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STATE ACTIVITIES

Grand Canyon Visibility Transport Commission (GCVTC): At the annual meeting of the Western Governors Association (WGA) on June 20, the Commissioners (i.e., Governors, or their representatives, and other Federal Agency reps) of the GCVTC met to receive a report on the status of the Commission's progress to date and to conduct other business related to the Commission's work. The Commissioners voted in favor of admitting the State of Wyoming to the GCVTC (making it an eight-state organization) and approved seven separate reports produced to date as work plan products of the Commission.

A briefing by William Auberle, chairman of the Commission's Public Advisory Committee, was met with assurances from Governor Symington (AZ) that resources would be available to maintain the balanced participation that has been sought by the Commission on all of the GCVTC's committees. Because of inadequate funding, this balance is currently in jeopardy, especially with respect to participation by native American groups, the general public, and local governments. The Commissioners also supported a call for greater public education efforts by the Communications Committee.

Other briefings were provided on the recently released National Research Council's report on "Protecting Visibility in National Parks and Wilderness Areas" and on a proposed visibility metric for standardizing the way that visual air quality is expressed. The Commissioners also accepted a budget proposal/request by Jim Souby, executive director of WGA, and held an election of officers to serve the GCVTC over the next year. (Brian Mitchell)

TRAINING

Smoke Management Techniques Course: Mitchell assisted a course development team assembled by the National Wildfire Coordinating Group in revising Smoke Management Techniques course, Rx-450, formerly Rx-95, to reflect changes required as a result of the Clean Air Act Amendments of 1990. Additional follow-up activities will be required, but the lion's share of rewriting course sessions was accomplished at the week-long workshop held outside Portland, Oregon, in early June.

OUTREACH ACTIVITIES

AQRV Survey Sent to Everglades NP and Pinnacles NM: Based on permit and regulatory review experience and air quality guidelines in NPS-77, there is a growing need within the NPS air quality program to develop a more current and comprehensive data base on park resources potentially affected by air pollution. The AQD has identified both short and long-term planning needs relative to the Clean Air Act's mandate that Federal Land Managers protect from adverse impact those park resources that are sensitive to air pollution (a.k.a. air quality related values, or AQRVs). Our aim is to compile the best information that is currently available on park resources relative to threats from existing or increased levels of air pollution. In order to help identify park specific AQRVs, the AQD developed a prototype survey which was sent to the

Southeast and Western Regional Offices for testing at Everglades NP and Pinnacles NM. The survey is designed to identify AQRVs in the park units and their known sensitivity levels, and to identify all air quality monitoring programs in or adjacent to the park units. Identifying AQRVs and sensitivity levels for each of the 48 NPS Class I areas will be a difficult task that will require time and effort on the part of AQD, regional, and park staff.

Approved Layout Plan for Air Quality Exhibit at Big Thicket NPres: The AQD received an air quality exhibit plan for Big Thicket National Preserve. The plan was reviewed and approved by the AQD and funds for the construction of the exhibit will be transferred from the AQD to the preserve. The proposed exhibit will be a portable display designed to inform park visitors about general air quality concerns at the preserve.

Air Quality Management for the Eastern United States Parks Committee Meeting at Shenandoah NP: Dee Morse traveled to Shenandoah NP to attend a committee meeting chaired by Bob Reynolds (Superintendent, Acadia NP) and comprised of individuals from the Midwest, Mid-Atlantic, North Atlantic, National Capitol, and Southeast Regions. This committee is responsible for the development of a strategy plan for a coordinated approach to addressing air quality issues affecting NPS units (Class I and II) in the Eastern United States. At the meeting, the group developed a framework and outline for the plan; began drafting the plan; developed a list of tasks to be accomplished, and a time line for completion; and assigned task responsibilities. During the meeting the group decided to name the air quality strategy **C**lean **A**ir for **P**arks in the **E**ast (**CAPE**). The draft plan will be reviewed by each of the five Regional Directors in July, revised accordingly, and then sent to the Director for his approval.

Air and Waste Management Association (AWMA): The annual AWMA international conference was held in Denver this year. Several NPS staff (including AQD and field personnel) attended various sessions during the conference, and some were involved in presenting papers or participating in panel discussions. The conference was well attended (the largest in Association history) and many important topics were covered that are relevant to protection of Federally managed lands and resources. A list of NPS papers presented is attached.

PERMIT REVIEW AND TECHNICAL SUPPORT

During June the Policy, Planning, and Permit Review Branch reviewed permit applications for the new air pollution sources listed in Table 1 which are proposed near NPS or FWS areas. Please contact the staff person identified for more specific information regarding these projects.

