

Technical Support Document

For

Proposed Approval of

**Maricopa County Rules
&**

State, County and Municipal Resolutions

associated with

**the “Revised PM-10 State Implementation Plan for the Salt
River Area”**

for the 24-Hour PM-10 Standard

This proposed approval includes

Maricopa County Air Quality Department Regulations:

Rules 310, 310.01, 316, 325, Appendix C, Appendix F,

and

Application for Dust Control Permit and
Guidance for Application for Dust Control Permit

June 14, 2006

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

Technical Support Document for the Final Revised PM-10 State Implementation Plan (SIP) for the Salt River Area

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A. Arizona Department of Environmental Quality (ADEQ) Submittals for the Salt River Area and history of EPA actions for the Phoenix Area

We provide information supporting our proposed approval of measures and commitments in the Revised PM-10 State Implementation Plan for the Salt River Area submitted by ADEQ on October 7, 2005. ADEQ submitted a supplement to the plan on November 29, 2005. Hereafter, we refer to these documents as the "Salt River plan" and "Salt River plan supplement", respectively.

Included with the Salt River plan October 7 submittal are three attachments and five appendices and a TSD with 21 appendices. We refer to the TSD as the "Salt River TSD" throughout this document. We refer to attachments and appendices of the plan as "Attachment 1, 2 or 3" and "Salt River plan, Appendix A, B, C, D, E or F". Appendices to the TSD are referred to as "Salt River TSD, Appendix A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, or U".

Maricopa County Air Quality Department (MCAQD) Rules 310, Appendix C, Appendix F, 316, and 325 are included in the Salt River plan October 7 submittal. Also, resolutions adopted in 2004 and 2005 the State, County, and municipalities are included in Appendix D. The November 29, 2005 submittal contains complete documentation for MCAQD Rule 310.01, "Application for Dust Control Permit" and "Guidance for Application for Dust Control Permit".

The Phoenix area violates both the annual PM-10 standard of $50 \mu\text{g}/\text{m}^3$ and the 24-hour PM-10 standard of $150 \mu\text{g}/\text{m}^3$. 40 CFR 50.6. The Salt River area is a subset of the Phoenix PM-10 nonattainment area that is approximately 32 square miles in metropolitan Phoenix. It is bounded by 59th Avenue to the west; 10th Street to the east; Van Buren Street to the north; and Baseline Road to the south. For additional background on the Salt River portion of the Phoenix PM-10 nonattainment area, see 67 FR 19148 (April 18, 2002) and 67 FR 44369 (July 2, 2002).

On July 25, 2002, EPA approved multiple documents submitted to EPA by Arizona for the Phoenix area as meeting the Clean Air Act (CAA) requirements for serious PM-10 nonattainment areas for the 24-hour and annual PM-10 national ambient air quality standards (NAAQS).¹ See EPA's proposed and final approval actions at 65 FR 19964 (April 13, 2000), 66 FR 50252 (October 2, 2001) and 67 FR 48718 (July 25, 2002). Among these documents is the "Revised Maricopa Association of Governments (MAG) 1999 Serious Area

¹ Serious PM-10 nonattainment areas are required to implement Best Available Control Measures (BACM) and those requesting an attainment date extension beyond 2001 must also demonstrate that their plan includes most stringent measures (MSM), among other CAA requirements.

Particulate Plan for PM-10 for the Maricopa County Nonattainment Area," February 2000 ("MAG plan"), that includes the BACM demonstrations for all significant source categories (except agriculture) for both the 24-hour and annual PM-10 standards and the State's request and supporting documentation, including the MSM analysis (except for agriculture) for an attainment date extension to 2006 for both standards.²

As part of this action we approved Maricopa County's fugitive dust rules, Rule 310, 310.01, and Appendix C³ as well as commitments by the local jurisdictions in the Phoenix area to implement control measures. EPA's approval of the BACM and MSM demonstration for construction site sources subject to Rule 310 included three Maricopa County commitments related to opacity test methods, dust suppression practices, and recordkeeping.⁴

B. Completeness Determination

The first step we take after receiving a SIP submittal is to determine if it is complete. CAA §110(k)(1)(B) requires that we review all SIPs and SIP revisions for completeness within 60 days of receipt. The completeness review allows us to quickly determine if the submittal includes all the necessary items and information we need to take action on it. If we do not issue a finding of completeness or completeness on a SIP submittal, the submittal becomes complete by operation of law 6 months after its submittal. CAA §110(k)(1)(B).

We make completeness determinations using criteria we have established in 40 CFR part 51, Appendix V. These criteria fall into two categories: administrative information and technical support information. The administrative information provides documentation that the State has followed basic administrative procedures during the SIP-adoption process and thus we have a legally-adopted SIP revision in front of us. The technical support information provides us the information we need to determine the impact of the proposed revision on attainment and maintenance of the air quality standards.

We notify a state of our completeness determination by letter. A finding of completeness does not approve the submittal as part of the SIP nor does it indicate that the submittal is approvable. It does start the 12-month clock we have to act on the SIP submittal. See CAA §110(k)(2).

² Phoenix area agricultural measures we approved as BACM can be found in "Maricopa County PM-10 Serious Area State Implementation Plan Revision, Agricultural Best Management Practices (BMP), ADEQ, June 2000, submitted on June 13, 2001.

³ Appendix C contains performance standards and test methods for opacity and surface stabilization for Rule 310 and Rule 310.01 sources.

⁴ 66 FR 50252, 50266-50267 (October 2, 2001).

The Arizona Department of Environmental Quality (ADEQ) has submitted multiple versions of the Salt River plan, beginning with a January 27, 2004 submittal, followed by an August 2, 2004 submittal and an August 29, 2005 submittal. The most recent October 7, 2005 and November 29, 2005 submittals supersede the previous submittals and are the subject of our proposed approval.

We have reviewed the October 7, 2005 and November 29, 2005 submittals and affirmatively determined that they satisfy our completeness criteria and that they are thereby complete for the purposes of §110(k)(1) of the Act. We notified the State of our completeness determination by a letter to ADEQ dated December 8, 2005. A copy of this letter can be found in the docket.

C. Applicable Clean Air Act Requirements and EPA Policy

1. Best Available Control Measures (BACM) and Most Stringent Measures (MSM)

Under CAA §189(b)(1)(B), BACM is to be implemented no more than 4 years after an area is reclassified from moderate to serious for PM-10, or June 10, 2000 for the Phoenix area. Because this deadline has now passed, the applicable deadline is "as expeditiously as practicable" under *Delaney v. EPA*, 898 F.2d 687 (1990).

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.⁵ *Addendum* at 42010.

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.)⁶ Thus in establishing BACM, a state must specify both the measure's control requirement and its applicability.

⁵ 59 FR 41998, August 16, 1994 "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" [hereafter, "Addendum"].

⁶ 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."

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

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 measures should then be converted into a legally enforceable vehicle (e.g. a regulation or permit process). CAA §172(6) and §110(a)(2)(A).

Best Available Control Technology (BACT) applies to stationary sources in serious PM-10 nonattainment areas and is a subset of BACM. *Addendum at 42009*. A 1994 EPA publication provides a methodology for performing a BACT analysis for existing sources located in serious PM-10 nonattainment areas.⁷ The methodology includes the following steps: 1) identify the types of emissions sources; 2) estimate PM-10 emissions; 3) identify all possible control technologies that can be used on each of the emission sources and eliminate technically infeasible controls; 4) estimate the costs and control efficiencies of control alternatives; and 5) consider energy, environmental and economic impacts. It is notably similar to the methodology described in EPA's 1994 *Addendum*.

CAA §188(e) requires as one of the conditions for receiving an extension of the attainment date for serious nonattainment areas, "that the State demonstrates to the satisfaction of the Administrator that the plan for that area includes the most stringent

⁷ "PM-10 Serious Nonattainment Area Example Best Available Control Technology Analysis for a Ready Mix Concrete Facility", U.S. EPA, EPA-452/R-94-016, December 1994 ["EPA BACT document"].

measures that are included in the implementation plan of any State or are achieved in practice in any State, and can feasibly be implemented in the area". The CAA §188(e) requirement for most stringent measures (MSM) is similar to the requirement for BACM. We define a "most stringent measure" level of control as 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 is a control measure that delivers this level of control.

Given the 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. 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.

2. General SIP Requirements

Generally, SIP rules must be enforceable (see CAA §110(a)) and must not relax existing requirements (see §110(l) and §193).⁸ The EPA guidance and policy document we used to help evaluate enforceability is "Guidance Document for Correcting Common VOC and Other Rule Deficiencies", U.S. EPA Region IX, August 21, 2001 (the Little Bluebook).

D. Evaluation of Adopted Measures and Commitments

1. Identification of Significant Sources and Summary of Salt River Plan Control Measures

As described in section 1.a above, the applicability of the CAA's §189(b)(1)(B) requirement for BACM is contingent upon whether a source has a significant impact based on a detailed PM-10 emissions inventory and air quality modeling. We summarize below ADEQ's development of a detailed emissions inventory and air quality modeling for the Salt

⁸ CAA §110(l) prohibits us from approving a revision to the applicable implementation plan if that revision would interfere with any applicable requirement of the Act. CAA §193 prohibits us under certain circumstances from approving a revision to the applicable implementation plan unless the modification insures equivalent or greater emissions reductions.

River area which enables identification of significant sources contributing to violations of the PM-10 24-hour standard.

The Salt River plan's emissions inventory and modeling is based on exceedences of the 24-hour PM-10 standard that occurred in 2002 at three air quality monitoring sites in the Salt River area. These sites include: West 43rd Avenue at 3940 W. Broadway ("West 43rd monitor"), 2702 AC Esterbrook Boulevard ("Durango Complex monitor"), and a site now discontinued that was located at 3045 S. 22nd Avenue ("Salt River monitor").

ADEQ developed an emissions inventory and modeling for four 2002 exceedence "design" days that occurred at these monitors, including January 8, December 16, April 15 and April 26. The latter two days experienced wind speeds over 15 mph whereas January 8 and December 16 did not. Therefore, ADEQ accounted for different meteorological conditions and resulting differences in source contributions leading to PM-10 exceedences, since higher wind speeds cause erosion from disturbed surfaces that are otherwise not a factor on low-wind days. The West 43rd monitor, Durango Complex monitor, and the Salt River monitor all measured concentrations above 150 $\mu\text{g}/\text{m}^3$ on both April 15 and April 26, thus ADEQ examined the relative significance of sources for each monitor on each design day for a cumulative total of eight individual design day exceedences. See Table 6-8 of the Salt River TSD. ADEQ also accounted for "background" concentrations attributable to sources outside of the Salt River area that contribute to concentrations within the area. See Table 6-2 of the Salt River TSD.

To develop an emissions inventory, ADEQ conducted an extensive source field study between June 1 and December 31, 2002 in the Salt River area. ADEQ used an emissions factor methodology to estimate each source category's emissions.⁹ In 2002, most of the sources in the Salt River area ADEQ identified were already subject to some level of control due to existing MCAQD or ADEQ requirements. Therefore, as part of calculating the 2002 emissions inventory, ADEQ estimated the level of control that existed on each source category.

ADEQ prepared a satellite image analysis of the Salt River area and developed an emissions grid for estimating source hourly emissions.¹⁰ Gridded hourly emissions were calculated for the design days, taking into account the low wind speeds characteristics of

⁹ A description of the emissions factors used can be found in Chapter 4 of the Salt River TSD. Industrial source emissions estimates, with the exception of a few subcategories, were provided by MCAQD. Industrial sources include sand and gravel facilities, concrete batch plants, and asphalt batch plants, among other sources.

¹⁰ Salt River plan, pgs. 19-20.

January 8 and December 16, 2002, and wind speeds over 15 miles per hour that occurred on April 15 and April 26, 2002.¹¹

ADEQ determined source significance by converting the 2002 emissions estimates to modeled concentrations using EPA's ISCST3 dispersion model and comparing them against EPA's presumed 5 µg/m³ significance value for the 24-hour PM-10 standard. ADEQ found the following source categories to be significant for at least one of the eight design day modeled exceedences:

- alluvial channel windblown dust;
- agricultural windblown dust;
- disturbed vacant lot and miscellaneous area windblown dust;
- industrial source windblown dust;
- construction site windblown dust;
- large industrial area sources;
- primary paved roads;
- secondary paved roads;
- trackout onto paved roads;
- unpaved shoulders;
- construction site activities, and;
- industrial point sources

Specifically, ADEQ estimated the following source category contributions to 2002 ambient PM-10 concentrations for each significant category.¹²

TABLE 1 - 2002 Source Category Contributions

Source Category	Average Low Wind Day Contribution (%)	Average High Wind Day Contribution (%)
Industrial Sources	25.9%	8.3%
Point Emissions	2.7%	1.1%
Area Emissions	23.2%	7.2%
Construction	5.8%	0.9%
Area Sources	4.2%	0.7%
Unpaved Parking Lots	1.7%	0.2%
Unpaved Shoulders	2.5%	0.4%

¹¹ Salt River TSD, pg. 4-1.

