

Nevada Request for Regional Geographic Initiative (RGI) Funding to Support Continued Operation of rural MDN Wet Deposition Sites in Nevada

November 1, 2006

Atmospheric deposition of mercury (Hg) is considered to be a major pathway for Hg to enter terrestrial and aquatic ecosystems (Swain et al., 1992; Mason et al., 2000; Schroeder et al., 1998). Both wet and dry deposition is known to occur. As part of the National Atmospheric Deposition Network (<http://nadp.sws.uiuc.edu>), established to monitor acid rain, a national Mercury Deposition Network (MDN) was established (<http://nadp.sws.uiuc.edu/mdn/sites.asp>). MDN sites are fully automated to collect only wet deposition. There are very few continuously operated MDN sites in the west (1 NM, 2 NV, 2 CA, 2 CO, 1 WY, 2 WA out of approximately 60 locations nationally) and only the two Nevada sites occur in the Great Basin.

The sites located in Northeastern Nevada are also unique because the state is home to large areas of natural geologic Hg enrichment that are significant sources of atmospheric Hg (Zehner and Gustin, 2002). In addition, gold and silver ore processing facilities in Northern Nevada are the State's largest anthropogenic sources of Hg to the atmosphere. Other potential sources of Hg to the atmosphere in the state are geothermal areas, and geothermal and coal combustion based energy production. To better understand the significance of these sources with respect to impacts locally and regionally, and to begin to assess the significance of wet versus dry deposition of Hg, the Nevada Division of Environmental Protection partnered with Dr. Mae Gustin, Associate Professor at the University of Nevada, and Dr. Eric Prestbo, Senior Research Scientist with Frontier Geosciences, Inc. to conduct Hg deposition research under an Air Toxics Grant.

Part of the outcome of that grant is predicated on the assumption that the wet deposition MDN sites in Northern Nevada will continue operating throughout the grant period. The two rural sites are currently being partially funded by NDEP and partially funded by EPA's Superfund Program. However, the federal funding will expire at the end of May 2007. The Division is requesting Regional Geographic Initiative funding to partially support the continued operation of the MDN sites at least through the end of the Air Toxics Grant period (from June 07 through October 08). As outlined below, the Division will continue to pay for the sample collection and shipping costs.

Budget:

The following costs for coordination and chemical analysis are estimated based on per sample cost of \$180 (the per sample cost in the current funding agreement plus a 5% COLA adjustment for the June 2007 through October 2008 timeframe) and a monthly coordination cost of \$475 (the monthly cost in the current agreement plus a 5% COLA adjustment for the June 2007 through the October 2008 timeframe). The exact costs would need to be negotiated and would include only the actual per sample cost.

	EPA	NDEP	TOTAL
Coordination*	8,075.00		8,075.00
Chemical Analysis**	26,280.00		26,280.00
Sample Collection		14,600.00	14,600.00
Shipping		1,700.00	1,700.00
Total	34,355.00	16,300.00	50,655.00

* Cost includes network management, data processing and publication, network quality assurance, and network equipment depot services.

** Chemical analysis includes total mercury, site liaison, some supplies, and postage for return of sample case from the mercury analytical laboratory to the site.

References:

Mason, R.P., Lawson, N.M., Sheu, G.R. 2000 Annual and seasonal trends in Hg deposition in Maryland. *Atmospheric Environmental* 34:1691-1701.

Schroeder, W.H., Munthe, J. 1998 Atmospheric Hg: An Overview. *Atmospheric Environment* 32:809-822.

Swain, E.B., Engstrom, D.R., Bringham, M.E., Henning, T.A., Brenzonik, P.L. 1992 Increasing rates of atmospheric Hg deposition in mid-continental North America. *Science* 257:784-787.

Zehner, R.E., Gustin, M.S. 2002 Estimation of mercury vapor flux from natural substrate in Nevada. *Environmental Science and Technology* 36:4039-4045.