

Technical Support Document

Proposing Approval of

**the PM-10 State Implementation Plan
for the Clark County Serious PM-10 Nonattainment Area
Annual and 24-Hour PM-10 Standards**

This proposed approval includes

Clark County Air Quality Regulations:

Section 0 (portions only);
Sections 90, 91, 92, 93; and
Section 94 and 94 Handbook

December 19, 2002

**Air Division
U.S. Environmental Protection Agency - Region 9**

This document has been prepared by

Air Division

Karen Irwin, Planning Office

and

David Albright, Permits Office
Larry Biland, Technical Support Office
Scott Bohning, Technical Support Office
Karina O'Connor, Planning Office
Robert Pallarino, Technical Support Office

Office of Regional Counsel

Paul Cort

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105

Disclaimer

We have made every effort to correctly describe the contents and provisions of the Clark County serious area PM-10 plan in this TSD. Any errors or omissions in the descriptions are ours and do not change or revise the content of the plan. We recommend that anyone reviewing this TSD also obtain a copy of the plan and consult it directly as to its contents and provisions.

Technical Support Document for Clark County Serious Area PM-10 State Implementation Plan

Table of Contents

Section

- A. Introduction, Findings, and Background: this document's purpose, summary of EPA's action, and history of PM-10 Plans for the Clark County nonattainment area
- B. Completeness Determination
- C. Transportation Budget Adequacy Determination
- D. CAA and EPA Policy Requirements for Serious Nonattainment Areas
- E. Detailed Evaluation of the PM-10 State Implementation Plan for Clark County
 - 1. Ambient Air Quality Surveillance
 - 2. Base Year and Future Year PM-10 Emissions Inventory
 - 3. Base Year Modeling Inventory and Design Values
 - a. Modeling premises
 - b. Significant vs. Insignificant sources
 - 4. BACM Analysis
 - 5. BACM and MSM Implementation
 - a. Disturbed Vacant Land
 - b. Unpaved Parking Lots
 - c. Construction Activities
 - d. Paved Roads
 - e. Unpaved Roads
 - f. Race Tracks
 - g. Section 0
 - h. Conclusion
 - 6. De Minimis Sources
 - a. Stationary Point Sources and BACT
 - b. Other Categories

c. Conclusion

7. General SIP Requirements

a. Adequate Personnel, Funding and Authority

b. Description of Enforcement Methods and State back-up authority

8. Demonstration of Attainment

a. Air Quality Modeling

b. Emission Reductions from Control Measures

c. Extension Request

9. Reasonable Further Progress and Contingency Measures

F. List of Tables

G. Attachments

Section A -- Introduction, Findings, and Background

This Document's Purpose

In this technical support document, we provide information supporting our proposed approval of the PM-10 State Implementation Plan (SIP or Plan) for Clark County (metropolitan Las Vegas, Nevada), submitted July 25, 2001. This Plan addresses federal Clean Air Act (CAA or Act) requirements for the Las Vegas Valley Planning Area (boundaries codified in 40 CFR 81.329) which is classified as "serious" nonattainment for PM-10.

In this technical support document, we:

- document our completeness determination;
- document our finding on the adequacy of the transportation conformity budgets;
- summarize the statutory and policy requirements for serious PM-10 nonattainment area plans and for state implementation plans in general; and
- describe our detailed analysis of the Plan, including the control measures and rules relied on to demonstrate compliance with CAA requirements, and our conclusions on the Plan's approvability with respect to those requirements.

Summary of EPA's Actions on the PM-10 State Implementation Plan for Clark County

1. Adequacy Finding on the Transportation Conformity Budget

We found the conformity budget adequate for transportation conformity purposes. See Letter, Jack Broadbent, EPA Region 9 to Allen Biaggi, Nevada Department of Environmental Protection (NDEP), dated November 9, 2001. A copy of this letter can be found in the docket. We published this finding in the Federal Register on January 11, 2002. 67 FR 1461. Our adequacy determination was effective on January 28, 2002.

2. Completeness Finding

We found the PM-10 Plan complete on January 31, 2002.¹ A copy of this letter can be found in the docket. With this proposed action, we are providing public notice of our completeness determination.

3. Proposed Actions on the PM-10 State Implementation Plan for Clark County and the Clark County Health District Rules

¹ Letter from Jack P. Broadbent, Director, Air Division, EPA Region IX, to Allen Biaggi, Administrator, Nevada Division of Environmental Protection, January 31, 2002.

There are two PM-10 national ambient air quality standards (NAAQS): an annual standard of 50 µg/m³ and a 24-hour standard of 150 µg/m³. Both standards are addressed in the PM-10 Plan for Clark County. We are proposing to approve this Plan under section 110(k)(3) and part D of the CAA. Table SUM-1 summarizes our actions by CAA requirement.

TABLE SUM - 1 PROPOSED ACTIONS ON THE PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY	
WE ARE PROPOSING TO APPROVE THIS REQUIREMENT...	UNDER THESE SECTIONS OF THE CLEAN AIR ACT...
Emissions inventory	172(c)(3)
Implementation of RACM/BACM	189(a)(1)(C) and 189(b)(1)(B)
Impracticability of attainment by 2001 demonstration	189(b)(1)(A)
Attainment by the expeditious alternative date	189(b)(1)(A)
BACT on major sources of PM-10 precursors	189(e)
RFP/Milestone demonstration	172(c)(2) and 189(c)
Attainment date extension request	188(e)
Contingency measures	172(c)(9)
Transportation conformity budget	176(c)
Clark County Regulations - portions of Section 0 (November 16, 2000), Sections 90, 91, 92, 93 (November 20, 2001), and Section 94 incl. 94 handbook (November 16, 2000)	110 and 189(b)(1)(B)
Commitments by Clark County jurisdictions and the State of Nevada to implement PM-10 control measures	110 and 189(b)(1)(B)

History of PM-10 Plans for the Las Vegas Valley

On the date of enactment of the 1990 CAA Amendments, PM-10 areas, including the Las Vegas Planning Area, that met the qualifications of section 107(d)(4)(B) of the amended

Act, were designated nonattainment by operation of law. 56 FR 11101 (March 15, 1991). In accordance with section 188(a), the Las Vegas Planning Area was initially classified as a moderate PM-10 nonattainment area. On December 6, 1991, the State of Nevada submitted a moderate area PM-10 Plan for the Las Vegas Valley titled “PM-10 Air Quality Implementation Plan, Las Vegas Valley, Clark County, Nevada.” Because this submittal did not demonstrate attainment of the 24-hour PM-10 standard by the applicable attainment deadline for moderate areas (December 31, 1994 per section 188(c)(1) of the Act), EPA reclassified the Las Vegas Valley under section 188(b)(1) to a serious PM-10 nonattainment area. 58 FR 3334, January 8, 1993.

The State of Nevada submitted the following plans (the “Moderate and Serious Area SIPs”), prepared by the Clark County Department of Comprehensive Planning to address the CAA’s moderate and serious nonattainment area requirements for the Las Vegas Valley Planning Area:

1. The PM-10 moderate area nonattainment plan titled “PM-10 Air Quality Implementation Plan, Las Vegas Valley, Clark County, Nevada,” submitted to EPA on December 6, 1991;
2. A RACM addendum titled “Addendum to the ‘Moderate Area’ PM-10 State Implementation Plan for the Las Vegas Valley,” submitted to EPA on February 15, 1995;
3. A BACM analysis plan titled “Providing for the Evaluation, Adoption and Implementation of Best Available Control Measures and Best Available Control Technology to Improve PM-10 Air Quality,” submitted to EPA on December 6, 1994; and
4. The PM-10 serious area nonattainment plan for the Las Vegas Valley nonattainment area titled “Particulate Matter (PM-10) Attainment Demonstration Plan”, submitted to EPA on August 25, 1997.

On June 14, 2000 EPA proposed to disapprove these plans, citing several deficiencies. 65 FR 37324. In response to the proposed disapproval, Clark County Department of Comprehensive Planning (renamed Clark County Department of Air Quality or “DAQM” in 2001) began drafting a new PM-10 Plan for the Las Vegas Valley and requested EPA comments. EPA commented on draft rules, emissions inventories, and other substantive elements of the draft Plan, a process that continued until eventual adoption of the Plan and associated rules.

On December 5, 2000, prior to EPA taking final action on its proposed disapproval, the State of Nevada withdrew the Moderate and Serious Area SIPs. On January 5, 2001, EPA proceeded with a finding of failure to submit, effective December 20, 2000, which began the 18-month time clock for mandatory application of sanctions and 2-year time clock for promulgation of a federal implementation plan (FIP). 66 FR 1046.

On June 19, 2001, the Clark County Board of Commissioners adopted a new serious area PM-10 plan titled "PM-10 State Implementation Plan for Clark County" ("Plan"). The Plan was submitted to EPA on July 25, 2001.

On January 31, 2002, EPA made a completeness finding on the Plan, thereby permanently stopping the sanctions clock that began on December 20, 2000 with EPA's finding of failure to submit.

On October 24, 2002, the Nevada Division of Environmental Protection submitted to EPA revised versions of Clark County Sections 90 through 93, dated November 20, 2001.

On November 19, 2002, the Nevada Division of Environmental Protection submitted to EPA an amendment to the Clark County PM-10 Plan adopted by the Clark County Board of Commissioners on November 19, 2002. The amendment establishes new deadlines for SIP commitments concerning revisions to Sections 90 through 94 and adds documentation on adopted local ordinances for fireplaces and woodstoves as Appendix R of the Plan.

The FIP clock established by the December 5, 2000 finding of failure to submit expires on December 20, 2002. Final action by EPA approving the Plan is necessary to avoid the deadline for promulgating a FIP.

Section B -- Completeness Determination

In this proposed approval, EPA is notifying the public that we have found the submitted PM-10 Implementation Plan for Clark County complete under section 110(k)(1) of the CAA.

We notified the State of our completeness determination by letter to NDEP on January 31, 2002, and our letter permanently stops the sanctions clock, as of that date, established by our January 5, 2001 finding that the State had failed to submit the required nonattainment plan.

Table SUM-2 provides details on how the Plan meets our completeness criterion, which can be found in appendix V of 40 CFR part 51.

TABLE SUM - 2 COMPLETENESS DETERMINATION FOR THE JULY 25, 2001 SUBMITTAL OF THE PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY		
THIS COMPLETENESS CRITERION...	Is...	BY THE SUBMITTAL IN...
Administrative Requirements		
Formal letter of submittal from the Governor or designee, requesting EPA approval of the plan or revision.	met	The cover letter for the submittal from Allen Biaggi, Administrator, Nevada Division of Environmental Protection (NDEP) to Laura Yoshii, Acting Regional Administrator, USEPA - Region 9, dated July 23, 2001. The submittal is the <u>PM10 State Implementation Plan for Clark County - June 2001</u> for the Las Vegas Valley Nonattainment Area. NDEP is a division of the State of Nevada's Department of Conservation and Natural Resources, which is the Governor of Nevada's designee for SIP submittal purposes.
Evidence that the State has adopted the plan in the State code or body of regulations; or issued the permit, order, consent agreement in final form (including adoption and effective dates).	met	The cover letter for the PM-10 plan from John Schlegel, Director, Clark County Department of Comprehensive Planning, to Allen Biaggi, Administrator, NDEP, dated July 12, 2001, which indicates that the Clark County Board of County Commissioners approved the PM-10 plan on June 19, 2001. The Board of County Commissioners is the lead agency for air quality planning in Clark County. The effective date of the plan approval is also June 19, 2001.

TABLE SUM - 2
COMPLETENESS DETERMINATION FOR THE JULY 25, 2001 SUBMITTAL
OF THE PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY

THIS COMPLETENESS CRITERION...	Is...	BY THE SUBMITTAL IN...
Evidence that the State has the necessary legal authority under State law to adopt and implement the plan.	met	State authority is contained in the Nevada Revised Statutes (NRS) 445B.100 through 445B.845 and applicable Nevada Administrative Codes. District/County authority is specified in NRS 445B.500 and District Air Pollution Regulations.
A copy of the plan with certification.	met	<u>PM10 State Implementation Plan for Clark County - June 2001</u> for the Las Vegas Valley Nonattainment Area. Certification of adoption is found in the June 19, 2001 Resolution of the Clark County Board of Commissioners. Certification of completeness by NDEP is found in the cover letter.
Evidence that the State followed its applicable administrative procedures in adopting the plan.	met for NDEP	NDEP determines completeness of Clark County submission. NDEP's comprehensive completeness checklist was enclosed with NDEP cover letter dated July 23, 3002.
	met for Board of Commiss ioners	Appendix F.
Evidence of public notice.	met	Appendix O, Section 4.
Evidence of public hearing.	met	Appendix O.
Public comments and the State's responses.	met	Appendix P.
Technical Requirements		
Identification of pollutants affected by the plan.	met	(PM-10) - throughout the plan.
Identification of the location of affected sources including area's designation and status of the attainment plan.	met	Chapters 1 and 3.
Quantification of emissions from the affected sources from the plan.	met	Chapter 3 and Appendix B.
Demonstration that the NAAQS and RFP are protected.	met	Chapter 5.

TABLE SUM - 2
COMPLETENESS DETERMINATION FOR THE JULY 25, 2001 SUBMITTAL
OF THE PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY

THIS COMPLETENESS CRITERION...	Is...	BY THE SUBMITTAL IN...
Modeling information required to support the proposed revision including supporting documentation.	met	Chapter 2 and Appendix C.
Evidence, where necessary, that emission limitations, are based on continuous emission reduction technology.	N/A	N/A.
Evidence that the plan contains emission limitations, work practice standards and record keeping/ reporting requirements, where necessary, to ensure emission levels.	met	Appendix G regulations and Chapter 4 commitments.
Compliance/enforcement strategies including how compliance will be determined in practice.	met	Chapter 4 and Appendix H.
Special economic and technological justifications required by applicable EPA policies, or an explanation of why such justifications are not necessary.	met	Chapters 4 and 6.
Plan addresses the elements required by the Act and EPA policy for serious area PM-10 plans.	met	The plan contains an emissions inventory (Chapter 3), air quality monitoring data and network (Chapter 2), BACM analysis (Chapter 4), attainment demonstration for the 24-hour and annual standards (Chapter 5), milestone demonstration/RFP (Chapter 5), requirements associated with an attainment date extension request for the 24-hour and annual standards (Chapter 7), contingency measures (Chapter 4) and conformity budget (Chapter 3 and Appendix N).

We have also determined that the plan includes all the elements required by the CAA for a serious area PM-10 plan. See Table SUM-3.

TABLE SUM - 3
SERIOUS AREA REQUIREMENTS IN THE
PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY

THIS SERIOUS AREA PLAN REQUIREMENT ...	Is...	IN THE PLAN AT THIS LOCATION...
Emissions inventory		
Base year emissions inventory		
- 24-hour standard	included	Chapter 3, sections 3.2, 3.4.3 and 3.4.4. Supporting information in Appendices B and C.
- annual standard	included	Chapter 3, sections 3.2, 3.4.1 and 3.4.2. Supporting information in Appendices B and C.
Modeling inventory		
- 24-hour standard	included	Chapter 3, sections 3.3, 3.4.3 and 3.4.4.
- annual standard	included	Chapter 3, sections 3.3, 3.4.1 and 3.4.2.
Projected year inventories		
- 24-hour standard	included	Chapter 3, sections 3.5.1 and 3.5.2. Chapter 4, section 4.6. Supporting information in Appendices E and L.
- annual standard	included	Chapter 3, section 3.5.3. Chapter 4, section 4.6. Supporting information in Appendices E and L.
Air Quality Monitoring		
Air Quality Data	included	Chapter 2, section 2.4.
Air Monitoring Network	included	Chapter 2, sections 2.2 and 2.3.
RACM/BACM Analysis		
RACM/BACM analysis		
- 24 hour standard	included	Chapter 4.
- annual standard	included	Chapter 4.
Identification of significant vs. insignificant sources	included	Chapter 4, section 4.2.
Available measures	included	Chapter 4, section 4.3.
Selected measures	included	Chapter 4, section 4.4.
Adopted measures and commitments	included	Chapter 4, sections 4.5 and 4.8.

TABLE SUM - 3
SERIOUS AREA REQUIREMENTS IN THE
PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY

THIS SERIOUS AREA PLAN REQUIREMENT ...	Is...	IN THE PLAN AT THIS LOCATION...
Justifications for rejecting measures	included	Throughout Chapter 4.
Attainment Demonstration		
Base year modeling		
- 24-hour standard	included	Chapter 5, sections 5.2.2 and 5.3. Supporting information in Appendix A.
- annual standard	included	Chapter 5, sections 5.2.1 and 5.3. Supporting information in Appendix A.
Future year modeling		
- 24-hour standard	included	Chapter 5, sections 5.4.2 and 5.5.2. Supporting information in Appendix K.
- annual standard	included	Chapter 5, sections 5.4.1 and 5.5.1. Supporting information in Appendix K.
Attainment measures		
- 24-hour standard	included	Chapter 4, section 4.5.2.
- annual standard	included	Chapter 4, section 4.5.3.
Estimation of reductions from attainment measures		
- 24-hour standard	included	Chapter 5, section 5.5.2.
- annual standard	included	Chapter 5, section 5.5.1.
Impracticability demonstration		
- 24-hour standard	included	Chapter 7, section 7.4.
- annual standard	NA	
Milestone Demonstration/RFP		
Milestone demonstration/RFP		
- 24-hour standard	included	Chapter 5, section 5.6.
- annual standard	NA	

TABLE SUM - 3
SERIOUS AREA REQUIREMENTS IN THE
PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY

THIS SERIOUS AREA PLAN REQUIREMENT ...	Is...	IN THE PLAN AT THIS LOCATION...
Attainment Date Extension Request (24 hr Standard)		
Request	included	Chapter 7, section 7.7.
Implement SIP	included	Chapter 4.
Most expeditious attainment date (both 24-hour and annual)	included	Chapter 7, section 7.6.
Most stringent measures analysis	included	Chapter 6.
Nature and extent of PM-10 problem	included	Chapter 2.
Population exposure	included	Chapter 3, section 3.3.
Toxic exposure	included	Chapter 3, section 3.2.
Economic and technological feasibility of measures	included	Chapter 4.
Other Requirements		
Contingency measures	included	Chapter 4, section 4.6.3.
Conformity budget	included	Chapter 5, section 5.7. Supporting information in Appendix N.

Section C -- Transportation Budget Adequacy Determination

Transportation Conformity and the Process for Determining the Adequacy of Transportation Conformity Budgets

Section 176(c) of the Clean Air Act requires that federally funded or approved transportation plans, programs, and projects in nonattainment areas “conform” to the area’s air quality implementation plans. Conformity ensures that federal transportation actions do not worsen an area’s air quality or interfere with its meeting the air quality standards. We have issued a conformity rule that establishes the criteria and procedures for determining whether or not transportation plans, programs, and projects conform. See 40 CFR Part 93, subpart A.

One of the primary tests for conformity is to show transportation plans and improvement programs will not cause motor vehicle emissions higher than the levels needed to make progress toward and to meet the air quality standards. The motor vehicle emissions levels needed to make progress toward and to meet the air quality standards are set in the area’s air quality implementation plans and are known as the “emissions budget for motor vehicles.” Emissions budgets are established for specific years and specific pollutants. See 40 CFR Part 93.118(a).

Before an emissions budget in a submitted SIP revision may be used in a conformity determination, we must first determine that it is adequate. The criteria by which we determine adequacy of submitted emission budgets are outlined in conformity rules in 40 CFR Part 93.118(e)(4). To start the adequacy process we must get public input. In order to provide the public input on the determination of whether a particular transportation conformity budget is adequate, we follow the following process:

- Notification of SIP submission: Within 10 days after a control strategy SIP or maintenance plan is formally received,² we notify the public by posting a notice on EPA’s Office of Transportation and Air Quality website (www.epa.gov/otaq/transp/conform/currrips.htm) and by notifying those who have previously requested notification of the SIP’s submission. The website provides the Regional contact information so that interested parties can arrange or discuss notification processes. The website also includes information on how to obtain copies of the SIP.

²The control strategy SIPs that must have motor vehicle emissions budgets for conformity are the 15 percent and 9 percent rate of progress plans (an ozone requirement) and attainment demonstrations.

- Public comment: A 30-day public comment period commences immediately upon the website posting in two circumstances: (1) if the state has made the SIP electronically available to the public via a website, electronic bulletin board, etc.; or (2) if no one has requested copies of the SIP within 15 days after the date of the posting notification. If someone does request a copy of the SIP and we receive the request within the first 15 days, the 30-day public comment period does not start until the date that we mail the copy. The website states when the public comment period begins and ends. If someone requests a copy of the SIP, we update the website to reflect any extension of the public comment period.
- EPA's adequacy determination: We issue our adequacy determination, including any response to comments, by posting it on EPA's Office of Transportation and Air Quality website (www.epa.gov/otaq/transp/conform/pastsips.htm) and by mailing it to requesters. We also announce the determination in the Federal Register. The adequacy determination takes effect 15 days after publication in the Federal Register. Adequate budgets must be used in future conformity determinations; inadequate budgets cannot be used.

Adequacy of the Transportation Conformity Budget in the PM-10 State Implementation Plan for Clark County

Following submittal of the Plan, we announced its receipt on the Internet (www.epa.gov/otaq/transp/conform/currpsips.htm) and requested public comment by September 6, 2001. We received one set of comments during the comment period from the Nevada Environmental Coalition, Inc. We subsequently found the conformity budget adequate for transportation conformity purposes. In reaching this decision, we reviewed the Plan and preliminarily determined that it will result in attainment of the PM-10 standards in the Las Vegas area. We responded to comments received and prepared a table that summarizes our adequacy determination. See Table SUM-4.

As a result of our adequacy finding, the Regional Transportation Commission (RTC) and the Federal Highway Administration (FHWA) are required to use this budget in future conformity analyses. We notified RTC, FHWA and NDEP of the conformity adequacy budget finding via letter to Allen Biaggi, NDEP, dated November 9, 2001. A copy of this letter can be found in the docket. We published this finding in the Federal Register on January 11, 2002. 67 FR 1461. Our adequacy determination was effective on January 28, 2002.

The Plan identifies regional motor vehicle emission budgets in tons of PM-10 per day for the years 2001, 2003 and 2006. The motor vehicle emission conformity budgets in the Plan contain components from vehicular exhaust (including sulfate PM), brake and tire wear, re-entrained dust from paved roads, unpaved roads and construction emissions associated

with construction of transportation facilities. The 2001 budget is 201.75 tons per day of PM-10 and the 2006 budget is 141.41 tons per day. The 2001 budget was developed to assure attainment of the annual average PM-10 standard while the tighter 2006 budget was developed to assure attainment of the PM-10 24-hour standard. To ensure conformance with the CAA requirement of Reasonable Further Progress, which must be met in the year 2003, a budget was set at 155.77 tons per day for the 2003 interim year. Transportation emissions must decrease with these totals to show conformity.

TABLE SUM - 4		
TRANSPORTATION CONFORMITY ADEQUACY REVIEW		
OF THE PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY		
TRANSPORTATION REVIEW CRITERIA	IS SATISFIED	REFERENCE IN SIP DOCUMENT / COMMENTS
40 CFR 93.118(e)(4)(i) - The Plan was endorsed by the Governor (or designee) and was subject to a public hearing.	met	The July 23, 2001 SIP submittal transmittal letter from NDEP to Laura Yoshii indicates endorsement from NDEP (which is the agency designated by the Governor to adopt and submit plans). Section 1.2.3 of the Plan also discusses the legal authority. Appendix P and Q contains documentation of public hearings on the Plan. The last public hearing was held on the final version of the Plan on June 19, 2001.
40 CFR 93.118(e)(4)(ii) - The Plan was developed through consultation with federal, state and local agencies; full implementation plan documentation was provided and EPA's stated concerns, if any, were addressed..	met	Consultation with federal, state and local agencies and the public was undertaken; this consultation is described in Appendices F and O of the Plan. The Plan contains all public comments received on the Plan and the responses to those comments in Appendices P and Q.
40 CFR 93.118(e)(4)(iii) - The motor vehicle emission budget(s) is clearly identified and precisely quantified.	met	The motor vehicle budget is clearly identified and precisely quantified on pages 5-33 through 5-35 and in Appendix N of the Plan.

TABLE SUM - 4
TRANSPORTATION CONFORMITY ADEQUACY REVIEW
OF THE PM-10 STATE IMPLEMENTATION PLAN FOR CLARK COUNTY

TRANSPORTATION REVIEW CRITERIA	IS SATISFIED	REFERENCE IN SIP DOCUMENT / COMMENTS
40 CFR 93.118(e)(4)(iv) - The motor vehicle emissions budget(s), when considered together with all other emission sources, is consistent with applicable requirements for reasonable further progress, attainment, or maintenance (whichever is relevant to the given plan).	met	The Plan adequately provides for all the control measures and emission reductions needed for attainment. With the required mobile source control reductions, the area should be able to reach attainment of the annual standard in 2001 and the 24-hour standard in 2006.
40 CFR 93.118(e)(4)(v) - The Plan shows a clear relationship between the emissions budget(s), control measures and the total emissions inventory.	met	The emission inventory for all point, area and motor vehicle, and their relation to control measures, is described in: Chapter 3, PM10 Emissions Inventories; Chapter 4, Overview of PM10 Control Measures; and Chapter 5, Demonstration of Attainment of PM10 NAAQS. Further details are included in Appendices B, C, D and E.
40 CFR 93.118(e)(4)(vi) - Revisions to previously submitted control strategy or maintenance plans explain and document any changes to any previous submitted budgets and control measures; impacts on point and area source emissions; any changes to established safety margins (see 93.101 for definition), and reasons for the changes (including the basis for any changes to emission factors or estimates of vehicle miles traveled).	N/A	There is no previous PM-10 SIP with conformity emission budgets for the Clark County nonattainment area. Previously submitted plans (which were withdrawn) did not contain identified budgets.

Approval of the Transportation Conformity Budget

As stated in the May 14, 1999, guidance, EPA's adequacy review is not to be used to prejudge EPA's ultimate approval or disapproval of the submitted SIPs. EPA's adequacy was developed to give transportation agencies the ability to use emission budgets, that are deemed adequate, for conformity determinations before EPA has made a final determination on the approvability of the SIP. It was recognized that considerable time is needed for EPA to go final with an approval or disapproval notice on a SIP. Thus the 90-day adequacy review

process was developed to give areas direction regarding the appropriateness of the conformity budgets.

Once deemed adequate, a conformity budget can be used until replaced by another adequate budget for the same pollutant, CAA requirement and timeframe. However, once a plan has been approved, the conformity emissions budget cannot be replaced by another budget for the same pollutant, CAA requirement and timeframe unless the new budget comes from an approved SIP. With final action on the Plan, the budgets will become approved budgets and must apply for conformity purposes until the Plan is revised and new budgets are approved.

Section D -- CAA and EPA Policy Requirements for Serious Nonattainment Areas

In this section, we discuss the two separate PM-10 standards and provide an overview of the CAA requirements for serious area PM-10 plans. We have issued a *General Preamble*³ and *Addendum to the General Preamble*⁴ describing our preliminary views on how the Agency intends to review SIPs submitted to meet the CAA's requirements for PM-10 plans. The *General Preamble* mainly addresses the requirements for moderate areas and the *Addendum*, the requirements for serious areas. We have also issued other guidance documents related to PM-10 plans or provisions of those plans. These other guidance documents will be cited as necessary when we discuss the details of the Clark County plan.

PM-10 standards

There are two PM-10 health-based national ambient air quality standards (NAAQS): an annual standard of 50 $\mu\text{g}/\text{m}^3$ and a 24-hour standard of 150 $\mu\text{g}/\text{m}^3$. EPA's guidance on the computations necessary for analyzing particulate matter data to determine attainment of the 24-hour and annual standards can be found in 40 CFR Part 50, Appendix K.

The two PM-10 standards are independent and must be addressed independently by states in their SIPs. See *Ober v. EPA*, 84 F.3d 304 (9th Cir. 1996).

Planning Requirements for Serious PM-10 Nonattainment Areas

States with PM-10 nonattainment areas that have been reclassified to serious because of a failure to attain by the moderate area attainment date must submit serious area PM-10 plans within 18 months of being reclassified. CAA section 189(b)(2). Plans must include:

- (a) provisions to assure that the best available control measures (BACM), including best available control technology (BACT) for stationary sources, for the control of PM-10 shall be implemented no later than four years after the area is reclassified (CAA

³ "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990," 57 FR 13498 (April 16, 1992) and 57 FR 18070 (April 28, 1992).

⁴ "State Implementation Plans for Serious PM-10 Nonattainment Areas, and Attainment Date Waivers for PM-10 Nonattainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990," 59 FR 41998 (August 16, 1994).

section 189(b)(1)(B));⁵

- (b) provisions to assure implementation of BACT on major stationary sources of PM-10 precursors no later than four years after the area is reclassified except where EPA has determined that such sources do not contribute significantly to exceedences of the PM-10 standards (CAA section 189(e));
- (c) a demonstration (including air quality modeling) that the plan will provide for attainment as expeditiously as practicable but no later than December 31, 2001 or where the State is seeking an extension of the attainment date under section 188(e), a demonstration that attainment by December 31, 2001 is impracticable and that the plan provides for attainment by the most expeditious alternative date practicable (CAA sections 188(c)(2) and 189(b)(1)(A));
- (d) quantitative milestones which are to be achieved every three years and which demonstrate reasonable further progress (RFP) toward attainment by the applicable attainment date (CAA sections 172(c)(2) and 189(c)); and
- (e) a comprehensive, accurate, current inventory of actual emissions from all sources of PM-10 (CAA section 172(c)(3)).

Within three years of reclassification, the State must also submit contingency measures as required by CAA section 172(c)(9). The Act does not specify a submittal date for these contingency measures, so we set it under our authority to set submittal dates in CAA section 172(b). See 59 FR 41998, 42015 (August 16, 1994).

Serious area PM-10 plans must also meet the general requirements applicable to all SIPs including reasonable notice and public hearing under section 110(l), necessary assurances that the implementing agencies have adequate personnel, funding and authority under section 110(a)(2)(E)(i) and 40 CFR § 51.280, and a description of enforcement methods as required by 40 CFR § 51.111.

Implementation of Best Available Control Measures

Under section 189(b)(2), serious area PM-10 plans must provide assurances that BACM will be implemented in the area no later than four years after the area is reclassified

⁵ When a moderate area is reclassified to serious, the requirement in section 189(a)(1)(C) to implement Reasonably Available Control Measures (RACM) remains and is augmented by the requirement to implement BACM. Thus, a serious area PM-10 plan must provide for the implementation of RACM, in addition to BACM, as expeditiously as practicable to the extent the RACM requirement has not already been satisfied in the area's moderate area plan.

as serious. For the Las Vegas Valley Planning Area, the BACM implementation deadline was February 8, 1997.

The CAA does not define what level of control constitutes a BACM-level of control. In guidance, we have defined it to be, among other things, the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic, environmental impacts and other costs. *Addendum* at 42010. This level of control is dependent on the deadline by which BACM must be implemented.⁶

The BACM-level control is intended to be more stringent than the RACM-level control, and may include expanded use of RACM (e.g., paving more miles of unpaved roads). *Addendum* at 42011-13. The word “best” implies that there should be a greater emphasis on the merits of the measure or technology alone and less flexibility in considering other factors. Additionally, we have explained that BACM should emphasize prevention rather than remediation (e.g., preventing track out at construction sites rather than simply requiring clean up of tracked-out dirt). *Addendum* at 42013.

As we explained in the *Addendum*: “When evaluating economic feasibility, States should not restrict their analysis to simple acceptance/rejection decisions based on whether full application of a measure to all sources in a particular category is feasible. Rather, a State should consider implementing a control measure on a more limited basis, e.g. for a percentage of the sources in a category if it is determined that 100 percent implementation of the measure is infeasible.” *Addendum* at 42014.

The stringency or level of control is a function of both the measure’s applicability and its control requirement, (i.e., what sources in the category are subject to the measure and what the measure requires the sources to do to reduce emissions.)⁷ Thus in establishing BACM, a state must specify both the measure’s control requirement and its applicability.

BACM must be applied to each significant (i.e., non-de minimis) source category.

⁶ We have long held that an otherwise available measure is not reasonable if it cannot be implemented on a schedule that will advance the attainment date. *See*, e.g., 57 FR 13498, 15560 (April 16, 1992). *See* also *Delaney v. EPA* 898 F.2d 695 (9th Cir. 1990) (requiring the adoption of “all available control measures” to attain “as soon as possible” and not simply all available control measures). The most clear example of this is a measure that cannot be implemented until after the applicable attainment date.

⁷ An example: a measure requires all unpaved roads with average daily trips (ADT) over 150 be stabilized by either paving, graveling, or treating with chemical stabilizers. The control requirement here is “stabilize using one of these three methods: paving, graveling, or chemical stabilization” and the applicability is “all unpaved roads with ADT over 150.”

Addendum at 42011. In guidance, we have established a presumption that a "significant" source category is one that contributes 5 $\mu\text{g}/\text{m}^3$ or more of PM-10 to a location of 24-hour violation and 1 $\mu\text{g}/\text{m}^3$ or more for the annual standard. *Addendum* at 42011. However, whether the threshold should be lower than this in any particular area depends upon the specific facts of that area's nonattainment problem. Specifically, in areas that are demonstrating attainment by December 31, 2001, it depends on whether requiring the application of BACM on source categories below a proposed de minimis level would meaningfully expedite attainment. In areas that are claiming the impracticability of attainment by December 31, 2001, it depends upon whether requiring the application of BACM on source categories below a proposed de minimis level would make the difference between attainment and nonattainment by the serious area deadline of December 31, 2001.⁸

We have outlined in our guidance a multi-step process for identifying BACM. *Addendum* at 42010-42014. The steps are:

1. develop a detailed emissions inventory of PM-10 sources and source categories,
2. model to evaluate the impact on PM-10 concentrations over the standards of the various sources and source categories to determine which are significant,
3. identify potential BACM for significant source categories and evaluate their reasonableness, considering technological feasibility, costs, and energy and environmental impacts when it bears on the BACM determination, and
4. provide for the implementation of the BACM or provide a reasoned justification for rejecting any potential BACM.

When the process is complete, the individual measures⁹ should then be converted into a legally enforceable vehicle (e.g. a regulation or permit process). CAA sections 172(6) and 110(a)(2)(A). Also, the regulations or other measures should meet EPA's criteria regarding the enforceability of SIPs and SIP revisions. *General Preamble* at 13541.

⁸ This principle is best illustrated by an example: In Area A, attainment of the 24-hour standard by December 31, 2001 requires that PM-10 ambient levels at exceeding locations be reduced by 40 $\mu\text{g}/\text{m}^3$ to 150 $\mu\text{g}/\text{m}^3$. After application of BACM to all source categories above the proposed de minimis level, PM-10 levels are reduced by 32 $\mu\text{g}/\text{m}^3$. BACM on the proposed de minimis source categories would reduce levels by a further 3 $\mu\text{g}/\text{m}^3$, but still leaves ambient levels 5 $\mu\text{g}/\text{m}^3$ short of the reduction needed to show attainment. Since application of BACM to the proposed de minimis source categories still leaves ambient levels above the attainment level of 150 $\mu\text{g}/\text{m}^3$, the proposed de minimis level is appropriate.

⁹ Here our guidance refers to RACM, however, since BACM builds upon RACM, the same principles apply.

Implementation of Reasonably Available Control Measures

When a moderate area is reclassified to serious, the requirement to implement RACM in section 189(a)(1)(C) remains. Thus, a serious area PM-10 plan must also provide for the implementation of RACM as expeditiously as practicable to the extent that the RACM requirement has not been satisfied in the area's moderate area plan.

However, we do not normally conduct a separate evaluation to determine if a serious area plan's measures also meet the RACM requirements as interpreted by us in the *General Preamble* at 13540. This is because in our serious area guidance (*Addendum* at 42010), we interpret the BACM requirement, as generally subsuming the RACM requirement (i.e. if we determine that the measures are indeed the "best available," we have necessarily concluded that they are "reasonably available"). Therefore, a separate analysis to determine if the measures represent a RACM level of control is not necessary. Consequently, our proposed approval of the Clark County Plan's provisions relating to the implementation of BACM is also a finding that the plan provides for the implementation of RACM.

Extension of the Attainment Date beyond 2001

The Clean Air Act Requirements for Attainment Date Extensions

Section 188(e) of the Act allows us to extend the attainment date for a serious area for up to five years beyond 2001 if attainment by 2001 is impracticable. However, before we may grant an extension of the attainment date, the State must first:

1. apply to us for an extension of the PM-10 attainment date beyond 2001,
2. demonstrate that attainment by 2001 is impracticable,
3. have complied with all requirements and commitments applying to the area in its implementation plan,
4. demonstrate to our satisfaction that its serious area plan includes the most stringent measures that are included in the implementation plan of any state and/or are achieved in practice in any state and are feasible for the area, and
5. submit a demonstration of attainment by the most expeditious alternative date practicable.

In determining whether to grant an extension and the appropriate length of the attainment date extension, we may consider:

1. the nature and extent of the nonattainment problem,
2. the types and numbers of sources or other emitting activities in the area (including the influence of uncontrollable natural sources and international transport),
3. the population exposed to concentrations in excess of the standard,
4. the presence and concentration of potentially toxic substances in the mix of particulate emissions in the area, and
5. the technological and economic feasibility of various control measures.