PLANNING AND ENVIRONMENTAL REVIEW

Roosevelt Campobello International Park (ROCA): A joint NPS-Canadian Parks Service (CPS) air quality workshop was held at ROCA from June 7-11, 1993. A contingent from the AQD, including John Christiano, Mark Scruggs, Miguel Flores, John Bunyak, Sandra Silva, and Erik Hauge, shared information on the NPS air quality program with CPS and other Canadian agency representatives. The Canadians reciprocated and described their various air quality programs. Field trips were taken to Acadia National Park and Moosehorn National Wildlife Refuge, in order for the Canadian officials to see the array of monitoring instruments and a biological effects research program deployed in the field as well as to learn of the impacts of a major emitting facility on a Class I clean air area. The personal commitment of the Superintendent, the Refuge Manager, and their key staffs made the field trip especially valuable. Commitments for future regional cooperation were made. Both parties also suggested a second air quality

workshop to be held at this time next year somewhere in the midwest, and to invite EPA, State, Provincial, International Joint Commission, and Mexican representatives.

Asheville, North Carolina: A meeting was held on May 3-4, 1993, by representatives of Shenandoah (SHEN) and Great Smoky Mountains National Parks, Blue Ridge Parkway, the Mid-Atlantic and Southeast Regional Offices, and the AQD to discuss the development of a Regional Air Quality Management Action Plan for the three park units. After discussing what should be included in the plan, an outline of the plan's major elements was developed. Julie Thomas (SHEN) recommended that an outside expert be hired temporarily to develop a draft and final version of the plan, since it would take at least 2-3 years for the group to develop a plan internally. The group agreed to share the cost of hiring the expert. A position description is being developed by Julie Thomas. The Forest Service Regional Office (FS) in Atlanta has expressed interest in developing an interagency agreement much like that in the Pacific Northwest for a two-agency-regional air quality plan, and in providing some funding to support the hiring of an outside expert to write the plan. (There are eight FS Class I wilderness areas in the vicinity of the three NPS units.) (Hauge)

In the past two months, Hauge has reviewed numerous park planning documents. Comments from all three AQD branches and the Division Chief on the preliminary draft Air Quality Management Plan for SHEN were compiled and submitted to the park to be included in the next draft. Air quality comments were also submitted to the appropriate regional offices on the Cumberland Island National Seashore, Appomattox Court House National Historical Park, and Pictured Rocks National Lakeshore Resource Management Plans. The comments primarily dealt with the location of major emitting facilities and air quality monitoring sites in the vicinity of the three units, and gave names, addresses, and telephone numbers of NPS and state officials to contact to obtain further assistance. Hauge also submitted a prioritized list of essential data elements for natural resources information being developed by the WASO Wildlife and Vegetation Division.

Hauge also reviewed several Environmental Impact Statements (EISs) in the past 2 months. In responding to the draft Fish and Wildlife Service (FWS) Refuges 2003 proposal, AQD recommended the FWS adopt the best air quality alternatives from those presented, including establishing air quality monitoring in all 21 FWS Class I areas. He also discussed the potential of individual oil wells as major emitting facilities, and recommended cumulative impact analyses and requiring air pollution mitigating measures be included in EISs for oil and gas development in the Dixie (Utah) and Tarhee (Idaho) National Forests and the Bureau of Land Management Big Dry Resource Area Management Plan (Montana). He recommended minor changes in the air quality discussion in the NPS response to the DOI proposal for a commercial space launching facility to be located next to Hawaii Volcanoes National Park.

GASEOUS POLLUTANT MONITORING

Ozone Monitoring Using Passive Samplers: A second study of ozone monitoring using the Ogawa passive ozone samplers is planned for July and August in two parks. The objective of the study is to demonstrate that the passive samplers are accurate enough for cumulative exposure measurements to be used at sites away from the continuous ozone monitors. Jim Renfro of the Uplands Research Lab at Great Smoky Mountains National Park and Diane Ewell at Sequoia/Kings Canyon National Parks will deploy the ozone samplers for 1-week periods in August at multiple sites within the parks. Dr. John Ray (AQD) will coordinate the overall study and conduct some preliminary experiments at the ARS lab in Ft. Collins, CO, in July. Wider use of these low-cost measurement devices may follow if the results are positive. (John D. Ray)

