

New Mexico Pilot Dust SIP Project

Obvious And Relevant Points

Overall, WRAP dust tools provide needed resources.

- Exception: CMAQ modeling for fugitive and windblown dust currently has only limited usefulness for 2007 SIPs
- Major hurdle: Confusion of terms and acronyms
 - Recommendation: A list of all acronyms and technical terms should be prepared for each WRAP tool and/or project, with maximum consistency in the acronyms.
- A simple summary list of databases and tools would be very useful.
- Tools should provide basic information in plain English.

Future Work / Next Steps

To the extent that SIPs will rely on the latest WRAP tools and data resources, the research recommended in the other Dust Lessons Learned papers should be pursued.

Research / Information Needs

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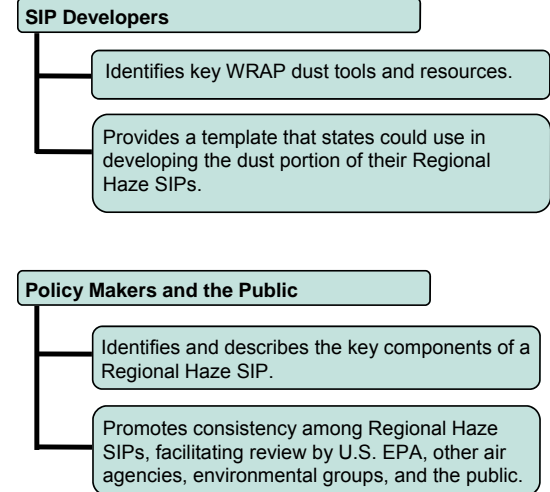
CONTACT INFORMATION AND ADDITIONAL RESOURCES

New Mexico Pilot Dust Regional Haze State Implementation Plan for the Salt Creek Wilderness Area
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 Study: <http://www.wrapair.org/forums/dejff/NM-pilot.html>

Study or Resource	Project Web Site
Attribution of Haze	www.wrapair.org/forums/aoh/index.html
Causes of Haze Assessment	http://coha.dri.edu/index.html
In and Near Class I Areas	www.wrapair.org/forums/class1/index.html
Near Emissions Project	www.wrapair.org/forums/class1/near/htmlfiles/main.html
Causes of Dust	www.wrapair.org/forums/dejff/causes.html
Windblown Dust	www.wrapair.org/forums/dejff/tderosion.html
GIS Land Use Database	www.wrapair.org/forums/toc/GIS.html
Regional Modeling Center	http://pah.cert.ucr.edu/rmc/ and http://pah.cert.ucr.edu/aqm/308/
Technical Support System	http://vista.cira.colostate.edu/tss/
Dust Definition	www.wrapair.org/forums/dejff/documents/defdust/index.html
Visibility Information Exchange Web System (VIEWS)	http://vista.cira.colostate.edu/views/
WRAP Emission Data Management System	www.wrapedms.org/default_login.asp
Fugitive Dust Handbook	www.wrapair.org/forums/dejff/fdh/index.html
Natural Resource Conservation Service: State of the Land	www.nrcs.usda.gov/technical/land/
Google Earth	http://earth.google.com/

This project demonstrated how various WRAP technical and policy products can be integrated to address the contribution of dust to regional haze. It relied heavily upon the previous inventory characterization and improvement efforts and followed the Dust Definition Feasibility Assessment Protocol. Strengths and weaknesses of the WRAP products were identified. The Project Report is also a template that states could be used in developing the dust portion of their Regional Haze SIPs.

Conclusions and Recommendations: WRAP dust tools generally provided needed information for Regional Haze SIPs; for each WRAP resource or tool, a list of all acronyms and technical terms and their definitions and a summary of the databases and tools would be helpful; any tool should provide all basic information in plain English, since most of the SIP planners will be held accountable by the public and political figures for the decisions made in this Regional Haze process.



BACKGROUND

The Environmental Protection Agency adopted the Regional Haze Rule in 1999. This rule is intended to improve visibility in all Class I areas over the next 60 years. It focuses on improving Class I area visibility on the haziest days and ensuring no degradation on the clearest days. States must revise their SIPs as part of this process.

Salt Creek Wilderness Area (SACR) was chosen for the Pilot Study due to the location's marked increase in coarse material on the 20% worst days for visibility. This region of the state has also historically had air quality issues with coarse particulate matter, particularly from high wind events. The SACR is located in the southeastern region of New Mexico, near the City of Roswell. The wilderness area is part of the 9,600 acre Bitter Lake National Wildlife Refuge. The predominant vegetative cover for SACR is native grasses and shrubbery. The Class I area is characterized by dry creek beds, sand dunes, and gypsum sinkholes.



