

WRAP Emission Forum Meeting Summary
Missoula, MT
September 27-28, 2005

Meeting Attendees (Day One)

Alice Edwards, Alaska DEC
Dennis Schwehr, WEST Associates
Alison Pollack, ENVIRON
Paula Fields, ERG
Tom Moore, WRAP Technical Coordinator
Roy Doyle, Colorado APCD
Bob Gruenig, NTEC
Jim Carlin, Montana DEQ
Lisa Riener, Quinalt Nation
Mike Doyle, Clark County, NV DAQEM
Bob Palzer, Sierra Club
Ken Cronin, NTEC
Jenifer Pond, ITEP
Lori Howell, Shoshone Bannock Tribes
Don Arkell, WESTAR
Chris Ramsdell, Idaho DEQ
Brenda Harpring, Nevada DEP
Lori Campbell, Nevada DEP
Lee Gribovicz, Wyoming DEQ
Julie Simpson, Nez Perce Tribe
Randy Ashley, Conferderated Salish & Kootenai Tribe

Meeting Summary

Pechan began the meeting with a status on the **Emission Data Management System** (EDMS) project which was "rolled out" in January '05. He provided statistics on Database Administrator (DBA) time, and pointed out that the project funding for the DBA support was about to run out for 2005. There are a number of EDMS Enhancements that were discussed, and the EF discussed which of these might be undertaken with available funds, still allowing continued contractor support for the system. The EDMS was Beta Tested last year, and the EF is looking at another round of testing this Fall. Based on stakeholder feedback and the results of this Beta testing the EF will make decisions on the future of EDMS around the end of this year.

Regarding the Alaska EI Projects, the **Alaska Aviation EI** is now done with the Final report posted on the Emission Forum web site:

<http://www.wrapair.org/forums/ef/inventories/akai/index.html>

The **Alaska Representative Community EI project** is proceeding with Survey Information still being collected. Sierra Research will extrapolate community-specific results to other similar sized communities based on population and geography, and they will prepare emission summaries from the calculations.

We heard the status of emission related **Inter-RPO Projects** including the 2002 National Wildfire EI, the ConCEPT model alternative emission processing model and the development of a new Ammonia model. Also the EI Data Warehouse Project is proceeding, which will provide a basic web system to exchange EI data between RPO's and between states (baby EDMS). Non-emissions related projects include the Natural Haze Levels sensitivity analysis, the Fast

Aerosol Sensing Tool for Natural Event Tracking (FASTNET) and the Combined Aerosol Trajectory Tool (CATT) projects.

Regarding the **Tribal Inventory of major Stationary sources**, there are initial results available, and the next step involves the Tribes, ITEP and the TDDWG reviewing the Project Report. Then the tribal 2002 emission estimates will need to be reconciled with states inventory, and TEISS files will be developed for the tribes.

Regarding **SSJF EI & Control Technology Projects**, the (slightly revised) Point & Area 2018 Projections are complete, with results of the **Final** 2002 and the **Draft** 2018 WRAP Point & Area Source Emission Inventories (w/o California) are summarized in the following table.

WRAP Region Emissions (Tons)							
Year	<u>NO_x</u>	<u>SO₂</u>	<u>VOC</u>	<u>CO</u>	<u>PM₁₀</u>	<u>PM_{2.5}</u>	<u>NH₃</u>
<u>Point Sources</u>							
2002	1,083,270	849,032	282,234	523,392	136,724	49,337	15,972
2018	1,008,505	792,403	315,917	591,799	165,957	67,778	15,483
<u>Area Sources</u>							
2002	453,257	255,715	1,960,682	1,487,543	1,893,156	512,671	31,784
2018	401,616	245,950	2,422,124	1,118,854	2,063,956	537,207	27,360

The **Revised WRAP Mobile Source EI's** are also completed, with On-Road MOBILE 6 emissions summarized for four categories: light duty gasoline, heavy duty gasoline, light duty diesel and heavy duty diesel vehicles.