Under the Act, we may grant only one extension for an area and the extension cannot be for more than 5 years after 2001; that is, the extended attainment date can be no later than December 31, 2006.

EPA's Policy on Attainment Date Extensions

This interpretation is our preliminary view of the section 188(e) requirements. In the following sections we discuss the five requirements a State must meet before we can consider granting an attainment date extension.

1. Apply for an attainment date extension

The State must apply for an extension of the attainment deadline under section 188(e). The request should be accompanied by the SIP submittal containing the most expeditious alternative attainment date demonstration required by CAA section 189(b)(1)(A)(ii). The state must have provided the public with reasonable notice and a hearing on the request before it is sent to EPA.

It is clear from the wording of section 188(e) that an extension application is not a SIP revision. Under section 188(e), a state *applies* for an extension request: "upon application by the State..." and we *grant* the request: "The Administrator may grant at most one such extension..." Wording later in section 188(e) also makes clear that the application for an extension is distinct from the SIP revision that must accompany it: "at the time of the such application, the State must submit a revision to the implementation plan that includes a demonstration of attainment by the most expeditious alternative date practicable." This attainment demonstration is the one required by section 189(b)(1)(A)(ii).

Extension requests are not SIP submittals per se and are therefore not subject to the requirements of the Clean Air Act and our regulations for public notice and hearing on SIP revisions. However, because they can greatly affect the content and ultimate approvability of a serious area PM-10 SIP, we believe a state must give the public an opportunity, consistent

with the requirements for SIP revisions, to comment on an extension request prior to submitting it to us.

2. Demonstrate that attainment by 2001 is impracticable

In order to demonstrate impracticability, the plan must show that the implementation of BACM on significant (that is, non-de minimis) source categories will not bring the area into attainment by December 31, 2001. In serious areas, BACM is required to be in place in advance of the 2001 attainment date; therefore, we believe that it is reasonable to interpret the Act to require that a state provide at least for the implementation of BACM on significant source categories before it can claim impracticability of attainment by 2001.¹⁰ This interpretation parallels our interpretation of the impracticability option for moderate PM-10 nonattainment areas in section 189(a)(1)(B). In moderate areas, RACM was required before a moderate area plan could show impracticability of attainment by 1994, the moderate area attainment date. *General Preamble* at 13544.

The statutory provision for demonstrating impracticability requires that the demonstration be based on air quality modeling. See section 189(b)(1)(A). We have established minimum requirements for air quality modeling. See discussion on air quality modeling later in this TSD.

3. Have complied with all requirements and commitments in its implementation plan

We interpret this criterion to mean that the state has implemented the emissions-reducing measures in the plan revisions it has submitted to address the CAA requirements in sections 172 and 189 for PM-10 nonattainment areas.

The purpose of this criterion is to assure that a state is not receiving additional time to attain because it failed to implement already-adopted or already-committed-to control measures. Given this purpose, we believe our review under this criterion should be limited to the implementation status of control measures from earlier PM-10 plans and not be an expansive review of the implementation status of every provision in submitted implementation plans, whether or not it is an emissions-reducing measure.¹¹

¹⁰ As described in the section on the BACM requirement, if applying BACM-level controls to one or more of the proposed de minimis source categories would result in attainment by December 31, 2001, then those categories are not de minimis (i.e., they are significant) and must have BACM applied to them. Therefore, states cannot use the de minimis exemption to BACM to avoid applying controls that would result in attainment by 2001.

¹¹ For example, CAA section 110(a) requires states to submit SIP revisions providing for, among other things, adequate authority and resources to monitor both ambient air and emissions

We read this provision not to require the area have a fully approved plan that meets the CAA's requirements for moderate areas. We base this reading on the plain language of section 188(e) which requires the state to comply with all requirements and commitments pertaining to that area *in the implementation plan* but does not require that the state comply with all requirements pertaining to the area *in the Act*. For the same reason, we also read this provision not to bar an extension if all or part of an area's moderate area plan is disapproved or has been promulgated as a FIP or if the area has failed to meet a RFP milestone.

Part of determining whether a state has implemented its commitments and requirements in earlier plans is assessing whether the state retains the legal authority for them and is funding, staffing, and enforcing them at the level assumed or committed to in those plans. Thus any determination that the state has met its commitments and requirements in earlier plans is also a finding that it has retained its legal authority and has met its commitments regarding enforcement, funding, and staffing.¹²

4. Demonstrate the inclusion of the most stringent measures

The fourth extension criterion requires the State to “demonstrate to the satisfaction of the Administrator that the plan for the area includes the most stringent measures that are included in the implementation plan of any State, or are achieved in practice in any State, and can be feasibly be implemented in the area.” CAA section 188(e).

The requirement for most stringent measures (MSM) is similar to the requirement for BACM. We define a BACM-level of control to be, among other things, the maximum degree of emission reduction achievable from a source or source category which is determined on a

from individual sources, to collect inventory information, to permit new and modifying sources, and to adopt and enforce air pollution control regulations. These requirements demonstrate that a state has a sufficient authority and resources to run an air pollution control program but are not themselves control measures. Thus under our interpretation of section 188(e), their implementation status is immaterial for the purposes of an extension.

As a practical matter, if a state is unable to meet the minimum program requirements in section 110(a), then it is very unlikely that it would be able to prepare an approvable PM-10 plan in the first place, let alone apply for an extension request, since the ability to collect air quality data, prepare emissions inventories, and adopt and enforce rules, etc. are all prerequisites to developing approvable plans.

¹² We only determine if a state's committed levels of legal authority, funding, staffing, and enforcement for a control measure are adequate under the CAA at the time we approve the measure into the SIP. Where we have not approved a measure in an earlier implementation plan, we are limited under section 188(e) to determining if the state has done what it said it would do rather than what the CAA arguably would have required it to do.

case by case basis considering energy, economic and environmental impacts. *Addendum* at 42010. The Act establishes the deadline for implementing BACM as four years after an area's reclassification to serious. CAA section 189(b)(1)(A).

We define a "most stringent measure" level of control in a similar manner: the maximum degree of emission reduction that has been required or achieved from a source or source category in other SIPs or in practice in other states and can be feasibly implemented in the area. A MSM then is a control measure that delivers this level of control.

The Act does not specify an implementation deadline for MSM. Because the clear intent of section 188(e) is to minimize the length of any attainment date extension, we believe that the implementation of MSM should be as expeditiously as practicable.

Given this similarity between the BACM requirement and the MSM requirement, we believe that determining MSM should follow a process similar to determining BACM, but with one additional step, to compare the potentially most stringent measure against the measures already adopted in the area to determine if the existing measures are most stringent:

1. develop a detailed emissions inventory of PM-10 sources and source categories,
2. model to evaluate the impact on PM-10 concentrations over the standards of the various source categories to determine which are significant for the purposes of adopting MSM,
3. identify potential most stringent measures in other implementation plans or used in practice in other states for each significant source category and for each measure determine their technological and economic feasibility for the area as necessary,
4. compare potential most stringent measures for each significant source category against the measures, if any, already adopted for that source category, and
5. provide for the adoption of any MSM that is more stringent than existing similar local measures and provide for implementation as expeditiously as practicable or, in lieu of adoption, provide a reasoned justification for rejecting the potential MSM, i.e., why such measures cannot be feasibly implemented in the area.

The MSM provision only requires that a state consider the best controls from elsewhere in the country for implementation in the area requesting an attainment date extension. It looks to see--and the results are completely dependent on--how well other areas have controlled their PM-10 sources. If other areas have not controlled a particular source or source category well, then the resulting level of control from the MSM will not be the maximum feasible level of control for that source or source category in the local area. Even if they have controlled them well, the resulting level of control may still not be the maximum

feasible level because local conditions may allow a higher degree of control than has been achieved elsewhere.

The MSM provision does not require that a state consider if local sources or source categories can be controlled at a level greater than the most stringent level from other areas. In other words, it does not require states to determine and adopt the maximum feasible level of control that could be applied to a source or a source category given local conditions and the additional implementation time afforded by an extension.

In considering the MSM provision, the inclination is to assume that there are always better controls out there than there are in the local area. This assumption is unwarranted, especially for areas that have already gone through the process of identifying and adopting BACM for their significant sources in order to meet the section 189(b)(1)(B) requirement. These areas are likely to have already evaluated the best controls from other areas and either adopted them as BACM or rejected them as not feasible for their area. As a result, the likelihood of finding substantial new controls during a MSM evaluation in one of these areas is low.¹³

The most promising universe of potential MSM in these areas are the measures that were rejected as BACM on de minimis grounds or because they could not be implemented by the BACM deadline. Therefore, we believe at minimum, more sources and source categories should be subject to the MSM analysis than were to the BACM analysis, by lowering the threshold for what is considered a de minimis source category and 2) any measures garnered from other areas that were rejected during the BACM analysis because they could not be implemented by the BACM-implementation deadline should be reviewed to see if they are now feasible for the area given the longer attainment date. See footnote 7.

De minimis Thresholds. What constitutes a de minimis source category for BACM is dependent upon the specific facts of the nonattainment problem under consideration. In particular, it depends upon whether requiring the application of BACM for such sources would make the difference between attainment and nonattainment by the serious area deadline. We will use a similar approach for judging what constitutes a de minimis source

¹³ There is also an inclination to assume that the MSM requirement is the provision in section 188(e) that implements the Act's general strategy of offsetting longer attainment time frames with more stringent controls and therefore, the MSM requirement must be interpreted to result in the adoption of measures more stringent than BACM. We believe, however, that this offsetting function is actually served by the CAA section 189(b)(1)(A)(ii) requirement for PM-10 plans to demonstrate attainment by the most expeditious date practicable, if attainment by 2001 is impracticable. Because we are required to grant the shortest possible extension, a state must demonstrate that it has adopted the set of control measures that will result in the most expeditious date practicable for attainment. This requirement may very well require that a state adopt controls that go beyond the most stringent measures adopted or implemented elsewhere.

category for MSM but instead of the attainment/nonattainment test, we intend to use the test of whether MSM controls on the de minimis sources would result in more expeditious attainment.

We would not review an MSM analysis in a plan if the plan did not demonstrate expeditious attainment since one prerequisite for granting an extension request is that the plan demonstrate attainment. Therefore, any de minimis standard for MSM that relied on the difference between attainment and nonattainment would be meaningless because no additional controls are needed for attainment beyond those already in the plan. Our responsibility under section 188(e), however, is to grant the shortest practicable extension of the attainment date by assuring the plan provides for attainment as expeditiously as practicable. Thus, one means of determining an appropriate de minimis level is to determine if applying MSM to the proposed de minimis source categories would meaningfully expedite attainment. If it did, then the de minimis level is too high, and if it did not, then the de minimis level is appropriate.

Like the RACM and BACM requirements, there is no explicit provision in the Act prohibiting the exemption from the MSM requirement for de minimis sources of PM-10 pollution. We are using here the same principles for determining when a source is considered de minimis under the MSM requirement that we used for the RACM requirement and thus we have constructed the de minimis exemption for the MSM requirement to prevent states from eliminating any controls on sources or source categories that alone or together would result in more expeditious attainment of the PM-10 standards.

Technological feasibility. In the MSM analysis, a state must evaluate the application of controls from elsewhere to sources in its own area. In many cases, these sources are already subject to local control measures. In these situations, part of determining if a control is technologically feasible is determining if the new control can be integrated with the existing controls without reducing or delaying the emission reductions from the existing control. If it cannot, then we would not, in general, consider the measure to be technologically feasible for the area unless the emission benefit of the new measure is substantially greater than the existing measure.¹⁴

Economic feasibility. Because cost is rarely used to justify rejection of a measure, we will not attempt to establish a general guide for evaluating when a measure is economically infeasible but instead will address the issue on a case-by-case basis as needed.

Judging stringency. The stringency of a control measure is determined primarily by a

¹⁴ We come to this position by considering the reasonable further progress requirement to assure early emission reductions. In general, public health is better protected by achieving emission reductions early even if that results in a small loss in total reductions than delaying them to gain slightly higher reductions.

combination of its applicability and its control requirement, that is, what sources in the category are subject to the measure and what does the measure require the source to do to reduce emissions. When we use the term “measure” in the context of the MSM requirement, we are referring to this combination; we are not referring to just the control requirement or to individual methods of control.¹⁵

The approach we intend to use in evaluating the selection of the most stringent among multiple measures, *i.e.*, evaluating the determination of when one control measure is more stringent than another, is:

1. If there is only a single measure applicable to a source category then we will compare the measures directly. If there are multiple control measures with diverse controls requirements applicable to a source category (e.g., tailpipe emissions are controlled through fuels, emission standards, inspection and maintenance programs, and transportation control measures) then we will compare measures with similar control requirements against one another. If several measures apply the same or very similar control requirements to a source category, that is they have the same control requirement but different applicabilities, then we will use the collective stringency of all the measures in the stringency analysis.
2. We will review all the provisions of a rule that apply to a specific type of source (e.g., all the rule provisions that apply to vacant lots) as an inseparable measure. As discussed above a rule’s stringency is defined by a combination of its applicability and control requirements (as they apply to a single type of source). They are not separable elements that can be compared in isolation to another rule.
3. In a MSM analysis, a measure’s stringency should be determined assuming that it is appropriately adopted, implemented and enforced. Thus, we will not use a measure’s implementation mechanisms (e.g., rule versus commitment), funding level, compliance schedule, test method,¹⁶ resources available for enforcement, or other similar items as criteria for judging relative stringency.¹⁷

¹⁵ For example: a control measure requires all unpaved roads with ADT over 150 be stabilized by either paving, graveling, or chemical stabilization. The control requirement here is “stabilize using one of these three methods: paving, graveling, or chemical stabilization.” The applicability is “all unpaved roads with ADT over 150.” The individual methods of control here are paving, graveling, and chemical stabilization.

¹⁶ We would take into account a test method if it effectively sets the rule’s performance standard.

¹⁷ However, once a State determines a measure is a feasible most stringent measure, it must convert the measure into a legally enforceable form and provide the necessary level of

A state may determine which measure or measures are most stringent either qualitatively or quantitatively. It is the state's responsibility, however, to assure that any determination is well documented and persuasive.

Once a state has identified a potential most stringent measure, it must provide for the adoption of any MSM that is more stringent than existing measures and provide for implementation as expeditiously as practicable or, in lieu of providing for adoption, provide a reasoned justification for rejecting the potential MSM, i.e., why such measures cannot be feasibly implemented in the area.

Finally, we address how we view the "to the satisfaction of the Administrator" qualifier on the requirement that the State demonstrate that its plan includes the most stringent measures. The presence and wording of this qualifier indicates that Congress granted us considerable discretion in determining whether a plan in fact provides for MSM. Under the terms of section 188(e), we believe that we can still accept an MSM demonstration even if it falls short of having every MSM possible. To intuit the limits of this discretion, we again look to the overall intent of section 188(e) that we grant as short an extension as practicable and to how we have interpreted the CAA's other general control requirements, RACM and BACM.

In concrete terms, this means that when judging the overall adequacy of the MSM demonstration, we will give more weight to a failure to include MSM for source categories that contribute the most to the PM-10 problem and to the failure to include measures that could provide for more expeditious attainment and less weight to those measures for source categories that contribute little to the PM-10 problem and would not expedite attainment.

5. Demonstrate attainment by the most expeditious alternative date practicable

Section 189(b)(1)(A) requires that a serious area plan demonstrate attainment by the most expeditious date practicable using air quality modeling after December 31, 2001. This demonstration is the final criterion that must be met before we may grant an extension request.

There are two parts to reviewing a modeled attainment demonstration: evaluating the technical adequacy of the modeling itself, and evaluating the control measures that are relied on to demonstrate attainment.

We have established technical requirements for modeling PM-10 in SIP attainment demonstrations. Please see discussion later in this TSD on modeling requirements for PM-10 SIPs.

resources, etc. to ensure its implementation.

In evaluating the control measures relied on in the attainment demonstration, we determine whether the following are true:

1. We have approved it into the SIP or the State has submitted it to us for approval into the SIP and we have proposed it for approval..
2. It is enforceable under our SIP-enforceability standards or qualifies to be credited under our mobile source voluntary measures policy.¹⁸
3. The plan provides reasonable assurances, including funding and other resource commitments, that it will be implemented and enforced.
4. It will be implemented on the most expeditious schedule practicable.
5. The emission reductions credited to it are reasonable and consistent with the implementation resources and schedule, and for any reductions coming from mobile source voluntary measures, that they do not collectively exceed 3 percent of the total reductions needed for attainment.¹⁹

Our determination of whether the plan provides for attainment by the most expeditious date practicable will depend on whether we propose to find that the plan provides for appropriate BACM, MSM, and any other technologically and economically feasible measures that will result in attainment as expeditiously as practicable and that these measures are implemented on an expeditious schedule.

¹⁸ *Memorandum*, Richard D. Wilson, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, 1 - 10, "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997.

¹⁹ *Ibid.*, page 5.

Section E -- Detailed Evaluation of the PM-10 State Implementation Plan for Clark County

1. Ambient Air Quality Surveillance

What are the requirements?

The CAA requires States to establish and operate air monitoring networks to compile data on ambient air quality for all criteria pollutants. Section 110(a)(2)(B)(i). Our regulations in 40 CFR Part 58 establish specific regulatory requirements for operating air quality surveillance networks to measure ambient concentrations of PM-10, including 1) measurement method requirements, 2) network design, 3) the minimum number of monitoring sites designated as National Air Monitoring Stations (NAMS), and 4) quality assurance procedures. We evaluate these four basic elements in determining the adequacy of an area's PM-10 monitoring network.

Under our regulations (40 CFR part 58), states are required annually to prepare and submit network evaluation reports. These reports describe the monitoring network and how it meets our regulations. We use these annual reports to assure that state and local ambient air quality monitoring networks meet our regulations and the CAA. Annual reporting is necessary because networks need to be dynamic and sites may be relocated over time as changes in demographics and emission source locations occur in the planning area. EPA regional offices also periodically evaluate state and local agency monitoring programs by performing technical system audits (TSAs). A TSA is an on-site review and inspection of a state or local agency's ambient air monitoring program to assess its compliance with established regulations governing the collection, analysis, validation, and reporting of ambient air quality data. We performed a TSA of the Clark County DAQM²⁰ in August 2001. The results of that TSA are discussed below.

Nonattainment area plans developed under title I, part D of the Clean Air Act are not, in general, required to address how the area's air quality network meets our monitoring regulations. These plans are submitted too infrequently to serve as the vehicle for assuring that monitoring networks remain current. We discuss the adequacy of the monitoring network in this TSD to support our finding that the plan appropriately evaluates the PM-10 problem in the Las Vegas area. Reliable ambient data is necessary to validate the base year air quality modeling which in turn is necessary to assure sound attainment demonstrations.²¹

²⁰ Formerly the Clark County Health District Air Quality Division

²¹ Ambient networks do not need to meet all our regulations to be found adequate to support air quality modeling. A good spatial distribution of sites, correct siting, and quality-

How are these requirements addressed in the plan?

The PM-10 State Implementation Plan for Clark County does not specifically address the adequacy of the PM-10 monitoring network in the Las Vegas area. It does describe the network as of July 25, 2001 and provides monitoring results for 1997 to 1999. See PM-10 State Implementation Plan for Clark County, pp. 2-1 to 2-29.

PM-10 Measurement Methods

PM-10 in the ambient atmosphere is measured using methods designated by us under the requirements of 40 CFR Part 53. All of the PM-10 methods used in the Las Vegas area are designated as either reference or equivalent methods.²²

PM-10 Network Design

40 CFR Part 58, Appendix D details the requirements for designing an ambient monitoring network for PM-10. Further guidance is provided in the document "Network Design and Optimum Site Exposure Criteria for Particulate Matter", (EPA-450/4-87-009, May 1987). The Clark County DAQM submits annual reports to us describing the overall ambient monitoring networks they operate in the Las Vegas area and how they meet the relevant EPA requirements.

Until 1997, our regulations at 40 CFR Part 58, Appendix D required States and/or local agencies to design and operate monitoring networks to address four basic monitoring objectives: 1) to determine the highest concentrations expected to occur in the area covered by the network; 2) to determine representative concentrations in areas of high population density; 3) to determine the impact on ambient pollution levels of significant sources or source categories; and 4) to determine general background concentration levels. In 1997 we revised those regulations to include two additional objectives: 5) to determine the extent of regional pollution transport among populated areas and in support of secondary [National Ambient Air Quality] standards; and 6) to determine the welfare-related impacts in more rural and remote areas (such as visibility impairment and effects on vegetation).

Closely associated with the monitoring objectives is the concept of "spatial scale of representativeness." The goal in siting monitoring stations is to correctly match the spatial

assured and quality-controlled data are the most important factors in determining whether an air quality monitoring network is adequate for air quality modeling.

²² A reference method is an air sample collection and analysis method which follows the procedures detailed in the appendices to 40 CFR Part 50. An equivalent method is an air sampling collection and analysis method which does not follow the reference procedures in 40 CFR Part 50 but has been certified by us as obtaining "equivalent" results.

scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring objective of the station. Thus, spatial scale of representativeness is described in terms of the physical dimensions of the air parcel nearest to a monitoring station throughout which actual pollutant concentrations are reasonably similar. The six spatial scales defined in our regulations are as follows:

Microscale - defines an area up to 100 meters from the PM₁₀ sampler.

Middle Scale - defines an area ranging from 100 meters to 0.5 kilometers from the sampler.

Neighborhood Scale - defines an area ranging from 0.5 to 4.0 kilometers from the sampler.

Urban Scale - defines an area ranging from 4 to 50 kilometers from the sampler. This scale usually requires more than one site for definition.

Regional Scale - defines usually a rural area of reasonably homogenous geography and extends from tens to hundreds of kilometers.

National and Global Scales - these measurement scales represent concentrations characterizing the nation and the globe as a whole.

For the purposes of this SIP review we will focus on the first three spatial scales and to a lesser extent, the urban scale.

The relationship between the four monitoring objectives and the scales of representativeness that are generally most appropriate for that objective are summarized in Table MON-1:

TABLE MON-1 RELATIONSHIP AMONG MONITORING OBJECTIVES AND SCALE OF REPRESENTATIVENESS	
MONITORING OBJECTIVE	APPROPRIATE SITING SCALES
Highest Concentration	Micro, Middle, Neighborhood
Representative Concentrations	Neighborhood, Urban
Source Impact	Micro, Middle, Neighborhood
Background	Neighborhood, Urban, Regional
Regional Transport*	Urban, Regional
Welfare Impacts*	Urban, Regional

* Objective added in 1997

There are three different types of monitoring sites. The standard type of site is called a SLAMS (State and Local Air Monitoring Station) site. These sites usually make up the bulk

of an agency's monitoring network. A subset of the SLAMS sites are also designated as National Air Monitoring Stations (NAMS). NAMS sites are only required in urban areas that meet or exceed certain population thresholds and are selected to provide data for national policy analyses and trends, as well as for reporting to the public on air quality in major metropolitan areas. NAMS sites are selected with an emphasis given to urban and multi source areas. Areas required to have designated NAMS sites are selected based on urbanized population and pollutant concentration levels. Generally, a larger number of NAMS sites are needed in more polluted and urban and multi source areas. The primary objective for siting NAMS is to monitor in the areas where the pollutant concentration and the population exposure are expected to be the highest.

While our regulations do require a minimum number of NAMS sites in certain urban areas, our regulations contain no criteria for determining the total number of stations in SLAMS networks. The optimum size of a particular SLAMS network involves trade offs among data needs and available resources that we believe can best be resolved during the network design process.

The last type of monitoring site is referred to as a Special Purpose Monitor (SPM) site. SPM are monitoring sites which may or may not meet all of our requirements. State and local agencies generally designate monitors as SPM when conducting special studies or when agencies are trying to determine the representativeness of new monitoring locations. They can also be sited temporarily to study a source's compliance or gather data for permitting or modeling purposes. Generally, we do not consider SPM locations when evaluating whether or not an ambient network meets our regulation since by their nature they are considered short term monitoring sites; however, data collected at SPM sites which meet all of our siting and quality assurance regulations are valid for use in regulatory actions, including validating modeling, with some exceptions.²³ In the case of the Las Vegas area, many of the SPM sites operated by the DAQM are in fact long term sites and we have instructed DAQM to redesignate those SPMs which have been in operation longer than three years as SLAMS sites.

DAQM operates 17 PM-10 monitoring sites. Table MON-2 summarizes the PM-10 network in the Las Vegas area.

²³ See the *memorandum*, John S. Seitz, Director, Office of Air Quality Planning and Standards to Regional Air Directors, "Agency Policy on the Use of Special Purpose Monitoring Data," August 22, 1997.

**TABLE MON-2
PM-10 MONITORING SITE IN THE LAS VEGAS AREA**

MONITORING SITE	SITE DESIGNATION	MONITORING OBJECTIVE	SPATIAL SCALE
City Center	NAMS	Maximum Concentration	Neighborhood
East Sahara	NAMS	Maximum Concentration	Neighborhood
Henderson	SPM	Maximum Concentration	Neighborhood
JD Smith	SLAMS	Maximum Concentration	Neighborhood
Paul Meyer Park	SPM	Maximum Concentration	Neighborhood
Walter Johnson	SLAMS	Maximum Concentration	Neighborhood
Green Valley	SPM	Maximum Concentration	Neighborhood
Pittman	SLAMS	Maximum Concentration	Neighborhood
East Charleston (a.k.a. Microscale)	SPM	Maximum Concentration	Neighborhood
Flamingo	NAMS	Maximum Concentration	Neighborhood
Apex	SPM	Background	Regional
East Craig Rd.	SPM	Maximum Concentration	Neighborhood
Boulder City	SPM	Maximum Concentration	Neighborhood
Jean	SLAMS	Transport	Regional
Lone Mountain	SPM	Maximum Concentration	Neighborhood
Palo Verde	SPM	Maximum Concentration	Neighborhood
Joe Neal	SPM	Not Available	Neighborhood

Source: Clark County Health District Air Monitoring Network 1999/2000 NAMS/SLAMS Network Review Report, July 2000

Based on Table MON-2 it would appear that the PM-10 network in the Las Vegas Area fails to meet a number of required monitoring objectives, e.g. representative concentrations, source impacts, and welfare impacts. We do not believe this is the case. When we conducted the TSA of DAQM in August 2001 (see above), one of the program areas we audited was monitoring network design. We found that there seemed to be a misunderstanding at DAQM on how to characterize their monitoring networks in terms of the monitoring site objectives.

As seen in Table MON-2 above, nearly all of the PM-10 monitoring sites in the Las Vegas area are listed as recording the maximum concentration of PM-10 air pollution. This is clearly not the case. Of the 17 monitors collecting PM-10 data, 15 are listed as determining the highest concentration expected to occur in the area covered by the network. A site such as Walter Johnson, with a design value²⁴ of 91 $\mu\text{g}/\text{m}^3$ (micrograms per cubic meter²⁵) is not measuring the highest concentration expected to occur in the Las Vegas area.

Another example is the Apex monitoring site being designated as the background site for the Las Vegas area. Since this site is located in an industrial area and ranks as the sixth highest PM-10 site²⁶, we do not believe that it appropriately represents background PM-10 concentrations. A background site is intended to represent the PM-10 concentrations in the air that does not include emissions from the area where the network is located. The background site should be located in an upwind location that is not impacted by anthropogenic sources.

We believe that many of the sites labeled as maximum concentration are better characterized as representative concentration sites, especially those located in established residential areas away from the urban center. Some sites may also satisfy multiple objectives such as a source impact site and maximum concentration site. For example, the Lone Mountain site is located near a sand and gravel operation and should be labeled as a source impact site rather than a maximum concentration site.

A positive attribute of the Las Vegas PM-10 network is that it uses a large number of monitoring sites that are spread out over the Las Vegas valley. Since PM-10 is a localized yet widespread pollutant in the Las Vegas area, a dense network such as DAQM operates is appropriate. In the Las Vegas area most PM-10 air pollution is a result of windblown dust

²⁴ The PM-10 design value is the third highest observed value in a three year period, in this case 1999 through 2001.

²⁵ PM-10 is measured in the ambient air as a mass (micrograms) of particles 10 microns or less in aerodynamic diameter per volume (cubic meter) of air.

²⁶ The Apex design value exceeds the PM-10 NAAQS with a value of 177 $\mu\text{g}/\text{m}^3$.

from disturbed ground. Activities that disturb the ground can occur throughout the valley but the greatest concentration of activity tends to be in the developing areas around the urban fringe. DAQM should justify its PM-10 network design by providing supporting information on construction and other land disturbing activities in the Las Vegas valley. Other areas that need to be monitored are industrial areas with heavy truck traffic and/or significant emissions potential and material processing industries.

With so much development activity in the Las Vegas valley, it is not possible or reasonable for an agency to operate a monitoring site near all PM-10 producing activities. Therefore the PM-10 network especially needs to demonstrate that the monitoring sites are representative of similar locations in the area. The network should be dynamic and able to change its configuration in response to changing emission conditions and activity patterns.

Our concern regarding network design is mainly that there seems to be a lack of understanding of the concepts of air pollution monitoring network design as presented by EPA regulations and guidance. The fact that DAQM operates a fairly robust network in terms of the number and spatial distribution of monitoring sites and instruments helps to lessen the impact of this deficiency. DAQM incorrectly identifying a monitoring objective does not make the data collected at that site invalid or of little use.

Number of NAMS Monitoring Sites

EPA regulations at 40 CFR Part 58, Appendix D, section 3.7.1 require that a certain number of monitoring sites be designated as National Air Monitoring Stations (NAMS). The actual number required is based on the area's population and the severity of the PM-10 air quality problem. Based on table 4 of this section, an area with population greater than 1,000,000 and PM-10 concentrations exceeding either the annual or 24-hour NAAQS by 20 percent or more should have between six and ten PM-10 monitoring sites designated as NAMS sites. Areas with populations between 500,000 and 1,000,000 and PM-10 concentrations exceeding either PM-10 NAAQS by 20 percent or more should have between four and eight sites designated as NAMS.

According to the U.S. Census, the 1990 population of the Las Vegas metropolitan statistical area (MSA) was 852,737. According to the 2000 census, the Las Vegas MSA grew to 1,563,282. The Las Vegas area currently has four PM-10 sites that are designated as NAMS. Since the PM-10 concentrations in the area exceed the NAAQS by more than 20 percent, the DAQM needs to designate at least two more sites in order to meet this monitoring requirement.

Quality Assurance

A significant portion of the August 2001 TSA on DAQM's air monitoring program focused on the agency's quality assurance program. Before discussing the findings in the

TSA as they relate to this technical support document, it is important to define quality assurance and quality control. Quality assurance (QA) is generally defined as the control of the measurement process through broad quality assurance activities, such as establishing policy and procedures, developing data quality objectives, assigning roles and responsibilities, conducting oversight and reviews, and implementing corrective actions. Quality control (QC) is defined as the control of the measurement process through the implementation of specific quality control procedures, such as audits, calibrations, checks, replicates, and routine self assessments.

Our evaluation of the DAQM QA/QC program found problems in the broader QA functions of the agency. We found that the QA program as a whole was not well defined nor integrated into the day-to-day functioning of the air monitoring program. DAQM has been working to improve this aspect of their program based on the recommendations contained in our report.

On the other hand, we found the technical staff to be well qualified and very knowledgeable about instrument operation and maintenance. As evidenced in the station and instrument log books, the field technicians perform routine and appropriately scheduled calibration, zero-span, precision and accuracy checks of the monitoring equipment and necessary maintenance is performed when warranted by these QC checks.

We do not believe that the deficiencies noted in our TSA report have adversely affected our ability to determine the air quality status of the Las Vegas area. For a more complete discussion of the DAQM monitoring program see “Clark County Department of Air Quality Management Technical System Audit, August 21 - August 23, 2001, Report on Findings” (February 2002). A copy of this report has been placed in the docket for this rulemaking.

2. Base Year and Future Year PM-10 Emissions Inventory

What are the requirements?

CAA 172(c)(3) requires that nonattainment area plans include a comprehensive, accurate and current inventory of actual emissions from all sources in the nonattainment area. Both a base year and a future (attainment) year inventory of actual emissions are needed to demonstrate how and when the NAAQS will be achieved.

Also, a separate requirement pertaining to the emissions inventory applies per CAA 189(b)(1)(B). This section of the Act requires that the serious area provide for the implementation of BACM. In following EPA’s BACM guidance, Step 1 in the BACM analysis is to develop a detailed emissions inventory of PM-10 sources that can be used in the second step of the BACM analysis, modeling to determine the impact of the various sources

on ambient air quality.²⁷

We address both of the above CAA requirements in this section. However, with respect to the future years emissions inventory, we only address emissions projections that do not account for expected emissions reductions from measures adopted. Emissions projections accounting for control measures adopted are discussed in the attainment demonstration portion, or Section E.8.b, of this TSD.

Our policies require that the inventory be fully documented.²⁸ Documentation is needed to assure us and the public of the reasonableness of the methodologies and assumptions used to create the estimates. The documentation should include the source of the emissions, emission factors, activity and growth data, and the control and rule effectiveness factors used to develop the inventory.²⁹ An EPA document that illustrates our expectation with regard to SIP inventory documentation is *Example Documentation Report For 1990 Base Year Ozone And Carbon Monoxide State Implementation Plan Emission Inventories*, EPA-450/4-92-007 dated March 1992.³⁰

In addition, it is important for the emissions inventory to be detailed enough to support the final step in the BACM analysis - providing for the implementation of BACM. As stated earlier in Section D of this TSD, a control measure is a combination of the measure's applicability and its control requirement, i.e., the sources in the category subject to the measure and the measure's requirement for sources to reduce emissions. Where applicability of a measure is limited, e.g., according to average vehicle trip estimates or source size, an emissions inventory of sufficient detail may be essential to estimate within a reasonable degree of accuracy the emission reductions afforded by the measure. For PM-10 area sources, this can require additional data collection prior to or in conjunction with the evaluation of source applicability thresholds. Such data is also important in supporting rule penetration estimates in the attainment demonstration.

How are the requirements addressed in the plan?

The Clark County PM-10 Plan contains an estimate of annual and 24-hour emissions for 1998 for the PM-10 nonattainment area. The annual emissions inventory contains emission rates in tons per year (tpy) for all emission sources across the entire nonattainment

²⁷ *Addendum* at 42012.

²⁸ PM-10 Emissions Inventory Requirements, EPA, OAQPS, EPA-454/R-94-033 (September 1994), section 4.1. Document available at <http://www.epa.gov/ttn/chief>.

²⁹ *Op. Cit.* pg 19.

³⁰ This is also available on EPA's website at <http://www.epa.gov/ttn/chief>.

area based on an average day for the base year, 2001. This is the inventory required by CAA section 172(c)(3).³¹ 1998 emissions total 333,132.7 tpy. Chapter 3, Table 3-1. The 24-hour values are calculated by simply dividing the annual emissions inventory estimates by 365 to arrive at emissions in tons per day (tpd) on a design day. Chapter 3, Table 3-2.

However, for the attainment demonstration, the Clark County Plan relies upon annual and 24-hour emissions inventories associated with a portion of the entire PM-10 nonattainment area titled the “BLM Disposal Area.” We address the appropriateness of this in the subsequent subsection of this TSD that addresses air quality modeling.

The Plan contains two base year BLM Disposal Area emissions inventories for the annual standard: a valley-wide inventory and a microscale inventory for the area surrounding the J.D. Smith monitoring station, which was the only site that measured a violation of the annual NAAQS. Chapter 3, Tables 3-3 and 3-4.

For the 24-hour standard, the Plan contains a base year emissions inventory for the design day (December 21, 1998). This is scaled from the annual inventory with the exception of sources where wind erosion from specific meteorological conditions factored into the emissions estimates (vacant land and construction sites) thus making estimates in these categories proportionally higher for the 24-hour inventory. Chapter 3, Table 3-5. Five “microscale” sites were selected as representative of the types of conditions that lead to elevated concentrations of PM-10 in the nonattainment area and monitors placed at each of the sites for the period 1997 through 1999. The sites recorded violations of the 24-hour NAAQS and microscale emissions inventories were developed by a contractor. See Appendix D. Vacant land emissions were developed by UNLV. See Appendix C. We address these microscale sites further in the modeling subsection of this TSD.

³¹ Emissions inventories for the baseline and future years for both the annual and 24-hour standards are necessary prerequisites to meet requirements for BACM and demonstration of attainment per CAA section 189(b). In the Las Vegas Valley, a subregional or “microscale” inventory is necessary to evaluate 24-hour exceedences. By design and need, the microscale inventory includes only sources within a small area around a monitor rather than all sources within the entire nonattainment area as required by CAA section 172(c)(3). Therefore, we address the 24-hour emissions inventory in Section E.5 of this TSD.