What the Dust Emission Joint Forum (DEJF) Did

The DEJF devised and oversaw several projects to support RHR SIP development in the western US. These include:

- Dust Emission Inventory Summary
- Windblown Dust Emissions from Vacant Lands
- Dust Tools and Resources
- Dust Definition Implementation
- New Mexico Pilot SIP Project (this project)

The State of New Mexico prepared a Pilot Study¹ for the Salt Creek Wilderness Class I area located in southeastern New Mexico near the City of Roswell, NM to use and critique the WRAP tools. The Salt Creek Class I area was chosen due to its marked increase in monitored coarse mass emissions, the major component of dust, for the site's worst visibility days.

¹ The NM Pilot Dust SIP is a template that states could use in developing the dust portion of their Regional Haze SIPs. It is an example and is by no means intended to represent the State of New Mexico's SIP submittal and should only be used at a state's own discretion.

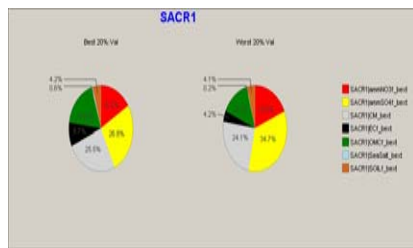
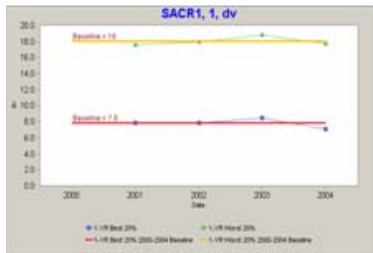
SIP Template/Protocol

The purpose of the Pilot Study is to not only utilize and critique the tools developed by WRAP, but to also provide a SIP template for other states to use in their SIP development process. The template language used for the Pilot Study was taken from the [Regional Haze State Implementation Plan Templates](#) developed by Western States Air Resources (WESTAR) Council. The information in the protocol section includes tools developed by WRAP and other resources used in the Salt Creek dust SIP template development process. The template is broken down into the following categories required under the Regional Haze Rule:

Visibility Conditions Reasonable Progress Long Term Strategies Sources and Control Strategies

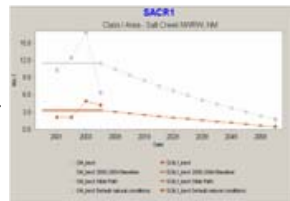
Visibility Conditions

Protocol: Baseline conditions can be determined through EPA Guidance for Tracking Progress under the Regional Haze Rule or WRAP [Technical Support System](#) (TSS). Natural conditions for a Class I Area can be determined from EPA Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Program. Light extinction for coarse mass: [Causes of Haze Assessment web site](#) (COHA). Monitoring data: [Visibility Information Exchange Web System](#) (VIEWS), information also on TSS website.



Reasonable Progress Goals

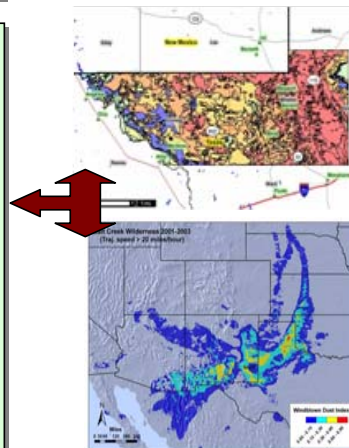
Protocol: Reasonable progress goal (RPG) and rate of progress (ROP) can be determined through EPA Guidance for Tracking Progress under the Regional Haze Rule or through the WRAP [TSS](#). Use the natural and baseline conditions to determine the RPG and ROP. IMPROVE monitoring data is available on [VIEWS](#) and [TSS](#).



Long Term Strategies

Protocol: The WRAP product used: [Assessment of the Principal Causes of Dust-Resultant Haze at IMPROVE Sites in the Western United States, Weight of Evidence Checklist](#). To determine impacts from Texas and Mexico: [Assessment of the Principal Causes of Dust-](#). Other resource tools: [Mexico National Emission Inventory](#); [Emission Inventory for Ciudad Juarez, Chihuahua, Mexico](#); [2001 Air Emission Inventory: Guadalupe National Park, Texas](#); and the [Natural Resources Conservation Services Web Soil Survey](#).

For monitoring data: [VIEWS](#) Annual Summary, [COHA](#), [TSS](#), and IMPROVE web site. For modeling data: [WRAP Regional Modeling Center](#) (RMC). Emission inventory data: WRAP [In and Near Emissions](#) web site and the Salt Creek local/regional emission inventory. Other Information: [TSS](#) web site and the [WRAP Emission Data Management System](#).