Nonroad emission categories include:

Agricultural Equipment	Lawn and Garden Equipment
Aircraft	Locomotives
Airport Ground Support Equipment	Logging Equipment
Commercial Equipment	Oil Field Equipment
Commercial Marine	Pleasure Craft
Construction and Mining Equipment	Railroad Equipment
Industrial Equipment	Recreational Equipment

with emissions calculated with the NONROAD 2004 model (except Aircraft, Commercial Marine and Locomotives). More details of the calculation procedures were presented, with inventories were compiled for 2002, 2008, 2013 and 2018.

Revisions were also made to the unpaved road dust emissions estimates from the previous §309 modeling work, and discussions were held regarding differences resulting from obtaining VMT on rural unpaved roads.

The **Next Meetings** of the Emission Forum were discussed. Calls were set to discuss budget and mobile questions (October 5th), and to discuss the results of the Beyond Beta Test of the EDMS (December 2nd). The next face to face meeting will involve decisions on EDMS enhancements, EDMS Training and budget management issues, to be held the week of February 6th possibly in New Mexico.

Meeting Attendees (Joint Session with FEJF, Day Two)

Alice Edwards, Alaska DEC
Dennis Schwehr, WEST Associates
Tom Moore, WRAP Technical Coordinator
Roy Doyle, Colorado APCD
Bob Gruenig, NTEC
Jim Carlin, Montana DEQ
Bob Palzer, Sierra Club
Ken Cronin, NTEC
Lori Howell, Shoshone Bannock Tribes
Don Arkell, WESTAR
Chris Ramsdell, Idaho DEQ
Brenda Harpring, Nevada DEP
Lori Campbell, Nevada DEP
Lee Gribovicz, Wyoming DEQ
Julie Simpson, Nez Perce Tribe
Randy Ashley, Conferderated Salish & Kootenai Tribe
Dan Redline, Idaho DEQ
Bob Habeck, Montana DEQ
Christi Gordon, US Forest Service, Region 3
Kara Paintner, Department of Interior, National Park Service
Charlene Spells, EPA, Office of Air Quality Planning and Standards
Margaret Walsh, USDA-NRCS
Adriann Killsnight, Northern Cheyenne Tribe
Ron King, Alaska DEC
Debra Wolfe, Montana DEQ
Darla Potter, Wyoming DEQ
Mark Fitch, US Forest Service
Don McKenzie, US Forest Service, FERA
Steve Body, EPA Region 10
Thomas Dzomba, US Forest Service, Region 1
Pat Shaver, USDA-NRCS
Lisa Bye, BLM/NPS/FWS

A **Joint Emissions-Fire Forum** session was held and participants received an update on the Attribution of Haze project and the Technical Support System (TSS) web portal to display these AoH results.

And **National 2002 Wildfire Emission Inventory** is essentially complete, with the vast majority (86% of the acres burned - essentially all of the PM_{2.5} emissions) shown coming from the WRAP region.

The final **Phase II 2002 WRAP Actual Fire EI** is complete, but for SIP Planning, we needed a representative baseline (actual 2002 data may not be representative of current conditions). Thus a **Phase III Inventory for the 2000-2004 timeframe** (WF & R combined) was completed. And the **Phase IV 2018 Projected Inventory** was developed from the Phase III average with three scenarios involving Less and More Emissions, along with a Likely Scenario for use in WRAP modeling.

Meeting Details

★ Emission Data Management System ★

David Holoman of Pechan gave a presentation on the status of the EDMS project.

This system was "rolled out" in January '05, and so far there have been 8 production inventories entered. The system is hosted at the University of North Carolina. He showed the activity of the Database Administrator (DBA) with Project Administration and Data Loading taking the most effort at 26% of the DBA time, each. This was followed by User Support at 18%, Application Administration at 12%, Data Remediation at 11% and Database Maintenance at 7%.

He gave statistics showing that there are 128 General Users now registered for the system, with 18 Data Analysts and 20 Data Owners (total 166 users). He explained that anyone can register as a General User, but a Data Analyst can use the "ad-hoc" reporting and query functions. Data Owners can actually modify the data system with capability to upload their data to the system. There have been some people that have tried to get EI information from EDMS as a General User, but didn't know that they needed Data Analyst level. That has caused some confusion and frustration from these data searchers, and there is now new instruction on the website to try to better inform users of the data use levels. Although there is a very low threshold for receiving Data Analyst level and no requests have been turned down, there has been some discussion on whether there is a need for these two separate user classifications (General & Analyst).