AQD Participates in the NARE Program: The monitoring site at Acadia NP will be used for enhanced monitoring of volatile hydrocarbons and nitrogen oxides as part of the North Atlantic Regional Experiment (NARE) and the Gulf of Maine Ozone Study (GOMOS) during August. The NARE experiment, organized by the National Oceanic and Atmospheric Administration (NOAA), has been designed to characterize the nature and sources of ozone precursors, their transport, and the atmospheric chemistry of ozone episodes in the Western North Atlantic. GOMOS is a regional study to better understand the ozone chemistry and transport over the Gulf of Maine. AQD is cooperating with the NOAA Agronomy Laboratory and the State of Maine, Department of Environmental Protection to augment the Acadia monitoring site and assist in these studies. AQD staff will be installing a NO_y (defined as the sum of all odd nitrogen species) analyzer at Acadia NP in July. (John D. Ray)

Annual Data Summary Reports: Annual gaseous pollutant summary reports for 1992 have been prepared this month for Arches National Park, Cuyahoga Valley National Recreation Area, Big Thicket National Preserve, Colorado National Monument, and Santa Monica Mountains National Recreation Area. Final ozone, sulfur dioxide, and/or meteorological data are included, as well as graphs and summaries of the data. These reports were sent to the parks and the respective Regional Air Quality Coordinators.

Ozone Summary Report: A report entitled, "Statistical Summary of Ozone Measurements in the National Park System, 1981-1991" has been released by the Air Quality Division. This two volume report includes monthly, growing season, and yearly summaries of the ozone data collected at 45 ozone monitoring sites in 37 units of the National Park System. The executive summary in Volume I includes a discussion of the spatial and temporal ozone trends observed in the NPS ozone monitoring network. Copies have been distributed to the superintendents of those units that have (or had) ozone monitors and the Air Quality Coordinators. If you would like a copy of the report please contact David Joseph or Miguel Flores at (303) 969-2072 or via cc:Mail. (Dave Joseph and Miguel Flores)

Calibration and Maintenance Visits: Tables 2 and 3 list the semi-annual calibration and maintenance visits conducted during June 1993 and those to be performed July through October 1993. This is a proposed schedule. Visits by monitoring support personnel will be scheduled with the site operators by the visitor. Site operators, park superintendents, and regional air quality coordinators will be given a 2-week written notice of the site visit once arrangements for the visit are finalized. (Ron Lawler Heavner)

NAAQS Exceedances: The raw data for June 1993 indicated that all National Park Service areas with monitoring sites were below the ozone and sulfur dioxide National Ambient Air Quality Standards (NAAQS) during the month. The data show that the maximum ozone concentration for the gaseous pollutant monitoring network was 0.122 ppm measured at 1800 hours on June 25, 1993, in Joshua Tree National Monument. The second highest concentration was 0.121 ppm measured at 2000 hours on June 18, 1993, also at Joshua Tree National Monument. There were 6 parks having maximum ozone concentrations greater than 0.100 ppm during June 1993: Joshua Tree NM (0.122), Pinnacles NM (0.116), Sequoia/Kings Canyon NP - Lower Kaweah (0.110), Great Smoky Mountains NP - Look Rock (0.107), Indiana Dunes NL (0.104), and Saguaro NM (0.102). The maximum sulfur dioxide concentration was 0.049 ppm measured at 1800 hours on June 13, 1993, in Olympic National Park. (Bob Carson)

BIOLOGICAL EFFECTS PROGRAM

Natural Areas Conference: Randy Ferrin attended the Twentieth Annual Natural Areas Conference held at the University of Maine, Orono, June 22-25. The theme of this year's national conference was "Conservation in Working Landscapes." Several CPSUs, Parks, Regional Offices, and WASO offices were represented at the conference. North Atlantic Regional Director Marie Rust gave one of the opening session presentations, describing the variety of park units within her region and the conservation issues and challenges facing those units. Ten papers were presented by NPS scientists and managers. In all, there were over 140 papers, with nearly 50 posters, and 15 field workshops. Judy Hazen-Connery and Bob Breen, Resource Management at Acadia NP, led a group of participants on a 1-day workshop in the park, discussing and illustrating resource challenges from both internal and external sources. One stop during this field workshop was the ozone fumigation chambers near Sand Beach. University of New Hampshire researcher Bob Eckert described the AQD-sponsored study which is examining the effects of ozone on sensitive plants of Acadia.