TABLE INV-1 1998 VALLEY-WIDE ANNUAL BLM DISPOSAL AREA PM-10 EMISSIONS INVENTORY		
Source	Tons Per Year	Percent of Overall Inventory
Vacant Land (includes unstable, native and stable land)	68,410 ³²	39%
Paved Roads (includes construction trackout)	44,842	26%
Construction (includes activity and windblown)	39,206	23%
Unpaved Roads	15,025	9%
Point (includes all permitted sources)	1,201	1%
Mobile (includes onroad, offroad and airports)	1,720	1%
Area (includes area-wide sources and small point sources)	1,351	1%
Total	171,755	100%

TABLE INV - 2 24-HOUR BLM DISPOSAL AREA PM-10 EMISSIONS INVENTORY (DECEMBER 21, 1998)		
Source	Tons Per Day	Percent of Overall Inventory
Vacant Land (includes unstable, native and stable land)	412.5	45%
Construction (includes activity and windblown)	343.13	37%
Paved Roads (includes construction trackout)	122.85	13%

³² Disturbed vacant land/unpaved parking lots constitute 48,500 tpy of this value.

TABLE INV - 2 24-HOUR BLM DISPOSAL AREA PM-10 EMISSIONS INVENTORY (DECEMBER 21, 1998)		
Source	Tons Per Day	Percent of Overall Inventory
Unpaved Roads	41.16	4%
Point (includes all permitted sources)	3.29	1%
Mobile (includes onroad, offroad and airports)	4.7	1%
Area (includes area-wide sources and small point sources)	4.3	1%
Total	931.95	100%

Future projected emissions inventories, not accounting for control measures beyond those assumed in the base year, include a 2001 and 2006 BLM Disposal Area valley-wide annual inventory (tpy), a 2001 BLM Disposal Area annual microscale inventory for the J.D. Smith site (tpy) and 2001 and 2006 BLM Disposal Area valley-wide 24-hour inventories (tpd). Appendix E, Tables E-20 through E-22. The inventories prepared for the five microscale sites demonstrate the varying percentage influence of source categories at the different sites. Chapter 3, Table 3-7. However, the Plan does not contain projected future inventories for the microscale sites as they are considered representative of “worst case” sources for the 24-hour NAAQS. See the subsequent modeling subsection of this TSD for further discussion.

TABLE INV-3 2001 AND 2006 VALLEY-WIDE ANNUAL BLM DISPOSAL AREA UNCONTROLLED PM-10 EMISSIONS INVENTORY (TONS/YEAR)		
Source	2001	2006
Vacant Land (includes unstable, native and stable land)	46,260 ³³	6,402 ³⁴

³³ Disturbed vacant land/unpaved parking lots constitute 33,100 tpy of this value.

³⁴ Disturbed vacant land/unpaved parking lots constitute 2,530 tpy of this value.

TABLE INV-3 2001 AND 2006 VALLEY-WIDE ANNUAL BLM DISPOSAL AREA UNCONTROLLED PM-10 EMISSIONS INVENTORY (TONS/YEAR)		
Source	2001	2006
Paved Roads (includes construction trackout)	55,005	59,019
Construction (includes activity and windblown)	45,742	29,402
Unpaved Roads	18,932	20,115
Point (includes all permitted sources)	1,201	1,201
Mobile (includes onroad, offroad and airports)	1,965	2,046
Area (includes area-wide sources and small point sources)	1,519	1,696
Total	170,625	118,983

The sources inventoried include point, area, nonroad, onroad, and nonanthropogenic sources. The inventory includes only primary PM-10 as chemical mass balance receptor modeling showed that secondary and condensable particulate formation contribute less than significant amounts to ambient PM-10 concentrations.³⁵ Chapter 4, section 4.2.1.

The emission estimates for 1998, 2001 and 2006 are based on emission factors and methodologies recommended by EPA. As is typically done in SIPs, these estimates have applied numerous hypotheses and assumptions in order to identify the types of PM-10 sources impacting ambient PM-10 concentrations and approximate the relative contribution from each major source category (expressed as a percentage of the total inventory). Emission inventories, if they are accurate and reliable, provide information on which sources to target for the development of cost-effective control strategies.

Appendices B, C, D, E and L of the Plan support the findings of the emissions inventories. The disturbed vacant land category provides an example of the detailed work supporting the emissions inventories. Attributed as the largest contributor to the annual inventory, aerial photographs and specific field research by the University of Nevada Las

³⁵ Therefore, average secondary particulate concentrations were added to the background as an irreducible part of the total PM-10 concentration. Chapter 3, pg. 3-7.

Vegas (UNLV) were used to estimate windblown emissions from vacant lands. See Appendix C.

Summary of the methodology used to develop emissions estimates for each source category

Stationary Sources:

Sand & Gravel Operations, Utilities - Natural Gas, Asphalt Concrete Manufacture, Industrial Processes, Other Sources - Clark County used emissions reports that were submitted by the sources and estimated emissions for point sources using algorithms developed in the early 1990s. We propose to find that the emissions factors used for stationary sources are based upon EPA's AP-42 methodology.

Stationary Area Sources:

Small Point Sources and Non-Point Sources - Small point sources are required to complete the same self-reporting procedure that stationary sources are required to complete. The 1998 emissions reported by sources was used for the 1998 nonattainment emission inventory.

Residential Firewood Combustion - Clark County used EPA's AP-42 Section 1.9-1, Table 1.9-1, dated October 1996 to develop their emission factors.

Natural Gas Combustion - Clark County used EPA's AP-42 Section 1.4-1, Table 1.4-1 and 1.4-2, dated July, 1998 to develop their emission factors. Since the records of Southwest Gas Corporation are in dekatherms which equals MMBtus, Clark County correctly converted EPA's emission factors from lb/10⁶ scf to lb/MMBtu.

Structural/Vehicle Fires/WildFires - Clark County used the California Air Resources Board (CARB) emission factors for combustible structure and fires. We propose to find this acceptable.

Charbroiling/Meat Cooking - Clark County used the emission factors developed by the South Coast Air Quality Management District located in Southern California for charbroiling and meat cooking. We find this acceptable.

Vacant Land - Vacant land distribution by size acreage is maintained in the Clark County Assessor's database and used in the Plan. Unpaved parking lots and race tracks are combined with overall disturbed vacant land inventory estimates.³⁶ The

³⁶ More specific information on unpaved parking lot and race track emissions estimates is discussed in Section E.5(a) and E.5.(f) of this TSD.

Plan's inventory also distinguishes windblown fugitive dust by acreage from the following sources: disturbed vacant land/unpaved parking lots, native desert and stabilized vacant land. Disturbed vacant land, native desert and stabilized vacant land emission rates were determined using a study performed by UNLV. UNLV applied three test methods, the ball drop, the rock test, and the threshold friction velocity test and found that some soils could be characterized as "stabilized", or passing the tests. Soils that pass the test are likely to be resistant to generation of fugitive dust in the majority of wind conditions. Such soils are either stabilized by specific application of control or have naturally re-stabilized to an extent that passes the tests. UNLV determined that it requires 25 mph or higher winds to elevate fugitive dust from undisturbed, native desert soils and that such emissions would only occur within the first hour of sustained wind speeds. UNLV estimated that soils characterized as "stabilized" release fugitive dust emissions at lower wind speeds (e.g., 15 mph) but, similar to native desert, such emissions would only occur within the first hour of sustained wind speeds (i.e., a limited reservoir). UNLV determined that soils classified as "disturbed" release fugitive dust emissions starting at 15 mph winds and higher, and will emit for a longer period of time than one hour (i.e., an unlimited reservoir). We propose to find acceptable the test methods and the study methodologies developed to determine emission rates for the various classifications of vacant land.

Construction - The overall construction site acreage, subcategorized by construction type, as well as by relative size of individual sites, is documented using information from existing dust control permits issued. Clark County estimates the percentage of sites implementing controls varies depending on the type of construction, e.g., from 20% for underground utilities to 80% for airports. The construction categories responsible for the majority of emissions are residential and commercial construction. Clark County assumes only a 50% compliance rate for these two categories in the base year. Construction site trackout is estimated by the number of acres under construction, the average number of access points and silt loading measurements conducted. A Best Available Control Measure (BACM) report developed by Midwest Research Institute (MRI) was used to determine the emission factors for construction activities. MRI recommended up to five different levels of uncontrolled PM-10 emission estimate methods depending on the type of construction activity. We propose to find the report developed by MRI used proper methodologies and assumptions to determine emission rates for the various construction activities in Clark County. We also find acceptable the use of stabilized and disturbed vacant land emission estimates for windblown construction dust. Windblown construction dust was identified into two categories, stabilized (use of control measures to stabilize the land) and disturbed/uncontrolled. Emission factors used for these two categories are the same as used for stabilized vacant land and disturbed vacant land. Clark County assumes that 3/4 of total construction site acreage is disturbed and uncontrolled. Thus, in the baseline year, Clark County assumes some control was being achieved by the

requirements for construction sites that applied at that time.

Nonroad Mobile Sources:

Airports, Commercial Equipment, Construction & Mining Equipment, Lawn & Garden Equipment, Railroad Equipment - Clark County used emission factors that were published by EPA for all subcategories within the nonroad mobile source category. For example, the “Nonroad Engine Emission Inventories for CO and Ozone Nonattainment Boundaries Las Vegas Area” report completed by EPA in 1993 included emission factors for nonroad engines with the exception of recreational equipment. EPA updated diesel emission factors in 1998 with a report titled “Exhaust Emission Factors for Nonroad Engine Modeling - - Compression Ignition, Report No. NR-009A” and these are used in the Plan. For recreational equipment, EPA emission factors from a March 1999 EPA report titled “Exhaust Emission Factors for Nonroad Engine Modeling - - Spark Ignition, Report No. NR-010b” were used. These factors are the most current and have been used correctly.

Onroad Mobile Sources:

Paved Roads (including construction track out) - Paved roads are classified by roadway type (e.g., major arterial, collector). The Regional Transportation Commission provided information on paved road vehicle miles and modeled vehicle miles traveled by roadway classification. The number of miles of paved roads with unimproved shoulders was provided by each of the cities in the nonattainment area and the Clark County Public Works Department. Clark County correctly used the equation found in AP-42 for calculating PM-10 emissions from re-entrained paved road dust.

Unpaved Roads - The Public Works Department inventoried public and private unpaved road miles within Clark County, and conducted vehicle tube counts on representative roads in order to categorize ADTs. ADTs for private unpaved roads were estimated using counts on adjacent public roads.) Clark County correctly used the equation found in AP-42 for calculating PM-10 emissions from re-entrained unpaved road dust.

Vehicle Emissions- The PM-10 and SO_x emission factors were developed using the Part5 model which was modified on 2/24/95. The NO_x emission factors were developed using the MOBILE5b model with 1998 vehicle fleet data.

We propose to find the emissions inventory for the Clark County PM-10 nonattainment area is well documented, comprehensive, accurate and is a current inventory of actual emissions from all sources in the 1998 base year. In addition to meeting our criteria for emissions inventories under CAA 172(c)(3), we propose to find that the baseline emissions

inventory contains a sufficient level of detail to enable appropriate evaluation of the selected BACM thresholds for source applicability and rule penetration purposes.

Summary of projected year findings for each (uncontrolled) major source category³⁷

Clark County projected their future years emission inventories using four basic methods:

- C emissions will remain the same in the future;
- C emissions will change by the same ratio as the population is predicted to change;
- C emissions will change based upon miles traveled in the nonattainment area; or
- C emissions will change based upon the number of acres in a given land use category.

The largest reduction in PM-10 emissions projected in 2006 will be in the disturbed vacant lands/unpaved parking lots category, with the assumption that most new construction will occur on vacant land. Appendix E, pg. E-7. Also, the Plan assumes construction activity will decrease in the future from its current peak, based on Regional Transportation Commission estimates showing that, while population is still increasing, it will do so at a slower rate. Appendix E, pg. E 4 and Tables E-5 and E-7.

We propose to find that the uncontrolled inventory projections methodologies and calculations rely upon reasonable assumptions and provide a sufficient basis upon which to assess control measure impacts on PM-10 air quality in the future. Clark County has committed to improve and update the emissions inventories in future years as discussed below.

SIP commitments

Clark County includes several SIP commitments to improve specific emission inventories. See Chapter 4, sections 4.8.2.3, 4.8.2.4, 4.8.2.5 and 4.8.2.6. These commitments include developing an improved unpaved road inventory, improved disturbed vacant land and construction inventory, improved emission factors for native desert and disturbed areas, and improved tracking of silt loadings on paved roads and a corresponding update of the paved roads emission inventory. Each commitment has a definitive date(s). As stated in a Reasonable Further Progress Report for June 2002 from the DAQM³⁸, Clark County is on

³⁷ See Appendix E of the Plan for details.

³⁸ Letter from Catherine MacDougall, Clark County DAQM, to Ken Bigos, EPA Region IX, June 28, 2002, with attached Reasonable Further Progress Report, pgs. 5-6, (“June 2002 RFP

track with fulfilling these commitments. We note that the June 2002 RFP Report is not required since the first RFP due date is not until 2003. Notwithstanding, Clark County prepared an interim report on the progress made with respect to the commitments.

Clark County further commits to update and revise the entire PM-10 emission inventories for the 2003 and 2006 attainment years to coincide with Reasonable Further Progress reports. See Chapter 4, section 4.8.2.8. As part of this commitment, Clark County commits to adjust the SIP if the emission inventories are significantly different, particularly if the difference would affect the attainment demonstration, including revising conformity budgets and re-evaluation of control measures if necessary.

3. Base Year Modeling Inventory and Design Values

What are the requirements?

CAA 189(b)(1)(A) requires Serious PM-10 nonattainment areas to demonstrate, based upon air quality modeling, that the Plan will provide for attainment by the applicable attainment date or that attainment by that date is impracticable. While we address the Plan's attainment demonstration in Section E.8 of this TSD, in this subsection we discuss the base year modeling assumptions that establish the basic premises upon which the attainment demonstration is based

A separate requirement pertaining to the emissions inventory applies per CAA 189(b)(1)(B). This section of the Act requires that the serious area provide for the implementation of BACM. In following EPA's BACM guidance, Step 2 in the BACM analysis is to model to evaluate the impact on PM-10 concentrations of the various sources and source categories to determine which are significant. We have established a presumption that a "significant" source category is one that contributes 1 $\mu\text{g}/\text{m}^3$ or more of PM-10 to a location of annual violation and 5 $\mu\text{g}/\text{m}^3$ or more of PM-10 to a location of 24-hour violation. 59 FR at 42011. These thresholds may be lowered depending upon the specific facts of the area's nonattainment. *Id.* In this subsection we address the modeling and data used to identify significant and insignificant sources. Section E.6 of this TSD addresses whether requiring the application of BACM on source categories below the proposed *de minimis* level would meaningfully expedite attainment of the 24-hour standard for purposes of evaluating the attainment date extension request.

The PM-10 SIP Development Guideline (EPA-450/2-86-001, June 1987, "PSDG") specifies that, in order of preference, the modeling used in the demonstration can be 1) a combination of receptor and dispersion models, 2) dispersion models alone, or 3) two

Report").

receptor models alone if dispersion modeling is inappropriate. For completeness (40 CFR Part 51 Appendix V, 2.2(e)), the SIP should include input and output data, including meteorological data, justification for the models used, for any off-site data used, and assumptions and settings used in the models.

EPA has issued several guidance documents and memoranda that describe PM-10 modeling procedures. However, this available guidance is not comprehensive and is sometimes aimed only at Moderate, rather than Serious, PM-10 plans. Sometimes, too, it assumes that the emissions to be modeled are predominantly from well-quantified point sources, such as industrial stacks, rather than from the more poorly characterized fugitive dust emissions. Interpretation and judgement is therefore needed in applying the guidance; also, the guidance explicitly recognizes that case-by-case evaluations of SIP modeling may be needed at times.

There is no recommended model for analyzing secondary particulates (which form chemically in the air from precursors like ammonia and oxides of sulfur and nitrogen); a case-by-case approach (including possibly rollback) may be used [Guideline on Air Quality Models (GAQM) 7.2]. For fugitive dust-dominated areas with relatively constant point source emissions, the assumption that secondary particulates are an irreducible part of the background is a conservative approach to handling these secondary particulates in a rollback attainment demonstration (described below).

Generally receptor models, such as the Chemical Mass Balance Model (CMB), cannot distinguish between the many source categories that create fugitive dust, like roadway dust, vacant lots, construction activities, etc. Unfortunately, dispersion models do not do well for fugitive dust either, since emission factors for dust-generating activities, as well as the level or amount of such activities, are uncertain, highly variable, and poorly characterized. Ground-level wind is an important determinant of emissions, yet it is spatially and temporally variable, and available wind measurements are sparse. Thus, emissions estimates are highly location- and time-specific as well as being uncertain; dispersion model predictions based on them will also have high uncertainty. Thus for fugitive dust-dominated areas, the default recommendations in EPA's guidance for model selection, receptor and dispersion modeling combined, may not be adequate.

The 2001 GAQM, section 7.2.1.c, refers to "the difficult nature of characterizing and modeling fugitive dust and fugitive emissions." Portions of section 7.2.2 state the need for a case-by-case approach in some circumstances (e.g., when "recommended dispersion models are not available or applicable.") Further, "where... area sources are a predominant component of PM-10, an attainment demonstration may be based on rollback of the apportionment derived from two reconciled receptor models".

Rollback is a very simple model in which ambient concentrations are assumed proportional to emissions. To predict future concentration, the current concentration is

reduced or "rolled back" by the same fractional amount that emissions are reduced. It is usually applied in the form of "proportional rollback", in which each emission source category's contribution to ambient concentrations is rolled back proportional to its contribution to total emissions. Thus, if category emissions are reduced by 10% and the category is 40% of total emissions, the overall effect is to reduce ambient concentrations by $(0.10 \times 0.40 = 0.04)$ 4%.

The basic rollback equation embodies the idea that concentration net of background is assumed proportional to emissions:

Formula 1:

~~$$\frac{X - B}{X_0 - B} = \frac{E}{E_0}$$~~

where:

- B = background concentration
- X_0 = initial ambient concentration (design value),
- E_0 = initial emissions
- X^* = NAAQS concentration
- E^* = emissions level needed for attainment

Alternatively stated, the percent change in net ambient concentration is assumed equal to the percent change in emissions: $\frac{X - B}{X_0 - B} = \frac{E}{E_0}$. To demonstrate attainment, one has to reduce emissions to E^* , which is calculated from the above formula as the level that will reduce X_0 down to X^* , the NAAQS.

In proportional rollback, the rollback formula is applied to each emission source category i individually: $\frac{X_i - B_i}{X_0 - B} = \frac{E_i}{E_0}$. Then reductions in each category are added up proportional to their contributions to ambient concentrations:

Formula 2:

~~$$\frac{X - B}{X_0 - B} = \sum \frac{E_i}{E_0} \frac{X_i - B_i}{X_0 - B}$$~~

The contributions or "source apportionments" (S_i) can be determined from a receptor model such as CMB, or, as in this submittal, from an inventory. In the latter case, the ambient contribution (X_i) from source category i is estimated from a source category's contribution to total emission:

Formula 3:

~~$$S_i = \frac{E_i}{E_0} (X_0 - B)$$~~

In practice, we want $X = X_0 - X^*$ for attainment, so putting this and formula 3 into formula 2 yields:

Formula 4:



To demonstrate attainment, one has to show that the sum of all the emissions reductions $\sum E_i$ is at least enough to reduce emissions so that the total of all the concentration contributions is below the NAAQS. The last column in Tables 5-15 through 5-19 of the Plan, "impact on attainment concentration", is equivalent to $(X_0 - B) * (\sum E_i / E)$. Their total, plus background B, is to be at most X^* , the NAAQS.

EPA guidance on attainment demonstrations generally assumes that the entire nonattainment area will be modeled using a dispersion model. However, as mentioned above, emission inventory development and modeling for areas with substantial fugitive dust problems, such as the Las Vegas Valley area, has proved difficult, because of fugitive dust emissions' marked uncertainty and their temporal and spatial variability. Accurately estimating emissions for input to dispersion modeling of fugitive dust over a large area is much more difficult than for point sources of gaseous pollutants, which were the archetypes for development of much of the modeling guidance.

Microinventory approach

Partly because of emission inventory uncertainty for PM-10, early EPA PM-10 guidance³⁹ puts forward alternatives such as Chemical Mass Balance (CMB) and the microinventory method, which focuses on analysis of concentrations at specific monitoring sites. The idea of intensive inventorying and modeling of a small area is a reasonable one for assessing pollutants like PM-10, which has relatively sharp spatial gradients as dust settles out with distance from the source. PM-10 thus has more localized effects than the other criteria pollutants, which are typically gaseous and buoyant. A focus on nearby source types and their activity levels is especially appropriate for fugitive PM-10 emissions, with their dependence on local soil characteristics and micrometeorology, and their proximity to the ground. This can be termed a "microscale" or "microinventory" approach. (Note: the term "microscale" is used in EPA monitoring regulations -- 40 CFR part 58, Appendix E, and elsewhere -- to mean a scale of several to one hundred meters. Here, the term is meant to distinguish a local analysis from an analysis of the whole nonattainment area.)

Three additional steps help make a microinventory attainment demonstration valid for more than just the immediate surroundings of existing monitors. First, the control measures that the analysis shows are needed should be applied throughout the nonattainment area, rather than just those that happen to be near a monitor. Second, an appropriate level for background concentration should be chosen. Despite fugitive dust PM-10's relatively

³⁹ Receptor Model Technical Series, Volume I, Overview of Receptor Model Application to Particulate Source Apportionment, EPA-450-4-81-016a, July 1981 p. 27; PM-10 SIP Development Guideline, section 6.4.2.

localized effect, some portion consists of smaller particles that are carried further, contributing to a longer range or more regional component of PM-10. The background concentration that enters a microinventory area from the outside should reflect the source surroundings, not just natural background levels. And third, as stated in PM-10 SIP Development Guideline section 6.4.2, the sites analyzed should be shown to be "controlling", i.e., the resulting emission reduction targets are to be shown sufficient for attainment throughout the nonattainment area. The guidance does not describe how to make this showing, but some justification should be provided on how the sites chosen are "worst case" in the sense of resulting in the most stringent control requirement, or at least representative of exceedences. In summary, though the initial analysis may be of "microscale" areas smaller than the entire nonattainment area, including these additional steps to connect those areas with the full area, the analysis can still yield an attainment demonstration valid for the nonattainment area as a whole.

In summary, in recognition of the special characteristics of fugitive dust-dominated areas, an attainment demonstration based on proportional rollback of one or more microinventories is a reasonable approach and is consistent with EPA guidance, as long as the microinventory areas are representative of worst case conditions, and the resulting emission controls are applied throughout the area.

How are these requirements addressed in the plan?

Given that the Las Vegas Valley has exceeded both the annual and 24-hour PM-10 standards, the Plan must provide for enforceable control measures sufficient by the end of 2001 to reduce ambient 24-hour average PM-10 concentrations to below 150 $\mu\text{g}/\text{m}^3$, and to reduce annual average PM-10 concentrations to below 50 $\mu\text{g}/\text{m}^3$ or, alternatively, demonstrate that attainment by that date is impracticable. Therefore, we must evaluate the representativeness of the "design" day concentration and other assumptions supporting the modeling.

a. Modeling premises

Model selection

As described in Chapter 6 and Appendix K of the Plan, Clark County used a microinventory rollback approach, along the lines described in the preceding subsection of this TSD.

Work conducted by the Desert Research Institute (DRI) "Fugitive Dust and Other Source Contributions to PM-10 in Nevada's Las Vegas Valley," August 30, 1996, as well as emissions inventories developed for the Plan (see Chapter 3), shows that the predominant source of PM-10 in the Las Vegas Valley area is fugitive dust. The results of the CMB receptor modeling performed by DRI were roughly the same as the estimates included in the

DAQM's inventory. CMB modeling found that fugitive dust accounted for 80-90 percent of PM-10 in the Las Vegas Valley⁴⁰ and the emissions inventories estimate that these sources contribute more than 90 percent of PM-10 emissions.⁴¹ Clark County estimates that vehicular secondary sulfate emissions from all sources contribute only 0.1 µg/m³ to annual valley-wide PM-10 concentrations.⁴² Point source emissions (e.g., those from specific industrial facility stacks) have actually declined over the past few years.⁴³ Thus, secondary particulate does not contribute significantly to PM-10 exceedences in the area.

ISCST3 dispersion modeling done as part of the previous SIP submittal (Las Vegas Valley Serious PM-10 Plan, August 1997) confirmed that individual sources have minimal impact on ambient concentrations five or more miles away, and the DRI modeling work concluded that, typically, sources within 2 kilometers of a monitor are the driving force in determining its concentration.⁴⁴ The DRI work also found that ISCST3 over-predicted concentrations by a factor of 2 to 4, due to uncertainty in emissions and emissions variability not captured in the model. (The results for range of influence are still valid, however, as they were determined by comparing the relative change in concentration with distance, rather than absolute PM-10 levels). The dominance of fugitive dust non-point sources and the relatively short range of influence of PM-10 sources support the use of a microinventory rollback approach for the Las Vegas Valley.

Model domain definition

The Plan indicates that five sites were selected as representative sites of the types of conditions that lead to elevated concentrations of PM-10 in the Clark County nonattainment area. The sites recorded violations of the 24-hour NAAQS during the design period of 1997 through 1999. Chapter 3, pg. 3-13. As discussed above, fugitive dust PM-10 sources have a limited range of influence, and conversely, concentrations at a monitor are driven by nearby emissions. Based on the Clark County and DRI dispersion modeling results described above, Clark County chose 2 km as the radius of the area containing the primary sources affecting a monitor. Researchers at UNLV and Dames & Moore were retained to create microinventories covering squares 4 km on a side around each monitor that exceeded the 24-hour PM-10

⁴⁰ Chapter 4, p. 4-8.

⁴¹ Chapter 4, p. 4-9.

⁴² Chapter 4, pg. 4-10 of the Plan.

⁴³ Chapter 3, p. 3-2.

⁴⁴ Chapter 4, p. 4-5; also, Chow et al., "Middle- and Neighborhood-Scale Variations of PM-10 Source Contributions in Las Vegas, Nevada", *Journal of the Air and Waste Management Association*, 49:641-564, June 1999.

NAAQS (Appendices B and D). The five monitors identified were J. D. Smith, Craig Road, East Flamingo, Green Valley, and Pittman.

The study areas around those monitors are clearly much smaller than the overall nonattainment area. However, as discussed above, under the microinventory approach this is sufficient if the areas are representative of worst case conditions. In one sense, the locations are "worst case" in that they are the locations where PM-10 exceedences have been observed; exceedences have not been observed in the rest of the monitoring network. More broadly, these locations can be considered representative of conditions in the area because they contain varying source category mixes; they span a range of conditions that occur in the Las Vegas Valley. As is apparent from the microinventories, and as explained in Appendix K (p. K-5) and Chapter 3, section 3.4.4, while each source category is present in each microinventory area to a degree, the sites vary in the categories' relative importance. For example, the East Flamingo site has high traffic volume; Green Valley has a significant amount of construction activity, plus motorcycle race tracks; J.D. Smith is a developed area, with a mixture of roadways, small point sources, and construction sites; Pittman has larger stationary sources, plus a significant amount of unpaved parking and unpaved roads. The total valley-wide inventory source contributions are spanned by the percent source contributions of the microinventory areas (Table K-1). Comparing the frequency distribution of PM-10 concentrations shows that most of the sites in the monitoring network vary together, largely driven by wind speed. These findings strengthen the idea that the chosen microinventory areas represent the Las Vegas Valley well for purposes of a rollback demonstration.

To further address the representativeness issue, Clark County prepared a valley-wide rollback analysis. That is, in addition to using the five microinventories, Clark County used an inventory for the whole BLM disposal area, reducing the area's maximum concentration in proportion to this inventory. While cruder than the microinventory approach, this is in line with the historical use of rollback, and since it covers a large area it is not limited to the particular mixes of sources that occur in the microinventory areas. (It also provides an area-wide emissions budget for conformity purposes.) In addition, an annual inventory was developed for the J.D. Smith site, the only monitor exceeding the annual PM-10 NAAQS.

Two potential issues with the microinventory approach need to be addressed:

- 1) future land use and growth in driving and other activities could create a source mix in a given area with higher emissions than is seen in the microinventory areas; and
- 2) the microinventory area source mixes do not represent conditions in the parts of the nonattainment area that are outside of the BLM disposal area.

Regarding the first issue, it should be noted that part of the concept of the microinventory approach is that the chosen areas are representative not only of current, but also of future conditions (Chapter 3, section 3.5.3, Chapter 5, section 5.2.2 and Appendix E).

Thus, new housing construction and new vehicle travel will likely occur in additional areas; but such conditions are deemed to be represented by the high-construction and high-vehicle travel sites of Green Valley and East Flamingo, respectively. Essentially, a judgement call is being made that future emissions density will be like current emission density around the collection of monitoring microinventory sites (though the highest density areas may be in locations other than those microinventory sites being evaluated). There is no absolute guarantee of this; circumstances could create higher density zones than are currently seen, however, future land use and construction activity can only be qualitatively projected and are subject to some degree of uncertainty. A future maintenance plan may be able to consider a range of plausible outcomes or a new microinventory study could be performed in the future using other sites and/or updated land use and activity data. For purposes of the Plan's attainment demonstration, we propose to that find the microinventory rollback approach is reasonable for demonstrating attainment throughout the nonattainment area, and is similar to that approved by EPA for the Maricopa nonattainment area (67 FR 48717, July 25, 2002).

The second issue, regarding locations outside the BLM Disposal Area, is partly addressed in Chapter 3, section 3.3 and Appendix E. All lands controlled by the federal government outside the BLM disposal area are to remain in their native state and the boundary can only be changed by an act of the United States Congress. Approximately 99% of the nonattainment area resides within the BLM Disposal Area and nearly all anthropogenic sources within the nonattainment area occur within the BLM Disposal Area, making it the appropriate focus for the attainment demonstration. In addition, in Appendix P Clark County argues that historically PM-10 exceedences have not been observed outside the BLM Disposal Area; for example, a PM-10 monitor operating at Frias between 1988 and 1994 never experienced an exceedence.⁴⁵ Since we accept that the Clark County monitoring network adequately meets our siting criteria, as discussed in Section E.1 of this TSD, and the five microscale monitors capture the worst-case conditions that lead to exceedences (including the types of sources that would exist outside of the BLM Disposal Area), a separate attainment demonstration for that portion of the nonattainment area that falls outside of the BLM Disposal Area is not needed. As discussed in Section E.5 of this TSD, the rules adopted by Clark County to address sources within the BLM Disposal Area equally apply to the entire PM-10 nonattainment area.

Given the short range of influence of PM-10 sources -- roughly 2 km for the main impact -- it would not be appropriate to include the emissions outside the BLM Disposal Area in the microinventory analyses. They are accounted for in the background concentrations used in the rollback. And even for the valley-wide rollback, given the large area involved, the non-BLM Disposal Area emissions would numerically overwhelm those within the BLM Disposal Area, despite their distance, low density, and small impact on exceedences, making a rollback analysis meaningless.

⁴⁵ Appendix P of the Plan, response 3 to comments from Jessica Hodge and verbal communication with Catherine MacDougall, 2001.

Finally, for ozone and carbon monoxide modeling, it is accepted that domains can be smaller than the whole nonattainment area, as long as the NAAQS-exceeding locations and the emissions areas contributing to them, are included (Guideline for Regulatory Application of the Urban Airshed Model, EPA-450/4-91-013, July 1991, section 3.2). This allows an agency to focus its analysis on the relevant areas.

Ideally, dispersion modeling would be performed for the entire nonattainment area. However, given the considerations above, including the types of sources contributing to nonattainment, feasibility of a rollback approach and short impact range of PM-10 sources, Clark County's approach to tailor the PM-10 modeling in the Plan only to the BLM Disposal Area is reasonable.

Meteorological and emissions inputs

The emissions inputs to a rollback modeling analysis are just the emissions themselves -- the five microinventories for the microinventory analysis and the BLM Disposal Area inventory for the vallevide analysis. Meteorological inputs are just the wind speeds used to drive the emissions, e.g. those for wind-blown construction dust and vacant lands. Wind speeds were measured at McCarran International Airport, which is often used for air quality analysis in Clark County. Actual winds, including the high-speed gusts that cause emissions, would vary by location, and would vary more often than the hourly measurements available. Thus, a refinement on the approach used would have been to collect additional wind data in multiple locations and use it to create a spatially-varying windfield to better reflect the varying emissions. But this would not necessarily have improved the results, because a calculated windfield to estimate emissions with a variability comparable to reality would be nearly impossible to develop; also, the windfield tools often used, e.g., the diagnostic wind model, are developed more for portraying transport of already-airborne pollutants by the wind on a larger scale than for modeling the localized ground-level winds that drive PM-10 emissions.

Episode selection

The valley-wide rollback analysis was constructed around design values for the annual and 24-hour PM-10 NAAQS. For the annual standard, the most recent period available was 1997-1999, for which the design value was $53 \mu\text{g}/\text{m}^3$. For the 24-hour standard, as described in Appendix A, the highest among the monitored "third-highs" was used as the overall area design value, $281 \mu\text{g}/\text{m}^3$ (this value occurred on December 21, 1998, at the Green Valley site). These are the values to be "rolled back" for the valley-wide attainment demonstrations.

For the five microinventory areas, each area's third-high was chosen as the design value to be "rolled back" in its microinventory 24-hour PM-10 attainment demonstrations. These values occurred on days in the January - March period of 1999. Chapter 3, Table 3-6.

Background concentration

The selection of background concentrations is described in Appendix K of the Plan. Ideally, background is set to be a concentration not affected by the sources being analyzed, i.e., the level of a "natural" background measured far from any anthropogenic emission source. The Jeans site satisfies this criterion, and was appropriately chosen for the valley-wide inventory rollback's background.

For a microinventory analysis in an urban area, however, such a natural background is not appropriate because other locations within the urban area will be contributing PM-10 to the microinventory area. A difficulty of the approach is that the background chosen will be composed partly of the natural background, partly of nearby sources similar to those within the microarea, and partly of a "regional" component due to finer particles throughout the area. Further, these other sources could themselves be affected by controls, so deciding the level of control needed for attainment becomes circular. Short of dispersion modeling for the whole area (which as discussed previously is problematic for other reasons), an alternative approach is to choose low measured values from monitors outside the microarea. Such values will reflect the PM-10 emissions entering the microarea that are generally present under most conditions. These values will also minimize the effect of the localized sources that primarily influence the upwind monitor under high wind conditions. This is a reasonable procedure, and the one followed by Clark County (Appendix K, K-2 and K-3). By holding this background constant, rather than reducing it as emission controls go into effect, Clark County used a conservative approach.

The DRI work cited above (Chow et al., 1999) showed that secondary particulates are only about 4% of ambient concentrations during that study. Chapter 4, Table 4-2 and Appendix K, K-3. Design day secondary concentrations from the East Charleston site ($3.5 \mu\text{g}/\text{m}^3$) were added to the irreducible background for each microinventory site. They were assumed constant in the rollback modeling, a conservative approach for an area with a very small point source and mobile source exhaust contribution (App. K, p. K-3). It would have been slightly more conservative to grow the mobile source component with vehicle miles traveled (VMT), but since vehicle exhaust is only about 1/10 of one percent of the inventory (Chapter 3, Table 3-5), this makes essentially no difference to the attainment demonstration.

Model performance

By its nature, rollback does not require a model performance evaluation. Since observed concentrations (above background) are assumed proportional to emissions, model output is defined to be the observed level. The rollback could be tested in the future, however, to check whether the proportionality used in the submittal remains the same.

In conclusion, we propose to find the modeling used in the attainment demonstrations for both the annual and the 24-hour NAAQS to be acceptable. Although not directly

employed in the attainment demonstration, both receptor and dispersion modeling were used in its development. This modeling confirmed that fugitive dust dominates the Las Vegas Valley PM-10 problem, but relying solely on its results would be problematic. Instead, a microinventory-based proportional rollback approach was used, as allowed under the case-by-case provisions of EPA's GAQM, and as recommended by early EPA PM-10 guidance. By showing that the chosen microinventory areas are representative of conditions leading to PM-10 NAAQS exceedences, and by then applying the controls shown to be needed in these microareas to the entire nonattainment area, Clark County has followed an acceptable procedure for demonstrating attainment.

b. Significant vs. Insignificant Sources

In this subsection, we summarize our findings concerning the significance or insignificance of source categories. More detailed analysis of each source category deemed insignificant can be found in Section E.6 of this TSD.

The determination of source significance is based primarily on the J.D. Smith annual microinventory and the 24-hour microinventories at the five representative sites, supplemented by reviews of the 1998 valley-wide 24-hour emissions inventory, the 1998 valley-wide annual emissions inventory, and Chemical Mass Balance modeling. Chapter 4, pg. 4-1.

