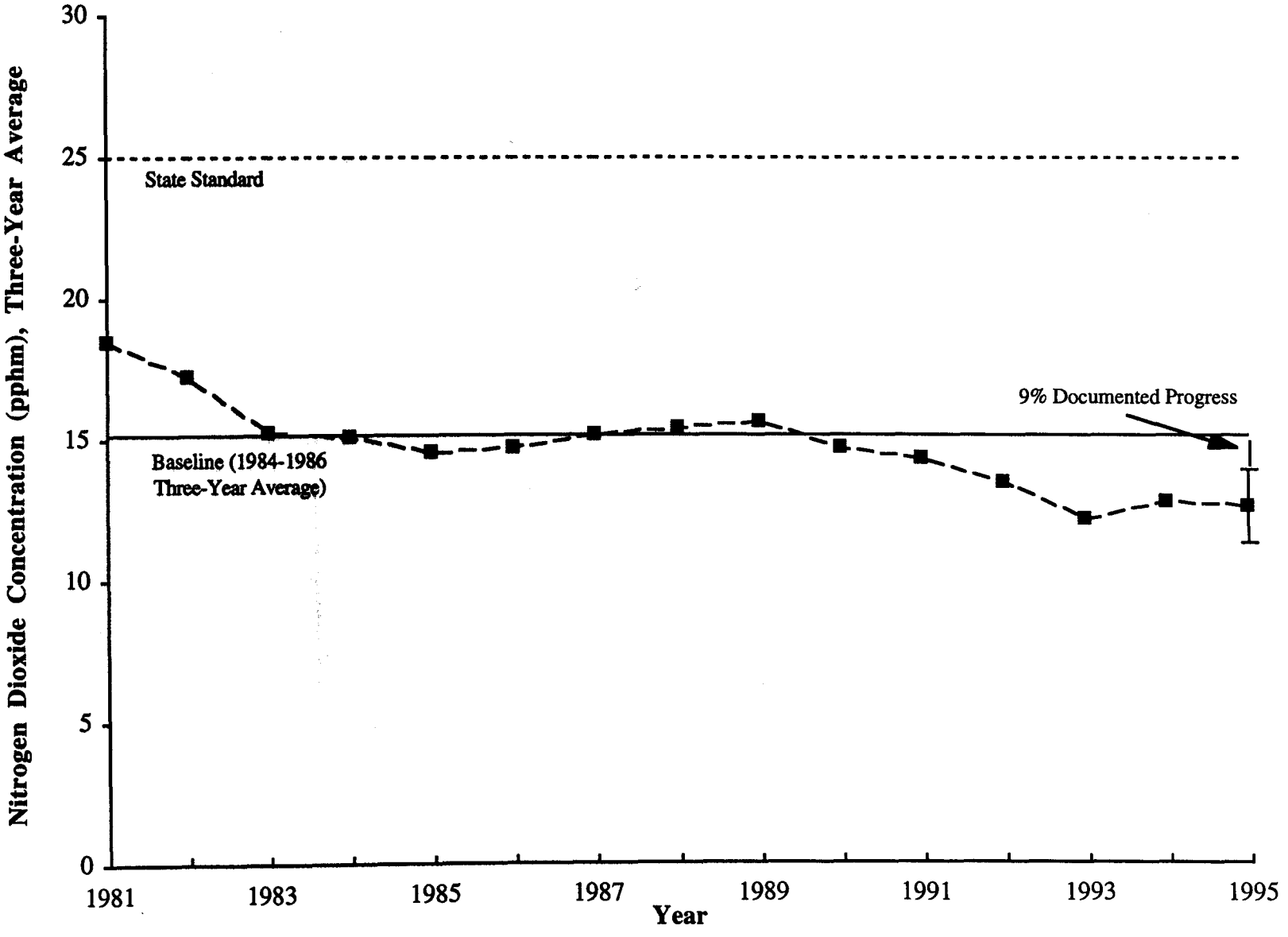

FIGURE 8
Nitrogen Dioxide

Expected Peak Day Concentration
Oceanside-Mission Avenue Monitoring Station