Progress on Midwest Parks Vulnerability Study: Jim Bennett, CPSU-University of Wisconsin, Madison, gave a seminar to AQD staff on June 14. The topic of his presentation was the Midwest Parks Vulnerability Study which is nearing completion. This analysis is based on the abundance and sensitivity of a park's vegetation and the park's exposure to sulfur dioxide, ozone, and sulfates. Using indices, Bennett ranked the parks in the Midwest Region with reference to the potential for resource damage due to air pollution. The study indicated that the Ohio Parks (Cuyahoga Valley and Hopewell Culture) were the most at risk, followed by Lincoln Boyhood National Memorial, Indiana Dunes National Lakeshore, and Ozark National Scenic Riverways. A significant by-product of the study was an updated plant list with standardized nomenclature for the 22 Midwest Parks. A draft of the study's results is expected in July. While at the AQD, Bennett also updated the air pollution effects bibliography (BIOLEFF) which he has been developing for several years. The bibliographic data base includes abstracts on the effects of air pollution on lichens and vascular plants, air-borne heavy metals effects on plants, as well as abstracts of articles on air pollutant concentrations and chemistry. (Ferrin)

AQD Staff Discuss Snow Projects with Front Range Watershed Researchers: On Monday, June 21, we met with John Turk (USGS-Water Resources), Jill Baron (NPS-WRD), and Mark Williams (Univ. of Colorado) to discuss the use of natural nitrogen isotopes to investigate biological transformations in snow and snowmelt in the Colorado Rockies. This study is designed to assess the potential for episodic acidification in streams in alpine/subalpine regions of the Rockies. At this meeting Tonnie Maniero gave an explanation of the permit review process and specifically described the situation with the planned retrofit of the Fort St. Vrain power plant that will be a large, new NO_x source, possibly affecting the Front Range of the Colorado Rockies. Another project we plan to support is a spring snow survey in 1994 at Glacier, Rocky Mountain, Yellowstone, and Grand Teton National Parks, in addition to Dinosaur National Monument. This survey will be used to verify the results of the spring 1993 survey to characterize the chemistry of the snowpack and to look for evidence of the influence of air pollutants on deposition. (Tonnessen)

Biological Effects Program Staff Meet with Research Cooperators: During the Annual Meeting of the Air and Waste Management Association (Denver, CO), staff participated in three separate meetings with research contractors. Dr. Robert Kohut (Boyce Thompson Institute) indicated that the ozone fumigation facility at Acadia National Park became operational in mid-May. Some sensitive species were showing injury in the high-ozone chambers. Ozone levels during late May and early June were low, and the researchers had increased the high ozone treatment to at least 3x ambient ozone. Dr. Kohut also briefed AQD personnel on the quality assurance procedures for the ozone monitor located on Cadillac Mountain. Ms. Diane Ewell (Sequoia and Kings

Canyon National Parks) indicated that Project FOREST will hold its yearly training course during the last week in June. Following this training and certification, field crews will begin an ozone injury survey (ponderosa and Jeffrey pines) in Lassen Volcanic, Kings Canyon, Sequoia, and Yosemite National Parks. Dr. Art Chappelka (Auburn University) reviewed the progress on the statistical analyses of both the 1992 Biomonitoring Study and Trend Plot Study (Great Smoky Mountains National Park). Since the AQD is planning to produce a videotape on ozone and its effects on biological systems, each contractor was alerted to the possibility of visiting camera crews this summer. (Nash)

VISIBILITY

Project MOHAVE: Project MOHAVE (Measurement Of Haze And Visual Effects), a study designed to estimate the contribution of the Mohave power project to haze in the Grand Canyon, is in its data analysis phase. Some 40 monitoring sites were operated throughout the Southwestern United States during "Winter" and "Summer" sampling periods. Tracer gas was released from the Mohave Power Plant stack, Southern California, and Bullfrog Basin in Lake Powell. Receptor sites involving special studies were carried out at Hopi Point and Indian Gardens at the Grand Canyon, at Meadview, Nevada, and at Joshua Tree National Monument. The sample analysis associated with these sites is nearly complete.

During the week of June 28, scientists involved with the analysis of this data met in Las Vegas to establish time lines for various interpretive tasks. Over 75 scientists are involved in the effort. National Oceanic and Atmospheric Administration is responsible for analysis of much of the meteorological data while scientists from Colorado State University are calculating windfields that incorporate the effects of complex terrain. Washington University scientists are using these windfields to estimate, using chemistry modeling, concentrations of aerosols and gases at the various monitoring sites. The Environmental Protection Agency, National Park Service, and Desert Research Institute are exercising various receptor models to estimate the aerosol concentrations at the same monitoring location. All calculations will be reconciled with each other.