Clark County determined that the following source categories are significant for the annual PM-10 standard:

- C Disturbed Vacant Land/Unpaved Parking Lots
- C Construction Activity Dust (incl. highway construction)
- C Windblown Construction Dust (incl. highway construction)
- C Paved Road Dust
- C Unpaved Road Dust

The same source categories were deemed significant for the 24-hour standard, with the exception that an additional category was added:

- C Race Track Wind Erosion/Vehicles

The following source categories were determined not significant for both standards:

- C Stationary point sources (sand & gravel operations, utilities - natural gas, asphalt concrete manufacture, industrial processes, other)
- C The following stationary area sources: small point sources, fuel combustion sources, residential wood combustion, open burning

- C Nonroad mobile sources
- C Onroad mobile vehicle exhaust and related emissions
- C Secondary aerosol particulate

The preceding modeling subsection of this TSD stresses the inherent uncertainty of fugitive dust PM-10 emissions inventories, based on those sources' poor characterization and their spatial and temporal variability. The state of knowledge in this area gradually advances, but remains far from perfect. Nevertheless, it does have value for determining the relative contribution of sources to overall PM-10, and as a guide to choosing control strategies. The rollback modeling approach used in the submittal is as good as the underlying inventories that it uses. The concentration at a given monitor is the result of a mix of source impacts that contribute to it; this mix varies by time and location. It reflects several different mixes of source categories, and also a valley-wide average mix. Correspondingly, the rollback modeling's estimates of the ambient contribution of source categories are similarly uncertain, but the best that is available. The model approach used is reasonably good for determining, in an average sense, which source categories have a significant impact and which are insignificant.⁴⁶ The five microscale sites were established to capture emissions from a variety of sources, including most of the categories that Clark County has deemed de minimis.⁴⁷

Emissions from the proposed de minimis categories are a small percentage (3% collectively) of the total 1998 BLM Disposal Area annual and 24-hour PM-10 emissions inventories. See Tables INV-1 and INV-2 of this TSD. The minimal contribution of the proposed de minimis source categories to the inventory supports that, both individually and collectively, they have a minor impact on elevated annual and 24-hour PM-10 levels in the Clark County nonattainment area. We provide more detail on emissions inventory and modeling assumptions that affect de minimis source categories in Section E.6 of this TSD.

Furthermore, Clark County includes a SIP commitment to conduct a PM-10 saturation study in the 2004 through 2006 time frame that will analyze neighborhood impacts of major stationary sources. This is to specifically address geographic locations not well covered by the current monitoring network due to growth within the valley and inter-basin and intra-basin transport during high wind events. Chapter 4, subsection 4.8.2.2.

In conclusion, we find the Plan has not excluded any source categories that should be considered significant from its list of significant source categories. The Plan presents

⁴⁶ We note that it is not reliable for determining definitively whether a given source category has an insignificant impact at all times and locations.

⁴⁷ Categories labeled de minimis in the Plan that were not observed within the microscale areas include airplane exhaust and agricultural activities, however the sites included impacts from stationary sources and other miscellaneous sources such as race tracks and vehicle exhaust. Chapter 3, pgs. 3-17 through 3-19.

acceptable modeling to evaluate the impact of various PM-10 sources and source categories on PM-10 levels and to derive a comprehensive and conservative list of significant source categories.

We also find that the Plan correctly excludes certain source categories from the BACM analysis because of their de minimis impact on PM-10 levels in the modeling domain. The minimal contribution of the proposed de minimis source categories to both the 24-hour and annual inventories argue that, both individually and collectively, they have a trivial impact on elevated annual PM-10 levels in the modeling domain.

4. BACM Analysis

In preceding subsections of this TSD, we have addressed the first two steps of the BACM analysis, which involve developing a detailed emissions inventory and modeling to identify significant versus insignificant sources. In this subsection, we address identification of potential BACM.

What are the requirements?

Step 3 in the BACM analysis, per CAA section 189(b), is to identify potential BACM for significant source categories including their technological feasibility, costs, and energy and environmental impacts. One source for identifying potential BACM is EPA's BACM guidance documents, but states are encouraged to consider other sources of information. A state should also consider any measures identified in public comments. *Addendum* at 42011.

How are the requirements met in the plan?

Section 4.3 of the Plan describes Clark County's analysis to identify potential BACM. Clark County identified and evaluated a complete list of potential BACM for sources identified as significant in the Las Vegas Valley. In preparing the list of candidate BACM, Clark County reviewed our guidance documents on BACM, other EPA documents on PM-10 control, as well as PM-10 plans from serious and moderate PM-10 areas in the West.

Extensive research was conducted to identify potential control measures for BACM, which was also used in the MSM analysis.⁴⁸ Clark County found the control measures implemented by the PM-10 serious nonattainment areas generally represented the most stringent measures in use for control of the significant sources in the Las Vegas Valley. Close attention was given particularly to Maricopa County Rules 310 and 310.01 (adopted February 16, 2000) and South Coast Rule 403 (amended December 11, 1998).

⁴⁸ Chapter 6, section 6.2 with reference to Chapter 4, section 4.3.

Clark County evaluated and developed new or enhanced control measures over a period of 18 months, including appropriate public comment through workshops and hearings before adopting the measures. Clark County evaluated controls proposed during public comment, and in some cases, plans to incorporate additional standards based on those comments.⁴⁹ The Plan provides cost effectiveness estimates for each of the candidate BACM per EPA guidance, with a low and a high estimate included.

Only four measures were eliminated from further consideration and thereby not evaluated for BACM implementation:

- C Improving specifications/reducing usage of skid control materials as a paved road dust measure was deemed “not applicable” since roads in the Las Vegas Valley are not sanded or salted for skid control.
- C Requiring dust mitigation plans⁵⁰ for vacant parcels greater than ten (10) acres⁵¹ that are disturbed was deemed “not cost effective”. In making this assessment, the Plan details the high additional costs that would be associated with preparing and reviewing such plans and indicates that no additional emissions benefits would be provided by such a strategy.⁵²
- C Requiring upwind/downwind monitoring and establishing a limit of 50 µg/m³ over a five-hour period for construction activities was deemed “not technologically feasible.” Among other arguments, Clark County explained that accurate and repeatable measurements from a fixed site boundary monitoring array are not possible given the mobile nature of construction activities and variable wind direction patterns (i.e., the correct position of such a monitoring array at the site boundary may vary throughout the day, making the measured results unreliable).
- C Prohibiting unpaved haul roads for construction sites (i.e., requiring that roads at construction sites be paved) was deemed “not technologically feasible.” This is because unpaved haul roads for construction sites are temporary roads that must be removed after the completion of the construction activity, which would generate

⁴⁹ These additional standards can be found in several of the proposed revisions to Section 94, as described in Chapter 4, section 4.8.2.9 “Commitment to Revise Air Quality Regulations” of the Plan.

⁵⁰ This refers to paperwork that would be submitted to the County detailing a plan to comply with established requirements.

⁵¹ Except for large tracts (10,000+ acres) of government owned lands.

⁵² For a detailed explanation, see Chapter 4, pgs. 4-13 and 4-14 of the Plan.

additional emissions in their removal and off-site stockpiling of used paving materials.

We propose to accept these as reasoned justifications for excluding the identified measures.

5. BACM and MSM Implementation

What are the requirements?

CAA section 189(b)(1)(B) requires that BACM be applied to significant sources of PM-10. In addition, in order to grant a State's request to extend the attainment deadline pursuant to CAA section 188(e), EPA must find the Plan includes the most stringent measures that are in the implementation plan of any State or achieved in practice in any State.

CAA section 110(l) prohibits us from approving a revision to the applicable implementation plan if that revision would interfere with any applicable requirement concerning attainment and reasonable further progress (RFP) or any other applicable requirement of the Act. We interpret section 110(l) to mean that we cannot approve a plan revision if that revision would mean that the State's applicable implementation plans no longer provide for attainment or RFP as these are required by the CAA for those plans or if the revision would mean that the plans no longer meet another requirement of the Act that applies to the plans. For a further discussion of this interpretation, see 61 FR 51599, 51608 (October 3, 1996).

In this section of the TSD, we evaluate information from the Clark County Plan that forms the basis for the control measures adopted. We divide discussion of each source category into six subcategories:

- description of emissions;
- proposed controls and justifications for rejecting potential controls;
- BACM evaluation;
- rule enforceability and comparison to the applicable SIP rule;
- MSM evaluation; and
- SIP commitments or miscellaneous issues (as appropriate)

In the "proposed controls and justifications for rejecting potential controls," the "BACM evaluation" and "MSM evaluation" subsections, we review the rules applicable to each significant source category for compliance with the CAA requirements for the implementation of BACM in section 189(b)(1)(B) and inclusion of the most stringent measures in section 188(e).

In the “rule enforceability and applicable SIP rule” subsection, we evaluate the rules for enforceability and consistency with applicable CAA requirements for SIP revisions in section 110 and Part D and EPA policy as outlined in the document entitled “Guidance Document for Correcting Common VOC and Other Rule Deficiencies”, U.S. EPA Region IX, revised August 21, 2001. We note that there may be some overlap between the BACM/MSM discussion and enforceability discussion.

How are the requirements met in the plan?

Sections 4.4 and 4.5 of the Plan detail the control measures adopted. Section 4.8 contains SIP commitments that contain control measures, in addition to other commitments. Additional evaluation of control measures was done as part of the most stringent measures analysis in Chapter 6 of the Plan.

The control measures Clark County adopted as BACM to address the 24-hour and the annual standard are the same (excluding race tracks, which were deemed only significant for the 24-hour standard). To avoid duplicative text, we evaluate BACM and MSM for each of the relevant source categories with respect to both standards in the same subsections of this TSD.

Clark County adopted Sections 90 through 94 and revised Section 0 to incorporate definitions related to fugitive dust sources on November 16, 2000. Sections 90 through 93 were subsequently revised on November 20, 2001 to include coverage for sources in the Apex Valley area, clarify that the rules do not apply to fugitive dust sources located at stationary source facilities, and update the rules to reflect adoption by the Clark County Air Quality Management Board in place of references to Clark County Health District. Clark County submitted these revised rules to EPA on November 1, 2002 to supersede those adopted on November 16, 2000 and submitted with the June 2001 Plan. These rules address the significant sources identified in the Plan, along with SIP commitments contained in Chapter 4 of the Plan. The rules apply to the entire PM-10 nonattainment area (Hydrographic Basin 212) and not just the BLM Disposal Area.

The Clark County Plan presents a detailed evaluation of BACM and MSM, with justifications supporting source thresholds of applicability and associated emissions reductions, descriptions of the relative stringency of individual potential measures and their impact on the SIP, and comparisons of the stringency of Clark County measures to those of other areas.

a. Disturbed vacant land

Description of emissions

This category includes windblown fugitive dust emissions from disturbed surfaces of vacant lands. On vacant land, fugitive dust emissions are caused by virtually any activity which disturbs an otherwise naturally stable parcel of land, including earthmoving activities, material dumping, weed abatement, and vehicle traffic.

Clark County calculated emissions from disturbed vacant lands for the 1998 base year modeling inventory. The County estimated 148,575 acres of vacant lands within the BLM Disposal Area, excluding lands under construction. Appendix B, B-6. Total annual emissions estimated for this category are 48,500 tpy (this value includes unpaved parking lots). Chapter 3, Table 3-3. Wind erosion from disturbed vacant land accounts for 371 tpd in the 24-hour BLM Disposal Area inventory, a little over one-third of the total estimated emissions. Chapter 3, Table 3-5.

Proposed controls and justifications for rejecting potential controls

Five potential BACM were identified, including:

- C limit off-road use of recreational vehicles on open land
- C vacant land stabilization
- C construct windbreaks
- C controls on weed abatement
- C dust abatement and management plans for large tracts of governmentally owned lands.

On November 20, 2001, Clark County adopted three of these control measures, including limits on motor vehicle use on open land, vacant land stabilization and weed abatement controls (Section 90 “Fugitive Dust From Open Areas and Vacant Lots”). The Plan contains a SIP commitment to adopt additional requirements for dust abatement management plans for large tracts of governmentally owned lands. Since large tracts of land are already subject to Section 90, this measure will simply provide more assurance of source compliance and associated emission reductions from such parcels. The original SIP commitment date was August 2001, however, Clark County is preparing to add further requirements to its fugitive dust rules⁵³ which would be adopted simultaneously with the SIP commitment revisions. The revised SIP commitment date for this BACM is March 31,

⁵³ June 2002 RFP Report, pgs. 6-8.

2003.⁵⁴

Clark County elected not to specifically require construction of windbreaks on disturbed vacant lots. Construction of windbreaks, however, may be used as an alternative to surface stabilization if approved on a case-by-case basis by the DAQM and EPA per subsections 90.2.1.1(c) and 90.2.1.2(d). Since the rule’s requirements for surface stabilization are more effective than a potential requirement to construct windbreaks, Clark County determined it is not necessary that this measure be required and we concur.

BACM evaluation

TABLE BACM - 1 DISTURBED VACANT LAND		
Potential BACM	Adopted Controls	Measure found in...
limit off-road use of recreational vehicles on open land	Prevent motor vehicle access and stabilize disturbed surfaces of open areas and vacant lots \geq 5,000 sq. ft.	Appendix G, Subsections 90.2.1 and 90.2.1.1(a)
vacant land stabilization	Where $>$ 5,000 sq. ft. of cumulative disturbed surface exists, stabilize all disturbed areas using water, dust palliatives or gravel.	Appendix G, Subsections 90.2.1 and 90.2.1.1(b)
weed abatement controls	Where discing or blading areas of \geq 5,000 sq. ft. for weed abatement, apply water both before and during operations and stabilize disturbed surfaces afterwards.	Appendix G, Subsections 90.2.2 and 90.2.2.1 (a) and (b)
dust abatement and management plans for large tracts of governmentally owned lands.	Proposed - not yet adopted.	Chapter 4, section 4.8.2.9; proposed text for Subsection 90.2.1.3

⁵⁴ Letter from Allen Biaggi, Administrator, Nevada Division of Environmental Protection, to Wayne Natri, Regional Administrator, EPA Region IX, November 19, 2002, with attached SIP amendment adopted by the Clark County Board of Commissioners on November 19, 2002 (“November 2002 SIP amendment”).

Applicability thresholds

Section 90 applies to both publicly and privately owned disturbed open areas and vacant lots. An analysis of Clark County Assessor Records determined that less than one percent of vacant land within the BLM disposal boundary was from parcels smaller than 5,000 square feet. Appendix L, L-8 of the Plan.

Open areas and vacant lots are defined in Section 0 as any of the following:

- an unsubdivided or undeveloped tract of land;
- a subdivided lot, which contains no approved or permitted buildings or structures of a temporary or permanent nature;
- an undeveloped or partially developed lot;
- nonroad easements (e.g., an easement not utilized by the easement holder or others with the permission of the easement holder, for travel by motor vehicles more often than 12 times within any 12 month period;
- unpaved parts of controlled access freeway rights-of-ways, except those portions subject to Section 93 requirements.

The definition also considers immediately adjacent vacant portions of residential or commercial lots owned and/or operated by the same individual entity as one open area or vacant lot. This ensures that lot size divisions smaller than 5,000 square feet of adjacent parcels owned or operated by the same entity will still be covered under the Section 90 requirements. We find the definition of open areas and vacant lots sufficiently encompassing to address the wide range of disturbed vacant lots and open areas that contribute emissions to this source category in the Las Vegas Valley.

We note that the potential BACM for limiting offroad use of recreational vehicles was expanded when the control was adopted to include any motor vehicle disturbance. Also, from a practical standpoint of preventing motor vehicle disturbances, we take into account that such activity typically takes the form of random, disparate tire tracks, rather than more contiguous disturbances caused by weed abatement, for example. Any amount of vehicle activity disturbing the surfaces of lots \geq 5,000 square feet is subject to requirements under Section 90.⁵⁵

Control measures/performance standard stringency

Owners/operators subject to Section 90 requirements to prevent motor vehicle disturbances/access are to install barriers, curbs, fences, gates, posts, signs, shrubs, trees or

⁵⁵ The requirements do not apply to vehicle use related to landscape maintenance, which excludes mechanized surface disturbing activity performed to establish initial landscapes or to redesign existing landscapes.

other effective traffic control measures. Also, water must be applied to stabilize the disturbed areas. Owners/operators are allowed flexibility as to how they choose to meet the performance standard that applies, which is that the measure be effective in preventing vehicle access. However, in instances where the chosen method of access prevention is not effective, the rule specifies that water is not to be used, since a dried crust that has been re-established by water can easily be broken with continuing vehicle disturbance. Therefore, the backstop for ineffective trespass prevention is that owners/operators must employ either better means to prevent access or stabilize the disturbed surface areas by uniformly applying and maintaining surface gravel or dust palliatives.

Control measures for disturbed, unstable surfaces of vacant lots that are not subject to vehicle trespass include forming a crust by watering or application of dust palliatives or uniformly applying surface gravel according to established surface stabilization performance standards. These standards include a “visible crust”, layer of nonerrodible elements equal to or greater than 20%, a threshold friction velocity corrected for non-errodible elements of 100 cm/second or higher, or an alternative test method approved in writing by the DAQM and EPA. Test methods to determine compliance with each standard are included. These stabilization performance standards were first adopted by EPA in a Federal Implementation Plan rule controlling disturbed vacant lots in the Phoenix PM-10 nonattainment area.⁵⁶

Control measures that apply to weed abatement by discing or blading on open areas and vacant lots 5,000 square feet or larger include: apply water before weed abatement by discing or blading occurs; apply water while weed abatement by discing or blading is occurring; and pave, apply gravel, apply water or apply a suitable dust palliative, in compliance with one of the stabilization standards discussed above in the previous paragraph.

Rule enforceability and comparison to the applicable SIP rule

The applicable SIP rule to control fugitive dust from open areas and vacant lots is Section 41. Specifically, Subsection 41.1.2 contains a general provision that reasonable precautions be taken to prevent fugitive dust, originating from property upon which the topsoil has been disturbed or natural cover removed prior to January 28, 1973, from becoming airborne. This rule was approved into the SIP by EPA on July 24, 1979 and is included as an attachment in Section G of this TSD. Clark County submitted a revised version of Section 41 dated June 25, 1992 as part of its RACM Plan. EPA commented on this rule in the TSD associated with our proposed disapproval of the Las Vegas Valley PM-10 Moderate and Serious Area Nonattainment Plans (dated May 31, 2000). These plans, including the revised version of Section 41, have since been withdrawn. However, the comments included in EPA’s TSD associated with the proposed disapproval action highlight enforceability concerns with Section 41. The same types of enforceability concerns exist in the SIP-approved Section 41.

⁵⁶ 64 FR 71304, December 21, 1999

Section 90 requirements would significantly strengthen the SIP relative to Section 41 by incorporating specific required control measures (discussed in the preceding BACM evaluation subsection), applicable performance standards, test methods, and appropriate recordkeeping requirements.⁵⁷ Section 90 does not contain inappropriate Executive Officer discretion.

We are proposing, therefore, to approve Section 90 into the SIP in addition to the existing Section 41.

MSM evaluation

Clark County identified two regulations with measures for disturbed vacant lands that are the most stringent controls implemented by others. The MSM analysis compares the relative stringency of Clark County Section 90 requirements with requirements for disturbed open areas and vacant lots in Maricopa County's Rule 310.01⁵⁸ and South Coast's Rule 403. Chapter 6, Section 6.3.1 of the Plan.

The MSM analysis determined that Clark County requirements to prevent motor vehicle trespass, surface stabilization and weed abatement are of at least equivalent stringency to Maricopa County's, and in fact more stringent with respect to the disturbed surface stabilization threshold. Also, Clark County's Section 90 applies regardless of whether a disturbed lot has been unused for at least a 15-day period. Also, the period of compliance is shorter -- 30 days following the initial discovery of the disturbance versus a 60-day compliance period in Rule 310.01.

The weed abatement requirements in Maricopa Rule 310 and Clark County Section 90 are the same, however, in addition to the work practice requirement to apply water found in both rules, Maricopa Rule 310 also contains a 20% opacity requirement that would apply as weed abatement is occurring. Since the SIP-approved Clark County Section 26 (Emission of Visible Air Contaminants) 20% opacity standard also applies, the requirements of Section

⁵⁷ The record keeping provision in Subsection 90.3.1 requires records to be retained for at least one year. Our policy for volatile organic compound (VOC) rules is that records be maintained on site for at least 2 years, and available for expeditious inspection and review for an additional 3 years. See letter, Daniel A. Meer, Chief, Rulemaking Section, Air and Toxics Division, Region 9 to Pat Leyden, South Coast Air Quality Management District, "Rule Development Recordkeeping Policy," June 27, 1996. We are not aware of a policy specific to fugitive dust sources. We are approving the Rule 310 record keeping retention provision because it appears to be consistent with the temporary, as opposed to permanent, nature of most operations subject to Rule 310 and we believe one year is sufficiently long enough for rule enforcement purposes.

⁵⁸ Also, Maricopa County Rule 310 contains requirements for weed abatement.

90 and Section 26 together are of equal stringency as Maricopa Rule 310 requirements.

Clark County's MSM analysis showed that Section 90 requirements are more stringent than South Coast Rule 403 requirements. South Coast Rule 403(d)(1) requires disturbed areas ½ acre or greater to be controlled to prevent visible emissions from crossing the property line. The rule does not contain provisions to prevent motor vehicle trespass on vacant lots, although some city ordinances in the South Coast Air Basin discourage motor vehicle trespass on unimproved property. Clark County requires surfaces to be stabilized to meet specific standards that can be proactively enforced prior to a windblown episode in which fugitive dust is released.

SIP commitments

One issue raised in Clark County's public workshop process was a concern that the potential for multi-media adverse environmental impacts from the long-term use of dust suppressant products be researched. The Plan contains a SIP commitment to participate in funding and coordination of such research. Chapter 4, Section 4.8.2.1. The DAQM contributed \$35,000 to a \$120,000 study conducted by the University of Nevada Las Vegas to evaluate water runoff from dust suppressants. The study is expected to be finalized by September 2002. Also, the DAQM is participating in an EPA-funded study regarding this issue. An expert panel symposium was held in May 2002 with the participation of Clark County staff and additional studies are anticipated based on the final recommendations of the expert panel.⁵⁹

b. Unpaved parking lots

Description of emissions

This category includes emissions from re-entrained road dust from vehicle traffic on unpaved parking lots and windblown dust entrained from the disturbed surface of unpaved parking lots.

Windblown emissions from unpaved parking lots are included in the disturbed vacant land category in the 1998 base year valley-wide and BLM Disposal Area emissions inventories. The extent of unpaved parking lots affected by the controls in adopted Section 92 has not been determined (or credited) on a valley-wide inventory basis,⁶⁰ but instead only with respect to the microscale inventories. UNLV used aerial photography to study vacant land acreage, which is nearly indistinguishable from unpaved parking lot acreage for

⁵⁹ June 2002 RFP Report, pg. 5.

⁶⁰ Chapter 4, Subsection 4.5.2.2.5.

purposes of the valley-wide and BLM Disposal Area inventories.

Both windblown and actively generated emissions from unpaved parking lots are included in the microscale inventories. The actively generated emissions are less than 3% of total unpaved parking lot emissions at the respective microscale sites and well under 1% of total emissions at the sites.⁶¹ While, ideally, a factor for actively generated unpaved parking lot emissions should be included in the valley-wide inventory, we find it acceptable that it is included only in the microscale inventory because: a) based upon microscale estimates, the valley-wide emissions factor would be quite small relative to windblown emissions; b) the data and applicable emissions factors available for estimating vacant land/unpaved parking lots emissions on a valley-wide scale are only of a relative magnitude of accuracy in the first place; and c) Clark County is not assuming credit for valley-wide reductions from unpaved parking lots.

Proposed controls and justifications for rejecting potential controls

Two potential BACM were identified:

- C stabilize surface of unpaved parking lots
- C prohibit unpaved parking lots

Both control measures were deemed feasible. Surface stabilization requirements were implemented in Section 92 (“Fugitive Dust from Unpaved Parking Lots”). A SIP commitment was adopted to modify Section 92 to prohibit new unpaved parking lots with limited exceptions by March 31, 2003.⁶²

BACM evaluation

TABLE BACM - 2 UNPAVED PARKING LOTS		
Potential BACM	Adopted Controls	Measure found in...
Stabilize surface of unpaved parking lots	Pave or stabilize unpaved parking lots of $\geq 5,000$ sq. ft. If used intermittently (≤ 35 days per year) stabilize during days of use.	Appendix G, Subsections 92.2.1 and 92.2.1.2

⁶¹ Chapter 3, Table 3-7.

⁶² The November 2002 SIP Amendment established a new deadline for this SIP commitment.

TABLE BACM - 2 UNPAVED PARKING LOTS		
Prohibit new unpaved parking lots	Proposed - not yet adopted.	Chapter 4, Subsection 4.8.2.9, proposed text for Subsection 92.2.1.1

Applicability thresholds

Section 0 defines an “unpaved parking lot” as “any area of 5,000 square feet or larger that is not paved and that is used for parking, maneuvering, or storing motor vehicles.” In order to assess the extent of the rule’s coverage, we refer to the Plan’s emissions inventory. In the valley-wide emissions inventory, unpaved parking lots were included within the disturbed vacant land source category. An analysis of Clark County Assessor Records determined that less than one percent of vacant land within the BLM disposal boundary was from parcels smaller than 5,000 square feet. Appendix L, L-8 of the Plan.

The requirement to pave or stabilize unpaved parking lots includes a limited exemption for lots used for a period of 35 days or less during the calendar year. This limited exemption allows such lots to meet the requirements for surface stabilization only during the days of use. During periods of inactivity, these lots will still be subject to Section 90 of the Air Quality Regulations.⁶³

The proposed revisions to Section 92 to prohibit new unpaved parking lots would not apply to parking lots for rural public facilities such as trailheads, campgrounds, and similar facilities where pavement would conflict with the rural nature of these facilities. Any new lots at these rural facilities, however, will be subject to the Section 92 requirements for stabilizing unpaved parking lots.

Control measures/performance standards stringency

Section 92 requires that unpaved parking lots be paved, stabilized through applying and maintaining dust palliatives, stabilized by applying and maintaining a uniform layer of two inches of gravel with dust palliatives applied to vehicle travel lanes, or stabilized by applying and maintaining an alternative control measure approved in writing by the DAQM and EPA.

⁶³ Chapter 4, Subsection 4.5.2.2.3.

The performance standards that apply include a 20% opacity standard and an 8% silt content standard, or in lieu of meeting the silt content standard, a 0.33 oz/ft² silt loading standard. Test methods to determine compliance with each standard are included. Where gravel is allowed for use, uniform application of gravel to a depth of 2 inches is required.

These performance standards and test methods for determining both opacity and whether an unpaved parking lot surface is adequately stabilized were first adopted by EPA in a Federal Implementation Plan rule controlling unpaved parking lots in the Phoenix PM-10 nonattainment area.⁶⁴ The opacity test method is a modification of EPA Reference Method 9 that is better tailored to the intermittent nature of plumes from vehicle traffic occurring on unpaved parking lots. Two readings are taken for each vehicle pass and a total of 12 readings are averaged for the result.

Furthermore, the Plan includes a SIP commitment to adopt a property line dust plume prohibition in Section 92.⁶⁵ This standard would only apply where the owner/operator has not applied BACM as provided for in Section 92.⁶⁶ We consider this an additional limit that is not necessary for the rule to meet BACM. (For discussion of property line prohibitions, see the MSM evaluation for construction sites in subsection E.5.c of this TSD).

Rule enforceability and comparison to the applicable SIP rule

The applicable SIP rule to control fugitive dust from open areas and vacant lots is Section 41. Specifically, Subsection 41.1.1 addresses fugitive dust from unpaved parking lots. This subsection contains a general provision that reasonable precautions be taken to abate fugitive dust the operation and use of unpaved parking facilities. Examples of measures are provided including “such other measures as the Control Officer may specify to accomplish satisfactory results.” These requirements are vague and include inappropriate Executive Officer discretion.

Section 92 requirements would significantly strengthen the SIP relative to Section 41 by incorporating specific required control measures (discussed in the preceding BACM evaluation subsection), applicable performance standards, test methods, and appropriate recordkeeping requirements.⁶⁷ Furthermore, the Section 92 requirements do not include inappropriate Executive Officer discretion.

⁶⁴ 64 FR 71304, December 21, 1999

⁶⁵ Chapter 4, section 4.8.2.9, proposed revisions to Subsection 92.2.1.4.

⁶⁶ This requirement is not a substitute for complying with BACM, but will be imposed in addition to the BACM and other rule requirements.

⁶⁷ See footnote 57.

We are proposing, therefore, to approve Section 92 into the SIP in addition to the existing Section 41.

MSM evaluation

In determining the most stringent controls implemented by others, Clark County identified three regulations with measures for unpaved parking lots. The MSM analysis compares the relative stringency of Clark County Section 92 requirements with requirements for unpaved parking lots in Maricopa County's Rule 310.01, South Coast's Rule 403 and San Joaquin's Regulation 8070 (adopted 25,1996). Chapter 6, Section 6.3.2.

Clark County requirements to stabilize unpaved parking lots are identical to Maricopa County's, with the exception that Clark County does not allow use of gravel on travel lanes of unpaved parking lots and requires two inches of gravel to be uniformly applied on parking areas. Therefore, Clark County requirements are at least equivalent in stringency with Maricopa County's Rule 310.01, if not marginally more stringent.

The South Coast Rule 403 requirements are non-specific but prohibit dust from crossing the property line. Clark County has proposed this performance standard as a SIP commitment in addition to the existing 20% opacity and surface stabilization standards. The San Joaquin Regulation 8070 was found to have a higher 1-acre applicability threshold and lacked a performance standard. Clark County concluded that Section 92 requirements are more stringent than South Coast Rule 403 and San Joaquin Valley Regulation 8070.

Miscellaneous

Clark County DAQM is planning to propose additional language to Section 92 to clarify that permanent material handling and storage yards and equipment and vehicle storage yards are subject to Section 92.⁶⁸

c. Construction activities

Description of emissions

Sources of fugitive dust emissions at construction site sources include land clearing, earthmoving, excavating, construction, demolition, material handling, bulk material storage and/or transporting operations, material trackout or spillage onto paved roads (which we have addressed under the paved road category), and vehicle use and movement on site (e.g., the operation of any equipment on unpaved surfaces, unpaved roads and unpaved parking areas).

⁶⁸ June 2002 RFP Report, pg. 7.

Windblown emissions from disturbed areas and inactive storage piles on construction sites are also a source of PM-10.

Construction operations, which are essentially various earthmoving operations (including highway construction projects) constitute 122,191 tpy of annual PM-10 emissions in the BLM Disposal Area. Windblown emissions from construction sites (including highway construction projects) constitute 17,015 tpy. Total construction site emissions make up approximately 37% of the 24-hour BLM Disposal Area emissions inventory. This does not account for trackout emissions from construction sites, which are included in the paved road dust inventory.

Proposed controls and justifications for rejecting potential controls

Clark County identified 24 potential BACM for construction sites. These can be found in Chapter 4, Table 4-5 in section 4.3.3 of the Plan. We note that when Clark County began developing specific BACM, this list became more detailed and expanded.

All control measures were adopted with the following exceptions: two are covered by a SIP commitment and will be adopted in the near term, one was deemed technologically infeasible, and one was partially adopted. The prohibition of unpaved haul roads at construction sites was determined to be “not technologically feasible”.⁶⁹ The prohibition would require the paving of all haul roads accessing construction sites. To rephrase, this would require that all haul roads accessing construction sites would need to be paved. Clark County determined this measure would be infeasible due to the temporary nature of roads, which often must be removed after completion of the construction activity.⁷⁰

The control measure to “phase” land development was partially implemented. Clark County considered two possible means of implementing this potential BACM. The first would involve adopting a limit on the total amount of acreage that can be graded and disturbed at any one time. The second would involve adopting a requirement that project phases be separately identified with control measures specifically listed for each phase. Based on comments received and evaluated during the public comment period, Clark County determined that adopting a limit on total acreage graded or disturbed at any one time may inadvertently encourage off-site hauling and stockpiling of fill dirt. Also, adopting surface stabilization requirements⁷¹ would provide incentive for developers to minimize disturbed areas. Therefore, Clark County implemented the second approach and included a general requirement for Dust Control Permits that project phases be separately identified along with

⁶⁹ Chapter 4, Table 4-7.

⁷⁰ Chapter 4, pg. 4-19.

⁷¹ See Table BACM - 3A of this TSD, “stabilize disturbed inactive surfaces”

the controls to be applied during each phase.⁷²

Clark County adopted a SIP commitment to “prevent visible emissions from crossing the property line” and “limit visible emissions to 100 feet”.⁷³ We consider the property line and 100-foot prohibitions that would apply where BACM is not fully implemented additional requirements that are not necessary for the rule to meet BACM.⁷⁴ (For further discussion, see the MSM evaluation in this section of the TSD). We note that Section 94 contains both a prohibition of visible dust beyond 100 yards and a 20% opacity standard.

The remaining potential BACM have been implemented in Section 94 and/or the Section 94 Handbook (or “Handbook”), which contains control measures specific to various construction site activities and soil types.⁷⁵

BACM evaluation

TABLE BACM - 3A CONSTRUCTION SITES		
Potential BACM	Adopted Controls	Measure found in...
Strengthen existing fugitive dust control rule requirements (general)	See individual requirements.	Appendix G, Section 94 and Section 94 Handbook
Provide for better enforcement of fugitive dust rules ⁷⁶	Improved enforcement resources addressed in Sections 7 and 8 of this TSD.	NA

⁷² Construction Activities Notebook, GEN 01

⁷³ Chapter 4, Section 4.8.2.9, proposed new Subsection to 94.5.4.

⁷⁴ These requirements are not a substitute for complying with BACM, but will be imposed in addition to the BACM and other rule requirements.

⁷⁵ Subsection 94.3.1 explicitly adopts the Section 94 Handbook and all tables of contents, definitions, articles, tables, indexes, examples and appendices as part of the regulation. The Handbook is submitted with the SIP in Appendix G.

⁷⁶ We do not consider improved enforcement a BACM but rather a method of implementing BACM. BACM is an emissions limitation or control requirement applied to a specific source.

TABLE BACM - 3A CONSTRUCTION SITES		
Mitigation bond reqt. to insure dust control plan (DCP) implementation ⁷⁷	Submit a surety bond if 3 (District-approved) violations have been issued within the previous 6 months.	Appendix G, Subsection 94.6.1
DCPs required for construction/land clearing and demolition	Complete and submit dust control permits ⁷⁸ for sites > 1/4 acre, mechanized trenching > 100 feet in length, and mechanical demolition of structures > 1,000 sq. ft. Site-specific dust control permits required for soil disturbing or construction projects 10 acres or greater.	Appendix G, Subsections 94.2.1, 94.4.8, and 94.4.9
Requirement for a dust control monitor (i.e., responsible person) ⁷⁹	Employ a dust control monitor (i.e., responsible person) for sites with > 50 acres of actively disturbed area.	Appendix G, Subsection 94.4.11
Track out control	Install and maintain trackout control devices at all access points where paved and unpaved access routes intersect, immediately clean up trackout extending 50 feet or more, clean up all trackout daily, and keep daily records of trackout conditions.	Appendix G, Subsection 94.6.8(c); Handbook CST 19

⁷⁷ As with improved enforcement, mitigation bonds are a means of ensuring the implementation (through enforcement) of BACM and not a BACM itself because they are used only to assure compliance with existing control requirements and not to impose new control requirements. It is an enforcement mechanism because the noncomplying contractor suffers an economic penalty (i.e., the amount of money deposited to meet the bonding requirement, money that would come back to the contractor if the bond is never invoked) for failure to comply.

⁷⁸ Dust control permits incorporate dust mitigation plans for the sites mentioned.

⁷⁹ While this measure is more designed to enhance compliance, which we address in sections 7 and 8(b) of this TSD, it also acts as an incentive for site owners/operators to keep the amount of actively disturbed soil at any one time to < 50 acres and thus may have the effect of a preventative BACM.

TABLE BACM - 3A CONSTRUCTION SITES		
Staging areas, equipment storage and material storage	Stabilize staging and storage area soils during use and at project completion.	Appendix G, Handbook CST 17
Use of surfactants or tackifiers	For soil types identified as “high” or “moderate high” particulate emission potential, apply surfactant mixture with water or tackifier mixture with water, respectively.	Appendix G, Handbook “Best Management Practices for Dust Control”, pg. 2 and applicable CSTs
High-wind operating restrictions	Monitor weather conditions and cease all construction activities if fugitive dust exceeds 20% opacity. Continued operation of water trucks and pulls is required except for specified circumstances.	Appendix G, Subsection 94.5.5 and Construction Activities Notebook GEN 03
Phasing land development	Partially implemented. Identify project phases in Dust Control Mitigation Plans and consider a list of measures designed to reduce the amount of disturbed area at any one time during project phases.	Appendix G, Construction Activities Notebook GEN 01
Stabilize disturbed inactive surfaces	Stabilize inactive disturbed surfaces by water or other control(s).	Appendix G, Subsection 94.6.8(g) and Handbook CST 10 and CST 11
Dust controls for blasting of soil and rock	Stabilize soil prior to, during and after blasting. Comply with limitations on the conditions under which blasting can occur.	Appendix G, Handbook CST 3
Dust controls for abrasive blasting ⁸⁰	Comply with a 40% opacity limit for an aggregate of 3 minutes per hour, and stabilize soils upon which support equipment will operate.	Appendix G, Handbook CST 2

⁸⁰ While Clark County included abrasive blasting requirements in Section 94 and the Section 94 Handbook related to construction and demolition, we consider abrasive blasting a minor small point source that is not part of the construction source category. See Section E.6 of this TSD for discussion of abrasive blasting requirements.