¹² Salt River plan, Table 4.2.1, pgs. 26 and 27.

Roads & Trackout	63.7%	13.5%
Freeway	0.4%	0.2%
Primary Roads	43.6%	9.3%
Secondary Roads	7.5%	1.5%
Trackout	12.1%	2.5%
Agricultural Tillage	0.4%	NA
Windblown Dust	NA	76.7%
Agricultural Fields	NA	21.3%
Alluvial Channels	NA	14.9%
Construction	NA	3.5%
Industrial	NA	7.3%
Disturbed Areas	NA	5.2%
Stockpiles	NA	3.6%
Vacant Lots	NA	20.9%
TOTAL	100%	100%

In addition to the estimated source concentrations shown in Table 1 for average low-wind days and on days with wind speeds over 15 miles per hour, ADEQ estimated the highest contribution of each source category on any one of the eight exceedence design days studied.¹³

On low-wind design days, ADEQ found that the overwhelming majority of PM-10 emissions were generated by re-entrained dust from paved roads (both those with and without visible trackout) and from industrial area sources. On design days with wind speeds over 15 miles per hour, ADEQ found that the overwhelming majority of PM-10 emissions were generated by windblown dust from sources such as disturbed vacant lots, agricultural fields and alluvial channels, followed by emissions from re-entrained paved road dust and industrial area sources.

The control measures included in the Salt River plan apply to most, but not all significant sources. Although, with our action on the Phoenix MAG plan, we have already approved BACM and MSM demonstrations for most of the sources identified as significant

¹³ Ibid. and Salt River TSD, Table 6-8, pg. 6-11.

in the Salt River plan, new information provided in the Salt River plan warrants an updated BACM and MSM demonstration for certain sources based on ADEQ's recommendations for additional control measures on these sources. Such additional measures have been adopted to apply to the entire Phoenix PM-10 nonattainment area. This is because the Salt River monitors were sited to be representative of air quality at other sites in the Phoenix PM-10 nonattainment area with similar emissions sources.¹⁴

In summary, the measures in the Salt River plan consist of: 1) Rules adopted by MCAQD for various fugitive dust sources; 2) MCAQD commitments designed to improve source compliance with fugitive dust requirements; 3) commitments from multiple municipalities, Maricopa County Department of Transportation (MCDOT), and the State addressing paved road re-entrained dust; 4) a City of Phoenix commitment addressing alluvial channels; and 5) MCAQD application and guidance documents for Rule 310 dust control plans.

2. Rules 316 and 325

As noted in section D.1 of this TSD, ADEQ identified industrial sources as significant contributors to PM-10 24-hour exceedences at the Salt River monitors.¹⁵ Given ADEQ's finding that industrial sources contribute significantly to 24-hour PM-10 exceedences, CAA §§189(b) and 188(e) apply and BACM/BACT and MSM demonstrations are required.

Industrial-related emissions generally fall into three categories: 1) stationary point (stack) sources; 2) stationary process sources; and 3) area sources. Process emissions are those that result from processing nonmetallic mineral products that do not have an identified stack, such as screens, crushers, storage bins and hoppers, conveyor belts, drop points, and truck loading. Area source emissions do not have a single emissions point nor multiple discrete emissions points and include sources such as unpaved roads, unpaved parking and staging areas, trackout onto paved roads, and windblown dust from disturbed surfaces and open storage piles.

¹⁴ See 67 FR 19148, 19150 and "Plan for Attainment of the 24-hour PM-10 Standard – Maricopa County PM-10 Nonattainment Area (May 1997), Appendix A "Technical Support Document", Appendix A-2, "Summary of January 7, 1997 ADEQ Public Meeting Coordinating the Control of Dust/Particulate Matter Within Maricopa County", pg. 1.

¹⁵ ADEQ estimates that industrial sources contributed approximately 26 percent to 2002 average low-wind day exceedences (with a highest contribution of 60 $\mu\text{g}/\text{m}^3$ at a single monitor) and 16 percent to 2002 exceedences on days with wind speeds over 15 miles per hour (with a highest contribution of 58 $\mu\text{g}/\text{m}^3$ at a single monitor). Salt River plan, Table 4.2.1, and Salt River TSD, Table 6-8. This estimate excludes industrial source trackout which is quantified in the paved road re-entrained dust source category.

ADEQ found that the vast majority of industrial source PM-10 emissions in the Salt River area are generated by nonmetallic mineral processing sources. The SIP-approved version of MCAQD Rule 316 contains requirements for stationary point sources at nonmetallic mineral processing plants and rock product plants.¹⁶ MCAQD upgraded Rule 316 requirements based on ADEQ's recommendation that BACM/BACT and MSM must be met for these sources.

With regard to other industrial sources in the Salt River area, ADEQ evaluated permitted industrial stack sources for compliance with BACM/BACT and MSM and found that control measures on all facilities met these requirements except brick and structural clay product manufacturing facilities.¹⁷ Thus, MCAQD adopted Rule 325 based on ADEQ's recommendation that BACM/BACT and MSM must be met for these sources.¹⁸

MCAQD Rules 316 and 325 apply to sources throughout Maricopa County, of which the Phoenix PM-10 nonattainment area is a subset.

a. Summary of the Salt River plan's BACM/BACT and MSM analysis for Rules 316 and 325

ADEQ first identified candidate BACM/BACT and MSM for Rule 316 and Rule 325 sources by researching controls in several areas, including PM-10 nonattainment areas in California, Nevada, Texas, Florida, and Oklahoma.¹⁹ ADEQ then conducted a technical and economic feasibility analysis with specific estimates of control efficiency and cost for each type of emissions point or control measure.²⁰ For the MSM comparison, ADEQ developed a series of tables that benchmark the most stringent controls in other areas.²¹

¹⁶ EPA approved a version of Rule 316 adopted on April 21, 1999. 66 FR 730 (January 4, 2001). We were not required to evaluate the rule for BACT because the sources to which it applied were not deemed significant at the time. We determined that the rule met the CAA requirements for Reasonably Available Control Technology (RACT). See 65 FR 42649, 42651 (July 11, 2000).

¹⁷ Salt River plan, pg. 70.

¹⁸ Rule 325 only applies to stationary, as opposed to area, sources. Area sources located at facilities subject to Rule 325 are subject to Rule 310 fugitive dust requirements.

¹⁹ Salt River plan, Appendix C.

²⁰ Salt River plan, Chapter 4, section 4.3.4.

²¹ *Ibid.*, Tables 4.3.4.7 through 4.3.4.12.

Based on its analysis, ADEQ recommended specific augmentations to Rule 316 for purposes of meeting BACM/BACT and MSM requirements. In addition, through its rulemaking process for Rule 316,²² MCAQD identified additional MSM for nonmetallic mineral processing facilities in South Coast Air Quality Management District (SCAQMD) Rule 1157, "PM-10 Emissions from Aggregate and Related Operations," adopted on January 7, 2005. Finally, ADEQ recommended enhanced enforcement of Rule 316 but did not provide a specific measure.²³ ADEQ also recommended specific measures for Rule 325 for purposes of meeting BACM/BACT and MSM requirements.

b. Evaluation of Rule 316 and Rule 325 stationary (including process) source control measures for BACT and MSM

Stationary sources located at nonmetallic mineral processing facilities include: stacks, feed hoppers, grizzlies, crushers, conveyors, surge piles, feeders, transfer points and screens. Candidate BACT measures for these sources include: water sprays, chemical suppressants, partial enclosures, full enclosures, or a combination of controls. (Full enclosures include venting to a control device such as a baghouse or those that are open on both ends or at two points.)²⁴ Emissions sources that can be controlled by a baghouse filtration system²⁵ include screening operations; aggregate transfer to elevated bins; weigh hopper loading; aggregate transfer to conveyors; aggregate delivery to ground storage; crushing and shredding of scrap metal; materials transfer points; and bulk loading of material into trucks.²⁶

ADEQ's technical and economic feasibility analysis includes specific estimates of control efficiency and cost for each type of emissions point or control measure. For

²² *Ibid.*, Appendix B, Revision to Maricopa County Rule 316 Nonmetallic Mineral and Processing, Appendix 2, "Notice of Final Rulemaking, Maricopa County Air Pollution Regulations, Regulation III, Rule 316 - Nonmetallic Mineral Processing" [hereafter "Rule 316 NFR"].

²³ Salt River plan, pgs. 56 and 78.

²⁴ Regarding screens, in practice most screens use partial enclosures to minimize dust emissions because some screens wash the aggregate. *Op. Cit.*, EPA BACT document, pg. 42.

²⁵ This can consist of a baghouse fabric filter attached to the exhaust of a bin or silo vent or a ducting system with a suction shroud constructed to draw process emissions into a baghouse fabric filter.

²⁶ Salt River plan, pg. 44.

example, ADEQ separately evaluated options such as applying a baghouse for bin and silo vents versus applying both a baghouse and a suction shroud for bin and silo vents. In ADEQ's MSM evaluation, the most common benchmarked controls reflect requirements from Texas Commission on Environmental Quality (TCEQ) permits or South Coast Air Quality Management District (SCAQMD) BACT Guidelines.

Rule 316 - "Nonmetallic mineral processing"

MCAQD Rule 316, adopted June 8, 2005, contains the following measures for stationary and process area sources.

The following requirements apply to nonmetallic mineral processing plants.²⁷

- Stack emissions limits of 7% opacity and 0.02 grains/dry standard cubic foot. Stack emissions must also be vented to a properly sized fabric filter baghouse.
- 7% opacity limit from any transfer point on a conveying system
- 15% opacity limit from any crusher
- 10% opacity limit from any affected operation or process source, excluding truck dumping directly into any screening operation, feed hopper, or crusher
- 20% opacity limit from truck dumping directly into any screening operation, feed hopper, or crusher
- Crushing and screening facilities are required to enclose sides of all shaker screens and to permanently mount watering systems (e.g., spray bars or an equivalent control on) inlet and outlet of all crushers, outlet of all shaker screens, and outlet of all material transfer points, excluding wet plants.

The following requirements apply to asphaltic concrete plants:

- 5% opacity limit and 0.04 grains/dry standard cubic foot of particulate matter over a 6-minute period for non-rubberized asphaltic concrete plants

²⁷ Rule 316 defines a nonmetallic mineral processing plant as "any facility utilizing a combination of equipment or machinery that is used to mine, excavate, separate, combine, crush, or grind any nonmetallic mineral including, but not limited to, lime plants, coal fired power plants, steel mills, asphalt plants, concrete plants, Portland cement plants, and sand and gravel plants. Rock Product Processing Plants are included in this definition."