Upon completion of the modeling tasks, the tracer data will be released to further verify results of the calculations. The first phase of the modeling effort is to be completed by January 1994, with a draft final report complete by September 1994. (Malm)

Interagency Monitoring of Protected Visual Environments (IMPROVE): A meeting of the IMPROVE technical steering committee and interested parties was held in Fort Collins in early June to discuss status of IMPROVE monitoring activities and related programs by individual State and Federal agencies. A major issue of concern is that IMPROVE monitoring may need to be scaled down in the future due to dwindling monetary resources and rising costs. Quarterly newsletters are now being issued by the IMPROVE program and a report on data from the first 3 years of the program was recently printed and disseminated. (Malm, Scruggs)

TABLE 1

PROJECT	LOCATION	MAJOR COMMENTS	CONTACT
Geolinear Company (natural gas processing plant)	42 km E of THRO	Temporary source of emissions; EPA determined PSD does not apply (emissions less than 250 tons per year); no significant impacts expected at the park.	Bunyak
IMC Fertilizer (phosphoric acid plant modification)	104 km SE of Chassahowitzka Wilderness Area	Slight increase in actual fluoride emissions; no significant impacts expected at the wilderness area.	Porter
Idaho National Engineering Laboratory (chemical processing plant area modification)	25 km E of CRMO	Very small increase in radionuclides; no significant impacts expected at the monument.	Notar
Public Service Company of Colorado--Ft. St. Vrain Plant (conversion of nuclear plant to gas-fired plant)	60 km E of ROMO	Provided initial and general comments on BACT, modeling, and AQRV concerns; recommended follow-up meeting to discuss concerns in more detail.	Maniero

TABLE 2

SITE LOCATION	VISITED BY	DATE
Saguaro NM	Robert Lehman (ARS)	June 7-10
Craters of the Moon NM	Mike Bagby (ARS)	June 8-11
Acadia NP	Mitch Walker (ARS)	June 8-11
Isle Royale NP	Ron Lawler Heavner (AQD)	June 11-12
Redwood NP	Mark Tigges (ARS)	June 14-16
Lassen Volcanic NP	Mike Tigges (ARS)	June 16-18
Yellowstone NP	Mike Bagby (ARS)	June 21-24
Great Smoky Mtns. NP	Mitch Walker (ARS)	June 21-24

TABLE 3

SITE LOCATION	TO BE VISITED BY	DATE
JULY SITE VISITS		
Grand Canyon NP	John Faust and Dave Meisters (ARS)	July 7-10
Canyonlands NP	Robert Lehman (ARS)	July 7-10
Sequoia NP	Mark Tigges (ARS)	July 12-16
Rocky Mountain NP	Ron Lawler Heavner (AQD)	July 13
Lassen Volcanic NP	Ron Lawler Heavner (AQD)	July 15
Everglades NP	Mike Bagby (ARS)	July 20-23
Olympic NP and Mount Rainier NP	John Faust (ARS)	July 26-31
Acadia NP	John Ray and Ron Lawler Heavner (AQD)	July 27-30
August Site Visits		
Pinnacles NM	John Faust (ARS)	August 11-13
Haleakala NP and Hawaii Volcanoes NP	Mark Tigges (ARS)	August 16-21
Great Basin NP	Mike Bagby and Dave Meisters (ARS)	August 23-27
Mesa Verde NP	John Faust (ARS)	August 31-Sept. 2
September Site Visits		
Rocky Mountain NP	Dave Meisters (ARS)	September 7-8
Indiana Dunes NL	Mark Tigges (ARS)	September 20-22
Shenandoah NP	Dave Meisters (ARS)	September 27-Oct. 1
October Site Visits		
Great Smoky Mtns. NP	Mark Tigges (ARS)	October 4-8
Yellowstone NP	Dave Meisters (ARS)	October 12-14
Big Bend NP	Mike Bagby (ARS)	October 19-21

List of Papers
Presented at the Air & Waste Management Association's
86th Annual Meeting & Exhibition
Denver, Colorado, 1993

Eldred, R.A., Cahill, T.A. and Malm, W.C. "Ten-Year Trends in Sulfur Concentrations at National Parks Throughout the United States."

Gebhart, K.A., Malm, W.C. and Iyer, H.K. "Comparison of Two Back Trajectory Techniques for Source Apportionment."

Huffman, D. and Malm, W.C. "Estimation of Aerosol Acidity from Non-Ionic Particle Measurements."

Sisler, J.F. and Malm, W.C. "Spatial and Temporal Patterns and the Chemical Composition of the Haze and Its Impact on Visibility in Alaska."

Malm, W.C. and Gebhart, K.A. "Source Apportionment of Organic and Light Absorbing Carbon Using Receptor Modeling Techniques"

Ross, D.M., and Iyer, H.K. "An Empirical Model to Predict the Probability of Visual Detection of Plumes."