

TECHNICAL MEMORANDUM
Street Sand Use Report
State of Colorado: Air Quality Regulation 16

September 30, 1999

This memorandum provides the methodology and source of data used to calculate the % Agency Emissions Reduction achieved for a given year based on knowledge of the sanding agency's 1989 Baseline Sanding Rate and the information normally reported in the Annual Street Sand Use Report. An electronic version of the Annual Street Sand Use Report is under development which will perform the calculations described herein based on the aforementioned agency information. A sanding agency may still continue to use the hard copy report form once the e-version is available

The information in this document can also be used as a planning tool for an agency seeking to improve its emissions reduction to the compliance levels, 30% in the metro area or 20% in the foothills area, which become effective October 1, 2000.

Per Cent Agency Emissions Reduction

The formula used to calculate % Agency Emissions Reduction is as follows:

$$(1-(0.36*(1-(SRC*\% Swept)))+(0.64(1-\% Sand Reduction)^{0.8}*(1-(SRC*\% Swept))))$$

where:

0.36 is dust fraction of emissions and 0.64 is sand plus residual sand fraction of emissions, which is based on the CDOT report Street Sanding & Sweeping (Cowherd, 1998) and supported by the RAQC report Emission Benefit Study (AlphaTRAC, Inc., August, 1999)

SRC is the Sweeping equipment emissions Reduction Credit currently recommended as 0.37 for Mechanical and Combination equipment and 0.61 for Vacuum and Regenerative Air equipment. The recommended emissions reduction credits are based on the RAQC Emission Benefit Analysis (September 1999) and the Emission Benefit Study (AlphaTRAC, Inc., August, 1999). Sweeping Practice & Sweeping Technology is reported in Section E of the annual Street Sand Use Report. See additional discussion below.

% Swept is % Network Swept in 4 days, as reported in Section E of the annual Street Sand Use Report.

% Sand Reduction is calculated as follows:

$$((\text{Baseline Rate} - \text{Material Application Rate})/\text{Baseline Rate}) * 100$$

Baseline Rate (lbs./lane mile) - as previously reported, the sand applied in tons * 2000 divided by the miles driven in 1989 for each entity. If baseline is not known contact the

RAQC or APCD.

Material Application Rate (lbs./lane mile) - Material Applied As Corrected Total in Tons (Section B of the annual Street Sand Use Report) *2000, divided by the reported Miles Driven (Section D of the annual Street Sand Use Report) for each entity.

Material Applied (Solids only) are reported in Tons in the first column (As Applied) of Section B. In the second column (As Corrected), Sand/Salt and Ice Slicer shall be recorded as actual tons applied as verified by the Emissions Benefit Study and Analysis previously referenced. Applied Realite tons shall be multiplied by the factor 1.1 based on the Western Aggregates, Inc Data Report for the Realite Plus Street Sanding Study (Woodward-Clyde, November 1995) and recorded in the second column. The As Corrected column shall be totaled and recorded in Tons on the line B. As Corrected Total

At this time Other materials should be discussed with the APCD & RAQC before use.

Miles Driven (miles) - as reported on Annual Sand Use Report Section D.

The power 0.8 is the EPA factor used to calculate emissions reduction credit from the reduction of applied sand.

Multiple Sweeping Technologies

Section E. Sweeping Practice & Sweeping Technology requires that the % of Network Swept be reported by sweeping technology as follows:

	<u>SRC</u>	*	_____	% of Sanding Network
Mechanical & Combination	0.37	*	_____	% of Sanding Network
Vacuum & Regenerative Air	0.61	*	_____	% of Sanding Network
Weighted Average SRC	_____	*	Total	% of Sanding Network

If multiple sweeping technologies are used a weighted average sweeping reduction credit applicable to the total % of Sanding Network Swept in 4 days will have to be calculated before the % **Agency Emissions Reduction** can be calculated.

EXAMPLE:

	<u>SRC</u>	*	_____	% of Sanding Network
Mechanical & Combination	0.37	*	40	% of Sanding Network
Vacuum & Regenerative Air	0.61	*	10	% of Sanding Network
Weighted Average SRC	0.42	*	50	% of Sanding Network

Foothills Area

A separate Street Sand Use report is required for the Foothills area. Under A. Data for (Insert 1 in appropriate box) indicate if the report is for the Foothills area or Metro area, which indicates the remainder of your jurisdiction. At the same time the report can be designated as calendar year or winter season. NOTE: Insert 1 in only one of the four available boxes.

The agencies with roadway in the Foothills area are Boulder County, CDOT 4 & CDOT 6, Douglas County and Jefferson County.

Network Characteristics

Report lane miles in the normally sanded or “treated “ network under Section F.. This includes those areas that may be treated exclusively with liquids or alternative materials such as Ice Slicer or Realite. The % of Network Swept in Section E. is based on this total lane miles of sanded or treated lane miles.

E-Mail Street Sand Use Report (Under Development)

Entering the **As Applied (tons)** of material in Section B will automatically generate the As Corrected Tons column. In Section D entering the **Miles Driven** and **Baseline Rate** will generate the current Material Application Rate and the % Sand Reduction from Baseline. Adding the **% of Network Swept** by each technology in Section E. will automatically calculate the weighted average sweeper reduction credit and the total % of network swept in 4 days.

Based on the information provided above the Percent Agency Emissions Reduction will be calculated and presented. The E-mail version will also display the Required Emissions Reduction and Increased Emissions Reduction Required, if any.

Street Sand Use Report

A non e-mail, hard copy version of the report form will be made available as in the past. It is not required that a sanding entity calculate its Percent Agency Emissions Reduction. However, all of the required data must be reported.