**TABLE BACM - 3A
CONSTRUCTION SITES**

Dust controls for crushing	Stabilize material before, during and after crushing and stabilize soils where support equipment will operate.	Appendix G, Handbook CST 6
Dust controls for landscaping	Stabilize soils, materials and slopes.	Appendix G, Handbook CST 14
Dust controls for paving/subgrade preparation	Stabilize soils prior to, during and following paving/subgrading activities.	Appendix G, Handbook CST 15
Dust controls for screening	Pre-treat material prior to screening and stabilize immediately after screening. Meet opacity and visible plume emissions standards.	Appendix G, Handbook CST 16
Dust controls for construction traffic	Stabilize all haul routes and offroad traffic and parking areas.	Appendix G, Handbook CST 20
Dust controls for trenching	Stabilize soil where trencher or excavator and support equipment vehicles will operate, comply with opacity and visible plume standards, and stabilize soils upon project completion.	Appendix G, Handbook CST 21
Dust controls for truck loading	Stabilize material to meet opacity and visible plume standards and cover all loads on public roadways.	Appendix G, Handbook CST 22
Dust controls for stockpiles	Stabilize stockpiles and meet other specific requirements for stockpiles over eight (8) feet in height.	Appendix G, Subsections 94.7.1 and 94.7.2; Handbook CST 18
20% opacity requirement for visible emissions	Prevent emissions from exceeding 20% opacity.	Appendix G, Subsection 94.5.3
Limit visible emissions to 100 feet	Proposed - not yet adopted.	Chapter 4, section 4.8.2.9, proposed new Subsection 94.5.4

TABLE BACM - 3A CONSTRUCTION SITES		
Prevent visible emissions from crossing property line	Proposed - not yet adopted.	Chapter 4, section 4.8.2.9, proposed new Subsection 94.5.4

In addition to the original list of potential BACM, Clark County identified more potential BACM and adopted or proposed the following additional measures for dust-generating activities in Table BACM - 3B below. These two tables together constitute a complete and detailed list of potential and implemented BACM assembled by Clark County for the construction activities source category.

TABLE BACM - 3B CONSTRUCTION SITES		
Potential BACM	Adopted Controls	Measure found in...
Dust controls for importing soil, rock, and other bulk materials	Stabilize material while loading, transporting and unloading to prevent fugitive dust emissions. Implement CST 22 (Truck Loading).	Appendix G, Handbook CST 13
Dust controls for backfilling	Stabilize backfill material when not actively handling, during handling and following handling.	Appendix G, Handbook CST 1
Dust controls for clearing and grubbing	Stabilize soil prior to, during and immediately after clearing and grubbing activities.	Appendix G, Handbook CST 4
Dust controls for clearing forms	Comply with 20% opacity and plume length restrictions.	Appendix G, Handbook CST 5
Dust controls for cut and fill	Presoak soils and stabilize prior to, during and after cut and fill activities.	Appendix G, Handbook CST 7
Dust controls for demolitions - implosion	Submit a supplemental form, stabilize soils where support equipment and vehicles will operate and stabilize soils and blast debris immediately following blasting. Comply with limitations on the conditions under which blasting can occur.	Appendix G, Handbook CST 8

TABLE BACM - 3B CONSTRUCTION SITES		
Dust controls for demolitions - mechanical/manual	Submit a supplemental form, stabilize wind erodible surfaces, stabilize surface soil where support equipment and vehicles will operate, and stabilize loose soil and demolition debris.	Appendix G, Handbook CST 9
Prohibition on dry rotary brushes or blower devices for track out cleanup	Proposed - not yet adopted.	Chapter 4, section 4.8.2.9, proposed new Subsection 94.5.9
Limit visible plume to 100 yards	Do not perform any construction activity that creates a visible plume of dust that extends more than 100 yards from the point of origin.	Appendix G, Subsection 94.6.8(b)
Fugitive dust limit for concrete, stone and tile cutting	Do not exceed 20% opacity standard (general applicability).	Appendix G, Subsection 94.2.1(k)
24-hour, 7 days/week control required	BACM required at all times whether or not construction activity is occurring	Appendix G, Subsection 94.5.4
Public Information Signage	Signs with specific dimensions required for Dust Control Permits that conform to District policy ⁸¹	Appendix G, Subsection 94.4.5
Reqs. for selection and use of dust suppressants, palliatives, and surfactants	Follow DAQM "Guidelines for Selection and Appropriate Use of Liquid Dust Palliatives" and record their use ⁸²	Appendix G, Handbook CST 12 and Subsection 94.8

⁸¹ This requirement refers to local guidelines that have not been submitted with the SIP, however, EPA does not have any specific requirements related to construction site public signage. We do not consider signage a BACM, but rather a means to facilitate public input in air quality agency enforcement efforts to check compliance with applicable requirements.

⁸² These are local guidelines that have not been submitted with the SIP. EPA does not currently have requirements for the use or selection of dust suppressants, palliatives, and surfactants.

Applicability thresholds

Section 94 requirements apply to all Construction Activities, as defined in Subsection 94.2.1, and owners/operators must employ Best Management Practices necessary to comply with the performance standards in Subsection 94.6.⁸³ Subsection 94.3.1.1 and Subsection 0.25 (of Section 0), tie the definition of Best Management Practices to the Section 94 Handbook. Therefore, while some sources are exempt from the requirement to submit a Dust Control Permit, they are not exempt from the requirements to implement specific control measures or meet the Section 94 performance standards.

In addition to the list of specific Construction Activities in Subsection 94.2.1 and the Section 94 Handbook, Subsection 0.36 of Section 0 clarifies that commercial and residential construction, flood control construction, and highway construction are all covered by Section 94. Subsection 94.2.1 indicates that operation of sources permitted under Section 12 and Section 16 of the Air Quality Regulations are not subject to Section 94, however, Section 94 does apply to any Construction Activities that occur at such permitted facilities.

The Section 94 requirement to prepare and submit a Dust Control Permit applies to construction activities greater than 0.25 acres, mechanized trenching greater than 100 feet in length,⁸⁴ or mechanical demolition of any structure larger than 1,000 square feet. Clark County estimates that construction sites under 0.25 acres account for less than 1.5 percent of all construction permits.⁸⁵ Therefore, the great majority of sites are subject to Clark County Dust Control Permit requirements.

In terms of applicability thresholds that are specific to the various sources of construction site fugitive dust:

- C Earthmoving (general) - all activities require control regardless of size of area disturbed.
- C Trackout - all access/exit points for traffic require installation and maintenance of a trackout control device. Trackout must be cleaned up immediately (within one hour of discovery) if it extends a cumulative distance of 50 feet or more, and all trackout must be cleaned up by the end of the work day or evening shift, as applicable per Section 94 Handbook CST 19 and Section 94, Subsection 94.6.8(c).
- C Staging areas - any portion of a construction project used for storing materials, parking vehicles and equipment requires control per Section 94 Handbook CST 17.

⁸³ Subsection 94.4.2.

⁸⁴ A trench is defined in Section 0 (Subsection 0.162) as a long and narrow excavation at least two feet deep made for the purpose of installing or removing utility service lines.

⁸⁵ Appendix L, pg. L-9.

- C Inactive disturbed soil - all disturbed soil areas are subject to control per Section 94 Handbook CST 10.
- C Unpaved traffic areas, including haul routes and parking areas - all are subject to control per Section 94 Handbook CST 20.
- C Stockpiles - all are subject to control per Section 94 Handbook CST 18; additional requirements exist for stockpiles over eight feet high.

Control measures/performance standards stringency

For soil disturbing or construction projects greater than or equal to 0.25 acres but less than 10 acres, a “Dust Mitigation Plan” is required that employs the Section 94 Handbook Best Management Practices. The control measures are not only activity-specific and designed to be placed into dust control permits in a phase-specific manner, but are also specific to the type of soil at a particular site or location and the soil’s potential to emit fugitive dust. Each Dust Mitigation Plan must incorporate the appropriate BMPs per the Section 94 Handbook according to soil type parameters. The Handbook classifies soil types into five categories (high, moderately high, moderately low, low and slight) based on their “Particulate Emission Potential” or PEP. PEP takes into account both silt content and optimum moisture content. The Handbook contains a decision flow chart using these two parameters to calculate PEP for Las Vegas soils. While Clark County strongly encourages owners/operators to use site-specific geotechnical reports or preliminary soil studies to determine the PEP of any particular site, where the silt content and optimum moisture content have not been measured, a map delineating the five soil type categories into geographic locations is included in the Handbook as a default.

For sites 10 acres or greater, trenching activity over 1 mile in length, or structural demolition using implosive or explosive techniques, a “Site-Specific Dust Mitigation Plan” is required, geared towards providing a more detailed project description and site plan. We note, however, that the basic Dust Mitigation Plan requirement already incorporates site-specific considerations with respect to identification of soil type, project phase, and activity-specific control measures. Such pre-project planning for 98.5% of sites provides greater consideration of and accountability for all of the potential dust generating activities, particularly targeting soils with high potential to emit.

The Section 94 Handbook establishes a specific performance standard (i.e., Control Requirement) that must be met for each identified construction activity. Multiple Control Requirements apply for each construction activity. A menu of control measure options is provided, one or more of which must be specifically identified in the Dust Mitigation Plan to meet each applicable Control Requirement for the activity. The control measures identified in the Dust Mitigation Plan are subject to review and approval by the DAQM as part of a Dust Control Permit. While the Handbook is designed to give owners/operators options as to how each of the Control Requirements will be met, at the same time, specific requirements based on soil type are established. For example, owners/operators conducting earthmoving

activities in soils classified as “high” are required to mix surfactant solution with water. For soils classified as “moderate high,” a mixture of tackifier solution and water is required. For disturbed inactive soils classified as “high,” dust palliatives are required for stabilization whereas water alone can be used for other soil classifications.

Owners/operators are only allowed to deviate from the soil-specific parameters or use an unlisted control measure under limited conditions providing a specific criteria is met⁸⁶ and such strategies are approved by the DAQM in the applicant’s Dust Control Permit. Any alternative strategies employed would still need to meet the Control Requirements contained in the Section 94 Handbook for the relevant activity category.⁸⁷ The intent of these provisions is to provide some flexibility to account for the variety of field conditions that exist without sacrificing stringency of control.

Applicable performance standards include a 20% opacity standard⁸⁸ that applies where soils are being actively handled or disturbed by construction-related activity and traffic. Unpaved haul roads are required to meet both a 20% opacity standard and a 6% silt content and/or 0.33 oz/ft² silt loading standard per Subsection 91.2.1.4.⁸⁹ All construction activities are prohibited from creating a visible plume that extends more than 100 yards from the point of origin. Where stationary soils exist, they are considered stabilized when in compliance with the Soil Crust Determination method included in Subsection 94.9.3, but

⁸⁶ The criteria are listed on pg. 2 of the Section 94 Handbook and include: 1) the control measure technique is a new or alternative technology demonstrated to be at least as effective in meeting the Control Requirement as the specified control measure; or 2) site logistics do not practically allow for implementation of a listed control measure as written (e.g., road width or pre-existing barriers limit the size or width of a gravel pad); or 3) the owner/operator demonstrates that a listed control measure is technically infeasible due to site-specific or material-specific conditions, such that implementation of the control measure will not provide a benefit in reducing fugitive dust (e.g., pre-soaking screened, washed rock when handling). The Handbook further indicates that, “Permit deviations from specific soil type BMPs in the form of a downgrade to the BMPs listed for a soil type with lower PEP, or applying a control measure listed for all soil types in lieu of a specific soil type BMP, are not approvable unless demonstrated to meet at least one of the above criteria.”

⁸⁷ For example, if the Control Requirement is to “stabilize the surface”, a control measure that is not related to surface stabilization could not be used to meet the requirement.

⁸⁸ The test method in Subsections 94.9.1 and 94.9.2, based on EPA Reference Method 9, applies.

⁸⁹ See requirement in Subsection 94.6.8(i).

could also comply with a standard/test method in Subsection 90.4.⁹⁰ For more discussion on the applicable surface stabilization standards/test methods for inactive disturbed areas on construction sites and unpaved haul roads, we refer the reader to the BACM sections of this TSD that discuss disturbed vacant lands and unpaved roads.

Although the test method included in Section 94 is the best currently available to assess the opacity of emissions from the variety of construction activities generating fugitive dust, it may not be sufficient in all field circumstances to ensure construction site dust is controlled to a BACM level.⁹¹ Therefore, Clark County has adopted a SIP commitment to fund additional research to develop an acceptable test method and revise Section 94 to incorporate revised test methods for all non-process, intermittent construction site fugitive dust generating activities.⁹² In its June 2002 RFP Report, the DAQM discusses the progress made through a collaborative process with Maricopa County and EPA Region 9 staff. A field study to collect data was conducted by staff of the three agencies on April 8 and 9, 2002 in Las Vegas (pg. 6). On November 13-14, 2002, Clark County DAQM, along with EPA and Maricopa County Environmental Services Division, conducted additional field research in Phoenix. The SIP commitment date for this measure is March 31, 2003.⁹³

Rule enforceability and comparison to applicable SIP rules

Comparison to SIP-approved rules

The applicable SIP rules to control fugitive dust from construction activities are Section 17 “Permission To Disturb Topsoil” and Section 41. Section 17, July 24, 1979, was approved into the SIP by EPA on August 27, 1981 (46 FR 43141), with additional portions dated November 17, 1981 approved into the SIP on July 18, 1982 (47 FR 26386). This rule is included in Section G of this TSD. Clark County submitted a revised version of Section 17 dated May 28, 1992 as part of its RACM Plan. EPA commented on this rule in the TSD associated with our proposed disapproval of the Las Vegas Valley PM-10 Moderate and Serious Area Nonattainment Plans (dated May 31, 2000). 65 FR 37324. These plans, including the revised version of Section 17, have since been withdrawn. However, the

⁹⁰ See definitions of “Stable” and “Stabilized” in the document titled “Acronyms/Definitions” of the portion of the submittal titled “Construction Activities Notebook including the Section 94 Handbook”.

⁹¹ For example, since the test method requires readings at 15 second intervals, and dust plumes can occur intermittently but still frequently, not all of the readings may capture the dust-emitting potential of the activity.

⁹² For details, see Chapter 4, section 4.8.2.7.

⁹³ November 2002 SIP Amendment

comments included in EPA's TSD associated with the proposed disapproval action highlight enforceability concerns with Section 17. The same types of enforceability concerns exist in the SIP-approved Section 17.

Section 17 requires a permit for disturbing topsoil or engaging in construction activities on sites 0.25 acres in size or more, or demolition of structures 1,000 square feet or larger. The applicable permit conditions that concern dust control include Subsection 17.5.1.2 and Subsection 17.5.1.3. These subsections require that applicants agree to implement an acceptable method to prevent particulate matter from becoming airborne and an acceptable method of securing the topsoil when the project is finished. In addition, the applicant is to take additional precautions as may be reasonably prescribed by the Control Officer (Subsection 17.5.1.4). These requirements are vague and include inappropriate Executive Officer discretion.

The Section 41 requirements that concern construction sites include Subsections 41.1.1, 41.1.2 and 41.1.3. Subsections 41.1.1 and 41.1.2 contain general provisions that reasonable precautions be taken to abate or prevent fugitive dust. Subsection 41.1.3 prohibits the handling, transporting or storage of any material in a manner which allows or may allow controllable particulate matter to become airborne.

Section 94 and Section 94 Handbook requirements would significantly strengthen the SIP relative to Sections 17 and 41 by incorporating specific required control measures (discussed in the preceding BACM evaluation subsection), applicable performance standards, test methods, and appropriate recordkeeping requirements.⁹⁴

We are proposing to approve Section 94 and the Section 94 Handbook into the SIP in addition to the existing Section 41, and to replace Section 17.

Specific evaluation of enforceability

As stated previously, the Section 94 Handbook is explicitly adopted by reference in Section 94 and describes how control measures must be selected to meet each applicable Control Requirement. It also provides specific criteria to address circumstances where unlisted control measures may be employed in a Dust Mitigation Plan.⁹⁵ Also adopted by reference in Section 94.3.1 are the definitions and other elements contained within the Construction Activities Notebook relied upon by Clark County.

Subsection 94.8 of Section 94 describes the recordkeeping requirement for construction sites. Records are to be kept for a minimum of one year, or six months beyond

⁹⁴ See footnote 57.

⁹⁵ Section 94 Handbook, page 1, section 2 "Best Management Practices".

the project duration, whichever is longer. The self-inspection records to be maintained include daily inspections for crusted or damp soil, trackout conditions and cleanup measures, daily water usage and dust suppressant application records. Control measures involving chemical or organic soil stabilization require records indicating the type of product applied, vendor name, label instructions for approved usage, and the method, frequency, concentration, and quantity of application. Also, a recordkeeping form, as incorporated per Section 94.3.1, can be found in Appendix D of the Construction Activities Notebook.⁹⁶ The Construction Activities Notebook GEN 02, describes in further detail that construction sites are required to have records of all Dust Control Measures (e.g., date, time and amount of water applied for dust control purposes), the use of dust palliatives, and notifications to the DAQM when the project is complete and compliance with Corrective Action Orders (if applicable).

In the preceding section, we discussed the enforceable standards/test methods that apply to Section 94 and the Section 94 Handbook. Clark County has included a SIP commitment to revise the Section 94 opacity test method, which will improve enforceability of the opacity standard for intermittent, actively generated construction site emissions.

Critical enforcement provisions contained in Section 94 include:

- C Subsection 94.5.1, requiring that BACM be employed as set forth in the Section 94 Handbook. BACM are defined in Subsection 94.5.1(b) as all Control Measures required by the approved dust mitigation plan or Dust Control Permits. If the site is not permitted, Best Management Practices set forth in the Section 94 Handbook for the subject activities shall be applicable.
- C Subsection 94.6.2, requiring that anyone engaging in Construction Activities shall be subject to the permit conditions outlined in the Dust Control Permit for that specific project. Non-fulfillment of any condition set forth in the permit shall be a violation of this Section.
- C Subsection 94.6.7, stating circumstances that constitute failure to comply with the Dust Control Permit requirements, including failure to obtain an approved Dust Control Permit before engaging in activities that disturb or have the potential to disturb soils and cause fugitive dust to enter the air.
- C Subsection 94.6.8, stating circumstances that constitute failure to fully employ BACM, including failure to employ any Best Management Practice as described in the Section 94 Handbook and included in an approved Dust Control Mitigation Plan or as a Dust Control Permit condition along with several other performance standard requirements.

In its June 2002 RFP Report, the DAQM indicates its intent to revise the structure of Section 94 to enhance clarity and enforceability (page 8). To this end, we have included a list

⁹⁶ See Attachment N of this TSD.

of recommended rule improvements. In addition, we also recommend elimination of an outdated definition in Section 0 (0.128) “permit for construction activities”, that references Section 17.

Recommended Improvements to Section 94

- C consolidate relevant definitions contained in Section 0 and the Construction Activities Notebook “Acronyms/Definitions” into Section 94.
- C clarify Subsection 94.5.2 requirements to indicate that Subsection (a) refers to soils that are being actively handled or disturbed by construction related activity or offroad construction traffic, whereas Subsections (b) and (c) refer to inactive soil surfaces. Also, clarify the applicable performance standards with respect to Subsection (c).
- C include all applicable standards/test methods in Subsection 94.9 such as those that apply to unpaved haul/access roads from Section 91 and to inactive disturbed surfaces from Section 90 (including Subsection 90.4.1).
- C add text to Subsection 94.5.5 that mirrors the language in the Construction Activities Notebook GEN 03 which includes reference to visible plume restrictions in addition to the 20% opacity standard.
- C in Subsection 94.3.1.2, reference the applicable criteria on page 2 of the Section 94 Handbook with respect to Control Officer approval of Other Control Measures.
- C incorporate a revised opacity test method(s) as required per the applicable SIP commitment.

MSM evaluation

Chapter 4, Table 4-8 of the Plan summarizes the variety of regulations evaluated for the MSM comparison for construction site activities. The program elements evaluated for each agency included rules and regulations, enforcement efforts, and penalties and fines.⁹⁷ Chapter 6 describes the specific requirements considered from other areas. In addition, Clark County conducted a survey of construction activity controls implemented in the southwestern United States.⁹⁸ The MSM analysis primarily compares the relative stringency of Clark County Section 94 requirements with requirements for equivalent sources in Maricopa County’s Rule 310, South Coast’s Rule 403 and Mojave Desert’s Rule 403-1 and Rule 403-2.

Clark County determined that specific soil requirements for use of surfactants and tackifiers and a requirement for a Dust Control Monitor (manager) at large construction sites were not being implemented by any other agencies and were thus unique to Clark County.

The Plan includes a comparison of site specific dust control plan and permit

⁹⁷ Chapter 4, section 4.4.1, pg. 4-20.

⁹⁸ Chapter 6, section 6.3.3, pg. 6-15.

requirements in Maricopa County, South Coast and Mojave. The Clark County threshold of 0.25 acres is more stringent than the respective South Coast and Mojave thresholds and the control measures more comprehensive. The Maricopa County threshold of 0.1 acre at which Dust Control Plans are required is more stringent than the 0.25 acre threshold, however, the analysis indicates that Section 94 contains additional specifications that may trigger the permit requirement for a smaller site (i.e., mechanized trenching greater than 100 feet and demolition of structures over 1,000 square feet) and BACM is still required in Clark County for any size site. In light of the comprehensiveness, effectiveness and stringency of the control measures required in the Section 94 Handbook, Clark County reasonably demonstrates that the overall stringency of the Clark County program exceeds the Maricopa program for larger projects and equals the Maricopa program for smaller projects.

In comparing performance standards that limit visible emissions, the 20% opacity standard that applies to Section 94 sources is identical to the Maricopa County Rule 310 opacity standard/test method. Clark County comments that the 20% opacity standard is of equal or greater stringency compared to the 100-foot plume length limit that applies in South Coast Rule 403 due to uncertainties associated with plume length and the degree of control achieved. South Coast Rule 403 also prohibits visible emissions from crossing a property line. As noted in Clark County's MSM discussion for disturbed vacant land, because of distance to the property line, it might be possible to comply by only stabilizing the outer perimeter of a site (or in this case, construction activities occurring near the outer perimeter of a large site). Also, it is unclear whether a 100-foot limit would capture the extent of emissions generated at the point of origin better than a 20% opacity standard, since the visible characteristics of plumes can quickly fade with atmospheric mixing. Thus, Clark County's requirements may be more stringent than South Coast's, but Clark County is nevertheless proposing in a SIP commitment to include these limits where BACM has not been fully implemented as they are relatively easy to enforce.

The areas with comparable high wind condition requirements identified include Maricopa County and South Coast. Clark County determined it was the only area to implement an unconditional requirement that dust-generating construction activities be ceased when high wind conditions overwhelm BACM applied. South Coast Rule 403 does not mandate cessation of construction activities during high winds, but rather that additional dust mitigation measures be employed. Unlike Maricopa County Rule 310 and South Coast Rule 403 where high wind condition requirements apply only when a defined wind speed of 25 miles per hour occurs, Clark County argues that its requirement is more stringent because, should lower wind speeds overwhelm the BACM and trigger violation of the opacity standard, activities must cease regardless. Also, Section 94 specifically requires that water trucks and water pulls continue to operate after dust-producing activities have been curtailed. We concur with Clark County's finding but also believe that the 100 yard distance limit could be an important tool in effectively gauging compliance with this provision.

With respect to requirements to stabilize disturbed soil and construction haul roads

and traffic areas, it appears that the Maricopa County requirements are closest in stringency to Clark County requirements.⁹⁹ Maricopa County and Clark County have identical requirements for surface stabilization of inactive disturbed vacant areas of construction sites, with the exception that Maricopa County Rule 310 explicitly contains a standard/test method for vegetation whereas Clark County emphasizes control by dust suppressant/palliative or rock cover. For unpaved haul roads, Maricopa County Rule 310 requires surface stabilization, with the exception of unpaved haul roads receiving 20 trips per day where speeds are limited to 15 mph. Also, a 20% opacity standard tailored to unpaved roads¹⁰⁰ applies in all cases. In comparison, Clark County Section 94 requires surface stabilization for all unpaved haul roads, regardless of vehicle trips per day and a 20% opacity standard with equivalent test method to Maricopa County's. In addressing unpaved parking areas, Maricopa County Rule 310 explicitly defines them as lots > 5,000 square feet, and requires compliance with an 8% silt content standard or 0.33 oz/ft² silt loading standard in addition to a 20% opacity standard, according to the same test method that applies to unpaved roads. Clark County Section 94 Handbook incorporates unpaved parking areas into the broader definition of construction traffic. Inactive unpaved parking areas (of any size), are required to meet the surface stabilization standards associated with inactive disturbed areas designed to prevent windblown dust. When construction traffic actively generates fugitive dust (on any size area), it is subject to the same 20% opacity standard/test method and 100 yard plume limit as earthmoving or other mobile equipment. Revisions to this opacity test method that are being addressed via a SIP commitment should render it more suitable to the intermittent nature of actively generated emissions from both equipment and truck traffic, and we credit this towards the ultimate stringency of the standard. While there are some differences between the Maricopa County and Clark County requirements, overall, we concur with the finding that the Clark County requirements are of equivalent stringency.

In terms of trackout control, Clark County measures for trackout cleanup and prevention are identical to Maricopa County measures for trackout. Applicability for trackout control devices is more encompassing in the Clark County Section 94 Handbook compared to Maricopa County Rule 310.¹⁰¹ While Maricopa County adopted a 6-inch gravel pad minimum

⁹⁹ South Coast relies on prescriptive controls and a property line standard, which may be less stringent than what is needed to control fugitive dust depending on the circumstance.

¹⁰⁰ Two readings per plume generated by a passing vehicle are taken. A total of 12 readings are averaged.

¹⁰¹ Maricopa Rule 310 requires trackout control devices from all work sites with ≥ 5 acres of disturbed surface, where 100 cubic yards of bulk materials are hauled on-site or off-site per day, and when crossing a public roadway upon which the public is allowed to travel while construction is underway. Clark County Section 94 Handbook requires trackout control devices to be installed and maintained at all access points where paved and unpaved access or travel routes intersect and that all exiting traffic must be routed over the selected device(s).

depth requirement (where this is selected by the owner/operator as the method of trackout control), Clark County requires a minimum 3-inch depth gravel pad. However, the MSM analysis indicates that the 3-inch depth will minimize problems with vehicle tires digging into the gravel pad and the requirement that gravel be maintained in a clean condition ensures that it will be at least as effective as the Maricopa standard. The minimum trackout prevention and removal requirements that apply in South Coast Rule 403 are of similar effect as the Clark County and Maricopa County rules. The analysis also identifies a prohibition on the use of dry rotary brushes and blower devices for trackout cleanup in San Joaquin's Regulation VIII. While Clark County believes the existing 20% opacity standard for visible emissions in Section 94 would preclude use of this type of equipment, they are proposing to adopt this specific prohibition.¹⁰²

With respect to control measures for bulk material transport and handling, the MSM analysis indicates that only the Maricopa County program came close to being as comprehensive as the Clark County program. Both programs require covering of loads on public roads and compliance with a 20% opacity standard during truck loading/unloading. Clark County Section 94 Handbook requires that owners/operators either cover haul trucks while carrying loads on site, maintain three to six inches of freeboard, or keep soils at their optimum moisture content (as necessary to meet the Control Requirement to "stabilize material while transporting to prevent fugitive dust emissions"). In order to comply with the requirement that emissions be prevented, the control measure that trucks be cleaned and checked for spillage before leaving the site must also be employed. Maricopa County mandates similar work practices.

The control measures for stockpiles in Maricopa County are the closest in stringency to the Clark County requirements. Both areas require that actively handled stockpiling must meet a 20% opacity standard (in Clark County, the 100 yard standard must also be met), and that inactive stockpiles be stabilized. Clark County further requires control measures specific to soil type and also specifies that stockpiles over eight feet high (which are only allowed over 100 yards distance away from occupied buildings) have a road bladed to the top to allow water truck/pull access or have a sprinkler irrigation system installed that is capable of complete stockpile coverage.

With respect to other earthmoving operations, such as cut and fill, Clark County has the same opacity performance standard as Maricopa County, but also incorporates more stringent soil-specific requirements. South Coast Rule 403 emphasizes compliance with a 12% soil moisture content. This may not be effective in Clark County since soils have an optimum moisture content varying from less than five percent to 19 percent.¹⁰³ The South Coast Rule 403 allows an alternative compliance option to the soil moisture content of

¹⁰² Chapter 4, Section 4.8.2.9 of the Plan, proposed new Subsection 94.5.9.

¹⁰³ MSM analysis, Chapter 6, Section 6.3.3.10, pg. 6-33 of the Plan.

watering to comply with a 100 foot visible emissions limit, which may not be as stringent as a point-of-origin plume evaluation. Maricopa County Rule 310 also contains an option to comply with a 12% soil moisture content, but in lieu of this, requires watering or other dust suppression to comply with the 20% opacity standard. We find that Clark County's approach with soil-specific parameters is likely to be more preventative and thus the most stringent in effect.

Furthermore, the Clark County BMPs in the Section 94 Handbook address certain miscellaneous sources that are not explicitly addressed with specific requirements in the fugitive dust rules of other areas, such as soil and rock blasting, clearing forms, crushing, demolition and screening, although some of these activities may be subject to permit requirements in both Clark County and other areas. The Clark County BMPs for these activities establish minimum requirements regardless of whether a site conducting one or more of these activities is subject to control through a separate permit requirement. We note that San Joaquin Regulation VIII does have specific requirements for demolition.¹⁰⁴ The San Joaquin rule established a 40% opacity requirement unless all exterior surfaces of the building up to six stories are wetted and demolition debris is wetted during off-site removal loading operations. Clark County's Section 94 establishes a 20% opacity standard that generally applies to emissions from all construction operations, including demolition. The Section 94 Handbook requires stabilization of wind erodible surfaces, surfaces where support equipment and vehicles operate, and loose soil and demolition debris.

d. Paved roads

Description of emissions

Paved road dust is fugitive dust that is deposited on a paved roadway and then is re-entrained into the air by the action of tires on the roadway. Dust is deposited on the roadway from being blown onto the road from disturbed areas; tracked onto the road from unpaved shoulders or from vehicles traveling on connecting unpaved roads or other unpaved access points (such as those at construction sites); stirred up from unpaved shoulders by wind currents created from traffic movement; spilled onto the road by haul trucks; and carried onto the road by water runoff or erosion.

Emissions of paved road dust are proportional to vehicle miles traveled. Re-entrained road dust emission rates are not significantly affected by vehicle speed but are affected by the silt loading on the road and amount of vehicle travel on a road. Emission rates are lower per mile traveled on more trafficked roads than they are on roads that receive less traffic.

¹⁰⁴ The San Joaquin rule in place at the time Clark County's MSM analysis was completed was Rule 8020, April 25, 1996, section 5.1.

Annual emissions in the 1998 baseline BLM Disposal Area for the paved road dust category, including trackout emissions from construction sites, are estimated to be 44,842 tpy. Chapter 3, Table 3-3 of the Plan. Emissions from paved road dust account for 122.85 tpd in the 24-hour BLM Disposal Area inventory.

Proposed controls and justifications for rejecting potential controls

Clark County identified 10 potential paved road BACM, all of which have been implemented as discussed in the subsequent BACM evaluation, except for the potential BACM regarding vacuum crack seal equipment. The Plan contains a SIP commitment to propose a revision to Section 93.2.3 to require future acquisition or contracting to acquire only vacuum type crack seal equipment. The SIP commitment date for this measure is March 31, 2003.¹⁰⁵

Another identified measure concerning skid control for paved roads was deemed “not applicable” and thus excluded from the list of potential BACM for further consideration. This is because roads in the Las Vegas Valley are not sanded or salted for skid control due to the mild climate of the area.

BACM evaluation

TABLE BACM - 4 PAVED ROADS		
Potential BACM	Adopted Controls	Measure found in...
Prevent deposition of material onto paved roads - stabilize unpaved access points ¹⁰⁶	See adopted measures addressing the following potential BACM: stabilizing unpaved roads and preventing trackout from construction sites and industrial sites.	See applicable adopted measures

¹⁰⁵ November 2002 SIP Amendment

¹⁰⁶ Clark County does not specifically discuss in Chapter 4 how this BACM is implemented, however, we look to other implemented measures affecting paved road dust to determine whether unpaved access points will be addressed as part of those measures. We have identified three such measures - surface treatment of unpaved roads, preventing trackout from construction sites and preventing trackout from industrial sites.

TABLE BACM - 4 PAVED ROADS		
Prevent deposition of material onto paved roads - construction track out ¹⁰⁷	See "Table BACM - 3A".	See "Table BACM - 3A".
Prevent deposition of material onto paved roads - industrial site trackout	BACT applies to sites with potential emissions > 2 tons and includes prevention of trackout onto paved roads to standards at least as stringent as those that apply in Section 94.	Section 12 of DAQM regulations ¹⁰⁸
Use of PM-10 efficient sweepers to clean paved roads	Owners/operators using street sweeping equipment or services on paved roads or parking lots must acquire or contract to acquire only certified PM-10 efficient street sweeping equipment after January 1, 2001.	Appendix G, Subsection 93.2.2
Use of vacuum crack seal equipment	Proposed - not yet adopted.	Chapter 4, section 4.8.2.9, proposed new Subsection 93.2.3

¹⁰⁷ We have addressed this in Section E.5(c) of this TSD for the construction site source category. See "Table BACM - 3A", CST 19.

¹⁰⁸ Section 12 was approved by EPA as part of the Nevada SIP on May 11, 1999. (64 FR 25210.) See Section E.6(a) of this TSD for more information on control requirements for stationary sources.

TABLE BACM - 4 PAVED ROADS		
Prevent deposition of material onto paved roads - stabilize shoulders (and medians) on paved roads ¹⁰⁹	1) Prohibit new unpaved road shoulders by paving shoulders and paving/stabilizing medians associated with new or modified paved roads; 2) SIP commitment to stabilize 33 miles of existing paved road shoulders by December 31, 2003 and all shoulders by December 31, 2006. This addresses a Section 93 requirement for stabilization of existing unpaved road shoulders.	1) Appendix G, Subsection 93.2.1; 2) Chapter 4, section 4.8.3.2; Appendix G, Subsection 93.2.1.6
Prevent deposition of material onto paved roads - material transport controls (truck covers, freeboard reqt.) ¹¹⁰	See "Table BACM - 3A" and "Table BACM - 3B".	See "Table BACM - 3A" and "Table BACM - 3B".
Prevent deposition of material onto roads - storm water drainage	Storm water drainage projects implemented through the Clark County Regional Flood Control District.	See Chapter 4, pg. 4-69.
Cleanup of material spills and erosion-caused deposits	Cleanup programs/policies implemented by the Cities, County and State	Appendix J
Routine sweeping/cleaning of paved roads	Programs for frequent street sweeping implemented by the Cities, County and State	Appendix J

Applicability thresholds

The SIP commitment to stabilize unpaved shoulders encompasses all shoulders by the end of 2006. Therefore, no unpaved shoulders are exempted from the requirement.

¹⁰⁹ There are two ways of addressing unpaved road shoulders. The first is to prohibit new unpaved road shoulders (e.g., requiring that new shoulders be paved). The second is to stabilize existing unpaved road shoulders. Clark County is implementing both.

¹¹⁰ See footnote 107. Applicable Section 94 Handbook requirements include CST 13 and CST 22.

All unpaved access points at construction sites are required to have a preventative trackout control device (including those located at businesses or other facilities where construction activities are occurring). All loads must be covered on public roadways to prevent material spillage (per Section 94 Handbook CST 22). Industrial site trackout is controlled to the extent that stationary sources are subject to permit requirements that pertain to paved roads.¹¹¹

The remaining paved road measures apply throughout the various jurisdictions and do not have specific thresholds of applicability (i.e., they apply in every jurisdiction as specified).

Control measures/performance standards stringency

The potential BACM of preventing deposition onto paved roads by stabilizing unpaved access points is being addressed through the implementation of measures such as surface treatment of unpaved roads, preventing trackout from construction sites and preventing trackout from industrial sites. Any unpaved road access points to paved roads where the unpaved road is subject to control per Section 91 requirements (as addressed in Section E.5(e) of this TSD) will also be controlled. Unpaved access points associated with construction sites or industrial sites are likely the most prevalent sources of dirt trackout from unpaved surfaces to adjoining paved surfaces due to dirt and mud sticking to the tires of heavy trucks. The Section 94 Handbook requirements, CST 19-2, 19-3 and 19-4 requiring installation and maintenance of trackout control devices at all unpaved access points to construction sites are designed to prevent deposition from the access points onto paved roads.

Clark County's requirements in Section 93 for PM-10 efficient street sweepers are equivalent to South Coast AQMD's requirements (see the MSM analysis below for details). Clark County indicates that because a very large proportion of the existing fleet of publicly owned and operated street sweeping equipment already meets the PM-10 efficient certification requirements, the emission reductions for this measure are reflected in the emissions inventory baseline and not factored in the attainment demonstration.¹¹² In addition, one of Clark County's SIP commitments is to propose a revision to Section 93 to prohibit the use of dry rotary brushes and blower devices for removal of dirt/debris unless preceded or accompanied by sufficient wetting to meet a 20% opacity standard.¹¹³

¹¹¹ Clark County has determined that the stationary source facilities on the whole constitute a de minimis source, so the total number of such facilities is limited. See Section 6.a for more details.

¹¹² Chapter 4, section 4.5.2.4.5, pgs. 4-70, 4-71.

¹¹³ Chapter 4, section 4.8.2.9, proposed new Subsection 93.2.2.