Mr. Holoman's presentation went on to give statistics on system use and he went over the fact that there have been quite a number of Steering Committee Calls to direct the system development. The minutes of these Steering Committee calls are posted on the EDMS Project Site:

(<http://projects.pechan.com/edms>)

Regarding management of the system, he pointed out that it has been very important to document exactly what is contained in any particular version of the inventory, and he noted that the contents of each inventory release are listed in a spreadsheet under the "Documents" link of "Site Help". Other important Production-Phase findings include the importance of resolution of potential jurisdictional overlaps, and conveyance of these overlaps to users.

It was noted that Data Loading is one of the largest expenditure of the DBA's time, and there is the capability for Data Owners to load their own data. But there have been some barriers to agency loading use, with QA routines that are triggered upon loading. If there was a way for smoothing this data loading process, then perhaps more of the DBA's time might be available for other activities. But there point was made that it is appropriate for the DBA to oversee the QA of the submitted information.

★ EDMS Enhancement Priorities ★

Pechan had prepared a "Potential Tasks" document, and the first item was the 2005 Hosting Supplement (\$58.4K Infrastructure; \$122K DBA Support). Regarding the budget status, right now Pechan is slightly over budget on the 2005 year,

and they see that they will have to cut over to "Minimum Services" on October 25th of this year. Under "Minimum Services" the system would be "turned on" (no changes to UNC), but there wouldn't be data loading, or monthly reporting or other DBA services. The biggest problem was the loading of the 2002 Actual Inventory in September of this year, and it was noted that this all will be repeated with the loading of the 2018 Projections.

Mr. Holoman also pointed out that there is a NIF 4.0 protocol, and there will probably be some work associated with that protocol (\$26.9K). And the EF needs to consider additional User Training for General Users and more detailed training for Data Providers (\$5.4K). And there is an interest in "Color Graded Maps" to indicate visual identification of trends, groupings, max/min's and data quality (\$9.9) Regarding BART, there is interest in the capability to harbor BART eligibility information (\$8.6K)

Then there was \$26.4K worth of other Enhancements that were identified in the EDMS Acceptance Plan. And there was some talk about Enhanced Facility GIS Display (large emission sources - \$9.6K), a Low Graphics Version of EDMS (\$30K; not a large demand so far), a Method for Biogenic/Dust Feedback (\$20K) and Capability to Geo-Code certain Area Sources (ie/ landfills, minor stationary sources (\$20K).

★ EDMS Testing ★

Eastern Research Group (ERG) had done the initial Beta Testing of the EDMS last year, and Paula Fields gave a presentation on the next round of planned system testing. The first time ERG looked at:

- Usability
- Functionality (home page, standard reports, GIS/dynamic reports, data upload
- Data Integrity (Inventory 1: 2002 Draft NEI)

For the "Beyond Beta Test" they will look at:

- Bug Resolution
- Functionality (ad hoc reports, standard reports, GIS/dynamic reports, data upload)
- Data Integrity (Inventory 8: Version 1.2 - revisions to fire, biogenics)
- Specifications Compliance (determine whether Bugs are really problems with the system, or issues that should have been addressed under the project Scope of Work specifications)

The testing begins October 3rd, leading to a Draft Report in November, and a Final Report by December 15th this year.

★ EDMS Planning ★

Jim Carlin brought up the question of whether the submittals to the EDMS, could also be used to satisfy the CERR Reporting to the NEI. Lee Gribovicz noted that this is an old idea that had been discussed in years past, but the Forum had never moved those talks up in priority. Lori Campbell noted that the EPA feels very empowered to modify and massage state data to the states' chagrin, and she wondered whether a united submittal from WRAP couldn't provide a stronger defense of the states' data. But there would be a number

of hurdles that have to be resolved before such a proposal could be implemented.

Regarding some of the problems experienced with EDMS, it was noted that for some counties, the EDMS showed that there was no emission data. Paula Fields also noted that there have been problems with Oracle errors when generating ad hoc reports. And Wyoming experienced difficulty when trying to upload information regarding file name convention. There also is a deficiency in listing of units and explanation of acronyms that must be addressed. And Lee Gribovicz explained that the implemented Standard Reports doesn't fully cover the list included in the Scope of Work for the project.

