



Idaho National Engineering Laboratory

FALTER

UCC. D. A. Bruns
R. E. Chaney
R. L. Heath
D. D. Keiser
J. W. Morfitt
B. P. Warner
Letter File
Central Files, w/o enc

*Saw - talk to
Bloomsburg about this?*

RECEIVED
D. D. Keiser
OCT 15 1985
INFO. & COMM.

October 15, 1985

INTEGRATED RESEARCH EFFORT - GBW-345-85

Dear :

Enclosed is a brief summary of some of the main topics that we discussed at our first planning meeting on atmospheric deposition research in the west. As indicated, we are planning a second meeting to be held perhaps sometime in January or February of 1986.

Please feel free to give us any feedback and suggestions on our joint efforts to develop the research plan. We will let you know about the second meeting as soon as we can, and will keep you informed of any other developments.

Sincerely,

G. B. Wiersma, Ph.D.
Manager
Environmental and Earth Sciences

dmh

Enclosure:
As stated

cc: R. J. Beers, DOE-ID
O. D. Markham, DOE-ID
S. K. Rope, DOE-ID
J. O. Zane, EG&G Idaho

** Being pushed by Congress
* Anticipate \$ by summer 1986.*



EG&G Idaho, Inc.

P.O. Box 1625

Idaho Falls, ID 83415

PARTICIPANTS IN ACID DEPOSITION WORKSHOP

<u>Name</u>	<u>Association</u>	<u>Phone</u>
Bob Woodmansee	Colorado State University	(303) 491-1983
Brent Russell	INEL	(208) 526-9535
Frank Munshower	Montana State University	(416) 994-4821
Raymond Herrmann	National Park Service/ Colorado State University	(303) 491-7573
Mark Harmon	Oregon State University	(503) 757-4361
Art McKee	Oregon State University	(503) 757-4395
G. E. Start	NOAA/ARLFRD	(208) 526-2329
Susan K. Rope	DOE/ID	(208) 526-1867
Alan Crockett	INEL	(208) 526-1574
Rob Rogers	INEL	(208) 526-0685
Steve Williams	University of Wyoming	(307) 766-2179
Frank Sanders	Wyoming Water Research Ctr.	(307) 766-2143
Chuck Wullstein	University of Utah	(801) 582-4549
Ron Neilson	University of Utah Research Institute	(801) 524-3461
Carl Richards	Idaho State University	(208) 236-2236
Nellie Stark	University of Montana	(406) 243-2913
LaMar Johnson	INEL	(208) 526-1157
Catherine Ballard	INEL	(208) 526-0588
Bob Breckenridge	INEL	(208) 526-0757
Bruce Wiersma	INEL	(208) 526-1590
Dale Bruns	INEL	(208) 526-0816
✓ Mike Falter	University of Idaho	(208) 885-7123
2 Tom Carlson	✓ University of Idaho	(208) 885-6793
Delbert Eatough	Brigham Young University	(801) 378-6040

SUMMARY OF THE FIRST MEETING ON
A COOPERATIVE ATMOSPHERIC DEPOSITION RESEARCH PLAN

INTRODUCTION

This report briefly summarizes some of the topics discussed at our first planning meeting on August 23 regarding a cooperative research effort between western universities and the Idaho National Engineering Laboratory (INEL). The major focus of this meeting was to explore the possibility of establishing an integrated research effort centering around potential impacts of atmospheric deposition on sensitive ecosystems in the Rocky Mountain West. Several presentations were made which covered the research opportunity, an overview of atmospheric deposition in the west, and a proposed list of initial research topics. Based on subsequent discussions, it appeared that the group agreed on the use of a general conceptual approach in formulating our research plan and proposal and that the watershed should be the basic unit of the research focus. In discussing and developing a list of research questions, there was recognition of the need to address scaling concepts and problems in the research plan.