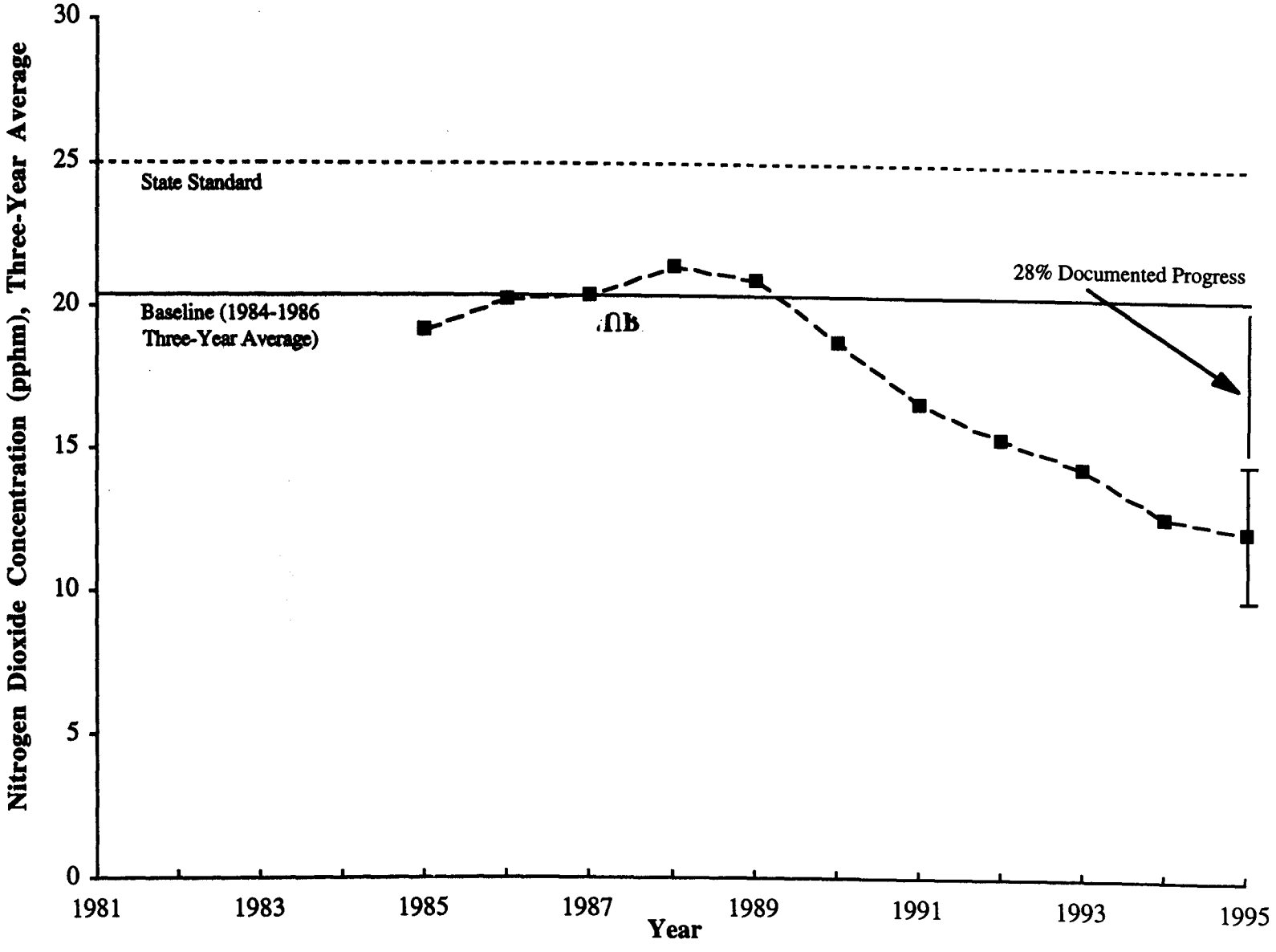

FIGURE 9
Nitrogen Dioxide
Expected Peak Day Concentration
San Diego-Overland Avenue Monitoring Station