The contractors were dismissed for a conversation on the Budget. Alice Edwards explained that the EF is experiencing cost overages in most all phases of the EDMS. There are potential enhancements to the system, and the EF must decide whether we are satisfied with Pechan's work to date, and whether we want to stick with Pechan for future operations. Some of the tasks are truly enhancements, while some of the work may fall into the category of "fixes" to some of the work that Pechan has already completed. In the latter case, it may be that Pechan's experience in developing the tool may provide an overwhelming advantage in understanding the problem, and may preclude other contractors from efficiently working with the issue. The Steering Committee is hearing from just a few users, and are hearing about problems with Pechan's responsiveness. But we aren't sure that most tribes and agencies are have really reviewed the system, and the Co-Chairs really want other users to "test drive" the system and provide feedback.

★ Alaska EI Project Updates ★

Alice Edwards gave update on the Alaska Aviation EI and Community EI projects.

The Aviation project is now done, and Alice reported that 1,241 Airports Identified with 3,000+ tons of NO_x annual emission from Alaska air activity (Wyoming has 120 TPY NO_x from aircraft). The Final report is posted on the Emission Forum web site:

<http://www.wrapair.org/forums/ef/inventories/akai/index.html>

The Community EI project is designed to collect emission inventory information from representative mid and small size communities in Alaska for broader application to the full list of these communities throughout the state. Survey information is complete for four communities, with surveys underway for another nine. Alaska plans to continue to work with remaining villages to complete data collection, and then Sierra Research will extrapolate community-specific results to other similar sized communities based on population and geography, and they will prepare emission summaries from the calculations.

★ Inter-RPO Projects Status ★

Tom Moore then gave a report on inter-RPO activities, noting that the money originally came from unused CENRAP grant money in 2003. The first project is the 2002 National Wildfire EI (\$133K), with the project now essentially complete. The ConCEPT model is an alternative emission processing model (WRAP currently uses SMOKE) which is being developed, but outside of LADCO, it is not being widely accepted within the modeling community as yet. And the MW RPO is also leading development of a new Ammonia model with the details of the progress of this model on the Midwest RPO website:

<http://www.ladco.org/mrpo.html>

.... under the "Emissions" section and the "New Ammonia Model" header.

There are also non-emissions related projects including Marc Pitchford's Natural Haze Levels sensitivity analysis (\$75K):

<http://www.wrapair.org/forums/aamrf/projects/NCS/index.html>

.... the Fast Aerosol Sensing Tool for Natural Event Tracking (FASTNET- \$100K)

<http://capita.wustl.edu/FASTNET/Reports/FASTNETProgRep0402.htm>

.... and the Combined Aerosol Trajectory Tool (CATT) project (\$75K)

http://www.datafed.net/projects/CATT/CATT_Links.htm

There is also the EI Data Warehouse Project, which will provide a basic web system to exchange EI data between RPO's and between states (baby EDMS). The implementation of this project began in August '05, with a preliminary release scheduled for mid-October, and computer code documents and training to be completed by December. Also by the end of the year, the contractor (ERG) will pick hardware/software, choose the server and migrate the system to a host location. Alpha, beta and final testing is scheduled to be completed by the end of January '06. MARAMA has asked and received commitment from WRAP and other RPO's to contribute funding for first year operations [Spring '06 through Winter '07].

★ Tribal EI Update ★

Jenifer Pond of ITEP gave a report on the Tribal Inventory of major Stationary sources on WRAP tribal lands. The objective of the project was to inventory all significant point sources of NO_x and SO₂ in Indian Country of the WRAP region, with a special emphasis on Oil and Gas exploration and production (E&P) sources. ITEP worked on compiling 2002 Title V, Part 71 permits from EPA records. They and their Contractor Team (ERG-Environ) worked with 7 reservations: the Wind River Reservation, Ute Mountain Ute, Tohono O'Odham, Colville and Warm Springs tribes, the Navajo and Yakama Nations. Her presentation included some of the initial results from the inventory work. Next steps involve the Tribes, ITEP and the TDDWG reviewing the Project Report. Then the tribal 2002 emission estimates will need to be reconciled with states inventory (O&G already done; area sources will be reconciled on a case-by-case basis in EDMS). And ITEP will then develop TEISS files for the tribes based on this data, while ERG will work to prepare 2018 emission projection estimates of this data.