- 20% opacity limit and 0.04 grains/dry standard cubic foot of particulate matter over a 6-minute period for rubberized asphaltic concrete plants when producing rubberized asphalt
- 20% opacity limit from all cement, lime, and/or fly-ash storage silos
- install an operational overflow warning system/device on all cement, lime, and/or fly-ash storage silos designed to alert operators to stop the loading operation when the silos are reaching a capacity that could adversely impact pollution abatement equipment
- install a properly sized fabric filter baghouse, with an opacity limit of not greater than 5% over a 6-minute period, on all existing cement, lime, and/or fly-ash storage silos
- install a properly size fabric filter baghouse or equivalent device designed to meet a maximum outlet grain loading of 0.01 grains/dry standard cubic foot, with an opacity limit of not greater than 5% over a 6-minute period, on all new cement, lime, and/or fly-ash storage silos
- from all drum dryers, control and vent exhaust to a properly sized fabric filter baghouse, with an opacity limit of not greater than 5% over a 6-minute period

The following requirements apply to concrete plans and/or bagging operations:

- 7% opacity stack emissions limit
- 10% opacity limit from any affected operation or process source, excluding truck dumping directly into any screening operation, feed hopper, or crusher
- 20% opacity limit from truck dumping directly into any screening operation, feed hopper, or crusher
- install an operational overflow warning system/device on all cement, lime, and/or fly-ash storage silos designed to alert operators to stop the loading operation when the silos are reaching a capacity that could adversely impact pollution abatement equipment
- install a properly sized fabric filter baghouse, with an opacity limit of not greater than 5% over a 6-minute period, on all existing cement, lime, and/or fly-ash storage silos
- install a properly size fabric filter baghouse or equivalent device designed to meet a maximum outlet grain loading of 0.01 grains/dry standard cubic foot on all new cement, lime, and/or fly-ash storage silos

- on dry mix concrete plant loading stations/truck mixed product, implement one of the following process controls:
 - install a rubber fill tube;
 - install a water spray;
 - install a properly sized fabric filter baghouse or delivery system;
 - enclose mixer loading stations such that no visible emissions occur; or
 - conduct mixer loading stations in an enclosed process building such that no visible emissions from the building occur during the mixing activities
- on cement silo filling processing/loading operations controls, install a pressure control system designed to shut-off cement silo filling process/loading operations, if pressure from delivery truck is excessive, as defined in the Operations and Maintenance Plan

Other requirements include:

- all other fugitive dust emission limitations not specifically listed and all overburden operations must, at a minimum, meet Rule 310 requirements (which includes a general 20% opacity standard)
- an Operation and Maintenance Plan (O&M Plan) is required for any emissions control system (ECS). The O&M Plan must be submitted for approval to MCAQD and be readily available on-site at all times. The O&M Plan actions and schedules must be followed by the facility. ECS monitoring devices must be installed, maintained and calibrated according to the O&M Plan.
- daily records must be kept for all days a facility is actively operating. Records must include hours of operation; type of batch operation (wet, dry, central); throughput per day of basic raw materials including sand, aggregate, cement (tons/day); volume of concrete and asphaltic concrete produced per day; volume of aggregate mined per day (cubic yards/day); and amount of each basic raw material including sand, aggregate, cement, fly ash delivered per day (tons/day)
- additional records for dry mix concrete plants and /or bagging operations include: number of bags of dry mix produced; weight (size) of bags of dry mix produced; kind and amount of fuel consumed in dryer (cubic feet/day or gallons/day); and kind and amount of any back-up fuel, if any
- specific records for control and monitoring device data for a fabric filter baghouse and scrubber apply, as well as specific ECS O&M Plan records
- records must be retained for 5 years

In evaluating Rule 316 requirements for BACT, we consider ADEQ's control measure recommendations based on its technical and economic feasibility analysis. ADEQ combined the results of its BACT and MSM analysis into one set of recommendations, thus we consider both BACT and MSM simultaneously. Tables 4.3.4.7, 4.3.4.8 and 4.3.4.9 of the Salt River plan list specific measures ADEQ found to be technically and economically feasible and either already applicable in the existing SIP-approved Rule 316 or more stringent measures applicable in other areas. ADEQ recommends this list of benchmarked controls as necessary augmentations to Rule 316 for purposes of meeting BACT and MSM. We have reviewed these tables and note that with only a couple of exceptions, the benchmarked controls ADEQ identified from other areas mirror the recommended Rule 316 augmentations.²⁸

Next, we compare the list of ADEQ recommended augmentations with the actual measures adopted into Rule 316. We find that, with a few minor differences, ADEQ's recommended augmentations were adopted into Rule 316. We discuss these minor differences below, which are generally the result of issues raised during Rule 316 public workshops and, for reasons provided below, do not affect the stringency of applicable requirements to the sources in question.

1. In Table 4.3.4.7, one MSM for crushing and screening plants is to enclose all screen sides with at least an 85% mesh fabric filter. The comparable requirement in Rule 316 is contained in Section 301.2(a), which specifies: "Enclose sides of all shaker screens". An enclosed screen is a solid wall, thus, it is more stringent than a mesh fabric filter.
2. Rule 316 requirements for concrete batch plants include an option to install a rubber fill tube to control fugitive emissions on dry mix concrete plant loading stations/truck mixed product (section 303.2(d)(1)). This option is not included among the control measures listed in Table 4.3.4.8 of recommended Rule 316 augmentations.

²⁸ The exceptions include work practices for crushing and screening plant conveyor systems (Table 4.3.4.7) and concrete batch plant hopper dumping into trucks (Table 4.3.4.8) benchmarked from TCEQ permits and SCAQMD BACT guidelines. However, based on investigating the TCEQ and SCAQD measures for these sources, ADEQ indicates that such work practices are not requirements consistently applied to nonmetallic mineral processing facilities in Texas and South Coast. (Information communicated per phone conversations between Karen Irwin, U.S. EPA Region 9, and Trevor Baggio and Eric Massey, August 17, 2005). Therefore, ADEQ did not include them as necessary MSM augmentations to Rule 316 and we accept this rationale. We further note that the process sources in question are subject to requirements in the adopted rule; crushing and screening plant conveyor systems must meet a 7% opacity standard and dry mix concrete plant loading stations/truck mixed product (which includes hopper dumping) must meet a 10% opacity standard and are subject to installation of a rubber fill tube, water spray, fabric filter baghouse or delivery system, or be enclosed.

However, a rubber fill tube is a device that contains the material as it is being transferred, thus it is of at least equivalent stringency as other control measure alternatives, which include installing a water spray, fabric filter baghouse, or enclosing the mixture loading station.

3. Table 4.3.4.8 MSMs for concrete batch plants recommend the following augmentation to Rule 316, among others: "Spillage of materials used in the batch shall be immediately cleaned up and contained or dampened". The Rule 316 requirement that applies to spillage of materials used in the batch (i.e., not on paved internal roads) is as follows: "maintain in a stabilized condition all other piles of spillage with dust suppressants until removal" (section 307.6). These two requirements, in comparison, provide equivalent protection since Rule 316 requires spillage piles in the batch to remain in a stabilized condition until removed.

Finally, we compare requirements we approved as RACT in the existing SIP-approved version of Rule 316 to the June 8, 2005 adopted Rule 316 requirements. We find the opacity standards in the June 8, 2005 rule for the various stack and process sources to be equally or more stringent relative to the SIP-approved version and that additional requirements increasing the rule's stringency have been included.

Rule 325 - Brick and Structural Clay Products Manufacturing

Rule 325, adopted by MCAQD on August 10, 2005, establishes:

- a 20% opacity standard;
- a limit for existing tunnel kilns with a capacity of ≥ 1 ton per hour throughput of 0.42 lbs of particulate matter per ton of fired product;
- a limit for new or reconstructed tunnel kilns with a capacity of < 10 tons per hour throughput of 0.42 lbs of particulate matter per ton of fired product; and
- a limit for new or reconstructed tunnel kilns with a capacity of ≥ 10 tons per hour throughput of 0.12 lbs of particulate matter per ton of fired product.

In evaluating Rule 325 for BACT and MSM, we consider ADEQ's analysis and recommendations for BACT and MSM, which are addressed together in Table 4.3.4.13 of the Salt River plan. ADEQ benchmarked as the MSM comparison EPA's New Source Performance Standards (NSPS) for Brick or Structural Clay Products Manufacturing kilns.²⁹ ADEQ indicates that SCAQMD Rule 1112.1 was also reviewed but is not applicable to brick and clay product kilns. ADEQ includes discussion of process weight rate requirements in MCAQD's Rule 311 that apply to brick and structural clay product manufacturing sources.

²⁹ 40 CFR 63.8405(a), subpart JJJJ, table 1.

Based on its analysis, ADEQ recommended that Rule 325 requirements be equivalent to those identified in EPA's NSPS requirements for clay products manufacturing kilns. In evaluating both the NSPS for Brick or Structural Clay Products Manufacturing kilns as well as the NSPS for Clay Ceramics Manufacturing kilns,³⁰ we find the adopted requirements in Rule 325 to be consistent with the NSPS requirements for both of these types of kilns. Furthermore, the Rule 325 standard for existing kilns is more stringent relative to the relevant EPA NSPS because it applies to existing kilns with ≥ 1 ton per hour throughput whereas the EPA NSPS apply only to existing (large tunnel) kilns with ≥ 10 ton per hour throughput.

As part of our MSM evaluation, we also consider whether Rule 325 requirements should be compared to requirements for cement plant and lime plant kilns found in EPA's NSPS and some air quality district rules. However, cement plant and lime plant kilns are not strictly comparable to ceramic and brick kilns. The former are continuous throughput kilns, while the latter are batch tunnel kilns. Therefore, we do not believe cement and lime kiln requirements are relevant to the MSM analysis for brick and structural clay manufacturing kilns.

c. Evaluation of Rule 316 area source control measures for BACM and MSM

In revising Rule 316, MCAQD expanded the rule's coverage to include area sources.³¹ Area sources at nonmetallic mineral processing facilities include: unpaved roads, unpaved parking and staging areas, open storage piles and active material handling, trackout onto paved public access roads, spillage and trackout on internal paved roads, bulk material hauling/transporting, surface soils where construction and support equipment operate,³² and extracting bulk materials from open pits.

While some area sources (e.g., trackout and paved /unpaved road travel) subject to Rule 316 requirements were addressed in the MAG plan's BACM and MSM demonstration

³⁰ 40 CFR 63.8555(a), subpart KKKKK, table 1.

³¹ Historically, Rule 316 has applied only to stationary sources located at nonmetallic mineral processing plants. Area sources located at Rule 316 facilities have been subject to fugitive dust control measures in Rule 310. MCAQD's June 8, 2005 revisions to Rule 316 include incorporating control measures specific to area sources. Area sources subject to specific control measures in Rule 316 are no longer subject to Rule 310 while area sources not subject to specific Rule 316 control measures are still subject to Rule 310.

³² We note that disturbances to open areas and vacant lots located at facilities subject to Rule 316 that are unrelated to construction and support equipment (e.g., illegal trespass) can occur. Such disturbed open areas and vacant lots are subject to the requirements of Rule 310.

for Rule 310 (see 67 FR 48718 (July 25, 2002) at 48739), new information in the Salt River plan demonstrates a relatively large contribution of nonmetallic mineral processing facility area sources to Salt River PM-10 exceedences. This warrants an updated BACM/BACT and MSM demonstration for all such sources.

In evaluating Rule 316 area source controls for BACM and MSM, we consider ADEQ's list of candidate BACM/MSM found in Appendix C of the Salt River plan. ADEQ addresses BACM and MSM for area sources in a combined analysis.³³ ADEQ benchmarked the following rules as reflecting both BACM and MSM for area sources: MCAQD Rule 310, SCAQMD Rule 403 "Fugitive Dust",³⁴ TCEQ permits, and Clark County Department of Air Quality and Environmental Management (CCDAQEM) "Section 94" and "Construction Activities Dust Control Handbook".³⁵

Through its rulemaking process for Rule 316,³⁶ MCAQD identified additional MSM for nonmetallic mineral processing facilities in SCAQMD Rule 1157 "PM-10 Emissions from Aggregate and Related Operations", adopted on January 7, 2005. Below we evaluate specific Rule 316 area source requirements for BACM and MSM in light of both ADEQ's analysis as well as SCAQMD Rule 1157 requirements.

Unpaved roads and parking/staging areas

Candidate BACM for unpaved roads and parking areas generally include surface treatment (e.g., paving, applying chemical/organic stabilizer, graveling), trip reduction (e.g., road closure or traffic restrictions), and speed control (e.g., establishing a 15 mph speed limit). We consider surface treatment the most effective of these three options to reduce emissions and have approved as BACM in multiple serious PM-10 nonattainment areas surface treatment measures for unpaved roads and parking areas that are applied to meet specific performance standards.³⁷

³³ Salt River plan, pgs. 56 – 70.

³⁴ Adopted on April 4, 2004. (Note: a more recent version of Rule 403 was adopted on June 3, 2005 to include requirements for confined animal facilities. These revisions, however, do not concern sources that are the subject of this MSM analysis.)

³⁵ Adopted on July 1, 2004, and March 18, 2003, respectively.

³⁶ Salt River plan, Appendix B, Rule 316 NFR.

³⁷ For example, see CCDAQEM Section 94; MCAQMD Rule 310, Rule 310.01, and Appendix C, and; SCAQMD Rule 403.1 and Chapter 8 of the Coachella Valley Fugitive Dust Control Handbook.

Rule 316 requirements for unpaved roads and unpaved parking/staging areas are as follows:

- Unpaved internal roads (including haul/access roads) must meet both a 20% opacity standard (with modified opacity method per Appendix C) and either a 6% silt content standard or a 0.33 oz/ft² silt loading standard per section 306.4. One or more control measures, e.g., applying water or another dust suppressant, must be specified in the permittee's Dust Control Plan. In addition, section 307.3 requires unpaved haul/access roads to specifically be paved, treated with a dust suppressant, covered with a gravel pad at least six inches deep, watered, or have a cohesive hard surface, in compliance with the above performance standards.
- Unpaved parking/staging areas must meet both a 20% opacity standard (according to a modified opacity method in Appendix C) and either an 8% silt content standard or a 0.33 oz/ft² silt loading standard per section 306.4. One or more control measures, e.g., applying water or another dust suppressant, must be specified in the permittee's Dust Control Plan.
- All batch trucks and material delivery trucks must remain on internal roads with paved surfaces or cohesive hard surfaces in the permanent areas of the facility/operation that include entrances, exists, warehouses and maintenance areas, office areas, concrete plant areas, asphaltic plant areas, and parking and staging areas.