The available research opportunity is a result of growing public and political pressures, regulatory concerns, and the lack of scientific information and understanding. The World Resources Institute report on acid rain in the west plus considerable general coverage in the popular press has helped to give much more visibility to the potential problem in the Rocky Mountains. Several bills for acid deposition research are being considered by the Congress and more attention is being paid to the western situation. Proposed federal funding for acid deposition research in fiscal year 1986 has increased significantly by \$23 million over 1985 levels. It is reasonable to expect that funds will be available for the west at some time in the future and it is not too early to begin planning a cooperative research effort.

There are several benefits and advantages for coordinating a joint integrated research effort. First, it will focus the considerable skills and expertise already available in the Intermountain area on a potential

problem of regional and national significance. Second, a cooperative effort will help to develop a critical research mass to match the scale of the problem and in doing so, will build regional peer recognition. Third, we will be ready with a plan when expected funds become available for western atmospheric deposition research. This will make us more competitive on a national scale.

PROPOSED TECHNICAL PROGRAM

In general, the overall research objectives and questions of our proposed research plan include:

- 1) characterization of the atmospheric route of exposure to sensitive, western ecosystems;
- 2) determination of the extent of potential acidic damage in western ecosystems;
- 3) do threshold limits exist for acidification of western ecosystems;
- 4) are there unique indicators of the impact of acidification on western ecosystems; and
- 5) are there natural or man-made mitigative factors that could be developed or explored?

Atmospheric research would include work on chemical transformations, transport phenomena, and measurement of ambient concentrations and deposition rates. Investigations of snowpack chemistry and physics will be very important and could constitute an area of research that may be more unique to the western problem. The determination of threshold limits for both terrestrial and aquatic systems will be needed. One of the questions here is whether or not the dose-response relationships are linear. In this regard, experimental work in conjunction with field characterization of the extent of potential acidic damage will be crucial. In addition, it will be important to delineate unique indicators of ecological impact. Investigation of biogeochemical processes at the watershed level will help to determine what natural factors may be involved in the mitigation of potential acidic impacts.

The problem of spatial and temporal scales in both modeling and empirical studies was acknowledged. It was indicated that this aspect of the research

plan needs to be integrated with regional problems of air pollution. In general, there was a consensus to focus initially at the watershed level in development of a research plan. From this level, a hierarchy of scale could be developed around the movement of chemicals and how they may affect the ecosystem.

Since the acidification process may last years to decades, the planned use of models in conjunction with laboratory and field research will be needed. Discussion was given to modeling and its role relative to planning and implementing a research plan. It was recognized that modeling can be used as a tool to direct research efforts but scientific modelers need to be integrated with empirical scientists working in the laboratory and field. A recommendation was made to hold a workshop to facilitate modelers working with non-modelers in the planning and development of a research program. A watershed acidification model would be the focus of this workshop.

UNIQUENESS OF THE WESTERN DEPOSITION PROBLEM

For a variety of reasons, acid deposition in the west appears to be unique and different in many respects from related problems in the east. The sheer scale of the west is unique in terms of the high elevations and acres involved for sensitive ecosystems. Many of these areas occur as wilderness. In this respect, there is a large availability of systems with low impact that could be very valuable in establishing baseline conditions. Snow chemistry in the west will be very important, especially in regard to scavenging, re-entrainment, spatial variability, and episodic events of snowmelt in spring. Summer convective storms also represent a unique western aspect and the Rocky Mountains are very sensitive to global meteorological patterns and in turn, can modify them. Forests in the western United States tend to be dominated by coniferous rather deciduous species. Other unique ecological aspects in the west include a comparative abundance of tundra and high elevation lakes and streams. And finally, it should be highlighted that there is and will be increasing development in the west.

In certain respects, the unique features of the western atmospheric deposition problem represent advantages in developing a research plan

for the west. However, it is recognized that it will be difficult to compete with eastern watershed studies.