★ SSJF EI & Control Technology Projects ★

The SSJF has been working on Oil & Gas EI Improvements, the Point & Area 2018 Projections, NO_x Control Technology for EGU's, and the above described Tribal Point Source EI's. Paula Fields and Alison Pollack presented information on this work, including a description of the 2018 projection methodology. The results of the **Final** 2002 (slightly revised from the AoH and SSJF meetings earlier in the month) and the **Draft** 2018 WRAP Point & Area Source Emission Inventories (California 2018 Projections will be done by that state later, and are not yet included) are summarized in the following table.

WRAP Region Emissions (Tons)							
Year	<u>NO_x</u>	<u>SO₂</u>	<u>VOC</u>	<u>CO</u>	<u>PM₁₀</u>	<u>PM_{2.5}</u>	<u>NH₃</u>
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<u>Area Sources</u>							
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2018	401,616	245,950	2,422,124	1,118,854	2,063,956	537,207	27,360

Regarding the Oil & Gas Sector, Environ has focused on large NO_x emitters, along with some VOC emitters. Area O&G sources included:

- O&G well drilling (NO_x) - drill rig prime movers
- natural gas compressor engines (NO_x)
- wellhead activities - (NO_x, VOC) dehydration, heaters, tanks, etc...
- coal bed methane generators (NO_x)

..... along with Stationary Point Sources

- compressor stations (NO_x, VOC)
- gas processing plants (NO_x, VOC)
- other smaller sources depending upon state inventory thresholds

The effect of adding the 2002 O&G inventory NO_x results showed that point source emissions increased in the WRAP region from about 171,000 tons NO_x, up by about 6K, to a little more than 177,000 tons after O&G Emissions were added to the previous 2002 estimates. But the work showed a much more significant increase in the area source sector; up over 8 times from around 15,000 tons previously, to over 133,000 tons of NO_x after O&G was included. Overall the Point & Area inventory increased by more than 125,000 tons when O&G Emissions were added to the previous 2002 estimates, reflecting a 68% increase in NO_x in the WRAP region due to O&G.

★ Mobile Source Projects Update ★

Alison Pollack gave a presentation on the status of the EF's Mobile Source project. The objectives of the project were to develop up-to date and accurate mobile source emission inventories for WRAP states, to use consistent emissions estimation methods among states and to get up-to-date modeling and activity inputs from state and local agencies.

On-Road emissions are calculated with the MOBILE 6 model. There are typically eight On-Road Vehicle categories, but for the purpose of the report Environ combined the categories into the following four: light duty gasoline vehicles (cars, light duty trucks & motorcycles make up the majority of gasoline emissions), heavy duty gasoline trucks, light duty diesel vehicles (cars,

light duty trucks) and heavy duty diesel trucks (majority of the diesel emissions).

Nonroad emission categories include:

Agricultural Equipment	Lawn and Garden Equipment
Aircraft	Locomotives
Airport Ground Support Equipment	Logging Equipment
Commercial Equipment	Oil Field Equipment
Commercial Marine	Pleasure Craft
Construction and Mining Equipment	Railroad Equipment
Industrial Equipment	Recreational Equipment

All categories are calculated with the NONROAD 2004 model, with the exception of Aircraft, Commercial Marine and Locomotives. More details of the calculation procedures are contained in Alison's presentation. The inventories were compiled for 2002, 2008, 2013 and 2018, and the presentations contains some state emission numbers for the various emission category totals from the WRAP region.

Revisions were also made to the unpaved road dust emissions estimates from the previous §309 modeling work. This was done to resolve the EPA's "divide by 4" methodology and to resolve the large differences that were seen between adjacent counties in different states. They used consistent methodology across states, revised average daily traffic volume (the key parameter in emissions estimates), revised the silt loadings and applied a transport fraction to the emission totals.

The road dust revisions included some additional information from Montana, where they obtained some previously un-quantified VMT on rural unpaved roads.