ADEQ's BACM/MSM analysis benchmarked comparison control measures in TCEQ permits in addition to existing requirements in MCAQD Rule 310. We also consider specific requirements in SCAQMD Rule 1157.

TCEQ permits require: surface treatment or paving of in-plant roads, all entry and exit roads and main traffic routes to be paved with a cohesive hard surface that is maintained intact and cleaned (unless the plant is temporary); all batch trucks and material delivery trucks to remain on paved surfaces when entering, conducting primary function, and leaving the property, and; all new facilities to locate unpaved roads no less than 25 feet from the property line, except for entrance and exit to the site.

SCAQMD Rule 1157 requires application of chemical stabilizers on unpaved haul roads and application of either chemical stabilizers or a gravel pad on unpaved (non-haul) internal roads to meet the same performance standards as those in Rule 316.³⁸

³⁸ SCAQMD Rule 1157, section (d)(7).

In comparing the adopted Rule 316 measures for unpaved roads and unpaved parking/staging areas to MCAQD Rule 310 measures, measures in other rules identified by ADEQ, and measures in SCAQMD Rule 1157, we find that:

a) the Rule 316 requirements apply to all unpaved haul/access roads and parking/staging areas located at sources subject to the rule, similar to requirements for construction site haul/access roads in CCDAQEM Section 94 and industrial mining roads subject to SCAQMD Rule 1157;

b) the control measures, performance standards and test methods in Rule 316 are consistent with those that apply in Clark County, South Coast, MCAQD Rule 310, and other serious PM-10 nonattainment area rules we have approved as meeting BACM; and

c) similar to TCEQ permits, Rule 316 requires truck traffic to remain on internal roads with paved or cohesive hard surfaces.³⁹

While SCAQMD Rule 1157 limits control measure options for unpaved haul roads to application of chemical stabilizers in lieu of water or other measures which are allowed per Rule 316, the performance standards of Rule 316 and Rule 1157 are equivalent. Regarding the TCEQ permit requirement for new facilities to maintain a minimum 25-foot distance of unpaved roads from the property line, Rule 316 does not incorporate this requirement.⁴⁰ However, we believe this TCEQ permit requirement is related to nuisance or safety as opposed to reducing fugitive dust emissions, and is therefore not required for the MSM comparison.

Open storage piles and active material handling

Candidate BACM for open storage piles and active material handling include surface treatment and covering/enclosing. Specifically, ADEQ identifies application of chemical additives, water, and partial or full enclosure as control measure alternatives.⁴¹

³⁹ Note: TCEQ permits also address cleaning of paved roads, which we discuss under "cleaning of internal paved roads and bulk material hauling/transporting" in a subsequent section of this TSD.

⁴⁰ Rule 316, section 307.3(b) contains a provision that mentions unpaved roads at new facilities and locating them 25 feet from the property line but does not establish such a requirement.

⁴¹ Salt River plan, pgs. 57-58.

Rule 316 requirements for open storage piles apply to any pile that is 150 square feet or more, at any one point attains a height of 3 feet, and has 5% or greater silt content.⁴² Requirements for open storage piles and active material handling are as follows:

- Open storage piles must be maintained with a stabilized surface (e.g., visible crust or meet a threshold friction velocity standard) per section 306.5 and comply with the 20% opacity standard in section 306.1. Section 307.1(a) requires that prior to, and/or while conducting stacking loading and unloading operations, material be sprayed with water or a dust suppressant other than water.
- When not conducting stacking, loading, and unloading operations, spraying water or another measure is required per section 307.1(b) to comply with the applicable standards.
- Section 307.1(c) limits the height of newly installed open storage piles to 45 feet and the distance from the property line of newly installed open storage piles to 25 feet. Section 307.1(d) requires installation and use of a water truck or other method that is capable of completely wetting the surface in compliance with the applicable standards for existing and new open storage piles greater than 8 feet in height that are not covered.

ADEQ's BACM/MSM analysis benchmarked comparison control measures in MCAQD's Rule 310 and CCDAQEM's "Section 94" and "Construction Activities Dust Control Handbook". We also compare Rule 316 requirements to those in SCAQMD Rule 1157.

In terms of the rule's applicability to only open storage piles that are 150 square feet or more and at any one point attain a height of 3 feet, this is consistent with the applicability of MCAQD Rule 310 and SCAQMD Rule 1157 requirements for open storage piles.⁴³

Rule 316 requirements are equivalent to Rule 310 requirements to spray open storage piles with water prior to and/or while conducting stacking, loading, and unloading operations and to cover or stabilize inactive piles (section 308.6). SCAQMD Rule 1157 establishes similar surface stabilization requirements for storage piles.

⁴² See Rule 316, section 236. Silt content is assumed to be 5% or greater unless shown otherwise in accordance with the proper laboratory test method.

⁴³ CCDAQEM requirements for stockpiles apply to piles of any size, however, we have approved a "small pile" exemption in previous BACM/MSM determinations because the cost-effectiveness associated with watering bulk material storage piles diminishes as piles become smaller. Note: actual cost effectiveness may vary under different site conditions.

In addition to surface stabilization requirements, CCDAQEM, TCEQ, and SCAQMD establish requirements concerning pile height and location. CCDAQEM requires that stockpiles located within 100 yards of occupied buildings must not be constructed over 8 feet high and that any stockpiles (located beyond 100 yards of occupied buildings) constructed over 8 feet high have a road bladed to the top to allow water truck access or have a sprinkler system installed. TCEQ requires the height of stockpiles to be 45 feet or less and that they be located at least 25 feet or more from the property line. SCAQMD requires stockpiles located within 300 feet of off-site occupied buildings to be no higher than 8 feet.

MCAQD Rule 316 contains the same limits for height and distance from the property line for newly installed piles as TCEQ requirements. While Rule 316 does not include the CCDAQEM nor SCAQMD 8-foot height limitation for stockpiles located within 100 yards or 300 feet of occupied buildings, respectively, these requirements are related to nuisance as opposed to reducing fugitive dust emissions and are therefore not required for the MSM comparison. Like CCDAQEM requirements, Rule 316 does require a water system capable of complete pile coverage for stockpiles greater than 8 feet in height.

Trackout onto paved public access roads

Candidate BACM addressing trackout include prevention (e.g., setting up trackout control devices or paving the surface of an unpaved road leading to a facility exit) and removal (e.g., sweeping up trackout deposits).

Rule 316 trackout requirements are as follows:

- Trackout onto paved public access roads - all new facilities and existing facilities with 60 or more trucks exiting on any day⁴⁴ onto paved public roadways/paved areas accessible to the public are required to install both a rumble grate and wheel washer and to pave internal roads from the rumble grate and wheel washer to the exit (limited exemptions apply). All other facilities are required to install either a rumble grate, wheel washer or truck washer no less than 30 feet prior to the exit and to either pave or install a 6-inch deep gravel pad from the rumble grate, wheel washer, or truck washer to the exit.
- Trackout is prohibited from extending a cumulative distance of 25 linear feet or more from all facility exits onto paved areas accessible to the public. All other trackout must be cleaned up at the end of the workday.

⁴⁴ In other words, the trackout requirements apply each day at facilities where on one or more days, 60 or more trucks exit the facility (as opposed to only applying on days when 60 or more trucks exit the facility).

- All batch trucks and material delivery trucks are required to enter and exit the facility/operation only through entrances that comply with the rule's trackout requirements.

ADEQ's BACM/MSM analysis benchmarked comparison control measures in CCDAQEM Section 94 and Construction Activities Dust Control Handbook and SCAQMD Rule 403. We also compare Rule 316 requirements to those in SCAQMD Rule 1157.

CCDAQEM's Section 94 and Construction Activities Dust Control Handbook require that a trackout control device be installed and maintained in effective condition at all access points where paved and unpaved access or travel routes intersect at all construction sites. Options for trackout control devices include installing a gravel pad of certain dimensions and depth as specified in the Handbook, wheel shakers, wheel washers, or limiting motor vehicle operation to paved surfaces. All exiting traffic must be routed over the trackout control device(s). Also, trackout extending 50 feet or more in cumulative length from the point of origin or that is of a depth greater than 0.25 inches is prohibited. All other trackout must be removed by the end of the workday or evening shift.

SCAQMD's Rule 1157 requires permanent facilities with land size in excess of 25 acres or with a designed daily throughput of 750 tons and existing facilities with 60 aggregate and/or mixer trucks exiting the facility on any day to install both a rumble grate and wheel washer and to pave internal roads from the rumble grate and wheel washer to the exit (limited exemptions apply). All other facilities are required to install either a rumble grate, wheel washer or truck washer no less than 30 feet prior to the exit and to either pave or install a 6-inch deep gravel pad from the rumble grate, wheel washer, or truck washer to the exit.

SCAQMD Rule 403 prohibits trackout from extending 25 feet or more in cumulative length from the point of origin from an active operation (including aggregate plants). All trackout must be removed at the conclusion of each workday or evening shift.

We find that Rule 316 contains the same or more stringent requirements as CCDAQEM Section 94 and Construction Activities Dust Control Handbook, SCAQMD Rule 403, and SCAQMD Rule 1157 with only a couple of differences. Rule 316 does not contain the CCDAQEM prohibition of trackout that is of a depth of 0.25 inches or greater. Also, Rule 316 wheel washing requirements differ from those in SCAQMD Rule 1157 in that Rule 316 provides an alternative to install a vehicle wash and/or a cosmetic wash in lieu of a wheel washer (where required), provided the vehicle wash/cosmetic wash has at least 40 pounds per square inch water spray from the nozzle, is capable of washing the entire circumference of each wheel, is operated in such a way that visible deposits are removed from the entire circumference of each wheel of the vehicle exiting the wash, and is installed, maintained and used according to the rule's criteria.

With respect to the 0.25 depth trackout prohibition in Clark County, it is combined with a prohibition of trackout extending 50 feet or more in length. Since the Rule 316 prohibition of trackout extending 25 feet or more in length is twice as stringent relative to the Clark County 50-foot requirement, we do not find the Clark County trackout requirements more stringent overall relative to Rule 316 for the MSM comparison.

With respect to the vehicle wash/cosmetic wash alternative in Rule 316 relative to SCAQMD Rule 1157 requirements, Rule 316 specifies that the vehicle wash/cosmetic wash be operated such that visible deposits are removed from the entire circumference of each wheel of the vehicle exiting the wash, along with other criteria. Thus, if an owner/operator installs a vehicle wash/cosmetic wash which leaves visible deposits on a wheel(s), it will not be in compliance with Rule 316. Furthermore, after exiting the wash, the vehicle must travel on 30 feet of pavement or a 6-inch gravel pad prior to exiting onto a paved public road, which provides further assurance that vehicle wheels will be clean before exiting the site. Therefore, we believe the Rule 316 requirements are approximately equivalent in stringency relative to Rule 1157.

Cleaning of internal paved roads and bulk material hauling/transporting

Candidate BACM include prevention of spillage during bulk material hauling/transporting (both offsite hauling and on-site hauling) and removal of spillage or trackout from paved roads after it has occurred.

Rule 316 requires the following:

- per section 307.6(e), paved internal roads must be cleaned with a street sweeper by the end of each production work shift for facilities with 60 or more trucks exiting on any day if there is evidence of dirt and/or other bulk material extending a cumulative distance of 12 linear feet or more. Sweeping is required by the end of every other work day for facilities with less traffic. For the latter, on the days paved internal roads are not swept, the owner/operator must apply water on at least 100 feet of paved internal roads as necessary to meet the rule's opacity standard and visible plume standard and or the entire length of paved internal roads leading to an exit to public paved roads, if such roads are less than 100 feet long.
- New street sweepers purchased must be PM-10 efficient (certified according to South Coast Air Quality Management District Rule 1186) along with street sweepers used at new facilities per sections 307.6(e)(3) and (4).
- Spillage on paved haul/access roads/ paved internal roads must be promptly removed or maintained in a stabilized⁴⁵ condition and removed by the end of the

⁴⁵ The same test methods for determining surface stabilization for open storage piles apply to spillage piles.

each day. All other spillage piles must be maintained in a stabilized condition until removal (per section 307.8).

- When hauling bulk materials off-site, trucks must have at least a 3-inch freeboard, be tarped or covered with another suitable closure, and spillage must be prevented through holes or other openings in the cargo compartment (per section 307.5).

We have identified benchmark BACM/MSM for cleaning of internal paved roads in SCAQMD Rule 1157 requirements. We have identified benchmark BACM/MSM for bulk material hauling/transporting in CCDAQEM Section 94 and Construction Activities Dust Control Handbook, MCAQD Rule 310, and SCAQMD Rule 1157.