STATUS OF FUTURE PLANNING MEETING

A second meeting is being planned to continue our development of a cooperative research plan, but no specific date has been selected. Based on the consensus at our first meeting, we are soliciting funding to support the transfer, debugging, and application of the Integrated Lake-Watershed Acidification Model. Our objective is to make this model available and apply it to a selected western site(s) where a sufficient data base may be available, at least for research planning purposes. Once the model is ready, the INEL would sponsor a workshop between modelers and non-modelers for several days. The intent will be to use the model and the meeting to identify and generate empirically testable research hypotheses that can be incorporated into our overall research plan on western atmospheric deposition. The earliest potential date for this meeting would be sometime after the first of January, 1986.



Idaho National Engineering Laboratory

October 15, 1985

Dr. Mike Falter
Fisheries Resources
University of Idaho
Moscow, ID 83843

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THE UNIVERSITY RESEARCH OFFICE

PRESENTS

A PROGRAM ON THE

IDAHO NATIONAL ENGINEERING LABORATORY

WITH

DR. PEGGY STRAIN, DEPARTMENT OF ENERGY

DR. CLAY NICHOLS, DEPARTMENT OF ENERGY

DR. JOHN MORFITT, EG&G

DR. LEON WALTERS, ARGONNE NATIONAL LAB - WEST

DR. LAMAR TREGO, WESTINGHOUSE IDAHO NUCLEAR CO.

DATE: MONDAY, OCTOBER 28, 1985

TIME: 9:00 am to 10:00 am

PLACE: SUB APPALOOSA ROOM

- TOPICS: 1) The Areas of Interest of INEL, including:
Environmental Research, Acid Rain Research
Biotechnology, Physics and Chemistry of Plasma,
Non-ferrous metals, Clean Coal Technology
- 2) Establishing connections with UI Researchers

* * * ALL FACULTY, STAFF AND STUDENTS ARE INVITED TO ATTEND * * *

NOTE: The INEL/DOE team will be on campus on Monday and Tuesday, October 28 and 29. If you would like to meet with one or more of them, please contact Nancy Weller, 885-6651

TEACHING/RESEARCH/SERVICE
Office of the Dean
Telephone (208) 885-6441



October 24, 1985

To: All FWR Faculty

From: George H. Belt, Associate Dean/Research

GHB

The INEL personnel visiting campus Monday, October 28 (see attached announcement) have expressed interest in the FWR program and will visit the College on the 28th from about 10 a.m. until noon. Their purpose is to learn more about our facilities and to tell us about their program. The driving force behind the visit is a \$5 million grant recently received by INEL and the potential for collaborative work with the College. This is very much an explorative session.

All persons interested are encouraged to attend the general session at 9 a.m. in the Appaloosa Room of the SUB. All interested FWR faculty are also welcome to participate in the FWR session.

The purpose of this memo is to organize our response to the INEL visit, and specifically to invite the faculty listed below to participate at 10 a.m. Monday. If the named individuals cannot participate or have questions, a call to me would be appreciated.

Biotechnology

Genetics - Fins
Microbiology - Stoszek, M.

Acid-Rain

Fish - Falter
Hydrology Watershed Mgt. - Belt

Environmental Research

Silviculture - Adams
Wood Residue - Johnson, L.
Range Ecology - Hironaka

Research Facilities

Fishery - Bjornn
Forest - Osborne
Laboratory - Campbell

GHB/pkv

enc.

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Focus

{ Lake/Res. Research + Mgmt.
Salmonid Ecology.

Dynamics of integrated systems (min. wastes, integrated return flows, ~~the~~ + ~~related~~ enclosed environments.

* Monitoring Site on School Forest,

- Their areas of interest with U of I.....
- * Bio-Tech (esp. applied bio-engineering)
 - * Site ecosystem research.

I involved in the Acid Dep.

- * pH
- * nutrients

system response
manipulation
Toxicity
Reservoirs - In
- Below

INEL now assembling matrix of research opportunities at
INEL
Blue Ribbon thrust areas.