Consequently Montana's road dust emissions rose almost 10 fold, to almost 200K tons, while other WRAP states were in the range of 5-30K tons. This begs the question as to whether there is a problem with all the other rural areas of WRAP states.

★ Next Meeting ★

Because of unresolved issues regarding budget and mobile questions, a call was set up for October 5th at 2:30 PM Mountain. And the Forum decided to schedule another call for December 2, 2005 at 2:00 PM Mountain to talk about the results of the Beyond Beta Test of the EDMS.

The next meeting will involve decisions on EDMS enhancements, EDMS Training and budget management issues. It was decided to shoot for the week of February 6th possibly in New Mexico.

Joint Emissions-Fire Forum Meeting

★ AoH Update ★

Tom Moore presented the status of the Attribution of Haze project and the Technical Support System (TSS) web portal to display these AoH results as of the September 14-15, 2005 San Francisco Meeting (see 9/16/05 AoH Memo).

★ Air Sciences Fire Emission Projects ★

James Scarborough of Air Sciences gave presentations on the 2002 National Wildfire Inventory and the Phase III/IV Fire Emission Inventories.

❖ National 2002 Wildfire Emission Inventory ❖

The purpose of the National 2002 Wildfire EI effort was to produce an inventory of wildfire for RPO's to use in regional haze modeling. The Inventory can be used to establish boundary conditions in regional haze modeling, and potentially provide the EPA's National Emission Inventory (NEI) with a nationwide wildfire EI that has been developed with a consistent technical methodology, rather than compiled piecemeal from varied state procedures.

To calculate this inventory, you must have total acres burned, along with the date and location of the burn. Mr. Scarborough's presentation explained where these data were collected, and how QA/QC was conducted on the data.

They had to develop a relationship between the reported fire perimeter acres, and the "blackened" acres that were actually burned (fire may burn in patches within the perimeter, and only acres of actual burning produce emissions). The ratio of perimeter to blackened acres was determined to be 2/3. Also, they had to QC duplicate entries in various data source databases, as small fires are often reported separately, and again after they grow together as a large central fire. And they had to verify the "fuel moisture" and the fuel availability (tons per acre) data, as well as look at the burn day "flaming", followed by the day after "smouldering" emissions.

Regarding Acres Burned, the WRAP had 86% of the area (3.88MM out of 4.50MM) and essentially all of the PM_{2.5} emissions. The WRAP had generally more timber and less brush and grassland than the other RPO's, and the WRAP fuel moisture was much dryer than the rest of the country. The WRAP's fires mostly occurred between late May and September, while the other RPO's fires occurred earlier in the year (February-May). Essentially all of the large (> 1000 acres) fires occurred in the WRAP region.

Project deliverables are NIF 3.0 files for each RPO, SMOKE-ready IDA modeling files, and a final report (<http://airsci.com/wrap/inter-rpo>).

❖ Phase III Baseline & Phase IV 2018 Fire Emission Inventories ❖

The final Phase II 2002 Actual Fire EI is already complete, but for SIP Planning, we needed a representative baseline (actual 2002 data may not be representative of current conditions). For Planning you need inventories that you can compare. To quantify the range of possibilities you use quantitative reduction in emissions (ERT's, Alternatives to Burning, etc.) to show a quantitative reduction in visibility impacts (modeling to show Reasonable Further Progress in managing the controllable portion of fire emissions). Consequently, the Phase III Inventory is a WF & R combined inventory for the 2000-2004 timeframe, while the Phase IV Inventory is a 2018 Projected Inventory from the Phase III average.

They had a Technical Workshop in August to review these draft inventories, and now each event must be categorized as Natural or Anthropogenic. Phase II

events were categorized based on National Fire Danger Rating System (NFDRS) fuel model:

heavy fuel loads/restoration → Anthropogenic
lighter fuel loads/maintenance → Natural

For 2018 Projections, they have developed three scenarios involving Less Emissions (most aggressive application of ERT's, limited R due to drought conditions or funding limitation), More Emissions (R not judged to contribute to §308 state visibility problems, ideal burn meteorology, maximum funding) and a Likely Scenario (pretty aggressive application of ERT's, burning conditions favorable in most states, funding holds steady). Thus there will be three 2018 EI's for using in modeling.