SCAQMD 1157 requires prompt removal of material spillage on internal paved roads or that the spillage be maintained in a stabilized⁴⁶ condition and removed by the end of each day. All other spillage piles must be maintained in a stabilized condition until removal. All loads on aggregate trucks must be maintained with at least 6 inches of freeboard and stabilized with dust suppressants or tarped/covered prior to exiting the site. Paved internal roads must be cleaned with a PM-10 efficient Rule 1186-certified street sweeper by the end of each production work shift for facilities with 60 or more trucks exiting on any day and by the end of every other work day for facilities with less traffic. For facilities with less traffic than 60 trucks, on the days the roads are not swept, the operator must apply water as necessary to meet the rule's opacity standards and visible plume standard on at least 100 feet of paved roads, or the entire length of paved roads leading to an exit to public paved roads, if such roads are less than 100 feet long.

Rule 316 requirements mirror those in SCAQMD Rule 1157 with only a couple of exceptions. Rule 316 sweeping requirements are only triggered where 12 linear feet or more of dirt/bulk material trackout exists on a paved internal road whereas SCAQMD Rule 1157 street sweeping requirements apply irrespective of the length of trackout on internal roads. We believe, however, that this difference between the two rules is acceptable with respect to demonstrating BACM and MSM because Rule 316 is clarifying a threshold below which it may not be cost-effective to conduct sweeping, i.e., where less than 12 linear feet of trackout exists. Rule 316 reasonably accommodates sites that have effectively prevented dirt trackout/spillage on their internal roads on the day(s) sweeping is required such that it is not necessary to sweep.

In comparing requirements for off-site bulk material hauling/transporting, Rule 316 requires 3-inch freeboard plus tarping of loaded trucks exiting a site whereas SCAQMD Rule 1157 requires 6 inches of freeboard and stabilization or tarping of loaded trucks exiting a site. We deem the Rule 316 requirement at least as stringent as the Rule 1157 requirement

⁴⁶ Ibid.

because tarping is required for all loaded trucks (irrespective of the amount of freeboard, which is of more concern where trucks are not tarped).

Unlike MCAQD Rule 310 and CCDAQEM Section 94 and Construction Activities Dust Control Handbook, Rule 316 does not contain bulk material on-site hauling requirements (as opposed to off-site hauling). The Rule 316 Notice of Final Rulemaking indicates that any such sources are subject to the requirements of Rule 310 per Rule 316 section 304.⁴⁷ We believe the applicable Rule 310 requirements for on-site hauling are acceptable for purposes of demonstrating BACM/MSM for these sources at Rule 316 facilities.

General and miscellaneous requirements

General and miscellaneous area source Rule 316 requirements are as follows:

- 20% opacity limit according to test methods in Appendix C⁴⁸
- prohibition of visible dust beyond the property line
- Wind Events: during wind events (defined as when the 60-minute wind average is greater than 25 miles per hour), sources are exempt from the above two requirements provided all other requirements have been implemented, disturbed surfaces and open storage piles are stabilized according to the rule's performance standards, and the wind event and control measures applied during the wind event are documented by records. For an active operation, either activity is to be ceased and the area stabilized for the remainder of the work day or a visible crust maintained by applying water or other suitable dust suppressant.
- Surface soils where construction and support equipment operate must be wetted, treated with dust suppressant, or covered with a 6-inch gravel pad and comply with surface stabilization standards.

We have identified benchmark BACM/MSM for these miscellaneous requirements in SCAQMD Rule 1157 and CCDAQEM Section 94 and Construction Activities Dust Control Handbook.

In addition to a 20% opacity limit, SCAQMD Rule 1157 contains a 50% opacity limit based on five individual, consecutive readings and a 100-foot limit for visible dust from any

⁴⁷ Salt River plan, Appendix B, Rule 316 NFR, pg. 88.

⁴⁸ Appendix C contains a tailored opacity test method for unpaved roads and parking lots and sources of non-continuous dust plumes.

source.⁴⁹ CCDAQEM Section 94 contains a 20% opacity limit, a non-federally enforceable 50% opacity instantaneous limit, and a 100-yard limit for visible dust from any source.

We have not required plume distance limits in fugitive dust rules for BACM/MSM demonstrations because it is unclear whether such limits better capture the extent of emissions generated relative to a point-of-origin 20% opacity standard, since visible characteristics of plumes can quickly fade with atmospheric mixing. With respect to the SCAQMD Rule 1157 50% opacity standard, a source is in violation if five consecutive readings are 50% opacity or higher. Under MCAQD Rule 316, a source would be in violation if 12 consecutive readings average 20% opacity or higher. While we recommend that fugitive dust rules contain multiple performance standards as additional tools to address varying site conditions, it is unclear that the Rule 1157 50% opacity standard would result in more stringent control relative to the Rule 316 20% opacity standard. While the 50% opacity standard requires fewer consecutive readings and may be useful in efficiently citing a grossly noncompliant source, we cannot conclude that a lower 20% opacity standard averaged across an additional 7 readings would be less protective. Thus, we believe it is not necessary for Rule 316 to contain the visible distance plume limits or 50% opacity limit contained in comparable rules in order to demonstrate BACM/MSM.

With respect to extracting bulk materials (i.e. digging into the walls of a pit), the only requirements in Rule 316 that apply to this activity include a 20% opacity limit and the prohibition of visible dust emissions beyond the property line. However, we have not identified other MSM as comparable rules also only contain a 20% opacity standard and visible plume limits for extraction of bulk materials; thus Rule 316 requirements are equivalent in stringency.

With respect to wind events, the most stringent comparable requirements are in SCAQMD Rule 1157. Rule 1157 allows exemption from the rule's opacity and visible dust performance standards during high winds (defined as instantaneous wind speeds exceeding 25 miles per hour) if all activities and/or equipment is ceased except for dust controls. Two exceptions are ready-mix concrete and hot-mix asphalt facilities producing materials for use in a construction project that is being paved or poured during high winds and the loading and transport of aggregate materials in such instances. While Rule 1157 requires ceasing of operations in order for facilities to be exempt from the opacity and visible dust standards during high wind conditions and Rule 316 does not, we note that Rule 1157 does not actually require operations to be ceased under high wind conditions, provided the opacity and visible dust standards are met. The surface stabilization requirements that apply to disturbed surfaces and open storage piles during wind event conditions are the same in the two rules. Therefore, we conclude that disturbed surfaces and open storage piles per Rule 316 and Rule 1157 are subject to an equivalent control level during wind events (i.e., the level of control required to comply with surface stabilization tests).

⁴⁹ Note: a visible property line limit also applies per SCAQMD Rule 403.

The most stringent comparison requirements for surface soil stabilization are found in CCDAQEM Section 94 and Construction Activities Dust Control Handbook and MCAQD Rule 310. The CCDAQEM Construction Activities Dust Control Handbook requires stabilization of soils where support equipment and vehicles will operate by applying water or dust palliative. MCAQD Rule 310, Table 11, requires maintaining surface soils where support equipment and vehicles operate in a stabilized condition. Both rules contain performance standards and test methods for surface stabilization, e.g. visible crust test. Rule 316 contains equivalent requirements to these other rules and is therefore equally stringent.

d. Implementation of BACM as expeditiously as practicable

Rule 316, section 401, provides that the requirements are effective upon adoption of the rule, however, institutes a later effective date for the following specific requirements:

1. Dust Control Plans must be submitted by July 31, 2005 or three months after rule adoption, whichever comes first;
2. compliance with pressure control system, operational overflow warning system/device, fugitive dust control technician and surface stabilization where support equipment and vehicles operate must be achieved by October 31, 2005; and
3. trackout prevention devices and schedules for using PM-10 efficient street sweepers must be in place by January 1, 2006.

All of the Rule 316 requirements are currently applicable. MCAQD indicates that the reason behind the later January 1, 2006 compliance date for trackout prevention devices and PM-10 efficient street sweepers was due a limited number of vendors and/or suppliers of trackout control devices and certified street sweepers in Maricopa County.⁵⁰

While the effective date of Rule 325 is March 9, 2005, compliance with the rule's requirements is not required until December 31, 2006. The rationale supporting this extended compliance date is as follows. Rule 325 applies to only three sources in Maricopa County: two brick and structural clay facilities and one tunnel kiln.⁵¹ In order to comply with Rule 325, owners would need to purchase either a dry lime scrubber with fabric filter (DFLS) or a dry injection fabric filter (DIFF). MCAQD relied upon EPA cost estimates for these control devices.⁵² EPA estimates costs of tunnel kilns with 10 tons/hour throughput to

⁵⁰ Rule 316 NFR, pgs. 15-16.

⁵¹ Salt River plan, Appendix B, Notice of Final Rulemaking, Rule 325, August 10, 2005, pg. 3450.

⁵² See "Economic Impact Analysis on Particulate Matter Emissions for Brick and Structural Clay Products Manufacturing Proposed Rule 325", David Lillie, September 28,

be \$1.2 million capital and \$450,000 annualized⁵³ for DFLS and \$940,000 capital and \$390,000 annualized for DIFF. Given the substantial annualized capital investment cost required to comply with Rule 325, we believe the rule's December 31, 2006 implementation date is as expeditious as practicable since owners subject to Rule 325 will need to include this cost into their fiscal year budgets.

e. Evaluation of Rules 316 and 325 per EPA's enforceability criteria

We have evaluated Rules 316 and 325 with respect to appropriate EPA policy and guidance and have determined that they meet our enforceability criteria. Rule 316 and Rule 325 requirements are clearly written with specific definitions of terms and compliance dates. The rules contain appropriate recordkeeping requirements and records must be maintained for 5 years. The rules also contain appropriate test methods for determining compliance with requirements. The rules do not contain unacceptable Executive Officer discretion.

f. Enforcement Resources and Methods for Rules 316 and 325

We consider enforcement resources to be part of the CAA §189(b) requirement that SIPs include provisions to assure the implementation of BACM.

In addressing ADEQ's recommendation for enhanced Rule 316 enforcement, MCAQD committed to increase the inspection frequency for Rule 316 sources from once every two years to four times per year beginning on July 1, 2005.⁵⁴ MCAQD conducted a workload analysis for the increased Rule 316 inspection frequency based on the number of permitted sources in fiscal year 2004 and determined that one additional inspector and an additional supervisor are needed.⁵⁵ This would increase the number of MCAQD inspectors

2004. This analysis is referenced on pg. 3450 of the Notice of Final Rulemaking for Rule 325. The analysis cites "Memorandum from Brian Shrager, RTI International, to Mary Johnson, U.S. EPA, regarding "Final Rule: Costs for Air Pollution Control Devices on Kilns", February 25, 2003.

⁵³ Annualized costs include the annual cost of the capital investment and the annual cost of operation and maintenance, specifically: labor, materials, electricity, lime, compressed air, replacement bags, waste disposal, overhead, administrative charges, property taxes, insurance, and capital recovery calculated for 10 years at 7% interest.

⁵⁴ Salt River TSD, Appendix D, Maricopa County Board Resolution No. C-85-05-005-0-00, Measure 2.

⁵⁵ "Workload Analysis for Rule 316 Permitted Sources" is included in the docket associated with this proposed rule. This analysis specifies that the 4 annual inspections will consist of 1 full inspection and 3 partial inspections. A partial inspection involves checking

dedicated to non-Title V and general permitted stationary sources, which includes Rule 316 and Rule 325 sources, from 7 to 8. In evaluating the level of enforcement resources dedicated to Rule 316 and Rule 325, we consider the number of MCAQD permits associated with facilities subject to these rules. MCAQD issued 107 permits for Rule 316 sources in 2004. Rule 325 applies to two brick and clay structural facilities and one tunnel kiln.⁵⁶ Thus the level of resources dedicated to Rule 316 and Rule 325 enforcement appears to be adequate for the limited number of sources.

The basic elements of MCAQD's enforcement program include permit review, facility inspections, source testing of equipment, and review of records and activities. MCAQD's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation.⁵⁷

g. Conclusion

We have evaluated Rule 316 and Rule 325 requirements to determine whether they demonstrate BACM/BACT and MSM. First, we verified that the adopted rules apply to sources throughout the Maricopa County PM-10 nonattainment area. Second, we considered ADEQ's BACM and MSM analysis and associated recommended control measures, along with reasoned justifications for measures not recommended.⁵⁸ Third, we compared ADEQ's recommended measures against the actual measures adopted into Rule 316 and Rule 325. In addition, we compared Rule 316 requirements to those adopted in SCAQMD Rule 1157 and checked Rule 325 requirements for consistency with EPA's NSPS for clay manufacturing kilns.⁵⁹

With respect to BACM/BACT, we find that Rule 316 and Rule 325 meet BACT requirements for stationary sources and that Rule 316 requirements satisfy BACM for area sources and are equally or more stringent relative to Rule 310 requirements we have approved as BACM. With respect to MSM, we find that Rule 316 and Rule 325 measures

compliance with fugitive dust controls but not necessarily process equipment unless an obvious problem is observed.