Section 93 provisions for shoulder and median stabilization associated with new or modified paved roads require 4 feet of paved or stabilized shoulder on each side of the paved travel section or constructing curbing adjacent to the paved travel lane. Clark County also has a SIP commitment to propose a revision to Section 93 that would require eight feet of stabilized shoulder adjacent to the paved travel section on roads with 3,000 vehicles per day or more.¹¹⁴ Stabilization is to be done through use of a dust palliative or gravel to comply with 20% opacity¹¹⁵ and 0.33 oz/ft² silt loading or, where gravel is being used, uniform application and maintenance of gravel to 2 inches depth. Subsection 93.4 contains the applicable test methods for opacity and silt loading. Medians are generally required to meet the same standards although, if located in a limited access freeway right-of-way, the Section 90 standards for disturbed vacant surfaces apply.

The Section 93 requirements for unpaved shoulders of existing roads provide for stabilization within 365 days following initial discovery that the road fails to meet the stabilization standards and other requirements that apply to new/modified paved road shoulders. The stringency of this provision is necessarily enhanced by the SIP commitment in Chapter 4, section 4.8.3.2 which lays forth the program and definitive dates by which all unstabilized shoulders will be identified and stabilized by public agencies in the Valley. Clark County indicates that shoulder improvements will be prioritized by each entity for their respective jurisdictions based upon emissions estimates. Plans will be completed by February 15, 2002, and at a minimum, funds will be obligated to improve 33 miles of paved road shoulders by the end of 2003, with all shoulders to be stabilized by the end of 2006. Annual updates on the progress of stabilizing shoulders will be submitted to Clark County and EPA. In its June 2002 RFP Report, the DAQM indicates that the respective public entities have submitted initial plans for stabilizing shoulders and initiated programs to begin stabilization.¹¹⁶

Clark County addresses the stormwater drainage (material deposition prevention) measure by referencing funded projects to build channels, washes and storm drains that have been ongoing since 1987.¹¹⁷ Such projects are directed by the Clark County Regional Flood Control District. Clark County indicates that since 1987, completed facilities include 45 detention basins and approximately 220 miles of channels, washes and storm drains. A Flood Control Master Plan was adopted in February 1997 with recommendations for storm water projects. A recent annual report from the Regional Flood Control District provides an updated account of progress towards the projects identified in the Master Plan: 270 miles of

¹¹⁴ Chapter 4, section 4.8.2.9, proposed new subsection 93.2.1.2.

¹¹⁵ The modified opacity method of 2 readings per plume applies per Subsection 93.4.1.1.

¹¹⁶ June 2002 RFP Report, pg. 9.

¹¹⁷ Chapter 4, page 4-69.

channels and underground storm drains have been completed, along with 57 detention basins.¹¹⁸ Additionally, Clark County indicates there are approximately \$1.1 billion in flood control facilities earmarked for future funding.¹¹⁹

With respect to cleanup of material spills and erosion-caused deposits and routine sweeping/cleaning of paved roads, Chapters 4 and 6 and Appendix J of the Plan describe the various programs and policies of the responsible agencies within their respective jurisdictions. These agencies include the Clark County Department of Public Works, City of Las Vegas Department of Public Works, City of North Las Vegas Department of Public Works, City of Henderson Department of Public Works and the State of Nevada Department of Transportation.

Rule enforceability and comparison to the applicable SIP rule

The applicable SIP rule to control fugitive dust from paved roads is Section 41. The respective Section 41 provision that concerns fugitive dust from paved roads is Subsection 41.1.3. This subsection provides that: “no person shall cause or permit the handling, transporting, or storage of any material in a manner which allows or may allow controllable particulate matter to become airborne.” We presume this subsection would apply to trackout onto paved roads from construction sites, however, it does not pertain to other sources of paved road dust such as unpaved shoulders or material deposited from other sources. Clearly, the adoption of requirements for shoulder stabilization and PM-10 efficient street sweepers constitute a SIP strengthening.

Section 93 requirements and the relevant SIP commitments addressing paved road fugitive dust would also strengthen the SIP relative to Section 41 by incorporating specific required control measures (discussed in the preceding BACM evaluation subsection), applicable performance standards, test methods, and appropriate recordkeeping requirements.¹²⁰ Furthermore, the rule meets EPA’s criteria with respect to Executive Officer discretion.

Section 93 also has a specific reporting requirement for the jurisdictions responsible for paving shoulders to prepare and submit to the DAQM an annual written report. While Subsection 93.3.3 provides that copies of records be retained for at least one year, the annual written report per Subsection 93.3.2 will in effect document multi-year compliance with

¹¹⁸ “Annual Report 2000-2001”, Clark County Regional Flood Control District, pgs. 2-3.

¹¹⁹ Chapter 4, pg. 4-69.

¹²⁰ Subsection 93.3.1 requires records that provide evidence of control measure application by indicating type of treatment or control measure, extent of coverage, and date applied.

Section 93 provisions including total miles of paved roads under each jurisdiction, miles of paved roads constructed or modified during the reporting period, and for newly constructed or modified roads, how the requirements for paving or surface stabilization have been met. Furthermore, the SIP commitment for paving/stabilization of existing shoulders contains a provision for annual progress updates to be provided to the DAQM and EPA.

Routine street sweeping, rapid cleanup of material deposits, and stormwater drainage measures are not in the form of an enforceable rule, but rather ongoing city and county programs.

We are proposing to approve Section 93 into the SIP in addition to the existing Section 41.

Recommended Rule Improvements

C Subsection 93.2.2.1 - correct typo from "Subsection 93.2.3" to "Subsection 93.2.2".

MSM evaluation

Clark County's analysis shows that the areas with the most comparable paved road dust measures in terms of stringency include Maricopa County and South Coast. Also, San Joaquin Valley Unified Air Quality Management District has standards for new/modified paved road shoulders that Clark County evaluated.

Regarding control measures for unpaved shoulder on paved roads, the MSM analysis found that Clark County is implementing the only program to eliminate unstabilized shoulders on all paved roads. The Maricopa County SIP contains a commitment to upgrade roads based on local improvement programs, while other areas did not have requirements.

In comparing the stringency of requirements for new/modified paved road shoulders, Clark County found that both the South Coast and San Joaquin Valley require eight (8) feet of paving or stabilization for roads with daily vehicle trips exceeding or equal to 3,000. As discussed in the preceding BACM section for paved roads of this TSD, Clark County is proposing to add this requirement to Section 93 via a SIP commitment.

With respect to trackout requirements for construction sites, we address this in the MSM section for construction sites of this TSD.

Clark County's SIP commitment regarding crack seal equipment entails proposing the following revision to Subsection 93.2.3: "After adoption of this Subsection, any owner and/or operator which utilizes crack seal equipment shall acquire or contract to acquire only vacuum type crack seal equipment." An equivalent requirement exists in Maricopa County for

vacuum crack seal equipment.¹²¹

South Coast Rule 1186 requires government agencies to purchase or lease PM-10 efficient street sweepers for sweeping streets. The Maricopa County PM-10 Plan contains a SIP commitment by cities, towns and the County to purchase PM-10 efficient street sweepers through allocation of \$3.8 million in CMAQ funds. The Clark County requirement for purchase or lease of PM-10 efficient street sweepers is equivalent to the South Coast requirement, except that the Clark County Subsection 93.2.2 requirement is more stringent in that it explicitly applies to paved parking lots as well as paved roads and applies to private operators in addition to government agencies. In these respects, it also surpasses the Maricopa County SIP commitment in stringency.

In comparing the street sweeping frequency programs of Maricopa County and Clark County public entities, sweeping programs in Clark County overall provide for more frequent street sweeping than those in Maricopa. We note that the Maricopa street sweeping efforts may increase as part of the CMAQ-funded PM-10 efficient street sweeper allocation, but are not otherwise codified in regulation. Table 6-20 in Chapter 6 of the Clark County Plan consolidates information from Appendix J, indicating that all paved roads within city or county jurisdiction are swept at least twice monthly, with more frequent targeted sweeping of roads with silt deposits in the City of Henderson and the City of Las Vegas. Clark County Department of Public Works sweeps all classes of road every 7 to 10 days.

With respect to control measures for cleanup of deposits from natural events and spills, Clark County compared the programs/policies of the various jurisdictional departments to requirements in Maricopa County Rule 310.01 and South Coast Rule 1186. Maricopa County Rule 310.01 requires cleanup of deposited material within 24 hours of discovery or prior to resumption of traffic on pavement where the pavement area has been closed to traffic. South Coast Rule 1186 requires public agencies to begin removal of visible roadway accumulations on public paved roads within 72 hours of notification. Clark County notes that the Maricopa County requirement applies to both public and private roads whereas the South Coast requirement applies only to public paved roads.

Clark County Public Works agencies all have action plans or policies to facilitate the rapid cleanup of materials deposited on paved roads by storms and spills as summarized in Table 6-21, Chapter 6 of the Plan. Truck spills are responded to either immediately or within four hours and cleanup continues until completed. Cleanup response to deposition from natural events appears to be immediate or quickly (e.g., within 15 to 30 minutes of notification). The City of North Las Vegas sweeps all paved roadways impacted by storm events within 48 hours following the event.

¹²¹ A.R.S. 9-500.04(4) and 49-474.01(3) requires Maricopa County city, towns, and the County to acquire or use vacuum systems or other dust removal technology to reduce particulate attributable to crack sealing operations as existing equipment is retired.

Unlike in Maricopa County and South Coast, these programs/policies for rapid cleanup are not in the form of adopted requirements, however, Clark County provides the justification that when major storm events occur that cause extensive damage and deposition of material on roadways, it is not technologically feasible for cleanup in all situations to be completed within 24 hours. With respect to minor storms (from infrequent but intense precipitation), Clark County indicates that the infrastructure for handling storm water is necessarily robust to the extent that minor storms do not generally result in significant off-site deposition of material. Furthermore, the Plan describes how the existing Clark County cleanup programs have proven effective in practice.¹²² Clark County credits no emission reductions towards attainment of the 24-hour standard to street sweeping efforts. The only reductions credited are from improved shoulders and reduced construction site trackout.¹²³ The main focus of emission reductions from the Clark County Plan is on preventing paved road deposition (e.g., stabilize shoulders and other sources of deposition) rather than mitigation (e.g., street sweeping to remove deposition), which is generally consistent with EPA's BACM guidance.¹²⁴

SIP commitments

Clark County includes a SIP commitment in the Plan to track silt loadings on paved roads.¹²⁵ The commitment is for Clark County Department of Comprehensive Planning to conduct additional measurements of silt loadings on paved roads in order to update the paved roads emissions inventory and evaluate the effectiveness of control measures for reducing silt loading on paved roads. Silt loading measurements will begin in the fourth quarter of 2001 and be conducted quarterly through June 2006. The DAQM indicates that Clark County contracted a local consulting firm to perform silt loadings of a variety of highway segments and various road conditions in December 2001.¹²⁶ The first round of silt loading measurements analyzed demonstrated greater than 50 percent effectiveness of controls to reduce roadway dust. Clark County has also requested funding to employ improved technology between 2003 and 2006 for testing paved road silt loading being developed by the University of Nevada's Desert Research Institute and the University of California's Center for Environmental Research and Technology.

¹²² Chapter 6, pgs. 6-55 and 6-56.

¹²³ Chapter 4, pg. 4-71.

¹²⁴ 59 FR at 42011, August 16, 1994.

¹²⁵ Chapter 4, section 4.8.2.6.

¹²⁶ June 2002 RFP Report, pg. 6.

e. Unpaved roads

Description of emissions

This category includes re-entrained dust from vehicle travel on unpaved roads and windblown emissions from unpaved roads. There are three categories of unpaved roads in the Clark County nonattainment area: publicly-owned/maintained roads, privately-owned roads, and unpaved haul/access roads associated with construction sites or industrial facilities. The latter category we address in the construction site BACM/MSM evaluation in Section 5.c of this TSD and the stationary source evaluation in Section 6.a. of this TSD.

The unpaved roads category is estimated to contribute 15,025 tpy to the BLM Disposal Area annual PM-10 emissions and 41.16 tpd to the BLM Disposal Area 24-hour inventory. Chapter 3, Tables 3-3 and 3-5 of the Plan.

Proposed controls and justifications for rejecting potential controls

Three potential BACM were identified including:

- C surface treatment for unpaved roads and alleys (e.g., pave, chemically stabilize)
- C prohibit new unpaved roads
- C reduce traffic/control speed on unpaved roads

Because Clark County decided to require surface treatment for unpaved roads, the County concluded traffic reduction/speed control was not a necessary control measure. Although Clark County considers traffic reduction/speed control a potential BACM for construction sites, it was determined that traffic reduction is not as stringent a measure for public and private unpaved roads as paving/stabilization. Clark County reasonably concluded that speed could not be accurately measured continuously, making this option less easily enforced than a road stabilization requirement which is verifiable and provides greater emissions reductions. (On a managed construction site, Clark County believes traffic reduction/speed control can be effectively used as a BMP, in addition to surface stabilization, because of the site operator's ability to mandate compliance by employees and subcontractors.)

One measure identified but not included for further consideration as a potential BACM was to "prohibit unpaved haul roads for construction sites." This measure is discussed in Section E.5(c) of this TSD, which addresses construction sites.

BACM evaluation

TABLE BACM - 5 UNPAVED ROADS		
Potential BACM	Adopted Controls	Measure found in...
Surface treatment to reduce dust from unpaved roads and alleys	By June 1, 2003, apply paving or dust palliatives to all existing unpaved roads that receive 150 vehicle trips per day or more (1/3 of the total to be completed by June 2001, 2/3 of total by June 2002, and the remainder by June 2003).	Appendix G, Subsection 91.2.1 and Chapter 4, Subsection 4.8.3.1
Prohibit new unpaved roads in public thoroughfares	Prohibits construction of new unpaved roads or alleys in public thoroughfares after June 22, 2000 unless the unpaved road is an interim component of an active paving project.	Appendix G, Subsection 91.2.1.2

Applicability thresholds

Section 91 requirements apply to both public and private roads, including unpaved alleys, unpaved road easements and unpaved access roads for utilities and railroads. Section 0 defines a “road easement” as an easement utilized by the easement holder, or others with the permission of the easement holder, for travel by motor vehicle. In the case of a road easement the owner and/or operator is the easement holder.¹²⁷ Section 91 does not apply to non-commercial and non-institutional private driveways, horse trails, hiking paths, biking paths, or similar paths that have been officially designated by a governing body for exclusive use for purposes other than travel by motor vehicles.

Section 91 applies to unpaved roads with 150 or more vehicle trips per day. Clark County estimates that approximately 64 miles of the 259-mile total base year inventory of publicly-owned and maintained unpaved roads have 150 or more average daily vehicle trips (ADT). Given that higher ADT unpaved roads proportionately contribute greater emissions than lower ADT roads, the 64 miles constitute 66% of emissions from the total inventoried

¹²⁷ Section 0 defines a “nonroad easement” as an easement not utilized by the easement holder, or others with the permission of the easement holder, for travel by motor vehicles more often than 12 times within any 12 month period. The purpose of this distinction is that nonroad easements are subject to Section 90 requirements while road easements are subject to Section 91 requirements.

road network.¹²⁸ The SIP commitment for unpaved roads in Chapter 4 of the Plan¹²⁹ further enhances coverage in that the City of Las Vegas makes an additional commitment to pave all unpaved roads within its jurisdiction by the end of 2006.

We also note that in the Chapter 4 SIP commitment concerning shoulder paving¹³⁰, Clark County indicates that shoulder improvements and road paving for unpaved roads with less than 150 ADT will be prioritized by each entity for their respective jurisdictions based upon emission estimates. This does not alter the commitment for all unpaved road shoulders to be stabilized by the end of 2006, but suggests that road paving efforts by jurisdictions may very well go beyond the requirements in Section 91 depending on the availability of CMAQ dollars.

The miles of privately owned unpaved roads have not been inventoried in detail, but public works staff from the various municipalities and Clark County have identified a total of 45 miles in the PM-10 nonattainment area, with 40.5 of these miles located in the BLM Disposal Boundary Area.¹³¹ The public works agencies determined that none of these privately owned roads had traffic volumes greater than 50 ADT. In the “SIP commitments discussion of this section, we describe Clark County’s commitment to develop an improved inventory of privately-owned unpaved roads.

In Subsection 91.2.1(d), Clark County addresses the prospect of vehicle traffic increases on unpaved roads that are currently below the 150 ADT threshold but in the future exceed it. This subsection provides that, after June 1, 2003, any existing unpaved roads on which vehicular traffic grows to equal or exceed 150 ADT must be controlled according to Section 91 within 365 calendar days following initial discovery that vehicular traffic equals or exceeds 150 ADT.

Section 91 also contains a requirement for unpaved roads with less than 150 ADT to comply with the surface stabilization standards of the rule within 365 calendar days following initial discovery of noncompliance with the standards. In such cases, the Control Officer may require short-term stabilization. However, the County is not seeking SIP approval of this requirement. As a result, it will not be federally enforceable and does not provide SIP credit towards BACM or any other CAA requirement. We presume Clark County’s intent is to enable local enforcement discretion to mandate control of any unpaved road in the valley that is discovered to cause fugitive dust.

¹²⁸ Chapter 4, pg. 4-78.

¹²⁹ Section 4.8.3.1, page 4-128.

¹³⁰ Section 4.8.3.2, page 4-129.

¹³¹ Chapter 4, pg. 4-76.

Control measures/performance standards stringency

Section 91 allows three options for compliance: paving, applying dust palliatives to meet specific performance standards, or applying and maintaining an alternative control measure approved in writing by the Control Officer and EPA. The public works departments with jurisdiction over unpaved roads have all indicated their intent to comply with Section 91 through paving, which is the most effective in terms of emission reductions.¹³² Clark County determined that the use of gravel on unpaved roads is not an effective measure in the Valley.¹³³

Applicable performance standards for dust palliatives where paving is not conducted include a 20% opacity standard¹³⁴ and a 0.33 oz/ft² silt loading or 6% silt content standard for surface stabilization. Any alternative control strategy would require DAQM and EPA approval.

Rule enforceability and comparison to the applicable SIP rule

There is no applicable SIP rule.¹³⁵ Therefore, Section 91 requirements and the relevant SIP commitments addressing unpaved road fugitive dust would strengthen the SIP by incorporating specific required control measures (discussed in the preceding BACM evaluation subsection), applicable performance standards, test methods¹³⁶, and appropriate recordkeeping requirements.¹³⁷

Section 91 has a specific reporting requirement for the jurisdictions responsible for

¹³² Clark County also indicates that the public entities deemed paving as the most cost-effective method in the long run due to lower maintenance costs than other alternatives and the longest lifespan. Chapter 4, pg. 4-76.

¹³³ Chapter 4, pg. 4-77.

¹³⁴ Opacity readings to be conducted by a modified method of two readings per vehicle pass and an average of 12 readings.

¹³⁵ The closest applicable requirements are those in Section 41 (Fugitive Dust), but the rule does not appear to explicitly cover vehicles traveling on unpaved roads.

¹³⁶ Test methods for the opacity and surface stabilization standards are included in Subsection 91.4.1.

¹³⁷ Subsection 91.3.1 requires records that provide evidence of control measure application by indicating type of treatment or control measure, extent of coverage, and date applied.

paving roads to prepare and submit to the DAQM an annual written report. While Subsection 91.3.2 provides that copies of records be retained for at least one year, the annual written report per Subsection 91.3.3 will in effect document multi-year compliance with Section 91 provisions including total miles of unpaved roads under each jurisdiction subject to the rule and the miles paved during the reporting period. Furthermore, the SIP commitment for unpaved roads¹³⁸ contains a provision for annual progress updates to be provided to the DAQM and EPA.

An important aspect of the ultimate enforceability of Section 91 requirements are the active efforts of the responsible jurisdictions to identify traffic counts on unpaved roads. Clark County indicates that, as part of either the development of the CMAQ dollar bid package, or as part of the construction agreement, 24-hour car counts will be obtained on each segment.¹³⁹ The inventory on unpaved roads was developed by the respective public works departments after extensive review of the existing roadway network and this information will be made publicly available.

MSM evaluation

Clark County determined that the unpaved road requirements in Maricopa County were significantly more stringent relative to controls for unpaved roads in other areas. Thus, the MSM analysis compares the unpaved road controls for Clark County and Maricopa County. The analysis indicates that both areas have developed comprehensive programs for stabilizing unpaved roads through a combination of regulations and SIP commitments by the various jurisdictions to implement control measures.

With respect to prohibiting new unpaved roads and alleys, Maricopa's SIP contains commitments or ordinances from most jurisdictions that limit or prevent the building of new unpaved roads, particularly those serving new subdivisions and commercial or residential developments. Clark County's Section 91 requirement applies uniformly to all jurisdictions in the nonattainment area, and thus is more comprehensive.

Both the Maricopa and Clark County requirements establish an applicability threshold of 150 vehicle trips per day; in both areas this threshold results in control of a substantial portion of emissions from the unpaved roads source category. The deadline for paving/stabilization is more expeditious in Clark County (June 2003) compared to Maricopa County (June 2004).

¹³⁸ Chapter 4, section 4.8.3.1.

¹³⁹ Chapter 4, pg. 4-76. Clark County also adds that: "Each entity is in the process of determining the ownership of the unpaved roadways. As these are determined, they will be placed in the database described below, and these will become the basis of the bid packages."

SIP commitments

Clark County's SIP commitment for unpaved roads indicates that annual updates on the progress of road paving will be submitted to EPA. The progress made to date by each jurisdiction is summarized in the DAQM's June 2002 RFP Report.¹⁴⁰ The City of Henderson and City of Las Vegas have successfully completed paving of all the roads in their respective networks that receive 150 ADT or greater (well in advance of the Section 91 June 2003 deadline). The City of North Las Vegas has met the Section 91 requirements thus far by applying dust palliatives in the interim until CMAQ funding to pave roads is received from the Regional Transportation Commission of Clark County. The Clark County Department of Public Works has paved approximately 50% of the total unpaved road miles in their jurisdiction that receive 150 or greater ADT, thus surpassing the current 1/3 requirement. A website tracking the road paving by the various responsible municipalities was established in 2001 and continues to be updated as new information becomes available.

Clark County has included a SIP commitment in the Plan to develop an improved inventory of unpaved roads.¹⁴¹ These improvements extend to both the public and private unpaved road networks. The improved public road inventory was to have been developed by the cities and county and completed by the first quarter of 2002. The private road inventory is to be completed by the DAQM using either satellite data or aerial photography by March 2003. The June 2002 RFP Report indicates that the jurisdictions met the SIP commitment for preparing and submitting an updated inventory of unpaved public roads and that the DAQM has requested fiscal year 2002-2003 funding to conduct the inventory of private roads.¹⁴²

f. Race tracks

Description of emissions

Race track emissions are both actively generated from use by offroad vehicles [e.g., dirt bikes and all-terrain vehicles (ATVs)] and windblown from disturbed surfaces following use. Clark County determined that "race track" emissions are only significant with respect to the 24-hour standard.¹⁴³ Race track emissions that were found to have significant impacts at

¹⁴⁰ June 2002 RFP Report, pgs. 8-9.

¹⁴¹ Chapter 4, section 4.8.2.3.

¹⁴² June 2002 RFP Report, pg. 5.

¹⁴³ Chapter 4, Table 4-1.

two micro-inventory sites were associated with unauthorized ATV use on a vacant parcel.¹⁴⁴

Clark County did not develop a separate valley-wide inventory for race track emissions given that windblown emissions from dirt bike and ATV disturbance of open areas and vacant parcels are already accounted for in the disturbed vacant land inventories and the sporadic nature of the activity, most of which occurs on property without the owner's permission, is difficult to quantify.¹⁴⁵ Specific emissions estimates for race tracks are included in the micro-inventories for the Craig Road and Green Valley sites.¹⁴⁶

Proposed controls and justifications for rejecting potential controls

Clark County did not prepare a separate BACM analysis for race tracks. Rather, Clark County regulates emissions from race tracks through its Section 90 controls for disturbed vacant land and open areas.

We note that there are three potential BACM for control of dirt race tracks: prohibit race tracks, treat the surface of race tracks with dust suppressants or palliatives, and establish wind breaks around the circumference of tracks. Of these potential BACM, Section 90 controls address the first two. Establishing wind breaks has not been adopted, but this measure is not as stringent as prohibiting race tracks and surface treatment of disturbed areas.¹⁴⁷

BACM evaluation

Clark County determined that Section 90 requirements effectively prohibit dirt race tracks because it is not possible to operate offroad vehicles, including dirt bikes and ATVs, on open areas/vacant lots and remain in compliance with the regulation. Where motor vehicle trespass is occurring on vacant lots greater than 5,000 square feet, owners must take steps to prevent trespass and stabilize the surface. Even if motor vehicle use is authorized, where over 5,000 cumulative square feet of surface has been disturbed, owners/operators must apply dust palliative (other than water) or gravel.¹⁴⁸ These requirements would apply to any public or private lands where offroad racing occurs.

¹⁴⁴ Chapter 4, pg. 4-81.

¹⁴⁵ Chapter 4, pg. 4-82.

¹⁴⁶ Op. Cit.

¹⁴⁷ See the discussion on windbreaks for disturbed opens areas and vacant lots in Section 5.a of this TSD.

¹⁴⁸ Chapter 4, pg. 4-80.

The one public entity in Clark County that can effectively authorize use of public land for offroad racing events is the Bureau of Land Management. Clark County indicates that, in reviewing BLM permits for offroad racing events on BLM land, it was found that no offroad racing events were approved by BLM in the nonattainment area during the past year while in previous years, BLM had authorized permits for offroad racing events in the nonattainment area. Clark County indicates that BLM is currently working to establish offroad racing courses outside the nonattainment area. The DAQM's policy prohibiting issuance of permits for offroad race tracks within the nonattainment area is provided in a letter dated September 5, 2002 from the DAQM to the BLM, in letters from the DAQM to other public agencies dated September 9, 2002, and in a letter to the Clark County Department of Comprehensive Planning dated September 11, 2002¹⁴⁹.

Rule enforceability and comparison to the applicable SIP rule

The current applicable SIP rule (Section 41) governing fugitive dust includes several requirements that apply to race tracks:

- C Subsection 41.1.1 - contains a general provision that reasonable precautions be taken to prevent fugitive dust from several activities, including the use of raceways for motor vehicles. Reasonable precautions include sprinkling and chemical sealing, or such other measures as the Control Officer may specify to accomplish satisfactory results.
- C Subsection 41.2.1 - prohibits offroad vehicle racing or motocross racing within the PM-10 nonattainment area boundaries unless adequate dust control measures are provided and approved in advance by the Control Officer.
- C Subsection 41.2.2 - permits motocross racing only at permanent motocross race courses within the PM-10 nonattainment area.
- C Subsection 41.2.3 - requires that permanent motocross race courses be registered with and permitted by the Control Officer in accordance with specified conditions in Section 1 of Clark County regulations.

Section 90 requirements would significantly strengthen the SIP relative to Section 41 by incorporating specific required control measures for disturbed vacant lots and open areas, applicable performance standards, test methods, and appropriate recordkeeping requirements. Furthermore, Section 90 does not contain inappropriate Executive Officer discretion. We refer the reader to Section 5.a of this TSD for a detailed discussion of Section 90 disturbed open area and vacant lot requirements.

MSM evaluation

Clark County did not conduct a MSM evaluation specific to race tracks. Rather, the

¹⁴⁹ See Section G, Attachments G through L, to this TSD.

MSM evaluation for Section 90 applies. We therefore refer the reader to the MSM evaluation for disturbed open areas and vacant lots in Section 5.a of this TSD.

g. Section 0

In the previous sections regarding BACM and MSM for each significant source category, we have addressed some of the related definitions contained in Section 0. Section 0 was revised by Clark County at the same time Sections 90 through 94 were adopted (November 16, 2000). The Section 0 definitions that concern fugitive dust sources are integrally linked to the requirements found in Sections 90 through 94. However, Section 0 also contains definitions that are not pertinent to Sections 90 through 94. For the purposes of this action, we have only evaluated the definitions concerning fugitive dust sources per Section 90 through 94 requirements and are proposing to approve only these sections into the SIP, rather than the entire Section 0.

The individual sections of Section 0, dated November 16, 2000, we are proposing to approve into the Nevada PM-10 SIP include the following:

Section 0.25 “Best Management Practices”
Section 0.33 “Commercial and Residential Construction”
Section 0.36 “Construction Activity”
Section 0.37 “Control Measure”
Section 0.43 “Disturbed Surface Area”
Section 0.45 “Dust Palliative”
Section 0.46 “Dust Suppressant”
Section 0.47 “Easement”
Section 0.48 “Easement Holder”
Section 0.51 “Emergency”
Section 0.58 “EPA or Administrator”
Section 0.65 “Flood Control Construction”
Section 0.70 “Fugitive Dust”
Section 0.81 “Hearing Officer”
Section 0.84 “Highway Construction”
Section 0.110 “Nonroad Easement”
Section 0.111 “Normal Farm Cultural Practice”
Section 0.114 “Offroad Vehicle”
Section 0.117 “Open Areas and Vacant Lots”
Section 0.120 “Owner and/or Operator”
Section 0.127 “Pave”
Section 0.132 “PM-10 Nonattainment Area”
Section 0.133 “PM-10”
Section 0.140 “Public Road”

Section 0.141 “Reclaimed Water”
Section 0.147 “Road Easement”
Section 0.162 “Trench”
Section 0.164 “Unpaved Parking Lot”
Section 0.166 “Vacant Lot”

The current Nevada SIP contains a definitions rule titled “Section 1 - Definitions” submitted on November 17, 1981 and approved into the SIP by EPA on June 21, 1982. Our proposed incorporation of the specified Section 0 definitions into the SIP would upgrade the SIP by adding several new definitions and replacing two of the existing Section 1 definitions. These two definitions include Section 0.70 “Fugitive Dust” and Section 0.114 “Offroad Vehicle”, which would replace subsection 1.35 and subsection 1.64.

h. Conclusion

We are proposing to revise the Nevada PM-10 SIP to incorporate Sections 90, 91, 92, and 93 (as adopted by Clark County on November 20, 2001) and Section 94 (including the Section 94 Handbook and other referenced documents) (as adopted by Clark County on November 16, 2000) of the Clark County Regulations. We are proposing to replace the SIP-approved Clark County Section 17. We are also proposing to add certain portions of Section 0, November 16, 2000, to the existing SIP-approved Section 1, and replace two definitions in Section 1, as previously identified in this TSD.

With respect to CAA 110(l), in addition to the effect on attainment and RFP, the “other applicable requirement of the Act” that we must be concerned with for this final action is the Act’s requirements for implementation of RACM and BACM and the inclusion of MSM. As discussed in other sections of this TSD, we are proposing to approve the expeditious attainment and RFP demonstrations in the PM-10 State Implementation Plan for Clark County. These demonstrations are in large part dependent on approval of Sections 90, 91, 92, 93, and 94 (incl. handbook). Therefore, our proposed approval of these rules will not adversely affect the Plan's provisions for expeditious attainment and RFP, the implementation of RACM and BACM and the inclusion of MSM as required by the Act.

6. De minimis Sources

What are the requirements?

CAA section 189(b)(1)(B) requires SIPs for serious PM-10 nonattainment areas to provide for the implementation of BACM. We read this requirement to apply to all categories of sources within the nonattainment area unless the State adequately demonstrates that a

particular source category does not contribute significantly to nonattainment (i.e., *de minimis* source categories).¹⁵⁰ Thus, our policy per CAA section 189(b) does not require that a BACM (including BACT) analysis be performed for sources deemed to have a *de minimis* impact “considering emission reductions achieved with RACM”. *Addendum* at 42012. To make this demonstration, a Serious Nonattainment Area plan must address how emissions from such source categories are not expected to increase to an extent that would potentially surpass the significance threshold in future years. Therefore, for the *de minimis* source categories identified, we evaluate the acceptability of existing measures in place as RACM and/or justifications supporting projections that uncontrolled sources will remain insignificant contributors to PM-10 in the area.

In areas that are claiming the impracticability of attainment by December 31, 2001,¹⁵¹ determining whether source categories are truly *de minimis* depends on determining if the application of BACM-level controls on the proposed *de minimis* source categories would make the difference between attainment and nonattainment by the serious area deadline of December 31, 2001. Furthermore, our responsibility under section 188(e) is to grant the shortest practicable extension of the attainment date by assuring the plan provides for attainment as expeditiously as practicable by an alternative date.

We summarize the MSM requirements for attainment extension requests per CAA 188(e) in Section 4. of this TSD. The test we use is whether controls or additional controls on *de minimis* sources would meaningfully expedite attainment.

In this section we evaluate Clark County’s estimates and assumptions concerning base year and future year emissions from the source categories deemed *de minimis*. This analysis includes assessing the reasonableness of growth (or nongrowth) assumptions and the controls in place (if applicable) that support Clark County’s determination that emissions levels for each of the respective categories will not interfere with the future year attainment demonstration.

How are the requirements met in the plan?

Table INV-4 below shows the 1998 base year tons per day emissions from each source category deemed *de minimis* with respect to the 24-hour standard.

¹⁵⁰ *Addendum* at 42011.

¹⁵¹ Clark County is only requesting an extension of the attainment date for the 24-hour PM-10 standard.

TABLE INV - 4
24-HOUR BLM DISPOSAL AREA PM-10 EMISSIONS INVENTORY FOR
DE MINIMIS SOURCES (DECEMBER 21, 1998)

Source	Tons Per Day	Concentration ($\mu\text{g}/\text{m}^3$)
Sand & Gravel Operations	1.72	0.50
Utilities - Natural Gas	0.55	0.16
Asphalt Concrete Manufacture	0.47	0.14
Industrial Processes	0.22	0.06
Other Stationary Point Sources	0.34	0.10
Small Point Stationary Area Sources	0.50	0.15
Residential Firewood	0.81	0.24
Residential Natural Gas	0.18	0.05
Commercial Natural Gas	0.09	0.03
Industrial Natural Gas	0.04	0.01
NG - Purchased at the Source - Carried by SWG	0.58	0.17
Structural / Vehicle Fires / Wild Fires	0.05	0.01
Charbroiling / Meat Cooking	2.05	0.60
Airport Support Equipment	0.10	0.03
Commercial Equipment	0	0.00
Construction & Mining Equipment	0.99	0.29
Lawn & Garden Equipment	0.03	0.01
Railroad Equipment	0.04	0.01
Recreational Equipment	0	0.00
McCarran International Airport	0.69	0.20
Henderson Executive Airport	0.02	0.00

TABLE INV - 4 24-HOUR BLM DISPOSAL AREA PM-10 EMISSIONS INVENTORY FOR DE MINIMIS SOURCES (DECEMBER 21, 1998)		
Source	Tons Per Day	Concentration ($\mu\text{g}/\text{m}^3$)
North Las Vegas Municipal Airport	0.06	0.02
Nellis Air Force Base	0.09	0.03
Vehicular Sulfate PM	1.12	0.32
Vehicular Tire Wear	0.23	0.07
Vehicular Brake Wear	0.37	0.11
Vehicular Exhaust	0.98	0.28
Total	12.32	3.59

Since the Clark County Plan is showing attainment of the annual standard in 2001, we only consider whether controls on de minimis sources would meaningfully expedite attainment of the 24-hour standard.

a. Stationary Point Sources and BACT

CAA section 189(b) requires BACT for significant stationary sources of PM-10. A separate requirement for BACT per CAA section 189(e) applies to major stationary sources of PM-10 precursors if these sources contribute significantly to PM-10 exceedences in the area. Clark County determined that stationary sources, including sand and gravel operations, natural gas-fired utility power plants, asphalt concrete plants, industrial processes, and other sources cumulatively contribute less than $1 \mu\text{g}/\text{m}^3$ of the design day concentration, placing them below the $5 \mu\text{g}/\text{m}^3$ significance threshold for the 24-hour standard. Design day micro-inventory concentrations from stationary source emissions were higher in some cases ($3.74 \mu\text{g}/\text{m}^3$ and $3.53 \mu\text{g}/\text{m}^3$ at the Pittman and Craig Road monitoring sites, respectively), but were still below the threshold of presumed significance for this source category. Therefore, BACT is not required to be applied to stationary sources per CAA section 189(b) or CAA 189(e).

In addition to demonstrating stationary sources of PM-10 are not significant, Clark County has also shown that emissions from stationary sources are not anticipated to increase in the future. Clark County projects that tonnage from the stationary source category will remain unchanged through 2006 and that the category will contribute the same PM-10 mass to the 24-hour design day in 2006. The Clark County plan predicates the assumption of no growth in stationary source emissions on several factors, including current trends in

emissions and regulatory requirements for stationary sources.¹⁵² The plan notes that stationary source PM-10 emissions decreased slightly from 1994 to 1998 (Chapter 4, pg. 4-104) and that declining annual rates of population growth and construction activity from their current level would be expected to decrease activity levels in sand and gravel operations and in asphalt concrete manufacturing, two key types of stationary PM-10 emissions in Clark County.

In addition, State law (see Section 445.389 of the Nevada Administrative Code) prohibits the construction or modification of fossil-fuel-powered electricity generation plants in Hydrographic Area 212 (the Las Vegas Valley PM-10 nonattainment area) and the city limits of Boulder City. This prohibition further limits the potential for additional emissions from stationary sources in the Las Vegas Valley.