Protocol (Continued)

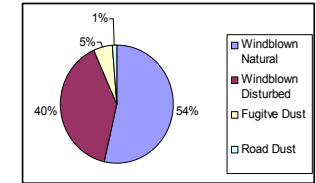
Sources and Control Strategies

Protocol: WRAP tools: Dust Definition; Fugitive Dust Emissions from Windblown Erosion; Stationary and Area Source Pivot Tables; In and Near Emissions; and EDMS. Other resources: site visits; use of aerial photography, i.e. Google Earth; and local/regional emission inventories. To identify high priority dust sources: the Dust Definition; site visits; and the local/regional emission inventory. Control or mitigation options: Dust Definition and the Fugitive Dust Handbook. Other resources were also used for this study.

In establishing the dust emission reductions for 2018, the anticipated net effect: WRAP's Fugitive Dust Handbook local/regional emission inventory, Natural Resource Conservation Service: State of the Land, Dona Ana County Natural Events Action Plan; and the Handbook for Dust Control in Mining. See also CMAQ modeling on the Regional Modeling Center web site.

Weight of evidence for the long term strategy: the Causes of Dust/New Mexico Pilot Study, as well as the Causes of Dust Analysis were important resources in determining if the 20% worst visibility days are caused by mechanical generation, windblown events, Asian dust events, or upwind transport. The Dust Definition provided the needed guidance to determine if the sources are anthropogenic, natural, or both and which sources can be controlled in the long term. The Fugitive Dust Handbook, Fugitive Dust Emissions from Wind Erosion, and the local/regional emission inventory provided information for the emission reductions. Other resources used in developing the weight of evidence include the TSS web site, NRCS Web Soil Survey, Google Earth, CARB Emission Inventory Documentation, and federal, state and local data.

Dust Sources that Affect Visibility at SACR



Sources	Control Techniques	Efficiency	Compliance Schedule
Construction	Regular use of wet suppression	90%	2008
	Dust suppressants	84%	
	Windbreaks	50%	
	Stabilization of disturbed areas	4-88%	
	Ceasing construction during high wind events	98%	
Oil and Gas	Regular use of wet suppression	90%	2008-2009
	Dust suppressants	84%	
	Retention of natural vegetation	90%	
Unpaved Roads	Regular use of wet suppression	90%	2008-2010
	Dust suppressants	84%	
	Traffic controls	44%	
	Paving	99%	
Agriculture	Ceasing tilling during high wind events	98%	2008-2010
	Contour Farming	15-64%	
Mining	Haul Road Dust Control	15-60%	2008-2010

WRAP Tool Ratings (5 √ being best, 1 √ being lowest)

WRAP Tool	Clarity	Useful	Relevancy	Effective	Comments / Recommendations to Users
Dust Definition: Feasibility Analysis and Case Studies (Salt Creek Wilderness and Saguro West)	✓✓✓	✓✓✓✓	✓✓✓✓✓	✓✓✓✓	<ul style="list-style-type: none"> Can help establish a framework for which dust sources affect a Class I area Can be confusing to follow It is helpful to read the Feasibility Analysis when using the Case Studies as a template
Fine Fraction of Fugitive Dust	✓✓✓	✓✓✓✓ ✓	✓✓✓✓✓	✓✓✓✓	<ul style="list-style-type: none"> Was essential to developing an accurate PM2.5 inventory. Recommendation: add a one page synopsis for the study and the conclusions.
Causes of Dust Regional Analysis	✓✓✓	✓✓✓✓	✓✓✓✓✓	✓✓✓✓	<ul style="list-style-type: none"> Proved to be quite helpful.
Causes of Dust: New Mexico Pilot Study	✓✓✓ ✓	✓✓✓✓ ✓	✓✓✓✓✓	✓✓✓✓	<ul style="list-style-type: none"> Proved to be quite helpful.
Fugitive Dust Emissions from Wind Erosion	✓✓✓	✓	✓✓✓✓✓	✓✓	<ul style="list-style-type: none"> Did not perform as expected: an alternative would be helpful in the short term.
Fugitive Dust Handbook	✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	<ul style="list-style-type: none"> Useful, but recommend fuller explanations of data sources and assumptions.
CMAQ Modeling for Fugitive Emissions	✓✓	✓	✓✓✓✓✓	✓	<ul style="list-style-type: none"> Data improvements are needed. It would be useful if an alternative method could be established to show reasonable progress for dust.
Weight of Evidence	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	<ul style="list-style-type: none"> Tool not fully available. Could be very helpful.