⁵⁶ Salt River plan, Appendix B, Notice of Final Rulemaking, Rule 325, August 10, 2005, pg. 3450.

⁵⁷ *Ibid.*, Maricopa County Board Resolution No. C-85-05-005-0-00, Measures 2 and 4.

⁵⁸ *Op. Cit.*, Tables 4.3.4.7 through 4.3.4.13 and accompanying text.

⁵⁹ 40 CFR 63.8555(a), subpart KKKKK, table 1 and 40 CFR 63.8405(a), subpart JJJJ, table 1.

are equally or more stringent relative to similar adopted requirements in other rules. We also have determined Rule 316 and Rule 325 requirements to be consistent with our policy and guidance regarding enforceability and SIP relaxations.

With regard to the CAA requirement for BACM/BACT to be implemented as expeditiously as practicable, we find that most of the requirements in Rule 316 were effective as of the June 8, 2005 adoption date and all of the requirements are currently applicable. While compliance with Rule 325 is not required until December 31, 2006, we believe MCAQD provided adequate justification for this implementation date based on substantial annualized capital investment costs required of facilities subject to the rule for the purchase of necessary emissions control equipment.

Finally, we have evaluated MCAQD enforcement resources for Rule 316 and Rule 325 and believe they are adequate to provide for the implementation of BACM.

Because we believe Rule 316 and Rule 325 fulfill all relevant requirements, specifically, BACM/BACT and MSM requirements of CAA §§189(b)(1)(B) and 188(e) and our policy and guidance regarding enforceability and SIP relaxations, we propose to approve the rules and the Maricopa County Board Resolution No. C-85-05-005-0-00⁶⁰ under CAA §110(k)(3) as meeting the requirements of CAA §§189(b)(1)(B) and 188(e).

3. Rules 310 and 310.01 and Related Submittals

As noted in section D.1 of this TSD, ADEQ identified construction sources, vacant lots, and miscellaneous disturbed areas as significant contributors to PM-10 24-hour exceedences at the Salt River monitors.⁶¹

Rule 310 applies to dust generating operations including construction/earthmoving and demolition sites throughout Maricopa County, of which the Phoenix PM-10

⁶⁰ Measures 2 and 4 of the Maricopa County Board Resolution are relevant to Rule 316 and Rule 325 sources.

⁶¹ ADEQ estimates that construction sources contributed 5.8 percent to 2002 average low-wind day exceedences and 4.4 percent to 2002 exceedences on days with wind speeds over 15 miles per hour (with a highest contribution of 18 $\mu\text{g}/\text{m}^3$ at a single monitor). These estimates exclude construction-related trackout which is quantified in the paved road re-entrained dust source category. ADEQ estimates that vacant lots and miscellaneous disturbed areas contributed approximately 26 percent to 2002 exceedences on days with wind speeds over 15 miles per hour (with a highest contribution of 52 $\mu\text{g}/\text{m}^3$ at a single monitor). Salt River plan, Table 4.2.1, and Salt River TSD, Table 6-8.

nonattainment area is a subset. Rule 310.01 applies to vacant lots and miscellaneous disturbed areas, among other sources, which are not subject to Rule 310 throughout Maricopa County. Performance standards and test methods for opacity and surface stabilization for Rule 310 and Rule 310.01 sources are found in Appendix C "Fugitive Dust Test Methods" of MCAQD's Regulation III. We approved versions of these rules dated February 16, 2000, into the Arizona SIP.⁶² Rule 310 also requires construction site owners/operators to develop dust control plans subject to MCAQD approval. MCAQD's "Application for Dust Control Permit" and "Guidance for Application for Dust Control Permit" provide supplemental information on MCAQD's implementation of the Rule 310 dust control plan requirements.

Upon assessing the contribution of construction sites, vacant lots, and miscellaneous disturbed areas to Salt River exceedences, ADEQ identified a critical need for additional inspectors to enforce Rule 310 and Rule 310.01 requirements.⁶³ EPA last evaluated enforcement resources and methods for Rule 310 and Rule 310.01 sources in 2001.⁶⁴ We agree with ADEQ's assessment that the continuing significant contribution of these sources to PM-10 exceedences in the Salt River area (and other sites in the Phoenix PM-10 nonattainment area with similar sources) warrants an updated evaluation of enforcement-related measures designed to ensure compliance with Rule 310 and Rule 310.01 requirements.

ADEQ did not identify a need for revisions to Rule 310 and Rule 310.01 requirements,⁶⁵ which we approved as meeting the CAA's BACM and MSM requirements on July 25, 2002, beyond fulfilling three MCAQD commitments associated with EPA's BACM and MSM approval for construction sources.⁶⁶ These commitments include 1) adding a modified opacity standard/test method to Appendix C tailored to non-process fugitive dust sources that create intermittent plumes; 2) incorporating additional requirements for dust

⁶² 67 FR 48718 (July 25, 2002).

⁶³ Salt River plan, pg. 29.

⁶⁴ 66 FR 50252, 50271-50273 (October 2, 2001).

⁶⁵ One exception is that ADEQ recommended wind breaks as an additional control measure for Rule 310.01 in conjunction with existing measures requiring surface stabilization. We consider this optional but not necessary to meet BACM because the rule relies on surface stabilization standards to demonstrate compliance and the emissions reduction potential of wind breaks is less certain. Also, wind breaks are not economically feasible in all circumstances.

⁶⁶ 66 FR 50252, 50256-50257. The commitments are contained in the MAG plan approved by EPA.

suppression practices/equipment into dust control plans and/or Rule 310;⁶⁷ and 3) revising and distributing the sample daily recordkeeping logs for Rule 310 sources to be consistent with rule revisions and to provide sufficient detail documenting dust control measure implementation.

a. Evaluation of Rule 310 revisions and related submittals that address the Phoenix MAG plan BACM and MSM commitments for construction sources

In our approval of the MAG Plan for the metropolitan Phoenix PM-10 nonattainment area, we determined that Rule 310 (and Appendix C), as adopted on February 16, 2000, in addition to three MCAQD commitments to further strengthen requirements for construction site fugitive dust, together provide for the implementation of BACM and MSM.⁶⁸

In addressing the BACM and MSM commitments for construction sources in the MAG plan, MCAQD: 1) adopted Appendix F "Soil Designations", revised Appendix C, and revised sections 304.5 and 502 of Rule 310 on April 7, 2004; and 2) revised the Application for Dust Control Permit and the Guidance for Application for Dust Control Permit on July 1, 2005.⁶⁹ MCAQD provides a discussion of the three MAG plan commitments in its Notice of Final Rulemaking for Rule 310, Appendix C, and Appendix F, adopted on April 7, 2004.⁷⁰

In this TSD, we evaluate these submittals for consistency with the BACM and MSM commitments we approved in the MAG plan as well as our general requirements in CAA §110 addressing enforceability and SIP relaxations. Below we list the three commitments (in italics) and describe how MCAQD has addressed them.

Commitment 1: Research and develop a standard(s) and test method(s) for earthmoving sources, designed to be enforceable and meet BACM requirements as to stringency. Revise Rule 310 and/or Appendix C to modify the existing opacity test or add an additional opacity test tailored to non-process fugitive dust sources that create intermittent plumes.

⁶⁷ MCAQD also committed to raise awareness of on-site supervisors of dust control plans through contact during inspections and a revised training curriculum.

⁶⁸ 66 FR 50252, 50256-50257.

⁶⁹ Rule 310, Appendix C, and Appendix F can be found in Appendix B of the Salt River plan. The Application for Dust Control Permit and Guidance for Application for Dust Control Permit can be found in the November 29, 2005 Salt River plan supplement.

⁷⁰ Salt River plan, Appendix B.

MCAQD adopted an opacity test method into Appendix C that addresses intermittent plumes from non-process fugitive dust sources at construction sites.⁷¹ The method is a derivation on EPA's Method 9 in which the averaging time is 5 seconds instead of 15. The Appendix C opacity test method for intermittent plumes applies to activities including, but not limited to, bulk material loading/unloading, non-conveyorized screening, or trenching with backhoes. Opacity readings are taken at the maximum point of the entrained fugitive dust plume that is located outside the initial fallout zone (i.e., the area where the heaviest particles drop out of the entrained fugitive dust plume). Two opacity observations are made per discrete activity, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation is to begin immediately after a plume has been created above the surface involved. A total of 12 consecutive opacity readings are averaged. Sources are in compliance if the average opacity is 20% or less.

MCAQD conducted field research on November 13-14, 2002 in support of revising Appendix C to adopt the opacity test method described in the previous paragraph.⁷² We believe this test method better ensures compliance with Rule 310's 20% opacity because the method is designed for opacity readings to occur at the time plumes are being intermittently generated by earthmoving activities. We believe this derivation to EPA Method 9 improves upon its enforceability for sources that generate intermittent plumes and meets BACM requirements for stringency in combination with other applicable standards. Therefore, we believe Commitment 1 has been met with the April 7, 2004 version of Appendix C.

Commitment 2: Part I: Raise awareness of on-site supervisors of dust control plans through contact during inspections and a revised training curriculum. Part II: Research, develop and incorporate additional requirements for dust suppression practices/equipment into dust control plans and/or Rule 310.

With respect to Part I, MCAQD provides an online Dust Devil Academy Construction Guide.⁷³ Also, MCAQD indicates that Maricopa County inspectors review a construction site's dust control plan with site personnel at the initial inspection and whenever issues arise in subsequent inspections. The inspectors conduct the initial site inspection within 10 days of the start of operations at a construction site.⁷⁴

⁷¹ Appendix C, section 3.3.2.

⁷² See email with attachment from Lucinda Swann, MCAQD, to Karen Irwin, U.S. EPA Region 9, December 11, 2002.

⁷³ The guide is available at http://www.maricopa.gov/qaq/divisions/dcomply/earthmov_guides.aspx.

⁷⁴ Letter from Al Brown, Maricopa County Environmental Services Department (now MCAQD), to Jack Broadbent, U.S. EPA Region 9, September 13, 2001, pg. 3.

With respect to Part II, MCAQD:

- a) adopted Appendix F which classifies soils into four soil texture types based on their PM-10 emissions potential (Very Slight, Slight, Moderate, and Severe) and contains a map delineating the locations in the Maricopa County PM-10 nonattainment area of these soil texture types;
- b) revised Rule 310, section 304.5, to require that dust control plans for construction projects one acre or larger must contain a statement disclosing which of the four designated soil texture types described in Appendix F (or as tested at a particular site) is naturally present at or will be imported to the dust generating operation; and
- c) added minimum criteria in the Application for Dust Control Permit and Guidance for Application for Dust Control Permit for the amount of water that needs to be available (i.e., water supply in conjunction with water application system) for sites with soils classified in Appendix F as "moderate" or "severe".⁷⁵ These criteria apply to individual permits subject to review and approval by MCAQD.

Specific criteria that applies to earthmoving operations (e.g., mass excavation) include: 30 gallons per cubic yard of material moved; 5,000 gallons per acre per day (November-February); and 10,000 gallons per acre per day (March-October). EPA Region 9 provided these minimum water criteria to MCAQD, based on phone conversations with experts.⁷⁶ The criteria ensure that an appropriate amount of water will be made available for dust control on sites with soils classified as "moderate" or "severe" dust emitting potential. In addition, the Application for Dust Control Permit provides examples of how the criteria are to be used and contains related questions as to the estimated quantity in cubic yards of soil to be moved, acres to be graded per day, and project phases in order to allow MCAQD Enforcement Officers to evaluate whether individual permits meet the criteria. MCAQD has also developed and submitted a guidance document titled Guidance For Application For Dust Control Permit.

In terms of the enforceability of these provisions, Rule 310, section 303.2, requires that "The Control Officer shall approve, disapprove, or conditionally approve the Dust Control Plan, in accordance with the criteria used to approve, disapprove or conditionally approve a permit. Failure to comply with the provisions of an approved Dust Control Plan is

⁷⁵ The criteria apply where water is not combined with a chemical or organic dust suppressant.