While total emissions from stationary sources have been demonstrated to be insignificant, EPA continues to believe fugitive emission sources located within the boundaries of stationary sources are subject to BACM. Through the County's stationary source permitting program, unpaved roads, unpaved parking lots, disturbed vacant lots and paved roads (including trackout onto adjoining public access roads) located at stationary source facilities will be subject to controls similar to those required for fugitive dust sources not located at stationary sources.¹⁵³

Clark County indicates that some existing permits already contain controls for fugitive dust sources that are more stringent than controls that apply valley-wide. For

¹⁵² Most notably, local regulations (Section 12) require the application of best available control technology (BACT) for new or modified stationary sources producing more than two tons and application of the lowest achievable emission rate (LAER) for all new and modified sources with the potential to emit more than 70 tons per year of PM-10 and generally require emissions increases to be offset by emission reductions from other sources.

¹⁵³ Section 90, 91, 92 and 93 requirements do not apply to stationary sources. (See Section 90, subsection 90.1.2; Section 91, subsection 91.1.2; Section 92, subsection 92.1.1; and Section 93, subsection 93.1.2.) However, these rules specify that "control measures [in the Regulation] shall be considered as part of a BACT determination [for stationary sources]". Clark County DAQM began including new language in new/modified stationary source permits in July 1, 2001 (see letter from Catherine MacDougall, Clark County DAQM, to Karen Irwin, EPA Region IX, December 17, 2002) that reflects the minimum performance standards (e.g., surface stabilization standard of six percent silt content or 0.33 oz/sq. foot) specified in Sections 91 and 93, along with work practice standards for open areas and vacant lots and unpaved parking lots. Clark County DAQM is also including provisions in permits that require sources to maintain less than 0.33 oz/sq. foot silt loading on any paved road, regardless of the average number of vehicles per day. We interpret this as applying to both on-site paved roads and adjoining paved roads to the site that may be subject to dirt trackout.

example, the County refers to permit conditions requiring unpaved haul roads be controlled to 90 percent by use of water, dust suppressants, sealing or paving¹⁵⁴, and stationary source permits do not establish traffic thresholds below which controls for unpaved haul roads do not apply.¹⁵⁵

Clark County DAQM provided samples of permit requirements containing the new language.¹⁵⁶ The sample language shows that requirements in some permits that pertain to open areas/vacant lots and unpaved parking lots may be more stringent than in Sections 90 and 92, e.g., no minimum size threshold below which controls are not required, or limited control measure options compared to those allowed in Sections 90 and 92. While the permits do not specifically contain the surface stabilization performance standards that exist in Sections 90 and 92, Clark County DAQM implements the performance standards of Sections 90 through 93 at stationary source facilities if stricter permit standards are not in effect.¹⁵⁷ About 50% of existing mineral processing permits (countywide) have been modified as discussed above.¹⁵⁸ This process will continue as permits are modified or revised and subject to Clark County DAQM review and approval.¹⁵⁹ We believe this schedule is adequately expeditious given that emissions reductions from stationary source emissions units are not being relied upon for the area's attainment demonstration.

b. Other Categories

Stationary Area Sources

Stationary Area Sources listed in the Plan as de minimis include small point sources (i.e. non-point stationary sources), residential firewood, residential natural gas, commercial natural gas, industrial natural gas, natural gas combusted by Southwest Gas Corporation

¹⁵⁴ Chapter 4, pg. 4-106 of the Plan.

¹⁵⁵ Phone conversation between Paul Durr, Clark County DAQM, and Karen Irwin, EPA Region IX, November 4, 2002.

¹⁵⁶ “Authority to Construct/Operating Permit For A De Minimis or Nonmajor Nonmetallic Mineral Processing Facility”; “Authority to Construct/Operating Permit For A Nonmajor, Various Location, Nonmetallic Mineral Processing Facility”

¹⁵⁷ Memorandum from Robert Folle, Compliance Manager, Clark County DAQM, to Compliance Field Enforcement Staff, Clark County DAQM, November 26, 2002.

¹⁵⁸ Letter from Catherine MacDougall, Clark County DAQM, to Karen Irwin, EPA Region IX, December 17, 2002

¹⁵⁹ Op. Cit.

(SWG) at compressor stations, structural/vehicle fires/wild fires and charbroiling/meat cooking.

Clark County also considered the following other stationary area sources but determined that they are not present in the nonattainment area at levels sufficient for further study, and thus there is no value included in the emissions inventory.¹⁶⁰

- C Consumer products (e.g., architectural coatings, pesticides, fertilizers and refrigerants)
Justification - these sources generally produce volatile organic compound emissions rather than PM-10 emissions.

- C Farming operations (e.g., fugitive dust or combustion sources)
Justification - farming operations are not present in the nonattainment area at any level approaching significance, since the need for irrigation and the high cost of water in the area make farming operations economically infeasible.

- C Open waste burning
Justification - open waste burning is prohibited under Section 42 of the Clark County Air Quality Regulations. The only known waste incinerators are permitted as part of a larger stationary point source. Such incinerator emissions are included in the emissions inventory for stationary point sources.

The Nevada SIP contains a rule with requirements for open burning (Section 42 “Open Burning”). This rule was submitted by Clark County on July 24, 1979 and approved into the SIP by EPA on August 27, 1981. From a cursory review of the rule’s requirements, we believe it meets the RACM/RACT standard¹⁶¹ and is adequate to ensure emissions from this source category do not increase.

While not identified in the Plan, we note that horse arenas and feed lots are specifically subject to SIP-approved Section 41 (subsection 41.1.1). We assume that “feed lots” are agricultural sources which fall under Clark County’s justification regarding farming operations. We understand that horse arenas are also not present in the nonattainment area at levels sufficient to merit further study, and that Section 90 requirements concerning disturbed surface areas could be applied to a horse arena.¹⁶²

¹⁶⁰ Appendix B, pg. B-4.

¹⁶¹ Review by Al Petersen, EPA Region IX, per October 1, 2002 email from Al Petersen to Karen Irwin, EPA Region IX.

¹⁶² Phone conversation between Karen Irwin, EPA Region IX, and Rodney Langston, Clark County DAQM, September 12, 2002.

While not specifically inventoried in the Plan, control measures for abrasive blasting are included in Clark County regulations for construction sites.¹⁶³ We consider abrasive blasting a miscellaneous small point source. Abrasive blasting requirements in Section 94 and the Section 94 Handbook are similar to abrasive blasting requirements that apply in the State of California.¹⁶⁴ Maricopa County Rule 312 contains a more stringent 20% opacity performance standard for abrasive blasting, yet, similar to Clark County, abrasive blasting was not identified as a significant source in Maricopa County and we did not evaluate Rule 312 for CAA section 189(b) purposes. The Section 94 Handbook control requirements for abrasive blasting specify that the surface be stabilized where support equipment will operate and that particulate matter in the surrounding area following blasting be stabilized, which is not specified in the Maricopa or State of California requirements. The applicable SIP rule is Section 41. Subsection 41.1.4 applies to sand and abrasive blasting. Subsection 41.1.4 states that sand and abrasive blasting will not be permitted unless effective enclosures or other such dust control devices, including but not limited to the injection of water, have been installed to prevent excessive sand and dust dispersal. These requirements are vague and include inappropriate Executive Officer discretion. The requirements in Section 94 and the Section 94 Handbook are more stringent and therefore strengthen the SIP. Because abrasive blasting is not a significant source in the Valley, the requirements do not need to meet BACM.

The structural / vehicle fires / wild fires category and residential natural gas categories are predicted to grow in proportion to population increases, but the values are still negligible. Residential natural gas emissions are predicted to increase from 0.18 tpd in the base year to 0.25 tpd in 2006 and structural / vehicle fires / wild fires are predicted to increase from 0.05 tpd in the base year to 0.07 tpd in 2006. Including growth, these values are well within the applicable significance thresholds.

Among stationary area source categories, the highest PM-10 emissions are generated from charbroiling. Both residential firewood and charbroiling / meat cooking categories are predicted to increase slightly in proportion to population: residential firewood (from 0.81 tpd in the base year to 1.12 tpd in 2006) and charbroiling / meat cooking (from 2.05 tpd in the base year to 2.84 in 2006).

¹⁶³ Section 94, subsections 94.2.1(j) and 94.5.6 and Section 94 Handbook CST 02.

¹⁶⁴ These include a requirement that abrasive blasting be conducted to meet a 40% opacity standard either by a wet method of abrasive blasting using air as a propellant, hydroblasting using water as the propellant, or dry, unconfined blasting using only abrasives that are approved and certified by the California Air Resources Board for such use. We note, however, that the State of California abrasive blasting requirements per Title 17, subchapter 6, Article 4 further specify that abrasive blasting must be conducted within a permanent building except under certain, defined circumstances while Clark County Section 94 Handbook requires abrasive blasting to be conducted in an enclosed structure whenever possible to preclude the release of visible emissions to the atmosphere.

Adopted county and city ordinances to prevent emissions from residential firewood from approaching or exceeding the de minimis source threshold level apply to new fireplaces. These ordinances include Clark County Ordinance 1249, City of Las Vegas Ordinance 3538, City of North Las Vegas Ordinance 1020, and City of Henderson Ordinance 1997. The ordinances require that new fireplaces meet EPA-certified Phase II wood burning stove standards or consist of cleaner alternative non-wood burning devices such as gas logs. These Ordinances have been submitted for EPA approval into the SIP with Clark County's November 2002 SIP Amendment. We are not proposing to approve them into the SIP as RACM or BACM per CAA section 189, but only as a SIP strengthening that will help keep emissions from this source category insignificant.

There are 1,460 charbroilers in the Las Vegas Valley as of 1998¹⁶⁵. As stated above, the emissions from charbroilers increase slightly with population growth. Clark County indicates that new emissions from the larger sources within this category are subject to BACT requirements under Section 12 (potential to emit greater than 2 tons per year)¹⁶⁶. This requirement would only likely be triggered for new large hotel-casinos with multiple restaurants. However, since the charbroiling category is still predicted to be de minimis in 2006, even with growth, Clark County has not adopted additional requirements.

No change is predicted in future emissions for the remaining stationary area sources included in the Plan as de minimis.

Nonroad Mobile

Nonroad mobile sources listed in the Plan as de minimis include: airport support equipment, commercial equipment, construction and mining equipment, lawn & garden equipment, railroad equipment,¹⁶⁷ recreational equipment, McCarran International Airport, Henderson Executive Airport, North Las Vegas Municipal Airport and Nellis Air Force Base.

Clark County also considered the following other nonroad mobile sources but determined that they were not found in the nonattainment area: recreational boats (there are no navigable water bodies within the nonattainment area), agricultural equipment (see the previous section's discussion of stationary area sources), snow equipment (snow equipment is not used to any extent in the region), and logging equipment (no commercial logging

¹⁶⁵ Estimate from a consultant report titled "Las Vegas Valley Broiler Emissions Inventory for Clark County Health District", May 1998. Reference is on pg. B-8 of Appendix B.

¹⁶⁶ Chapter 4, pg. 4-116.

¹⁶⁷ This refers to locomotive emissions. Union Pacific operates 41 track miles within the nonattainment area, with less than one percent outside the BLM disposal boundary area.

enterprises operate within the Las Vegas Valley).¹⁶⁸

Among nonroad mobile categories, the highest emissions are generated from construction and mining equipment (1.17 tpd in 2001 increasing to 1.36 tpd in 2006). This increase in emissions reflects changes in population growth. Clark County indicates that actual use of construction equipment is likely to decline in proportion with the declining growth rate in construction.¹⁶⁹ The only regulatory standards that apply to construction and mining equipment are federal emissions standards for new engines. U.S. EPA established emissions standards for new offroad engines on October 23, 1998 (63 FR 56968), including PM standards associated with Tier 2 requirements which take effect in the 2001-2006 timeframe.

Clark County estimates that PM-10 emissions from commercial equipment, recreational equipment, lawn & garden equipment, and railroad equipment are negligible. (See TABLE INV-4 of this section.) Even accounting for population growth, these categories remain minute in impact in both the valley-wide (BLM Disposal Area) and 24-hour inventories. For example, recreational equipment emissions on a valley-wide basis remain estimated at 1 tpy in both 2001 and 2006. Valley-wide emissions from lawn & garden equipment and railroad equipment only increase 2 tpy and 3 tpy, respectively, between 2001 and 2006.

PM-10 emissions from aircraft in 1998 are cumulatively estimated to be 0.86 tpd. For 2001, Clark County grew these emissions due to population increase (except for Nellis Air Force Base), totaling 0.99 tpd. Aircraft emissions from Nellis Air Force Base are assumed to remain the same (see Appendix E, pgs. E-3 through E-4.) However, aircraft emissions from the McCarran International Airport, Henderson Executive Airport and North Las Vegas Municipal Airport are predicted to slightly decrease by 2006 based on estimates from the Clark County Department of Aviation regarding the number of flights, so that total estimates from aircraft emissions equal 0.75 tpd. Clark County also indicates that aircraft emissions at McCarran Airport, the largest of the three, will decline in future years due to aircraft gate electrification and use of new, lower-emission aircraft.¹⁷⁰

Onroad Mobile

Onroad mobile sources listed in the Plan as de minimis include: vehicular sulfate PM, vehicular tire wear, vehicular brake wear and vehicular exhaust. These categories are projected to increase slightly with projected increases in vehicle miles traveled but still total

¹⁶⁸ Appendix B, pg. B-9.

¹⁶⁹ Chapter 4, pg. 4-117.

¹⁷⁰ Op. Cit.

only 3.26 tpd as a controlled emissions value in 2006, compared to 2.7 tpd in 1998. The 2006 value translates into 2.23 $\mu\text{g}/\text{m}^3$ mass contribution, which is within the 5 $\mu\text{g}/\text{m}^3$ significance threshold.

Measures to control onroad mobile source emissions have been implemented at the national, state and local level. These measures include national standards for sulfur content of diesel fuel and onroad heavy-duty truck and bus engines, a State and Clark County regulation limiting diesel truck and bus idling, annual smog check tests, a State program for random roadside smoke opacity testing, a State remote sensing program, a State alternative fuel vehicle program with fleet purchase requirements for government agencies and a Clark County wintertime cleaner-burning gasoline program, among others. Some of these measures are documented in the Las Vegas Valley Carbon Monoxide State Implementation Plan dated August 2000. Clark County notes that PM-10 reductions from mobile source measures are mostly negligible and difficult to quantify.¹⁷¹

c. Conclusion

For purposes of meeting MSM, we evaluate whether new controls on de minimis sources would meaningfully expedite attainment. Even if emissions from the de minimis source categories were totally eliminated, the area would still not have attained the 24-hour standard by the end of 2001. Chapter 6, pg. 6-4. Clark County estimates a total mass contribution of 209 $\mu\text{g}/\text{m}^3$ in 2001 after controls are implemented, 5.1 $\mu\text{g}/\text{m}^3$ of which accounts for all of the insignificant sources identified.¹⁷² Therefore, eliminating insignificant source category emissions would not have advanced attainment of the 150 $\mu\text{g}/\text{m}^3$ standard. The 2003 inventory shows that the total controlled concentration will be 184.2 $\mu\text{g}/\text{m}^3$, with insignificant sources contributing a higher proportion (13 $\mu\text{g}/\text{m}^3$) to the total. Again, the reductions gained from eliminating all emissions from the insignificant source categories, which could not be achieved even by applying MSMs on such categories, would not meaningfully expedite attainment as the remaining concentration would still exceed the standard. The Plan's 2006 controlled inventory demonstrates attainment of the 24-hour standard with controls applied to significant source categories.

US EPA interprets the nonattainment provisions of the Act as requiring the application of more stringent control measures where feasible to ensure the most expeditious schedule for attaining the NAAQS. Pursuant to this requirement, Clark County considered the potential for a reduction in the de minimis (insignificant) source threshold to determine the potential impact on achieving attainment of the 24-hour PM-10 standard. Specifically, Clark County evaluated the insignificant source contributions to determine if new or

¹⁷¹ Chapter 4, pg. 4-110.

¹⁷² We address supporting information for the attainment demonstration concentrations in subsequent sections of this TSD.

additional controls could be implemented for the insignificant sources that would contribute to expediting the attainment date.

The County looked at the contribution of insignificant sources to the total mass contribution of PM-10 after controls in 2001 and 2003. In 2001, the total mass contribution after controls is $209 \mu\text{g}/\text{m}^3$ (against the 24-hour PM_{10} standard of $150 \mu\text{g}/\text{m}^3$), with insignificant sources contributing merely $5.1 \mu\text{g}/\text{m}^3$. Thus, the County asserts that eliminating 100 percent of the insignificant source contributions would have no effect on achieving earlier attainment of the 24-hour PM-10 standard. The same analysis was done for 2003 and it showed the total controlled concentration to be $184.2 \mu\text{g}/\text{m}^3$, with insignificant sources contributing $13.1 \mu\text{g}/\text{m}^3$. Again, eliminating all insignificant source contributions would not advance the attainment date as such elimination would only reduce the total concentration to $171.1 \mu\text{g}/\text{m}^3$, which is still above the $150 \mu\text{g}/\text{m}^3$ standard. The County notes that since three consecutive years of data below the $150 \mu\text{g}/\text{m}^3$ standard are required to demonstrate attainment, the earliest date for attainment would still be December 31, 2006, even if all insignificant source emissions were 100 percent controlled. EPA agrees that, given this analysis, application of most stringent measures to insignificant sources would not expedite attainment of the 24-hour PM-10 standard.

7. General SIP requirements:

a. Adequate Personnel, Funding and Authority

What are the requirements?

Section 110(a)(2)(E)(i) of the CAA requires that implementation plans provide necessary assurances that the State (or the general purpose local government) will have adequate personnel, funding and authority under State law to carry out the submitted plan.

States and responsible local agencies must demonstrate that they have the legal authority to adopt and enforce provisions of the SIP and to obtain information necessary to determine compliance. SIPs must also describe the resources that are available or will be available to the State and local agencies to carry out the plan, both at the time of submittal and during the 5-year period following submittal.

How are the requirements met in the plan?

Resources:

We evaluate the Plan to verify that Clark County DAQM and the five public transportation departments have committed adequate resources to implement the controls and SIP commitments in the Plan. The five public transportation departments include: Nevada

Department of Transportation and the Clark County Public Works, City of North Las Vegas Public Works, City of Las Vegas Public Works and City of Henderson Public Works.

As discussed in further detail in the subsequent section, one way in which Clark County is enhancing its enforcement efforts for fugitive dust sources is by increasing inspection staff. The Clark County District Board of Health committed to hiring 15 additional staff to implement and enforce Sections 90 through 94. Appendix H, Resolution 02-00, July 27, 2001. These positions include several enforcement officers, clerical and other support and Clark County committed to have the new positions filled by December 31, 2001. Clark County's SIP commitment indicates that, not accounting for the new hires, compliance for fugitive dust sources (per Sections 17 and 41) was being handled by 11 people total, seven of which were field enforcement officers conducting inspections.

Salary and administrative costs for the additional personnel is estimated at \$780,000 for the first year. Clark County indicates that resources to fund the additional personnel will come from increased dust control permit fees redirecting funding from the PM-10 Emission Control Research Account¹⁷³ and increased funding from the Clark County general fund. Chapter 4, pg. 4-122. The Clark County District Board of Health approved the increased dust control permit fee on December 14, 2000.

An October 1, 2002 letter from the DAQM provides an update on Clark County's SIP commitment to increase its enforcement staff working on fugitive dust sources.¹⁷⁴ First, the DAQM met its commitment by hiring 15 new staff into the compliance division, 12 of which were hired as field enforcement officers to conduct inspections and handle cases for construction sites and vacant lots, one supervisor, and two administrative support positions. The DAQM then exceeded its SIP commitment by hiring an additional seven field enforcement officers in 2002. The Compliance Division now consists of a total of 44 positions, with 22 field enforcement officers who spend approximately 90 percent of their time on fugitive dust issues. (In July 2002, all Enforcement Officers were divided into six geographically-based teams to cover the entire Clark County area and cross trained for ability to inspect multiple sources in each area, including construction activities, vacant land, gasoline dispensing facilities, dry cleaning facilities and stationary sources.) The increased level of effort specifically being targeted towards fugitive dust sources is evidenced by the significant number of inspections and corrective action orders concerning fugitive dust sources in 2001 and 2002, which we address in detail in section E.7.b of this TSD.

¹⁷³ All funding for the new staff is actually being provided from the Clark County general fund, per August 4, 2002 conversation with Rodney Langston, Clark County DAQM.

¹⁷⁴ Letter from Robert Folle, Clark County DAQM, to Karen Irwin, EPA Region IX, October 1, 2002 ("October 2002 DAQM letter").

The Clark County District Board of Health¹⁷⁵ ensures that the resources needed to implement the air quality program are provided. Chapter 4, pg. 4-132. Clark County projects future year resources to require \$12,133,422 for FY 2001-2002, \$12,573,490 for FY 2003-2004, and \$15,079,268 for FY 2005-2006. The State of Nevada has ultimate responsibility for ensuring the adequate implementation of the Clark County air quality program according to NRS 445B.520. This statute allows the State Environmental Commission to supersede a County's program when the Commission determines that a local air quality program is inadequate.

The five public transportation departments that have made SIP commitments to pave unpaved roads and unpaved shoulders are using Congestion Management Air Quality (CMAQ) funds. The Plan indicates that the current (fiscal year 2001 through 2003) Transportation Improvement Program commits the use of CMAQ funds not to exceed \$25 million to meet the PM-10 SIP commitments and that this will result in the obligation of these funds to roadway shoulder improvements and the paving of unpaved roads by June 30, 2003 in accordance with each entity's plan. Furthermore, the Plan states that the remaining CMAQ funds beyond fiscal year 2003 after the necessary carbon monoxide transportation demand management program funds have been allocated will be used towards completing each entity's plan for roads and shoulders by December 31, 2006. Chapter 4, pgs. 4-129 and 4-130.

Legal authority:

The following demonstrate legal authority to adopt and enforce provisions of the SIP.

- The Clark County Board of Commissioners (Adoption of the plan). State authority is contained in the Nevada Revised Statutes (NRS) 445B.100 through 445B.845 and applicable Nevada Administrative Codes. District/County authority is specified in NRS 445B.500 and District Air Pollution Regulations.
- The County and City Public Works Departments (authority to improve and maintain roads): NRS 244.155
- The Nevada Department of Transportation (authority to improve and maintain roads): NRS 408.100.4 & 408.100.5

We propose to find that the implementing agencies for the Clark County serious area plan have adequate resources for implementing their respective commitments that are included in the submitted plan. We also propose to find that the plan adequately describes the resources that are available or will be available to the State and local agencies to carry out the

¹⁷⁵ After a reorganization, the Clark County Department of Air Quality Management has full authority to fund air quality programs.

plan, both now and over the next 5 years. See discussion of the individual commitments and control measures earlier in this TSD.

All agencies and jurisdictions appear to have adequate authority under Nevada state law to implement their respective commitments and, where applicable, to obtain information necessary to determine compliance. We, therefore, propose to find that these agencies/jurisdictions have demonstrated that they have adequate legal authority to implement the plan.

b. Description of the Enforcement Methods and State Back-up Authority

What are the requirements?

Section 110(a)(2)(C) requires SIPs to include a program to provide for the enforcement of SIP measures. The implementing regulation for this section is found at 40 CFR §51.111(a) and requires control strategies to include a description of the enforcement methods including 1) procedures for monitoring compliance with each of the selected control measures, 2) procedures for handling violations, and 3) the designation of the agency responsible for enforcement.

Section 110(a)(2)(E)(iii) requires SIPs to include necessary assurances that where a State has relied on a local or regional government, agency or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision.

Finally, we interpret the phrase “BACM implementation” per CAA section 189(b) to broadly include the State’s and/or other responsible agency’s efforts to ensure source compliance with the measures that have been adopted (i.e., the concept of BACM implementation goes beyond the mere adoption of requirements). Adequate enforcement of adopted BACM is necessary to ensure the emission reductions actually occur.

In this section we primarily address enforcement procedures and policies. We address other efforts related to increasing source compliance in the attainment demonstration section of this TSD that discusses rule effectiveness assumptions (Section E.8.b).

How are the requirements addressed in the plan?

The principal control measures in the plan are the adopted requirements in Sections 90 through 94 and the Plan’s SIP commitments for unpaved shoulders and roads. Procedures for monitoring compliance (i.e., the inspection strategy) with these requirements are described in Chapter 4 of the Plan, section 4.8.1 and Appendix H.

We have discussed in the previous section the significant increase in field

enforcement officers and other compliance personnel to handle fugitive dust cases. Clark County exceeded its SIP commitment to hire an additional 15 personnel.

Clark County relies upon two options for handling noncompliant sources: issuing a Corrective Action Order (CAO) or a Notice of Violation (NOV). In 2001, the County issued 1,316 CAOs and in 2002 (as of August 31) issued 1,775 CAOs. In 2001, the County issued 57 NOVs and in 2002 (as of August 31) issued 133 NOVs. The penalties assessed for the two years combined amount to \$719,372.¹⁷⁶ CAOs are generally written for infractions that are not substantial enough to warrant an NOV, allowing source owners/operators a first-time chance to comply. NOVs are issued for more serious violations. Should owners/operators fail to comply with a CAO, it becomes a NOV with associated penalties. Previously, the County had issued Notices of Concern for vacant land infractions, but this practice ended in April 2002.¹⁷⁷

Clark County's authority to issue and collect administrative penalties comes from NRS 445B.500 for penalties and NRS 445B.275 for Hearing Boards. Section 7 of Clark County Air Quality Regulations establishes the local procedures for the Hearing Officers and Hearing Board. Section 7 provides that the Hearing Board Officers be selected by the District Board of Health and have the authority to levy penalties for alleged violations in accordance with Section 9 of Clark County regulations.

The minimum penalties for violations of fugitive dust requirements are contained in Section 9 of Clark County regulations. The minimum penalty for limiting visible emissions is \$2,000. The minimum penalty for not complying with other control measure provisions is \$1,000. Minimum penalties for failing to comply with administrative requirements related to permit conditions is \$500 and \$250 for other administrative requirements. Clark County compared these minimum penalties for dust violations to those of other air regulatory agencies and found that they were among the highest in the nation. Appendix L, pg. L-2.

Clark County's enforcement staff utilizes the county Geographic Information System (GISMO) to obtain detailed aerial photographs to locate and identify large parcels of vacant land to inspect and characterize.¹⁷⁸ The DAQM continues to expand the existing vacant land program by identifying and systematically inspecting the problem areas and the larger

¹⁷⁶ October 2002 DAQM letter, pg. 3.

¹⁷⁷ Information communicated in a phone conversation by Robert Folle, Clark County DAQM to Karen Irwin, EPA Region IX and Charles Aldred, EPA Region IX, September 17, 2002.

¹⁷⁸ October 2002 DAQM letter, pg. 6.

parcels.¹⁷⁹ For example, Clark County prioritizes vacant lot sites with high silts; in particular, the County is looking at the North Central area, which has fine, silty soil.¹⁸⁰ Clark County conducted a total of 2,203 vacant land inspections in 2001 and 1,840 vacant land inspections in 2002 (as of August 31).¹⁸¹ The Compliance Division has a member on staff who coordinates all activities and concerns with two government agency large vacant landowners, the Bureau of Land Management and the Bureau of Reclamation, in order to ensure close cooperation with these agencies.¹⁸²

Clark County conducted a total of 2,249 construction site inspections in 2001 and 2,770 construction site inspections in 2002 as of August 31.¹⁸³ Complaints are given priority for inspection, however, enforcement officers also inspect construction sites within their assigned area on a routine basis, including non-permitted construction activities as they are encountered in the field. (Appendix L, pg. L-11). Clark County received 668 complaints regarding construction sites and 291 complaints concerning other fugitive dust sources in 2002 as of August 31.¹⁸⁴

Miscellaneous requirements of Section 94 that assist enforcement and compliance efforts for construction sites include:

- C Subsection 94.4.5 requires that a sign be posted at permitted construction sites with DAQM contact information regarding dust complaints.
- C Subsection 94.6.1 requires a surety bond to cover the cost of the dust control measures when three or more violations occur within 180 days
- C Subsection 94.6.3 provides that a permit may be revoked or suspended when three notices of violation have been issued
- C Subsection 94.6.9.4 provides that Clark County may, after giving due notice, take appropriate corrective action to remedy a dust problem where the owner or operator fails to do so and assess the cost to the responsible party
- C Subsection 94.4.11 requires a responsible person at construction sites with more than 50 acres of actively disturbed soil to monitor compliance dust control and other

¹⁷⁹ Op. Cit., pg. 5.

¹⁸⁰ Information communicated in a phone conversation by Robert Folle, Clark County DAQM to Karen Irwin, EPA Region IX, September 17, 2002.

¹⁸¹ October 2002 DAQM letter, pg. 3.

¹⁸² Op. Cit., pg. 6.

¹⁸³ Op. Cit., pg. 3.

¹⁸⁴ Op. Cit., pg. 4.

Section 94 requirements.

The DAQM's Compliance Division also conducts training and outreach for fugitive dust sources to improve compliance. We discuss these efforts in detail in Section E.8.b of this TSD.

Clark County tracks progress of government agencies on their unpaved road and paved road SIP commitments through a PM-10 SIP Implementation Working Group and an Unpaved Road Ad Hoc Committee. These groups are comprised of DAQM planning and compliance staff and staff from the County and City public works agencies.¹⁸⁵ Unpaved road paving is documented using an extranet site and the unimproved shoulders program will be reviewed annually through submittal of annual reports to the DAQM.¹⁸⁶

We propose to find that the Clark County PM-10 Plan adequately provides for the enforcement of the principal measures relied on for attainment measures and that Clark County has provided adequate descriptions of its enforcement methods as required by our regulations.

With regard to Section 110(a)(2)(E)(iii), as stated in the previous section, the State of Nevada has ultimate responsibility for ensuring the adequate implementation of the Clark County air quality program according to NRS 445B.520. This statute allows the State Environmental Commission to supersede a County's program when the Commission determines that a local air quality program is inadequate.

8. Demonstration of Attainment

a. Air Quality Modeling

What are the requirements?

The basic attainment demonstration requirement is that the states show that enforceable control measures will be sufficient to reduce ambient 24-hour average PM-10 concentrations to under $150 \mu\text{g}/\text{m}^3$ by the end of 2001 and annual PM-10 concentrations to under $50 \mu\text{g}/\text{m}^3$, or if attainment is impracticable by that date, as expeditiously as practicable but no later than the end of 2006 (CAA section 189(b)(1)(A)). We addressed in further detail the modeling requirements and guidance in Section E.5.3 of this TSD.

¹⁸⁵ October 2002 DAQM letter, pg. 3.

¹⁸⁶ Appendix L, pg. L-12.

How are the requirements met in the plan?

As discussed in the modeling domain (section E.3 of this TSD), under the microinventory approach, current conditions are deemed representative of conditions that can lead to high PM-10 concentrations in the future, though possibly in a different location. Thus, the microinventories are not projected into the future, except for the effect of controls. With land use changes, Clark County anticipates that valley-wide emissions will decline (vacant land gets developed, and no longer emits). Nevertheless, for both the annual and 24-hour attainment demonstrations, Clark County conservatively assumed baseline concentrations remain constant when projected to the target year 2001 to account for some uncertainty in the acres of vacant land developed between 1998 and 2001.¹⁸⁷

The effects of control measures (described in Chapter 4) upon concentrations are shown in Chapter 5, Tables 5-1 through 5-19. Pre- and post-control emissions are apportioned to concentration levels according to Formula 2 discussed in Section E.3 of this TSD. Clark County predicted that an annual reduction of 5.66% (equivalent to 9,657 tons valley-wide and 303 tons for the J.D. Smith micro-inventory area) is needed to attain the annual 50 µg/m³ standard, given an estimated uncontrolled concentration of 53 µg/m³. The valley-wide rollback modeling results in Table 5-11 for the annual NAAQS shows PM-10 predicted to be 46.2 µg/m³ in 2001, below the NAAQS of 50 µg/m³. Table ATT-1 summarizes the percent reduction estimated and resulting concentrations that add up to this value.

TABLE ATT-1 2001 ANNUAL BLM DISPOSAL AREA CONTROLLED EMISSIONS AND ATTAINMENT CONCENTRATION		
Source	Percent Reduction	Impact on Attainment Concentration (µg/m³)
Disturbed Vacant Land	-36.00	4.53
Paved Roads	-7.61	10.87
Construction (activity)	-34.00	3.26
Construction (windblown)	-35.47	2.54
Unpaved Roads	0	4.05
Highway const. (activity)	-34.00	0.39
Highway const. (windblown)	-35.29	0.20

¹⁸⁷ Chapter 5, pg. 5-5.

TABLE ATT-1		
2001 ANNUAL BLM DISPOSAL AREA CONTROLLED EMISSIONS AND ATTAINMENT CONCENTRATION		
Source	Percent Reduction	Impact on Attainment Concentration ($\mu\text{g}/\text{m}^3$)
All other sources	0	3.86
Background	0	16.5
Total	----	46.20

Table 5-12 of the Plan shows the corresponding microinventory result for J.D. Smith, the exceeding site; the projection is $48.5 \mu\text{g}/\text{m}^3$, also less than $50 \mu\text{g}/\text{m}^3$. Together, these demonstrate attainment of the annual PM-10 NAAQS by 2001. The adequacy of the Plan's attainment demonstration for the annual PM-10 standard by December 31, 2001 is further supported by information provided by the DAQM indicating that the three-year annual average (1999-2001) of the microscale sites is below the standard.¹⁸⁸

Because there are five representative microscale sites in addition to a valley-wide emissions inventory, there are six 24-hour design values. The percent reduction needed to attain the 24-hour standard thus varies between 20.6% and 46.6%. Table 5-15 of the Plan shows the valley-wide rollback projection for 2006. We have summarized these estimates in Table ATT-2 below.

TABLE ATT-2		
2006 24-HOUR BLM DISPOSAL AREA CONTROLLED EMISSIONS AND ATTAINMENT CONCENTRATION		
Source	Percent Reduction	Impact on Attainment Concentration ($\mu\text{g}/\text{m}^3$)
Disturbed Vacant Land	-72.00	3.70
Paved Roads	-28.97	78.71
Construction (activity)	-68.00	8.93
Construction (windblown)	-69.89	18.64
Unpaved Roads	-64.61	13.36

¹⁸⁸ June 2002 RFP Report, pgs. 9-10.

TABLE ATT-2 2006 24-HOUR BLM DISPOSAL AREA CONTROLLED EMISSIONS AND ATTAINMENT CONCENTRATION		
Source	Percent Reduction	Impact on Attainment Concentration ($\mu\text{g}/\text{m}^3$)
Highway const. (activity)	-68.00	1.07
Highway const. (windblown)	-69.17	1.52
All other sources	0	10.61
Background	0	10.5
Total	----	147.04

With respect to the 24-hour NAAQS, the estimated valley-wide rollback for 2001 has a value of $209 \mu\text{g}/\text{m}^3$, still considerably above the NAAQS. See Table 5-13 of the Plan. This is because the control measures upon which Clark County is relying to demonstrate attainment of the 24-hour standard will not be fully implemented until the end of 2003.¹⁸⁹ The County's strategy plans for three years of emissions below the 24-hour standard beginning in 2004, thus allowing for attainment (based on three years of monitoring data) to be achieved by the end of 2006.

Tables 5-15 through 5-19 of the Plan show the corresponding projections for the five microinventory areas. Clark County also estimates the percent reduction at each of the five microscale sites. The overall percent reduction at each of the sites ranges from 48 to 65, resulting in 2006 concentrations ranging from 111 to $134 \mu\text{g}/\text{m}^3$. All are under $150 \mu\text{g}/\text{m}^3$, demonstrating attainment of the 24-hour NAAQS by 2006.

Our detailed evaluation that the attainment demonstration reflects all required control measures, the assumptions applied by Clark County are reasonable, and a 2006 extension is warranted, can be found in subsequent sections.

b. Emission Reductions from Control Measures

What are the requirements?

We look at four factors to assure that the reductions credited in the attainment demonstration are appropriate and that attainment is demonstrated as expeditiously as practicable.

¹⁸⁹ Chapter 5, pg. 5-21.

1. Each measure is approved or proposed for approval into the SIP

The minimum pre-requisite for crediting a measure into an attainment demonstration is that it is in the SIP or will be made part of the SIP concurrently with the action on the attainment demonstration.

2. Each measure meets basic SIP-enforceability standards

This factor is really a subset of the previous one since a measure must meet basic enforceability standards before we can approve it into the SIP. The SIP-enforceability standards we are evaluating here are usually described as standards for “practical” enforceability.¹⁹⁰ Practical enforceability of a measure is really a question of assuring that the measure is explicit in its compliance requirements. In general, practical enforceability is demonstrated for a measure when the measure has:

- a clear statement of applicability, that is, to whom, to what, and when does the measure apply,
- a clear and measurable performance standard, that is, the limit or requirement that must be met and/or what action must be taken is clear and must be capable of being measured, monitored, or otherwise explicitly tracked,
- a specified compliance schedule, that is, the time frames in which the requirements in the measure are to be met are clearly specified,
- a method for measuring/monitoring/tracking the standard.

See the *General Preamble* at 13567 and memorandum, J. Craig Potter, “Review of State Implementation Plans and Revisions for Enforceability and Legal Sufficiency,” September 23, 1987 (Potter memo) for a further discussion of these enforceability criteria.¹⁹¹

3. Emission reductions credited to each measure are reasonable and consistent with the implementation resources and schedule

¹⁹⁰ There are actually two distinct standards for “enforceable” that must be met for SIP measures: practical enforceability and legal authority. Legal authority is the assurance that the implementing agency has the legal authority under State and federal law to adopt, implement, and enforce the measure. See CAA section 110(a)(2)(E). We address this legal authority requirement elsewhere in this TSD.