⁷⁶ References for the water criteria are included in the docket associated with this rulemaking. See emails from Karen Irwin, U.S. EPA Region 9, to Jo Crumbaker, MCAQD, dated March 29, 2004, March 31, 2004, and April 4, 2004.

deemed to be a violation of [Rule 310].” We believe this renders the provisions enforceable when coupled with MCAQD Rule 200 “Permit Requirements”, section 308, which specifies that: “All permit applications shall be filed in the manner and form prescribed by the Control Officer. The application shall contain all the information necessary to enable the Control Officer to make the determination to grant or deny a permit or permit revision, which shall contain such terms and conditions as the Control Officer deems necessary to assure a source’s compliance with the requirements of [Maricopa County] rules.” Since the Application for Dust Control Permit and Guidance for Application for Dust Control Permit contain the relevant terms and conditions for Rule 310 dust control plans and have both been submitted to EPA, the water availability criteria constitute enforceable measures.

Since the “Part I” portion of the commitment concerns raising awareness rather than requirements, our enforceability criteria do not apply. The “Part II” portion of the commitment concerns a requirement for dust control plans to indicate which of four soil texture types are present at a given site per Appendix F classifications or as tested at a particular site. This requirement is enforceable in that either defined geographic locations in Appendix F or a site-specific test will be used to delineate the soil texture at a given site in the relevant dust control plan. See the previous paragraph for a discussion of enforceability with respect to the MCAQD water availability criteria in Rule 310 application and guidance documents. We believe these measures, in total, are consistent with the BACM and MSM commitments we approved in the MAG plan. In conclusion, we believe both phases of Commitment 2 have been satisfied.

Commitment 3: Revise the sample daily recordkeeping logs for new and renewed Rule 310 permits to be consistent with rule revisions and to provide sufficient detail documenting the implementation of dust control measures required by Rule 310 and the dust control plan. Distribute sample log sheets with issued permits and conduct outreach to sources.

Section 502 of Rule 310 requires a daily written log recording the actual application or implementation of the control measures delineated in the approved Dust Control Plan. MCAQD revised section 502 to include examples of dust suppression activities for which recordkeeping is required. Examples specified are records on street sweeping, water applications, and maintenance of trackout control devices, gravel pads, fences, wind barriers and tarps.

MCAQD also revised its sample daily recordkeeping logs which are available on MCAQD’s website to provide various formats for documenting application of measures for specific types of dust generating sources, e.g., haul roads, unpaved parking lots, trucks transporting loads, etc.⁷⁷ Three sample forms are provided. Site owners/operators may select to use a form in question and answer format with questions concerning specific actions taken to address dust from each source or they may select to use a form in which daily

⁷⁷ <http://www.maricopa.gov/aq/divisions/dcomply/earthmov.aspx#log>.

inspection results are to be recorded for each source, including the amount of water applied and the times applied.

Section 502 of Rule 310 (and section 503 which addresses records retention) constitute enforceable recordkeeping requirements for construction sources. We consider the sample daily recordkeeping logs as additional tools to increase rule compliance that do not need to be submitted for purposes of meeting the commitment we approved as BACM and MSM.

We believe MCAQD has adequately met Commitment 3 by ensuring consistency between the Rule 310 recordkeeping requirements and the sample daily recordkeeping logs, revising the sample daily recordkeeping logs to demonstrate the need for site owners/operators to specify actions taken to address each dust source, and making the forms available online.

b. Evaluation of Rule 310.01 revisions and revisions to other rules not related to the MAG plan commitments

MCAQD strengthened and clarified certain requirements in Rule 310.01.⁷⁸ In addition, MCAQD made other revisions to Rule 310 and Appendix C that are unrelated to the MAG plan BACM and MSM commitments for construction sites. We have evaluated these revisions for consistency with our general requirements in CAA §§110 and 193 addressing enforceability and SIP relaxations.

Rule 310.01 - "Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways", adopted on February 17, 2005.

MCAQD's revisions to Rule 310.01 include:

- For lots subject to section 301, adds a requirement that within 30 calendar days following initial discovery by the District of vehicle use on open areas and vacant lots, the owner and/or operator provide in writing to the District a description and date of the control measure(s) to be implemented to prevent such vehicle use on open areas and vacant lots.
- For lots subject to section 302, adds a requirement that within 30 calendar days following initial discovery by the District of disturbance on open areas and vacant lots, the owner and/or operator provide in writing to the District a description and date of the control measure(s) to be implemented.

⁷⁸ Rule 310.01 can be found in the November 29, 2005 Salt River plan supplement.

- Expands coverage of requirements that apply to intermittently used unpaved parking lots, or those used for a period of 35 days or less per year. In the SIP-approved version of Rule 310.01, requirements only apply to such lots on days when over 100 vehicles use the lot. Also, the SIP-approved version excludes days on which ten or fewer vehicles use the lot for purposes of determining whether a lot is used for a period of 35 days or less per year. Rule 310.01, adopted 2/17/05, requires control measures for any lots that are used for a period of 35 days or less per year on any days the unpaved parking lot is used.
- Makes several editing and formatting revisions for improved rule clarity.

In reviewing the above revisions, we have determined they constitute either strengthenings or clarifications that do not weaken rule requirements and are consistent with our criteria for enforceability and SIP relaxations.

Rule 310 "Fugitive Dust" and Appendix C "Fugitive Dust Test Methods"

Rule 310 revisions not related to the three MAG plan commitments include:

- Adds a definition (section 201) for "area accessible to the public". The definition is: "any retail parking lot or public roadway that is open to public travel primarily for purposes unrelated to the dust generating operation"

This revision relates to control measures designed to address publicly accessible areas adjacent to a construction site. It ensures that sources subject to Rule 310 are responsible for dust generated at their site that impacts nearby publicly accessible retail parking lots and public roadways, e.g. trackout.

- Expands the Rule 310 requirement for a trackout control device (section 308.3(a)(1)) to disturbed work areas 2 acres or larger (revised from the SIP-approved version requiring a trackout control device for disturbed work areas 5 acres or larger).

This revision clearly strengthens the rule's coverage.

- Clarifies in section 308.7 that an on-site water application system is (e.g., water truck or hose) is needed while conducting any earthmoving operations on disturbed surface areas 1 acre or larger "unless a visible crust is maintained or the soil is sufficiently damp to prevent loose grains of soil from becoming dislodged".

This revision clarifies that the requirement for an on-site water application system is not necessary for earthmoving operations that occur, for example, immediately following heavy rain or where soils have been pre-soaked to the depth of cut until such time as the controlling effects of the rain or pre-soaking have ended. Thus, it

allows flexibility to account for day-to-day (or hour by hour) field circumstances. The section 308.7 requirement for an on-site water application system is still enforceable given that it can be readily determined whether a visual crust exists (per the test method in Appendix C) or loose grains (i.e. visible dust) are dislodged from the soil disturbed by earthmoving.

- Revises miscellaneous sections to improve clarity, fixes typographical and formatting errors, and incorporate text revisions to increase rule enforceability

With respect to Appendix C, in addition to the revisions discussed in the context of MAG plan Commitment 1, MCAQD revised section 3.3.3 which addresses opacity readings for continuous dust plumes. Text added to section 3.3.3(b)(2) is as follows: "Readings can be taken for more than one piece of equipment within the discrete length of travel path within the 140° sector to the back." This additional text allows opacity observers to take readings from multiple pieces of equipment within a limited line of sight. This revision better tailors the opacity method to earthmoving activities which often involve multiple pieces of equipment each creating discrete dust plumes. Thus, it enables observation of multiple dust plumes that, together, better represent the emissions from a given site and constitutes a rule strengthening.

In reviewing the above revisions, we have determined they constitute either strengthenings or clarifications that do not weaken rule requirements and are consistent with our criteria for enforceability and SIP relaxations.

c. Enforcement Resources and Methods for Rule 310 and Rule 310.01

With respect to enforcement resources dedicated to inspecting sources subject to Rule 310 and Rule 310.01, MCAQD conducted a 2005/06 workload analysis of its earthmoving and vacant lot programs and also created an inspection priority plan for Rule 310.01 sources.⁷⁹ Maricopa County Board Resolution No. C-85-05-005-0-00,⁸⁰ adopted on January 19, 2005, commits MCAQD to increase the number of inspectors dedicated to Rule 310 and Rule 310.01 enforcement, along with other measures designed to improve source compliance. Specifically, the Maricopa County Board Resolution No. C-85-05-005-0-00 commitments include:

- (a) Hire 10 additional inspectors to enforce MCAQD Rule 310.01 by August 2005;⁸¹

⁷⁹ Salt River plan, Appendix F, Enclosures 1 and 2.

⁸⁰ Salt River plan, Appendix D.

⁸¹ As of April 2006, MCAQD had hired all ten of the Rule 310.01 inspectors.

- (b) Develop and submit to EPA by March 2005 an inspection priority plan for vacant lots/open areas and unpaved parking lots in the PM-10 nonattainment area;⁸²
- c) Conduct inspections on all vacant lots/open areas, including alluvial channels,⁸³ in the Salt River area by October 2006 with periodic follow-up inspections;
- d) Hire an additional 12 inspectors, 4 supervisors, and 3 support staff by June 2005 to work proactively and directly on compliance and enforcement of the Rule 310 earthmoving fugitive dust program;⁸⁴ and
- e) Complete a user fee analysis and have new fees considered by the Board of Supervisors in January 2005 to be effective no later than July 1, 2005, to permanently fund the 19 Rule 310 positions.⁸⁵

In reviewing the adequacy of these commitments, we compare them to enforcement provisions in the currently applicable Phoenix PM-10 SIP.⁸⁶ The MAG plan provides for 8 fugitive dust inspectors to implement MCAQD's fugitive dust rules. Because the January 2005 Maricopa County Board Resolution provides for an additional 22 inspectors to implement MCAQD's fugitive dust rules, this represents a significant increase in personnel resources. The number of additional inspectors needed is based on MCAQD's projected fiscal year 2005/06 workload analysis for its earthmoving and vacant lot programs which accounts for the number of vacant parcels in the Phoenix area and the number of Rule 310 permits, which have increased since 2000.⁸⁷

⁸² MCAQD developed an inspection priority plan that is included in the Salt River plan. See Appendix F, Enclosure 1.

⁸³ Alluvial channels in the Salt River area consist of a dry riverbed subject to Rule 310.01.

⁸⁴ As of October 2005, MCAQD had hired all 12 of the additional Rule 310 inspectors, the 4 supervisors, and 2 of the support staff. MCAQD expects to hire the third support staff shortly. The support staff position does not affect field enforcement efforts.

⁸⁵ This commitment has been met through MCAQD's adoption of a revised Rule 280 "Fees" on May 18, 2005, with an effective date of July 1, 2005.

⁸⁶ MAG plan, Commitments for Implementation, Volume Four, Maricopa County, Fourth Submittal, Exhibit A, Revised Measure 6 of Resolution No. C 88-00-017-6-A2128, adopted December 15, 1999.

⁸⁷ MCAQD was responsible for the issuance of 2,500 earthmoving permits in 2000 (Salt River plan, pg. 29), which have increased to 4,548 permits projected for fiscal year 2005/06 according to MCAQD's workload analysis. The workload analysis staffing

MCAQD's inspection priority plan for vacant lots/open areas and unpaved parking lots provides for identification of these sources through complaint investigations, field observations, soil maps, the Maricopa County Assessor Geographic Information Systems website, and/or aerial photographs. The plan provides for site inspections to be prioritized based on complaint investigations, location within the Salt River area, soil texture potential for wind erosion, size (lots in excess of 10 acres), location within the PM-10 nonattainment area, and location in proximity to sensitive receptors (e.g., schools).⁸⁸ The inspection priority plan also provides for an inspection rotation/re-inspection electronic database to rate the dust generating potential of vacant lots/open areas based on criteria such as lot size and compliance history to assist in the scheduling and prioritizing of sites for re-inspection. The inspection priority plan is currently in effect.

The MAG plan does not contain specific criteria for prioritizing vacant lot/open area and unpaved parking lot inspections.⁸⁹ Thus, the MCAQD inspection priority plan for these sources would strengthen the SIP.

Rule 310 requirements are administered through a visual inspection program and permit program which includes review of permit, inspection, performance of compliance test methods and review of records and activities. Rule 310.01 requirements are administered through a visual inspection program which includes stabilization limitation requirements. MCAQD's enforcement options include orders of abatement, civil actions for injunctive relief or civil penalties, and filing a class 1 misdemeanor citation.⁹⁰

Procedural changes to MCAQD's enforcement program have assisted construction site enforcement efforts. Recent improvements to MCAQD's enforcement program have stemmed from the enactment of ARS 49-511.E, which authorizes the County to enter into an Order of Abatement by Consent that may include monetary payments as part of the

conclusions are based on accommodating 9,152 inspections per year of Rule 310 sources and 4,587 inspections per year of Rule 310.01 sources.

⁸⁸ We note that lots less than 10 acres or that are otherwise not prioritized in MCAQD's inspection priority plan are still subject to proactive inspections. However these lots will receive a lower priority than those meeting the plan's criteria.

⁸⁹ The MAG plan commitment reads: "April 2000 - Develop inspection priorities for vacant lot and unpaved parking lot inspections considering lot size and number of sources. Larger lots will be inspected first and smaller lots in succeeding years. Department resources will be directed initially to areas that lack municipal programs". Op. Cit., Revised Measure 6 of Resolution No. C 88-00-017-6-A2128.

⁹⁰ Maricopa County Board Resolution No. C-85-05-005-0-00, Measures 1 and 3.

negotiated terms of the order and has enabled MCAQD to establish a mutual settlement program.⁹¹ This program has streamlined MCAQD's enforcement process by eliminating initial case referral to the County Attorney's office. As a result, cases are resolved more quickly, reinforcing the link between a violation and its consequences.

d. Conclusion

We have reviewed the MCAQD submittals that address the three commitments in the approved MAG plan for construction sources⁹² and have found that they are consistent with the BACM and MSM requirements of the CAA per §§189(b)(1)(B) and 188(e), respectively, and also are consistent with our policy and guidance regarding enforceability and SIP relaxations. With respect to rule revisions unrelated to the MAG plan commitments made to Rule 310, Rule 310.01, and Appendix C, we have determined these revisions would strengthen the SIP and are consistent with our policy and guidance regarding enforceability and SIP relaxations.

We have reviewed the January 2005 Maricopa County Board Resolution enforcement resource commitments for Rule 310 and Rule 310.01 and have found that they adequately provide for the implementation of the BACM requirements in those rules by substantially increasing the number of inspectors and associated personnel for enforcing fugitive dust requirements. We have found that other enforcement-related commitments would strengthen the SIP.

With regard to implementation of BACM as expeditiously as practicable, the revisions to Rules 310, 310.01, Appendix C, the Application for Dust Control Permit, and the Guidance for Application for Dust Control Permit and the newly adopted Appendix F are all currently in effect. Regarding the MCAQD commitments for enhanced enforcement resources, MCAQD had hired all ten of the Rule 310.01 inspectors by April 2006 and all twelve of the additional Rule 310 inspectors by October 2005.

Therefore, we propose to approve Rule 310, Rule 310.01, Maricopa County Board Resolution No. C-85-05-005-0-00,⁹³ Appendix C, Appendix F, "Application for Dust

⁹¹ Letter from Robert Kard, MCAQD, to Colleen McKaughan, U.S. EPA Region 9, September 13, 2005.

⁹² These include revisions to Rule 310 (sections 304.5 and 502), Appendix C (section 3.3.2), Application for Dust Control Permit, Guidance for Application for Dust Control Permit, and the newly submitted Appendix F.

⁹³ Enforcement resource provisions of Measures 1 and 3 of the Maricopa County Board Resolution are relevant to providing for the implementation of BACM for Rule 310.01 and Rule 310 sources.

Control Permit”, and “Guidance for Application for Dust Control Permit” under CAA §110(k)(3). We propose to approve sections 304.5 and 502 of Rule 310, section 3.3.2 of Appendix C, and Appendix F as meeting the BACM and MSM requirements of §§189(b)(1)(B) and 188(e). We propose to approve Section 2, subsections 10 and 11, and Section 3, subsection 1 of the Application for Dust Control Permit as meeting the BACM and MSM requirements of §§189(b)(1)(B) and 188(e). We propose to approve Section 2, subsection 13, and Section 3 of the Guidance for Application for Dust Control Permit as meeting the BACM and MSM requirements of §§189(b)(1)(B) and 188(e). We propose to approve all other revisions to these rules, Resolution, Application for Dust Control Permit and Guidance for Application for Dust Control Permit as SIP strengthenings.

4. City of Phoenix Alluvial Channels Commitment

The Salt River area contains dry river channels comprised of alluvial soils. As noted previously, ADEQ assessed the PM-10 impact of alluvial channels in the Salt River area, and found that they contribute significantly to wind-driven exceedences.⁹⁴ In assessing the wind erosion potential of alluvial channel soils, ADEQ found that some soils have particularly high-emitting potential relative to average vacant land soils. The City of Phoenix owns a substantial amount of alluvial channel land in the Salt River area.

Alluvial channels are subject to MCAQD Rule 310.01 requirements. ADEQ’s recommended approach to addressing alluvial channels throughout the PM-10 nonattainment area is the same as that for vacant lots/open areas and miscellaneous disturbed surfaces, which is increasing enforcement of Rule 310.01 requirements through the hiring of additional MCAQD inspectors.⁹⁵ We have addressed this measure in section D.3.c of this TSD.

ADEQ notes that one of the most effective control methods that can be applied to alluvial channels is establishing barriers to prevent vehicle trespass in combination with stabilization of soils. In order to maximize compliance with Rule 310.01 requirements on its alluvial channel land, the City of Phoenix adopted Resolution No. 20114 on June 16, 2004, which outlines a plan for dust control measures on alluvial channels in the Salt River area.⁹⁶ Specifically, the City of Phoenix committed to “develop and implement a program to control vehicle trespass on City-owned vacant land to address particulate emissions and

⁹⁴ Salt River plan, Table 4.2.1. ADEQ estimates that alluvial channels contributed approximately 15 percent to 2002 average exceedences on days with wind speeds over 15 miles per hour (with a highest contribution of 80 $\mu\text{g}/\text{m}^3$ at a single monitor).

⁹⁵ Salt River plan, pgs. 32 and 41.

⁹⁶ Ibid., Appendix D, City of Phoenix Resolution No. 20114, Measure 04-DC-3.

criminal activity. These lands may include dry river beds, washes, and other open areas where significant trespass occurs. Measures to reduce trespass may include signs, increased police enforcement, such as barriers, fences, berms or other measures. Measures may include stabilization of disturbed soils where feasible." The City of Phoenix budgeted \$200,000 in fiscal year 2005/06 to implement this measure.

The Salt River plan contains a 2004 milestone progress report which specifies City of Phoenix actions to prevent trespass and stabilize soils on City-owned alluvial channel lands.⁹⁷ Concentrated enforcement efforts on alluvial channels in the Salt River area from July through November 2004 resulted in 55 citations and 220 warnings. In December, instances of vehicle trespass significantly lowered to a range of zero to two vehicles; pedestrian trespassers dropped from 45 to 8 per weekend. Thirty "no trespass" signs were installed and maintained. Three-hundred and thirty tons of trash and over 2,000 tires were removed by contractors from the upper riverbank and a thick layer of mulch was applied to twelve acres. Contractors have secured 1,800 feet of fences and berms to prevent trespass along Broadway Road since July 2004. The City treated the entire length of berm on its property with polymer stabilizer. One-thousand, one-hundred feet of guardrail on West side of 35th Avenue have been installed. Installation of concrete barriers at all four corners of the 51st Avenue bridge began in January 2005. Rains in January 2005 formed a crust in the alluvial channel.⁹⁸

Because we believe the City of Phoenix Resolution No. 20114, Measure 04-DC-3, strengthens the SIP and is consistent with our policy and guidance regarding enforceability and SIP relaxations, we propose to approve it under CAA §110(k)(3) as a SIP strengthening.

⁹⁷ Salt River plan, Appendix E, Table 3.

⁹⁸ Photos of City of Phoenix treatments of alluvial channels can be found in the docket associated with this proposed rulemaking.

5. Municipality, County, and State Paved Road Re-Entrained Dust Commitments

As noted previously, ADEQ identifies paved road re-entrained dust as a significant contributor to PM-10 24-hour exceedences at the Salt River monitors.⁹⁹ In evaluating sources responsible for paved road dust emissions in the Salt River area, ADEQ found the most significant sources of dust loading on paved roads to be from windblown emissions, soil trackout, and emissions from earthmoving and other dust generating processes in areas of high industrial, construction, and agricultural activity.¹⁰⁰

In order to address the largest sources of the problem, ADEQ recommended enhanced enforcement of Rule 310 and Rule 316 and the adoption of specific Rule 316 requirements for control of trackout.¹⁰¹ We have addressed these recommendations in sections D.3.c, C.2.f and C.2.c, respectively, of this TSD. ADEQ also recommended enhanced street sweeping with PM-10 efficient sweepers of paved road segments that typically experience a high level of soil and dust deposition,¹⁰² e.g., in locations with high industrial, construction, and agricultural activity.

In our July 2002 approval of the MAG plan, we approved a suite of measures as meeting BACM and MSM for paved roads, including measures addressing street sweeping of public roads. Specifically, we approved commitments by MAG, cities, towns, and the County for purchase and use of PM-10 efficient street sweepers and ongoing street sweeping programs with variable frequencies. MAG's distribution of PM-10 efficient street sweepers funded by Congestion Mitigation and Air Quality dollars included, as one element of the application process, an assessment of PM-10 emissions reduction potential for each city's intended use of the street sweeper(s). However, the SIP-approved MAG plan does not contain measures for targeted street sweeping, using PM-10 efficient street sweepers, on road segments identified as having particularly high emissions potential.

Based on ADEQ's recommendation, eighteen municipalities in the Phoenix PM-10 nonattainment area, Maricopa County and the Arizona Department of Transportation

⁹⁹ Salt River plan, Table 4.2.1. ADEQ estimates that paved road re-entrained dust contributed approximately 64 percent to 2002 average low-wind day exceedences (with a highest concentration of 74 $\mu\text{g}/\text{m}^3$ at a single monitor) and 13.5 percent to 2002 average exceedences on days with wind speeds over 15 miles per hour (with a highest concentration of 43 $\mu\text{g}/\text{m}^3$ at a single monitor).

¹⁰⁰ Salt River plan, pg. 72.

¹⁰¹ Ibid., pg. 78.

¹⁰² Ibid., pg. 79.

adopted resolutions¹⁰³ in 2004 and 2005 that address both the purchase/use of additional PM-10 efficient street sweepers and more frequent, targeted street sweeping. These resolutions largely reflect a model protocol developed by MAG containing the following four elements: targeting “high dust” arterials and collectors and increasing sweeping frequencies with PM-10 efficient sweepers; describing how the protocol constitutes an enhancement or improvement over previously adopted commitments contained in the MAG plan; addressing trackout associated with facilities and activities regulated by Maricopa County by notifying the County when rule violations are observed, and; providing for annual reevaluation of the protocol.

As an example of specific measures resulting from adopted municipal resolutions, the City of Phoenix developed a protocol to comply with its adopted Resolution No. 20114, Measure 04-DC-1. The protocol specifies that street sweeping schedules will increase from the current 14-day sweeping cycle to a 7-day cycle in a targeted area, defined as bounded by Van Buren Street, Baseline Road, 10th Street, and 59th Avenue in the Salt River area.¹⁰⁴ Also, the City reports that its entire fleet of street sweepers are now PM-10 efficient.¹⁰⁵

In addition, the City of Phoenix included \$330,000 in its 2004/05 budget for the purchase of two street sweepers¹⁰⁶ and provides for street improvements (i.e., curb and gutter) on approximately 0.8 mile of 43rd Avenue between Lower Buckeye Road and the Salt River.¹⁰⁷

MCDOT adopted the following street sweeping protocol:¹⁰⁸

(a) identify and target arterial and collector “high dust” roads through routine field supervisor roadway inspections and sweep such roads at least three times per month.¹⁰⁹

¹⁰³ Salt River plan, Appendix D.

¹⁰⁴ Ibid., “City of Phoenix 2004 Protocol & Implementation Plan For Paved Streets With Potential for Dust Emissions”.

¹⁰⁵ Ibid., pg. 5.

¹⁰⁶ Salt River plan, Appendix D, City of Phoenix Resolution No. 20114, Measure 04-DC-1.

¹⁰⁷ Ibid., Measure 04-DC-2.

¹⁰⁸ Salt River plan, Appendix D, Maricopa County Resolution No. C-85-05-005-0-00, Measure 5.

¹⁰⁹ The protocol indicates that this sweeping frequency is double the previous frequency.

(b) sweep all targeted roads with certified PM-10 efficient street sweepers by February 2, 2005.

(c) have all MCDOT field inspectors and supervisors report trackout associated with facilities and activities regulated by Maricopa County to MCAQD when rule violations are observed.

(d) re-evaluate the protocol annually to ascertain its effectiveness, update the list of roads swept with increased frequency, and submit this list to MCAQD annually.

The adopted resolutions would enhance the stringency of existing SIP-approved MAG plan measures and are consistent with our policy and guidance regarding enforceability and SIP relaxations. We therefore propose to approve the municipal, County,¹¹⁰ and State resolutions under CAA §110(k)(3) as SIP strengthenings.

¹¹⁰ Measure 5 of the Maricopa County Board Resolution contains the relevant street sweeping commitment.