¹⁹¹ We note that if the measure involves a one-time permanent action, such as paving, the Potter memo may be overly prescriptive, e.g., a formal test method is not required to determine if a road has been paved.

The emission reductions assigned to each measure in the attainment demonstration must be reasonable for the type of control, the source category, and the resources available for implementing and enforcing the measure. The rate at which emission reductions are claimed in an attainment demonstration and reasonable further progress demonstration must reflect the implementation schedule for the measure.

Emission reduction (ER) denotes the actual reduction that can be achieved when the control measure is properly applied to a specific activity or source. For example, if an unpaved road is paved or chemically treated, the Plan assumes a different percentage reduction for each of these measures for any given individual source.

Rule penetration (RP) is the percentage of a total source category that a particular rule or measure will impact, accounting for applicability thresholds. For example, if the rule applies to unpaved roads with 150 vehicle trips per day or more, the rule penetration would be the emissions generated by such roads as a percentage of the unpaved roads category.

Rule effectiveness (RE) denotes the expected rate of compliance with a rule, accounting for emission reductions lost due to noncompliance, control equipment downtime, failure to apply adequate controls, or failure to use control equipment properly. One hundred percent rule effectiveness is the ability of a regulatory program to achieve all the emission reductions that could be achieved by full compliance with the applicable regulations at all sources at all times.

We have established policies on applying rule effectiveness factors for both base year and projected year inventories of volatile organic compounds (VOC), a precursor to ozone. See *General Preamble* at 13503 and “Rule Effectiveness Guidance: Integration of Inventory, Compliance, and Assessment Applications.” USEPA, OAQPS, EPA-452/R-94-001, January 1994, (RE Guidance). In general, we encourage states to derive local category-specific RE factors. If there are no such local RE factors, we require the use of an 80 percent effectiveness default value. *General Preamble* at 13503.

The items that influence compliance with a rule and thus the appropriate RE factor are the clarity of the rule, its compliance requirements and the complexity of the controls required by the rule; the source’s actions; and the implementing agency’s actions. See RE Guidance, pp. Table 1-1 and Appendix C.

We have not established any explicit guidance for applying RE to particulate matter sources. We know, however, that PM sources, like VOC sources, are not in full compliance with applicable rules at all times; therefore, some RE factor needs to be applied. For this rulemaking, we have applied the existing Agency RE guidance for VOC sources to emission reduction estimates for the Clark County control measures.

The overall reduction for a rule is calculated by multiplying the emissions reduction

by the rule penetration and multiplying the result by the rule effectiveness.

4. The measures must collectively be implemented on the most expeditious schedule practicable

If attainment is impracticable by December 31, 2001, Section 189(b)(1)(A)(ii) requires that the plan show attainment by the earliest alternative date practicable. In a plan that includes the feasible BACM and MSM, the principal means of demonstrating expeditious attainment is by implementing the BACM and MSM on an expedited schedule.

How are the requirements met in the plan?

1. Each measure is approved or proposed for approval into the SIP

The applicable BACM for the Clark County SIP are found in Sections 90 through 94 and in the Plan's SIP commitments. Sections 90 through 94 have been adopted by Clark County and submitted with the Plan for EPA's approval into the SIP. Some additional measures have been proposed for inclusion in Sections 90 through 94 which have not yet been adopted. Clark County's November 2002 SIP Amendment provides a new deadline of March 31, 2003 by which these measures will be adopted. These are all addressed in the BACM/MSM evaluations in this TSD for each significant source category. Some control measures for significant source categories that have not been adopted as rules (e.g., unpaved shoulder improvements) have been included in the Plan as commitments for inclusion into the Nevada SIP. For detailed discussion, see the BACM/MSM evaluations of this TSD.

2. Each measure meets basic SIP-enforceability standards

We propose to find that each control measure upon which the SIP is relying for emission reductions meet basic SIP-enforceability standards. We addressed enforceability criteria for each significant source category in the BACM/MSM evaluation, Section E.5 of this TSD.

3. The emission reductions credited to each measure are reasonable and consistent with the implementation resources and schedule

Clark County calculates overall rule reduction by accounting for the appropriate factors, including emission reduction, rule penetration, and rule effectiveness. Table ATT-3 shows the measures upon which Clark County is relying for demonstrating attainment.

TABLE ATT-3					
2006 VALLEY-WIDE CONTROL ASSUMPTIONS FOR FUGITIVE DUST SOURCES					
Source (sub)category	Control provided by...	ER (%)	RP (%)	RE (%)	Overall Control Effect (%)
Disturbed Vacant Land/Unpaved Parking Lots ¹⁹²	Sections 90 and 92	91 ¹⁹³	99 ¹⁹⁴	80 ¹⁹⁵	72

¹⁹² The extent of unpaved parking lots affected by the regulation was not determined on a valley-wide basis but instead grouped within the disturbed vacant land category. However, emission reductions attributable to Section 92 controls for unpaved parking lots were separately calculated for the two microscale areas that included unpaved parking. The assumed emission reductions, rule penetration and rule effectiveness estimates for the two micro-inventory areas are included in Chapter 4, pg. 4-52 of the Plan. The estimated emission reductions from unpaved parking lots within the micro-inventory areas amounts to 0.46 tpd.

¹⁹³ This ER factor is an average based on UNLV's assessment of seven different control measures applied to disturbed vacant land, including watering. While it is difficult to predict which control measures will be used, the Plan assumes that most owners will comply using water or dust palliatives.

¹⁹⁴ For the 10% of vacant land assumed to be disturbed and unstable in the 1998 base year (Appendix B, pg. B-7), Clark County estimates that the RP of Section 90 will be 99 percent based on information from the Clark County Assessor's database regarding the size distribution of vacant parcels less than 5,000 square feet.

¹⁹⁵ Clark County conservatively applies a 40% RE in 2001, which increases to 80% by 2006. In support of the 80% RE, Clark County cites increases in enforcement staff and that vacant lot inspections will be prioritized based on satellite imagery and areas known to have problem soils, as well as complaints received. Appendix L, pg. L-10. (Also see Section E.7.b of this TSD.) In addition, in order to increase awareness among vacant lot owners/operators of new disturbed vacant lot requirements, Clark County prepared and distributed a brochure titled "Landowners: New Vacant Land Regulations May Affect You" to over 40,000 vacant landowners that summarizes Section 90 requirements. (October 2002 DAQM letter, pg. 6.)

TABLE ATT-3					
2006 VALLEY-WIDE CONTROL ASSUMPTIONS FOR FUGITIVE DUST SOURCES					
Source (sub)category	Control provided by...	ER (%)	RP (%)	RE (%)	Overall Control Effect (%)
Construction (activity)	Section 94 and Section 94 Handbook	87 ¹⁹⁶	98 ¹⁹⁷	80 ¹⁹⁸	68

¹⁹⁶ For construction sites in the 1998 base year emissions inventory, Clark County assumes an ER of 50% control efficiency from watering based on EPA's 1988 guidance document "Control of Open Fugitive Sources". Clark County estimates that the ER will increase to 87% for the 2006 demonstration given that sites will be better controlled through the required use of tackifiers or surfactants on certain soils and the overall program strengthenings that should result in the more effective application of water. Appendix L pg. L-3 and L-4.

¹⁹⁷ This RP factor is based on a review of construction activities permits previously issued that showed sites less than 1/4 acre (which are not subject to Dust Control Plan requirements) accounted for less than 1.5 percent of all construction permits. Thus while all construction activities in the nonattainment area are subject to control under Section 94, Clark County conservatively sets the rule penetration value at 98 percent.

¹⁹⁸ For construction sites, Clark County has conservatively assumed a relatively low RE of 40% in 2001. The County states the belief that 10 enforcement officers are sufficient to adequately enforce the Section 94 requirements, yet the hiring process for these new officers was not to be complete until the end of 2001. Appendix L, pg. L-10. In addition to hiring additional enforcement officers, other efforts Clark County has engaged in to improve compliance for construction sites include compliance assistance through publishing and distributing a 7 inch by 5 inch manual titled the "Quick Look Book" that summarizes the Section 94 and Section 94 Handbook requirements in an easy-to-comprehend format. Also, dust control classes and educational workshops are regularly offered. Section 94 requires the construction site superintendent or designated on-site representative and water truck and water pull drivers for each construction project to successfully complete a Dust Control Class and all individuals required to attend must successfully complete the Dust Control Class at least once every three years. See Section 94, subsections 94.7.3 through 94.7.5. 8 of Chapter 4. A special effort to train Dust Control Monitors per the Section 94.4.11 requirement was made by the DAQM in 2002. To date, two Dust Monitor classes have been held with over 90 participants. Clark County credits this program (the requirement for a Dust Control Monitor) with drastically reducing fugitive dust problems from the larger construction sites. We refer to Section E.7.b for details regarding Clark County's enforcement program for construction sites. With increased enforcement officers, the RE factor rises to 64% in 2002. Clark County does not assume that the RE increases to 80% (the allowed default factor) until 2003 in order to account for development of better construction site test methods per the applicable SIP commitment in Chapter 4 which, in combination with increased enforcement staffing, will allow the full rule effectiveness to be achieved. Appendix L, pg. L-11.

TABLE ATT-3					
2006 VALLEY-WIDE CONTROL ASSUMPTIONS FOR FUGITIVE DUST SOURCES					
Source (sub)category	Control provided by...	ER (%)	RP (%)	RE (%)	Overall Control Effect (%)
Construction (trackout)	Section 94 and Section 94 Handbook	28 ¹⁹⁹	98	80	22
Construction (windblown)	Section 94 and Section 94 Handbook	91	98	80	71
Paved roads	Section 93 and SIP commitment for shoulders	Values by VMT and road type ²⁰⁰	95 ²⁰¹ (shoulders only)	95 ²⁰² (shoulders only)	71

¹⁹⁹ The ER for controlling trackout from construction sites is 28 percent. This is based on specific silt loading measurements taken on roads within the Las Vegas Valley before and after construction site egress points, considering the control provided by different trackout control devices.

²⁰⁰ Clark County determined that reductions in silt loadings on paved roads do not result in linear percentage reductions of PM-10 emissions. Chapter 4, pg. 4-71. Therefore, emission reductions were calculated separately according to vehicle miles traveled and silt loading for each road class rather than linear rollback. Emission reductions include reductions from silt loading from all control measures except street sweeping (estimated at 15% in 2001 and 30% in 2006 for each road class), reduced deposition from other sources, improving unstabilized shoulders and reduced trackout from construction activities. See Appendix L, pgs. L-5 and L-6 for details.

²⁰¹ This RP factor for unpaved road shoulders along paved roads is based on Section 93 requirements and the SIP commitment of governmental entities to inventory and stabilize unimproved shoulders.

²⁰² This RE assumed in 2006 for improving unpaved shoulders is based on governmental agency commitments. Clark County tracks compliance with unpaved road and shoulder requirements and governmental agency commitments through a PM-10 SIP Implementation Working Group and an Unpaved Road Ad Hoc Committee comprised of DAQM planning and compliance staff and staffs of the various public works agencies in Clark County. (October 2002 DAQM letter pgs. 2-3.)

TABLE ATT-3					
2006 VALLEY-WIDE CONTROL ASSUMPTIONS FOR FUGITIVE DUST SOURCES					
Source (sub)category	Control provided by...	ER (%)	RP (%)	RE (%)	Overall Control Effect (%)
Unpaved roads	Section 91 and SIP commitment for roads	99	66 ²⁰³	99 ²⁰⁴	65

Table ATT-3 does not contain reductions attributable to race track emissions because they were only calculated with respect to the two microscale areas where they were deemed significant contributors to 24-hour concentrations. The race track emission reductions factors assumed in the Plan are 91 percent for wind erosion and 100 percent for vehicle emissions. The rule penetration factor for both wind erosion and vehicle emissions is 99 percent. The rule effectiveness factor for both wind erosion and vehicle emissions is 80 percent. Therefore, the overall control reduction assumed for wind erosion and vehicle emissions from race tracks at the micro-inventory sites is 72 percent and 79 percent, respectively.

We find that the emission reduction estimates for each source category are consistent with available research on the applicable control methods and rule penetration estimates are reasonable based on emissions inventory data. We also find that rule effectiveness estimates are reasonable given the schedule for adoption of measures and other factors.²⁰⁵ Emissions reductions credited based on these estimates are appropriately applied in the attainment demonstrations.

4. The measures must collectively be implemented on the most expeditious schedule

²⁰³ This RP factor for unpaved roads applies beginning in 2003 and is based on emission reductions associated with unpaved roads determined to have 150 or more average vehicle trips.

²⁰⁴ This RE factor for unpaved roads is based on the SIP commitments by governmental agencies to pave unpaved roads. Unpaved road paving is tracked (i.e., documented) using an extranet site and the Public Works Departments in Clark County routinely track paved road performance and maintenance by checking the condition of paved roads in their respective jurisdictions. Appendix L, pg. L-12.

²⁰⁵ For example, for disturbed vacant lands and construction sites, Clark County conservatively applies a 40% RE in 2001, which increases to 80% by 2006. We believe this is supported by Clark County's increased efforts to conduct public outreach and education, dust control classes, routine and frequent inspections for fugitive dust sources, test method revisions and program evaluations and improvements over this time period. In total, Clark County addresses the main programmatic areas that are key to improving source compliance.

practicable

Effective dates of regulations and SIP commitments:

- C Section 90, vacant lot requirements became effective on January 1, 2001. Thus the rule requirements applied prior to adoption of the PM-10 Plan in June 2001.
- C Section 91, unpaved road requirements, prohibit new unpaved roads as of June 22, 2000. Thus the rule requirements applied prior to adoption of the PM-10 Plan in June 2001. For existing unpaved roads, Section 91 requires 1/3 of the unpaved roads with > 150 vehicle trips per day to be stabilized by 2001, 2/3 of the roads with > 150 vehicle trips per day to be stabilized by 2002, and the remaining roads that exceed the vehicle trip threshold to be stabilized by 2003. Clark County indicates that the CMAQ funding obligated by the responsible government agencies (totaling over \$25 million) will support completing approximately one-third of the total paving requirement for each year from 2001 to 2003. Chapter 7, pg. 7-4.
- C Section 92, unpaved parking lot requirements, became effective on June 22, 2000 for new parking lots and on July 1, 2001 for existing parking lots. Thus the rule requirements applied prior to adoption of the PM-10 Plan in June 2001.
- C Section 93, paved road requirements, became effective on January 1, 2001. Thus the rule requirements applied prior to adoption of the PM-10 Plan in June 2001.
- C The SIP commitment by governmental entities to stabilize unpaved shoulders provides for stabilization of 33 miles of shoulders by the end of 2003 and all shoulders by the end of 2006. This schedule allows time for public works agencies to complete an inventory of the unpaved shoulders in their respective jurisdictions and adopt schedules under capital improvement programs to stabilize shoulders each year using the appropriated CMAQ funds.
- C Section 94, construction site requirements, became effective on January 1, 2001. Thus the rule requirements applied prior to adoption of the PM-10 Plan in June 2001.
- C The Section 94 SIP commitment to incorporate new test methods into the regulation by December 2002 accounts for the need for the County, EPA and other interested parties to conduct field research to evaluate and determine appropriate alternative methods.
- C Other research commitments with varying implementation timeframes appear to be reasonable in light of specific needs identified. See the "SIP commitments" subsections of Section E.5 of this TSD.

The remaining BACM/MSM for which Clark County has made a SIP commitment to implement by revising Sections 90 through 94 by March 31, 2003 include a requirement for dust management plans for large tracts (i.e., 10,000 acres or more) of governmentally owned lands, prohibiting new unpaved parking lots, construction of new or modified paved road shoulders with eight feet of stabilized shoulder, prohibiting the use of dry rotary brushes, and limiting use of crack seal equipment to vacuum type equipment. Clark County also committed to add property line limit and 100-foot plume performance standards to Sections

92 and 94.

In supporting material for the November 2002 SIP Amendment, Clark County provides justification as to why these revisions were not expeditiously adopted according to the original deadline of August 2001 included in the SIP commitment. While important strengthenings to the SIP, the already adopted measures provide the main basis for our findings concerning adoption of measures on the most expeditious as practicable schedule. This is because the revisions would provide incremental reductions above an already-adopted baseline that should achieve substantial immediate reductions. For example, while a requirement for dust management plans for large tracts of land should improve compliance and emissions reductions resulting from implementation of Section 90, requirements for large disturbed vacant parcels are already encompassed in the Section 90 requirements which were expeditiously adopted. The proposed measure will simply help the County ensure that the full emissions reductions anticipated from disturbed vacant land are achieved by the 2004-2006 timeframe (upon which the 24-hour attainment demonstration is based). With respect to prohibiting new unpaved parking lots, Section 92 requirements (which were also expeditiously adopted) already require all unpaved parking lots $\geq 5,000$ square feet to be stabilized, whether newly constructed or existing. This provides the baseline emission reductions anticipated from the unpaved parking lot source category. Requiring that new unpaved parking lots be paved will simply ensure an incremental benefit in emission reductions for new lots than is already provided for under Section 92 (since paving is estimated to result in a slightly higher percentage of control compared to application of dust palliatives).

Schedule for enhanced enforcement/rule implementation:

Clark County's SIP commitment to hire an additional staff to implement and enforce the new regulations provided for all new positions to be filled by the end of 2001. This commitment was met and exceeded as noted in Section E.7.a of this TSD. As evidenced by the significant number of fugitive dust source inspections conducted by the County in 2001 and 2002 to date, we believe enforcement efforts have significantly increased since the Plan was adopted. We propose to find that the enhanced enforcement and compliance-related efforts relied upon in the SIP are being implemented as expeditiously as practicable.

Conclusion

We propose to find the schedule for implementation of measures in the Clark County PM-10 nonattainment area meets the "as expeditious as practicable" standard.

c. Extension Request

Clark County is requesting a five-year extension for attaining the 24-hour PM-10 standard. The documentation supporting Clark County's extension request is found in

Chapter 7 of the Plan.

The factors EPA needs to consider for an extension request for up to five years per CAA section 188(e) are as follows:

- i. Demonstrate the impracticability of attainment by December 31, 2001
- ii. Complied with all requirements and commitments in its implementation plan
- ii. Demonstrate the plan includes the most stringent measures
- iv. Demonstrate attainment by the most expeditious alternative date practicable after December 31, 2001
- v. Other factors that EPA may consider in granting an extension request

i. Impracticability demonstration for 24-hour standard

Clark County has demonstrated attainment of the 24-hour standard by 2001 is impracticable. This is primarily based upon the need for increased enforcement staffing, which could not be completed until the end of 2001. Clark County conservatively assumes that the rule effectiveness of its regulations in 2001 is half of what it will need to be in 2006 to demonstrate attainment of the 24-hour standard.

Also, with respect to the unpaved roads schedule, Clark County indicates that the maximum benefit that will be realized at the end of 2003 from the CMAQ funding cannot practicably be achieved earlier due to funding limitations each year. Chapter 7, pg. 7-4. Notwithstanding, we note from the June 2002 RFP Report that the responsible entities have exceeded the Section 91 required 33 percent paving of roads subject to the rule by 2001 and reported paving 86 percent, or a total of 55 of the 64 mile inventory of unpaved roads with 150 vehicle trips per day. This demonstrates the commitment of Clark County governmental entities to implement control measures as expeditiously as practicable.

With respect to improvements to paved road shoulders, Clark County has committed to stabilize 33 miles of paved road shoulders by the end of 2003 within the limitations each year using appropriated CMAQ funds. The remaining shoulders have a later implementation date given that new CMAQ funds will need to be appropriated and first committed towards the carbon monoxide transportation demand management program, followed by use towards paving shoulders. Thus, earlier implementation would be impracticable.

The modeled valley-wide 24-hour value for 2001 is $209 \mu\text{g}/\text{m}^3$. Although this is a significant reduction from the projected design day value of $281 \mu\text{g}/\text{m}^3$, it still falls far short of the $150 \mu\text{g}/\text{m}^3$ standard.

Thus, we propose to find that Clark County has demonstrated the impracticability of meeting the 24-hour standard by 2001.

ii. Compliance with all requirements and commitments in the implementation plan

We interpret this criterion to mean that the State has implemented the control measures in prior SIP revisions it has submitted to address the CAA requirements in sections 172 and 189 for PM-10 nonattainment areas. It does not include measures being approved in this action.

All measures upon which Clark County is relying to meet the applicable CAA requirements for a Serious Area PM-10 plan are included or referenced in the current June 2001 Plan as amended by Clark County in November 2002.

iii. Demonstration of the most stringent measures adopted

We propose to find that the Clark County serious area PM-10 plan demonstrates to our satisfaction that it includes the most stringent measures that are included in the implementation plan of any State, or are achieved in practice in any State, and can be feasibly implemented in the Clark County area as required in CAA section 188(e) for areas being granted an extension of the attainment date.

We have discussed identification and adoption of MSM and the rejection of any MSM for each category deemed significant for BACM in the “BACM and MSM Implementation” section (E.5) of this TSD. For categories deemed de minimis, the MSM test is to determine whether controlling or further controlling the categories would meaningfully expedite attainment. As discussed in Section E.6 of this TSD, we believe Clark County has adequately demonstrated that new or additional controls on source categories deemed de minimis would not expedite attainment of the 24-hour standard.

iv. Demonstration of attainment by the most expeditious alternative date practicable after December 31, 2001

For any serious PM-10 nonattainment area seeking an extension of the compliance date beyond December 31, 2001, the plan must provide for attainment by the most expeditious alternative date practicable. This demonstration must be based on air quality modeling. See CAA sections 189(b)(1)(A)(ii) and 188(e).

There are two parts to reviewing a modeled attainment demonstration: 1) evaluating the technical adequacy of the modeling itself, and 2) evaluating the control measures that are relied on to demonstrate attainment. We have evaluated both of these factors in Section 8.a and 8.b of this TSD and propose to find that the Clark County PM-10 Plan provides for expeditious attainment by the most expeditious alternative date practicable.

v. Other factors that EPA may consider in granting an extension request

Section 188(e) states that in determining whether to grant an extension and the appropriate length of the attainment date extension, we may consider: 1) the nature and extent of the nonattainment problem; 2) the types and numbers of sources or other emitting activities in the area (including the influence of uncontrollable natural sources and international transport); 3) the population exposed to concentrations in excess of the standard; 4) the presence and concentration of potentially toxic substances in the mix of particulate emissions in the area; and 5) the technological and economic feasibility of various control measures.

Consideration of any or all of these factors, however, is not mandatory.

In evaluating these factors, we have focused on the nature and extent of the nonattainment area problem, the types of sources contributing to the problem, and the ability of the County to control these sources.²⁰⁶ Fugitive dust sources dominate the emissions inventory in the Clark County PM-10 nonattainment area. Controls for these sources are well known (paving, wetting surfaces, etc.) and have been adopted; however, the number of sources and nature of sources make education, outreach and enhanced enforcement necessary to assure full compliance with those controls. In addition, costs for paving roads and stabilizing shoulders necessary to reduce PM-10 emissions are high and funds are only available over a number of years. These factors generally support a longer time frame for attainment. Also, in order for the area to achieve attainment by 2006, monitored values will need to be below the 24-hour standard beginning in 2004 (attainment with the standard is calculated based on three years of air quality monitoring data). Therefore, granting a five-year extension in effect allows the area two years (from the December 31, 2001 attainment date) to achieve clean monitoring data. Full implementation of all measures with the exception of shoulder stabilization²⁰⁷ will be achieved by the end of 2003.

Summary

Based on our review of the Clark County PM-10 State Implementation Plan and our determination that it meets the four requirements necessary for granting an extension of the attainment date under CAA section 188(e), we are proposing to grant a five-year extension of the serious area attainment date for the Clark County PM-10 serious area nonattainment area from December 31, 2001 to December 31, 2006 for the 24-hour PM-10 standard.

²⁰⁶ For purposes of this analysis, we are not making any determinations specific to localized toxic impacts from any particular sources or source category since source categories that emit toxic substances (e.g., combustion sources) are not significant contributors to PM-10 exceedences in the area.

²⁰⁷ The SIP contains a commitment for 33 miles of road shoulders to be stabilized by the end of 2003, while remaining shoulders are to be stabilized by the end of 2006.

9. Reasonable Further Progress and Contingency Measures

What are the requirements?

RFP and Quantitative Milestones

CAA section 172(c)(2) requires nonattainment area plans to provide for reasonable further progress (RFP). Section 171(1) of the Act defines RFP as “such annual incremental reductions in emissions of the relevant air pollutant as ... may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.”

Historically, RFP has been met by showing annual incremental emission reductions sufficient generally to maintain at least linear progress toward attainment by the applicable deadline. Requiring linear progress in PM-10 plans is more appropriate in situations where:

- PM-10 is emitted by a large number of diverse sources,
- the relationship between any individual source or source category and overall air quality is not well known,
- secondary particulate significantly contributes to overall PM-10 levels, and
- the emission reductions needed for attainment are inventory-wide.

Addendum at 42015.

In general, serious area PM-10 plans should include detailed schedules for compliance with emission regulations in the areas and accurately indicate the corresponding annual emission reductions to be realized from each milestone in the schedule. We have considerable discretion in reviewing the PM-10 plan to determine whether the annual incremental emission reductions to be achieved are reasonable in light of the statutory objective of timely attainment. We believe that it is appropriate to require early implementation of the most cost-effective control measures while phasing in the more expensive control measures. *Addendum* at 42016.

CAA section 189(c) also requires PM-10 plans demonstrating attainment to contain quantitative milestones which are to be achieved every 3 years until the area is redesignated attainment and which demonstrate RFP. These quantitative milestones should consist of elements that allow progress to be quantified or measured. *Addendum* at 42016.

The Act does not specify which year is to be the starting point for the 3-year milestone. In the *General Preamble*, we determined that for the initial moderate areas, PM-10 plans demonstrating attainment should address at least two milestones and that the starting point for the first 3-year period should be the original moderate area PM-10 plan submittal due date of November 15, 1991, making the first milestone date 3 years later, i.e., the

moderate area attainment date of December 31, 1994²⁰⁸ and the second one, December 31, 1997, 3 years after the first. *General Preamble* at 13539, *Addendum* at 42016. For moderate areas that are reclassified as serious, the third milestone achievement date is November 15, 2000. *Addendum* at 42016.

Contingency Measures

Section 172(c)(9) of the Clean Air Act requires that implementation plans provide for the implementation of specific measures to be undertaken if the area fails to make RFP or attain by its attainment deadline. These contingency measures are to take effect without further action by the State or the Administrator. The Act does not specify how many contingency measures are necessary nor does it specify the level of emission reductions they must produce.

We interpret the “take effect without further action by the State or the Administrator” to mean that no further rulemaking actions by the State or EPA would be needed to implement the contingency measures. *Addendum* at 42015.

The purpose of contingency measures is to ensure that additional emission reductions beyond those relied on in the attainment and RFP demonstrations are available if there is a failure to make RFP or attain by the applicable attainment date. These additional emission reductions will assure continued progress towards attainment while the SIP is being revised to fully correct the failure. To ensure this continued progress, we recommend that contingency measures provide emission reductions equivalent to one year’s average increment of RFP. *Addendum* at 42016.

Certain core control measure requirements such as RACM, BACM, and MSM may result in a state adopting and expeditiously implementing more measures than are strictly necessary for expeditious attainment and/or RFP. Because of this and because these core requirements effectively require the implementation of all non-trivial measures that are technologically and economically feasible for the area, states are left with few, if any, substantive unimplemented control measures. In fact, under the Act’s PM-10 planning provisions, if there were a measure or set of measures that were technologically and economically feasible and could collectively generate substantial emission reductions, e.g., one year’s worth of RFP, then a state would be hard pressed to justify withholding their

²⁰⁸ The exact milestone date would be November 15, 1994; however, given the relatively small amount of time between this date and the attainment date of December 31, 1994, we believed it appropriate and efficient to make the milestone coincide with the attainment date. *General Preamble* at 13539.

implementation.²⁰⁹

If we read the CAA to demand that the only acceptable contingency measure are those that are adopted but not implemented, then states face a difficult choice: adopt the controls for immediate implementation and clearly meet the core control measure requirements but fail the contingency measure requirement or adopt the control measures but hold implementation in reserve to meet the contingency measure requirement but potentially fail the core control measure requirements.

However, states do not need to face this difficult choice if we read the CAA to allow adopted and implemented measures to serve as contingency measures, provided that those measures' emission reductions are not needed to demonstrate expeditious attainment and/or RFP. There is nothing in the language of section 172(c)(9) that prohibits this interpretation; that is, there is no language which says that the contingency measures cannot already be implemented. This approach to the contingency measure requirement also has the benefit of allowing states to build uncredited cushions into their attainment and RFP demonstrations--which makes actual failures to make progress or attain less likely--while still obtaining the air quality and public health benefits from the implemented measures.

We have allowed this approach--which is effectively the early implementation of contingency measures--in ozone and carbon monoxide plans. See *memorandum*, G. T. Helms, Chief, Ozone/Carbon Monoxide Programs Branch, OAQPS to Air Branch Chiefs, Regions I-X, "Early Implementation of Contingency Measures for Ozone and Carbon Monoxide (CO) Nonattainment Areas," August 13, 1993 ("Helms memo"). In this memorandum, we note that several states wished to implement their contingency measures early even though they were not needed for their attainment or RFP demonstrations and that "[i]t seems illogical to penalize nonattainment areas that are taking extra steps to ensure attainment of the NAAQS by having them adopt additional [replacement] contingency measures now." This rationale applies with equal force to PM-10 plans.

How are the requirements met in the plan?

RFP and Quantitative Milestones

Clark County identified milestone achievement dates of 2003 and 2006 with respect to the 24-hour standard. The milestones have been addressed by quantifying emission reductions which result from the implementation of the committed control measures after predicted growth has occurred. Figure 5-1 of the Plan (Chapter 5, pg. 5-32) depicts Clark County's quantitative milestones in tpd reductions for 2003 and 2006 relative to the base year. Emissions by 2003 are projected to be reduced to 276.48 tpd, with 77.23 additional tpd

²⁰⁹ We do not believe that States are obligated by section 172(c)(9) to adopt infeasible or unreasonable measures or measures that individually and collectively have trivial benefit.

reductions occurring between 2003 and 2006, resulting in 199.25 tpd. Clark County indicates that total emissions under 210.70 tpd should result in attainment of the 24-hour standard.

The milestones for the 24-hour standard are based on reasonable assumptions that are consistent with the implementation schedules for the measures in the plan and with the RFP demonstrations. For these reasons, we propose to find that the Plan meets the quantitative milestone requirement in CAA section 189(c)(1).

RFP Reports are due at the end of 2003 and 2006, which correspond with Clark County's milestone achievement dates.

Contingency Measures

The following contingency measures were adopted by Clark County Health District Board of Health Resolution #03-00 on July 27, 2000.²¹⁰

- C Reduce the threshold for site-specific dust mitigation plan requirements for construction activities from ten acres to five acres;
- C Require paving/stabilization of all unpaved roads with ≥ 100 average daily vehicle trips; and
- C Provide for at least two additional field enforcement officer above and beyond those staff increases committed to in the State Implementation Plan;
- C Increase minimum penalties for violations of Air Quality Regulations for fugitive dust; and
- C Reduce the size threshold for requiring a dust control monitor (coordinator) at construction sites.

The entire set of contingency measures will be automatically implemented if Clark County fails to meet the projected 2003 emissions reduction milestone.²¹¹ We note that Clark County has already implemented the contingency measure for field enforcement officer staff increases above and beyond the staff increases committed to in the Plan. Clark County estimates the emissions reduction benefit from these measures to be 1,373 tpy. Chapter 4, pgs. 4-117,118.

We propose to find that the Plan provides for the implementation of contingency measures for the 24-hour standard as required by CAA section 172(c)(9). The contingency measures identified in the plan have been adopted but are not credited in the attainment, RFP or milestone demonstrations for the 24-hour standard and are not necessary to demonstrate expeditious attainment of the standard. Under our contingency measure policy, contingency

²¹⁰ See Appendix H of the Plan.

²¹¹ Appendix H, Memorandum #19-00, July 27, 2000.

measures should in total have emission reductions equal to or more than the annual RFP increment. *Addendum* at 42016. We refer to Chapter 5 of the Plan, Figure 5-1, pg. 5-32. The 2003 estimated level of emissions (276.48 tpd) is much lower than the level of emissions which would result from assuming a direct linear reduction per year, including the 1,373 tpy (which translates into 3.76 tpd) that Clark County estimates could be achieved by implementing all of the contingency measures in total. This demonstrates the expeditious achievement of emission reductions in the early years of the program.

F. List of Tables

1. Table SUM-1 “Proposed Actions on the PM-10 State Implementation Plan for Clark County”
2. Table SUM-2 “Completeness Determination for the July 25, 2001 Submittal of the PM-10 State Implementation Plan for Clark County”
3. Table SUM-3 “Serious Area Requirements in the PM-10 State Implementation Plan for Clark County”
4. Table MON-1 “Relationship Among Monitoring Objectives and Scale of Representativeness”
5. Table MON-2 “PM-10 Monitoring Sites in the Las Vegas Area”
6. Table INV-1 “1998 Valley-wide Annual BLM Disposal Area PM-10 Emissions Inventory”
7. Table INV-2 “24-Hour BLM Disposal Area PM-10 Emissions Inventory (December 21, 1998)”
8. Table INV-3 “2001 and 2006 Valley-wide Annual BLM Disposal Area Uncontrolled PM-10 Emissions Inventory (tons/year)”
9. Table BACM-1 “Disturbed Vacant Land”
10. Table BACM-2 “Unpaved Parking Lots”
11. Table BACM-3A “Construction Sites”
12. Table BACM -3B “Construction Sites”
13. Table BACM-4 “Paved Roads”
14. Table BACM-5 “Unpaved Roads”
15. Table INV-4 “24-Hour BLM Disposal Area PM-10 Emissions Inventory for De minimis Sources (December 21, 1998)”
16. Table ATT-1 “2001 Annual BLM Disposal Area Controlled Emissions and Attainment Concentration”

17. Table ATT-2 “2006 24-Hour BLM Disposal Area Controlled Emissions and Attainment Concentration”
18. Table ATT-3 “2006 Valley-wide Control Assumptions for Fugitive Dust Sources”

G. List of Attachments

- A. Applicable SIP rule “Section 41 - Fugitive Dust,” July 24, 1979
- B. Applicable SIP rule “Section 17 - Permission to Disturb Topsoil,” July 24, 1979
- C. Applicable SIP rule “Section 1 - Definitions,” September 18, 1979 and November 17, 1981
- D. Letter from Jack Broadbent, EPA Region IX, to Allen Biaggi, Nevada Division of Environmental Protection, January 31, 2002
- E. Clark County Department of Air Quality Management Technical System Audit, August 21 - August 23, 2001, Report on Findings (February 2002)
- F. Letter from Catherine MacDougall, Clark County DAQM, to Ken Bigos, EPA Region IX, June 28, 2002 with June RFP Report attached
- G. Letter from Robert Folle, Clark County DAQM, to John Jamrog, BLM, September 5, 2002
- H. Letter from Robert Folle, Clark County DAQM, to Jerry Taylor, Clark County Dept. of Aviation, September 9, 2002
- I. Letter from Robert Folle, Clark County DAQM, to Leslie Long, City of North Las Vegas, September 9, 2002
- J. Letter from Robert Folle, Clark County DAQM, to Cameron Harper, Clark County Public Works, September 9, 2002
- K. Letter from Robert Folle, Clark County DAQM, to Clay Jenson, City of Henderson, September 9, 2002
- L. Letter from Robert Folle, Clark County DAQM, to John Schlegel, Clark County Dept. of Comprehensive Planning, September 11, 2002
- M. NRS 408.100 & 244.155
- N. Appendix D “Dust Control Permit Supplemental Forms” of the Clark County DAQM Construction Activities Notebook
- O. “Annual Report 2000-2001”, Clark County Regional Flood Control District

- P. Letter from Robert Folle, Clark County DAQM, to Karen Irwin, EPA Region IX, October 1, 2002
- Q. Letter from Allen Biaggi, Administrator, Nevada Division of Environmental Protection, to Wayne Nasti, Regional Administrator, EPA Region IX, October 24, 2002, with attached submittal of Sections 90 through 93 (dated November 20, 2001)
- R. Email from Paul Durr, Clark County DAQM, to Karen Irwin, EPA Region IX, November 4, 2002 with attachments “Authority to Construct/Operating Permit For A De Minimis or Nonmajor Nonmetallic Mineral Processing Facility” and “Authority to Construct/Operating Permit For A Nonmajor, Various Location, Nonmetallic Mineral Processing Facility”
- S. Memorandum from Robert Folle, Clark County DAQM, to Christine Robinson, Susan Shelby, and Catherine MacDougall, Clark County DAQM, November 11, 2002
- T. Letter from Allen Biaggi, Administrator, Nevada Division of Environmental Protection, to Wayne Nasti, Regional Administrator, EPA Region IX, November 19, 2002, with attached SIP amendment adopted by the Clark County Board of Commissioners on November 19, 2002
- U. Letter from Catherine MacDougall, Clark County DAQM, to Karen Irwin, EPA Region IX, December 17, 2002